PTO/AIA/15 (10-17)
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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	480805.00748 (61823-US-C)
First Named Inventor	SCROGGIE, Derek
Title	Push Through Retainer Connection with Integrated Hinging Seal
Priority Mail Express® Label No.	

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☐ **Fee Transmittal Form** (PTO/SB/17 or equivalent)
2. ☐ **Applicant asserts small entity status.** See 37 CFR 1.27
3. ☐ **Applicant certifies micro entity status.** See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent.
4. ☑ **Specification** [*Total Pages* 18] Both the claims and abstract must start on a new page. *(See MPEP § 608.01(a) for information on the preferred arrangement)*
5. ☑ **Drawing(s)** (35 U.S.C. 113) [*Total Sheets* 4]
6. **Inventor's Oath or Declaration** [*Total Pages* 3] *(including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e))*
   a. ☐ Newly executed (original or copy)
   b. ☑ A copy from a prior application (37 CFR 1.63(d))
7. ☑ **Application Data Sheet** ** See note below.* See 37 CFR 1.76 (PTO/AIA/14 or equivalent)
8. **CD-ROM or CD-R** in duplicate, large table, or Computer Program (*Appendix*)
   ☐ Landscape Table on CD
9. **Nucleotide and/or Amino Acid Sequence Submission** (*if applicable, items a. – c. are required*)
   a. ☐ Computer Readable Form (CRF)
   b. ☐ Specification Sequence Listing on:
      i. ☐ CD-ROM or CD-R (2 copies); or
      ii. ☐ Paper
   c. ☐ Statements verifying identity of above copies

ADDRESS TO:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ACCOMPANYING APPLICATION PAPERS

10. ☐ **Assignment Papers** (cover sheet & document(s))
    Name of Assignee _____
11. ☐ **37 CFR 3.73(c) Statement** (*when there is an assignee*) ☑ **Power of Attorney**
12. ☐ **English Translation Document** (*if applicable*)
13. ☐ **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
    ☐ Copies of citations attached
14. ☑ **Preliminary Amendment**
15. ☐ **Return Receipt Postcard** (*MPEP § 503*) (*Should be specifically itemized*)
16. ☐ **Certified Copy of Priority Document(s)** (*if foreign priority is claimed*)
17. ☐ **Nonpublication Request** Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent.
18. ☑ **Other:** clean copy of specification and marked-up copy of specification

*Note: (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).
(2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

19. CORRESPONDENCE ADDRESS

☑ The address associated with Customer Number: 160504 **OR** ☐ Correspondence address below

Name					
Address					
City		State		Zip Code	
Country		Telephone		Email	

Signature	/NPSchmidbauer/	Date	2020-06-10
Name (Print/Type)	Nicholas P. Schmidbauer	Registration No. (Attorney/Agent)	56610

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	480805.00748(61823-US-C)
	Application Number	
Title of Invention	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Derek		Scroggie	

Residence Information (Select One) ● US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
Macomb	MI	US

Mailing Address of Inventor:

Address 1	c/o: Illinois Tool Works Inc.
Address 2	155 Harlem Avenue
City	Glenview
State/Province	IL
Postal Code	60025
Country	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Michelle	E.	Bozinovski	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
Oakland Charter Township	MI	US

Mailing Address of Inventor:

Address 1	c/o: Illinois Tool Works Inc.
Address 2	155 Harlem Avenue
City	Glenview
State/Province	IL
Postal Code	60025
Country	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Robert	A.	Murawski	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	480805.00748(61823-US-C)
	Application Number	
Title of Invention	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL	

City	Clinton Township	State/Province	MI	Country of Residence	US

Mailing Address of Inventor:

Address 1	c/o: Illinois Tool Works Inc.		
Address 2	155 Harlem Avenue		
City	Glenview	**State/Province**	IL
Postal Code	60025	**Country**	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	160504		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL		
Attorney Docket Number	480805.00748(61823-US-C)	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	4	**Suggested Figure for Publication (if any)**	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	480805.00748(61823-US-C)
	Application Number	
Title of Invention	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL	

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	◯ Limited Recognition (37 CFR 11.9)
Customer Number	160504		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	15987986	2018-05-24
Prior Application Status	Patented		Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15987986	Continuation of	14652819	2015-06-17	9982694	2018-05-29

Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
14652819	a 371 of international	PCT/US2013/073861	2013-12-09
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2013/073861	Claims benefit of provisional	61739604	2012-12-19

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	480805.00748(61823-US-C)
	Application Number	
Title of Invention	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL	

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	480805.00748(61823-US-C)
	Application Number	
Title of Invention	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	480805.00748(61823-US-C)
	Application Number	
Title of Invention	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 — Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

● Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	Illinois Tool Works Inc.		
Mailing Address Information For Applicant:			
Address 1	155 Harlem Avenue		
Address 2			
City	Glenview	**State/Province**	IL
Country	US	Postal Code	60025
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	480805.00748(61823-US-C)
	Application Number	
Title of Invention	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/NPSchmidbauer/			Date (YYYY-MM-DD)	2020-06-10
First Name	Nicholas P.	Last Name	Schmidbauer	Registration Number	56610

Additional Signature may be generated within this form by selecting the Add button. Add

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	480805.00748(61823-US-C)
	Application Number	
Title of Invention	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL	

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1 The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3 A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL
First Named Inventor/Applicant Name:	Derek Scroggie
Filer:	Nicholas P. Schmidbauer./Cyndy Marcello
Attorney Docket Number:	480805.00748(61823-US-C)

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY APPLICATION FILING	1011	1	300	300
UTILITY SEARCH FEE	1111	1	660	660
UTILITY EXAMINATION FEE	1311	1	760	760
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1720**

Electronic Acknowledgement Receipt

EFS ID:	39682429
Application Number:	16897947
International Application Number:	
Confirmation Number:	8594
Title of Invention:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL
First Named Inventor/Applicant Name:	Derek Scroggie
Customer Number:	160504
Filer:	Nicholas P. Schmidbauer./Cyndy Marcello
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		61823-US-C-specification-.pdf	222251 aed2301ecb83c1fb08d23af4f7f8e28ec9abb030	yes	18

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
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2	Drawings-only black and white line drawings	61823-US-C-Drawings.pdf	96123 1229421a24f760a3697f9df9642761723524b55b	no	4
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3	Preliminary Amendment	61823-US-C-Preliminary-Amendment-10JUN20.pdf	135653 871f7bb10038d43c1a3ae5c4d59a7ba4723a66fc	no	3
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4	Specification	61823-US-C-marked-up-spec.pdf	195755 8e4f162da2aeaf4db4f8d952c49f5ff7de3e0dff	no	11
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5	Specification	61823-US-C-clean-spec.pdf	192799 3c15b34f0957e492de81805df15852d3740ac8f3	no	11

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6	Oath or Declaration filed	61823-US-C-Declarations.pdf	260350 2680e5f9aa6d0c4fdc64f4114d29212da2a6b9b8	no	3
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7	Power of Attorney	61823-US-C-POA.pdf	310450 e58a05a1a9a557591eb1c62da8a9995bd6a1d6eb	no	2
Warnings:					
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8	Transmittal of New Application	61823-US-C-Utility_trans.pdf	392951 f7df06c08edf5624cfd3d1390b86bff176b260fe	no	2
Warnings:					
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9	Application Data Sheet	61823-US-C-ADS.pdf	1256010 719de3b58b6c4e9f35be227e50ce5f0ae08d011b	no	9
Warnings:					
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10	Fee Worksheet (SB06)	fee-info.pdf	35275 387dfee17292a284d37cddbb4dd39aa6186cd470	no	2
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ABSTRACT OF THE DISCLOSURE

A connection assembly adapted to join a surface element to an underlying support structure while maintaining a substantially zero gap abutting relation between the surface element and the support structure. The connection assembly includes a press-in retainer with a circumferential seal having a sealing foot. The sealing foot flexes about a living hinge while maintaining continuous sliding contact with the support panel without interfering with downward movement of the retainer.

What is claimed is:

1. A press-in retainer, comprising:

a retainer head including a collar and a seal disposed at least partially about the collar; and

a clip portion projecting from the collar,

wherein the seal includes a main body engaging the collar and a sealing foot projecting at an obtuse angle from a distal surface of the main body to a free edge when in an unstressed condition such that the sealing foot is disposed outboard from the collar, wherein the sealing foot is contiguous with the main body, the obtuse angle facing the clip portion, wherein the sealing foot is configured to flex from the unstressed condition toward a substantially flattened condition about a living hinge while remaining outboard from the main body, and wherein, in the substantially flattened condition, the obtuse angle between the sealing foot and the distal surface of the main body approaches a flat contiguous surface.

2. The press-in retainer of claim 1, wherein the press-in retainer is configured to join a surface element to a support structure, and wherein the clip portion is configured for insertion into an acceptance opening of the support structure.

3. The press-in retainer of claim 2, wherein the retainer head and the clip portion are molded as a unitary structure.

4. The press-in retainer of claim 2, wherein the clip portion comprises a stem extending from the collar.

5. The press-in retainer of claim 4, wherein the clip portion comprises at least one flexible wing that extends in an angled relation away from an end of the stem, wherein the flexible wing comprises a dogleg configuration with a proximal face surface and a distal face surface, wherein the proximal face surface extends from the end of the stem radially outwardly, toward the collar, and to the distal face surface, and wherein the distal face surface extends from the proximal face surface radially inwardly, toward the collar, and to a free tip of the flexible wing.

6. The press-in retainer of claim 5, wherein the flexible wing is configured to flex toward the stem during insertion through the acceptance opening of the support structure, and wherein the distal face surface is configured to press against an interior surface of the acceptance opening to urge the retainer downwardly into the acceptance opening.

7. The press-in retainer of claim 6, wherein the seal is configured to flex from the unstressed condition toward the substantially flattened condition to bring the surface element toward the support structure in response to the distal face surface pressing against the interior surface of the acceptance opening to urge the retainer downwardly into the acceptance opening.

8. The press-in retainer of claim 2, wherein the collar includes an interior collar portion and a reduced thickness outer annular lip disposed circumferentially about the interior collar portion, and wherein the outer annular lip extends outwardly from a perimeter of the interior collar portion.

9. The press-in retainer of claim 8, wherein the main body of the seal is annular and further includes a circumferential acceptance slot that extends circumferentially along an inner diameter of the main body, and wherein the circumferential slot is configured to receive the outer annular lip of the collar.

10. The press-in retainer of claim 2, wherein the free edge of the sealing foot is configured to maintain sliding contact with the support structure as the seal flexes from the unstressed condition toward the substantially flattened condition.

11. A retainer assembly configured to join a surface element to a support structure so that the surface element assumes a contacting abutting relation with the support structure, the support structure having an acceptance opening, the retainer assembly comprising:

a retainer head including a collar, a platform, and a neck disposed between the collar and the platform, the retainer head being configured for placement into a channel defined by the surface element;

a seal disposed about a perimeter of the collar and comprising an annular main body and a sealing foot, the sealing foot being connected to the main body by a living hinge extending along a perimeter of the main body, and the sealing foot extending from the living hinge to a free edge, wherein an inner diameter of the main body at least partially contacts an outer diameter of the collar, wherein a contacting surface of the sealing foot is contiguous with a distal surface of the main body, the contacting surface and the distal surface both facing away from the retainer head, and wherein the contacting surface forms an obtuse angle with the distal surface when the seal is in an unstressed condition; and

a clip portion extending from the collar of the retainer head, the clip portion being configured for insertion into the acceptance opening of the support structure, and the clip portion comprising at least one surface that is configured to press against an interior surface of the acceptance opening to urge the retainer assembly further into the acceptance opening,

wherein the seal is configured to flex from the unstressed condition toward a fully flexed condition to bring the surface element closer to the support structure, and wherein, in the fully flexed condition, the free edge of the sealing foot is disposed radially outwardly and closer to the retainer head such that the contacting surface of the sealing foot and the distal surface of the main body form an angle greater than the obtuse angle of the unstressed condition.

12. The retainer assembly of claim 11, wherein the retainer head and the clip portion are molded as a unitary structure.

13. The retainer assembly of claim 11, wherein the clip portion comprises a stem extending from the collar.

14. The retainer assembly of claim 13, wherein the clip portion comprises at least one flexible wing that extends in an angled relation away from an end of the stem, wherein the flexible wing

comprises a dogleg configuration with a proximal face surface and a distal face surface, wherein the proximal face surface extends from the end of the stem radially outwardly, toward the collar, and to the distal face surface, and wherein the distal face surface extends from the proximal face surface radially inwardly, toward the collar, and to a free tip of the flexible wing.

15. The retainer assembly of claim 14, wherein the at least one flexible wing is configured to flex toward the stem during insertion through the acceptance opening of the support structure, and wherein the distal face surface is configured to press against the interior surface of the acceptance opening to urge the retainer assembly downwardly into the acceptance opening.

16. The retainer assembly of claim 13, wherein the clip portion comprises a pair of flexible wings that extend in angled relation away from an end of the stem in opposing directions, wherein each of the pair of flexible wings comprises a dogleg configuration with a proximal face surface and a distal face surface, wherein the proximal face surface extends from the end of the stem radially outwardly, toward the collar, and to the distal face surface, and wherein the distal face surface extends from the proximal face surface radially inwardly, toward the collar, and to a free tip of the flexible wing, and wherein the distal face surface is configured to press against the interior surface of the acceptance opening to urge the retainer assembly downwardly into the acceptance opening.

17. A retainer assembly configured to join a surface element to a support structure, the support structure having an acceptance opening, the retainer assembly comprising:

a retainer head including a collar, a platform, and a neck disposed between the collar and the platform, the retainer head being configured for placement into a channel defined by the surface element;

a seal disposed about a perimeter of the collar and comprising an annular main body and a sealing foot, the sealing foot being connected to the main body by a living hinge extending along a perimeter of the main body, and the sealing foot extending from the living hinge to a free edge that is disposed radially outwardly from the living hinge, wherein an inner diameter of the main body at least partially contacts an outer diameter of the collar, wherein a contacting surface of the sealing foot is contiguous with a distal surface of the main body, the contacting surface and the distal surface both facing away from the retainer head, and wherein the contacting surface forms an obtuse angle with the distal surface when the seal is in an unstressed condition; and

a clip portion extending from the collar of the retainer head,

wherein the collar includes an interior collar portion and a reduced thickness outer annular lip disposed circumferentially about the interior collar portion such that a step is disposed at an intersection of the interior collar portion and the outer annular lip, the outer annular lip extending radially outwardly from a perimeter of the interior collar portion, and

wherein the main body of the seal further includes a circumferential acceptance slot that extends circumferentially along the inner diameter of the main body and is configured to receive the annular lip of the collar.

18. The retainer assembly of claim 17, wherein the clip portion is configured for insertion into the acceptance opening of the support structure and comprises at least one angled surface that is configured to press against an interior surface of the acceptance opening to urge the retainer further into the acceptance opening.

19. The retainer assembly of claim 18, wherein the seal is configured to flex from the unstressed condition toward a fully flexed condition to bring the surface element closer to the support structure in response to the at least one angled surface pressing against the interior surface of the acceptance opening to urge the retainer assembly downwardly into the acceptance opening, wherein, in the fully flexed condition, the free edge of the sealing foot is disposed farther radially

outwardly and closer to the retainer head than in the unstressed condition, and wherein, in the fully flexed condition, the contacting surface of the sealing foot and the distal surface of the main body form an angle greater than the obtuse angle of the unstressed condition.

20. The retainer assembly of claim 19, wherein the free edge of the sealing foot is configured to maintain sliding contact with the support structure as the seal flexes from the unstressed condition toward the fully flexed condition.

PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of United States Patent Application No. 14/652,819 filed June 17, 2015, now United States Patent No. 9,982,694, which is a National Phase of International Application Number PCT/US2013/073861 filed December 9, 2013, which claims the benefit of, and priority from, United States Provisional Application No. 61/739,604 filed December 19, 2012, all of which are hereby incorporated by reference in their entireties.

TECHNICAL FIELD

[0002] The present disclosure relates generally to connection assemblies incorporating retainers which may also be referred to as fasteners. More particularly, this disclosure pertains to connections incorporating push-in type retainers having downward biasing wing features which secure the retainer in place after insertion through an aperture and with seals for creating a barrier to the penetration of moisture, dust and noise through the aperture in which the retainer is secured.

BACKGROUND

[0003] Push-in type W-base retainers are used in a variety of connection assemblies to secure components of the assembly. For example, in automobiles such stud-like retainers are used to secure molding or other surface structures to underlying support elements such as body panels, support beams or the like. Such retainers typically include a stem with deflectable wing elements for securing the retainer to the support elements when the stem portion supporting the deflectable wing elements is pushed through an aperture in the support element. Typically, a head attached to the stem is configured for attachment to a doghouse or other complementary receiving element on the underside of the surface structure. In this regard, the head may include an enhanced diameter upper platform radial collar feature and an enhanced diameter lower radial collar feature with a spacing post extending between the upper and lower radial collar features. Thus, the spacing post may slide into a doghouse or other receiving element as will be well

known to those of skill in the art and thereafter be blocked against axial withdrawal by the upper and lower radial collar features.

[0004] During use, as the stem is inserted into the aperture, the deflectable members may be compressed radially inwardly. The deflectable members then may spring outwardly as insertion is completed to lock behind the underside of the support element. Thus, with the head secured to the surface structure, the retainer forms a connection between the surface structure and the underlying support element.

[0005] W-base retainers are typically designed as a component of an overall assembly and work in conjunction with the other components with the goal of establishing and maintaining a "zero gap" condition between the sheet metal panel or other support element and the molding or other surface structure. To promote the desired "zero gap" condition, the W-base retainers typically provide a continuous pull down or clamp load condition. This constant pull down is intended to provide and maintain the desired "zero gap" condition between the support element and the molding or other surface structure. If this pull down force is compromised by a significant force acting in the opposite direction such that the molding or other surface structure does not seat against the sheet metal panel or other support element, an unacceptable gap condition may occur within the final assembled product. Such a gap condition may result in undesired rattling noise as well as in the introduction of dirt and water between the molding or other surface structure and the underlying support structure.

[0006] As much as is reasonably possible, it is generally desirable to limit the generation of squeaks, rattles and objectionable noises that may be created from movement of the retainer relative to the parts to which it is connected. By way of example only, and not limitation, various sealing arrangements for push through retainers are illustrated and described in US Patent 5,173,026 to Cordola et al. and US published application 2006/0099051 to Moerke, the contents of all of which are incorporated herein by reference in their entirety. To minimize corrosion, it is desirable also to prevent moisture from precipitation, carwashes, etc. from seeping past the retainer, and through the aperture in which the retainer is installed.

[0007] A variety of sealing structures have been used to minimize rattles and squeaks and to prevent moisture seepage past the retainer. Independent concave skirts such as described in US published application 2006/0099051 have been used in conjunction with push-in retainers at the

base of the head to confront the body panel around the aperture in the panel. Elastomeric and foam seals also have been used to further improve sealing qualities against moisture penetration.

[0008] Although retainers as described incorporating concave skirts and/or seals have been used successfully to limit squeaks and rattles and to inhibit the penetration of moisture past the retainer, further improvements are desirable. Installing the seal as a separate part is cumbersome and awkward, complicating installation of the retainer. If installed on the retainer in advance, the seal can become dislodged, even if properly placed on the retainer. In automated assembly plants, a retainer missing a seal may not be detected and may be installed on the article in which it is used inadvertently. A loose retainer of this type will rattle or squeak, may provide a path for the penetration of moisture and may not adequately secure the second article or item as required. If the seal is adhered to the skirt of the retainer, the seal may not function optimally if the retainer is not seated squarely in the panel. Further, the position of the seal relative to the retainer skirt has limited the range of panel thicknesses with which the retainer can be used effectively to provide a seal against moisture intrusion.

[0009] As will be understood by those of skill in the art, a seal which is held between the retainer head and the support panel may experience a build, stack up condition as compression force is applied which results in a counteracting upward force being applied against the head which may partially offset the pull-down force provided by the deflectable wings. In some cases, the presence of seal elements which are compressed between the retainer head and the support panel may block the lower collar feature of the retainer from getting close enough to the underlying sheet metal panel to establish the desired "zero gap" condition between the sheet metal panel and the overlying molding or other surface structure. That is, the compressed seal in stack-up condition may act in the manner of a spacing shim holding the retainer head further away than intended from the sheet metal panel or other underlying support element. With the retainer head in this elevated condition, the attached molding or other surface element will likewise be held away from the panel or other support element and a gap condition may result.

SUMMARY

[0010] The present disclosure provides advantages and alternatives over the prior art by providing a connection assembly including a push-in type retainer having a functional sealing

feature that does not experience a build, stack up condition that may reduce the clamp load force. Thus, the retainer is not blocked from assuming its designed orientation relative to the sheet metal panel or other underlying support element. A "zero gap" condition is thereby established and maintained between the sheet metal panel or other underlying support element and the mating molding substrate or other surface element.

[0011] In accordance with one exemplary feature, the present disclosure provides a connection assembly adapted to join a surface element such as molding or the like to an underlying support structure such as a sheet metal panel or the like while maintaining a substantially zero gap abutting relation between the surface element and the support structure during use. The connection assembly includes a press-in retainer adapted for insertion into an acceptance opening in the support structure to establish operative connecting engagement between the surface element and the support structure. The retainer includes a retainer head and a clip portion of arrowhead configuration projecting outwardly away from the retainer head. The retainer head includes an upper platform and an annular platform defining a lower collar positioned in spaced relation below the upper platform. The clip portion includes a central stem extending downwardly away from the lower collar and a pair of flexible wings extending in upward angled relation away from a central stem. The retainer further includes a seal disposed at least partially about the lower collar. The seal includes a body portion engaging the lower collar and a sealing foot projecting downwardly and radially outwardly away from the body portion to a free edge such that the sealing foot is disposed outboard from the lower collar. The underside of the sealing foot forms an obtuse angle relative to the underside of the lower collar. The sealing foot flexes about a living hinge while remaining outboard from the lower collar and maintains continuous sliding contact with the support panel in response to applied pressure between the seal and the support panel during use.

[0012] Other features and advantages of the present disclosure will become apparent from a description of certain preferred embodiments thereof which are shown in the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1 is an exploded perspective view illustrating an exemplary sealing retainer in accordance with the present disclosure with the seal separated from the retainer body;

[0014] FIG. 2 is an elevation perspective view illustrating an exemplary sealing retainer in accordance with the present disclosure engaging trim molding prior to insertion through a sheet metal support panel;

[0015] FIG. 3 is a cross-sectional view illustrating an exemplary sealing retainer in accordance with the present disclosure in normal operative connecting relation between a doghouse surface connector and an underlying support panel with wing elements in the inserted self-adjusting downward biasing condition;

[0016] FIG. 4 is a cross-sectional view illustrating an exemplary sealing retainer in accordance with the present disclosure engaging trim molding prior to insertion through a sheet metal support panel and with the seal in an unstressed condition; and

[0017] FIG. 5 is a cross-sectional view illustrating an exemplary sealing retainer in accordance with the present disclosure engaging trim molding after full insertion through a sheet metal support panel with a retained "zero gap" condition between the trim molding and the support panel and illustrating the compression action of the seal in an extreme insertion condition.

[0018] Before the embodiments of the disclosure are explained in detail, it is to be understood that the disclosure is not limited in its application to the details of construction and the arrangements of the components set forth in the following description or illustrated in the drawings. The disclosure is capable of other embodiments and of being practiced or being carried out in various ways. Also, it is understood that the phraseology and terminology used herein are for the purpose of description and should not be regarded as limiting. The use herein of "including", "comprising" and variations thereof is meant to encompass the items listed thereafter and equivalents thereof, as well as additional items and equivalents thereof.

DETAILED DESCRIPTION

[0019] Referring now more specifically to the drawings, and to FIGS. 1 and 2 in particular, it may be seen that the present disclosure provides a retainer 10 adapted to secure a molding 12 or other surface element to a sheet metal support panel 14 or other underlying support element of metal or the like. As shown, in the illustrated exemplary construction, the retainer 10 includes a retainer head 16 and a snap engaging clip portion 18. As will be appreciated, the retainer head 16

and the clip portion 18 may be formed as a monolithic unitary body by injection molding or other suitable molding or fabrication process. The material for retainer 10 can be selected as optimally desirable for its particular installation and use. Accordingly, the retainer 10 may be formed of suitable plastic, such as Nylon, polypropylene, acetal resin and the like as will be well known to those of skill in the art. Acetal resin and Nylon 6.6 may be preferred in some environments of use. Of course, other polymeric and non-polymeric materials including metal and the like and combinations of various polymeric materials also may be used if desired. Likewise, it should be understood that the particular configurations for the retainer head 16 and for the clip portion 18 may be varied in a manner as may be desired for a particular installation.

[0020] By way of example only, and not limitation, in the illustrated exemplary construction for the retainer 10, the retainer head 16 is adapted for sliding receipt and retention within an intermediate connector 20 (FIG. 2) such as a dog house connector or the like disposed in hidden relation at the underside of the molding 12. In this regard, the intermediate connector 20 may be formed integral with the molding 12 as shown or may be a separate attached structure as may be desired.

[0021] As shown, in the illustrated exemplary construction, the retainer head 16 includes a table-like upper platform 22 disposed in opposing relation to a lower collar 24 of substantially rigid, annular construction. In this regard, while the upper platform 22 is illustrated as having a generally rectangular configuration, it is likewise contemplated that other polygonal or circular geometries may be used if desired. As shown, the lower collar 24 may be in substantially perpendicular non-angled orientation to the travel path of the retainer and may include an interior collar portion 26 and a reduced thickness outer annular lip 28 disposed circumferentially about the interior collar portion such that a step 30 is disposed at the intersection of the interior collar portion 26 and the outer annular lip 28. A neck structure 32 in the form of a reduced diameter post extends between the upper platform 22 and the lower collar 24. As will be understood, the effective outer diameters defined by the upper platform 22 and by the lower collar 24 are preferably greater than the effective outer diameter defined by the neck structure 32.

[0022] In operation, the retainer 10 may be operatively secured to the intermediate connector 20 by sliding the neck structure 32 into a slot in the intermediate connector 20 in a manner as will be well known to those of skill in the art. The intermediate connector may, in turn, be

attached to the overlying molding 12 or other surface element. Likewise, the retainer head 16 may be connected directly to an overlying component by techniques such as tape, adhesive bonding, mechanical joining or the like if desired.

[0023] As indicated previously, the retainer 10 further includes a clip portion designated generally as 18 extending away from the underside of the lower collar 24. In the illustrated exemplary construction, the clip portion 18 includes a stem 34 projecting away from the lower collar 24 such that the lower collar is oriented substantially perpendicular to an axis defined by the stem. As illustrated, wing elements 36 extend upwardly in angled relation away from the end of the stem 34. The wing elements 36 are adapted to flex inwardly towards the stem 34 during insertion through an acceptance opening 38 in the support panel 14. As best seen through joint reference to FIGS. 1 and 3, in the illustrated exemplary construction each of the wing elements 36 incorporates an outer face having a dogleg configuration facing generally outwardly away from the stem 34. In this regard, in the illustrated construction, the outer face of each wing element 36 includes a proximal face surface 42 extending in angled relation away from the axis defined by the stem 34. A distal face surface 44 extends away from the proximal face surface in angled relation back towards the axis defined by the stem 34 ultimately terminating at the free tip of the wing element thereby establishing the outer surface dogleg profile. As shown, the free tips of the wing elements are at an elevation below the lower collar 24.

[0024] As best seen through joint reference to FIGS. 1-3, a monolithic perimeter seal 50 of flexible polymeric material is disposed about the perimeter of the lower collar 24 generally at the intersection between the retainer head 16 and the clip portion 18. As best seen in FIG 3, the inner diameter of the perimeter seal 50 may substantially cover the outer annular lip 28 of the lower collar 24 and may abut the step 30. The perimeter seal 50 may be formed from commercially available moldable materials such as thermoplastic elastomers including, by way of example only, polyolefins, PVC, silicone rubber, PTFE, polyvinylidene fluoride (PVDF), fluorinated ethylene propylene (FEP) and blends thereof. Such materials will preferably be of lower durometer (i.e. are less rigid) than the material forming the retainer head and may be characterized by a useful operating temperature range of about -75 °C to about 175 °C. In accordance with one exemplary construction, the perimeter seal 50 may be formed by over-molding or two-shot molding processes such that during molding the flexible material forming the perimeter seal 50 is integrally fused with the more rigid acetal resin or other material forming

the lower collar 24. It is also contemplated that the perimeter seal 50 may be formed separately with a circumferential acceptance slot around the interior for receipt and retention of the annular lip 28 in a stretch-fit relation if desired. In any event, the seal 50 defines a relatively soft, deformable covering at the perimeter edge of the lower collar 24 adapted to provide a seal around the acceptance opening 38 in the support panel 14 during use without the need for any sealing structures oriented below the lower collar.

[0025] As best seen in FIG. 3, the perimeter seal 50 may be substantially annular and may include a main body portion 52 adapted to cover the outer annular lip 28 of the lower collar 24. A hingeable outwardly flared sealing foot 54 extends in angled relation downwardly and radially away from the main body portion 52. As shown, the sealing foot 54 is elongated and relatively thin in cross-section. In an unstressed condition (FIG. 4), the sealing foot 54 extends radially outboard from the main body portion 52 to a free edge such that the sealing foot is disposed entirely outboard from lower collar 24 and the underside of the sealing foot forms an obtuse angle relative to the underside of the lower collar 24. As shown, no portion of the angled sealing foot 54 is in the zone below the lower collar 24.

[0026] When the sealing foot 54 is pressed against the support panel 14 during normal use, the sealing foot 54 readily flexes upwardly towards a flattened condition about a living hinge 56 substantially at the intersection with the body portion 52. This hinging takes place without confinement of the sealing foot between the support panel 14 and the lower collar 24 while continuously maintaining contacting engagement with the underlying support panel. Thus, the sealing foot 54 may flex from its unstressed condition (FIG. 4) to its fully flexed position (FIG. 5) without experiencing a stack-up condition of seal material between the support panel 14 and the lower collar 24. As the sealing foot 54 flexes during compression, the edge of the sealing foot 54 moves radially outwardly as the sealing foot 54 takes on a more flattened condition. As this flattening takes place, the sealing foot 54 moves out of the way of the travel path for the lower collar 24. This avoids any confinement and stack-up of seal material between the support panel 14 and the lower collar 24 while nonetheless maintaining a sealing condition relative to the support panel 14. Accordingly, the retainer head 16 and the attached molding 12 may be pulled downwardly to a position wherein the molding 12 and the underlying support panel form a substantially flush "zero gap" condition while maintaining a seal around the acceptance opening 38. In this regard, it will be understood that such a zero gap condition occurs when a

contact surface 60 on the molding 12 assumes a contacting abutting relation with the underlying support panel 14. As will be appreciated, the elevation and contour of the contact surface 60 may be selected to provide this zero gap condition when the sealing foot 54 is in a flexed condition relative to the support panel 14 and with the lower collar 24 elevated relative to the support panel 14.

[0027] Referring now to FIGS. 2 and 3, it will be seen that in normal operation (FIG. 3), a portion of the sloped distal face surface 44 may be in contacting relationship with the inner perimeter surface of the acceptance opening 38. In the normal operating condition shown in FIG. 3, the retainer 10 is urged downwardly continuously as the flexed wing elements press outwardly against the perimeter surface of the acceptance opening 38. However, downward movement will be limited once the molding 12 comes into contact with the underlying support panel 14 to establish a zero gap condition. Thus, in the condition shown by FIG. 3, a condition of static equilibrium is established when the molding 12 comes into contact with the underlying support panel 14. Since the retainer 10 is urged continuously downwardly due to the sloped distal face surface 44, the retainer will naturally assume and retain the level at which the molding 12 contacts the underlying support panel 14 and thereby blocks further downward movement. As shown, in this equilibrium condition, the lower collar 24 remains slightly elevated relative to the support panel 14 and the sealing foot 54 of the perimeter seal 50 is hinged outwardly while maintaining a sealing relationship against the support panel 14. As can be seen, the sealing foot 54 is adapted to flex outwardly in a hinging action as the retainer moves downwardly without blocking further downward movement by the retainer 10.

[0028] As will be appreciated, the equilibrium position of the retainer 10 within the acceptance opening 38 is continuously self-adjusting as the relative positions of the molding 12 and the support panel 14 change during use as a result of vibration or other events. In this regard, the living hinge 56 urges the sealing foot 54 continuously against the underlying support panel 14 as the sealing foot 54 attempts to resume its normal unflexed condition (FIG. 4). Thus, the sealing relationship provided by the sealing foot 54 is maintained by sliding contact as the retainer 10 moves up and down and the sealing foot 54 moves radially in and out during equilibrium adjustment. That is, although the angle between the support panel 14 and the sealing foot 54 may change as the retainer 10 moves up and down, the sealing relation is maintained as the sealing foot 54 moves in sliding relation over the support panel. Moreover, since the sealing

foot 54 is not confined between the lower collar 24 and the support panel 14, downward movement of the molding is unobstructed by the sealing element.

[0029] As best seen in FIG. 5, in the event of extreme insertion such that the tips of the wing elements wing elements 36 are within the acceptance opening, in the support panel 14, the sealing foot 54 may assume a substantially flattened condition against the underlying support panel 14 as the molding 12 establishes a "zero gap" condition with the support panel. Even in this extreme insertion condition, the sealing foot is not confined between the lower collar 24 and the support panel 14. Accordingly, no stack-up condition and resultant shim action is created. Thus, the molding 12 may continue to be pulled down to the desired "zero gap" condition over the full range of operative engagement positions between the wing elements 36 and the support panel 14 with the sloped distal face surface 44 bearing against the support panel.

[0030] The ability to avoid a stack-up condition is promoted by maintaining the free space between the lower collar 24 and the underlying support panel during downward movement such that portions of the seal material do not collect in the free space in a manner which would limit downward movement. This free space below the lower collar is maintained even in the extreme insertion condition shown in FIG. 5. As shown, all portions of the sealing foot 54 are positioned radially outboard from the lower collar 24 and the free edge of the sealing foot 54 is adapted to slide radially outwardly away from the lower collar 24 and the main body portion 52 as the retainer head 16 moves downwardly and the sealing foot 54 hinges outwardly. Thus, the sealing foot 54 flattens by hinging outwardly about the living hinge 56 as it is pressed against an underlying support panel 14. Accordingly, the sealing foot 54 does not interfere with downward movement of the retainer head 16 and the molding 12 may be maintained in a "zero gap" condition with the underlying support panel 14.

[0031] While various spatial and directional terms, such as upper, horizontal, vertical, front and the like may be used to describe embodiments of the present invention, it is understood that such terms are merely used with respect to the orientations shown in the drawings. The orientations may be inverted, rotated, or otherwise changed, such that an upper portion is a lower portion, and vice versa, horizontal becomes vertical, and the like.

[0032] Of course, variations and modifications of the foregoing are within the scope of the present disclosure. It is to be understood that the disclosure disclosed and defined herein extends

to all alternative combinations of two or more of the individual features mentioned or evident from the text and/or drawings. All of these different combinations constitute various alternative aspects of the present disclosure. The embodiments described herein explain the best modes known for practicing the disclosure and will enable others skilled in the art to utilize the disclosure. The claims are to be construed to include alternative embodiments to the extent permitted by the prior art.

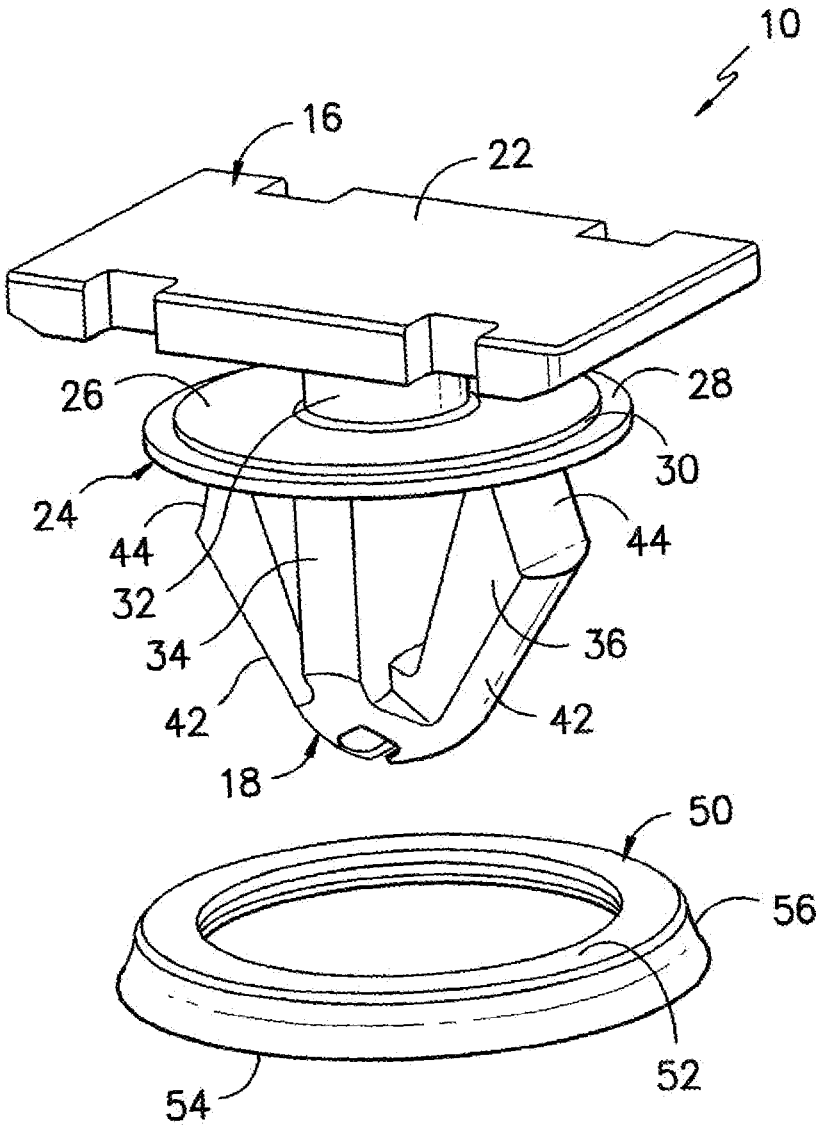


FIG. –1–

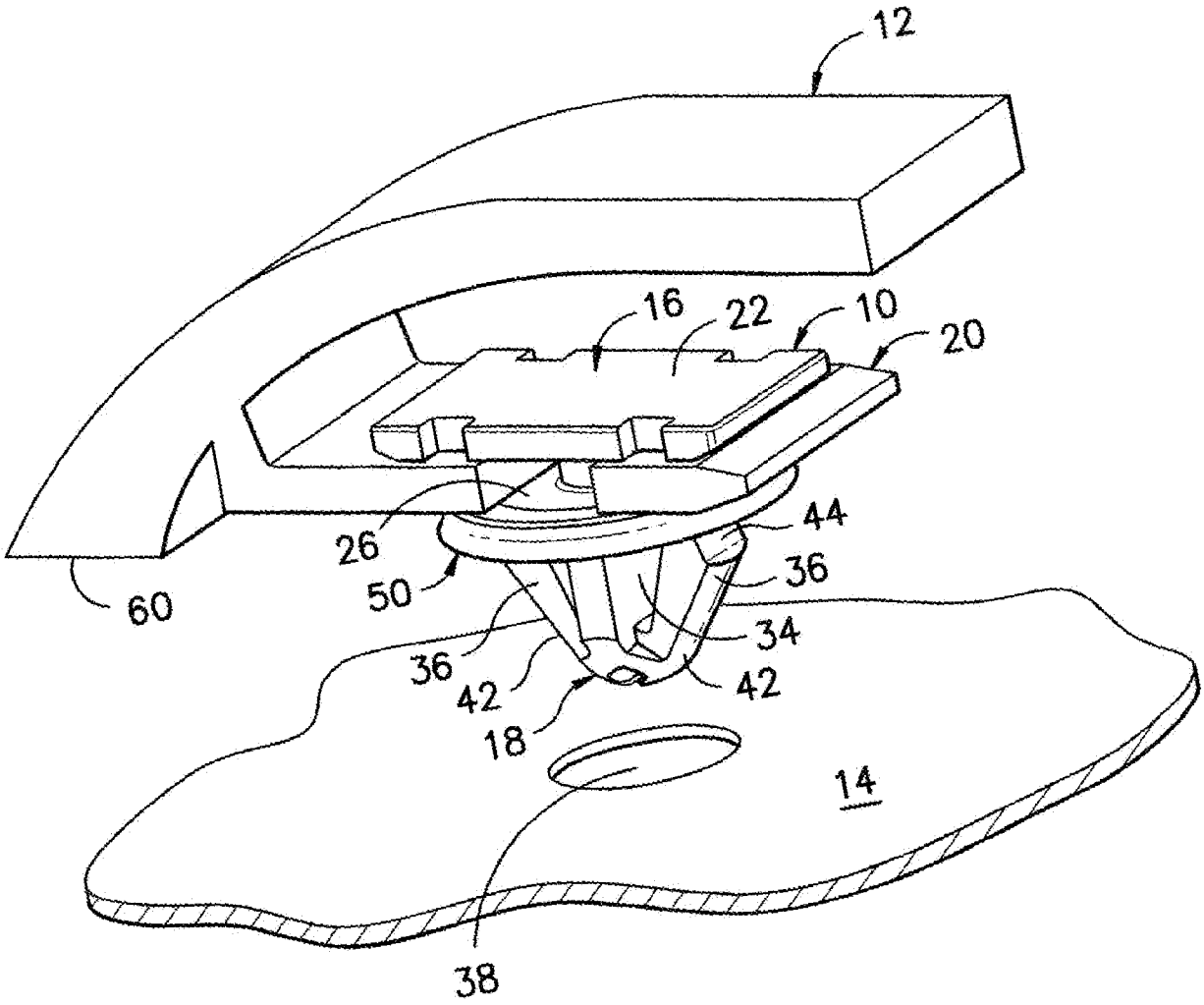


FIG. -2-

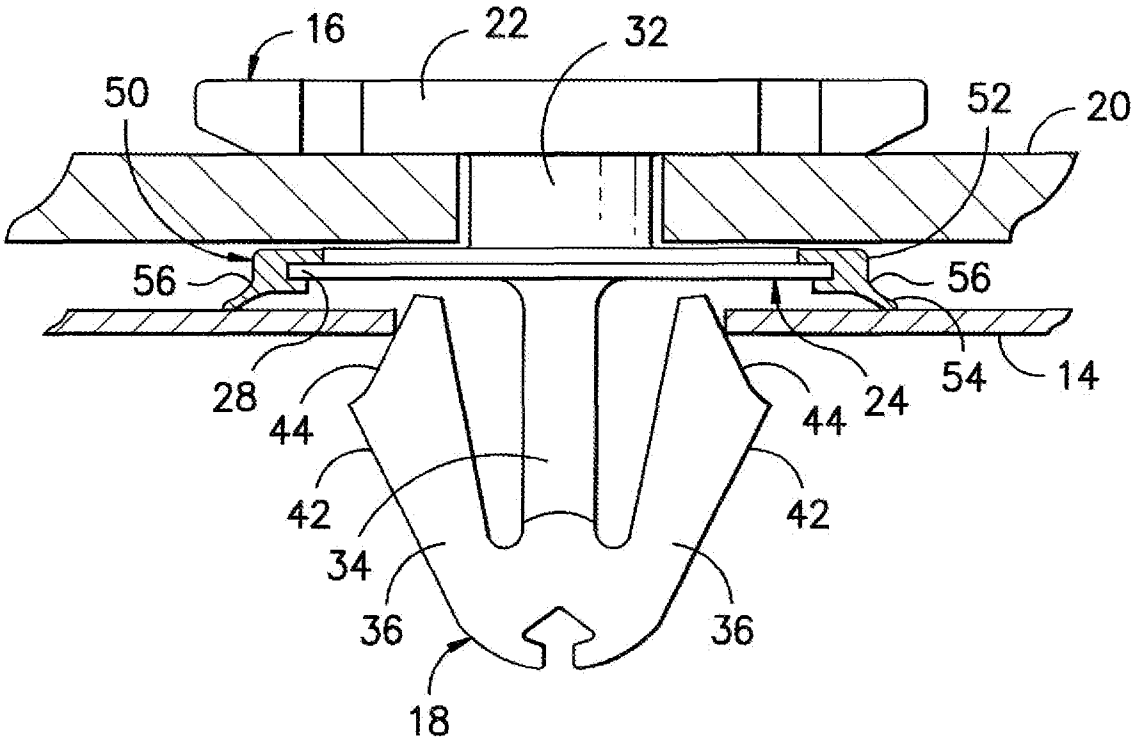


FIG. —3—

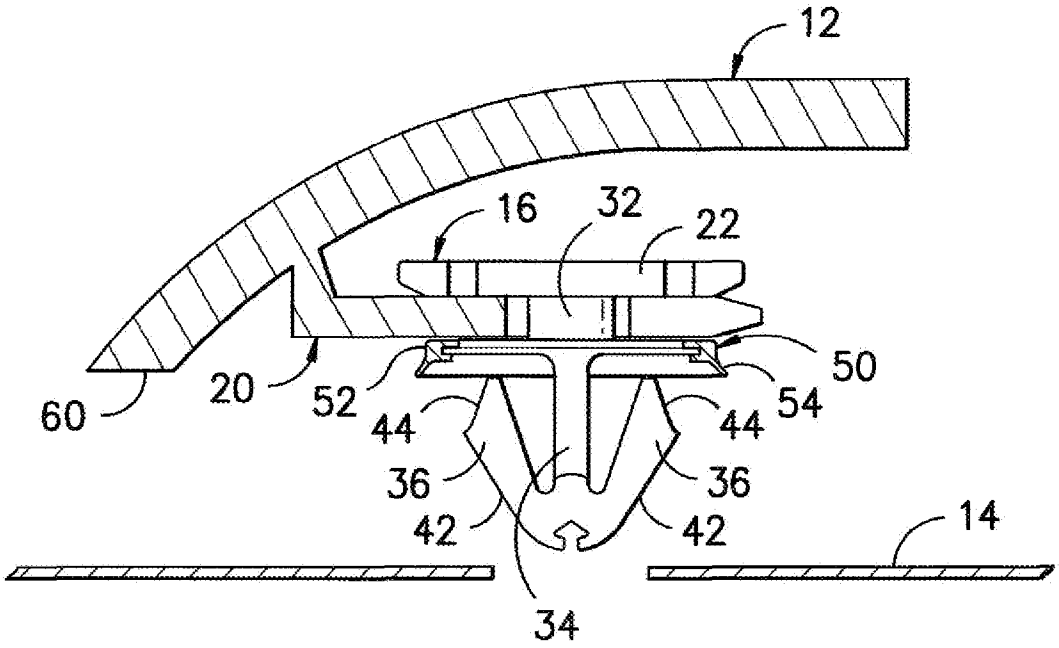

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FIG. —4—

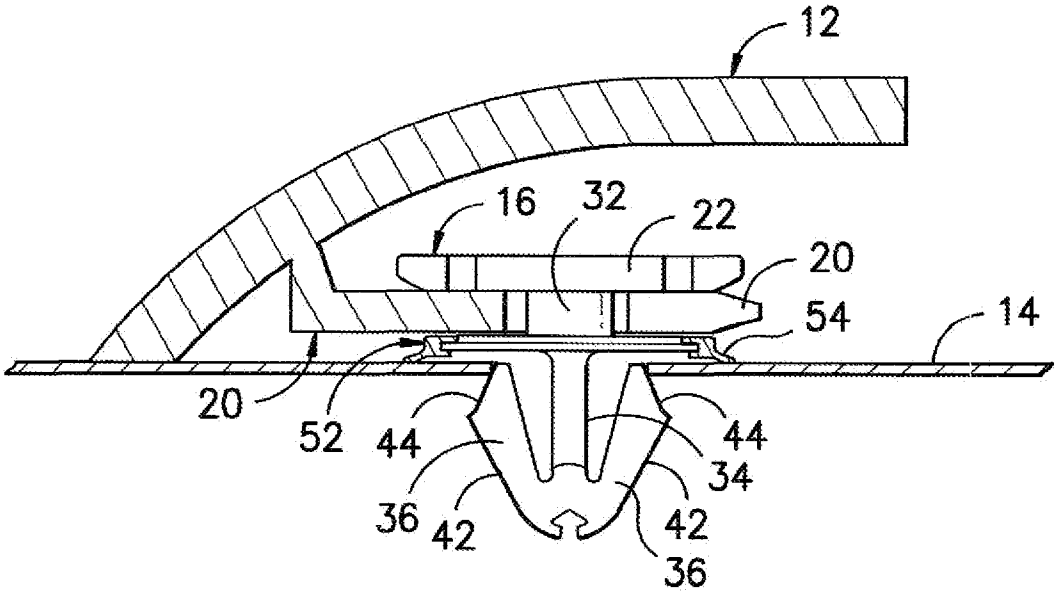

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FIG. —5—

PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of United States Patent Application 15/987,986, filed May 24, 2018, which is a continuation of United States Patent Application No. 14/652,819 filed June 17, 2017, now United States Patent No. 9,982,694, which is a National Phase of International Application Number PCT/US2013/073861 filed December 9, 2013, which claims the benefit of, and priority from, United States Provisional Application No. 61/739,604 filed December 19, 2012, all of which are hereby incorporated by reference in their entireties.

TECHNICAL FIELD

[0002] The present disclosure relates generally to connection assemblies incorporating retainers which may also be referred to as fasteners. More particularly, this disclosure pertains to connections incorporating push-in type retainers having downward biasing wing features which secure the retainer in place after insertion through an aperture and with seals for creating a barrier to the penetration of moisture, dust and noise through the aperture in which the retainer is secured.

BACKGROUND

[0003] Push-in type W-base retainers are used in a variety of connection assemblies to secure components of the assembly. For example, in automobiles such stud-like retainers are used to secure molding or other surface structures to underlying support elements such as body panels, support beams or the like. Such retainers typically include a stem with deflectable wing elements for securing the retainer to the support elements when the stem portion supporting the deflectable wing elements is pushed through an aperture in the support element. Typically, a head attached to the stem is configured for attachment to a doghouse or other complementary receiving element on the underside of the surface structure. In this regard, the head may include an enhanced diameter upper platform radial collar feature and an enhanced diameter lower radial collar feature with a spacing post extending between the upper and lower radial collar features. Thus, the spacing post may slide into a doghouse or other receiving element as will be well

known to those of skill in the art and thereafter be blocked against axial withdrawal by the upper and lower radial collar features.

[0004] During use, as the stem is inserted into the aperture, the deflectable members may be compressed radially inwardly. The deflectable members then may spring outwardly as insertion is completed to lock behind the underside of the support element. Thus, with the head secured to the surface structure, the retainer forms a connection between the surface structure and the underlying support element.

[0005] W-base retainers are typically designed as a component of an overall assembly and work in conjunction with the other components with the goal of establishing and maintaining a "zero gap" condition between the sheet metal panel or other support element and the molding or other surface structure. To promote the desired "zero gap" condition, the W-base retainers typically provide a continuous pull down or clamp load condition. This constant pull down is intended to provide and maintain the desired "zero gap" condition between the support element and the molding or other surface structure. If this pull down force is compromised by a significant force acting in the opposite direction such that the molding or other surface structure does not seat against the sheet metal panel or other support element, an unacceptable gap condition may occur within the final assembled product. Such a gap condition may result in undesired rattling noise as well as in the introduction of dirt and water between the molding or other surface structure and the underlying support structure.

[0006] As much as is reasonably possible, it is generally desirable to limit the generation of squeaks, rattles and objectionable noises that may be created from movement of the retainer relative to the parts to which it is connected. By way of example only, and not limitation, various sealing arrangements for push through retainers are illustrated and described in US Patent 5,173,026 to Cordola et al. and US published application 2006/0099051 to Moerke, the contents of all of which are incorporated herein by reference in their entirety. To minimize corrosion, it is desirable also to prevent moisture from precipitation, carwashes, etc. from seeping past the retainer, and through the aperture in which the retainer is installed.

[0007] A variety of sealing structures have been used to minimize rattles and squeaks and to prevent moisture seepage past the retainer. Independent concave skirts such as described in US published application 2006/0099051 have been used in conjunction with push-in retainers at the

base of the head to confront the body panel around the aperture in the panel. Elastomeric and foam seals also have been used to further improve sealing qualities against moisture penetration.

[0008] Although retainers as described incorporating concave skirts and/or seals have been used successfully to limit squeaks and rattles and to inhibit the penetration of moisture past the retainer, further improvements are desirable. Installing the seal as a separate part is cumbersome and awkward, complicating installation of the retainer. If installed on the retainer in advance, the seal can become dislodged, even if properly placed on the retainer. In automated assembly plants, a retainer missing a seal may not be detected and may be installed on the article in which it is used inadvertently. A loose retainer of this type will rattle or squeak, may provide a path for the penetration of moisture and may not adequately secure the second article or item as required. If the seal is adhered to the skirt of the retainer, the seal may not function optimally if the retainer is not seated squarely in the panel. Further, the position of the seal relative to the retainer skirt has limited the range of panel thicknesses with which the retainer can be used effectively to provide a seal against moisture intrusion.

[0009] As will be understood by those of skill in the art, a seal which is held between the retainer head and the support panel may experience a build, stack up condition as compression force is applied which results in a counteracting upward force being applied against the head which may partially offset the pull-down force provided by the deflectable wings. In some cases, the presence of seal elements which are compressed between the retainer head and the support panel may block the lower collar feature of the retainer from getting close enough to the underlying sheet metal panel to establish the desired "zero gap" condition between the sheet metal panel and the overlying molding or other surface structure. That is, the compressed seal in stack-up condition may act in the manner of a spacing shim holding the retainer head further away than intended from the sheet metal panel or other underlying support element. With the retainer head in this elevated condition, the attached molding or other surface element will likewise be held away from the panel or other support element and a gap condition may result.

SUMMARY

[0010] The present disclosure provides advantages and alternatives over the prior art by providing a connection assembly including a push-in type retainer having a functional sealing feature that does not experience a build, stack up condition that may reduce the clamp load force. Thus, the retainer is not blocked from assuming its designed orientation relative to the sheet

metal panel or other underlying support element. A "zero gap" condition is thereby established and maintained between the sheet metal panel or other underlying support element and the mating molding substrate or other surface element.

[0011] In accordance with one exemplary feature, the present disclosure provides a connection assembly adapted to join a surface element such as molding or the like to an underlying support structure such as a sheet metal panel or the like while maintaining a substantially zero gap abutting relation between the surface element and the support structure during use. The connection assembly includes a press-in retainer adapted for insertion into an acceptance opening in the support structure to establish operative connecting engagement between the surface element and the support structure. The retainer includes a retainer head and a clip portion of arrowhead configuration projecting outwardly away from the retainer head. The retainer head includes an upper platform and an annular platform defining a lower collar positioned in spaced relation below the upper platform. The clip portion includes a central stem extending downwardly away from the lower collar and a pair of flexible wings extending in upward angled relation away from a central stem. The retainer further includes a seal disposed at least partially about the lower collar. The seal includes a body portion engaging the lower collar and a sealing foot projecting downwardly and radially outwardly away from the body portion to a free edge such that the sealing foot is disposed outboard from the lower collar. The underside of the sealing foot forms an obtuse angle relative to the underside of the lower collar. The sealing foot flexes about a living hinge while remaining outboard from the lower collar and maintains continuous sliding contact with the support panel in response to applied pressure between the seal and the support panel during use.

[0012] Other features and advantages of the present disclosure will become apparent from a description of certain preferred embodiments thereof which are shown in the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1 is an exploded perspective view illustrating an exemplary sealing retainer in accordance with the present disclosure with the seal separated from the retainer body;

[0014] FIG. 2 is an elevation perspective view illustrating an exemplary sealing retainer in accordance with the present disclosure engaging trim molding prior to insertion through a sheet

metal support ~~panel~~ structure;

[0015] FIG. 3 is a cross-sectional view illustrating an exemplary sealing retainer in accordance with the present disclosure inserted through an underlying support structure having wing elements that engage the underlying support structure ~~in normal operative connecting relation between a doghouse surface connector and an underlying support panel with wing elements in the inserted self-adjusting downward biasing condition~~;

[0016] FIG. 4 is a cross-sectional view illustrating an exemplary sealing retainer in accordance with the present disclosure engaging trim molding prior to insertion through a sheet metal support ~~panel~~ structure and with the seal in an unstressed condition; and

[0017] FIG. 5 is a cross-sectional view illustrating an exemplary sealing retainer in accordance with the present disclosure engaging trim molding after full insertion through a sheet metal support ~~panel~~ structure with a retained "zero gap" condition between the trim molding and the support ~~panel~~ structure and illustrating the compression action of the seal in an extreme insertion condition.

[0018] Before the embodiments of the disclosure are explained in detail, it is to be understood that the disclosure is not limited in its application to the details of construction and the arrangements of the components set forth in the following description or illustrated in the drawings. The disclosure is capable of other embodiments and of being practiced or being carried out in various ways. Also, it is understood that the phraseology and terminology used herein are for the purpose of description and should not be regarded as limiting. The use herein of "including", "comprising" and variations thereof is meant to encompass the items listed thereafter and equivalents thereof, as well as additional items and equivalents thereof.

DETAILED DESCRIPTION

[0019] Referring now more specifically to the drawings, and to FIGS. 1 and 2 in particular, it may be seen that the present disclosure provides a retainer 10 adapted to secure a ~~molding~~ surface element 12, such as, e.g., a molding, ~~or other surface element~~ to a sheet metal support ~~panel~~ structure 14, such as, e.g., a panel or other underlying support element of metal or the like. As shown, in the illustrated exemplary construction, the retainer 10 includes a retainer head 16 and a snap engaging clip portion 18. As will be appreciated, the retainer head 16 and

the clip portion 18 may be formed as a monolithic unitary body by injection molding or other suitable molding or fabrication process. The material for retainer 10 can be selected as optimally desirable for its particular installation and use. Accordingly, the retainer 10 may be formed of suitable plastic, such as Nylon, polypropylene, acetal resin and the like as will be well known to those of skill in the art. Acetal resin and Nylon 6.6 may be preferred in some environments of use. Of course, other polymeric and non-polymeric materials including metal and the like and combinations of various polymeric materials also may be used if desired. Likewise, it should be understood that the particular configurations for the retainer head 16 and for the clip portion 18 may be varied in a manner as may be desired for a particular installation.

[0020] By way of example only, and not limitation, in the illustrated exemplary construction for the retainer 10, the retainer head 16 is adapted for sliding receipt and retention within an intermediate connector 20 (FIG. 2) such as a dog house connector or the like disposed in hidden relation at the underside of the ~~molding~~ surface element 12. In this regard, the intermediate connector 20 may be formed integral with the ~~molding~~ surface element 12 as shown or may be a separate attached structure as may be desired.

[0021] As shown, in the illustrated exemplary construction, the retainer head 16 includes a table-like upper platform 22 disposed in opposing relation to a lower collar 24 of substantially rigid, annular construction. In this regard, while the upper platform 22 is illustrated as having a generally rectangular configuration, it is likewise contemplated that other polygonal or circular geometries may be used if desired. As shown, the lower collar 24 may be in substantially perpendicular non-angled orientation to the travel path of the retainer and may include an interior collar portion 26 and a reduced thickness outer annular lip 28 disposed circumferentially about the interior collar portion such that a step 30 is disposed at the intersection of the interior collar portion 26 and the outer annular lip 28. A neck structure 32 in the form of a reduced diameter post extends between the upper platform 22 and the lower collar 24. As will be understood, the effective outer diameters defined by the upper platform 22 and by the lower collar 24 are preferably greater than the effective outer diameter defined by the neck structure 32.

[0022] In operation, the retainer 10 may be operatively secured to the intermediate connector 20 by sliding the neck structure 32 into a slot in the intermediate connector 20 in a manner as will be well known to those of skill in the art. The intermediate connector may, in turn, be

attached to the overlying ~~molding~~ surface element 12 or other surface element. Likewise, the retainer head 16 may be connected directly to an overlying component by techniques such as tape, adhesive bonding, mechanical joining or the like if desired.

[0023] As indicated previously, the retainer 10 further includes a clip portion designated generally as 18 extending away from the underside of the lower collar 24. In the illustrated exemplary construction, the clip portion 18 includes a stem 34 projecting away from the lower collar 24 such that the lower collar is oriented substantially perpendicular to an axis defined by the stem. As illustrated, wing elements 36 extend upwardly in angled relation away from the end of the stem 34. The wing elements 36 are adapted to flex inwardly towards the stem 34 during insertion through an acceptance opening 38 in the support ~~panel~~ structure 14. As best seen through joint reference to FIGS. 1 and 3, in the illustrated exemplary construction each of the wing elements 36 incorporates an outer face having a dogleg configuration facing generally outwardly away from the stem 34. In this regard, in the illustrated construction, the outer face of each wing element 36 includes a proximal face surface 42 extending in angled relation away from the axis defined by the stem 34. A distal face surface 44 extends away from the proximal face surface in angled relation back towards the axis defined by the stem 34 ultimately terminating at the free tip of the wing element thereby establishing the outer surface dogleg profile. As shown, the free tips of the wing elements are at an elevation below the lower collar 24.

[0024] As best seen through joint reference to FIGS. 1-3, a monolithic perimeter seal 50 of flexible polymeric material is disposed about the perimeter of the lower collar 24 generally at the intersection between the retainer head 16 and the clip portion 18. As best seen in FIG 3, the inner diameter of the perimeter seal 50 may substantially cover the outer annular lip 28 of the lower collar 24 and may abut the step 30. The perimeter seal 50 may be formed from commercially available moldable materials such as thermoplastic elastomers including, by way of example only, polyolefins, PVC, silicone rubber, PTFE, polyvinylidene fluoride (PVDF), fluorinated ethylene propylene (FEP) and blends thereof. Such materials will preferably be of lower durometer (i.e. are less rigid) than the material forming the retainer head and may be characterized by a useful operating temperature range of about -75 °C to about 175 °C. In accordance with one exemplary construction, the perimeter seal 50 may be formed by over-molding or two-shot molding processes such that during molding the flexible material forming

the perimeter seal 50 is integrally fused with the more rigid acetal resin or other material forming the lower collar 24. It is also contemplated that the perimeter seal 50 may be formed separately with a circumferential acceptance slot around the interior for receipt and retention of the annular lip 28 in a stretch-fit relation if desired. In any event, the seal 50 defines a relatively soft, deformable covering at the perimeter edge of the lower collar 24 adapted to provide a seal around the acceptance opening 38 in the support ~~panel~~ structure 14 during use without the need for any sealing structures oriented below the lower collar.

[0025] As best seen in FIG. 3, the perimeter seal 50 may be substantially annular and may include a main body portion 52 adapted to cover the outer annular lip 28 of the lower collar 24. A hingeable outwardly flared sealing foot 54 extends in angled relation downwardly and radially away from the main body portion 52. As shown, the sealing foot 54 is elongated and relatively thin in cross-section. In an unstressed condition (FIG. 4), the sealing foot 54 extends radially outboard from the main body portion 52 to a free edge such that the sealing foot is disposed entirely outboard from lower collar 24 and the underside of the sealing foot forms an obtuse angle relative to the underside of the lower collar 24. As shown, no portion of the angled sealing foot 54 is in the zone below the lower collar 24.

[0026] When the sealing foot 54 is pressed against the support ~~panel~~ structure 14 during normal use, the sealing foot 54 readily flexes upwardly towards a flattened condition about a living hinge 56 substantially at the intersection with the body portion 52. This hinging takes place without confinement of the sealing foot between the support ~~panel~~ structure 14 and the lower collar 24 while continuously maintaining contacting engagement with the underlying support ~~panel~~ structure 14. Thus, the sealing foot 54 may flex from its unstressed condition (FIG. 4) to its fully flexed position (FIG. 5) without experiencing a stack-up condition of seal material between the support ~~panel~~ structure 14 and the lower collar 24. As the sealing foot 54 flexes during compression, the edge of the sealing foot 54 moves radially outwardly as the sealing foot 54 takes on a more flattened condition. As this flattening takes place, the sealing foot 54 moves out of the way of the travel path for the lower collar 24. This avoids any confinement and stack-up of seal material between the support ~~panel~~ structure 14 and the lower collar 24 while nonetheless maintaining a sealing condition relative to the support ~~panel~~ structure 14. Accordingly, the retainer head 16 and the attached ~~molding~~ surface element 12 may be pulled downwardly to a position wherein the ~~molding~~ surface element 12 and the

underlying support ~~panel~~ structure 14 form a substantially flush "zero gap" condition while maintaining a seal around the acceptance opening 38. In this regard, it will be understood that such a zero gap condition occurs when a contact surface 60 on the ~~molding~~ surface element 12 assumes a contacting abutting relation with the underlying support ~~panel~~ structure 14. As will be appreciated, the elevation and contour of the contact surface 60 may be selected to provide this zero gap condition when the sealing foot 54 is in a flexed condition relative to the support ~~panel~~ structure 14 and with the lower collar 24 elevated relative to the support ~~panel~~ structure 14.

[0027] Referring now to FIGS. 2 and 3, it will be seen that in normal operation (FIG. 3), a portion of the sloped distal face surface 44 may be in contacting relationship with the inner perimeter surface of the acceptance opening 38. In the normal operating condition shown in FIG. 3, the retainer 10 is urged downwardly continuously as the flexed wing elements press outwardly against the perimeter surface of the acceptance opening 38. However, downward movement will be limited once the ~~molding~~ surface element 12 comes into contact with the underlying support ~~panel~~ structure 14 to establish a zero gap condition. Thus, in the condition shown by FIG. 3, a condition of static equilibrium is established when the ~~molding~~ surface element 12 comes into contact with the underlying support ~~panel~~ structure 14. Since the retainer 10 is urged continuously downwardly due to the sloped distal face surface 44, the retainer will naturally assume and retain the level at which the ~~molding~~ surface element 12 contacts the underlying support ~~panel~~ structure 14 and thereby blocks further downward movement. As shown, in this equilibrium condition, the lower collar 24 remains slightly elevated relative to the support ~~panel~~ structure 14 and the sealing foot 54 of the perimeter seal 50 is hinged outwardly while maintaining a sealing relationship against the support ~~panel~~ structure 14. As can be seen, the sealing foot 54 is adapted to flex outwardly in a hinging action as the retainer moves downwardly without blocking further downward movement by the retainer 10.

[0028] As will be appreciated, the equilibrium position of the retainer 10 within the acceptance opening 38 is continuously self-adjusting as the relative positions of the ~~molding~~ surface element 12 and the support ~~panel~~ structure 14 change during use as a result of vibration or other events. In this regard, the living hinge 56 urges the sealing foot 54 continuously against the underlying support ~~panel~~ structure 14 as the sealing foot 54 attempts to resume its normal

unflexed condition (FIG. 4). Thus, the sealing relationship provided by the sealing foot 54 is maintained by sliding contact as the retainer 10 moves up and down and the sealing foot 54 moves radially in and out during equilibrium adjustment. That is, although the angle between the support ~~panel~~ structure 14 and the sealing foot 54 may change as the retainer 10 moves up and down, the sealing relation is maintained as the sealing foot 54 moves in sliding relation over the support ~~panel~~ structure 14. Moreover, since the sealing foot 54 is not confined between the lower collar 24 and the support ~~panel~~ structure 14, downward movement of the ~~molding~~ surface element 12 is unobstructed by the sealing element.

[0029] As best seen in FIG. 5, in the event of extreme insertion such that the tips of the wing elements wing elements 36 are within the acceptance opening, in the support ~~panel~~ structure 14, the sealing foot 54 may assume a substantially flattened condition against the underlying support ~~panel~~ structure 14 as the ~~molding~~ surface element 12 establishes a "zero gap" condition with the support ~~panel~~ structure 14. Even in this extreme insertion condition, the sealing foot is not confined between the lower collar 24 and the support ~~panel~~ structure 14. Accordingly, no stack-up condition and resultant shim action is created. Thus, the ~~molding~~ surface element 12 may continue to be pulled down to the desired "zero gap" condition over the full range of operative engagement positions between the wing elements 36 and the support ~~panel~~ structure 14 with the sloped distal face surface 44 bearing against the support ~~panel~~ structure 14.

[0030] The ability to avoid a stack-up condition is promoted by maintaining the free space between the lower collar 24 and the underlying support ~~panel~~ structure 14 during downward movement such that portions of the seal material do not collect in the free space in a manner which would limit downward movement. This free space below the lower collar is maintained even in the extreme insertion condition shown in FIG. 5. As shown, all portions of the sealing foot 54 are positioned radially outboard from the lower collar 24 and the free edge of the sealing foot 54 is adapted to slide radially outwardly away from the lower collar 24 and the main body portion 52 as the retainer head 16 moves downwardly and the sealing foot 54 hinges outwardly. Thus, the sealing foot 54 flattens by hinging outwardly about the living hinge 56 as it is pressed against an underlying support ~~panel~~ structure 14. Accordingly, the sealing foot 54 does not interfere with downward movement of the retainer head 16 and the ~~molding~~ surface element 12 may be maintained in a "zero gap" condition with the underlying support ~~panel~~ structure 14.

[0031] While various spatial and directional terms, such as upper, horizontal, vertical, front

and the like may be used to describe embodiments of the present invention, it is understood that such terms are merely used with respect to the orientations shown in the drawings. The orientations may be inverted, rotated, or otherwise changed, such that an upper portion is a lower portion, and vice versa, horizontal becomes vertical, and the like.

[0032] Of course, variations and modifications of the foregoing are within the scope of the present disclosure. It is to be understood that the disclosure disclosed and defined herein extends to all alternative combinations of two or more of the individual features mentioned or evident from the text and/or drawings. All of these different combinations constitute various alternative aspects of the present disclosure. The embodiments described herein explain the best modes known for practicing the disclosure and will enable others skilled in the art to utilize the disclosure. The claims are to be construed to include alternative embodiments to the extent permitted by the prior art.

PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of United States Patent Application 15/987,986, filed May 24, 2018, which is a continuation of United States Patent Application No. 14/652,819 filed June 17, 2017, now United States Patent No. 9,982,694, which is a National Phase of International Application Number PCT/US2013/073861 filed December 9, 2013, which claims the benefit of, and priority from, United States Provisional Application No. 61/739,604 filed December 19, 2012, all of which are hereby incorporated by reference in their entireties.

TECHNICAL FIELD

[0002] The present disclosure relates generally to connection assemblies incorporating retainers which may also be referred to as fasteners. More particularly, this disclosure pertains to connections incorporating push-in type retainers having downward biasing wing features which secure the retainer in place after insertion through an aperture and with seals for creating a barrier to the penetration of moisture, dust and noise through the aperture in which the retainer is secured.

BACKGROUND

[0003] Push-in type W-base retainers are used in a variety of connection assemblies to secure components of the assembly. For example, in automobiles such stud-like retainers are used to secure molding or other surface structures to underlying support elements such as body panels, support beams or the like. Such retainers typically include a stem with deflectable wing elements for securing the retainer to the support elements when the stem portion supporting the deflectable wing elements is pushed through an aperture in the support element. Typically, a head attached to the stem is configured for attachment to a doghouse or other complementary receiving element on the underside of the surface structure. In this regard, the head may include an enhanced diameter upper platform radial collar feature and an enhanced diameter lower radial collar feature with a spacing post extending between the upper and lower radial collar features. Thus, the spacing post may slide into a doghouse or other receiving element as will be well

known to those of skill in the art and thereafter be blocked against axial withdrawal by the upper and lower radial collar features.

[0004] During use, as the stem is inserted into the aperture, the deflectable members may be compressed radially inwardly. The deflectable members then may spring outwardly as insertion is completed to lock behind the underside of the support element. Thus, with the head secured to the surface structure, the retainer forms a connection between the surface structure and the underlying support element.

[0005] W-base retainers are typically designed as a component of an overall assembly and work in conjunction with the other components with the goal of establishing and maintaining a "zero gap" condition between the sheet metal panel or other support element and the molding or other surface structure. To promote the desired "zero gap" condition, the W-base retainers typically provide a continuous pull down or clamp load condition. This constant pull down is intended to provide and maintain the desired "zero gap" condition between the support element and the molding or other surface structure. If this pull down force is compromised by a significant force acting in the opposite direction such that the molding or other surface structure does not seat against the sheet metal panel or other support element, an unacceptable gap condition may occur within the final assembled product. Such a gap condition may result in undesired rattling noise as well as in the introduction of dirt and water between the molding or other surface structure and the underlying support structure.

[0006] As much as is reasonably possible, it is generally desirable to limit the generation of squeaks, rattles and objectionable noises that may be created from movement of the retainer relative to the parts to which it is connected. By way of example only, and not limitation, various sealing arrangements for push through retainers are illustrated and described in US Patent 5,173,026 to Cordola et al. and US published application 2006/0099051 to Moerke, the contents of all of which are incorporated herein by reference in their entirety. To minimize corrosion, it is desirable also to prevent moisture from precipitation, carwashes, etc. from seeping past the retainer, and through the aperture in which the retainer is installed.

[0007] A variety of sealing structures have been used to minimize rattles and squeaks and to prevent moisture seepage past the retainer. Independent concave skirts such as described in US published application 2006/0099051 have been used in conjunction with push-in retainers at the

base of the head to confront the body panel around the aperture in the panel. Elastomeric and foam seals also have been used to further improve sealing qualities against moisture penetration.

[0008] Although retainers as described incorporating concave skirts and/or seals have been used successfully to limit squeaks and rattles and to inhibit the penetration of moisture past the retainer, further improvements are desirable. Installing the seal as a separate part is cumbersome and awkward, complicating installation of the retainer. If installed on the retainer in advance, the seal can become dislodged, even if properly placed on the retainer. In automated assembly plants, a retainer missing a seal may not be detected and may be installed on the article in which it is used inadvertently. A loose retainer of this type will rattle or squeak, may provide a path for the penetration of moisture and may not adequately secure the second article or item as required. If the seal is adhered to the skirt of the retainer, the seal may not function optimally if the retainer is not seated squarely in the panel. Further, the position of the seal relative to the retainer skirt has limited the range of panel thicknesses with which the retainer can be used effectively to provide a seal against moisture intrusion.

[0009] As will be understood by those of skill in the art, a seal which is held between the retainer head and the support panel may experience a build, stack up condition as compression force is applied which results in a counteracting upward force being applied against the head which may partially offset the pull-down force provided by the deflectable wings. In some cases, the presence of seal elements which are compressed between the retainer head and the support panel may block the lower collar feature of the retainer from getting close enough to the underlying sheet metal panel to establish the desired "zero gap" condition between the sheet metal panel and the overlying molding or other surface structure. That is, the compressed seal in stack-up condition may act in the manner of a spacing shim holding the retainer head further away than intended from the sheet metal panel or other underlying support element. With the retainer head in this elevated condition, the attached molding or other surface element will likewise be held away from the panel or other support element and a gap condition may result.

SUMMARY

[0010] The present disclosure provides advantages and alternatives over the prior art by providing a connection assembly including a push-in type retainer having a functional sealing feature that does not experience a build, stack up condition that may reduce the clamp load force. Thus, the retainer is not blocked from assuming its designed orientation relative to the sheet

metal panel or other underlying support element. A "zero gap" condition is thereby established and maintained between the sheet metal panel or other underlying support element and the mating molding substrate or other surface element.

[0011] In accordance with one exemplary feature, the present disclosure provides a connection assembly adapted to join a surface element such as molding or the like to an underlying support structure such as a sheet metal panel or the like while maintaining a substantially zero gap abutting relation between the surface element and the support structure during use. The connection assembly includes a press-in retainer adapted for insertion into an acceptance opening in the support structure to establish operative connecting engagement between the surface element and the support structure. The retainer includes a retainer head and a clip portion of arrowhead configuration projecting outwardly away from the retainer head. The retainer head includes an upper platform and an annular platform defining a lower collar positioned in spaced relation below the upper platform. The clip portion includes a central stem extending downwardly away from the lower collar and a pair of flexible wings extending in upward angled relation away from a central stem. The retainer further includes a seal disposed at least partially about the lower collar. The seal includes a body portion engaging the lower collar and a sealing foot projecting downwardly and radially outwardly away from the body portion to a free edge such that the sealing foot is disposed outboard from the lower collar. The underside of the sealing foot forms an obtuse angle relative to the underside of the lower collar. The sealing foot flexes about a living hinge while remaining outboard from the lower collar and maintains continuous sliding contact with the support panel in response to applied pressure between the seal and the support panel during use.

[0012] Other features and advantages of the present disclosure will become apparent from a description of certain preferred embodiments thereof which are shown in the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1 is an exploded perspective view illustrating an exemplary sealing retainer in accordance with the present disclosure with the seal separated from the retainer body;

[0014] FIG. 2 is an elevation perspective view illustrating an exemplary sealing retainer in accordance with the present disclosure engaging trim molding prior to insertion through a sheet

metal support structure;

[0015] FIG. 3 is a cross-sectional view illustrating an exemplary sealing retainer in accordance with the present disclosure inserted through an underlying support structure having wing elements that engage the underlying support structure;

[0016] FIG. 4 is a cross-sectional view illustrating an exemplary sealing retainer in accordance with the present disclosure engaging trim molding prior to insertion through a sheet metal support structure and with the seal in an unstressed condition; and

[0017] FIG. 5 is a cross-sectional view illustrating an exemplary sealing retainer in accordance with the present disclosure engaging trim molding after full insertion through a sheet metal support structure with a retained "zero gap" condition between the trim molding and the support structure and illustrating the compression action of the seal in an extreme insertion condition.

[0018] Before the embodiments of the disclosure are explained in detail, it is to be understood that the disclosure is not limited in its application to the details of construction and the arrangements of the components set forth in the following description or illustrated in the drawings. The disclosure is capable of other embodiments and of being practiced or being carried out in various ways. Also, it is understood that the phraseology and terminology used herein are for the purpose of description and should not be regarded as limiting. The use herein of "including", "comprising" and variations thereof is meant to encompass the items listed thereafter and equivalents thereof, as well as additional items and equivalents thereof.

DETAILED DESCRIPTION

[0019] Referring now more specifically to the drawings, and to FIGS. 1 and 2 in particular, it may be seen that the present disclosure provides a retainer 10 adapted to secure a surface element 12, such as, e.g., a molding, to a sheet metal support structure 14, such as, e.g., a panel or other underlying support element of metal or the like. As shown, in the illustrated exemplary construction, the retainer 10 includes a retainer head 16 and a snap engaging clip portion 18. As will be appreciated, the retainer head 16 and the clip portion 18 may be formed as a monolithic unitary body by injection molding or other suitable molding or fabrication process. The material for retainer 10 can be selected as optimally desirable for its particular installation and use.

Accordingly, the retainer 10 may be formed of suitable plastic, such as Nylon, polypropylene, acetal resin and the like as will be well known to those of skill in the art. Acetal resin and Nylon 6.6 may be preferred in some environments of use. Of course, other polymeric and non-polymeric materials including metal and the like and combinations of various polymeric materials also may be used if desired. Likewise, it should be understood that the particular configurations for the retainer head 16 and for the clip portion 18 may be varied in a manner as may be desired for a particular installation.

[0020] By way of example only, and not limitation, in the illustrated exemplary construction for the retainer 10, the retainer head 16 is adapted for sliding receipt and retention within an intermediate connector 20 (FIG. 2) such as a dog house connector or the like disposed in hidden relation at the underside of the surface element 12. In this regard, the intermediate connector 20 may be formed integral with the surface element 12 as shown or may be a separate attached structure as may be desired.

[0021] As shown, in the illustrated exemplary construction, the retainer head 16 includes a table-like upper platform 22 disposed in opposing relation to a lower collar 24 of substantially rigid, annular construction. In this regard, while the upper platform 22 is illustrated as having a generally rectangular configuration, it is likewise contemplated that other polygonal or circular geometries may be used if desired. As shown, the lower collar 24 may be in substantially perpendicular non-angled orientation to the travel path of the retainer and may include an interior collar portion 26 and a reduced thickness outer annular lip 28 disposed circumferentially about the interior collar portion such that a step 30 is disposed at the intersection of the interior collar portion 26 and the outer annular lip 28. A neck structure 32 in the form of a reduced diameter post extends between the upper platform 22 and the lower collar 24. As will be understood, the effective outer diameters defined by the upper platform 22 and by the lower collar 24 are preferably greater than the effective outer diameter defined by the neck structure 32.

[0022] In operation, the retainer 10 may be operatively secured to the intermediate connector 20 by sliding the neck structure 32 into a slot in the intermediate connector 20 in a manner as will be well known to those of skill in the art. The intermediate connector may, in turn, be attached to the overlying surface element 12 or other surface element. Likewise, the retainer head 16 may be connected directly to an overlying component by techniques such as tape,

adhesive bonding, mechanical joining or the like if desired.

[0023] As indicated previously, the retainer 10 further includes a clip portion designated generally as 18 extending away from the underside of the lower collar 24. In the illustrated exemplary construction, the clip portion 18 includes a stem 34 projecting away from the lower collar 24 such that the lower collar is oriented substantially perpendicular to an axis defined by the stem. As illustrated, wing elements 36 extend upwardly in angled relation away from the end of the stem 34. The wing elements 36 are adapted to flex inwardly towards the stem 34 during insertion through an acceptance opening 38 in the support structure 14. As best seen through joint reference to FIGS. 1 and 3, in the illustrated exemplary construction each of the wing elements 36 incorporates an outer face having a dogleg configuration facing generally outwardly away from the stem 34. In this regard, in the illustrated construction, the outer face of each wing element 36 includes a proximal face surface 42 extending in angled relation away from the axis defined by the stem 34. A distal face surface 44 extends away from the proximal face surface in angled relation back towards the axis defined by the stem 34 ultimately terminating at the free tip of the wing element thereby establishing the outer surface dogleg profile. As shown, the free tips of the wing elements are at an elevation below the lower collar 24.

[0024] As best seen through joint reference to FIGS. 1-3, a monolithic perimeter seal 50 of flexible polymeric material is disposed about the perimeter of the lower collar 24 generally at the intersection between the retainer head 16 and the clip portion 18. As best seen in FIG 3, the inner diameter of the perimeter seal 50 may substantially cover the outer annular lip 28 of the lower collar 24 and may abut the step 30. The perimeter seal 50 may be formed from commercially available moldable materials such as thermoplastic elastomers including, by way of example only, polyolefins, PVC, silicone rubber, PTFE, polyvinylidene fluoride (PVDF), fluorinated ethylene propylene (FEP) and blends thereof. Such materials will preferably be of lower durometer (i.e. are less rigid) than the material forming the retainer head and may be characterized by a useful operating temperature range of about -75 °C to about 175 °C. In accordance with one exemplary construction, the perimeter seal 50 may be formed by over-molding or two-shot molding processes such that during molding the flexible material forming the perimeter seal 50 is integrally fused with the more rigid acetal resin or other material forming the lower collar 24. It is also contemplated that the perimeter seal 50 may be formed separately with a circumferential acceptance slot around the interior for receipt and retention of the annular

lip 28 in a stretch-fit relation if desired. In any event, the seal 50 defines a relatively soft, deformable covering at the perimeter edge of the lower collar 24 adapted to provide a seal around the acceptance opening 38 in the support structure 14 during use without the need for any sealing structures oriented below the lower collar.

[0025] As best seen in FIG. 3, the perimeter seal 50 may be substantially annular and may include a main body portion 52 adapted to cover the outer annular lip 28 of the lower collar 24. A hingeable outwardly flared sealing foot 54 extends in angled relation downwardly and radially away from the main body portion 52. As shown, the sealing foot 54 is elongated and relatively thin in cross-section. In an unstressed condition (FIG. 4), the sealing foot 54 extends radially outboard from the main body portion 52 to a free edge such that the sealing foot is disposed entirely outboard from lower collar 24 and the underside of the sealing foot forms an obtuse angle relative to the underside of the lower collar 24. As shown, no portion of the angled sealing foot 54 is in the zone below the lower collar 24.

[0026] When the sealing foot 54 is pressed against the support structure 14 during normal use, the sealing foot 54 readily flexes upwardly towards a flattened condition about a living hinge 56 substantially at the intersection with the body portion 52. This hinging takes place without confinement of the sealing foot between the support structure 14 and the lower collar 24 while continuously maintaining contacting engagement with the underlying support structure 14. Thus, the sealing foot 54 may flex from its unstressed condition (FIG. 4) to its fully flexed position (FIG. 5) without experiencing a stack-up condition of seal material between the support structure 14 and the lower collar 24. As the sealing foot 54 flexes during compression, the edge of the sealing foot 54 moves radially outwardly as the sealing foot 54 takes on a more flattened condition. As this flattening takes place, the sealing foot 54 moves out of the way of the travel path for the lower collar 24. This avoids any confinement and stack-up of seal material between the support structure 14 and the lower collar 24 while nonetheless maintaining a sealing condition relative to the support structure 14. Accordingly, the retainer head 16 and the attached surface element 12 may be pulled downwardly to a position wherein the surface element 12 and the underlying support structure 14 form a substantially flush "zero gap" condition while maintaining a seal around the acceptance opening 38. In this regard, it will be understood that such a zero gap condition occurs when a contact surface 60 on the surface element 12 assumes a contacting abutting relation with the underlying

support structure 14. As will be appreciated, the elevation and contour of the contact surface 60 may be selected to provide this zero gap condition when the sealing foot 54 is in a flexed condition relative to the support structure 14 and with the lower collar 24 elevated relative to the support structure 14.

[0027] Referring now to FIGS. 2 and 3, it will be seen that in normal operation (FIG. 3), a portion of the sloped distal face surface 44 may be in contacting relationship with the inner perimeter surface of the acceptance opening 38. In the normal operating condition shown in FIG. 3, the retainer 10 is urged downwardly continuously as the flexed wing elements press outwardly against the perimeter surface of the acceptance opening 38. However, downward movement will be limited once the surface element 12 comes into contact with the underlying support structure 14 to establish a zero gap condition. Thus, in the condition shown by FIG. 3, a condition of static equilibrium is established when the surface element 12 comes into contact with the underlying support structure 14. Since the retainer 10 is urged continuously downwardly due to the sloped distal face surface 44, the retainer will naturally assume and retain the level at which the surface element 12 contacts the underlying support structure 14 and thereby blocks further downward movement. As shown, in this equilibrium condition, the lower collar 24 remains slightly elevated relative to the support structure 14 and the sealing foot 54 of the perimeter seal 50 is hinged outwardly while maintaining a sealing relationship against the support structure 14. As can be seen, the sealing foot 54 is adapted to flex outwardly in a hinging action as the retainer moves downwardly without blocking further downward movement by the retainer 10.

[0028] As will be appreciated, the equilibrium position of the retainer 10 within the acceptance opening 38 is continuously self-adjusting as the relative positions of the surface element 12 and the support structure 14 change during use as a result of vibration or other events. In this regard, the living hinge 56 urges the sealing foot 54 continuously against the underlying support structure 14 as the sealing foot 54 attempts to resume its normal unflexed condition (FIG. 4). Thus, the sealing relationship provided by the sealing foot 54 is maintained by sliding contact as the retainer 10 moves up and down and the sealing foot 54 moves radially in and out during equilibrium adjustment. That is, although the angle between the support structure 14 and the sealing foot 54 may change as the retainer 10 moves up and down, the sealing relation is maintained as the sealing foot 54 moves in sliding relation over the support

structure 14. Moreover, since the sealing foot 54 is not confined between the lower collar 24 and the support structure 14, downward movement of the surface element 12 is unobstructed by the sealing element.

[0029] As best seen in FIG. 5, in the event of extreme insertion such that the tips of the wing elements wing elements 36 are within the acceptance opening, in the support structure 14, the sealing foot 54 may assume a substantially flattened condition against the underlying support structure 14 as the surface element 12 establishes a "zero gap" condition with the support structure 14. Even in this extreme insertion condition, the sealing foot is not confined between the lower collar 24 and the support structure 14. Accordingly, no stack-up condition and resultant shim action is created. Thus, the surface element 12 may continue to be pulled down to the desired "zero gap" condition over the full range of operative engagement positions between the wing elements 36 and the support structure 14 with the sloped distal face surface 44 bearing against the support structure 14.

[0030] The ability to avoid a stack-up condition is promoted by maintaining the free space between the lower collar 24 and the underlying support structure 14 during downward movement such that portions of the seal material do not collect in the free space in a manner which would limit downward movement. This free space below the lower collar is maintained even in the extreme insertion condition shown in FIG. 5. As shown, all portions of the sealing foot 54 are positioned radially outboard from the lower collar 24 and the free edge of the sealing foot 54 is adapted to slide radially outwardly away from the lower collar 24 and the main body portion 52 as the retainer head 16 moves downwardly and the sealing foot 54 hinges outwardly. Thus, the sealing foot 54 flattens by hinging outwardly about the living hinge 56 as it is pressed against an underlying support structure 14. Accordingly, the sealing foot 54 does not interfere with downward movement of the retainer head 16 and the surface element 12 may be maintained in a "zero gap" condition with the underlying support structure 14.

[0031] While various spatial and directional terms, such as upper, horizontal, vertical, front and the like may be used to describe embodiments of the present invention, it is understood that such terms are merely used with respect to the orientations shown in the drawings. The orientations may be inverted, rotated, or otherwise changed, such that an upper portion is a lower portion, and vice versa, horizontal becomes vertical, and the like.

[0032] Of course, variations and modifications of the foregoing are within the scope of the present disclosure. It is to be understood that the disclosure disclosed and defined herein extends to all alternative combinations of two or more of the individual features mentioned or evident from the text and/or drawings. All of these different combinations constitute various alternative aspects of the present disclosure. The embodiments described herein explain the best modes known for practicing the disclosure and will enable others skilled in the art to utilize the disclosure. The claims are to be construed to include alternative embodiments to the extent permitted by the prior art.

Named Inventor: Derek Scroggie

Attorney Docket No.: 61823

Title: PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

DECLARATION (37 C.F.R.§1.63) FOR US UTILITY OR DESIGN APPLICATION

As the below named inventor, I hereby declare that:

This declaration is directed to either the attached application, orUnited States application or PCT international application or _____ application number - _____ filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. §1001by fine or imprisonment of not more than (5) years, or both.

Legal Name of Inventor:			
(e.g., Given name (First and middle or initial (if any) and Family Name or Surname)) Derek Scroggie			
Inventor's Signature:	Date: 11-26-13	Citizenship: US	
Residence: City Macomb	State / Province / Territory MI	Country US	
Mailing address: **C/O: Illinois Tool Works Inc., 3600 West Lake Avenue**			
City **Glenview**	State **Illinois**	Zip **60026**	Country **USA**

I execute this Declaration for application acknowledging that I have reviewed and understand the contents of the application, and I am aware of the duty to disclose to the Office all information known to me to be material to patentability as explained in 37 C.F.R. §1.56. I further acknowledge that I understand English.

Note - Whenever an individual making an oath or declaration cannot understand English, the oath or declaration must be in a language that such individual can understand and shall state that such individual understands the content of any documents to which the oath or declaration relates.

Named Inventor: Michelle E. Bozinovski

Attorney Docket No.: 61823

Title: PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

DECLARATION (37 C.F.R. §1.63) FOR US UTILITY OR DESIGN APPLICATION

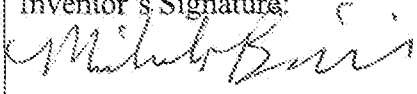
As the below named inventor, I hereby declare that:

This declaration is directed to either the attached application, or United States application or PCT international application or _____ application number _____ filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. §1001 by fine or imprisonment of not more than (5) years, or both.

Legal Name of Inventor:			
(e.g., Given name (First and middle or initial (if any) and Family Name or Surname)) Michelle E. Bozinovski			
Inventor's Signature: 	Date: 11-20-13		Citizenship: US
Residence: City Oakland Charter Township	State / Province / Territory MI	Country US	
Mailing address: **C/O: Illinois Tool Works Inc., 3600 West Lake Avenue**			
City **Glenview**	State **Illinois**	Zip **60026**	Country **USA**

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Named Inventor: Robert A. Murawski

Attorney Docket No.: 61823

Title: PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

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As the below named inventor, I hereby declare that:

This declaration is directed to either the attached application, or United States application or PCT international application or _____ application number _____ filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

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Legal Name of Inventor:			
(e.g., Given name (First and middle or initial (if any) and Family Name or Surname)) Robert A. Murawski			
Inventor's Signature: Robert A Murawski	Date: 11-20-2013	Citizenship: US	
Residence: City Clinton Township	State / Province / Territory MI	Country US	
Mailing address: **C/O: Illinois Tool Works Inc., 3600 West Lake Avenue**			
City **Glenview**	State **Illinois**	Zip **60026**	Country **USA**

I execute this Declaration for application acknowledging that I have reviewed and understand the contents of the application, and I am aware of the duty to disclose to the Office all information known to me to be material to patentability as explained in 37 C.F.R. §1.56. I further acknowledge that I understand English.

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PATENT
Attorney Docket No. 480805.00748 (61823-US-C)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Illinois Tool Works Inc.	)
Serial No.:	To be assigned	)
Filed:	Concurrently herewith	)
Title:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL	)
Group Art Unit:	To be assigned	)
Examiner:	To be assigned	)

Confirmation No. To be assigned

CERTIFICATE OF EFS FILING

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, on the date below.

June 10, 2020

/Cyndy Marcello/
Cyndy Marcello

PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Amendments to the Specification begin on page 2; and

Remarks may be found on page 3.

AMENDMENT TO THE SPECIFICATION

Prior to examination on the merits, please enter the attached substitute specification. A marked up and clean specification are submitted herewith. No new matter has been added.

REMARKS

The specification is amended in this preliminary amendment. A marked up and clean specification are submitted herewith. No new matter has been added. Applicant respectfully requests entry of the amendments prior to examination.

Although no additional fees are believed due, other than authorized on the accompanying fee sheet, if an additional fee is deemed due, please charge any additional fees due, except issue fees, to deposit account no. 17-0055.

Respectfully submitted,

QUARLES & BRADY LLP
300 N. LaSalle Street, Suite 4000
Chicago, Illinois 60654
(312) 715-5072

Date: June 10, 2020

By: /NPSchmidbauer/
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PTO/AIA/82A (07-13)
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Application Number	To be assigned
Filing Date	Herewith
First Named Inventor	Scroggie, Derek
Title	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL
Art Unit	To be assigned
Examiner Name	To be assigned
Attorney Docket Number	480805.00748(61823-US-C)

SIGNATURE of Applicant or Patent Practitioner

Signature	/NPSchmidbauer/	Date (Optional)	
Name	Nicholas P. Schmidbauer	Registration Number	56610
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☑ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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PTO/AIA/82B (07-13)
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I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

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☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 160504

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I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

ILLINOIS TOOL WORKS INC.

☐ Inventor or Joint Inventor (title not required below)

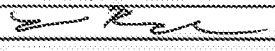
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SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

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Name	Chris Rauch		
Title	Chief Intellectual Property Counsel		

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	16897947
Filing Date	2020-06-10
First Named Inventor	SCROGGIE, Derek
Art Unit	
Examiner Name	
Attorney Docket Number	480805.00748(61823-US-C)

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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	Attorney Docket Number	480805.00748(61823-US-C)

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	1	1174079	JP	S	2003-05-26	Nifco, Inc.		☒
	2	2009123616	WO	A1	2009-10-08	TS Tech Co.		☐
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	4	2017205022	WO	A1	2017-11-30	Illinois Tool Works Inc.		☐

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	Attorney Docket Number	480805.00748(61823-US-C)

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(19) World Intellectual Property Organization
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(43) International Publication Date
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(71) Applicant: **ILLINOIS TOOL WORKS INC.** [US/US]; 155 Harlem Avenue, Glenview, IL 60025 (US).

(72) Inventors: **STELLWAG, Philip**; C/o Illinois Tool Works Inc., 155 Harlem Avenue, Glenview, IL 60025 (US). **DOMINGUEZ, David**; C/o Illinois Tool Works Inc., 155 Harlem Avenue, Glenview, IL 60025 (US). **SPANIER, Marco**; C/o Illinois Tool Works Inc., 155 Harlem Avenue, Glenview, IL 60025 (US).

(74) Agent: **NIEBERDING, Michael, J.** et al.; Thompson Hine LLP, 10050 Innovation Drive, Suite 400, Dayton, OH 45342-4934 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

WO 2017/205022 A1

(54) Title: FASTENER FOR FASTENING AN ELEMENT, WHICH IS TO BE FASTENED, TO A CARRIER PART OF A VEHICLE WITH REDUCED CORROSION RISK

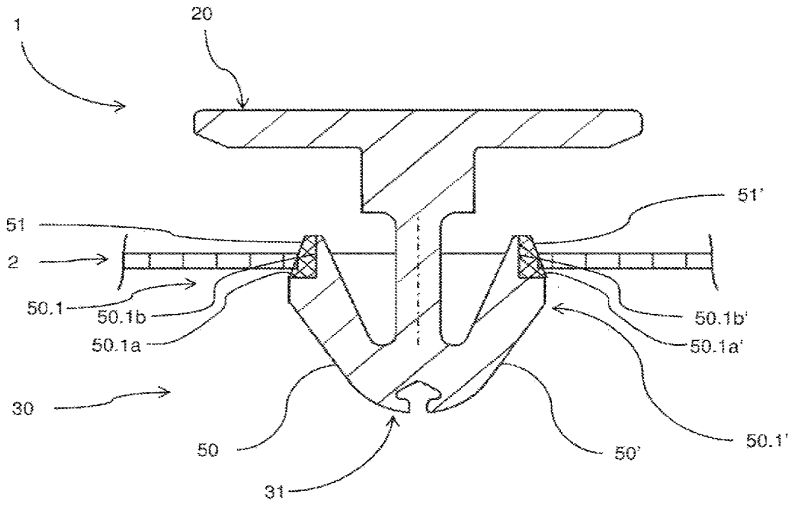


Fig. 1

(57) Abstract: A fastener (1) for fastening an element to be fastened to a carrier part (2) of a vehicle, includes a head portion (20), configured for being fastened to the element to be fastened, a foot portion (30), configured for being fastened to the carrier part (2), - at least one wing (50) connected to the foot portion (30) via a coupling portion (31) of the foot portion (30); the wing (50) includes a decoupling element (51), pre-mounted to the foot portion (30) and covering at least a portion of the wing (50), such that when the foot portion (30) is fastened to the carrier part (2) the decoupling element (51) contacts the carrier part (2), wherein the decoupling element (51) is made of a material softer than at least the material of the portion of the wing (50) covered by the decoupling element (51).

[Continued on next page]

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Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

— *with international search report (Art. 21(3))*

FASTENER FOR FASTENING AN ELEMENT, WHICH IS TO BE FASTENED, TO A CARRIER PART OF A VEHICLE WITH REDUCED CORROSION RISK

[0001[This invention relates to a fastener for fastening an element to be fastened, in particular a trim or a panel or a wire harness, to a carrier part of a vehicle, preferably a car body.

[0002[According to prior art WO 2014/110301, a fastener comprises a foot and a head comprising a plate to which said foot is linked, a wedge and a shank connecting said plate to said wedge, which comprises a back-plate, a rim and flexible arms connecting said rim to said back-plate.

[0003[It is perceived as disadvantageous that in some cases when using the fastener according to the prior art, in particular in the outer vehicle region, there could be a risk of corrosion. The object of the invention therefore was to reduce the risk of corrosion when using such a fastener for fastening an element to be fastened to a carrier part of the vehicle. This object is achieved by the subject matter of the independent claims; preferred embodiments are specified by the dependent claims.

[0004[Particularly, this object is achieved by a fastener for fastening an element to be fastened, preferably a trim or wire harness, to a carrier part of a vehicle, preferably a car body, wherein the fastener comprises:
- a head portion, which is configured for being fastened to the trim;
- a foot portion, which is configured for being fastened to the carrier part, preferably through a hole or a rail in the carrier part;
- at least one wing connected to the foot portion via a coupling portion of the foot portion; wherein said wing comprises a decoupling element, preferably decoupling coating, which is pre-mounted to the foot portion and which is covering at least a, preferably radially outer, portion of the wing, such that when the foot portion is fastened to the carrier part the decoupling element is contacting the carrier part, wherein the decoupling element is made of a material softer than at least the material of the portion of the wing covered by the decoupling element.

[0005[The object of the invention is also particularly achieved by a method for manufacturing a fastener for fastening an element to be fastened, preferably a trim or wire harness, to a carrier part of a vehicle, preferably a car body, whereby the method comprises:
- manufacturing, preferably molding, a head portion, which is configured for being fastened to the element to be fastened, and a foot portion, which is configured for being fastened to the carrier part, preferably through a hole or rail in the carrier part, and at least one wing connected to the foot portion via a coupling portion of the foot portion, wherein the method comprises additionally a
- creating and fixing, the fixing taking place before mounting the fastener to the carrier part, of a decoupling element, preferably decoupling coating, preferably by over-molding, to at least a, preferably radially outer, portion of the wing, such that when the foot portion is fastened to the carrier part the decoupling element is contacting the carrier part and wherein the decoupling element is manufactured, preferably molded, out of a material softer than at least the material of the portion of the wing covered by the decoupling element.

[0006[By this decoupling element covering the wing(s) of the fastener, the hole of the carrier part is protected from damages, in particular damages of its corrosion protection coating, and the risk of corrosion is hence reduced. It was found that during car life hard contacts between the wing and the carrier part may lead to such damages of the carrier part due to ongoing vibrations during driving and that therefore the the risk of corrosion is increased. The decoupling element on the one hand is damping such vibrations and therefore damping/decoupling relative movements between the wing and the carrier part and serves on the other hand as a protective, soft surface, not able to damage the carrier part or its coating easily. Indeed, the decoupling element preferably prevents all or most (preferably more than 50%, particularly preferably more than 80%) of the contacts between the hard material of the fastener wing(s) and the carrier part, e.g. the car body surrounding the hole. Preferably all or most (preferably more than 50%, particularly preferably more than 80%) of the contacts between the fastener via the wing(s) and the carrier part, e.g. car body, exist via the soft material of the decoupling element. At the same time, the mounting of the fastener to the carrier part is not complicated as the decoupling element is already fixed to the wing before such mounting.

[0007[The fastener may be, for example, produced out of one or more of the following materials: metal, plastic. Any molding mentioned with respect to this fastener is preferably an injection molding, particularly preferably a plastic injection molding.

[0008[The head portion serves for connecting the trim to the element to be fastened. Different fastening principles could be used, e.g. a clip or a flange that is slid into a rail of the trim.

[0009[The foot portion may include more than one wing, preferably two or three or four wings. The foot portion and the head portion are preferably connected via an axial shaft of the fastener.

[0010[The decoupling coating is pre-mounted to the foot portion which is preferably to be understood as the decoupling element having been fixed to the foot portion before the fastener is or was fastened to the carrier part. Thereby, a simple mounting to the carrier part is achieved. The decoupling element could, e.g., be a protection sleeve put on or put over the wing(s), particularly preferred an over molded decoupling coating.

[0011[The one or more wings preferably comprise a free end and the decoupling element is located at or close to the free end or it is surrounding preferably completely the free end or a radially outer portion of the free end. Preferably at least two wings are facing each other so that the hole or the rail of the carrier part is contacted on two opposing sides and the fastener is fastening the element to be fastened to the carrier part in a more efficient way. Most preferably, in case where the foot portion includes more than one wing, each wing, preferably at its free end and preferably at a radial outer portion of the wing, is covered at least partially, preferably completely, by the one or a further decoupling element, so that the surface or corrosion protection coating around the hole or rail of the carrier part is well protected from scratches. The fixing of the decoupling element may be accomplished by manual or automatic mounting before mounting the fastener to the carrier part and particularly preferably while creating the decoupling element, e.g., preferably via overmolding of or molding onto the at least one, preferably radially outer, portion of the wing.

[0012[The wing is preferably flexible such that the wing is brought closer to the rest of the fastener while inserting the fastener into the hole or the rail and then extending again.

[0013[The softer material is preferably one of the following: thermoplastic elastomer (TPE), thermoplastic starch (TPS), ethylene propylene diene monomer rubber (EPDM).

[0014[Preferably the one or more wings, the foot portion and head portion, if existing the shaft, are all made of the harder material, whereas the wings are at least partially covered by the soft material. The harder material is preferably one of the following: all commonly used plastics for fasteners is automotive industry as well as property enhancing modifications/variants (e.g., glass fiber reinforced), metals and alloys.

[0015[In a further preferred embodiment according to the present invention, the decoupling element is a decoupling coating applied onto the portion of the wing. In a further preferred method according to the present invention the decoupling element is created and fixed to the at least one portion of the wing as a decoupling coating, preferably by overmolding on the at least one portion of the wing.

[0016[Hereby, a particularly well to manufacture and easy to handle fastener is provided. Preferably the free end of the wing comprises a step forming a radial shoulder and an axial collar and the decoupling coating is coating the upper part of the radial shoulder and or the radially outer part of the axial collar. Such a step provides a particularly good adhesion of the decoupling coating.

[0017[In a further preferred embodiment according to the present invention, the fastener has a flange between the foot portion and the head portion. In a further preferred method according to the present invention a flange between the foot portion and the head portion is manufactured, preferably formed by molding.

[0018[With that said flange, a stop plate is provided for limiting the insertion of the foot portion into the carrier part. Preferably, the flange has a shape larger than the shape of the hole or rail of the carrier part so that only the wing of the foot portion is pushed into the hole or rail.

[0019[It is preferred that the flange is manufactured, preferably molded, during the same manufacturing, preferably molding, step than the head portion and the foot portion with the same material.

[0020[In a further preferred embodiment according to the present invention, the flange has a sealing lip, which is preferably overmolded or manually or automatically mounted before the fastening of the fastener to the carrier part, for sealing the flange against a surface of the carrier part around the hole or rail of the carrier part. In a further preferred method according to the present invention, a sealing lip is fixed or formed on the flange, preferably before the mounting of the fastener to the carrier part, preferably by manually or automatically mounting before fastening the fastener to the carrier part or by forming by molding, particularly preferably overmolding of the flange or molding onto the flange.

[0021[Hereby, corrosion risk is further reduced. The sealing lip is preferably in contact with the carrier part so that it also permits to avoid scratches of the carrier part. The sealing lip is preferably covering the edge of the flange, preferably all around, such that it is sealing the flange against the surface around the hole or rail of the carrier part. The sealing lip is preferably located at the side of the flange facing the foot portion.

[0022[In a further preferred embodiment according to the present invention, the sealing lip and the decoupling element are of the same material. In a further preferred method according to the invention the sealing lip and the decoupling element are formed, preferably molded, out of the same material.

[0023[Hereby, the production can be made efficient, e.g. via 2K injection molding.

[0024[In a further preferred embodiment of the present invention the sealing lip and the decoupling element are connected or have been connected via a bridge. In a further preferred method according to the invention the decoupling element and the sealing lip are molded and the material used for the decoupling element and the sealing lip is running from the sealing lip to the decoupling element or vice-versa from the decoupling element to the sealing lip forming a bridge.

[0025[Hereby the sealing lip and the decoupling element can both be formed in one molding step with an injection point or injection points only on one of the sealing lip and the decoupling element. The material then runs to the other of the sealing lip and the decoupling element via the bridge. Hence, the bridge is indicating that the preferred method has been applied.

[0026[In a further preferred method according to the present invention the sealing lip and the decoupling element are both formed during the same manufacturing step, preferably molding step.

[0027[Hereby time is saved. Preferably, for decoupling element and sealing lip, in the case of the preferred molding, separate injection points are used; alternatively, an injection point or injections are only used for one of the sealing lip and the decoupling element, as just described above.

[0028[This molding step is preferably different than a molding step of the head portion and the foot portion. Preferably, during the molding step of the sealing lip and the decoupling element the same mold is used to form the sealing lip and the decoupling element. Preferably a bridge is thereby created by the material injected. This material bridge may be cut away afterwards.

[0029[In another preferred method according to the present invention, the sealing lip and the decoupling element are formed during different manufacturing steps, preferably molding steps.

[0030[Hereby, it is possible (but not necessary) to conveniently use different materials for sealing lip and decoupling element.

[0031[In a further preferred embodiment according to the present invention, the wing comprises a free end and the material used for the decoupling element is also covering the wing throughout between the coupling portion and the decoupling element, such that a connection made of the material (type) used for the decoupling element connects the coupling portion with the decoupling element.

[0032[Such a fastener is easy to manufacture as the injection point for the material used for the decoupling element can be located at a convenient position, preferably at the coupling portion of the foot portion, as described directly in the following.

[0033[A free end of the wing may preferably be understood as a radially outermost point of the wing which is able to be pressed in the direction towards the fastener axis. It is pref-

erably an area of the wing which is, in fixed state, braced with a certain tension in the hole or rail of the carrier part. In the broadest sense even such a radially outer extreme point is to be understood as a free end, which is connected to the shaft of the fastener over several ridges of the wing (for example one axially up and one down), i.e. which is not completely free or a true end, but it is comparatively freely moveable.

[0034[In another preferred method according to the present invention the manufacturing, preferably molding, of the foot portion comprises
- manufacturing, preferably molding a free end of the wing and
wherein the decoupling element created by molding, wherein material used for the decoupling element is injected on the coupling portion and guided along the wing, when it is liquid, from the coupling portion towards the free end.

[0035[This convenient location of the injection point results in a less complex tool design. At the location where the material is guided along the wing, when the material is liquid, preferably said connection covering the wing throughout, i.e. without interruption, between the coupling portion and the decoupling element is formed. The connection (see above) is therefore indicating that this preferred method has been applied.

[0036[In another preferred embodiment according to the present invention, the fastener comprises a further wing which is connected to the foot portion via the coupling portion of the foot portion and which is comprising a further decoupling element, and wherein the material used for the decoupling elements is also covering the further wing throughout between the coupling portion and the further decoupling element, such that a further connection built of the material (type) used for the further decoupling element connects the coupling portion with the further decoupling element.

[0037[Such a fastener is particularly well to manufacture by injection molding, as a common injection point for the material used for the decoupling elements can be used, as described directly in the following

[0038[In another preferred method according to the invention a further wing is manufactured, preferably molded, which is connected to the foot portion via the coupling portion of the foot portion, and wherein, when the decoupling element is molded, also a further de-

coupling element of the further wing is molded and wherein the material for the decoupling elements is injected, preferably on the coupling portion, via a common injection point, common to both decoupling elements.

[0039[Hereby, the tool for molding the decoupling elements can be made even less complex. Preferably, the common injection point is located in the middle between two wings, preferably at one side of the wings, preferably at one side of the coupling portion. Preferably two decoupling elements are symmetrically arranged and the injection point is on the axis of symmetry. Preferably, the sealing lip and the decoupling element are formed separately so that no material bridge is formed between them.

[0040[Embodiments of the present invention will now be described - by way of example only - with reference to the accompanying drawings, whereby

[0041[Fig. 1 is a conceptual overview of a fastener with two wings according to the invention;

[0042[Fig. 2A is a conceptual overview of the fastener of Figure 1, whereby the fastener further comprises a flange with sealing lip and bridges between the sealing lip and the decoupling coatings;

[0043[Fig. 2C is a perspective explosion view of the fastener of Figures 2A, 2B, whereby the sealing lip, the bridges and the decoupling coatings are shown in perspective;

[0044[Fig. 2B is a perspective side view of the fastener of Figure 2A;

[0045[Fig. 3A is a conceptual overview of a variant of the fastener of Figures 2A-C, whereby the sealing lip and the decoupling coatings are not linked together by bridges;

[0046[Fig. 3B is a perspective overview of the fastener of Figure 3A, whereby the wings are each covered by a connection;

[0047[Fig. 3C is a perspective explosion view of the fastener of Figures 3A, B, whereby the sealing lip, the decoupling coatings and the connections are shown in perspective.

[0048[**Figure 1** shows a conceptual overview of a fastener 1 according to the invention with preferred two wings 50, 50'. The fastener 1 comprises a head portion 20 configured for being fastened to element to be fastened and a foot portion 30 configured for being fastened to the carrier part 2 of the vehicle. The fastener 1 comprises preferably at least two wings 50, 50' connected to the foot portion 30 via a coupling portion 31 of the foot portion 30 wherein said wings 50, 50' comprise each a decoupling element 51, 51'. The decoupling elements 51, 51' are pre-mounted on the foot portion 30 and made of a material softer than at least the material of the portion of the wings 50, 50' covered by the decoupling element 51, 51'. The decoupling elements 51, 51' are covering at least a portion of the wings 50, 50', such that when the foot portion 30 is fastened to the car body 2 the decoupling elements 51, 51' are in contact with the car body 2.

[0049[Furthermore, the fastener 1 comprises the following preferred features: the decoupling elements 51, 51' are decoupling coatings 51, 51' and are molded on the wings 50, 50'; the carrier part 2 is a car body 2 and the foot portion 30 is configured to be fastened via a hole in the car body 2; the wings 50, 50' comprise each a free end 50.1, 50.1' and the decoupling coatings 51, 51' are located at or close to the free ends 50.1, 50.1' at a radially outer portion of the free end; the wings 50, 50' are facing each other so that the hole of the car body 2 is contacted on two opposing sides; the free ends 50.1, 50.1' of the wings 50, 50' comprise a step forming a radial shoulder 50.1a, 50.1a' and an axial collar 50.1b, 50.1b' and the decoupling coatings 51, 52' are coating the upper (i.e. facing the head portion 20) part of the radial shoulders 50.1a, 50.1a' and the radially outer part of the axial collars 50.1b, 50.1b' – the shoulder and collar configuration is also present in the drawings Fig. 2A-c and 3A-c however, not specifically referenced by referenced numerals; the head portion 20 serves for connecting the trim to the fastener by sliding it into a rail or groove of the trim.

[0050[**Figure 2A** shows a conceptual overview of the fastener 1 based on Figure 1, whereby the fastener 1 has a flange 40 with a sealing lip 41 wherein the sealing lip 41 has a shape or diameter larger than the shape or diameter of the hole of the car body 2 so that it is sealing the flange 40 against the surface around the hole of the car body 2. The decoupling coatings 51, 51' and the sealing lip 41 are of the same soft material. The decoupling coat-

ings 51, 51' and the sealing lip 41 are each connected via a bridge 80, 80'. The bridges 80, 80' may be cut afterwards.

[0051[The sealing lip 41 and the decoupling coatings 51, 51' are formed by molding during the same molding step, such that the same tools are used for molding them. For example, soft material is injected to an injection point at the flange 40 for forming the sealing lip 41 and two (open) channels in the tool are guiding the material further to the free ends 50.1, 50.1' of the wings 50, 50' for forming the respective decoupling coating 51, 51' and resulting in the bridges 80, 80'.

[0052[**Figure 2B** shows a perspective overview of the fastener 1 of Figure 2A. The bridges 80, 80' between the sealing lip 41 and the decoupling coatings 51, 51' are hidden by the shape of the sealing lip 41.

[0053[**Figure 2C** shows a perspective explosion view of the fastener 1 of Figure 2A and 2B, whereby the soft material is shown in perspective so that the sealing lip 41, the decoupling coatings 51, 51' and the bridges 80, 80' are well visible. The radial outer portions at the free ends 50.1, 50.1' of the wings 50, 50', where the wings 50, 50' are overmolded by the decoupling coatings 51, 51', are well visible. Likewise, the flange 40 is shown without its sealing lip 41.

[0054[**Figure 3A** shows a conceptual overview of a variant of the fastener 1 based on Figure 2A-C, whereby the sealing lip 41 and the decoupling coatings 51, 51' are not linked together by bridges 80, 80'.

[0055[The sealing lip 41 and the decoupling coatings 51, 51' are of the same material. The sealing lip 41 and the decoupling coatings 51, 51' are formed by molding. They may be formed at the same time (preferred) but separately via separate injection points or they may be formed during different molding steps.

[0056[**Figure 3B** shows a perspective overview of the fastener 1 of Figure 3A, whereby material used for the decoupling coatings 51, 51' is also covering the wings 50, 50' throughout between the coupling portion 31 and the decoupling coatings 51, 51', such that

a respective connection 52, 52' made of the material used for the decoupling coatings 51, 51' connects the coupling portion 31 with the decoupling coatings 51, 51'.

[0057[The material for molding the decoupling coatings 51, 51' is injected through the common injection point 33 on the coupling portion 31 and is, when it is liquid, guided along the wings 50, 50' from the coupling portion 31 towards the decoupling coatings 51, 51' at the free ends 50.1, 50.1'.

[0058[**Figure 3C** shows a perspective explosion view of the fastener 1 of Figure 3A and 3B, whereby the soft material is shown in perspective so that the sealing lip 41, the connections 52, 52' and the common injection point 32 are well visible.

Reference signs

1	Fastener	50.1'	Free end
2	Carrier part	50.1a	Radial shoulder
20	Head portion	50.1a'	Radial shoulder
30	Foot portion	50.1b	Axial collar
31	Coupling portion	50.1b'	Axial collar
32	Common injection point	51	Decoupling element
40	Flange	51'	Decoupling element
41	Sealing lip	52	Connection
50	Wing	52'	Connection
50'	Wing	80	Bridge
50.1	Free end	80'	Bridge

Claims

1. A fastener (1) for fastening an element to be fastened to a carrier part (2) of a vehicle, whereby the fastener (1) comprises:
- a head portion (20), which is configured for being fastened to the element to be fastened,
- a foot portion (30), which is configured for being fastened to the carrier part (2),
- at least one wing (50) connected to the foot portion (30) via a coupling portion (31) of the foot portion (30);
characterized in that said wing (50) comprises a decoupling element (51), which is pre-mounted to the foot portion (30) and which is covering at least a portion of the wing (50), such that when the foot portion (30) is fastened to the carrier part (2) the decoupling element (51) is contacting the carrier part (2), wherein the decoupling element (51) is made of a material softer than at least the material of the portion of the wing (50) covered by the decoupling element (51).

2. A fastener (1) according to claim 1, wherein the decoupling element (51) is a decoupling coating applied onto the portion of the wing (50).

3. A fastener (1) according to claim 1 or 2, wherein the fastener has a flange (40) between the foot portion (30) and the head portion (20).

4. A fastener (1) according to claim 3, wherein the flange (40) has a sealing lip (41) for sealing the flange (40) against a surface of the carrier part (2).

5. A fastener (1) according to claim 4, wherein the decoupling element (51) and the sealing lip (41) are of the same material.

6. A fastener (1) according to claim 5, wherein the decoupling element (51) and the sealing lip (41) are connected or have been connected via a bridge (80).

7. A fastener (1) according to one of claims 1 to 5, wherein the wing (50) comprises a free end (50.1), and wherein the material used for the decoupling element (51) is also covering the wing (50) throughout between the coupling portion (31) and the decoupling element

(51), such that a connection (52) made of the material used for the decoupling element (51) connects the coupling portion (31) with the decoupling element (51).

8. A fastener (1) according to claim 7, wherein the foot portion (30) comprises a further wing (50') connected to the foot portion (30) via the coupling portion (31) of the foot portion (30) and comprising a further decoupling element (51'), wherein the material used for the decoupling elements (51, 51') is also covering the further wing (50') throughout between the coupling portion (31) and the further decoupling element (51'), such that a further connection (52') built of the material used for the further decoupling element (51') connects the coupling portion (31) with the further decoupling element (51').

9. A method for manufacturing a fastener (1) for fastening an element to be fastened to a carrier part (2) of a vehicle, whereby the method comprises:
- manufacturing a head portion (20), which is configured for being fastened to the element to be fastened, and a foot portion (30), which is configured for being fastened to the carrier part (2), and at least one wing (50) connected to the foot portion (30) via a coupling portion (31) of the foot portion (30),
characterized in that the method comprises additionally:
- creating and fixing, the fixing taking place before mounting the fastener (1) to the carrier part, a decoupling element (51) to at least a portion of the wing (50), such that when the foot portion (30) is fastened to the carrier part (2) the decoupling element (51) is contacting the carrier part (2) and wherein the decoupling element (51) is manufactured out of a material softer than at least the material of the portion of the wing (50) covered by the decoupling element (51).

10. A method according to claim 9, wherein the decoupling element (51) is created and fixed to the at least one portion of the wing (50) as a decoupling coating.

11. A method according to claim 9 or 10, wherein a flange (40) of the fastener (1) is formed between the foot portion (30) and the head portion (20).

12. A method according to claim 11, wherein a sealing lip (41) is fixed or formed on the flange (40).

13. A method according to claim 12, wherein the sealing lip (41) and the decoupling element (51) are both formed during the same manufacturing step.

14. A method according to claim 12 or 13, wherein the sealing lip (41) and the decoupling element (51) are formed out of the same material.

15. A fastener (1) according to claim 13 and 14, wherein the decoupling element (51) and the sealing lip (41) are created by molding and the material used for the decoupling element (51) and the sealing lip (41) is running from the sealing lip (41) to the decoupling element (51) or vice-versa from the decoupling element (51) to the sealing lip (41) forming a bridge (80).

16. A method according to one of the claims 9 to 14, wherein manufacturing of the foot portion (30) comprises
- Manufacturing a free end (50.1) of the wing (50) and
wherein the decoupling element (51) is created by molding, wherein the material used for the decoupling element (51) is injected on the coupling portion (31) and guided along the wing (50), when it is liquid, from the coupling portion (31) towards the free end (50.1).

17. A method according to claim 16, wherein a further wing (50') is manufactured which is connected to the foot portion (30) via the coupling portion (31) of the foot portion (30), and wherein, when the decoupling element (51) is molded, also a further decoupling element (51') of the further wing (50') is molded and wherein the material for the decoupling elements (51, 51') is injected via a common injection point (32), common to both decoupling elements (51, 51').

18. A fastener (1) fastening an element to a carrier part (2) of a vehicle, the fastener (1) comprising:
a head portion (20) fastened to the element;
a foot portion (30) fastened to the carrier part (2);
at least one wing (50) connected to the foot portion (30) via a coupling portion (31) of the foot portion (30), wherein said wing (50) comprises a decoupling element (51) mounted to the foot portion (30) and covering at least a portion of the wing (50), such that the decoupling element (51) is in contact with the carrier part (2), wherein the decoupling element

(51) is made of a material that is softer than a material of the portion of the wing (50) covered by the decoupling element (51).

19. A fastener (1) according to claim 18, wherein:
the decoupling element (51) is a decoupling coating applied onto the portion of the wing (50);
and/or
the fastener has a flange (40) between the foot portion (30) and the head portion (20);
and/or
the flange (40) has a sealing lip (41) that seals the flange (40) against a surface of the carrier part (2);
and/or
the decoupling element (51) and the sealing lip (41) are of the same material;
and/or
the decoupling element (51) and the sealing lip (41) are connected via a bridge (80);
and/or
the wing (50) comprises a free end (50.1), wherein the material used for the decoupling element (51) also covers the wing (50) from the free end all the way to the coupling portion (31), such that a connection (52) made of the material used for the decoupling element (51) connects or runs from the coupling portion (31) along the wing to the decoupling element (51) at the free end;
and/or
the foot portion (30) comprises a further wing (50') connected to the foot portion (30) via the coupling portion (31) of the foot portion (30) and comprising a further decoupling element (51'), wherein the material used for the decoupling elements (51, 51') also covers the further wing (50') from a free end (50.1') all the way to the coupling portion (31), such that a further connection (52') made of the material used for the further decoupling element (51') connects or runs from the coupling portion (31) along the further wing (50') to the further decoupling element (51') at the free end (50.1').

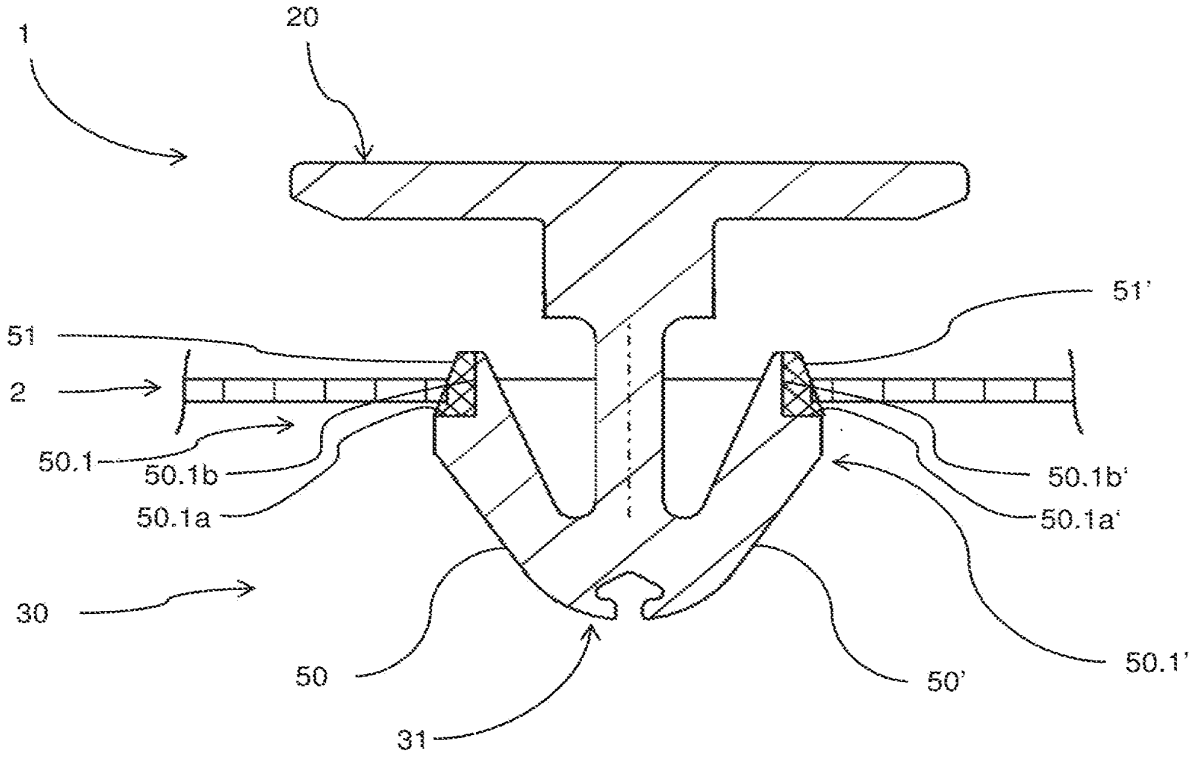


Fig. 1

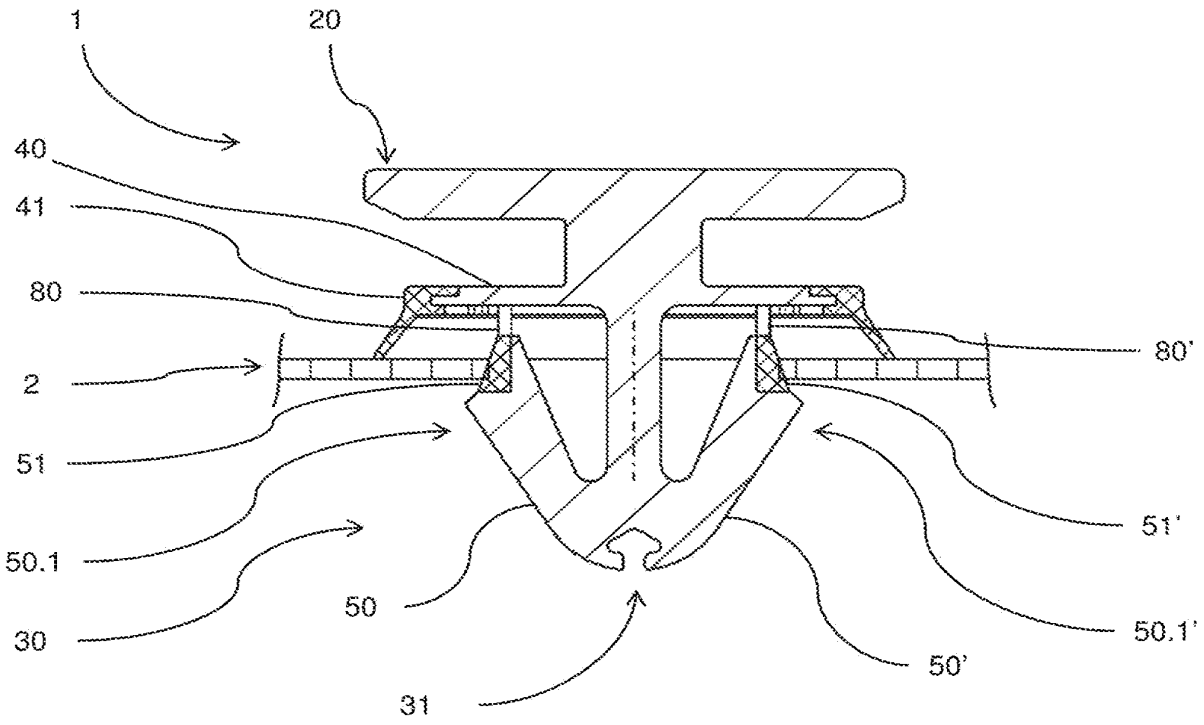

1
20
40
41
80
2
51
50.1
30
50
31
50'
51'
50.1'
80'

Fig. 2A

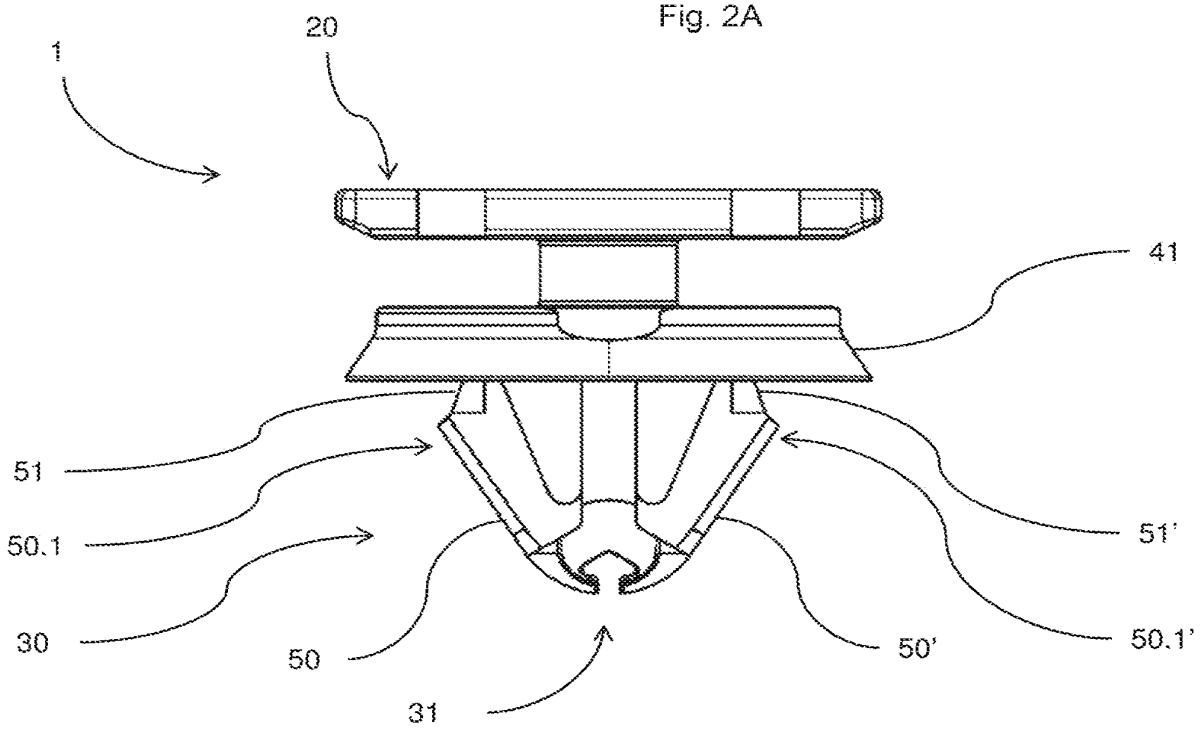

1
20
41
51
50.1
30
50
31
50'
51'
50.1'

Fig. 2B

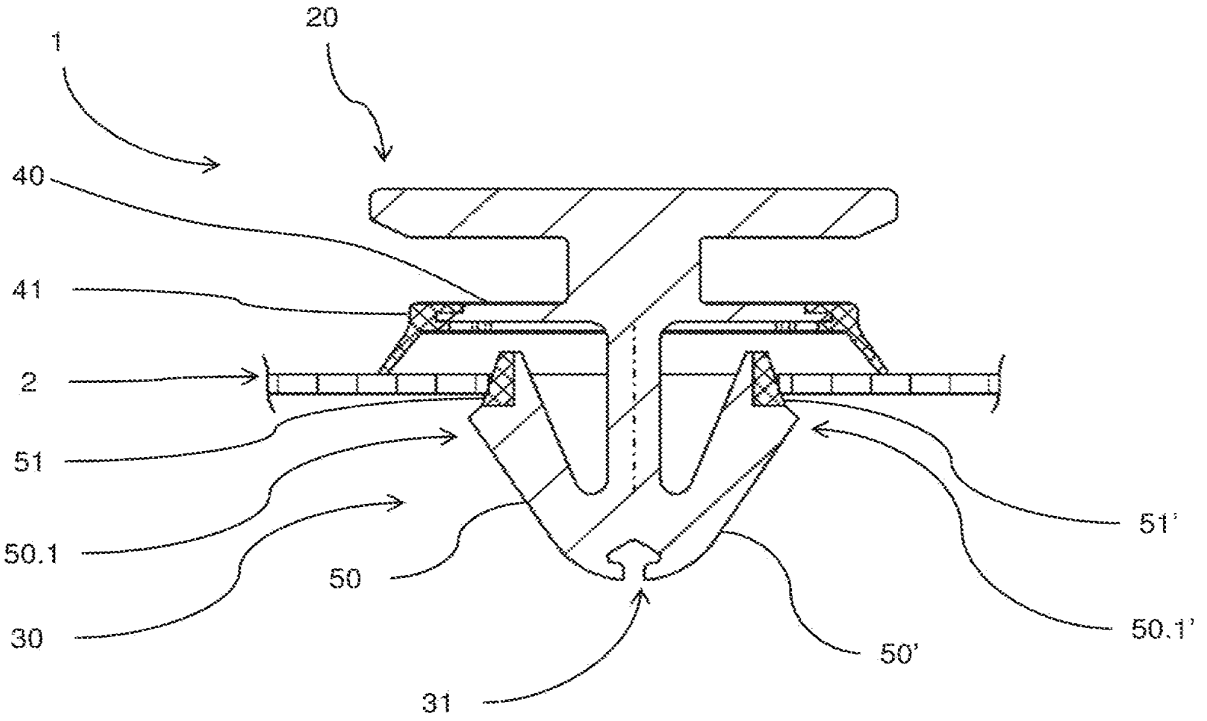

1
20
40
41
2
51
50.1
30
50
31
50'
51'
50.1'

Fig. 3A

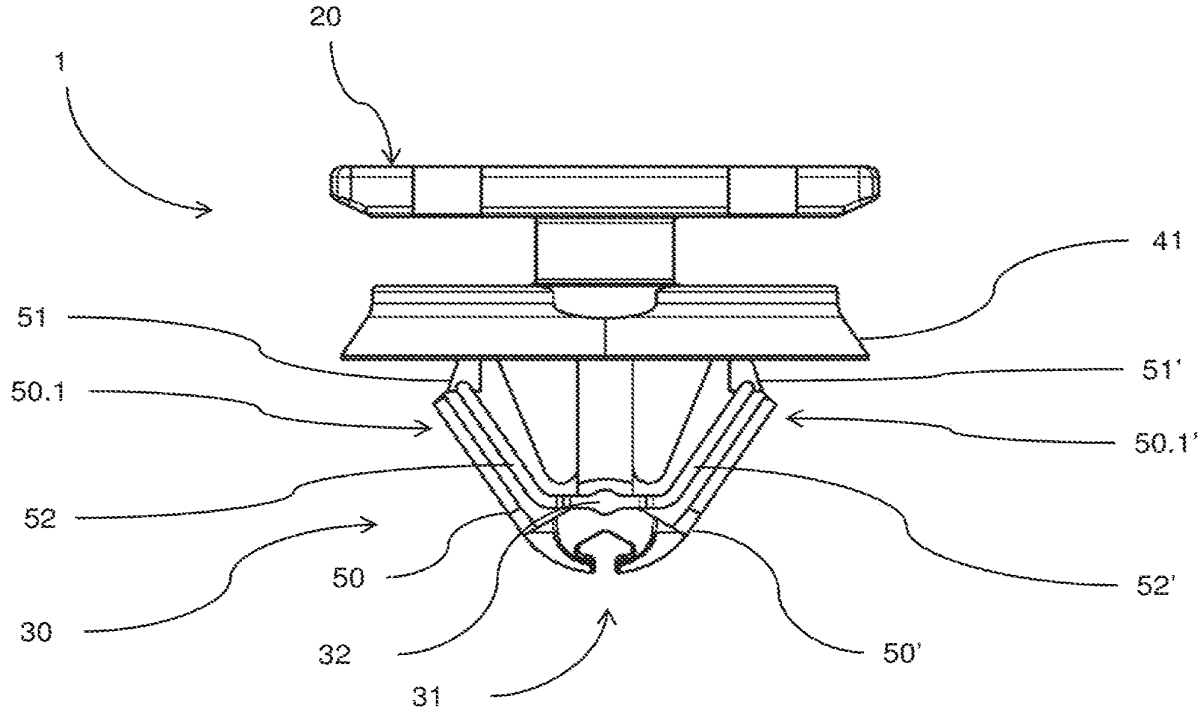

20
1
41
51
51'
50.1
50.1'
52
52'
50
30
32
31
50'

Fig. 3B

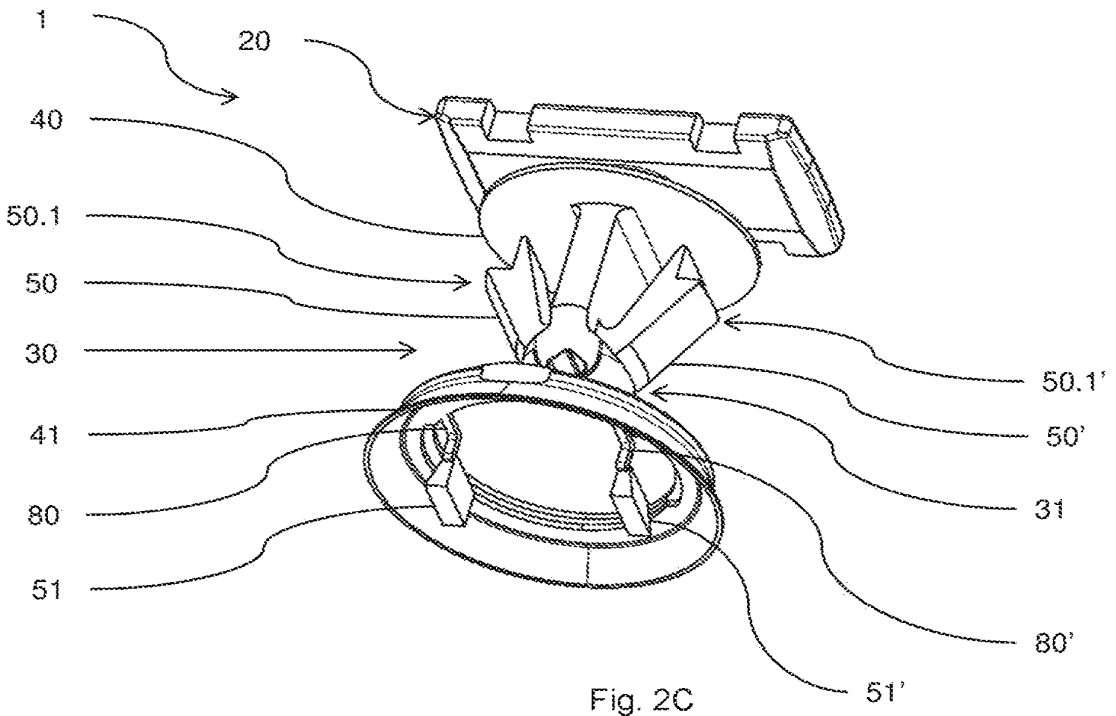

1
20
40
50.1
50
30
41
80
51
50.1'
50'
31
80'
51'

Fig. 2C

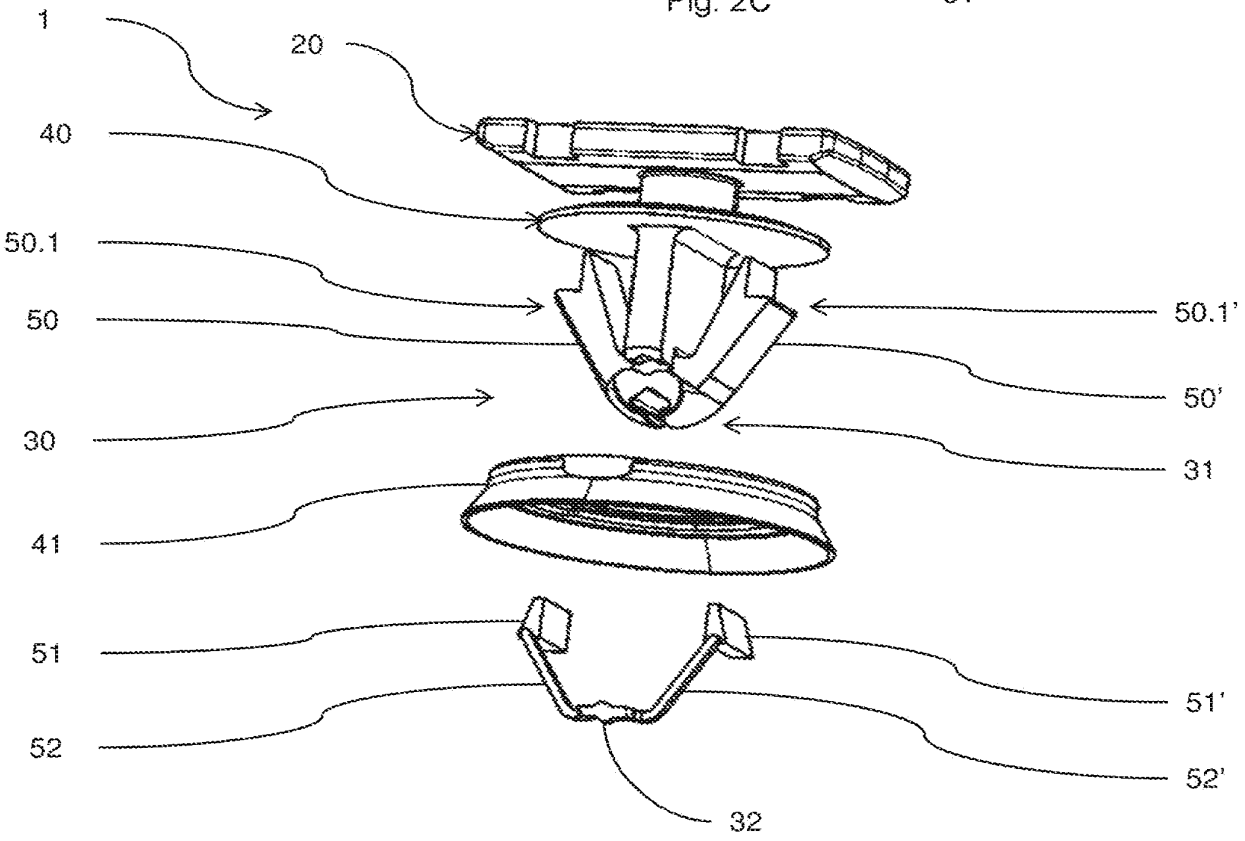

1
20
40
50.1
50
30
41
51
52
50.1'
50'
31
51'
52'
32

Fig. 3C

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2017/030967

A. CLASSIFICATION OF SUBJECT MATTER
INV. F16B21/08 F16B5/06 B60R13/02
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F16B B60R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2015/322985 A1 (SCROGGIE DEREK [US] ET AL) 12 November 2015 (2015-11-12) paragraphs [0002], [0024]; figures 2,3	1-19
Y	US 2010/026028 A1 (SMITH MICHAEL WALTER [US] ET AL) 4 February 2010 (2010-02-04) paragraphs [0002], [0050]	1-19
A	US 2002/066166 A1 (GRAMSS RAINER [DE]) 6 June 2002 (2002-06-06) paragraphs [0002], [0008], [0010], [0013]	1-19
A	WO 2013/142559 A2 (ILLINOIS TOOL WORKS [US]) 26 September 2013 (2013-09-26) claims 12-15	1-19

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
28 July 2017	23/08/2017

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Garmendia, Ion

1

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2017/030967

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2015322985 A1	12-11-2015	CN 104854355 A	19-08-2015
		US 2015322985 A1	12-11-2015
		WO 2014099444 A1	26-06-2014
US 2010026028 A1	04-02-2010	NONE	
US 2002066166 A1	06-06-2002	BR 0105892 A	13-08-2002
		DE 10060236 C1	04-07-2002
		ES 2192465 A1	01-10-2003
		US 2002066166 A1	06-06-2002
WO 2013142559 A2	26-09-2013	DE 102012005739 A1	26-09-2013
		EP 2828070 A2	28-01-2015
		US 2015117939 A1	30-04-2015
		WO 2013142559 A2	26-09-2013

Title (Translation)	Fastener for fastening an element, which is to be fastened, to a carrier part of a vehicle with reduced corrosion risk		
Publication Number	WO2017205022A1	Publication Date	30 Nov 2017
Application Number	PCT/US2017/030967	Application Date	04 May 2017
Standardized Assignee (Translated)	ILLINOIS TOOL WORKS US		
Assignee Name (Translated)	ILLINOIS TOOL WORKS INC.		
Current Assignee (Translation)	ILLINOIS TOOL WORKS INC.		
Standardized Inventor	STELLWAG PHILIP DOMINGUEZ DAVID SPANIER MARCO		
Inventor Name	STELLWAG, PHILIP DOMINGUEZ, DAVID SPANIER, MARCO		
IPC	F16B21/08 F16B5/06 B60R13/02		
CPC	F16B5/0621 B60R13/0206 F16B21/086 F16B33/008		
Priority Data	102016109760 26 May 2016 DE		
External Link	Espacenet WIPO		

Abstract (Translated)

A fastener (1) for fastening an element to be fastened to a carrier part (2) of a vehicle, includes a head portion (20), configured for being fastened to the element to be fastened, a foot portion (30), configured for being fastened to the carrier part (2), - at least one wing (50) connected to the foot portion (30) via a coupling portion (31) of the foot portion (30); the wing (50) includes a decoupling element (51), pre-mounted to the foot portion (30) and covering at least a portion of the wing (50), such that when the foot portion (30) is fastened to the carrier part (2) the decoupling element (51) contacts the carrier part (2), wherein the decoupling element (51) is made of a material softer than at least the material of the portion of the wing (50) covered by the decoupling element (51).

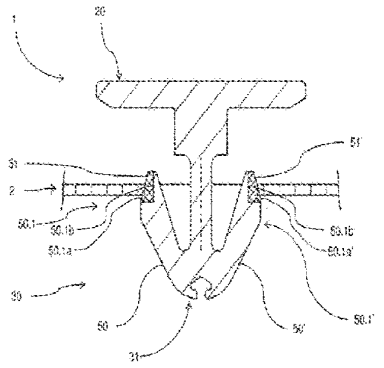


Fig.1

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31 March 2008 (31.03.2008)

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(74) Agents: **PACE, Vincent, T.** et al.; Dann, Dorfman, Herrell And Skillman, P.C., 1601 Market Street, Suite 2400, Philadelphia, PA 19103-2307 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

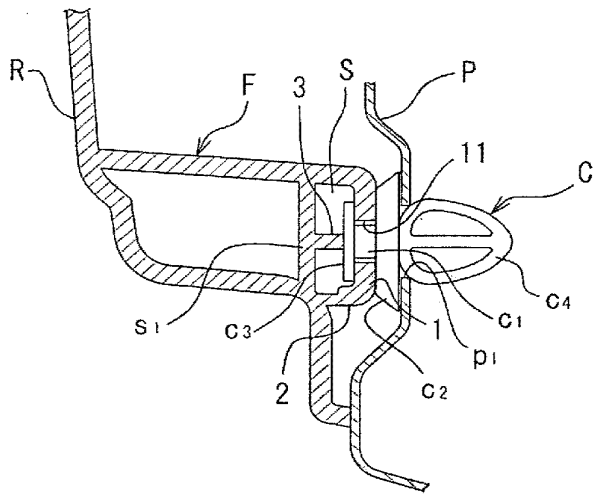
(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

[Continued on next page]

(54) Title: CLIP-MOUNTING SEAT AND VEHICLE INTERIOR COMPONENT

FIG. 2



(57) Abstract: A clip-mounting seat for mounting a clip to a vehicle interior component is disclosed. The clip includes a pillar-shaped axial portion.The clip-mounting seat includes a clip seating section, the clip seating section having an engaging hole for engagingly receiving the axial portion of the clip, and a pair of guide edge portions extending to the engaging hole from a side of the clip seating section to thereby form a tapered silt for allowing the axial portion of the clip to be slid along the pair of guide edge portions and allowing the axial portion of the clip to be guided into the engaging hole.

WO 2009/123616 A1

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*

CLIP-MOUNTING SEAT AND VEHICLE INTERIOR COMPONENT

DESCRIPTION

Field of the Invention

[0001] The present invention relates mainly to a clip-mounting seat which is used to mount a clip on an inner surface side of a vehicle interior component, the vehicle interior component being adapted to be opposingly fixed to a vehicle body panel by the clip.

Background of the Invention

[0002] Generally, in a vehicle interior component such as a door lining, a rear corner panel, etc., a plurality of anchor-shaped clips are provided at an inner surface of the vehicle interior component. The clips are press-fitted into stop holes formed in a panel surface of a vehicle body panel, whereby the vehicle interior component is opposingly fixed to the vehicle body panel.

[0003] More particularly, the clips are provided at the inner surface of the vehicle interior component via clip-mounting seats which are provided at the inner surface of the vehicle interior component. The clip-mounting seats of the vehicle interior component include seating sections on which the clips are to be seated (hereinafter referred to as "clip seating sections"). The clips include base sections, and tip end portions which are protruded from the base sections and are to be press-fitted into the stop holes of the vehicle body panel. The clips are provided at the inner surface of the vehicle interior component with portions of the base sections thereof being seated on the clip seating section of the vehicle interior component.

[0004] Referring now to Figs. 8 and 9, the conventional clip-mounting seat will be

discussed hereinafter in order to facilitate understanding of the present invention. As shown in Fig. 8, the conventional clip-mounting seat includes the clip seating section 1 on which the clip (not shown) is to be seated and which has an engaging hole 11 for engagingly receiving a pillar-shaped axial portion of the clip, and guide edge portions 10a, 10b for allowing the axial portion of the clip to be slid along the guide edge portions 10a, 10b and allowing the axial portion of the clip to be guided into the engaging hole 11.

[0005] The guide edge portions 10a, 10b extend inwardly from a side portion of the clip seating section 1, to thereby form a tapered slit having an inner end smaller in size than an outer diameter of the axial portion of the clip. The engaging hole 11 is formed into a substantially circular shape having a size which is larger than the outer diameter of the axial portion of the clip and allows the clip to be capable of being shifted so as to positionally match a corresponding stop hole of the vehicle body panel when the vehicle interior component is to be fixed to the vehicle body panel. The engaging hole 11 continues from inner ends of the guide edge portions 10a, 10b.

[0006] . The clips which are provided at the vehicle interior component through the clip-mounting seats constructed as discussed above will be easily removed from the vehicle interior component during transportation of the vehicle interior component and/or fixing of the vehicle interior component to the vehicle body panel. The removal of the clips is brought about by a reason for which, when loads applied in such a direction X (indicated in Fig. 9 by an arrow) that the clips are disengaged from the clip seating sections of the clip-mounting seats is applied to the clips, the loads are concentrated on the inner ends of the guide edge portions 10a, 10b of the clip seating sections, to thereby cause the guide edge portions 10a, 10b to be operatively opened relative to each other.

[0007] Moreover, there are also proposed clip-mounting seats which, as shown in Figs. 10 and 11, include clip seating sections 1', 1" having engaging holes 11', 11" and guide edge portions 10a', 10b', 10a", 10b" and in the clip seating sections 1', 1" of which notched portions 13' and 13" are provided so as to extend along the guide edge portions 10a', 10b' and 10a" from the engaging holes 11', 11", whereby the guide edge portions 10a', 10b' and 10a" are adapted to serve as leaf-spring-shaped arms which are elastically deformable (Japanese Utility Model Application Laid-Open No. Sho. 52-137411 and Japanese Patent Application Laid-Open No. Hei. 6-270675).

[0008] With each of the conventional clip-mounting seats, the axial portion of the clip is slid along the guide edge portions 10a', 10b' (10a", 10b") and easily guided into the engaging holes 11' (11"). However, when a load in such a direction that the clip is disengaged from the engaging hole 11' (11") is applied to the clip and concentrated on inner ends of the guide edge portions 10a', 10b' (10a", 10b"), the guide edge portions 10a', 10b' (10a", 10b") are easy to be opened relative to each other. Therefore, each of the conventional clip-mounting seats fails to exert the function of preventing the disengagement of the clip from the clip-mounting seat. Moreover, the notched portions 13', 13" are formed by cutting the clip seating sections 1', 1", so that the guide edge portions 10a', 10b', 10a" are easy to be broken and rigidity of the clip seating sections 1', 1" is decreased.

Summary of the Invention

[0009] The present invention has been made with a view to overcoming the foregoing problems of the prior art clip-mounting seats.

[0010] It is therefore an object of the present invention to provide a clip-mounting seat which includes a clip seating section having an engaging hole for engaging an axial portion of a clip, and guide edge portions for allowing the axial portion of the clip to be

guided along the guide edge portions and allowing the axial portion of the clip to be guided into the engaging hole, wherein rigidity of the clip seating section is not decreased and disengagement of the clip from the clip seating section can be positively prevented.

[0011] It is another object of the present invention to provided a vehicle interior component provided with a plurality of clip-mounting seat as stated above.

[0012] In accordance with one aspect of the present invention, there is provided a clip-mounting seat for mounting a clip to a vehicle interior component. The clip includes a pillar-shaped axial portion. The clip-mounting seat includes a clip seating section, the clip seating section having an engaging hole for engagingly receiving the axial portion of the clip, and a pair of guide edge portions extending to the engaging hole from a side of the clip seating section to thereby form a tapered slit for allowing the axial portion of the clip to be slid along the pair of guide edge portions and allowing the axial portion of the clip to be guided into the engaging hole. The tapered slit has an inner end smaller in size than an outer diameter of the axial portion of the clip. The engaging hole is formed into a substantially circular shape having a size larger than the outer diameter of the axial portion of the clip; and the engaging hole continuing from inner ends of the guide edge portions. At least one of the guide edge portions is provided with a protruding piece projecting into the engaging hole from an inner end of the at least one of the guide edge portions. The protruding piece includes a tip end surface having a width that allows the tip end surface to be operatively come surface-contact with the axial portion of the clip.

[0013] In the clip-mounting seat, the at least one of the guide edge portions is provided with the protruding piece which includes the tip end surface having the width that allows the tip end surface to be operatively come surface-contact with the axial

portion of the clip, so that even if the clip is moved by a load applied in such a direction that the clip is disengaged from the engaging hole of the clip-mounting seat, the protruding piece operatively comes into surface-contact with the axial portion of the clip, the load that has the tendency to cause the clip to be disengaged from the engaging hole can be positively received by the protruding piece and can be distributed, the clip is shifted to a region of the engaging hole which is adjacent the guide edge portion that is not provided with any protruding piece, and the axial portion of the clip does not come into point-contact with the inner end of the guide edge portion 10b. Therefore, the guide edge portions are hard to be opened relative to each other. Thus, it is possible to prevent the clip from being disengaged from the clip-mounting seat without allowing rigidity of the clip seating section to be decreased.

[0014] Each of the guide edge portions may be provided with the protruding piece. In this case, even if the clip is moved by a load applied in such a direction that the clip is slid along the guide edge portions and disengaged from the engaging hole, the tip end surfaces of the protruding pieces operatively come into surface-contact with the axial portion of the clip, whereby the load that has the tendency to cause the clip to be disengaged from the engaging hole can be effectively received by the protruding pieces and can be distributed, so that the guide edge portions can be positively prevented from being opened relative to each other.

[0015] The tip end surface of the protruding piece may be formed into a circular arc-shape so as to fit around the axial portion of the clip. In this case, the protruding piece can positively fit around the axial portion of the clip.

[0016] According to a further aspect of the present invention, there is provided a vehicle interior component which is provided with a plurality of clip-mounting seats as set forth above. Transportation of the vehicle interior component can be performed

without causing any inconvenience and fixing of the vehicle interior component to a vehicle body panel can be easily performed without causing any inconvenience.

Brief Description of the Drawings

[0017] Fig. 1 is a schematic perspective view of a door lining at which a plurality of clip-mounting seats according to the present invention are provided;

[0018] Fig. 2 is a schematic sectional view of the door lining of Fig. 1, taken on a plane indicated in Fig. 1 by a line A-A;

[0019] Fig. 3 is a schematic side view of a clip-mounting seat according to the present invention;

[0020] Fig. 4 is a schematic enlarged fragmentary side view of the clip-mounting seat of Fig. 3;

[0021] Fig. 5 is a schematic side view of the clip-mounting seat of Fig. 3, which is of assistance in explaining a situation where a clip is prevented from being disengaged from the clip-mounting seat;

[0022] Fig. 6 is a schematic enlarged fragmentary side view of a modification of the clip-mounting seat of Fig. 3;

[0023] Fig. 7 is a schematic side view of another modification of the clip-mounting seat of Fig. 3, which is of assistance in explaining a situation where a clip is prevented from being disengaged from the modification;

[0024] Fig. 8 is a schematic side view of a conventional clip-mounting seat;

[0025] Fig. 9 is a schematic side view of the conventional clip-mounting seat, which is of assistance in explaining a situation where a clip is disengaged from the conventional clip-mounting seat;

[0026] Fig. 10 is a schematic side view of another conventional clip-mounting seat;

and

[0027] Fig. 11 is a schematic side view of still another conventional clip-mounting seat.

Detailed Description

[0028] Referring now to Figs. 1 and 2, there is illustrated a vehicle interior component R, for example, a door lining, in which a plurality of clip-mounting seats F according to the present invention for supporting anchor-shaped clips that are used in order to cause the door lining R to be opposingly fixed to a panel surface of a vehicle body panel, for example, a door panel P are disposed at predetermined intervals along peripheral edge portions of an inner surface of the door lining R except an upper edge portion of the inner surface of the door lining R.

[0029] As shown in Fig. 2, each of the clip-mounting seats F (only one clip-mounting seat F is shown in Fig. 2) comprises a clip seating section 1, a peripheral wall section 2 standing up from the inner surface of the door lining R and defining a space S in which a portion of a base section of a corresponding clip C is to be received, and a rising rib 3 rising up from a bottom plate s1 of the space S for stoppingly supporting the base section of the clip C. The clip seating section 1 of the clip-mounting seat F is formed with an engaging hole 11. In the illustrated example, the door lining R and the clip-mounting seats F are formed integrally of, for example, polypropylene resin by injection molding.

[0030] Each of the clips C (only one clip C is shown in Fig. 2) comprises the base section having a pillar-shaped axial portion c1, a first flange portion c2 and a second flange portion c3 connected to the first flange portion c2 through the pillar-shaped axial portion c1, and an anchor-shaped tip end portion c4. The clip C is adapted to be

mounted through a corresponding clip-mounting seat F to the inner surface of the door lining R, with the axial portion c1 thereof being engagingly received in the engaging hole 11 of the clip-mounting seat F, with the first flange portion c2 thereof being seated on the clip seating section 1 of the clip-mounting seat F, with the first and second flange portions c2, c3 thereof interposingly holding the clip seating section 1 of the clip-mounting seat F, and with the second flange portion c3 thereof being stoppingly supported by the rising rib 3 of the clip-mounting seat F. The door lining having the clips mounted through the clip-mounting seats F to the inner surface thereof is opposingly fixed to the door panel P by causing the anchor-shaped tip portions c4 of the clips to be press-fitted into through-holes p1 (only one through-hole p1 is shown in Fig. 2) which are formed in the door panel P.

[0031] The clip seating section 1 of each of the clip-mounting seats F according to the present invention is basically similar to that of the clip-mounting seat which is shown in Fig. 8. Referring now to Fig. 3, there is illustrated the clip seating section 1 of the clip-mounting seat F according to the present invention. In Fig. 3, elements of the clip seating section 1 of the clip-mounting seat F of the present invention that are substantially similar to those of the clip seating section shown in Fig. 8 are denoted by the same reference numerals. As shown in Fig. 3, the clip seating section 1 of the clip-mounting seat F according to the present invention is formed into a substantially U-shape as viewed from the side and has the engaging hole 11 and a pair of guide edge portions 10a, 10b extending to the engaging hole 11 for allowing the pillar-shaped axial portion c1 of a corresponding clip to be slid along the guide edge portions 10a, 10b and allowing the pillar-shaped axial portion c1 of the clip C to be guided into the engaging hole 11.

[0032] The guide edge portions 10a, 10b extend inwardly from a side portion of the

clip seating section 11, to thereby form a tapered slit having an inner end smaller in size than an outer diameter of the axial portion c1 of the clip. The engaging hole 11 is formed into a substantially circular shape having a size larger than the outer diameter of the axial portion c1 of the clip C, and continues from inner ends of the guide edge portions 10a, 10b.

[0033] In addition to the basic structure of the clip seating section 1, the clip seating section 1 of the clip-mounting seat F according to the present invention has protruding pieces 12a, 12b projecting into the engaging hole 11 from the inner ends of the guide edge portions 10a, 10b. Each of the protruding pieces 12a, 12b is provided with a tip end surface which has a width that allows the tip end surface to come into surface-contact with the axial portion c1 of the clip. Each of the protruding pieces 12a, 12b is formed in such a manner that one side of the protruding piece extends linearly from a corresponding guide edge portion 10a (or 10b). As shown in Fig. 4, the tip end surfaces of the protruding pieces 12a, 12b are formed into circular arc-shapes so as to fit around the axial portion c1 of the clip.

[0034] In the clip seating section 1 of the clip-mounting seat that is constructed as discussed above, even if the clip is moved by a load applied in such a direction X (indicated in Fig. 5 by an arrow) that the clip is slid along the guide edge portions 10a, 10b and disengaged from the engaging hole 11, the tip end surfaces of the protruding pieces 12a, 12b operatively come into surface-contact with the axial portion c1 of the clip, whereby the load that has the tendency to cause the clip to be disengaged from the engaging hole 11 can be effectively received by the protruding pieces 12a, 12b and can be distributed, so that the guide edge portions 10a, 10b can be positively prevented from being opened relative to each other. By this, it is possible to prevent the clip from being disconnected from the clip seating section of the clip-mounting seat, without

allowing rigidity of the clip seating section 1 to be decreased.

[0035] As long as the protruding pieces 12a, 12b can operatively come into surface-contact with the axial portion c1 of the clip at the tip end surfaces thereof, the sides of the protruding pieces are not formed so as to extend linearly from the guide edge portions 10a, 10b and may be formed so as to have slope regions 13a, 13b which are inclined to the engaging hole 11 from the inner ends of the guide edge portions 10a, 10b as shown in Fig. 6. In this case, it is possible to cause an interval between the inner ends of the guide edge portions 10a, 10b not to become much narrower than a required level.

[0036] While it is preferable that the protruding pieces are provided at both the inner ends of the guide edge portions 10a, 10b, the protruding piece 12a and the protruding piece 12b are not necessarily provided at the inner end of the guide edge portion 10a and the inner end of the guide edge portion 10b, respectively. As shown in Fig. 7, a protruding piece 12 may be provided at any one of the inner ends of the guide edge portions 10a, 10b (in the example shown in Fig. 7, the protruding piece 12 is provided at the inner end of the guide edge portion 10a). In this case, even if the clip is moved by a load applied in the direction that the clip is slid along the guide edge portions 10a, 10b and disengaged from the engaging hole 11, the protruding piece 12 also operatively comes into surface-contact with the axial portion c1 of the clip at a tip end surface thereof having a circular arc-shape, whereby the load that has the tendency to cause the clip to be disengaged from the engaging hole 11 can be positively received by the protruding piece 12 and can be distributed, the clip is shifted to a region of the engaging hole 11 which is adjacent the guide edge portion 10b that is not provided with any protruding piece, and the axial portion c1 of the clip does not come into point-contact with the inner end of the guide edge portion 10b, so that the guide edge

portions 10a, 10b are hard to be opened relative to each other.

[0037] As discussed above, the door lining R (Fig. 1) has the clips mounted to the inner surface thereof through the clip-mounting seats which facilitate preventing of disengagement of the clips therefrom, so that transportation of the door lining R can be performed without causing any inconvenience and fixing of the door lining to the vehicle body panel such as the door panel P (Fig. 1) can be easily performed without causing any inconvenience.

[0038] While the case where the clip seating section of the clip-mounting seat has the substantially U-shape as viewed from the side has been discussed above, the shape of the clip seating section of the clip-mounting seat may be a substantially square-shape as viewed from the side. Moreover, while the clip-mounting seat has the peripheral wall section 2 standing up from the vehicle interior component, it may has a pair of opposing plates standing up from the inner surface of the vehicle interior component, in lieu of the peripheral wall section 2. In this case, the opposing plates are interconnected by the clip seating section 1 and the bottom plate s1. Moreover, while the case where the entire clip-mounting seats are formed integrally with the door lining has been discussed above, the clip-mounting seats which are formed separately from the door lining may be mounted to the door lining.

[0039] The terms and expressions which have been employed are used as terms of description and not of limitation, and there is no intention in the use of such terms and expressions of excluding any equivalents of the features shown and described, or portions thereof, but it is recognized that various modifications are possible within the scope of the invention claimed.

What is claimed is:

1. A clip-mounting seat for mounting a clip to a vehicle interior component, said clip including a pillar-shaped axial portion, said clip-mounting seat including a clip seating section; said clip seating section having an engaging hole for engagingly receiving said axial portion of said clip, and a pair of guide edge portions extending to said engaging hole from a side of said clip seating section to thereby form a tapered slit for allowing said axial portion of said clip to be slid along said pair of guide edge portions and allowing said axial portion of said clip to be guided into said engaging hole; said tapered slit having an inner end smaller in size than an outer diameter of said axial portion of said clip; said engaging hole being formed into a substantially circular shape having a size larger than said outer diameter of said axial portion of said clip; and said engaging hole continuing from inner ends of said guide edge portions; wherein at least one of said guide edge portions is provided with a protruding piece projecting into said engaging hole from an inner end of said at least one of said guide edge portions, said protruding piece including a tip end surface having a width that allows said tip end surface to be operatively come surface-contact with said axial portion of said clip.

2. A clip-mounting seat as set forth in Claim 1, wherein each of said guide edge portions is provided with said protruding piece.

3. A clip-mounting seat as set forth in Claim 1, wherein said tip end surface is formed into a circular arc-shape so as to fit around said axial portion of said clip.

4. A clip-mounting seat as set forth in Claim 2, wherein said tip end surface is formed into a circular arc-shape so as to fit around said axial portion of said clip.

5. A vehicle interior component having a plurality of clip-mounting seats as set forth in Claim 1 or 2.

6. A vehicle interior component having a plurality of clip-mounting seats as set forth in Claim 3 or 4.

FIG. 1

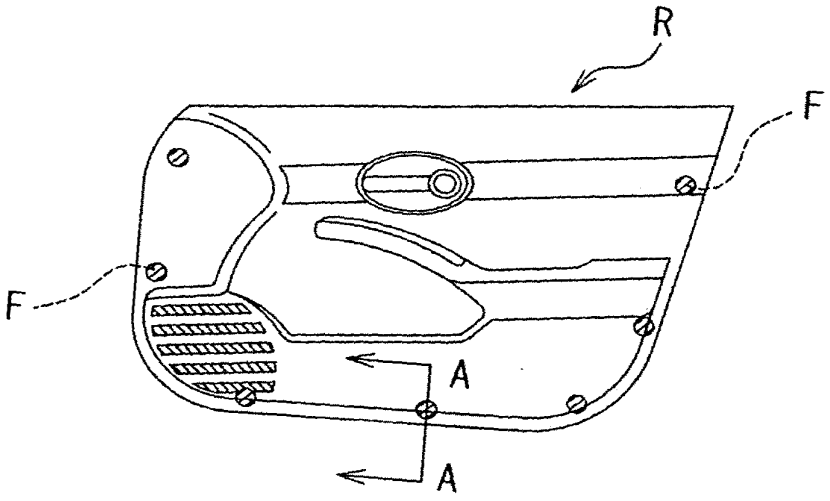


FIG. 2

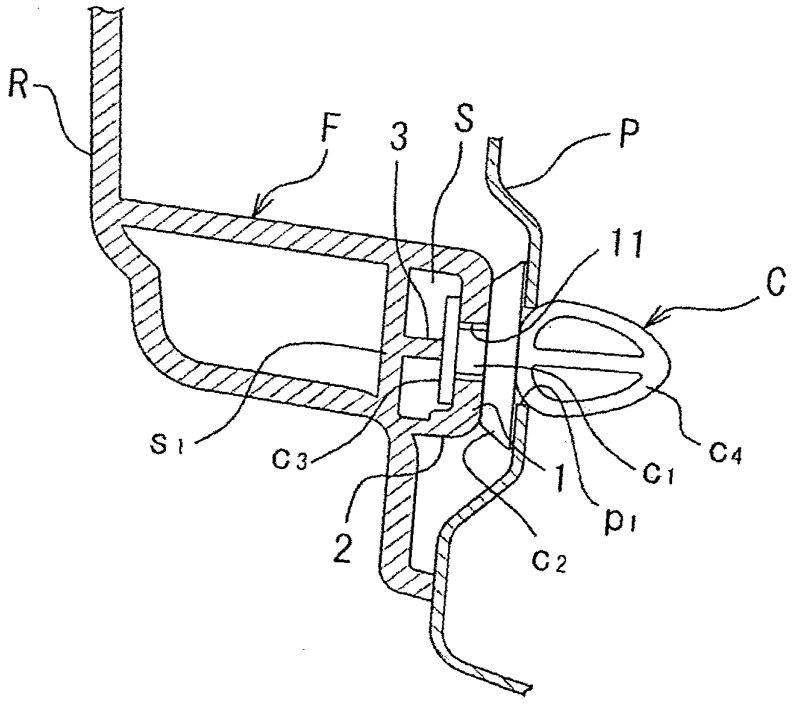


FIG. 3

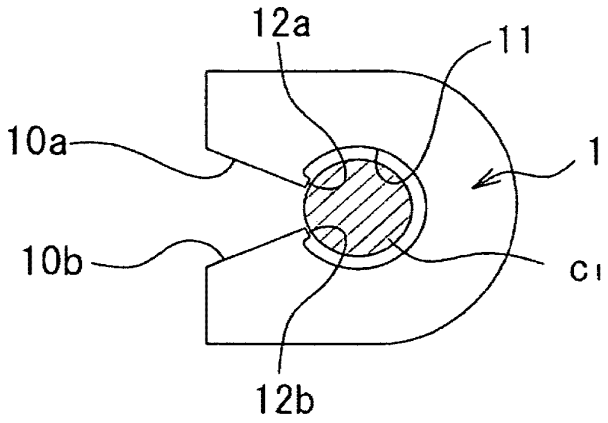


FIG. 4

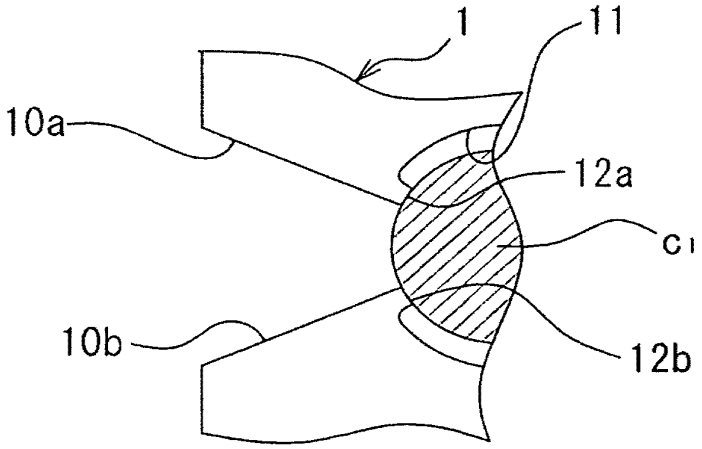


FIG. 5

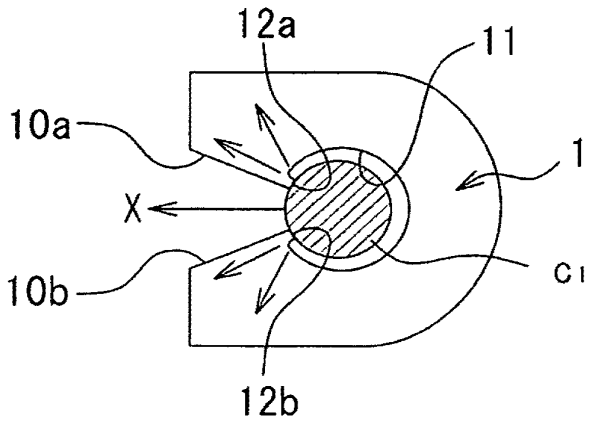


FIG. 6

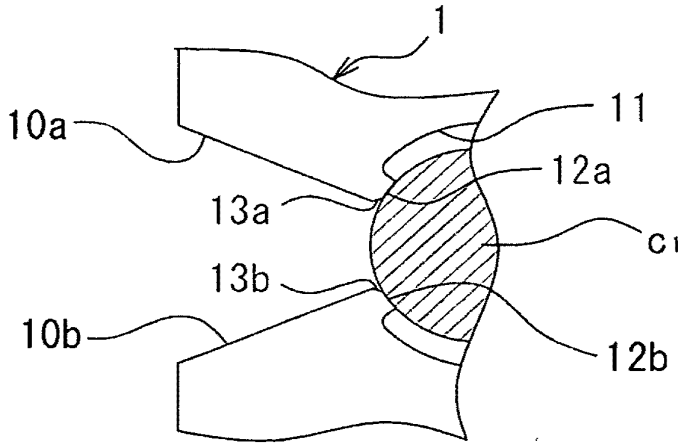


FIG. 7

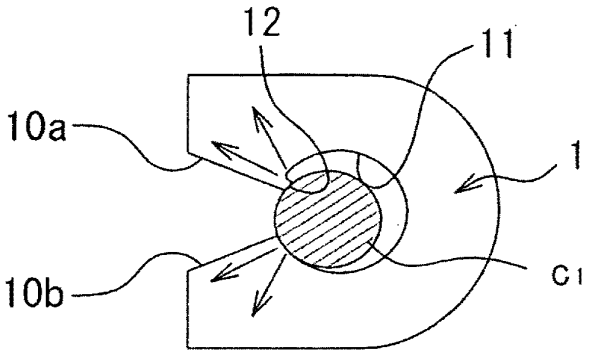


FIG. 8

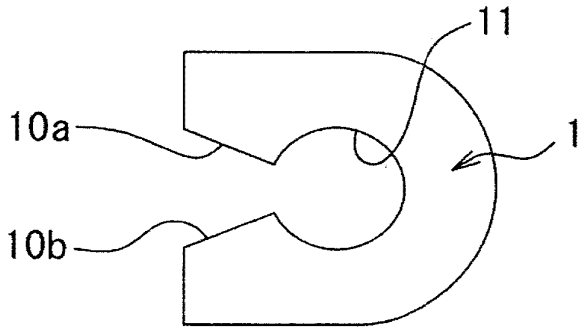


FIG. 9

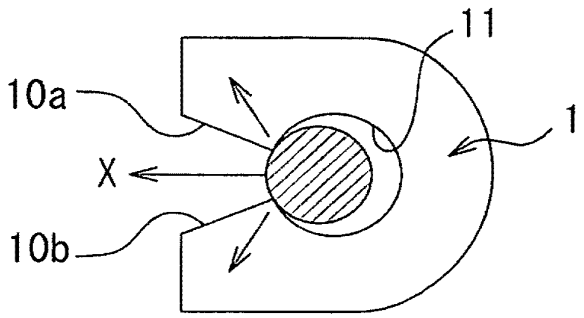


FIG. 10

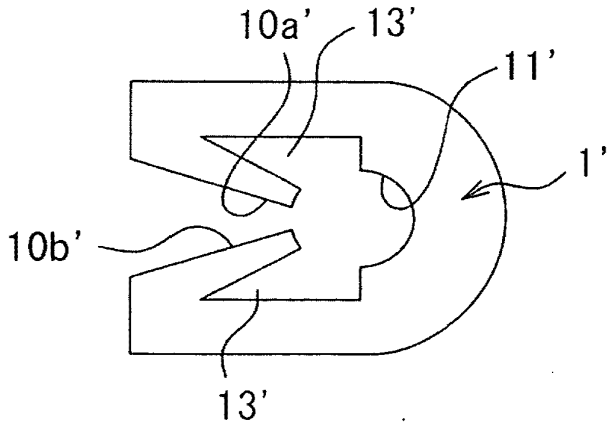
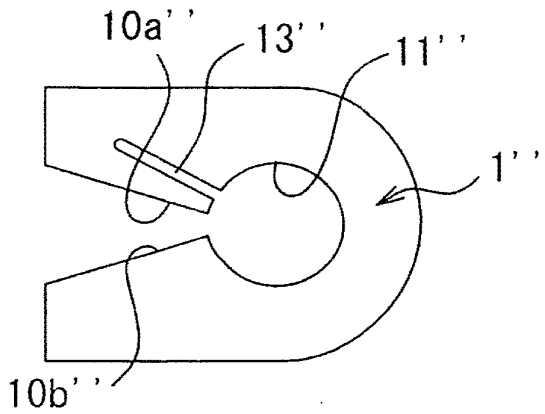


FIG. 11



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 08/58954

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A44B 21/00 (2008.04)
USPC - 24/458
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8)- A44B 21/00 (2008.04)
USPC- 24/458

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
IPC(8)- A44B 21/00 (2008.04)
USPC- 24/458, 49/502, 49/350, 248/544

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST(USPT,PGPB,EPAB,JPAB); DialogPRO(Engineering); Google Scholar
Search Terms: seat, clip, mounting, vehicle, axial, hole, door, pin, car, slide

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,694,719 A (Bejune et al.) 9 December 1997 (09.12.1997), Figures 2, 6, 13, and Column 8	1-6
A	US 6,481,682 B2 (Miura) 19 November 2002 (19.11.2002), entire document	1-6
A	US 6,918,162 B2 (Bodo) 19 July 2002 (19.07.2005), entire document	1-6

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
2 August 2008 (02.08.2008)	AUGUST 19, 2008
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

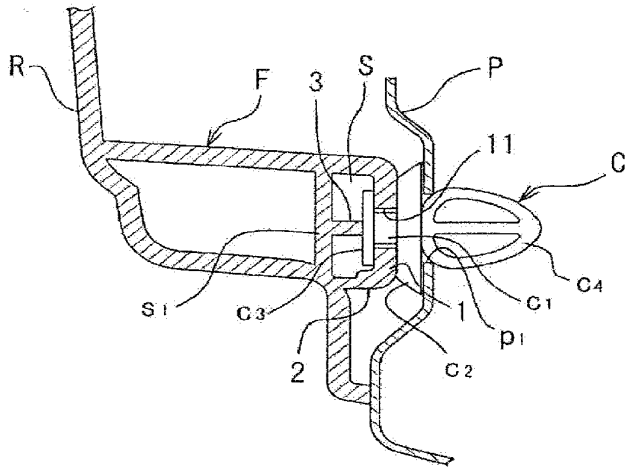
Form PCT/ISA/210 (second sheet) (April 2007)

patsnap

Title (Translation)	Clip-mounting seat and vehicle interior component		
Publication Number	WO2009123616A1	Publication Date	08 Oct 2009
Application Number	PCT/US2008/058954	Application Date	31 Mar 2008
Standardized Assignee (Translated)	T STEC KK IWASAKI TAKASHI		
Assignee Name (Translated)	TS TECH CO., LTD. IWASAKI, TAKASHI		
Current Assignee (Translation)	TS TECH CO., LTD. IWASAKI, TAKASHI		
Standardized Inventor	IWASAKI TAKASHI		
Inventor Name	IWASAKI, TAKASHI		
IPC	A44B99/00 A44B21/00		
CPC	F16B5/065 F16B19/00 F16B5/0664 F16B21/186 B60R13/0206 F16B5/0657 B60J5/0468 Y10T24/303 Y10T24/44026		
External Link	Espacenet WIPO		

Abstract (Translated)

A clip-mounting seat for mounting a clip to a vehicle interior component is disclosed. The clip includes a pillar-shaped axial portion.The clip-mounting seat includes a clip seating section, the clip seating section having an engaging hole for engagingly receiving the axial portion of the clip, and a pair of guide edge portions extending to the engaging hole from a side of the clip seating section to thereby form a tapered silt for allowing the axial portion of the clip to be slid along the pair of guide edge portions and allowing the axial portion of the clip to be guided into the engaging hole.



(19) RÉPUBLIQUE FRANÇAISE

INSTITUT NATIONAL
DE LA PROPRIÉTÉ INDUSTRIELLE

PARIS

(11) **N° de publication :** **2 913 738**

(à n'utiliser que pour les commandes de reproduction)

(21) **N° d'enregistrement national :** **07 01939**

(51) Int Cl[8] : ***F 16 B 5/06*** *(2006.01), F 16 B 19/00, 21/06, 43/00, B 60 R 13/02*

(12) **BREVET D'INVENTION** **B1**

(54) AGRAFE DE FIXATION.

(22) **Date de dépôt :** 16.03.07.

(30) **Priorité :**

(43) **Date de mise à la disposition du public de la demande :** 19.09.08 Bulletin 08/38.

(45) **Date de la mise à disposition du public du brevet d'invention :** 30.10.09 Bulletin 09/44.

(56) **Liste des documents cités dans le rapport de recherche :**

Se reporter à la fin du présent fascicule

(60) **Références à d'autres documents nationaux apparentés :**

(71) **Demandeur(s) :** *A. RAYMOND ET CIE Société en commandite simple* — FR.

(72) **Inventeur(s) :** RAYMOND ANTOINE.

(73) **Titulaire(s) :**

(74) **Mandataire(s) :** CABINET PRUGNEAU SCHAUB.

FR 2 913 738 - B1

L'invention concerne une agrafe de fixation utilisée pour fixer des éléments sur par exemple un véhicule terrestre notamment à moteur, et tout particulièrement pour fixer un panneau sur un support tel qu'une porte de véhicule terrestre à moteur.

On connaît du document de brevet FR-2673249, une telle agrafe de fixation comportant : un corps en matière plastique moulée relativement rigide, muni d'une tête adaptée à se monter au panneau à travers un orifice, d'un pied adapté à se monter au support à travers un orifice, et d'une collerette disposée à la jonction du pied et de la tête, et une rondelle d'étanchéité en matière plastique relativement molle surmoulée sur la périphérie de la collerette pour assurer une étanchéité avec le support.

Le document de brevet GB-2360322 décrit une agrafe de fixation similaire à celle décrite dans le document précédant mais dans laquelle le surmoulage est conçu pour éviter que la rondelle ne s'échappe de la collerette.

Enfin le document de brevet EP-1025368 décrit une agrafe avec plusieurs collerettes.

Le but de l'invention est de renforcer encore plus l'étanchéité procurée par la rondelle d'une agrafe de fixation telle que définie plus haut.

A cet effet, l'invention a pour objet une agrafe de fixation comportant : un corps en une première matière plastique moulée relativement rigide, muni d'une tête, d'un pied et d'une collerette disposée à la jonction entre la tête et le pied, et une rondelle d'étanchéité en une seconde matière plastique moulée relativement souple qui est fixée à la périphérie de la collerette, caractérisée en ce que la rondelle est fixée à la collerette par une liaison chimique cohésive résultant d'une fusion lors du moulage entre la première matière plastique et la seconde matière plastique.

L'idée à la base de l'invention est donc de choisir deux matières plastiques différentes mais compatibles et de les polymériser lors du

moulage dans des conditions telles à provoquer la liaison cohésive entre la rondelle et la collerette.

L'agrafe selon l'invention trouve à s'appliquer en particulier mais non exclusivement pour la fixation d'un élément sur un support, par exemple un panneau de garnissage des portes d'automobile : le panneau comporte une série d'orifices dans chacun desquels on monte une agrafe, et ensuite on présente le panneau sur la porte ou le support, qui comporte une série d'orifices correspondants dans lesquels s'enclipsent les pieds des agrafes lorsqu'on presse le panneau contre le support. En position fixée, la collerette et la rondelle sont enserrées entre le panneau et le support, la collerette portant contre le panneau et la rondelle contre le support, la coopération de la collerette généralement tronconique et de la rondelle conférant à l'assemblage une excellente étanchéité.

L'invention s'étend à une agrafe de fixation dont la tête est à clipsage, à lanière crantée, à enrubannage, etc pour la fixation de câbles électriques, tubes de conduite ou autres éléments à fixer sur un support muni d'un orifice....

L'invention sera encore mieux comprise à la lecture de la description qui suit et qui est illustrée par le dessin montrant vue en coupe longitudinale une agrafe de fixation d'un panneau sur un support.

Sur la figure unique, on a représenté une agrafe de fixation d'un panneau à un support qui comporte un corps 1 en une première matière plastique moulée relativement rigide, muni d'une tête 2, d'un pied 3 et d'une collerette 4 disposée à la jonction entre la tête et le pied.

La tête 2 comporte un alésage central 2A bordé par un disque annulaire 2B servant de butée pour un blocage de la tête de l'agrafe selon une direction longitudinale.

Le pied 3 est composé d'une âme centrale déformable élastiquement entourée par une jambe formée de deux sections de longueur tronconiques disposées en opposition avec une base commune, l'une 3A

formant l'extrémité libre de la jambe dont la pointe est orientée vers cette extrémité, l'autre 3B dont la pointe est orientée vers la tête 2.

La collerette 4 se présente sous la forme d'un disque annulaire dont le bord extérieur périphérique est muni d'un chanfrein. Quand l'agrafe est montée sur le panneau, ce dernier s'intercale entre le disque 2B de la tête et la collerette 4.

L'agrafe comporte également une rondelle d'étanchéité 5 en une seconde matière plastique moulée relativement souple, c'est-à-dire beaucoup plus molle que la première matière plastique constituant le corps de l'agrafe.

La rondelle 5 a un bord intérieur périphérique 5A présentant une gorge intérieure dans laquelle s'engage le chanfrein du bord extérieur de la collerette 4. Elle a également une lèvre périphérique 5B de forme tronconique qui saille depuis le bord 5A du côté du pied 3 et qui s'évase en allant en direction du pied 3.

Selon l'invention, le bord intérieur périphérique de la rondelle 5 est fixé au bord extérieur périphérique de la collerette par une liaison cohésive lors du moulage de l'agrafe. Par conséquent, le corps 1 incluant la tête 2, le pieds 3 et la collerette 4 avec la rondelle 5 sont donc réalisés d'une seule pièce par moulage des deux matières plastiques respectivement du corps 1 et de la rondelle 5.

Ces deux matières plastiques peuvent être des matières thermoplastiques. Elles sont choisies pour être compatibles pour provoquer cette liaison cohésive lors du moulage par injection en une seule étape du corps et de la rondelle de l'agrafe. La liaison peut par exemple se produire en phase de vulcanisation des matières brutes (les molécules une fois placées à l'intérieur du moule de fabrication de l'agrafe bi-matière se combinent entre elles à des températures données favorisant une bonne accroche chimique).

A titre d'exemple on pourra choisir comme couple de matières plastiques compatibles, par exemple :

- un copolymère acétal POMC (type Hostaform C9021 de la société Ticona ou Kepital F20-30 de la société Kep) avec un styrène copolymère TPE-S (type Thermolast K de la société Kraiburg)
- un PA6/PP (type Orgalloy RS6000 de la société Arkema) avec un TPE-S (type Thermolast K ou Vitaprene de la société VTP)
- un PP (type Exxtral CNU011 de la société ExxonMobil) avec un PP/EPDM (type Santoprene de la société ExxonMobil) ou un SEBS (type Multiflex de la société Multibase)

La cohésion chimique (ou adhésion chimique) est donc basée sur la formation de liaisons chimiques iono-covalentes. Ces liaisons sont parmi les plus fortes (de l'ordre de 1000 kJ/mole) et assurent aux assemblages collés une résistance à la rupture importante et une meilleure durabilité ce qui renforce l'étanchéité procurée par la rondelle de l'agrafe selon l'invention.

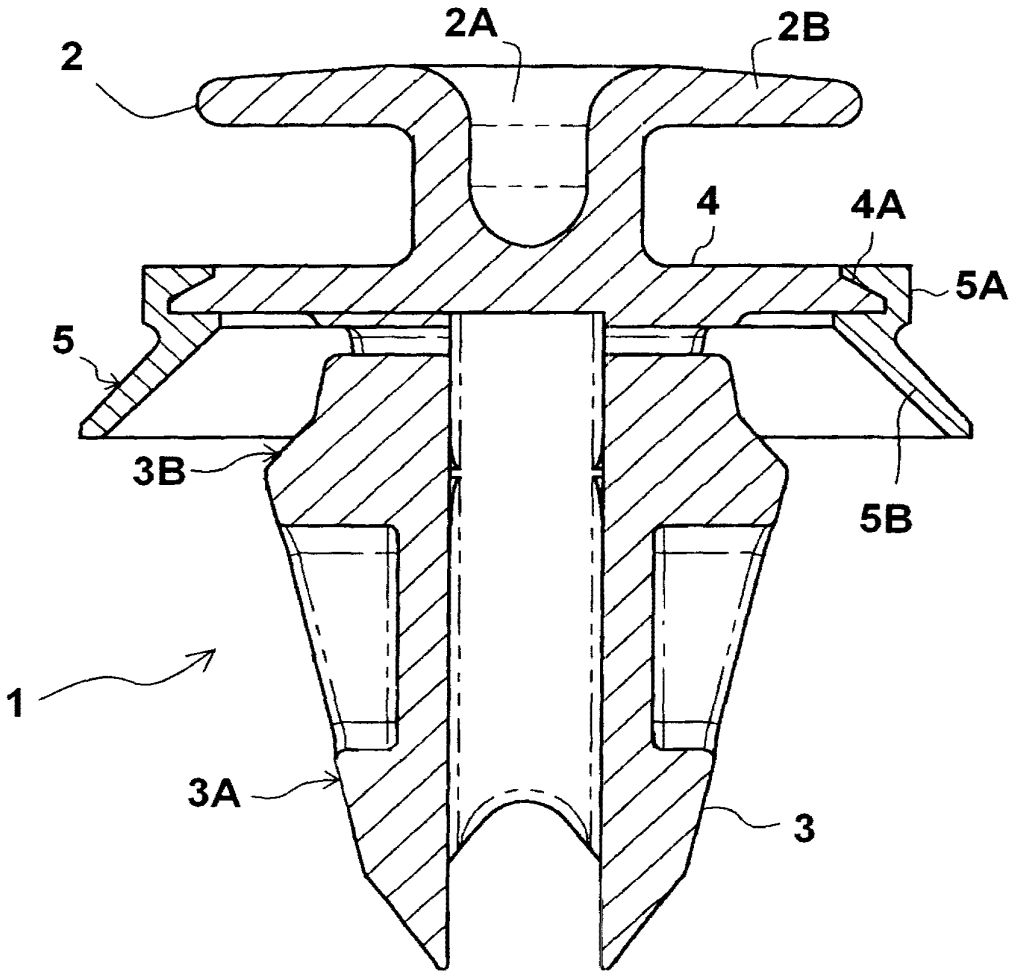
REVENDICATIONS

1) Méthode de fabrication d'une agrafe de fixation par moulage d'un corps (1) en une première matière plastique relativement rigide, muni d'une tête (2), d'un pied (3) et d'une collerette (4) disposée à la jonction entre la tête et le pied, et d'une rondelle d'étanchéité (5) en une seconde matière plastique relativement souple qui est fixée à la périphérie de la collerette, caractérisée en ce qu'elle comprend les étapes consistant à fournir une première matière plastique et une seconde matière plastique compatibles entre elles pour provoquer lors d'une vulcanisation une liaison chimique cohésive, à mouler d'une seule pièce ledit corps (1) et ladite rondelle (5) avec lesdites matières plastique compatibles à l'état brut et à vulcaniser lesdites matières plastique compatibles de ladite pièce pour former ladite liaison cohésive entre ledit corps et ladite rondelle.

2) Méthode selon la revendication 1, dans laquelle on fournit des matières plastique compatibles pour former une liaison iono-covalente lors de la vulcanisation.

3) Agrafe de fixation obtenue par une méthode selon l'une des revendications 1 ou 2, caractérisée en ce que ladite rondelle (5) comporte une lèvre périphérique (5B) de forme tronconique.

4) Agrafe selon la revendication 3, dans laquelle la tête est adaptée à se monter à un panneau et le pied est adapté à se monter à un support, la rondelle assurant l'étanchéité avec le support.


2A
2B
2
4
4A
5A
5
3B
5B
1
3A
3

N° d'enregistrement national : 07 01939 N° de publication :

RAPPORT DE RECHERCHE

articles L.612-14, L.612-17 et R.612-53 à 69 du code de la propriété intellectuelle

OBJET DU RAPPORT DE RECHERCHE

L'I.N.P.I. annexe à chaque brevet un "RAPPORT DE RECHERCHE" citant les éléments de l'état de la technique qui peuvent être pris en considération pour apprécier la brevetabilité de l'invention, au sens des articles L. 611-11 (nouveauté) et L. 611-14 (activité inventive) du code de la propriété intellectuelle. Ce rapport porte sur les revendications du brevet qui définissent l'objet de l'invention et délimitent l'étendue de la protection.

Après délivrance, l'I.N.P.I. peut, à la requête de toute personne intéressée, formuler un "AVIS DOCUMENTAIRE" sur la base des documents cités dans ce rapport de recherche et de tout autre document que le requérant souhaite voir prendre en considération.

CONDITIONS D'ÉTABLISSEMENT DU PRÉSENT RAPPORT DE RECHERCHE

- ☒ Le demandeur a présenté des observations en réponse au rapport de recherche préliminaire.
- ☐ Le demandeur a maintenu les revendications.
- ☒ Le demandeur a modifié les revendications.
- ☐ Le demandeur a modifié la description pour en éliminer les éléments qui n'étaient plus en concordance avec les nouvelles revendications.
- ☐ Les tiers ont présenté des observations après publication du rapport de recherche préliminaire.
- ☐ Un rapport de recherche préliminaire complémentaire a été établi.

DOCUMENTS CITÉS DANS LE PRÉSENT RAPPORT DE RECHERCHE

La répartition des documents entre les rubriques 1, 2 et 3 tient compte, le cas échéant, des revendications déposées en dernier lieu et/ou des observations présentées.

- ☒ Les documents énumérés à la rubrique 1 ci-après sont susceptibles d'être pris en considération pour apprécier la brevetabilité de l'invention.
- ☐ Les documents énumérés à la rubrique 2 ci-après illustrent l'arrière-plan technologique général.
- ☐ Les documents énumérés à la rubrique 3 ci-après ont été cités en cours de procédure, mais leur pertinence dépend de la validité des priorités revendiquées.
- ☐ Aucun document n'a été cité en cours de procédure.

N° d'enregistrement national : 07 01939 N° de publication :

1.ELEMENTS DE L'ETAT DE LA TECHNIQUE SUSCEPTIBLES D'ETRE PRIS EN CONSIDERATION POUR APPRECIER LA BREVETABILITE DE L'INVENTION

FR 2 673 249 A (ITW DE FRANCE FR)
28 août 1992 (1992-08-28)

EP 1 452 745 A (METZELER AUTOMOTIVE PROFILE DE)
1 septembre 2004 (2004-09-01)

2.ELEMENTS DE L'ETAT DE LA TECHNIQUE ILLUSTRANT L'ARRIERE-PLAN TECHNOLOGIQUE GENERAL

NEANT

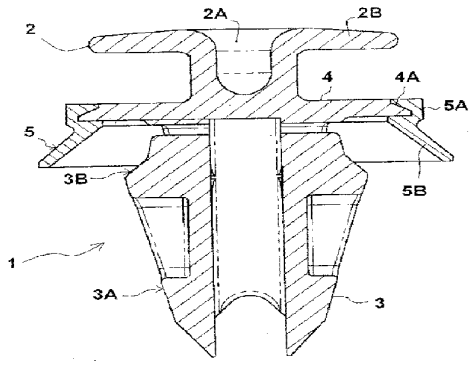
3. ELEMENTS DE L'ETAT DE LA TECHNIQUE DONT LA PERTINENCE DEPEND DE LA VALIDITE DES PRIORITES

NEANT

Title (Translation)	FASTENING CLIP		
Publication Number	FR2913738B1	Publication Date	30 Oct 2009
Application Number	FR2007001939	Application Date	16 Mar 2007
Standardized Assignee (Translated)	A RAYMOND		
Assignee Name (Translated)	A. RAYMOND ET CIE		
Current Assignee (Translation)	A. RAYMOND ET CIE		
Standardized Inventor	RAYMOND ANTOINE		
Inventor Name	RAYMOND ANTOINE		
IPC	F16B5/06 B60R13/02 F16B19/00 F16B21/06 F16B43/00		
CPC	F16B5/065 F16B21/06		
Other patent	FR2913738A1		
External Link	Espacenet		

Abstract (Translated)

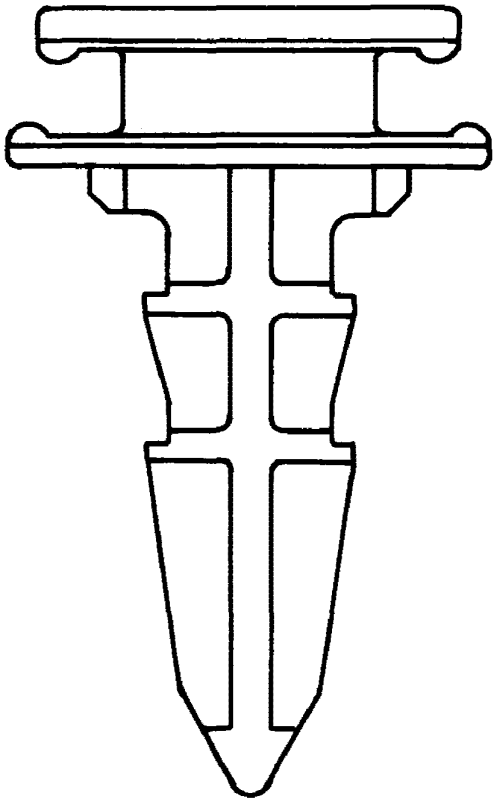
A fastening clip comprises: a body (1) made of a relatively rigid first molded plastic material, provided with a head (2), a foot (3) and a flange (4) disposed at the junction between the head and foot, and a sealing washer (5) in a second relatively flexible molded plastic material which is secured to the periphery of the flange. The washer is attached to the flange by a cohesive chemical bond resulting from a melt during molding between the first plastic material and the second plastic material.



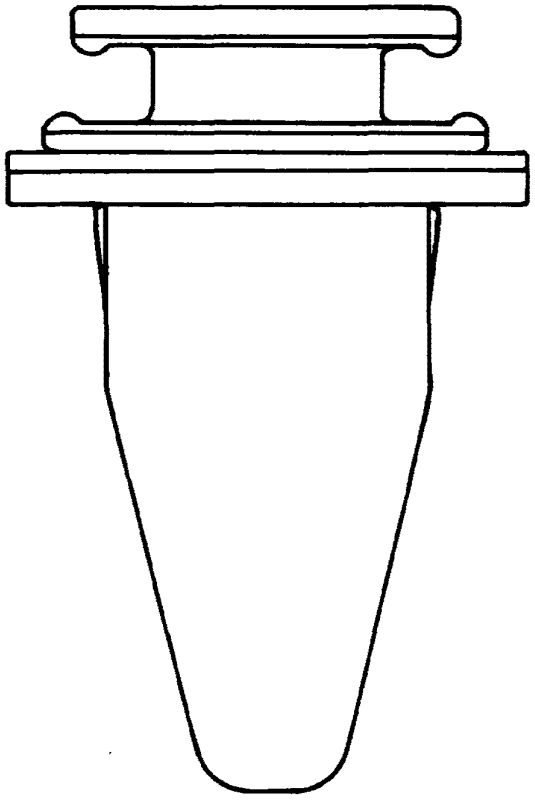
（１９）【発行国】日本国特許庁（ＪＰ）
（４５）【発行日】平成１５年5月２６日（２００３．５．２６）
（１２）【公報種別】意匠公報（Ｓ）
（１１）【登録番号】意匠登録第１１７４０７９号（Ｄ１１７４０７９）
（２４）【登録日】平成１５年3月２８日（２００３．３．２８）
（５４）【意匠に係る物品】連結具
（５２）【意匠分類】Ｍ３－１２３Ｅ
（５１）【国際意匠分類（参考）】０８－０８
（２１）【出願番号】意願２００１－３３８１４（Ｄ２００１－３３８１４）
（２２）【出願日】平成１３年１１月１９日（２００１．１１．１９）
（７２）【創作者】
【氏名】根本　武彦
【住所又は居所】神奈川県横浜市戸塚区舞岡町１８４番地１　株式会社ニフコ内
（７３）【意匠権者】
【識別番号】０００１３５２０９
【氏名又は名称】株式会社ニフコ
【住所又は居所】神奈川県横浜市戸塚区舞岡町１８４番地１
（７４）【代理人】
【識別番号】１００００７７２４１
【弁理士】
【氏名又は名称】桑原　稔
（７４）【代理人】
【識別番号】１００００９８２０２
【弁理士】
【氏名又は名称】中村　信彦
【審査官】梅澤　修
（５６）【参考文献】意登９８３９３３　意登１１７４０７８　実開平３－２３２１１　実開平４－８４９８４
（５５）【意匠に係る物品の説明】この意匠に係る物品は、連結しようとする二つの部材の一方に形成された取付穴にはめ込んでこの一方の部材に取り付けられる雌連結具と、この二つの部材の他方に対し頭部において取り付けられる雄連結具とからなり、使用状態を示す参考断面図に示されるように、前記のように二つの部材の他方に取り付けられた雄連結具の脚部を前記のように二つの部材の一方に取り付けられた雌連結具の内部に受け入れさせることによりこの雄連結具の脚部に雌連結具を掛合させて前記二つの部材を連結し合わせるように用いられる。
（５５）【意匠の説明】背面図は正面図と同一に表れる。左側面図は右側面図と同一に表れる。雌連結具の背面図は雌連結具の正面図と同一に表れる。雌連結具の左側面図は雌連結具の右側面図と同一に表れる。雄連結具の背面図は雄連結具の正面図と同一に表れる。雄連結具の左側面図は雄連結具の右側面図と同一に表れる。

【図面】

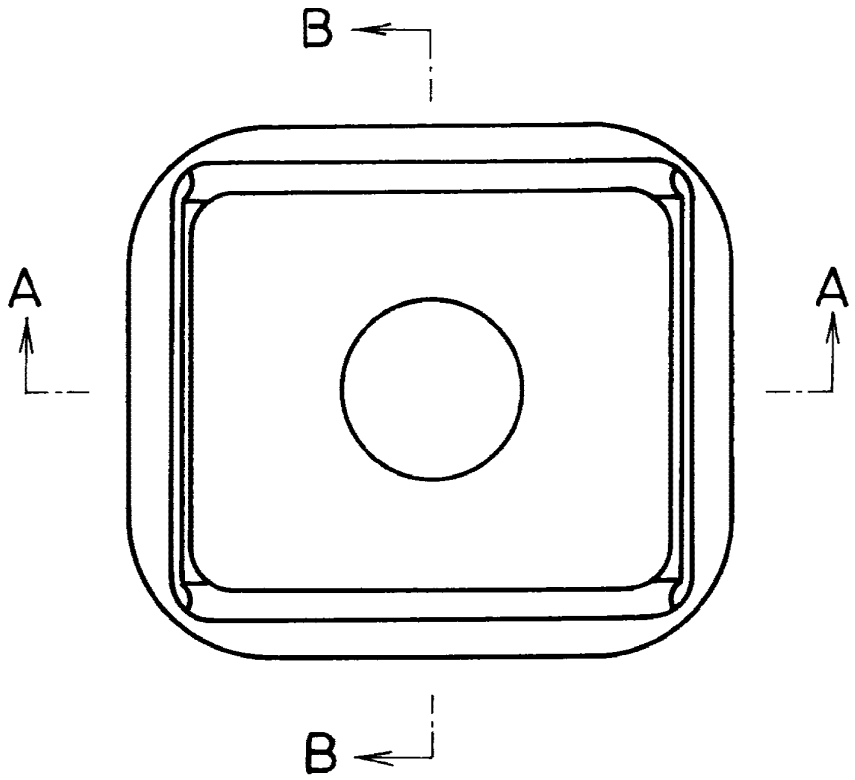
【正面図】



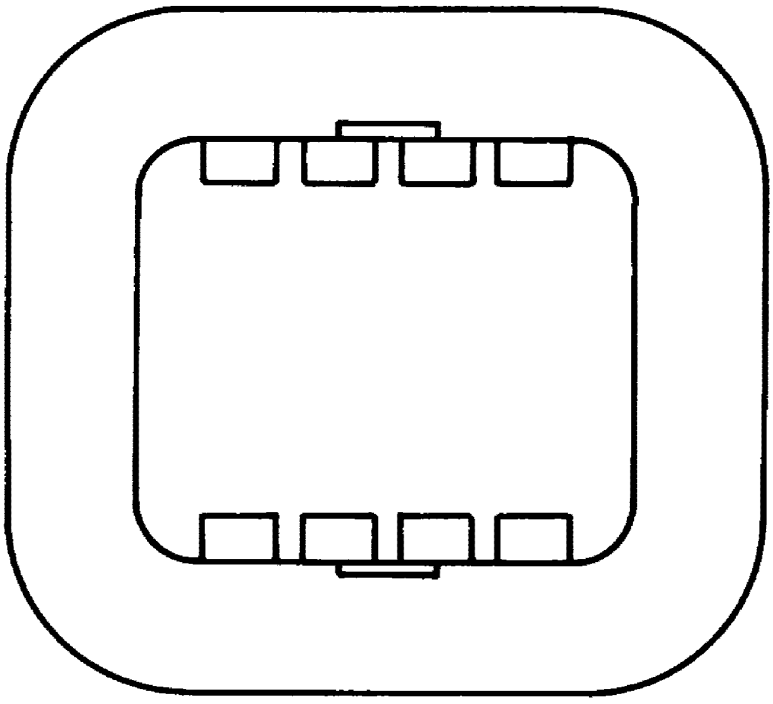
【右側面図】



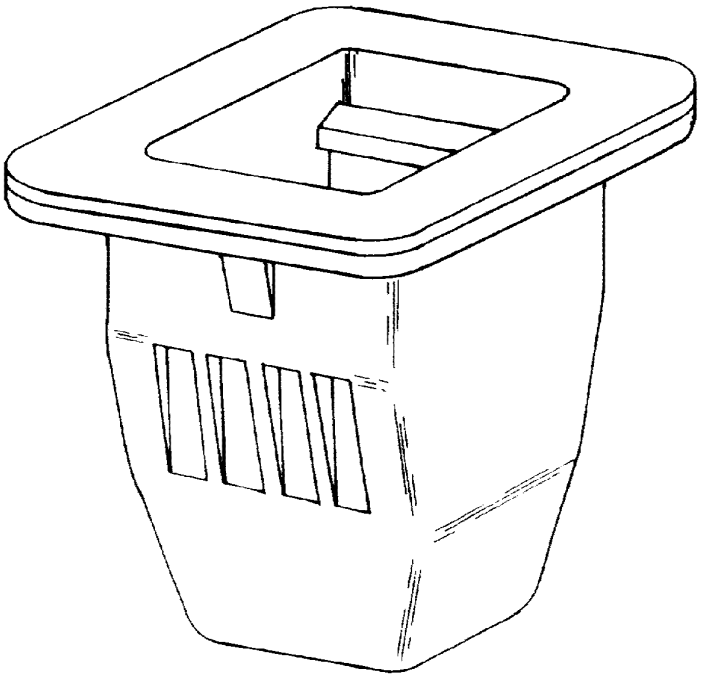
【平面図】



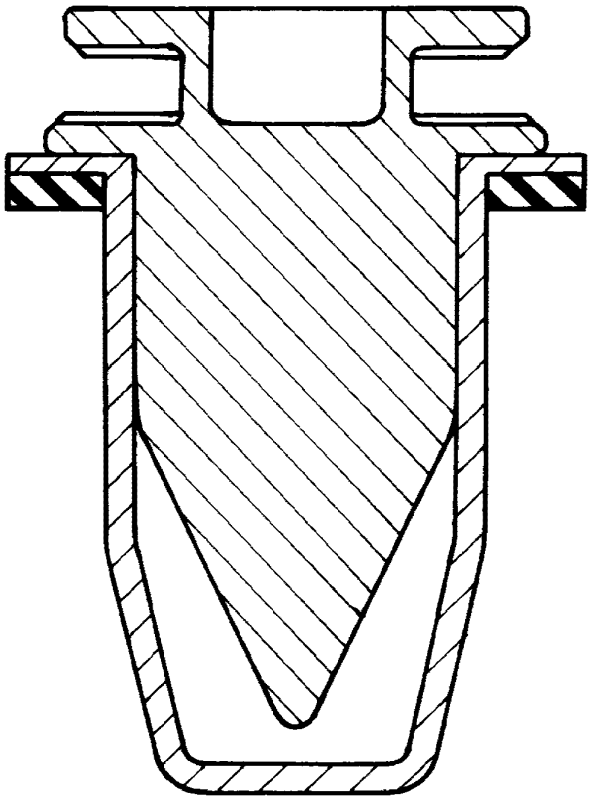
【底面図】



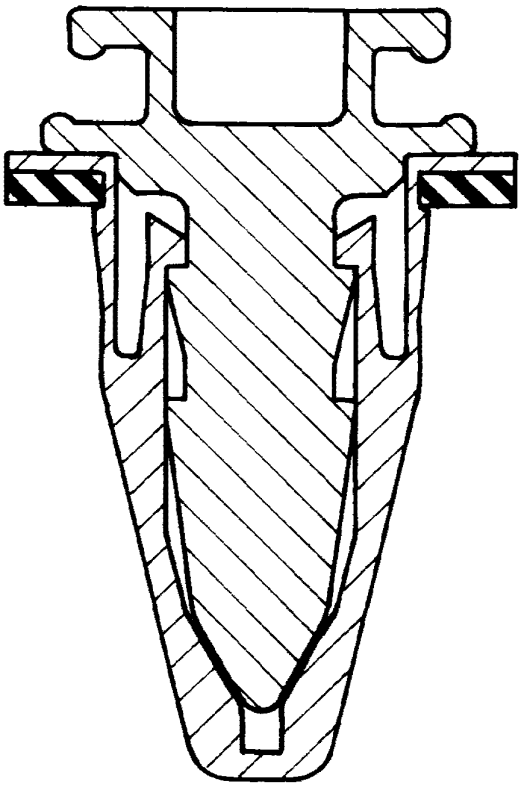
【雌連結具の参考斜視図】



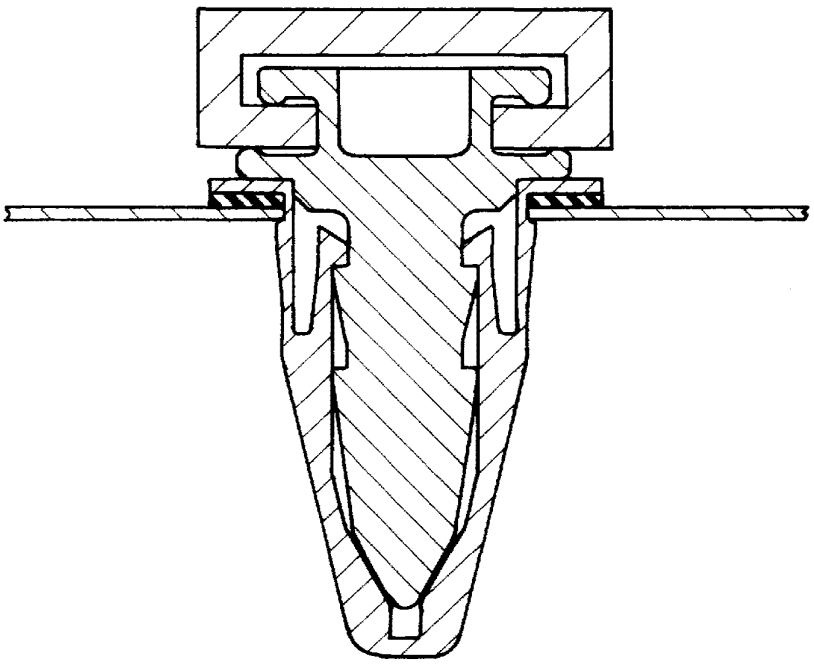
【Ａ－Ａ線断面図】



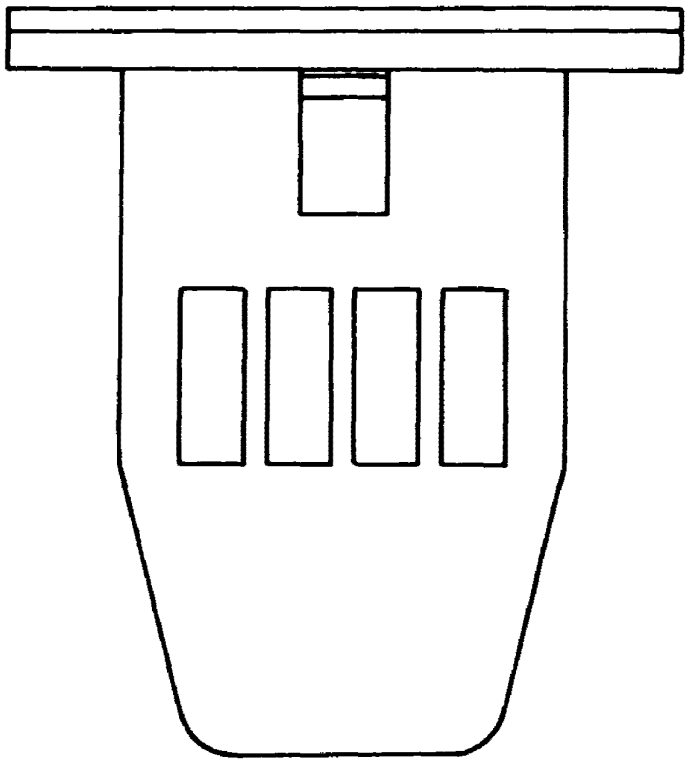
【Ｂ－Ｂ線断面図】



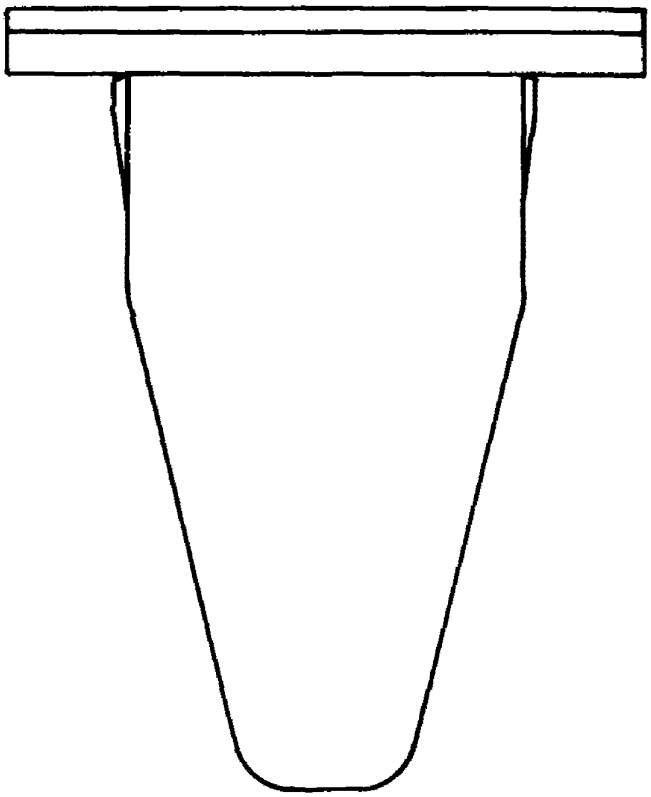
【使用状態を示す参考断面図】



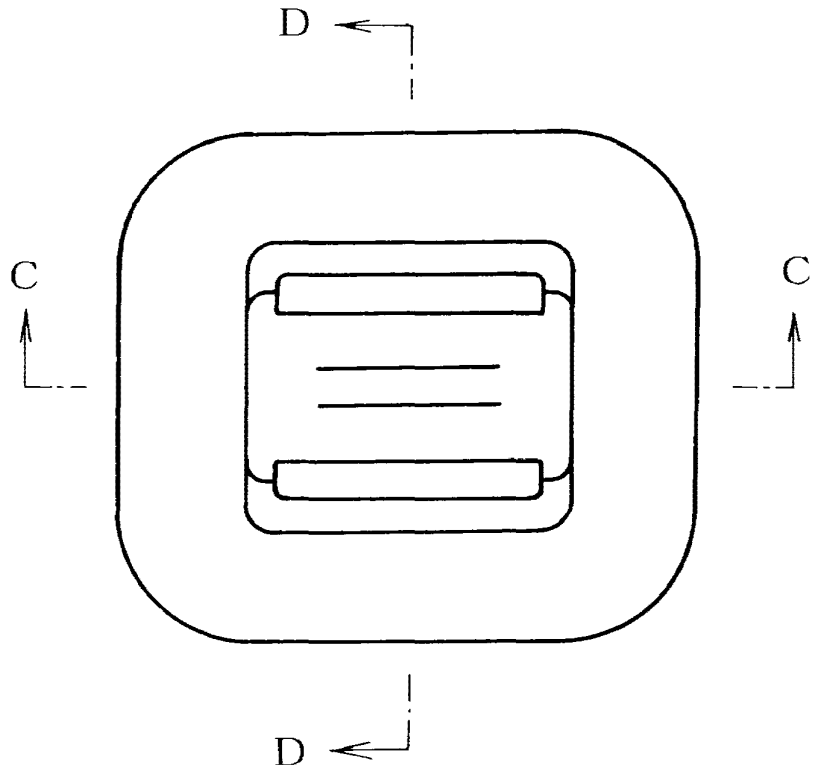
【雌連結具の正面図】



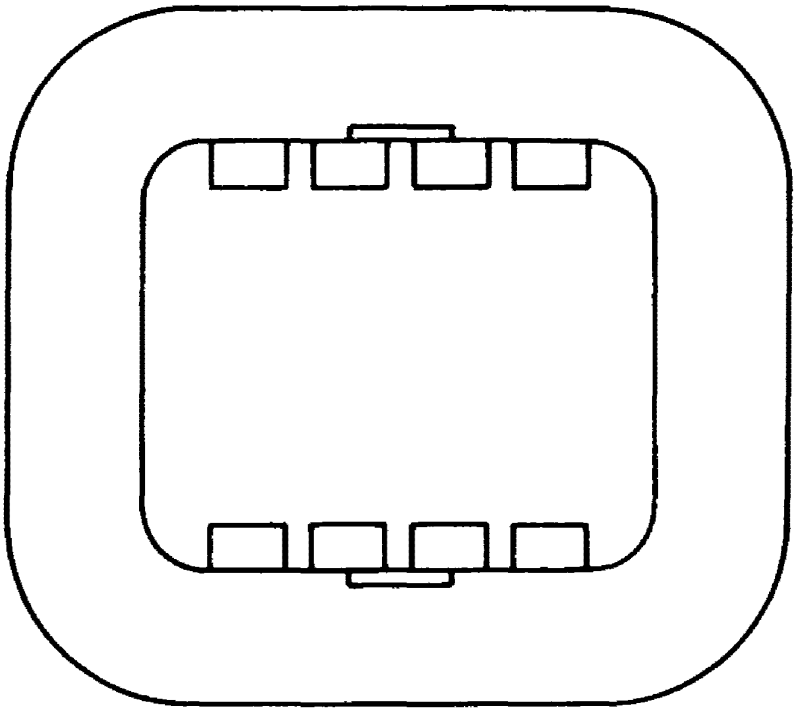
【雌連結具の右側面図】



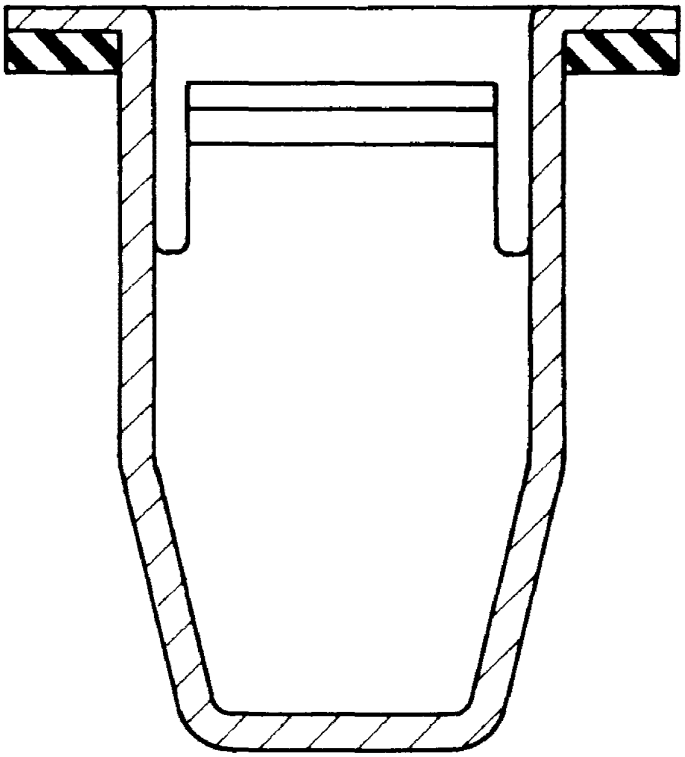
【雌連結具の平面図】



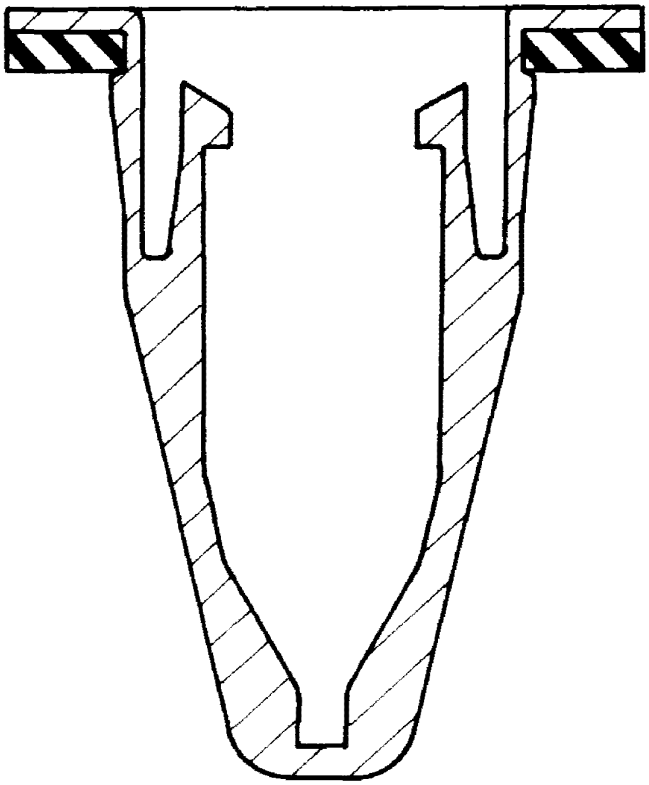
【雌連結具の底面図】



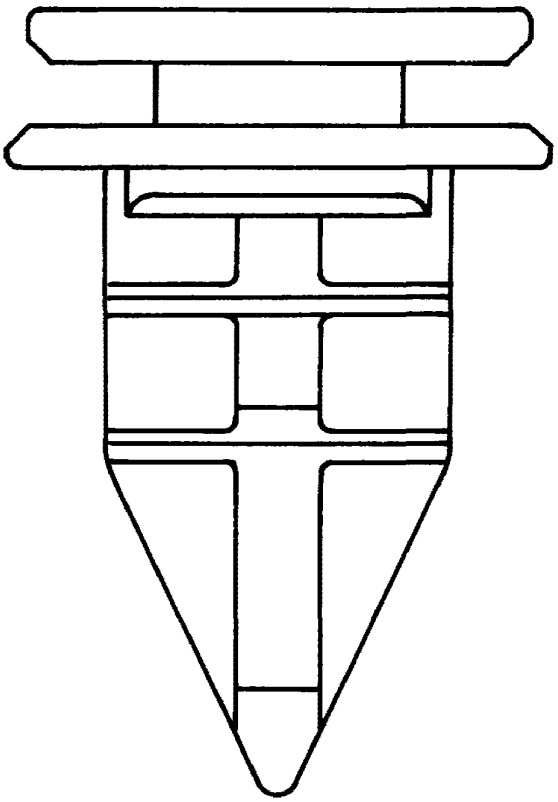
【Ｃ－Ｃ線断面図】



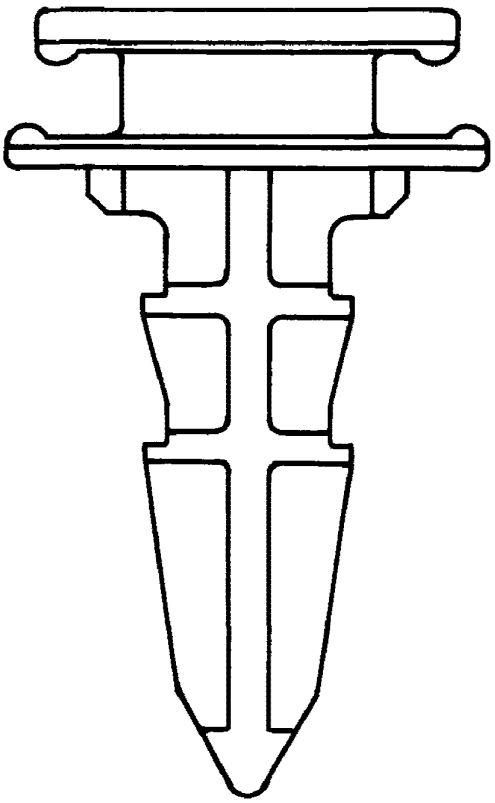
【Ｄ－Ｄ線断面図】



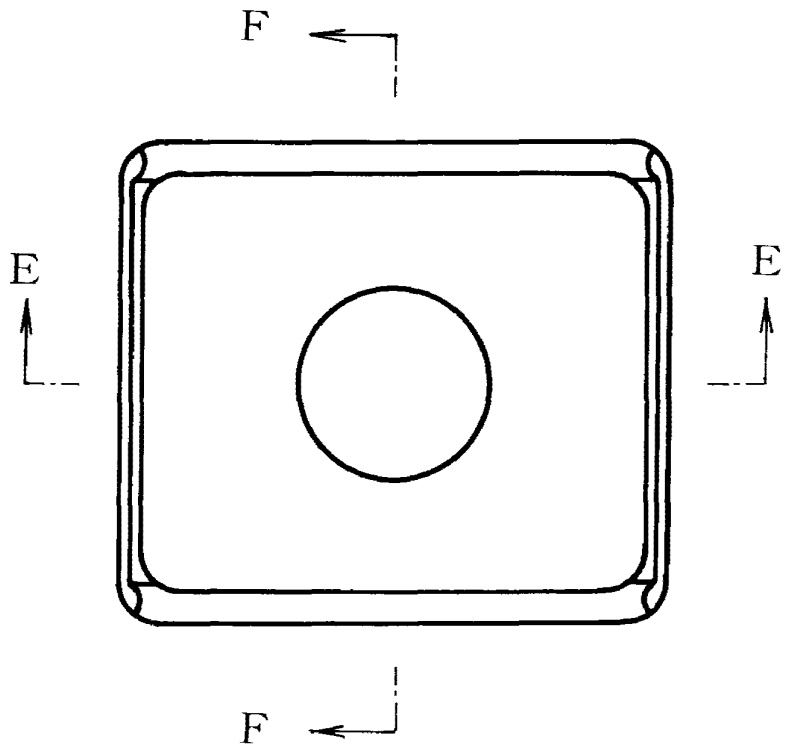
【雄連結具の正面図】



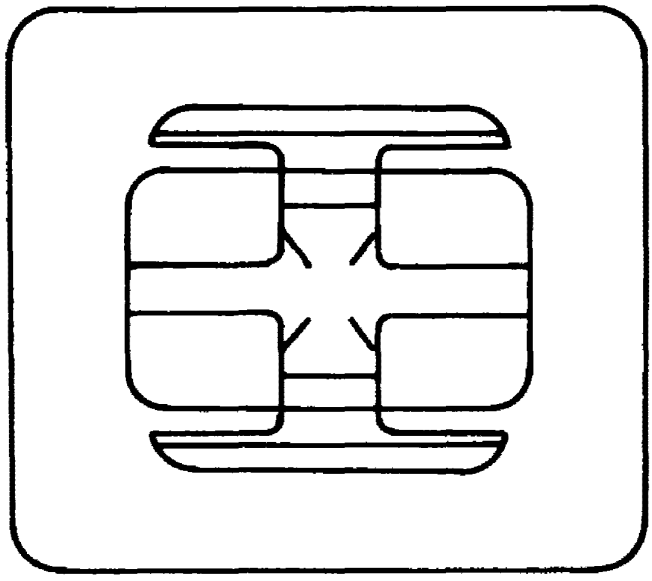
【雄連結具の右側面図】



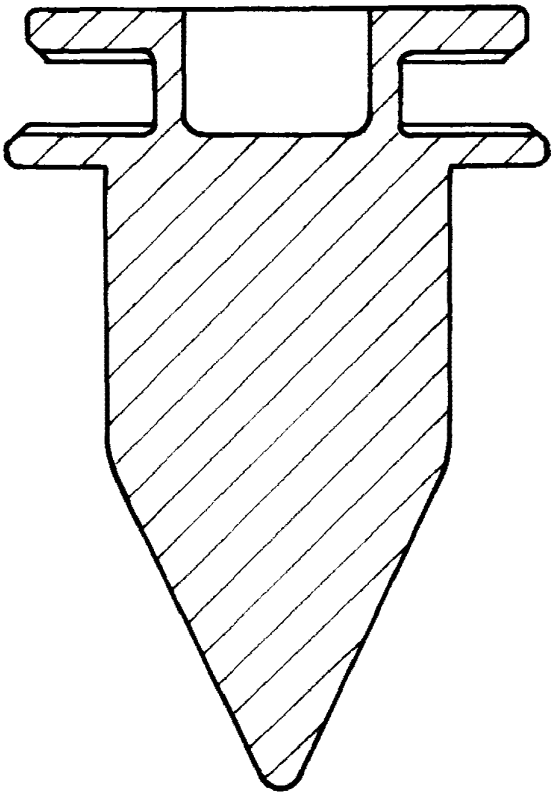
【雄連結具の平面図】



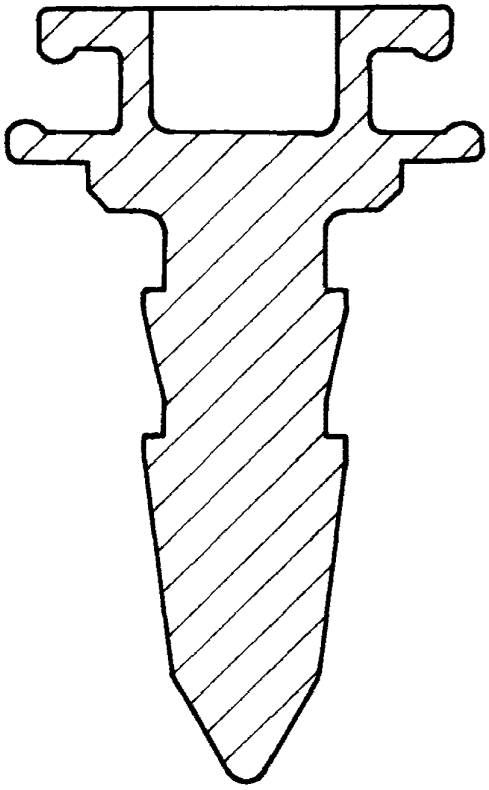
【雄連結具の底面図】



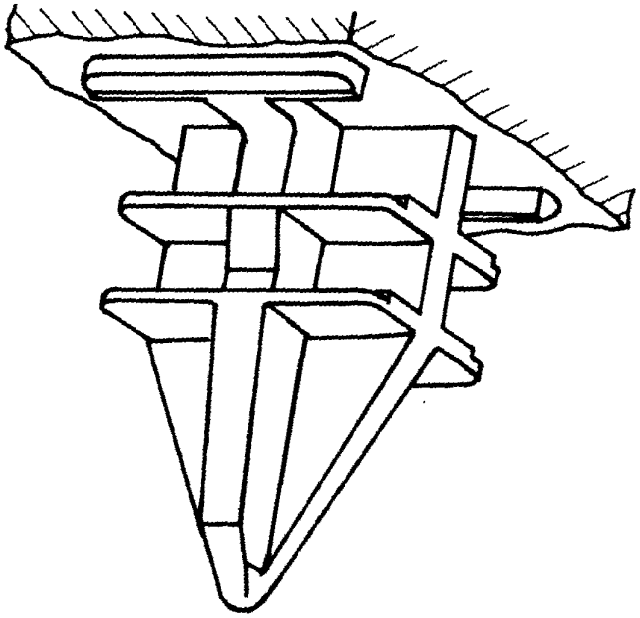
【Ｅ－Ｅ線断面図】



【Ｆ－Ｆ線断面図】



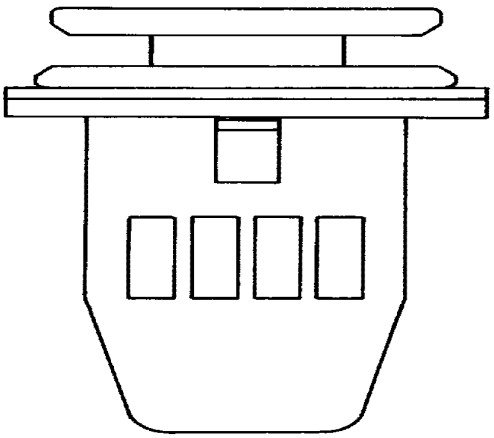
【雄連結具の脚部の参考斜視図】



patsnap

Title (Translation)	Linkage		
Publication Number	JP1174079S	Publication Date	26 May 2003
Application Number	JP2001033814D	Application Date	19 Nov 2001
Standardized Assignee (Translated)	NIFCO		
Assignee Name (Translated)	Nifco Inc.		
Current Assignee (Translation)	Nifco Inc.		
Standardized Inventor	根本武彦		
Inventor Name	根本 武彦		
LOC	08-08		
Attorney Name (Translation)	Minoru Kuwahara Nobuhiko Nakamura		
Primary Examiner (Translation)	Osamu Umezawa		

Abstract (Translated)



The article related to this design includes a female connector fitted in a mounting hole formed in one of the two members to be connected and attached to the one member and a female connector attached to the other of the two membersAs shown in the reference sectional view showing the use state, it is made up of the male coupling tool described above.The legs of the male coupler attached to the other of the two members are received in the female coupler attached to one of the two members as described above, whereby the female coupling And is used to connect the two members by engaging the tool.The rear view is the same as the front view. The left side view appears the same as the right side view. The rear view of the female coupler appears the same as the front view of the female coupler. The left side view of the female coupler appears the same as the right side view of the female coupler. The rear view of the male connector appears the same as the front view of the male connector.The left side view of the male connector appears the same as the right side view of the male connector.

Electronic Acknowledgement Receipt

EFS ID:	39700620
Application Number:	16897947
International Application Number:	
Confirmation Number:	8594
Title of Invention:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL
First Named Inventor/Applicant Name:	Derek Scroggie
Customer Number:	160504
Filer:	Nicholas P. Schmidbauer./Cyndy Marcello
Filer Authorized By:	Nicholas P. Schmidbauer.
Attorney Docket Number:	480805.00748(61823-US-C)
Receipt Date:	12-JUN-2020
Filing Date:	
Time Stamp:	11:31:13
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	61823-US-C-IDS1-Trans-12JUN20.pdf	118835 43d3df0dc020582042761193659 1e9c2f3ed41a5	no	1

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	61823-US-C-IDS1.pdf	1037351 850ec71fa53045788b640cfb36a2a526488e0e0d	no	14
Warnings:					
Information:					
3	Foreign Reference	WO2017205022A1.pdf	1102438 e5c36aa9726b7c294b41d9aabf6b4753efd1cae3	no	25
Warnings:					
Information:					
4	Foreign Reference	WO2009123616A1.pdf	519558 9d57469fbb45c535767b52aeae85c05e525fd991	no	23
Warnings:					
Information:					
5	Foreign Reference	FR2913738B1-.pdf	598795 3de43dc65cdb19545a8c1d975ea5b081a0f20e2e	no	10
Warnings:					
Information:					
6	Foreign Reference	JP1174079S-.pdf	5219620 3a1e10cb58eacd1cdffa46bc183519772fad9b36	no	13
Warnings:					
Information:					
		Total Files Size (in bytes):	8596597		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Illinois Tool Works Inc.	)
Serial No.:	16/897,947	)
Filed:	2020-06-10	)
For:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL	)
Group Art Unit:	Not yet assigned	)
Confirmation No.:	8594	)
Examiner:	Not yet assigned	)

CERTIFICATE OF EFS FILING

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, on the date below.

June 12, 2020

/Cyndy Marcello/
Cyndy Marcello

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

The patents and/or publications listed on the enclosed Form PTO/SB/08a are being brought to the attention of the Examiner pursuant to 37 CFR §§ 1.56, 1.97, and 1.98. Copies of any foreign publications or other documents are enclosed as necessary.

This Information Disclosure Statement is being filed, to the best of the undersigned's knowledge, before issuance of a first Office action. In accordance with 37 C.F.R. § 1.97(b), no certification or fee is required. However, should the Examiner deem otherwise, the Examiner is hereby requested and authorized to charge the appropriate fee to Deposit Account No. 17-0055.

The identification of any document in the attached Form PTO/SB/08a is not an admission that such document is in fact prior art or is material to patentability relative to the instant application.

An early and favorable action on the merits is respectfully requested.

Respectfully submitted,

QUARLES & BRADY LLP
300 N. LaSalle Street, Suite 4000
Chicago, Illinois 60654
312.715.5072

June 12, 2020

By: /NPSchmidbauer/
Nicholas P. Schmidbauer
Reg. No. 56,610

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/897,947

APPLICATION AS FILED - PART I

	(Column 1)	(Column 2)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE($)	FEE($)		RATE($)	FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	300
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	660
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	760
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*			OR	x 100 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 460 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1720

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1)		(Column 2)	(Column 3)					
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
16/897,947	06/10/2020	3643	1720	480805.00748(61823-US-C)	20	3

CONFIRMATION NO. 8594

FILING RECEIPT

160504
QUARLES & BRADY LLP/ITW Automotive OEM
Attn: IP Docket
411 E. WISCONSIN AVE.
SUITE 2350
MILWAUKEE, WI 53202-4426

OC000000117880256

Date Mailed: 06/19/2020

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Derek Scroggie, Macomb, MI;
Michelle E. Bozinovski, Oakland Charter Township, MI;
Robert A. Murawski, Clinton Township, MI;

Applicant(s)

Illinois Tool Works Inc., Glenview, IL;

Power of Attorney: The patent practitioners associated with Customer Number 160504

Domestic Priority data as claimed by applicant

This application is a CON of 15/987,986 05/24/2018 PAT 10683882
which is a CON of 14/652,819 06/17/2015 PAT 9982694
which is a 371 of PCT/US2013/073861 12/09/2013
which claims benefit of 61/739,604 12/19/2012

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 06/18/2020

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/897,947**

Projected Publication Date: 09/24/2020

Non-Publication Request: No

Early Publication Request: No

Title

PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

Preliminary Class

043

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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PTO/SB/08a (02-18)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16897947
Filing Date	2020-06-10
First Named Inventor	SCROGGIE, Derek
Art Unit	
Examiner Name	
Attorney Docket Number	480805.00748(61823-US-C)

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6659701	B1	2003-12-09	Risdale	
	2	8936420	B2	2015-01-20	Scroggie, et al.	
	3	9873388	B2	2018-01-23	Meyers, et al.	
	4	10451100	B2	2019-10-22	Flynn	
	5	10688943	B2	2020-06-23	Bachelder, et al.	

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U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20030156917	A1	2003-08-21	Heflin, et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16897947
	Filing Date	2020-06-10
	First Named Inventor	SCROGGIE, Derek
	Art Unit	
	Examiner Name	
	Attorney Docket Number	480805.00748(61823-US-C)

	2	20070166127	A1	2007-07-19	Scroggie, et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16897947
	Filing Date	2020-06-10
	First Named Inventor	SCROGGIE, Derek
	Art Unit	
	Examiner Name	
	Attorney Docket Number	480805.00748(61823-US-C)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/NPSchmidbauer/	Date (YYYY-MM-DD)	2020-08-27
Name/Print	Nicholas P. Schmidbauer	Registration Number	56610

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	40396792
Application Number:	16897947
International Application Number:	
Confirmation Number:	8594
Title of Invention:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL
First Named Inventor/Applicant Name:	Derek Scroggie
Customer Number:	160504
Filer:	Nicholas P. Schmidbauer./Cyndy Marcello
Filer Authorized By:	Nicholas P. Schmidbauer.
Attorney Docket Number:	480805.00748(61823-US-C)
Receipt Date:	27-AUG-2020
Filing Date:	10-JUN-2020
Time Stamp:	12:05:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	61823-US-C-IDS2-Trans-27AUG20.pdf	91530 f54b093257434cdfcce9d0171654b9a41f72c085	no	1

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	61823-US-C-IDS2.pdf	1034523 8a1644d33d59776eaeda8cad45bddced952fe759	no	4
Warnings:					
Information:					
			Total Files Size (in bytes):	1126053	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Illinois Tool Works Inc.	)
Serial No.:	16/897,947	)
Filed:	2020-06-10	)
For:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL	)
Group Art Unit:	Not yet assigned	)
Confirmation No.:	8594	)
Examiner:	Not yet assigned	)

CERTIFICATE OF EFS FILING

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, on the date below.

August 27, 2020

/Cyndy Marcello/
Cyndy Marcello

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

The patents and/or publications listed on the enclosed Form PTO/SB/08a are being brought to the attention of the Examiner pursuant to 37 CFR §§ 1.56, 1.97, and 1.98. Copies of any foreign publications or other documents are enclosed as necessary.

This Information Disclosure Statement is being filed, to the best of the undersigned's knowledge, before issuance of a first Office action. In accordance with 37 C.F.R. § 1.97(b), no certification or fee is required. However, should the Examiner deem otherwise, the Examiner is hereby requested and authorized to charge the appropriate fee to Deposit Account No. 17-0055.

The identification of any document in the attached Form PTO/SB/08a is not an admission that such document is in fact prior art or is material to patentability relative to the instant application.

An early and favorable action on the merits is respectfully requested.

Respectfully submitted,

QUARLES & BRADY LLP
300 N. LaSalle Street, Suite 4000
Chicago, Illinois 60654
312.715.5072

August 27, 2020

By: /NPSchmidbauer/
Nicholas P. Schmidbauer
Reg. No. 56,610

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/897,947	06/10/2020	Derek Scroggie	480805.00748(61823-US-C)

CONFIRMATION NO. 8594

160504
QUARLES & BRADY LLP/ITW Automotive OEM
Attn: IP Docket
411 E. WISCONSIN AVE.
SUITE 2350
MILWAUKEE, WI 53202-4426

PUBLICATION NOTICE

OC000000120149406

Title:PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

Publication No.US-2020-0300280-A1
Publication Date:09/24/2020

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently https://portal.uspto.gov/pair/PublicPair. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16897947
Filing Date	2020-06-10
First Named Inventor	SCROGGIE, Derek
Art Unit	3677
Examiner Name	-
Attorney Docket Number	480805.00748(61823-US-C)

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	4252827	JP	B2	2009-01-30	Piolax Inc.		☓
	2	2011/043352	WO	A1	2011-04-14	Nifco Inc.		☒
	3	4806495	JP	B2	2011-08-19	Suiryo Plastics Co., Ltd., et al.		☒

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16897947
	Filing Date	2020-06-10
	First Named Inventor	SCROGGIE, Derek
	Art Unit	3677
	Examiner Name	-
	Attorney Docket Number	480805.00748(61823-US-C)

If you wish to add additional Foreign Patent Document citation information please click the Add button [Add]

NON-PATENT LITERATURE DOCUMENTS [Remove]

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	First Named Inventor	SCROGGIE, Derek
	Art Unit	3677
	Examiner Name	-
	Attorney Docket Number	480805.00748(61823-US-C)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/NPSchmidbauer/	Date (YYYY-MM-DD)	2021-02-09
Name/Print	Nicholas P. Schmidbauer	Registration Number	56610

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

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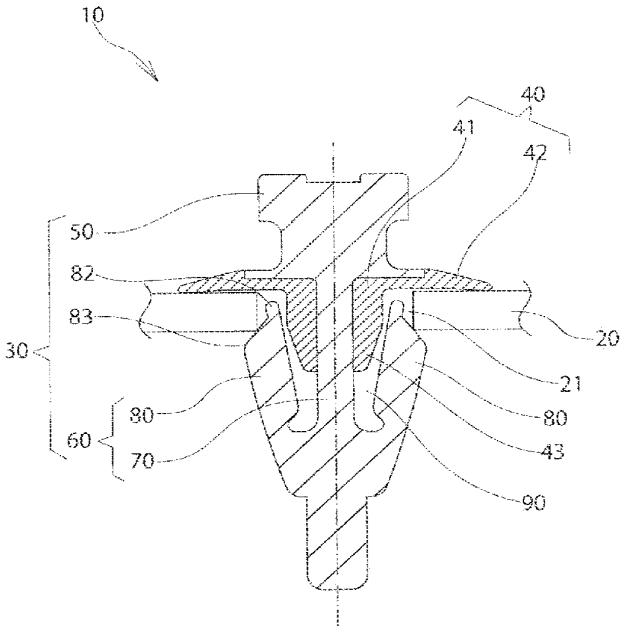
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[続葉有]

(54) Title: RETAINER

(54) 発明の名称 : 留め具

[図1]



(57) Abstract: Disclosed is a retainer provided with an insertion pin. The insertion pin is integrally provided with a head portion and a leg portion. The leg portion is comprised of a support rod extending downward from the head portion, and elastic locking portions extending from the lower portion of the support rod toward the head portion. The retainer is provided with a bush which is positioned at least between the outer peripheral portion of the support rod of the insertion pin and the elastic locking portions and which is composed of an elastic material having elasticity. The elastic material is a thermoplastic elastomer. The insertion pin and the bush are integrally formed.

(57) 要約: 留め具には、挿入ピンを備える。挿入ピンには、頭部、脚部を一体に備える。脚部は、頭部から垂下する支柱、支柱の下部から頭部方向に延びる弾性係止部からなる。留め具には、挿入ピンの支柱の外周部と、弾性係止部との間に少なくとも位置し、弾性を有する弾性材料からなるブッシュを備える。弾性材料は、熱可塑性エラストマーである。挿入ピンとブッシュとは、一体成形されている。

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— 国際調査報告（条約第 21 条(3)）

明　細　書

発明の名称 ： 留め具

技術分野

[0001] この発明は、パネルに他の部品を取り付けるための留め具に関し、ブッシュを弾性係止部から独立させて機能させることで、留め具の再利用時の抜去力の低下を減少させることができるようにしたものである。

背景技術

[0002] 従来、この種の留め具としては、両係止脚片の裏側に、パネルに対する係止脚片の係着力を増強するためのリブがそれぞれ設けられたものが知られている（例えば特許文献１の段落番号「００１２」、図１及び図５～８参照、以下「前者」という。）。

上記した従来のリブは、係止脚片の内側面に、その一端が連結され、そこから内側へ斜めに立ち上がって屈曲部を形成した後、支柱に沿って真っ直ぐ上方へ延び、鍔部の下面に連結されている（例えば特許文献１の段落番号「００１２」参照）。

[0003] また、従来、脚部の外周に、軟質樹脂製のブッシュをはめたものが知られている（例えば特許文献２の２頁右欄１８～２５行及び第１～４図、特許文献３の２頁右欄３２～３９行及び第１～４図参照、以下「後者」という。）

先行技術文献

特許文献

[0004] 特許文献1：特許第3607826号公報

特許文献2：実公平04-32490号公報

特許文献3：実公平05-15607号公報

発明の概要

発明が解決しようとする課題

[0005] しかし、上記した従来の前者（特許文献１）のリブは、鍔部の下面や係止脚片の内側面への連結部分に大きな負荷が掛かり、クリープ変形が起こり易

く、再利用した場合に、抜去力が低下し易いという問題点があった。

また、上記した従来の後者（特許文献２及び特許文献３）の軟質樹脂製のブッシュは、脚部の外周にはめているため、弾性部（特許文献２）や拡開部（特許文献３）の弾性復元力を補助する機能を持たないという問題点があった。

[0006] そこで、本発明は、上記した従来の技術の有する問題点に鑑みてなされたものであり、その目的とするところは、支柱の外周部と弾性係止部との間に弾性材料からなるブッシュを設けることで、弾性係止部の弾性復元力を補助し、抜去力を向上することができるようにしたものである。

課題を解決するための手段

[0007] 本発明は、上記した目的を達成するためになされたものであり、本発明は、次の点を特徴とする。

[0008] 第１に、留め具には、次の構成を備える。

（１）挿入ピン

第２に、挿入ピンには、次の構成を一体に備える。

（２）頭部

（３）脚部

第３に、脚部は、次の構成からなる。

[0009] （４）支柱

支柱は、頭部から垂下するものである。

（５）弾性係止部

弾性係止部は、支柱の下部から頭部方向に延びるものである。

第４に、留め具には、次の構成を備える。

[0010] （６）ブッシュ

ブッシュは、挿入ピンの支柱の外周部と、弾性係止部との間に少なくとも位置し、弾性を有する弾性材料からなるものである。

本発明は、次の点も特徴として備えていてもよい。

[0011] 弾性材料は、熱可塑性エラストマーである。こうすると、熱可塑性エラス

トマーによる弾性効果を得ることができる。

本発明は、次の点も特徴として備えていてもよい。

挿入ピンとブッシュとは、一体成形されている。こうすると、挿入ピンとブッシュとを一体成形することのより、製造工程を短縮させることができる。

本発明は、次の点も特徴として備えていてもよい。

[0012] ブッシュには、次の構成を一体に備える。

（１）筒形部

筒形部は、挿入ピンの支柱にかん合するものである。

（２）フランジ部

フランジ部は、筒形部の上端部から半径方向外向きに張り出し、パネルに開設した取付孔の内径より径の大きなものである。

こうすると、筒形部及びフランジ部を備えたブッシュにより、パネルの取付孔の水密性を向上させることができる。

発明の効果

[0013] 本発明は、以上のように構成されているので、支柱の外周部と弾性係止部との間に弾性材料からなるブッシュを設けることで、弾性係止部の弾性復元力を補助し、抜去力を向上することができる。

[0014] これに加えて、ブッシュを弾性係止部から独立させて機能させることで、留め具の再利用時の抜去力の低下を減少させることができる。

図面の簡単な説明

[0015] [図1]留め具をパネルに取り付けた状態の断面図である。

[図2]留め具の斜視図である。

[図3]留め具の一半を断面にした側面図である。

[図4]留め具の一半を断面にした他の側面図である。

[図5]留め具の平面図である。

[図6]金型の断面図である。

[図7]板厚の比較的に薄いパネルに留め具を取り付けた状態の断面図である。

[図8]（ａ）～（ｃ）は、留め具の取付手順を説明するための説明図である。

発明を実施するための形態

[0016] 図中、10は、留め具を示し、この留め具10を使用し、自動車のドア回りやトランクルームの開口縁等のパネル20に、ウエザーストリップ等の他の部品を取り付けるために使用される。

なお、パネル20として、自動車のドア回りやトランクルームの開口縁を例示したが、ドア回りやトランクルームの開口縁に限定されないばかりか、自動車用にも限定されない。

[0017] パネル20には、図１に示すように、当該パネル20の表裏面に貫通した円形の取付孔21を設けている。なお、取付孔21の形状として、円形を例示したが、これに限定されない。

また、パネル20には、図１及び図７に示すように、複数種類有り、例えば板厚の厚いパネル20と、板厚の比較的薄いパネル20aとがある。なお、パネル20, 20aの板厚は、２種類に限定されず、３種類以上存在しても良い。

[0018] 留め具10は、図１～５に示すように、大別すると、次の各部を備える。

なお、次の（１）及び（２）については、後述する。

（１）挿入ピン30

（２）ブッシュ40

なお、留め具10の各部は、上記した（１）及び（２）に限定されない。

（挿入ピン30）

挿入ピン30は、図１に示すように、パネル20の取付孔21に挿入することで固定され、パネル20の表面から突出する部分に、ウエザーストリップ（図示せず）を取り付けるものである。そして、挿入ピン30は、例えばＰＯＭ（ポリオキシメチレン）等の適度な弾性と剛性とを有する比較的な硬質な熱可塑性樹脂で一体的に成形されている。

[0019] 具体的には、挿入ピン30には、図１～５に示すように、大別すると、次の各部を備える。

なお、次の（１）及び（２）については、後述する。

（１）頭部50

（２）脚部60

なお、挿入ピン30の各部は、上記した（１）及び（２）に限定されない。

（ブッシュ40）

ブッシュ40は、図１～５に示すように、挿入ピン30の後述する支柱70の外周部と、同じく後述する弾性係止部80との間に少なくとも位置し、弾性を有する弾性材料からなるものである。弾性材料としては、弾性に富み、挿入ピン30と比較して軟質な、例えばエラストマー等の熱可塑性樹脂が使用されている。ブッシュ40は、後述するが、挿入ピン30に二次成形される。

[0020] 具体的には、ブッシュ40には、図１～５に示すように、次の各部を備える。

（１）筒形部41

筒形部41は、図１及び図４に示すように、挿入ピン30の後述する支柱70にかん合するものである。

筒形部41の下端部からは、図１～４に示すように、複数個、例えば４個の脚43, 44が９０度間隔で延びている。

[0021] ４個の脚43, 44のうち、互いに背向する一対の第１脚43は、図１及び図２に示すように、後述する支柱70の外周部と、同じく後述する弾性係止部80との間に位置する。

４個の脚43, 44のうち、残る互いに背向する一対の第２脚43は、図２～４に示すように、第１脚43と９０度位相が異なり、第１脚43より長く延びている。

なお、脚43, 44を、４個形成したが、これに限定されず、環状に１個形成したり、或いは２個、３個、５個以上形成しても良い。

[0022] （２）フランジ部42

フランジ部42は、図１～５に示すように、筒形部41の上端部から半径方向外向きに環状に張り出し、パネル20に開設した取付孔21の内径より径の大きなものである。

具体的には、フランジ部42の外周縁部は、図２～４に示すように、斜め下向きに傘形に延び、肉厚を比較的薄く設定し、たわみ易くしている。

[0023] フランジ部42は、図１及び図７に示すように、板厚の異なる２種類のパネル20, 20aの表面に弾性的に密着する。このため、フランジ部42は、シール効果に加え、パネル20, 20aの板厚の変化を許容できる。

（頭部50）

頭部50は、図１に示すように、脚部60をパネル20の取付孔21に挿入して固定した状態で、パネル20の表面から上方に向かって突出し、ウエザーストリップ（図示せず）を取り付けるものである。

[0024] 具体的には、頭部50には、図２～５に示すように、次の各部を備える。

（１）中軸部51

中軸部51は、図２～４に示すように、円柱形に短く延びている。

（２）張出部52

張出部52は、図３～５に示すように、中軸部51の下端部から環状に張り出し、ブッシュ40のフランジ部42の上面と接合する。

[0025] （３）刺入部53

刺入部53は、図２～５に示すように、中軸部51の下端部からＴ字形に延び、図５に示すように、上面から見た状態において、両端部が先細状に細くなった略菱形に形成されている。刺入部53は、図示しないが、ウエザーストリップ中に刺し入れられ、埋設状に固定される。

（脚部60）

脚部60は、図１に示すように、パネル20の取付孔21に挿入されることで、パネル20に対して固定されるものである。

[0026] 具体的には、脚部60には、図１～４に示すように、次の各部を備える。

（１）支柱70

支柱70は、図１～４に示すように、頭部50から四角柱形に垂下するものである。

なお、支柱70を、四角柱形に形成したが、これに限らず、例えば円柱形に

形成しても良い。

[0027] （２）弾性係止部80

弾性係止部80は、図１～４に示すように、支柱70の下部から頭部50方向に延びるものである。

具体的には、弾性係止部80は、図２及び図４に示すように、ブッシュ40のフランジ部42の下面に向かって支柱70の下部から略Ｖ字形に延びている。また、弾性係止部80は、複数個、例えば一対形成され、刺入部53の突出方向に対して９０度位相を異ならせている。一対の弾性係止部80の最大外径は、パネル20の取付孔21の内径より大きく設定されている。

[0028] なお、弾性係止部80を、一対形成したが、これに限定されず、３個以上形成しても良い。

一方、弾性係止部80と支柱70の外周部との間には、図２及び図４に示すように、空間部90が形成され、当該空間部90内に、ブッシュ40の第１脚43が位置する。

また、弾性係止部80には、図２～４に示すように、次の各部を備える。

[0029] （１）くびれ部81

くびれ部81は、図２及び図４に示すように、弾性係止部80の基端部に位置し、上方から下方に向かって凹状にくびれている。くびれ部81は、弾性係止部80をたわみ易くするものであり、ヒンジとして機能する。

（２）先端凸部82

先端凸部82は、図２及び図４に示すように、弾性係止部80の先端部から凸状に延びている。先端凸部82は、図７に示すように、板厚の比較的薄いパネル20aの取付孔21の内縁部に弾性的に当接することで、ブッシュ40のフランジ部42の下面との間で、パネル20aを表裏面からはさみ持つ。先端凸部82は、後述する先端傾斜部83とともに、パネル20, 20aの板厚に対する許容性を持たせるためのものである。

[0030] （３）先端傾斜部83

先端傾斜部83は、図２及び図４に示すように、弾性係止部80の先端部の外

面に形成され、先端凸部82に向かって弾性係止部80の肉厚が徐々に減少するように斜めに傾斜している。先端傾斜部83は、図１に示すように、板厚の比較的厚いパネル20の取付孔21の内縁部に弾性的に当接することで、ブッシュ40のフランジ部42の下面との間で、パネル20を表裏面からはさみ持つ。

（成型方法）

つぎに、図６に示す金型100を用いて、留め具10の成型方法について説明する。

[0031] 金型100は、図６に示すように、大別すると、固定側金型110と、可動側金型120とから構成されている。また、図６中、130は、パーティングラインを示し、140はコマ割りラインを示すものである。

まず、固定側金型110と可動側金型120と閉じ、例えばＰＯＭ（ポリオキシメチレン）等の比較的に硬質な熱可塑性樹脂を用いて、挿入ピン30を一次成形する。

[0032] ついで、エラストマー等の比較的に軟質な熱可塑性樹脂を用いて、ブッシュ40を二次成形して、留め具10とする。

（取付方法）

つぎに、上記した構成を備える留め具10を使用したウエザーストリップ（図示せず）の取付方法について説明する。

[0033] まず、図示しないが、挿入ピン30の刺入部53を、ウエザーストリップ中に刺し入れ、埋設状に固定する。

つぎに、挿入ピン30の脚部60を、図８（ａ）に示すように、パネル20の取付孔21に合わせて挿入する。

脚部60を挿入すると、その一対の弾性係止部80の外側面が、図８（ａ）に示すように、取付孔21の内縁部に当接する。

[0034] ここで、脚部60を強く挿入すると、図８（ｂ）に示すように、一対の弾性係止部80の外側面が取付孔21の内縁部に押されて、互いに接近する方向にたわみ込む。このため、脚部60の外径が縮径し、一対の弾性係止部80が取付孔21を通過する。

このとき、一対の弾性係止部80の内側面が、図８（ｂ）に示すように、ブッシュ40の第１脚43に当接する。第１脚43は、弾性係止部80の内側面に押されて変形して肉厚が薄くなり、復元力を蓄積する。

[0035] 弾性係止部80が取付孔21を通り抜けると、図８（ｃ）に示すように、樹脂の弾性復元力によりパネル20の裏側で復元し、先端傾斜部83が取付孔21の内縁部に弾性的に当接することで、ブッシュ40のフランジ部42の下面との間で、パネル20を表裏面からはさみ持つ。

このため、図示しないが、ウエザーストリップは、留め具10を介してパネル20に固定される。

[0036] 一方、弾性係止部80が復元する際に、弾縮されていた第１脚43が、樹脂の弾性復元力により肉厚が厚くなることで、弾性係止部80の内側面を弾性的に押圧する。

このため、ＰＯＭ（ポリオキシメチレン）等の比較的に硬質な樹脂の復元力に加えて、エラストマー等の比較的に軟質な樹脂の復元力が作用する。

したがって、ブッシュ40の弾性効果により、留め具10を再利用した際、すなわち２回目以降のクリープによる劣化の影響を減少でき、保持力を高い値に維持することができる。

[0037] 一方、図７に示すように、板厚の比較的薄いパネル20aの場合には、取付孔21の内縁部に先端凸部82が弾性的に当接することで、ブッシュ40のフランジ部42の下面との間で、パネル20aを表裏面からはさみ持つ。

２００９年１０月６日に出願された日本特許出願第２００９－２３２２８０号の明細書、特許請求の範囲、図面及び要約書の全内容をここに引用し、本発明の明細書の開示として、取り入れるものである。

請求の範囲

[請求項1] 頭部と、

前記頭部から垂下する支柱、及び前記支柱の下部から頭部方向に延びる弾性係止部からなる脚部とを一体に有す挿入ピンを備える留め具であって、

前記留め具には、

前記挿入ピンの前記支柱の外周部と、前記弾性係止部との間に少なくとも位置し、弾性を有する弾性材料からなるブッシュを備えていることを特徴とする留め具。

[請求項2] 請求項１に記載の留め具であって、

前記弾性材料は、

熱可塑性エラストマーであることを特徴とする留め具。

[請求項3] 請求項２に記載の留め具であって、

前記挿入ピンと前記ブッシュとは一体成形されていることを特徴とする留め具。

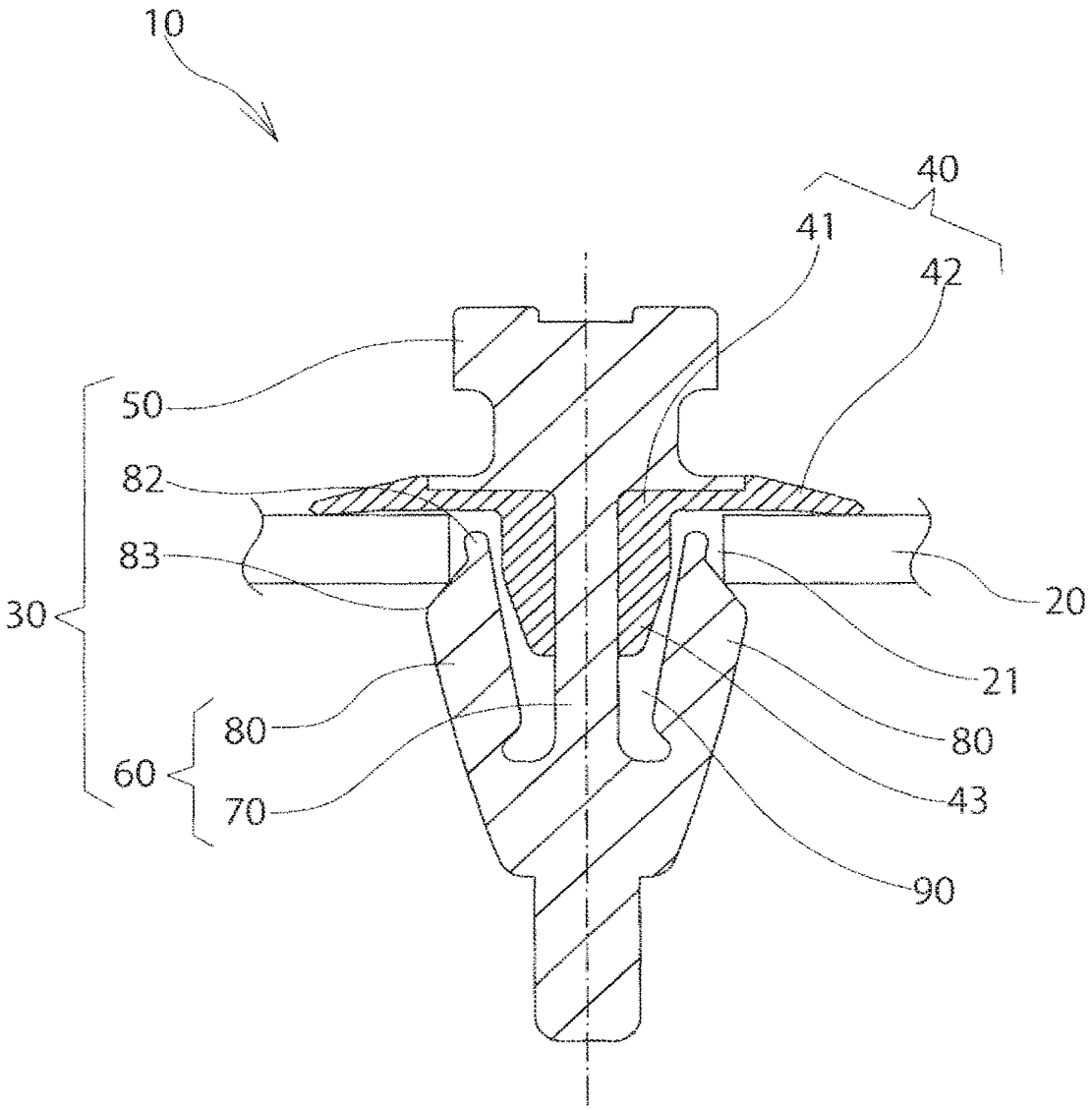
[請求項4] 請求項１～３のいずれか１項に記載の留め具であって、

前記ブッシュには、

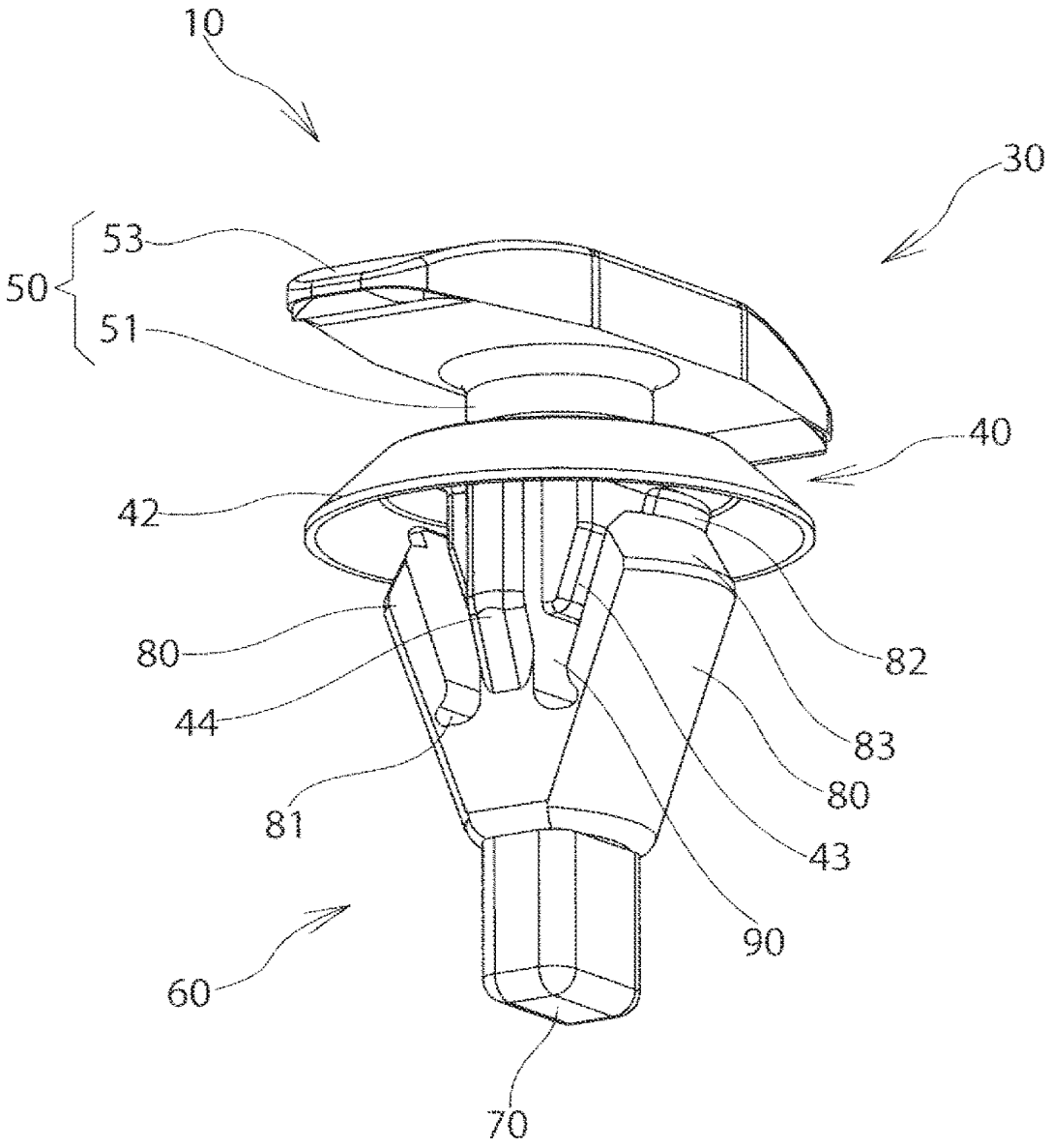
前記挿入ピンの前記支柱にかん合する筒形部と、

前記筒形部の上端部から半径方向外向きに張り出し、パネルに開設した取付孔の内径より径の大きなフランジ部とを一体に備えていることを特徴とする留め具。

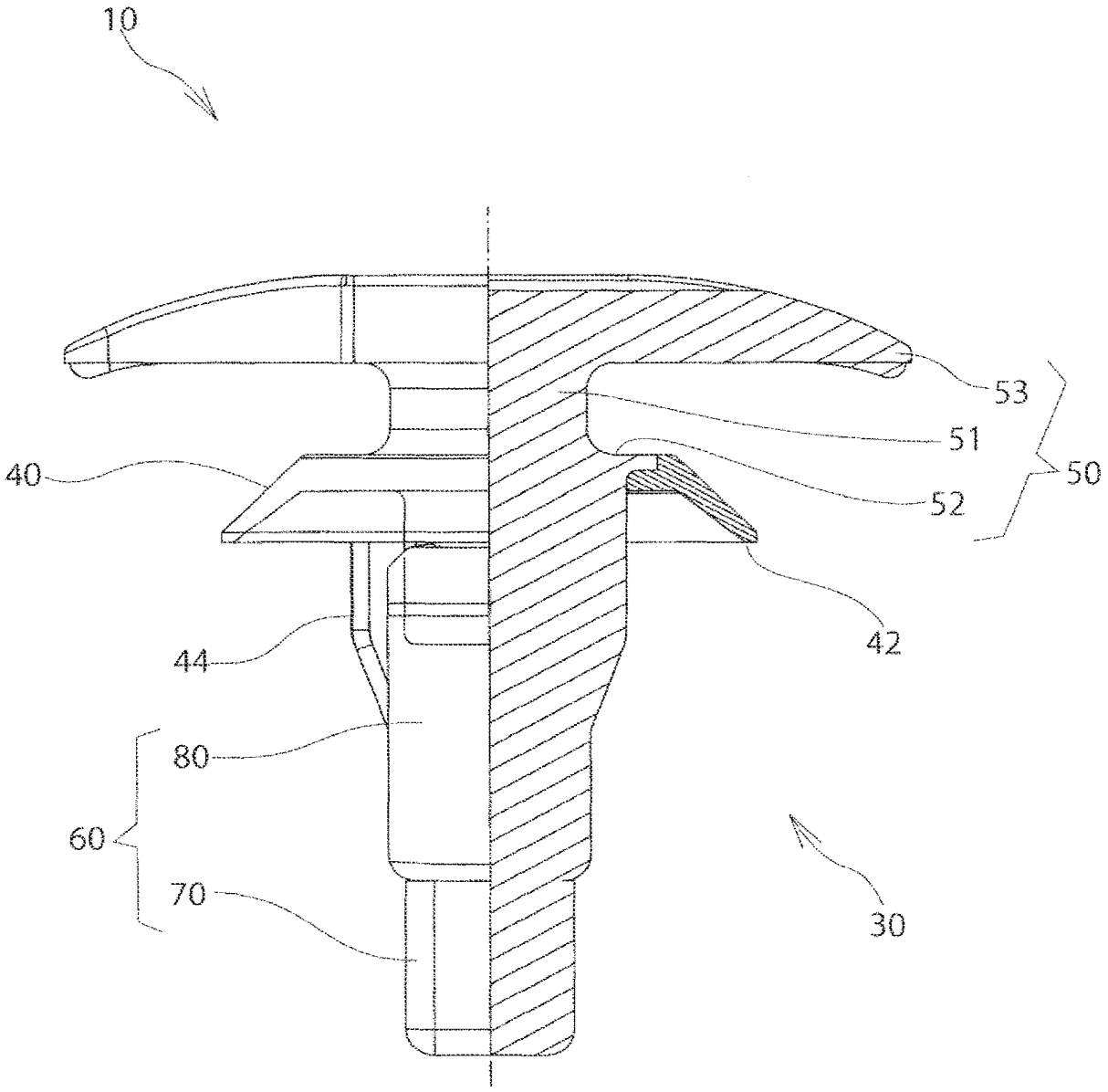
[図1]



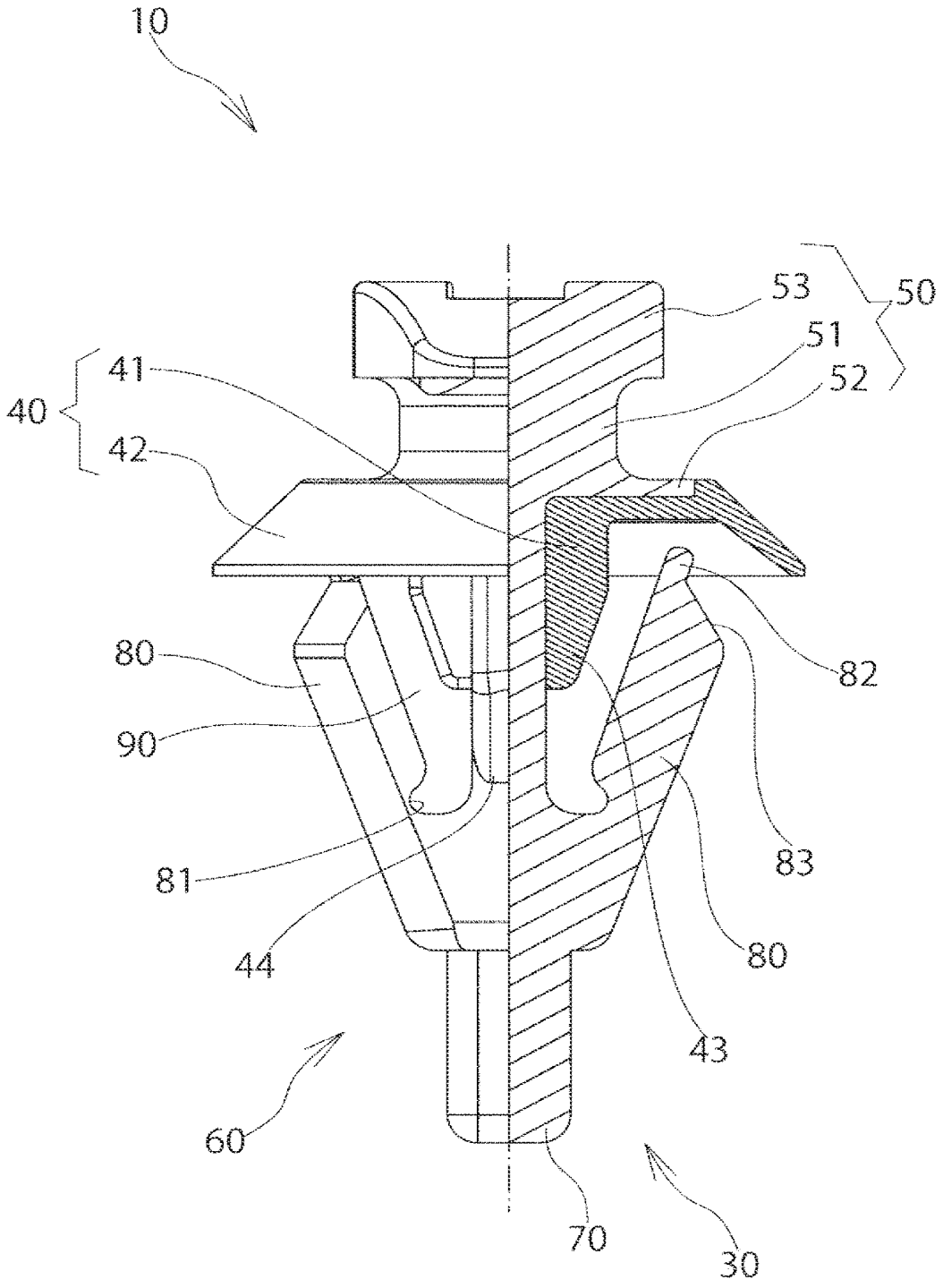
[図2]



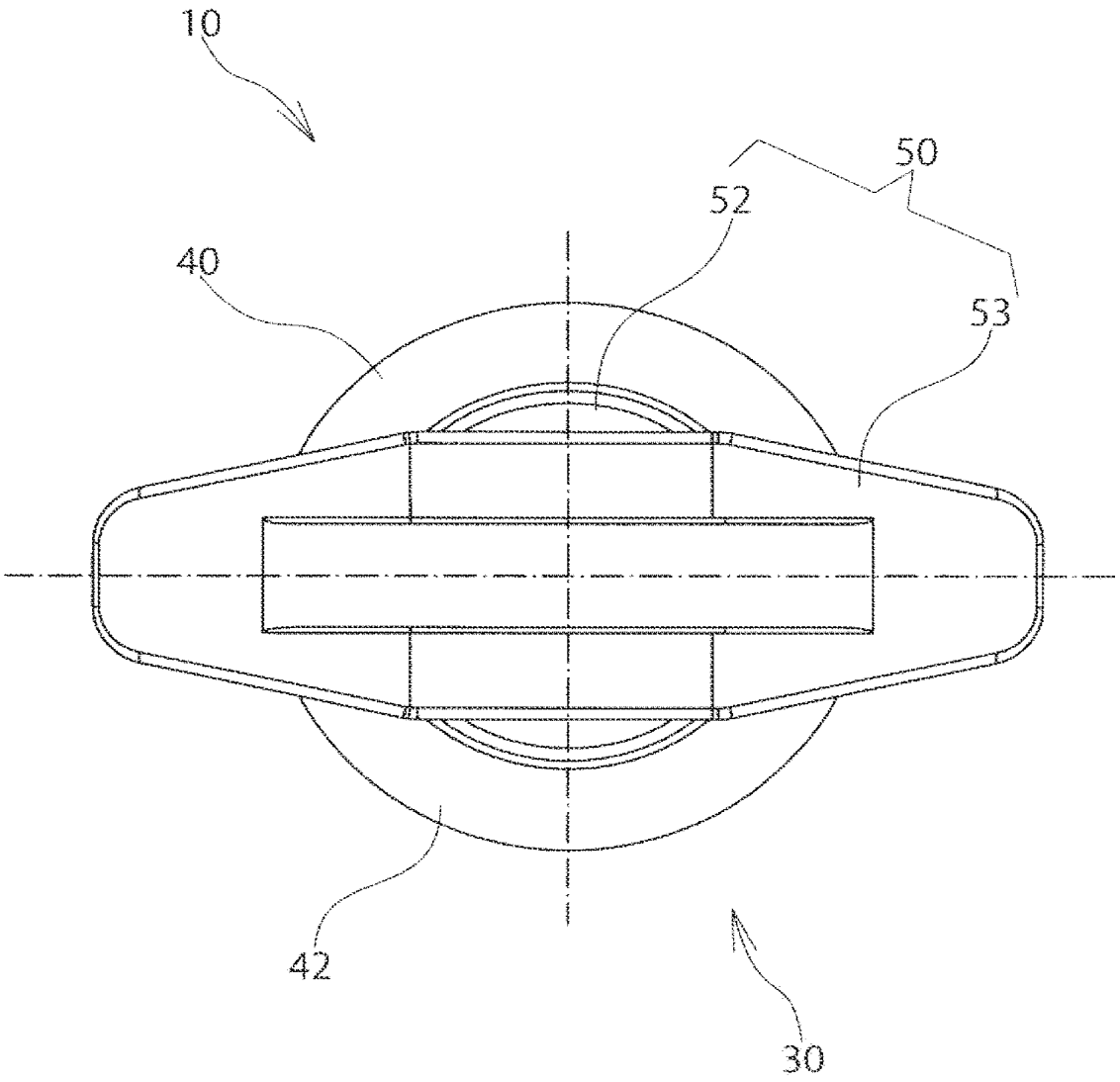
[図3]



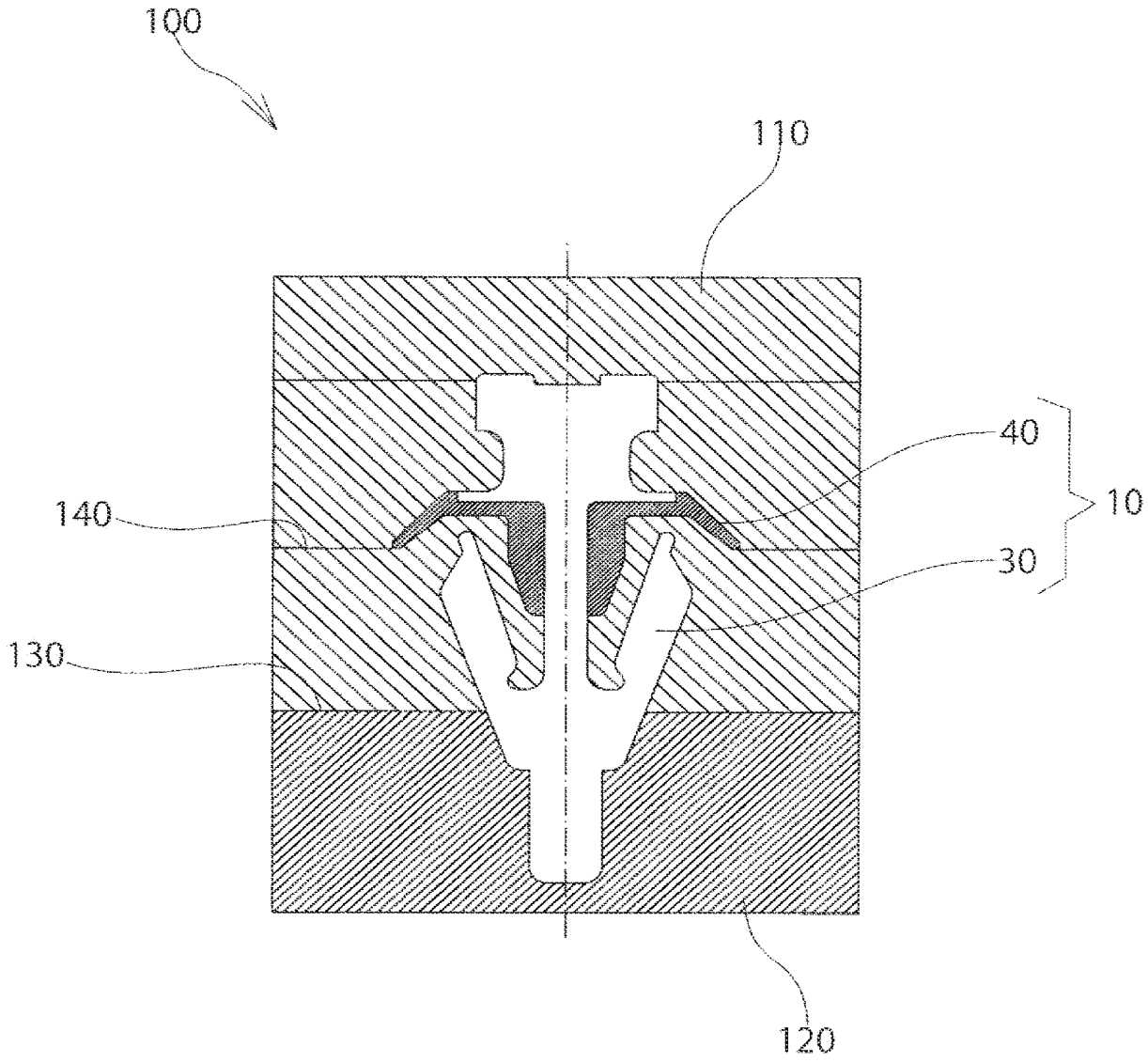
[図4]



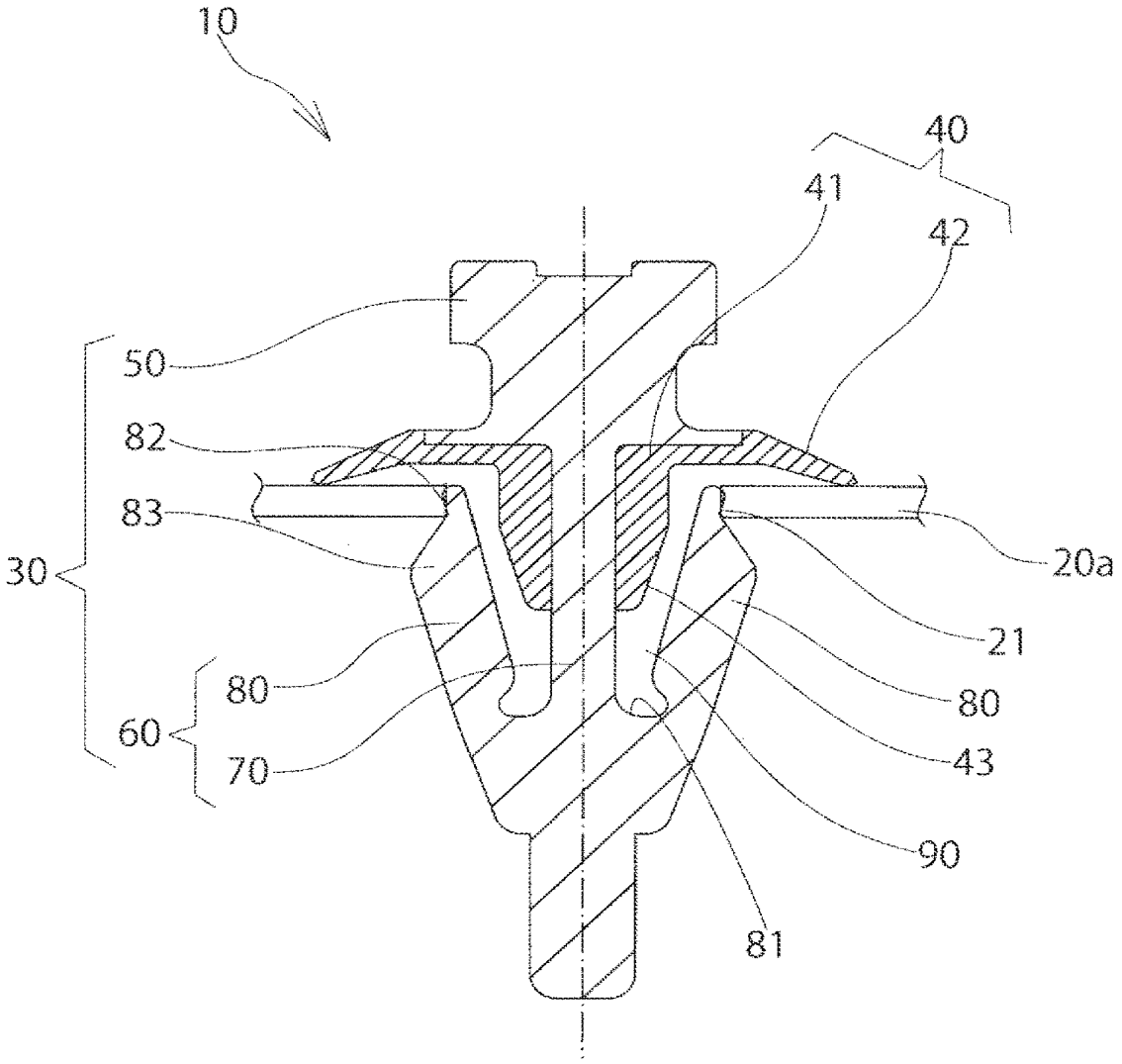
[図5]



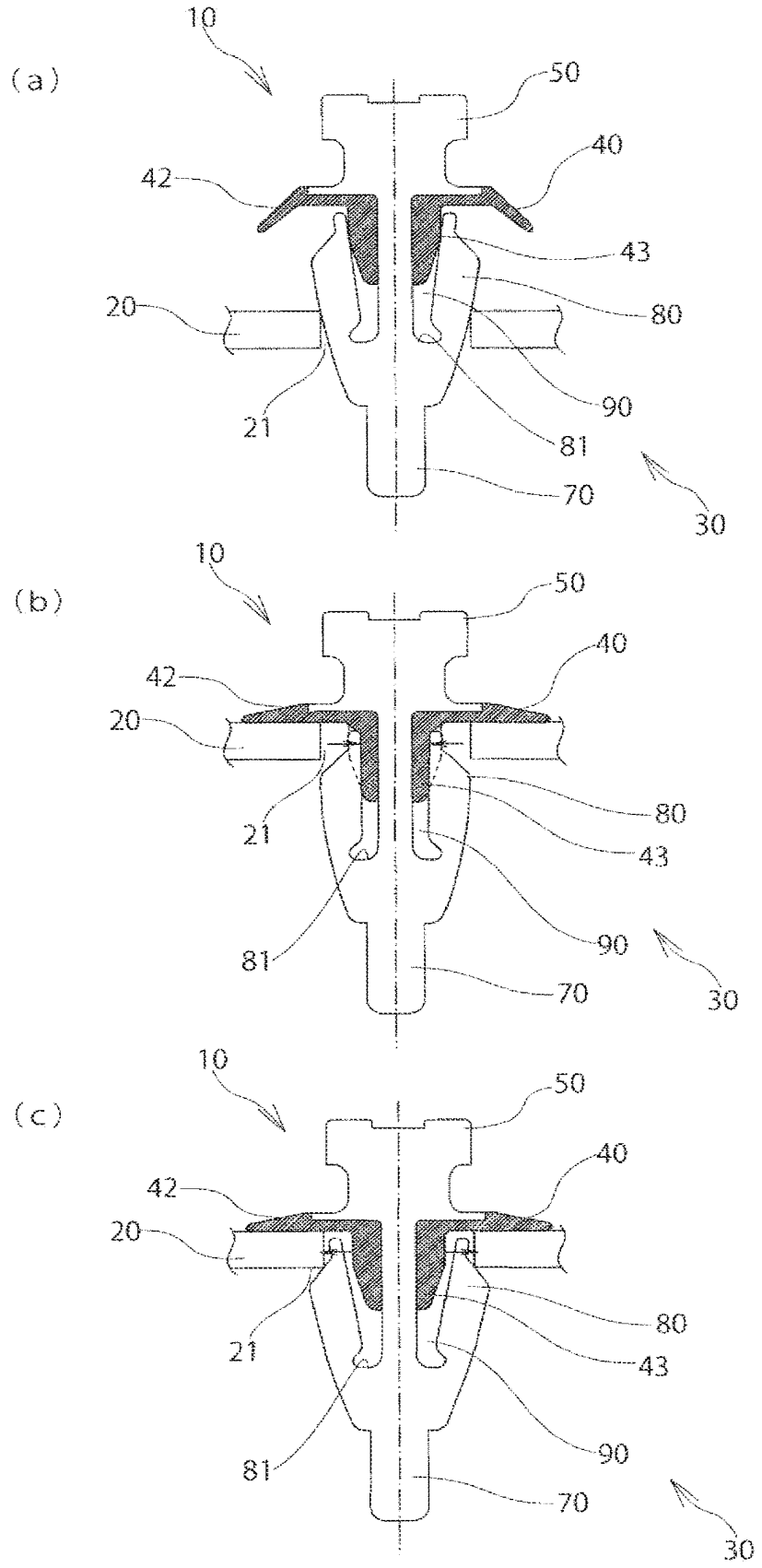
[図6]



[図7]



[図8]


(a)
10
50
40
42
43
20
80
90
21
81
70
30
(b)
10
50
40
42
20
80
21
43
81
90
70
30
(c)
10
50
40
42
20
80
21
43
81
90
70
30

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2010/067485

A. CLASSIFICATION OF SUBJECT MATTER
F16B19/00(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F16B19/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2010
Kokai Jitsuyo Shinan Koho	1971-2010	Toroku Jitsuyo Shinan Koho	1994-2010

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 4-25528 Y2 (Togo Seisakusyo Corp.), 18 June 1992 (18.06.1992), entire text; fig. 1 to 14 (Family: none)	1-4
A	JP 4-32490 Y2 (Nifco Inc.), 05 August 1992 (05.08.1992), entire text; fig. 1 to 7 (Family: none)	1-4
A	JP 5-15607 Y2 (Nifco Inc.), 23 April 1993 (23.04.1993), entire text; fig. 1 to 8 (Family: none)	1-4

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"&" document member of the same patent family

Date of the actual completion of the international search 12 November, 2010 (12.11.10)	Date of mailing of the international search report 22 November, 2010 (22.11.10)
Name and mailing address of the ISA/ Japanese Patent Office Facsimile No.	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 2009)

国際調査報告

国際出願番号　ＰＣＴ／ＪＰ２０１０／０６７４８５

Ａ．　発明の属する分野の分類（国際特許分類（ＩＰＣ））

Int.Cl.　F16B19/00(2006.01)i

Ｂ．　調査を行った分野

調査を行った最小限資料（国際特許分類（ＩＰＣ））

Int.Cl.　F16B19/00

最小限資料以外の資料で調査を行った分野に含まれるもの

日本国実用新案公報	１９２２－１９９６年
日本国公開実用新案公報	１９７１－２０１０年
日本国実用新案登録公報	１９９６－２０１０年
日本国登録実用新案公報	１９９４－２０１０年

国際調査で使用した電子データベース（データベースの名称、調査に使用した用語）

Ｃ．　関連すると認められる文献

引用文献のカテゴリー＊	引用文献名　及び一部の箇所が関連するときは、その関連する箇所の表示	関連する請求項の番号
X	JP 4-25528 Y2 (株式会社東郷製作所) 1992.06.18, 全文、第1-14図 (ファミリーなし)	1-4
A	JP 4-32490 Y2 (株式会社ニフコ) 1992.08.05, 全文、第1-7図 (ファミリーなし)	1-4
A	JP 5-15607 Y2 (株式会社ニフコ) 1993.04.23, 全文、第1-8図 (ファミリーなし)	1-4

☐　Ｃ欄の続きにも文献が列挙されている。

☐　パテントファミリーに関する別紙を参照。

＊　引用文献のカテゴリー
「Ａ」特に関連のある文献ではなく、一般的技術水準を示すもの
「Ｅ」国際出願日前の出願または特許であるが、国際出願日以後に公表されたもの
「Ｌ」優先権主張に疑義を提起する文献又は他の文献の発行日若しくは他の特別な理由を確立するために引用する文献（理由を付す）
「Ｏ」口頭による開示、使用、展示等に言及する文献
「Ｐ」国際出願日前で、かつ優先権の主張の基礎となる出願の日の後に公表された文献
「Ｔ」国際出願日又は優先日後に公表された文献であって出願と矛盾するものではなく、発明の原理又は理論の理解のために引用するもの
「Ｘ」特に関連のある文献であって、当該文献のみで発明の新規性又は進歩性がないと考えられるもの
「Ｙ」特に関連のある文献であって、当該文献と他の１以上の文献との、当業者にとって自明である組合せによって進歩性がないと考えられるもの
「＆」同一パテントファミリー文献

国際調査を完了した日	国際調査報告の発送日
１２．１１．２０１０	２２．１１．２０１０

国際調査機関の名称及びあて先	特許庁審査官（権限のある職員）	
日本国特許庁（ＩＳＡ／ＪＰ） 郵便番号１００－８９１５ 東京都千代田区霞が関三丁目４番３号	平城　俊雅	３Ｗ　９０２７
	電話番号　０３－３５８１－１１０１　内線　３３６８	

様式ＰＣＴ／ＩＳＡ／２１０（第２ページ）（２００９年７月）

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(72) Inventors; and
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(74) Agent: OGAWA, Toshiharu et al.; SIA Kanda Square 4F, 17 Kandakonya-cho, Chiyoda-ku, Tokyo-to 1010035 (JP).

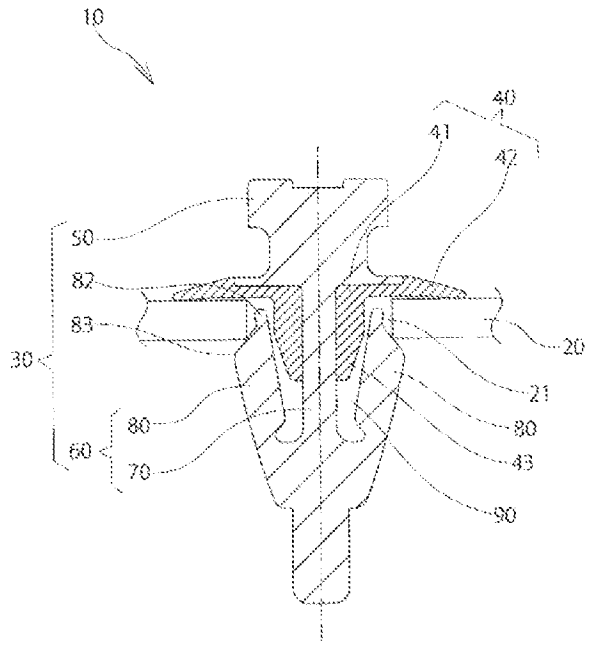
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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(Continued)

(54) Title: RETAINER
(54) Title of the invention: RETAINER

(Fig. 1)



(57) Abstract: Disclosed is a retainer provided with an insertion pin. The insertion pin is integrally provided with a head portion and a leg portion. The leg portion is comprised of a support rod extending downward from the head portion, and elastic locking portions extending from the lower portion of the support rod toward the head portion. The retainer is provided with a bush which is positioned at least between the outer peripheral portion of the support rod of the insertion pin and the elastic locking portions and which is composed of an elastic material having elasticity. The elastic material is a thermoplastic elastomer. The insertion pin and the bush are integrally formed.

(57) Abstract: The retainer is provided with an insertion pin. The insertion pin is integrally provided with a head part and a leg part. The leg part is composed of a supporting column extending downward from the head part and an elastic locking part extending from the bottom part of the supporting column toward the head part. The retainer is provided with a bush composed of an elastic material having elasticity, positioned at least between the outer circumferential part of the support column of the insertion pin and the elastic locking part. The elastic material is a thermoplastic elastomer. The insertion pin and the bush are integrally molded.

WO 2011/043352 A1

Published:
— with international search report (Art. 21 (3))

DESCRIPTION

Title of the invention: Retainer

Technical field

[0001] This invention relates to a retainer for attaching other components to a panel, wherein a bush is made to function independently of an elastic locking part, thus making it possible to reduce the drop in pull-out strength upon reuse of the fastener.

Background art

[0002] Conventionally known retainers of this type have been provided with ribs on the inside surface of two locking leg pieces so as to increase the latching strength of the locking leg pieces to the panel (for example, see Patent Document 1, Paragraph No. "0012", Fig. 1 and Fig. 5 through 8; hereinafter referred to as "former invention").

The rib of the prior art described above is connected at one end to the inner surface of the locking leg piece, and from there rises diagonally inward to form a curved part, after which it extends straight upward along the supporting column and is connected to the bottom surface of a collar part (for example, see Patent Document 1, Paragraph No. "0012").

[0003] Furthermore, retainers are known in the prior art wherein a soft resin bush is fitted onto the outer circumference of the leg part (for example, see Patent Document 2, page 2, right column, lines 18 to 25 and Fig. 1 through 4, and Patent Document 3, page 2, right column, lines 32 to 39 and Fig. 1 through 4; hereinafter referred to as "latter inventions").

Prior art documents

Patent documents

(0004) Patent document 1: Japanese Patent No. 3607826

Patent document 2: Japanese Examined Utility Model Application Publication H04-32490

Patent document 3: Japanese Examined Utility Model Application Publication H05-15607

Summary of the invention

Problem to be solved by the invention

(0005) However, in the case of the rib of the former invention of the prior art mentioned above (Patent Document 1), there is the problem that a large load is applied to the bottom surface of the collar part and to the connecting portion going to the inner surface of the locking leg piece, so creep deformation occurs readily and in case of reuse, the pull-out strength tends to fall.

Furthermore, the soft resin bush of the latter inventions of the prior art mentioned above (Patent Document 2 and Patent Document 3) is fitted onto the outer circumference of the leg part, so there is the problem that it does not have a function of assisting the elastic restoring force of the elastic part (Patent Document 2) or expanded part (Patent Document 3).

(0006) The present invention was thus made in light of the problems of the prior art described above, its purpose being to make it possible to assist the elastic restoring force of an elastic locking part and increase the pull-out strength by providing a bush composed of elastic material between the outer circumferential part of a supporting column and the elastic locking part.

Means for solving the problem

(0007) The present invention was made to achieve the aforementioned purpose and is characterized by the following features.

(0008) First, the retainer is provided with the following component.

(1) Insertion pin

Second, the insertion pin is integrally provided with the following components.

(2) Head part

(3) Leg part

Third, the leg part is composed of the following components.

(0009) (4) Supporting column

The supporting column extends downward from the head part.

(5) Elastic locking part

The elastic locking part extends from the bottom part of the supporting column toward the head part.

Fourth, the retainer is provided with the following component.

(0010) (6) Bush

The bush is composed of an elastic material having elasticity and is positioned at least between the outer circumferential part of the supporting column of the insertion pin and the elastic locking part.

The present invention may optionally comprise the following feature as a distinguishing characteristic.

(0011) The elastic material is a thermoplastic elastomer. This makes it possible to achieve an elastic effect based on the thermoplastic elastomer.

The present invention may optionally comprise the following feature as a distinguishing characteristic.

The insertion pin and bush are integrally molded. This makes it possible to shorten the manufacturing process by integrally molding the insertion pin and bush.

The present invention may optionally comprise the following feature as a distinguishing characteristic.

(0012) The bush is integrally provided with the following components.

(1) Tubular part

The tubular part fits onto the supporting column of the insertion pin.

(2) Flange part

The flange part protrudes in the radially outward direction from the upper end part of the tubular part and is larger in diameter than the inside diameter of the attachment hole formed in the panel.

Thus, the water-tightness of the attachment hole in the panel can be improved by means of a bush provided with a tubular part and a flange part.

Effect of the invention

(0013) The present invention, being configured as above, makes it possible to assist the elastic restoring force of the elastic locking part and increase the pull-out strength by providing a bush composed of elastic material between the outer circumferential part of the supporting column and the elastic locking part.

(0014) In addition, the present invention makes it possible to reduce the drop in pull-out strength in case of reuse of the retainer by making the bush function independently of the elastic locking part.

Brief description of the drawings

(0015) (Fig. 1) is a cross-sectional view of the state of a retainer attached to a panel.

(Fig. 2) is a perspective view of the retainer.

(Fig. 3) is a side view of the retainer with one half thereof shown in cross-section.

(Fig. 4) is another side view of the retainer with one half thereof shown in cross-section.

(Fig. 5) is a plan view of the retainer.

(Fig. 6) is a cross-sectional view of a mold.

(Fig. 7) is a cross-sectional view of the state of the retainer attached to a panel of relatively thin plate thickness.

(Fig. 8) (a) through (c) are explanatory drawings intended to explain the retainer attachment procedure.

Modes for embodying the invention

(0016) In the drawings, 10 represents a retainer, this retainer 10 being used for attaching weather stripping or other components to a panel 20, for example in the vicinity of a door or the edge of a trunk room opening of an automobile.

It should be noted that while the vicinity of door and the edge of a trunk room opening of an automobile are exemplified with respect to the panel 20, the panel is not limited to use in the vicinity of a door or the edge of a trunk room opening, nor is it limited to use in automobiles.

(0017) The panel 20, as shown in Fig. 1, is provided with a round attachment hole 21 penetrating from the outer to the inner surface of the panel 20. It should be noted that while the shape of the attachment hole 21 is exemplified as being round, the shape is not limited thereto.

Furthermore, the panel 20 can be of multiple types, as shown in Fig. 1 and Fig. 7; for example, it can be a thick plate panel 20, or a relatively thin plate panel 20a. It should be noted that the plate thickness of the panel 20, 20a is not limited to two types and may be of three or more types.

(0018) The retainer 10, as shown in Fig. 1 through 5, broadly classified, comprises the following parts.

The following (1) and (2) will be described later.

(1) Insertion pin 30

(2) Bush 40

It should be noted that the parts of the retainer 10 are not limited to (1) and (2) above.

(Insertion pin 30)

The insertion pin 30, as shown in Fig. 1, is secured by inserting into an attachment hole 21 of a panel 20, and is used to attach weather stripping (not illustrated) to the portion protruding from the outer surface of the panel 20. The insertion pin 30 is furthermore integrally molded from a relatively hard thermoplastic resin having the appropriate elasticity and rigidity, such as POM (polyoxymethylene).

(0019) Specifically, the insertion pin 30, broadly classified, is provided with the following parts, as shown in Fig. 1 through 5.

The following (1) and (2) will be described later.

(1) Head part 50

(2) Leg part 60

It should be noted that the parts of the insertion pin 30 are not limited to (1) and (2) above.

(Bush 40)

The bush 40, as shown in Fig. 1 through 5, is composed of an elastic material having elasticity, positioned at least between the outer circumferential part of a supporting column 70, described below, of the insertion pin 30, and an elastic locking part 80, likewise described below. As the elastic material, a thermoplastic resin such as an elastomer which is highly elastic and soft in comparison to the insertion pin 30 is used. The bush 40, as will be described later, is formed through secondary molding on the insertion pin 30.

(0020) Specifically, the bush 40 is provided with the following parts, as shown in Fig. 1 through 5.

(1) Tubular part 41

The tubular part 41, as shown in Fig. 1 and Fig. 4, is fitted onto the supporting column 70, described later, of the insertion pin 30.

As shown in Fig. 1 through 4, multiple, for example, four, legs 43, 44 extend at 90 degree intervals from the lower end part of the tubular part 41.

(0021) Of the four legs 43, 44, the pair of first legs 43 arranged back to back to each other, as shown in Fig. 1 and Fig. 2, are positioned between the outer circumferential part of the supporting column 70, described below, and the elastic locking part 80, likewise described below.

Of the four legs 43, 44, the remaining pair of second legs 43 arranged back to back to each other, as shown in Fig. 2 through 4, differ in phase from the first legs 43 by 90 degrees, and extend longer than the first legs 43.

It should be noted that while four legs 43, 44 have been formed, the invention is not limited thereto. Alternatively, a single leg may be formed in a ring shape, or two, three or five or more legs may be formed.

(0022) (2) Flange part 42

The flange part 42, as shown in Fig. 1 through 5, protrudes in a ring shape in the radially outward direction from the upper end part of the tubular part 41 and is larger in diameter than the inside diameter of the attachment hole 21 formed in the panel 20.

Specifically, the outer circumferential edge part of the flange part 42, as shown in Fig. 2 through 4, extends diagonally downward in an umbrella shape, with its material thickness being made relatively thin so as to make it easily bendable.

(0023) The flange part 42, as shown in Fig. 1 and Fig. 7, is elastically brought into tight contact with the surface of the two types of panels 20, 20a of different plate thickness. Thus, the flange part 42, in addition to having a sealing effect, is able to tolerate changes in plate thickness of the panel 20, 20a.

(Head part 50)

The head part 50, as shown in Fig. 1, in a state where the leg part 60 has been inserted and secured to the attachment hole 21 of the panel 20, protrudes upward from the outer surface of the panel 20 and is used to attach weather stripping (not illustrated).

(0024) Specifically, the head part 50 is provided with the following parts, as shown in Fig. 2 through 5.

(1) Central shaft part 51

The central shaft part 51, as shown in Fig. 2 through 4, extends for a short distance in a round column shape.

(2) Bulge-out part 52

The bulge-out part 52, as shown in Fig. 3 through 5, bulges out in a ring shape from the lower end part of the central shaft part 51 and connects to the upper surface of the flange part 42 of the bush 40.

(0025) (3) Piercing part 53

The piercing part 53, as shown in Fig. 2 through 5, extends in a T shape from the lower end part of the central axis part 51, and is formed in a substantially rhomboid shape with two ends becoming narrow in tapering fashion when viewed from above, as shown in Fig. 5. The piercing part 53, although this is not shown in the drawings, pierces into a weather strip and is secured in an embedded state therein.

(Leg part 60)

The leg part 60, as shown in Fig. 1, is secured to the panel 20 by inserting into an attachment hole 21 of the panel 20.

(0026) Specifically, the leg part 60 is provided with the following parts, as shown in Fig. 1 through 4

(1) Supporting column 70

The supporting column 70, as shown in Fig. 1 through 4, extends downward in a quadrilateral column shape from the head part 50.

It should be noted that while the supporting column 70 was formed in a quadrilateral column shape, it is not limited thereto and may also be formed, for example, in a round column shape.

(0027) (2) Elastic locking part 80

The elastic locking part 80, as shown in Fig. 1 through 4, extends from the lower part of the supporting column 70 toward the head part 50.

Specifically, the elastic locking part 80, as shown in Fig. 2 and Fig. 4, extends substantially in a V shape from the lower part of the supporting column 70 toward the bottom surface of the flange part 42 of the bush 40. Furthermore, a plurality, for example, a pair, of elastic locking parts 80 are formed, with their phase being shifted 90 degrees in relation to the direction of protrusion of the piercing part 53. The maximum outside diameter of the pair of elastic locking parts 80 is made larger than the inside diameter of the attachment hole 21 of the panel 20.

(0028) It should be noted that while a pair of elastic locking parts 80 were formed, the invention is not limited thereto and three or more may be formed as well.

Furthermore, a space part 90 is formed between the elastic locking parts 80 and the outer circumferential part of the supporting column 70, as shown in Fig. 2 and Fig. 4, and the first legs 43 of the bush 40 are positioned inside this space part 90.

Furthermore, the elastic locking parts 80 are provided with the following parts, as shown in Fig. 2 through 4.

(0029) (1) Constricted part 81

The constricted part 81, as shown in Fig. 2 and Fig. 4, is located at the base end part of the elastic locking part 80 and is constricted into a concave shape going from the top downward. The constricted part 81 makes the elastic locking part 80 easier to bend and functions as a hinge.

(2) Tip end protruding part 82

The tip end protruding part 82, as shown in Fig. 2 and Fig. 4, extends in a convex shape from the tip end part of the elastic locking part 80. The tip end protruding part 82, as shown in Fig. 7, elastically contacts the inner edge part of the attachment hole 21 of the panel 20a with relatively thin plate thickness, thereby sandwiching the panel 20a from the outer and inner surfaces between itself and the bottom surface of the flange part 42 of the bush 40. The tip end protruding part 82, together with the tip end sloping part 83, described later, are intended to provide tolerance for the plate thicknesses of panels 20 and 20a.

(0030) (3) Tip end sloping part 83

The tip end sloping part 83, as shown in Fig. 2 and Fig. 4, is formed on the outer surface of the tip end part of the elastic locking part 80, and is sloped diagonally such that the material thickness of the elastic locking part 80 gradually decreases toward the tip end protruding part 82. The tip end sloping part 83, as shown in Fig. 1, elastically contacts the inner edge part of the attachment hole 21 of the panel 20 with relatively thick plate thickness, thereby sandwiching the panel 20 from the outer and inner surfaces between itself and the bottom surface of the flange part 42 of the bush 40.

(Molding method)

Next, the molding method for the retainer 10 using the mold 100 shown in Fig. 6 will be described.

(0031) The mold 100, as shown in Fig. 6, broadly classified, is composed of a stationary side mold 110 and a movable side mold 120. Furthermore, in Fig. 6, 130 represents a parting line, and 140 represents an insert split line.

First, the stationary side mold 110 and the movable side mold 120 are closed, and primary molding of the insertion pin 30 is performed using a relatively hard thermoplastic resin such as POM (polyoxymethylene).

(0032) Secondary molding of the bush 40 is then performed using a relatively soft thermoplastic resin such as an elastomer, thus creating the retainer 10.

(Attachment method)

Next, the method of attaching weather stripping (not illustrated) using a retainer 10 provided with the aforesaid components will be described.

(0033) First, although this is not shown in the drawings, the piercing part 53 of the insertion pin 30 is pierced into a weather strip and is secured in an embedded state therein.

Next, the leg part 60 of the insertion pin 30 is aligned with and inserted into an attachment hole 21 of the panel 20, as shown in Fig. 8 (a).

When the leg part 60 is inserted, the outer surface of the pair of elastic locking parts 80 contacts the inner edge part of the attachment hole 21, as shown in Fig. 8 (a).

(0034) Here, if the leg part 60 is inserted forcefully, the outer surface of the pair of elastic locking parts 80 will be pushed against the inner edge part of the attachment hole 21, bending them inward toward each other, as shown in Fig. 8 (b). Thus, the outside diameter of the leg part 60 narrows and the pair of elastic locking parts 80 pass through the attachment hole 21.

Here, the inner surface of the pair of elastic locking parts 80 contacts the first legs 43 of the bush 40, as shown in Fig. 8 (b). The first legs 43 are pushed by the inner surface of the elastic locking parts 80 and deformed so that the material thickness is reduced and restoring force is accumulated.

(0035) Once the elastic locking parts 80 clear the attachment hole 21, as shown in Fig. 8 (c), they are restored on the inner side of the panel 20 due to the elastic restoring force of the resin, and the tip end sloped parts 83 elastically contact the inner edge part of the attachment hole 21, thereby sandwiching the outer and inner surfaces of the panel 20 between these tip end sloped parts and the bottom surface of the flange part 42 of the bush 40.

Thus, while not shown in the drawings, the weather strip is secured to the panel 20 by the retainer 10.

(0036) Furthermore, when the elastic locking parts 80 are restored, the first legs 43 that had been elastically compressed increase in material thickness due to the elastic restoring force of the resin, and thus press on the inner surface of the elastic locking parts 80.

Consequently, the restoring force of the relatively soft resin such as an elastomer acts in addition to the restoring force of the relatively hard resin such as POM (polyoxymethylene).

Therefore, when the retainer 10 is reused, the elastic effect of the bush 40 makes it possible to reduce the influence of degradation due to creep and to maintain the retaining force at a high level for the second and subsequent uses.

(0037) Furthermore, in the case of a panel 20a with relatively thin plate thickness, as shown in Fig. 7, the tip end protruding part 82 elastically contacts the inner edge part of the attachment hole 21, thereby sandwiching the panel 20a from the outer and inner surfaces between itself and the bottom surface of the flange part 42 of the bush 40.

The entire disclosure of Japanese Patent Application No. 2009-232280 filed on 06 October 2009 including the specification, claims, drawings and abstract is incorporated herein by reference in its entirety.

CLAIMS

(Claim 1) A retainer provided with an insertion pin integrally comprising

a head part and

a leg part composed of a supporting column extending downward from said head part and an elastic locking part extending from the bottom part of said supporting column toward the head part,

said retainer being characterized in that it is provided with:

a bush composed of elastic material having elasticity, positioned at least between an outer circumferential part of said supporting column of said insertion pin and said elastic locking part.

(Claim 2) A retainer as set forth in Claim 1,

characterized in that said elastic material

is a thermoplastic elastomer.

(Claim 3) A retainer as set forth in Claim 2,

characterized in that said insertion pin and said bush are integrally molded.

(Claim 4) A retainer as set forth in any one of claims 1 through 3,

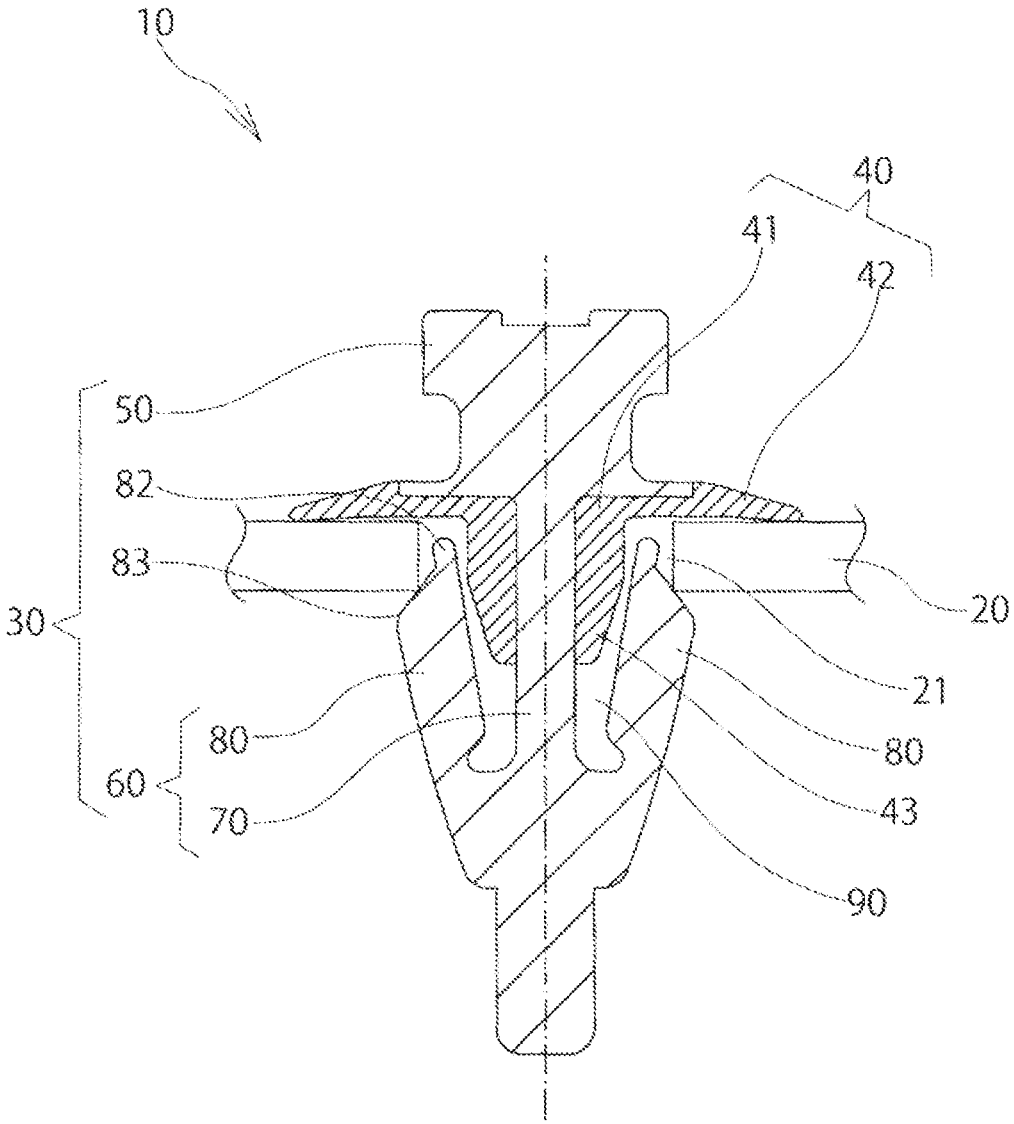
characterized in that said bush is integrally provided with:

a tubular part which fits onto said supporting column of said insertion pin, and

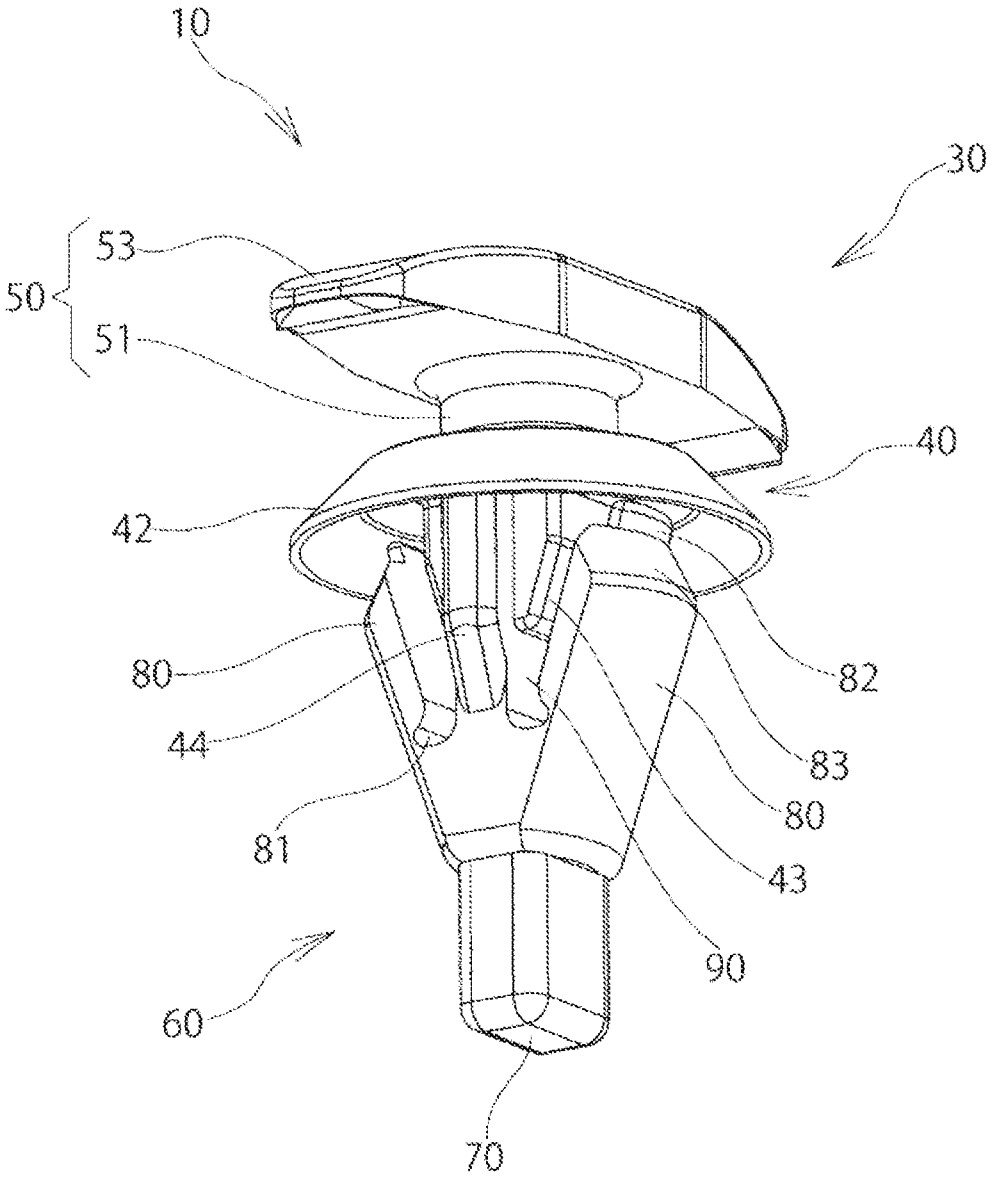
a flange part which protrudes radially outward from an upper end part of said tubular part and has a larger diameter than the inside diameter of an attachment hole formed in a panel.

WO 2011/043352 PCT/JP2010/067485

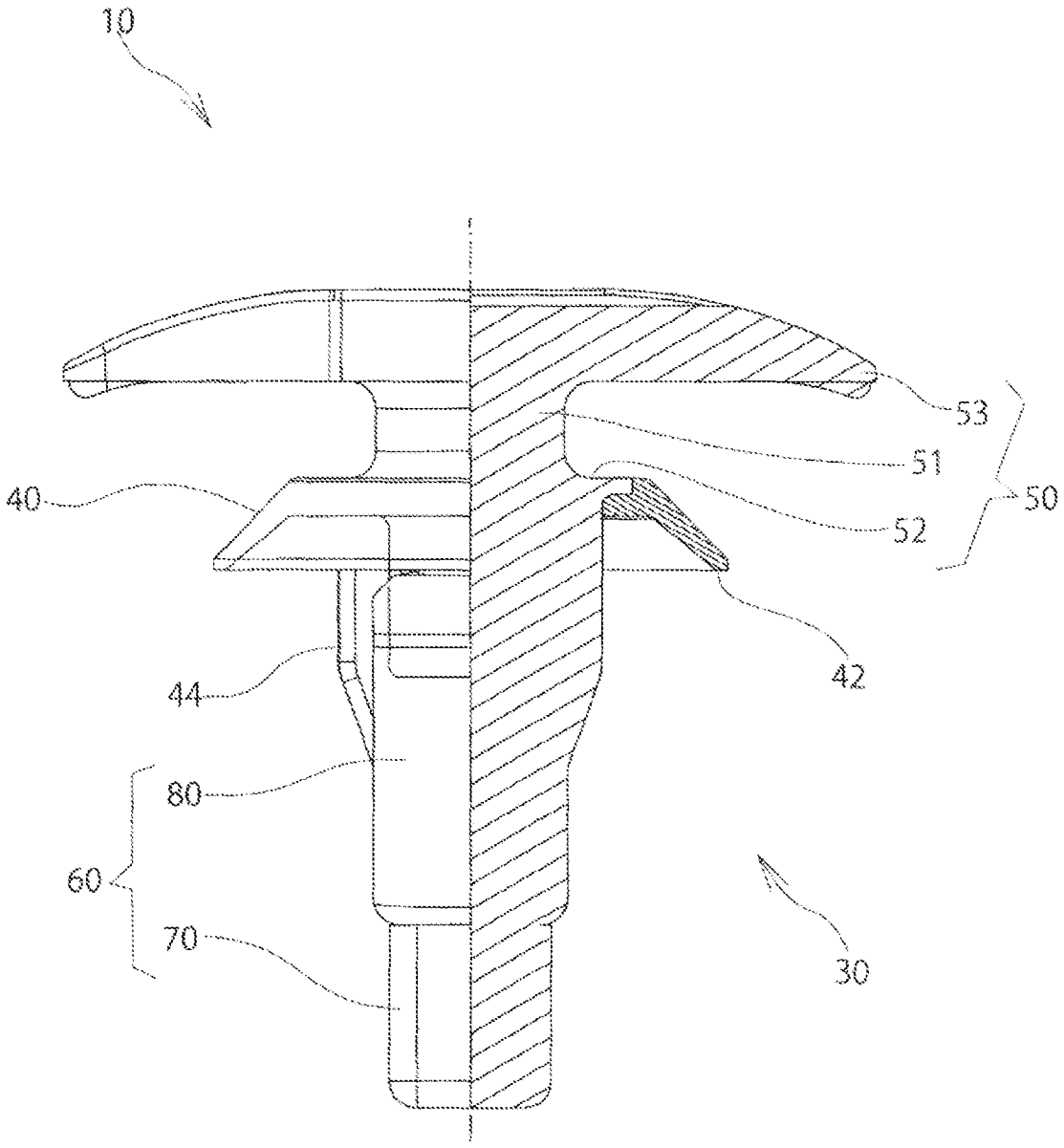
(Fig. 1)



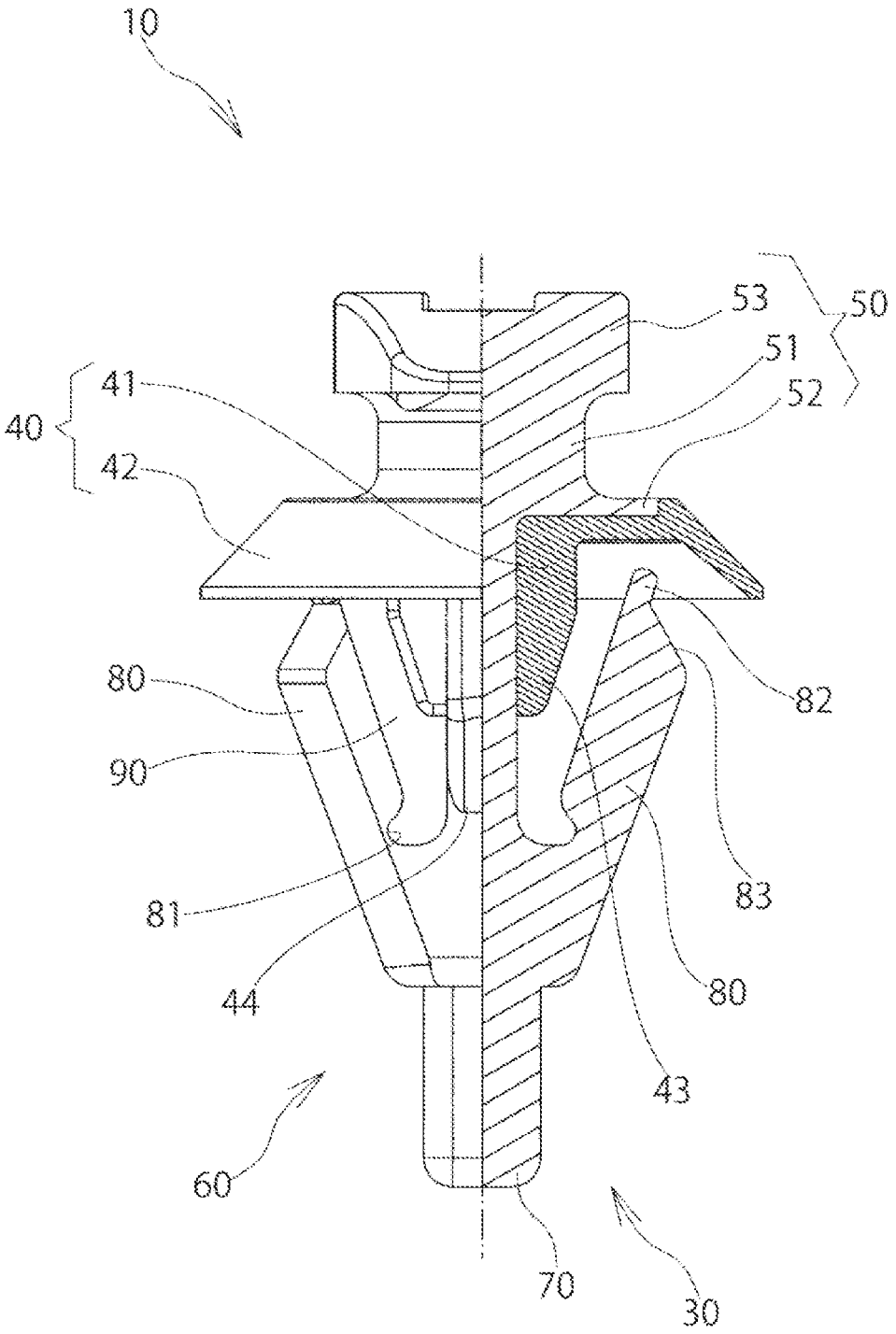
(Fig. 2)



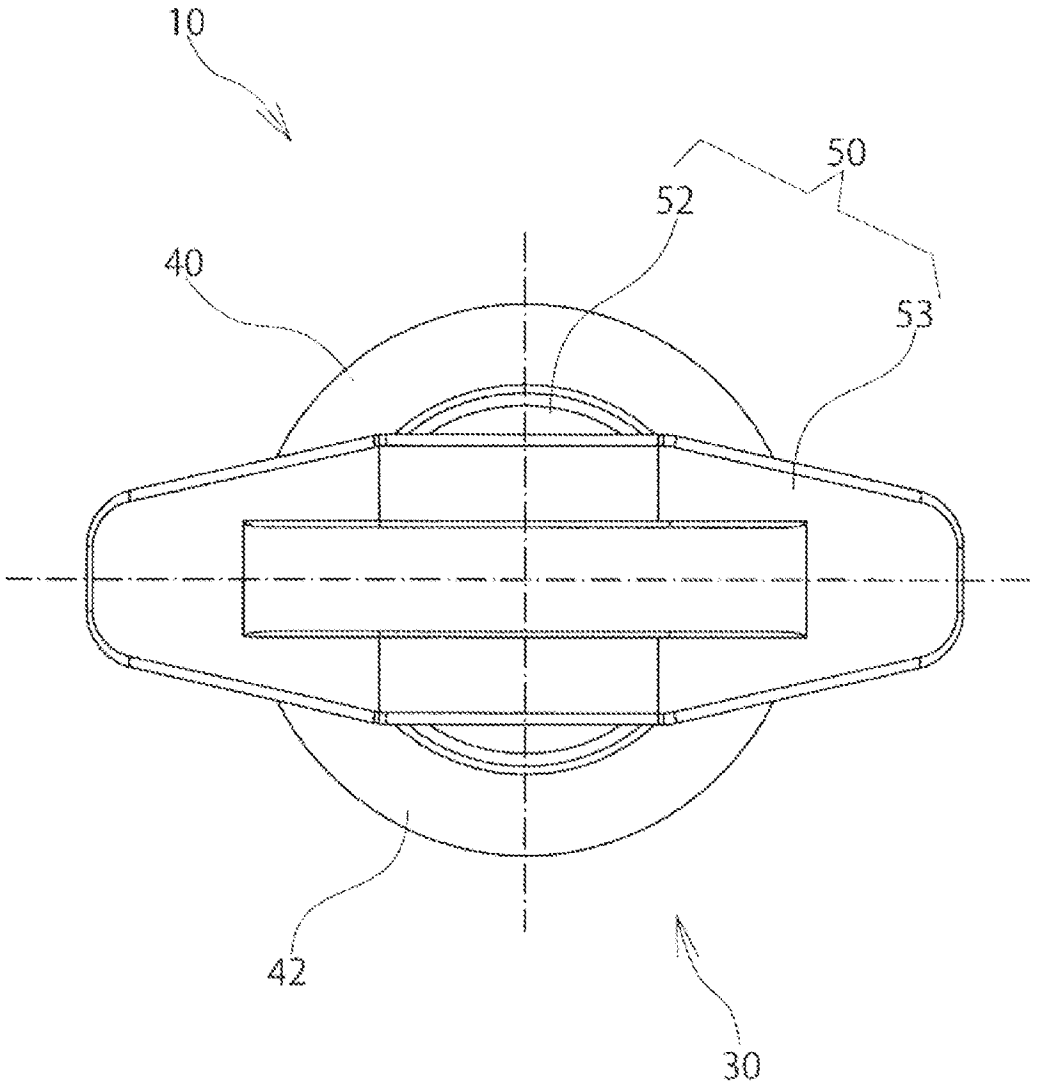
(Fig. 3)



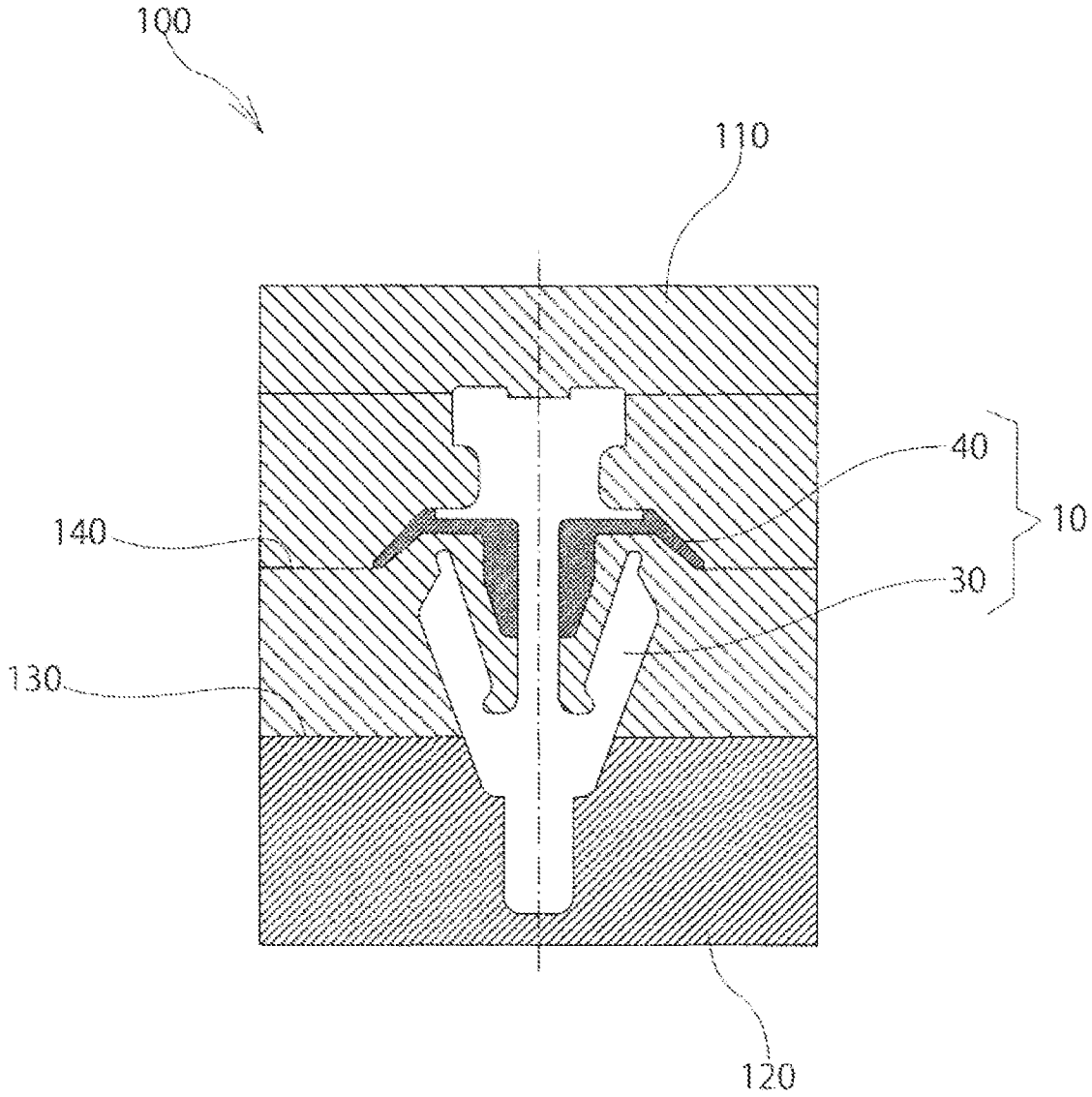
(Fig. 4)



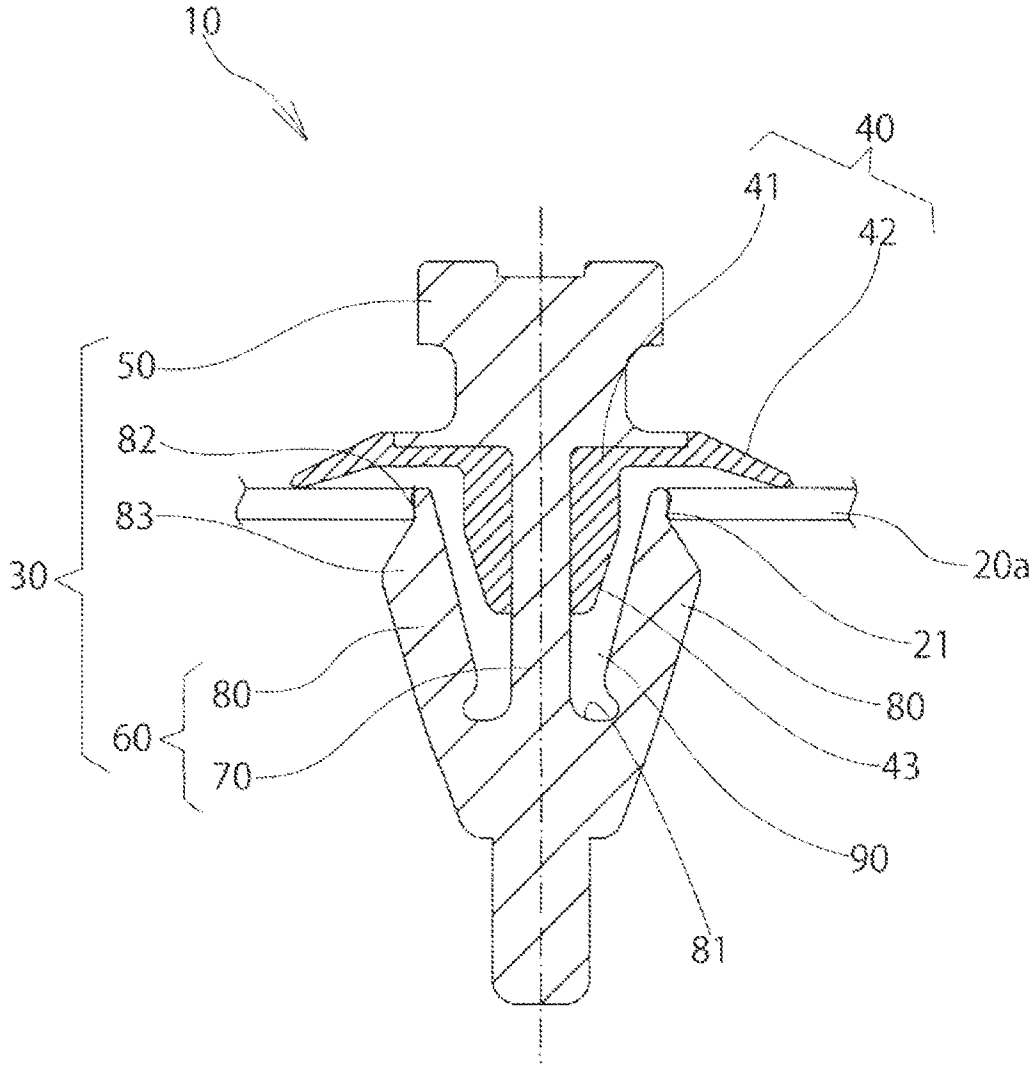
(Fig. 5)



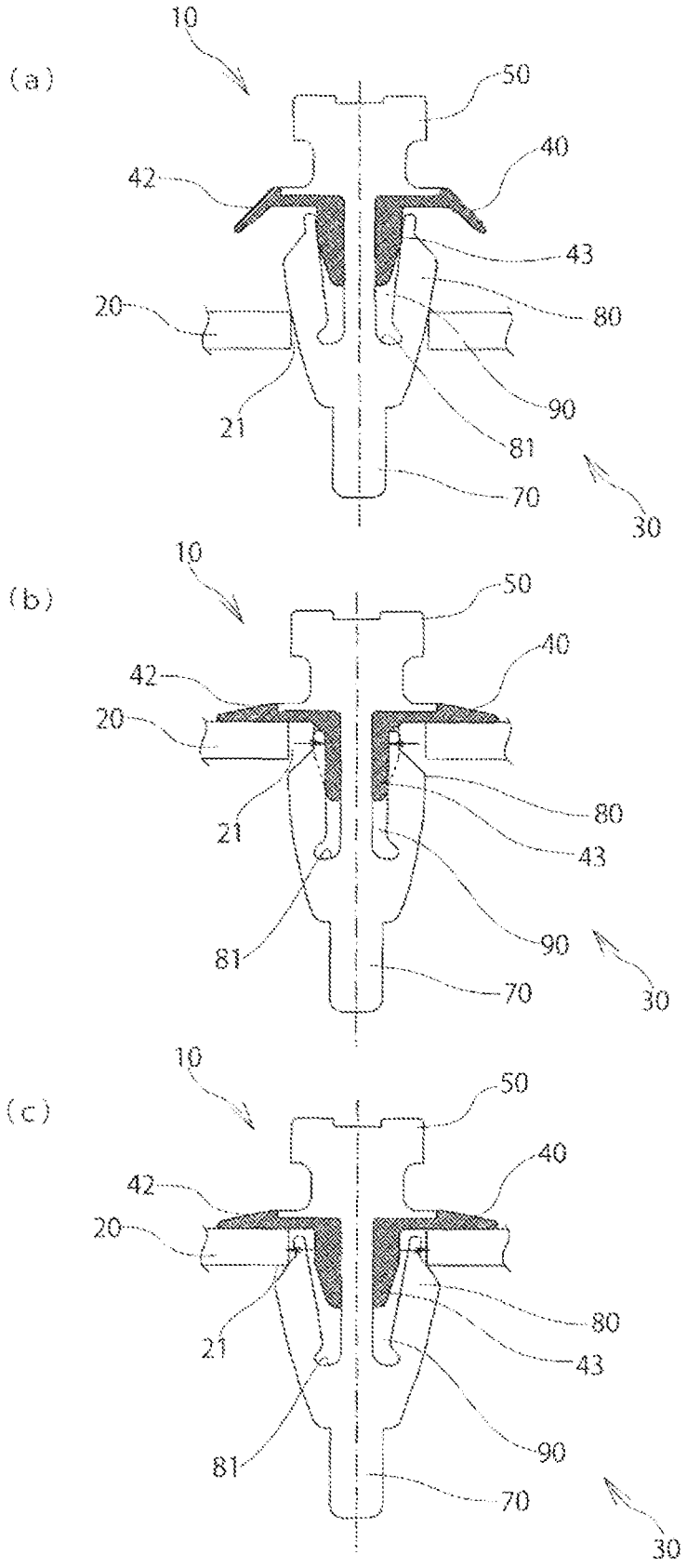
(Fig. 6)



(Fig. 7)



(Fig. 8)


(a)
10
50
40
42
43
80
20
90
21
81
70
30
(b)
10
50
40
42
20
80
21
43
90
81
70
30
(c)
10
50
40
42
20
80
21
43
90
81
70
30

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2010/067485

A. CLASSIFICATION OF SUBJECT MATTER
F16B19/00(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F16B19/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2010
Kokai Jitsuyo Shinan Koho	1971-2010	Toroku Jitsuyo Shinan Koho	1994-2010

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 4-25528 Y2 (Kogo Seisakusyo Corp.), 18 June 1992 (18.06.1992), entire text; fig. 1 to 14 (Family: none)	1-4
A	JP 4-32490 Y2 (Nifco Inc.), 05 August 1992 (05.08.1992), entire text; fig. 1 to 7 (Family: none)	1-4
A	JP 5-15607 Y2 (Nifco Inc.), 23 April 1993 (23.04.1993), entire text; fig. 1 to 8 (Family: none)	1-4

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA/ Japanese Patent Office	Authorized officer
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INTERNATIONAL SEARCH REPORT

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F16B19/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2010
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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12.11.2010	22.11.2010

Name and address of the ISA	JPO examiner (authorized personnel)	
Japan Patent Office (ISA/JP) Postal code 100-8915 4-3 Kasumigaseki 3-chome, Chiyoda-ku, Tokyo-to	Toshimasa Hirajyo Telephone No. 03-3581-1101 Ext. 3368	3W | 9027

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最終頁に続く

(54)【発明の名称】車両用外装部材の取付構造

(57)【特許請求の範囲】
【請求項１】
車両の外表面を成し、その一部に内側に向かって折曲された内壁とこの内壁に連なる奥壁とを有する凹部が形成された外板部材と、
前記奥壁に取付けられかつ前記内壁に対向する係止面を有する保持部材と、
前記車両の内側に向かって延設されたフランジ部を有する外装部材とを有し、
前記フランジ部は先端に向かって厚さが減少するテーパ状の傾斜面を有し、
該フランジ部が前記係止面と前記内壁との間に挟持された状態で前記係止面に該フランジ部が係止された車両用外装部材の取付構造であって、
前記凹部の内壁が前記フランジ部の前記傾斜面に応じた角度で傾斜し、
前記フランジ部には前記係止面と向かい合う係止孔が形成され、
前記係止面に前記凹部の内壁に向かって突出する凸部が形成され、該凸部は、前記フランジ部が前記内壁と前記係止面との間に挿入される際に該フランジ部の挿入を許容する位置に変位し、該凸部が前記係止孔に達したとき該係止孔に嵌合するばね性を有しかつ、
前記凸部の側面に、前記外装部材を前記フランジ部に沿う方向に移動させたときに該フランジ部が前記凸部上に乗り上げて該凸部を前記係止孔から外す方向に変位させるガイド斜面が形成され、かつ、
前記保持部材の取付面に形成された一対のファスナ部と、
前記奥壁に形成され前記一対のファスナ部がそれぞれ挿入される一対の取付孔とを具備したことを特徴とする車両用外装部材の取付構造。

【発明の詳細な説明】
【０００１】
【発明の属する技術分野】
この発明は、車両のバンパフェイス等の外装部材を車体に取付けるための取付構造に関する。
【０００２】
【従来の技術】
車両のバンパフェイス（バンパフェイシャともバンパカバーとも呼ばれる）を車体に固定するために、例えば実開平６－４５８７０号公報や実開平３－４４０５４号公報あるいは特開２０００－５２９００号公報などに記載されているように、クリップ等の保持部材を用いたバンパ取付構造が提案されている。これらの従来例は、バンパフェイスあるいは車体のいずれか一方に保持部材（クリップ）を取付け、他方に形成された係合部に前記保持部材を係合させることにより、バンパフェイスを車体の所定位置に取付けるようにしている。
【０００３】
【発明が解決しようとする課題】
しかし従来の取付構造は、車体の外板部材（アウタパネル）とバンパフェイスとが互いに直接位置決めし合う構造ではないために、外板部材に対してバンパフェイスの縁部の位置を高精度に規制することが難しかった。例えば外板部材とバンパフェイスの縁部との間に隙間や段差が生じるなどして、見栄えが悪くなることがある。
【０００４】
また、バンパフェイスを従来のクリップ等の保持部材を用いて外板部材の凹部に取付ける構造では、バンパフェイスを車体から取外す必要が生じたときに、車体の外側からバンパフェイスを取外す作業を行いにくく、作業性の面で改善の余地があった。
【０００５】
従ってこの発明の目的は、バンパフェイス等の車両用外装部材を外板部材の所定位置に精度良く取付けることができる取付構造を提供することにある。さらに他の目的は、外装部材を容易に取外すことができるようにすることにある。
【０００６】
【課題を解決するための手段】
本発明の外装部材の取付構造は、請求項１に記載したように、車両の外表面を成し、その一部に内側に向かって折曲された内壁とこの内壁に連なる奥壁とを有する凹部が形成された外板部材と、前記奥壁に取付けられかつ前記内壁に対向する係止面を有する保持部材と、前記車両の内側に向かって延設されたフランジ部を有する外装部材とを有し、前記フランジ部は先端に向かって厚さが減少するテーパ状の傾斜面を有し、該フランジ部が前記係止面と前記内壁との間に挟持された状態で前記係止面に該フランジ部が係止された車両用外装部材の取付構造であって、前記凹部の内壁が前記フランジ部の前記傾斜面に応じた角度で傾斜し、前記フランジ部には前記係止面と向かい合う係止孔が形成され、前記係止面に前記凹部の内壁に向かって突出する凸部が形成され、該凸部は、前記フランジ部が前記内壁と前記係止面との間に挿入される際に該フランジ部の挿入を許容する位置に変位し、該凸部が前記係止孔に達したとき該係止孔に嵌合するばね性を有しかつ、前記凸部の側面に、前記外装部材を前記フランジ部に沿う方向に移動させたときに該フランジ部が前記凸部上に乗り上げて該凸部を前記係止孔から外す方向に変位させるガイド斜面が形成され、かつ、前記保持部材の取付面に形成された一対のファスナ部と、前記奥壁に形成され前記一対のファスナ部がそれぞれ挿入される一対の取付孔とを具備している。外装部材のフランジ部が、外板部材の凹部の内壁と保持部材の係止面との間に挟み込まれた状態で両者が係止されることにより、外板部材とフランジ部が互いに直接位置決めされる。しかもこのフランジ部は、先端に向かって厚さが減少する形状であるため、フランジ部の先端を前記内壁と保持部材との間の隙間に容易に差し込むことができる。
【０００７】

請求項1に記載した発明においては、前記フランジ部が前記内壁と係止面との間に挿入されたときに、凸部が係止孔に嵌合することにより、フランジ部が前記隙間から抜け出ることが阻止されるとともに、この凸部によってフランジ部の位置（いわゆる“出しろ”）が規制される。このため外板部材の縁部と外装部材の縁部の位置を精度良く揃えることができる。

【０００８】

請求項1に記載した発明においては、前記外装部材を保持部材から取外す必要が生じたときに、外装部材を横に少しずらすことにより、フランジ部が凸部のガイド斜面に接しながら凸部を乗り上げ、凸部が押されることにより、凸部が係止孔から外れる。そののちフランジ部を手前に引き出せば、フランジ部が保持部材から外れる。

【０００９】

【発明の実施の形態】

以下に本発明の一実施形態について、図１から図５を参照して説明する。

図２は、車両（この場合は自動車）の車体１０の一部を示している。この車両は、車体１０の外表面を成す外板部材１１と、外装部材の一例であるバンパフェイス１２と、ランプユニット１３などを備えている。バンパフェイス１２の端部１２ａは、以下に説明する保持部材３０によって、外板部材１１の所定位置に取付けられている。バンパフェイス１２の端部１２ａ以外の箇所については、周知のボルト等によって車体１０に固定されるため説明は省略する。

【００１０】

図１に示すように外板部材１１の一部に凹部１５が形成されている。凹部１５は、車体内側に向かって折曲された内壁１６と、内壁１６から下方に連なる奥壁１７とを有している。内壁１６は、外板部材１１の外面１１ａから車体内側に向かって高さが低くなる形状に折曲され、図５に示すように水平線Ｌに対して角度θ１をなして傾斜している。奥壁１７は、内壁１６の奥からほぼ垂直な方向に延びている。奥壁１７の上部に、左右一対の矩形の取付孔１８（図３に示す）が形成されている。

【００１１】

合成樹脂材からなるバンパフェイス１２は、図１に示すようにフェイス本体部２０の上端から車体内側に向けて水平方向に延出するフランジ部２１を備えている。フランジ部２１は、その下面に設けられた板金製の補強部材２２を含んでいる。この補強部材２２は、バンパフェイス１２の長手方向（図２中に矢印Ａで示す車体前後方向）に沿って設けられている。

【００１２】

フランジ部２１は、先端２３に向かって厚さが減少するテーパ形状をなし、上面側が傾斜面２４となっている。図５に示すように、傾斜面２４は水平線Ｌに対して先端２３側が低くなるように角度θ２をなして傾斜している。この傾斜角度θ２は、内壁１６の傾斜角度θ１よりも僅かに大きい。フランジ部２１の所定位置に、上下方向に貫通する係止孔２５が形成されている。係止孔２５は、後述する係止面３１と向かい合って開口している。

【００１３】

凹部１５の奥壁１７に保持部材３０が取付けられている。保持部材３０は、例えばポリアセタールやナイロン等に代表される合成樹脂の一体成形品であり、奥壁１７に取付けられた状態においてほぼ水平方向に延びる係止面３１と、ほぼ垂直方向に延びる取付面３２と、補強リブ３３などを有している。係止面３１は内壁１６と向かい合っている。保持部材３０の前部には、その前端３０ａから係止面３１に向かって次第に高くなるように円弧状に湾曲したガイド面３４が形成されている。

【００１４】

前記取付面３２に左右一対のファスナ部３６が形成されている。このファスナ部３６は、Ｖ形に広がるばね状の抜け止め部３７を有している。各ファスナ部３６をそれぞれ取付孔１８に挿入し、抜け止め部３７を取付孔１８の開口縁に引っ掛けることにより、保持部材３０をワンタッチで奥壁１７に取付けることができる。ファスナ部３６と取付面３２と

間には、緩衝材を兼ねたパッキン３８が設けられている。
【００１５】
図４に示すように、係止面３１に「コ」形のスリット４１が形成されている。スリット４１の内側の領域が、図１において上下方向に撓むことのできるばね部４２となっている。このばね部４２の上面に凸部４３が形成されている。凸部４３は、係止面３１の前部、すなわちガイド面３４に近い部分において、内壁１６に向かって突出している。凸部４３の前面４４は、フランジ部２１が内壁１６と係止面３１との間の隙間Ｓ（図５に示す）に挿入される際に、フランジ部２１の下面２１ａが滑りながら乗り上げることができるように、後方に向かって高さが大となるように傾斜した形状をなしている。
【００１６】
フランジ部２１が前記隙間Ｓに挿入される際、フランジ部２１の下面２１ａによって凸部４３が下方に押されながらばね部４２が撓むため、フランジ部２１を隙間Ｓの奥に向かって挿入することが可能となる。そして係止孔２５の位置が凸部４３に達したとき、ばね部４２の弾力によって凸部４３が係止孔２５に嵌合する。すなわちこの凸部４３は、ばね部４２によって、上下方向に撓むことができるばね性をもたせている。
【００１７】
凸部４３の背面側は、凸部４３が係止孔２５に入り込んだのちフランジ部２１が隙間Ｓから抜ける方向に移動することを阻止するために、係止面３１から直角に近い角度で立上がる位置決め壁４５となっている。
【００１８】
凸部４３の両側面（車体の前後方向の面）には、凸部４３の頂部４３ａに向かって高さが大となるように傾斜するガイド斜面４６が形成されている。このガイド斜面４６は、バンパフェイス１２をフランジ部２１に沿う方向（図２に矢印Ａで示す方向）に少しずらしたとき、フランジ部２１の下面２１ａが凸部４３上を滑りながら乗り上げ、凸部４３が係止孔２５から外れる方向（下方に引っ込む方向）に変位するような傾斜面としている。
【００１９】
係止面３１の後部、すなわち取付面３２に近い側に、内壁１６に向かって上方に突出するストッパ壁５０が形成されている。このストッパ壁５０は、フランジ部２１の先端２３が隙間Ｓの奥まで挿入されたときに先端２３が当接し、フランジ部２１の挿入深さを規制できる位置に設けられている。
【００２０】
次に、前記保持部材３０を用いてバンパフェイス１２を外板部材１１に取付ける工程について説明する。
まず、保持部材３０のファスナ部３６を外板部材１１の取付孔１８に挿入することにより、保持部材３０を凹部１５の奥壁１７に取付ける。保持部材３０の係止面３１と凹部１５の内壁１６との間に、奥壁１７に向かってテーパ状に狭くなる隙間Ｓ（図５に示す）が形成される。
【００２１】
そののち、バンパフェイス１２のフランジ部２１の先端２３を、前記隙間Ｓに向かって図５中の矢印Ｂ方向に挿入する。フランジ部２１は、先端２３に向かって厚さが減少するテーパ形状であり、しかも保持部材３０の上縁部にガイド面３４が形成されているため、フランジ部２１の先端２３を前記隙間Ｓに容易に差し込むことができる。
【００２２】
フランジ部２１を隙間Ｓに挿入する過程で、図５に示すように凸部４３がフランジ部２１の下面２１ａに接することによって、凸部４３が係止面３１の内側に引っ込む方向にばね部４２が撓む。このため、フランジ部２１の先端２３がストッパ壁５０に当接する位置までフランジ部２１を挿入することができる。フランジ部２１の先端２３がストッパ壁５０に達する過程で、ばね部４２の弾力によって凸部４３が係止孔２５に入り込む。
【００２３】
フランジ部２１は先端２３側の肉厚が薄くなるテーパ状をなし、その傾斜面２４が凹部１

５の内壁１６に接している。このためフランジ部２１が前記隙間Ｓに挿入されると、フランジ部２１が図１中の矢印Ｃ方向に戻ろうとする。しかしこの方向には凸部４３の位置決め壁４５が存在するため、係止孔２５の内面２５ａが位置決め壁４５に当接する。これにより、フランジ部２１の矢印Ｃ方向の位置（出しろ）が正確に規制される。

【００２４】

その結果、外板部材１１の外面１１ａに対してバンパフェイス１２の縁部１２ｂの位置が実質的に同一面上に揃う。しかもフランジ部２１の傾斜角θ２（図５に示す）が内壁１６の傾斜角度θ１よりも僅かに大きいため、バンパフェイス１２の縁部１２ｂを外板部材１１の縁部１１ｂに密接させることができる。

【００２５】

バンパフェイス１２を保持部材３０から取外すには、バンパフェイス１２を車体１０の前後方向（図２中の矢印Ａ方向）に少し移動させる。こうすることにより、凸部４３のガイド斜面４６にフランジ部２１の下面２１ａが乗り上げ、凸部４３が下方に引っ込むようにばね部４２が撓むため、凸部４３が係止孔２５から外れる。そののちフランジ部２１を隙間Ｓから手前（車体外方）に引き出せば、フランジ部２１を保持部材３０から取外すことができる。

【００２６】

前述した本発明の車両用外装部材の取付構造は、フロントバンパやリヤバンパをはじめとして、バンパフェイス以外の外装部材に適用することができる。またこの発明を実施するに当たり、外板部材や外装部材の具体的な形状、保持部材の係止面や凸部の形態など、この発明の構成要素をこの発明の要旨を逸脱しない範囲で種々に変更して実施できることは言うまでもない。

【００２７】

【発明の効果】

請求項１に記載した発明によれば、外板部材の内壁と保持部材との間にフランジ部を挟み込むことによって、フランジ部と外板部材とを直接位置決めする構造であるため、外板部材の所定位置に外装部材を精度良く取付けることができる。

【００２８】

請求項１に記載した発明によれば、フランジ部を保持部材の係止面と外板部材の凹部の内壁との間に挿入するだけで、外板部材の所定位置に外装部材を容易に取付けることができる。また、外板部材の縁部と外装部材の縁部の互いの位置関係を高精度に規制することができる。

【００２９】

請求項１に記載した発明によれば、外装部材を保持部材から取外す必要が生じたときに、外装部材を横に少しずらすことにより、フランジ部と保持部材との係合を外すことができる。

【図面の簡単な説明】

【図１】　本発明の一実施形態の外装部材の取付構造を示す車両の一部の縦断面図。

【図２】　図１に示された車両の一部の斜視図。

【図３】　図１に示された外装部材の取付構造に使用される保持部材の斜視図。

【図４】　図３に示された保持部材の平面図。

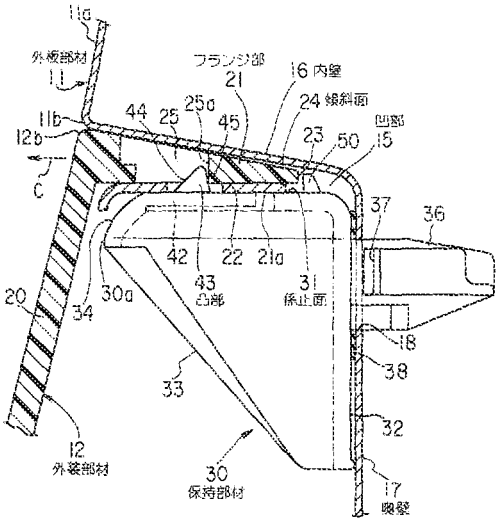
【図５】　図１に示された外装部材のフランジ部が保持部材に係止される直前の状態を示す断面図。

【符号の説明】

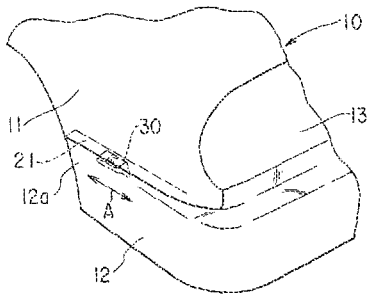
１０…車体
１１…外板部材
１２…バンパフェイス（外装部材）
１５…凹部
１６…内壁
１７…奥壁

２１…フランジ部
２４…傾斜面
２５…係止孔
３０…保持部材
３１…係止面
４３…凸部
４６…ガイド斜面

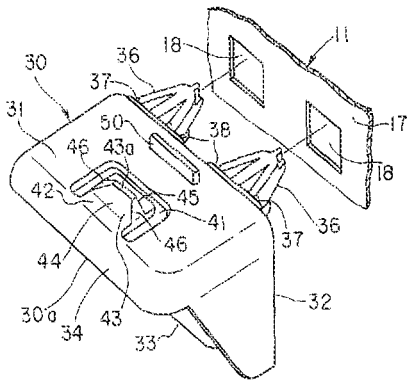
【図１】



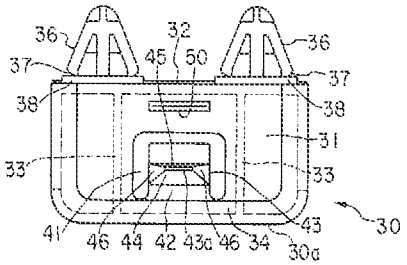
【図２】



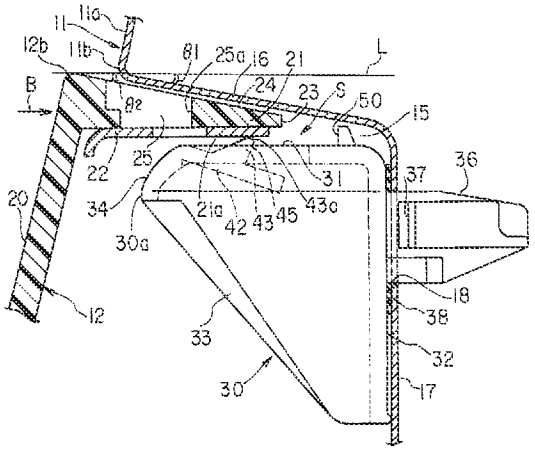
【図３】



【図４】


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【図５】


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特開２００２－０４６５５８（ＪＰ，Ａ）
実開平０４－０４３５４２（ＪＰ，Ｕ）
実開昭６４－０３６２５７（ＪＰ，Ｕ）

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B60R 19/24

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		B60R	19/24	F

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Continued on the last page

(54) (Title of the invention) Vehicular exterior trim member mounting structure

(57) (Scope of patent claims)
(Claim 1)

A vehicular exterior trim member attachment structure comprising an exterior panel member which forms an outside surface of a vehicle and in a portion of which there is formed a recessed part having an inwardly bent inner wall and a back wall continuing from the inner wall,

a retaining member having a locking surface which is attached to said back wall and opposes said inner wall, and

an exterior trim member having a flange part extending toward the interior of said vehicle,

wherein said flange part has a tapered inclined surface whereof the thickness decreases toward the tip end,

and said flange part is locked to said locking surface in a state where said flange part is held between said locking surface and said inner wall, the vehicular exterior trim member attachment structure being characterized in that

the inner wall of said recessed part is inclined at an angle corresponding to the said inclined surface of said flange part;

a locking hole which faces said locking surface is formed in said flange part;

a protruding part which projects toward the inner wall of said recessed part is formed on said locking surface, which protruding part has springiness such that it is displaced to a position that allows insertion of said flange part when said flange part is inserted between said inner wall and said locking surface and such that said protruding part engages said locking hole upon reaching said locking hole;

a sloping guide surface is formed on a side surface of said protruding part such that when said exterior trim member is moved along said flange part, said flange part runs up onto said protruding part and displaces said protruding part in a direction that disengages it from said locking hole; and

the vehicular exterior trim member attachment structure comprises a pair of fastener parts formed on the attachment surface of said retaining member, and

a pair of attachment holes which are formed in said back wall and into which said pair of fasteners are inserted.

(Detailed description of the invention)
(0001)
(Technical field of the invention)
This invention relates to an attachment structure for attaching an exterior trim member such as a bumper face of a vehicle to a vehicle body.
(0002)
(Prior art)
A bumper attachment structure using retaining members such as clips has been proposed for securing a vehicle bumper face (also called bumper fascia or bumper cover) to a vehicle body, as described, for example, in Japanese Unexamined Utility Model Application Publication H6-45870, Japanese Unexamined Utility Model Application Publication H3-44054 and Japanese Unexamined Patent Application Publication 2000-52900. In these examples of the prior art, a retaining member (clip) is attached to either the bumper face or to the vehicle body, and an engagement part formed on the other one of these is engaged with the retaining member to attach the bumper face to a predetermination location on the vehicle body.
(0003)
(Problem to be solved by the invention)
However, the conventional attachment structure is not a structure in which the exterior panel member (outer panel) of the vehicle body and the bumper face are directly positioned in relation to each other, so it is difficult to constrain the location of the edge of the bumper face in relation to the exterior trim member with high precision. For example, a gap or level difference may occur between the exterior panel member and the edge of the bumper face, harming the appearance.
(0004)
Furthermore, with a structure in which conventional retaining members such as clips are used to attach a bumper face to a recessed part of the exterior panel member, when the need to detach the bumper face from the vehicle body arises, the work of detaching the bumper face is difficult to carry out from the outside of the vehicle body, so there is room for improvement as regards workability.
(0005)
Therefore, it is an object of the present invention to provide an attachment structure which makes it possible to attach a vehicular exterior trim member such as a bumper face to a predetermined location on an exterior panel member with high precision. It is another object of the present invention to make it possible to easily detach the exterior trim member.
(0006)
(Means for solving the problem)
The exterior trim member attachment structure of the present invention, as set forth in Claim 1, is a vehicular exterior trim member attachment structure comprising an exterior panel member which forms an outside surface of a vehicle and in a portion of which there is formed a recessed part having an inwardly bent inner wall and a back wall continuing from the inner wall, a retaining member having a locking surface which is attached to said back wall and opposes said inner wall, and an exterior trim member having a flange part extending toward the interior of said vehicle, wherein said flange part has a tapered inclined surface whereof the thickness decreases toward the tip end, and said flange part is locked to said locking surface in a state where said flange part is held between said locking surface and said inner wall, wherein the inner wall of said recessed part is inclined at an angle corresponding to the said inclined surface of said flange part; a locking hole which faces said locking surface is formed in said flange part; a protruding part which projects toward the inner wall of said recessed part is formed on said locking surface, which protruding part has springiness such that it is displaced to a position that allows insertion of said flange part when said flange part is inserted between said inner wall and said locking surface and such that said protruding part engages said locking hole upon reaching said locking hole; a sloping guide surface is formed on a side surface of said protruding part such that when said exterior trim member is moved along said flange part, said flange part runs up onto said protruding part and displaces said protruding part in a direction that disengages it from said locking hole; and wherein the vehicular exterior trim member attachment structure comprises a pair of fastener parts formed on the attachment surface of said retaining member, and a pair of attachment holes which are formed in said back wall and into which said pair of fasteners are inserted. With the flange part of the exterior trim member having been inserted between the inner wall of the recessed part of the exterior panel member and the locking surface of the retaining member, the two are locked, thereby directly positioning the exterior panel member and the flange part in relation to each other. Furthermore, the flange part has a shape such that its thickness decreases toward the tip end, so the tip end of the flange part can be easily inserted into the gap between the inner wall and the retaining member.
(0007)

In the invention as set forth in Claim 1, when the flange part has been inserted between the inner wall and the locking surface, the protruding part engages the locking hole, thereby preventing the flange part from slipping out from the gap, and the position of the flange part (so-called "projection allowance") is constrained by the protruding part. It thus becomes possible to precisely align the position of the edge of the exterior panel member and the edge of the exterior trim member.

(0008)

In the invention as set forth in Claim 1, if the need arises to detach the exterior trim member from the retaining member, shifting the exterior trim member slightly to the side will cause the flange part to run up onto the protruding part while contacting the sloped guide surface of the protruding part, thus depressing the protruding part and causing it to come out of the locking hole. Subsequently pulling the flange part out toward oneself will cause the flange part to detach from the retaining member.

(0009)

(Embodiments of the invention)

A first embodiment of the present invention will be described below with reference to FIG. 1 through FIG. 5.

FIG. 2 illustrates a portion of the vehicle body 10 of a vehicle (in this case, an automobile). This vehicle comprises an exterior panel member 11 forming the outside surface of the vehicle body 10, a bumper face 12 which is an example of an exterior trim member, a lamp unit 13, etc. The end part 12a of the bumper face 12 is attached to a predetermined location on the exterior panel member 11 by means of a retaining member 30, described below. At locations other than the end part 12a, the bumper face 12 is secured to the vehicle body 10 by means of well-known bolts and the like, so description thereof will be omitted.

(0010)

A recessed part 15 is formed in a portion of the exterior panel member 11, as shown in FIG. 1. The recessed part 15 comprises an inner wall 16, which is bent toward the inside of the vehicle body, and a back wall 17 which continues downward from the inner wall 16. The inner wall 16 is bent in a shape such that its height becomes lower going from the outer surface 11a of the exterior panel member 11 toward the inside of the vehicle body, and is inclined so as to form an angle θ1 to the horizontal L, as shown in FIG. 5. The back wall 17 extends in a substantially perpendicular direction from the back of the inner wall 16. A pair of left and right rectangular attachment holes 18 (shown in FIG. 3) are formed in the upper part of the back wall 17.

(0011)

The bumper face 12, made of synthetic resin, comprises a flange part 21 that extends horizontally from the upper end of the face main body part 20 shown in FIG. 1 toward the inside of the vehicle body. The flange part 21 comprises a reinforcing member 22 made of sheet metal, disposed on its bottom surface. This reinforcing member 22 is disposed in the long direction of the bumper face 12 (the front-back direction of the vehicle body indicated by arrow A in FIG. 2).

(0012)

The flange part 21 has a tapered shape, with its thickness decreasing toward the tip end 23, and its top surface side forms an inclined surface 24. As shown in FIG. 5, the inclined surface 24 forms an angle θ2 such that the tip end 23 side is lower in relation to the horizontal L. This tilt angle θ2 is slightly greater than the tilt angle θ1 of the inner wall 16. A locking hole 25, penetrating through in the vertical direction, is formed at a predetermined location of the flange part 21. The locking hole 25 opens facing the locking surface 31, described below.

(0013)

A retaining member 30 is attached to the back wall 17 of the recessed part 15. The retaining member 30 is an integrally molded product of synthetic resin as typified, for example, by polyacetal and nylon, and comprises a locking surface 31 extending substantially horizontally and an attachment surface 32 extending substantially vertically, when mounted to the back wall 17, as well as reinforcing rib 33, etc. The locking surface 31 faces the inner wall 16. In the front part of the retaining member 30, there is formed a guide surface 34 curved in an arc shape that gradually becomes higher going from the front end 30a of the retaining member toward the locking surface 31.

(0014)

A pair of left and right fastener parts 36 are formed on the attachment surface 32. These fastener parts 36 comprise a spring-shaped retainer part 37 which widens in a V shape. By inserting the fastener parts 36 into the respective attachment holes 18 and catching the retainer part 37 on the opening edge of the attachment hole 18 makes it possible to attach the retaining member 30 to the back wall 17 by a one-touch operation. A packing 38 which doubles as a cushioning material is provided between the fastener part 36 and the attachment surface 32.

(0015)
A square U-shaped slit 41 is formed in the locking surface 31, as shown in FIG. 4. The region on the inside of the slit 41 constitutes a spring part 42 capable of deflecting in the vertical direction of FIG. 1. A protruding part 43 is formed on the top surface of this spring part 42. This protruding part 43 projects toward the inner wall 16 at the front part of the locking surface 31, i.e. in the area near the guide surface 34. The front surface 44 of the protruding part 43 has an inclined shape, with the height increasing in the rearward direction, such that the bottom surface 21a of the flange part 21 can slide up onto it when the flange part 21 is inserted into the gap S (shown in FIG. 5) between the inner wall 16 and the locking surface 31.
(0016)
When the flange part 21 is inserted into the gap S, the spring part 42 deflects as the protruding part 43 is depressed downward by the bottom surface 21a of the flange part 21, making it possible to insert the flange part 21 toward the back of the gap S. When the location of the locking hole 25 reaches the protruding part 43, the protruding part 43 is engaged into the locking hole 25 by the elastic force of the spring part 42. In other words, the spring part 42 imparts springiness to the protruding part 43, allowing it to deflect vertically.
(0017)
The rear surface side of the protruding part 43 constitutes a positioning wall 45 that rises at an angle close to a right angle from the locking surface 31, so as to prevent the flange part 21 from moving in the direction of slipping out from the gap S after the protruding part 43 has entered the locking hole 25.
(0018)
On the two side surfaces of the protruding part 43 (the surfaces in the front-back direction of the vehicle), there is formed a sloping guide surface 46 which slopes such that its height increases toward the top 43a of the protruding part 43. This sloping guide surface 46 forms an inclined surface such that when the bumper face 12 is shifted slightly along the flange part 21 (in the direction shown by arrow A in FIG. 2), the bottom surface 21a of the flange part 21 slides up onto the protruding part 43 and the protruding part 43 is displaced in the direction of disengaging from the locking hole 25 (in the direction of retracting downward).
(0019)
On the rear part of the locking surface 31, i.e. the side closer to the attachment surface 32, there is formed a stopper wall 50 that projects upward toward the inner wall 16. This stopper wall 50 is provided at a location such that it is contacted by the tip end 23 of the flange part 21 and is able to constrain the insertion depth of the flange part 21 when the tip end 23 is inserted to the back of the gap S.
(0020)
Next, the process of attaching the bumper face 12 to the exterior panel member 11 using the retaining member 30 will be described.
First, by inserting the fastener part 36 of the retaining member 30 into the attachment hole 18 of the exterior panel member 11, the retaining member 30 is attached to the back wall 17 of the recessed part 15. A gap S (shown in FIG. 5) which becomes narrower in tapered fashion toward the back wall 17 is formed between the locking surface 31 of the retaining member 30 and the inner wall 16 of the recessed part 15.
(0021)
The tip end 23 of the flange part 21 of the bumper face 12 is then inserted in the direction of arrow B in FIG. 5 toward the gap S. The flange part 21 has a tapered shape whereof the thickness decreases toward the tip end 23, and a guide surface 34 is formed on the upper edge of the retaining member 30, thus making it easy to insert the tip end 23 of the flange part 21 into the gap S.
(0022)
In the process of inserting the flange part 21 into the gap S, the protruding part 43 contacts the bottom surface 21a of the flange part 21, as shown in FIG. 5, causing the spring part 42 to deflect in the direction of retracting the protruding part 43 into the locking surface 31. Thus, the flange part 21 can be inserted up to the position where the tip end 23 of the flange part 21 contacts the stopper wall 50. In the process of the tip end 23 of the flange part 21 reaching the stopper wall 50, the protruding part 43 is made to enter the locking hole 25 by the elastic force of the spring part 42.
(0023)

The flange part 21 has a tapered shape becoming thinner toward to the tip end 23, and its inclined surface 24 contacts the inner wall 16 of the recessed part 15. Thus, when the flange part 21 is inserted into the space S, the flange part 21 tries to return in the direction of arrow C in FIG. 1. However, since the positioning wall 45 of the protruding part 43 is present in this direction, the inner surface 25a of the locking hole 25 contacts the positioning wall 45. The position of the flange part 21 in the direction of arrow C (projection allowance) is thereby reliably constrained.

(0024)

As a result, the position of the edge 12b of the bumper face 12 in relation to the outer surface 11a of the exterior panel member 11 is aligned substantially within the same plane. Furthermore, since the tilt angle θ2 of the flange part 21 (shown in FIG. 5) is slightly greater than the tilt angle θ1 of the inner wall 16, the edge 12b of the bumper face 12 can be brought into tight contact with the edge 11b of the exterior panel member 11.

(0025)

To detach the bumper face 12 from retaining member 30, the bumper face 12 is moved slightly in the front-back direction of the vehicle body 10 (the direction of arrow A in FIG. 2). Doing so causes the bottom surface 21a of the flange part 21 to run up onto the sloping guide surface 46 of the protruding part 43, whereby the spring part 42 deflects so that the protruding part 43 is retracted downward, and as a result, the protruding part 43 disengages from the locking hole 25. The flange part 21 can then be detached from the retaining member 30 by pulling the flange part 21 out from the gap S toward oneself (outward from the vehicle body).

(0026)

The vehicular exterior trim member attachment structure of the present invention described above can be applied to exterior trim members other than a bumper face, such as a front bumper or rear bumper. Furthermore, when working this invention, the specific shape of the exterior panel member and exterior trim member, the configuration of the locking surface and protruding part of the retaining member and other constituent elements of the invention may be modified in various ways so long as one does not depart from the gist of the invention.

(0027)

(Effect of the invention)

According to the invention as set forth in Claim 1, a structure is provided wherein the flange part and the exterior panel member are directly positioned by inserting the flange part between the inner wall of the exterior panel member and the retaining member, thus making it possible to precisely attach the exterior trim member at a predetermined location of the exterior panel member.

(0028)

According to the invention as set forth in Claim 1, an exterior trim member can be easily attached to a predetermined location on an exterior panel member simply by inserting the flange part between the locking surface of the retaining member and the inner wall of the recessed part of the exterior panel member. Furthermore, the positional relationship between the edge of the exterior panel member and the edge of the exterior trim member can be constrained with high precision.

(0029)

According to the invention as set forth in Claim 1, if the need arises to detach the exterior trim member from the retaining member, the flange part can be disengaged from the retaining member by shifting the exterior trim member slightly to the side.

(Brief description of the drawings)

(Fig. 1) A partial vertical cross-sectional view of a vehicle, illustrating an exterior trim member attachment structure according to an embodiment of the present invention.

(Fig. 2) A partial perspective view of the vehicle shown in FIG. 1.

(Fig. 3) A perspective view of a retaining member used in the exterior trim member attachment structure shown in FIG. 1.

(Fig. 4) A plan view of the retaining member shown in FIG. 3.

(FIG. 5) A cross-sectional view of the state immediately before the flange part of the exterior trim member shown in FIG. 1 locks into the retaining member.

(Description of references)

10…Vehicle body

11…Exterior panel member

12…Bumper face (exterior trim member)

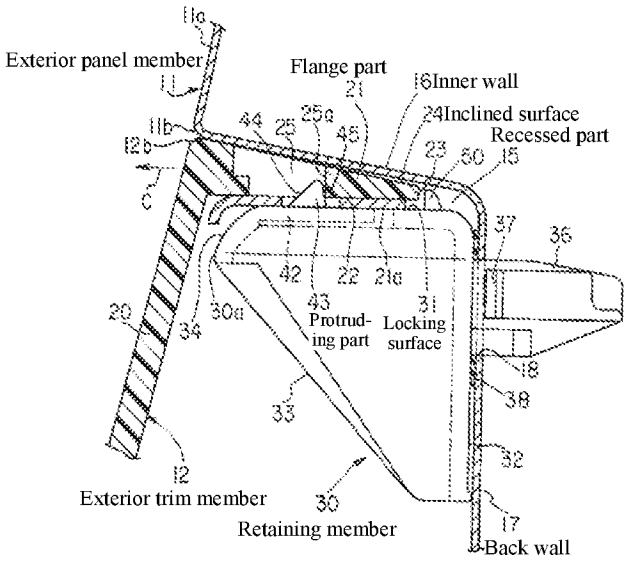
15…Recessed part

16…Inner wall

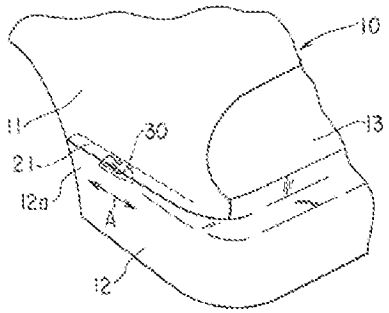
17…Back wall

21…Flange part
24…Inclined surface
25…Locking hole
30…Retaining member
31…Locking surface
43…Protruding part
46…Sloping guide surface

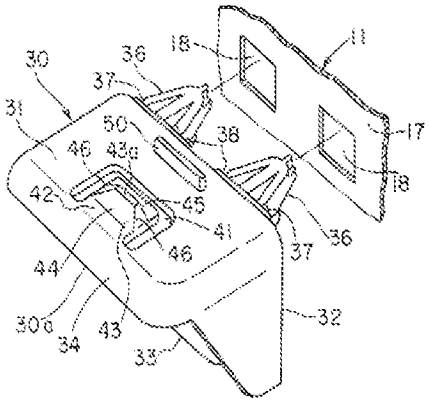
(FIG. 1)



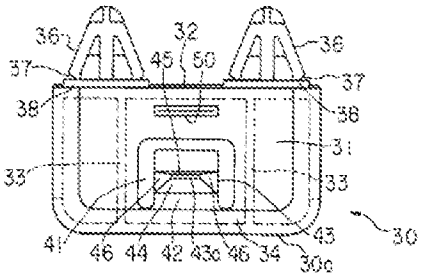
(FIG. 2)



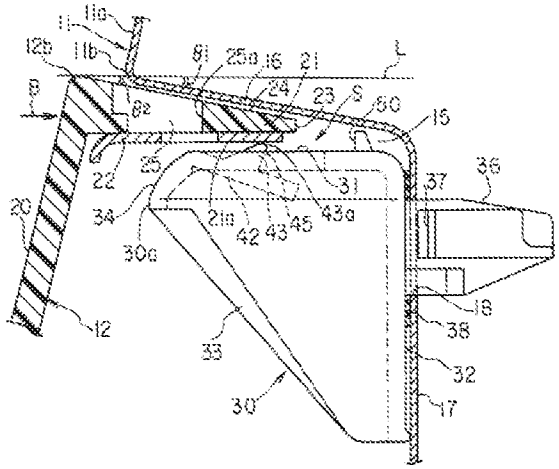
(FIG. 3)



(FIG. 4)


36
32
36
37
45
50
37
38
38
31
33
33
41
46
44
42
43a
46
34
43
30c
30

(FIG. 5)


11a
11
12b
11b
8j
25a
16
21
L
9
24
23
S
60
15
8a
22
25
31
37
35
20
34
21a
42
43
45
43a
30a
18
12
38
33
32
30
17

Continuation of the front page

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Japanese Unexamined Utility Model Application Publication H04-043542 (JP, U)
Japanese Unexamined Utility Model Application Publication S64-036257 (JP, U)

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(56)参考文献　実開平０５－０９４５１７（ＪＰ，Ｕ）
特開平０３－１８０３１１（ＪＰ，Ａ）

最終頁に続く

(54)【発明の名称】樹脂製クリップ

(57)【特許請求の範囲】
【請求項１】
被取付部材に係合する頭部と、この頭部から延出された軸部と、この軸部の外周に形成されたフランジ部と、このフランジ部の下面側に延出され、前記被取付部材を固定すべきパネルに設けられた孔に挿入されて係止される脚部とを有するクリップ本体と、
前記クリップ本体の前記フランジ部外周に被着された被着部と、この被着部の前記フランジ部下面を覆う部分から斜め外方に向けて広がるスカート部とを有するシールパッドとを備えた樹脂製クリップにおいて、
前記フランジ部下面の前記シールパッドの前記被着部内周が、前記脚部外周の最も外径側に突出した部分よりも外側に配置されており、
前記フランジ部下面の前記シールパッドの前記被着部内周から、前記フランジ部と前記脚部との接合部に至る部分には、周状の凹部又は段部が形成されており、
前記スカート部の下面にはパーティングラインが生じていないことを特徴とする樹脂製クリップ。
【請求項２】
前記シールパッドは、一次成形された前記クリップ本体を二次成形金型内に配置した状態で二次成形することによって形成されたものであり、前記周状の凹部内周又は段部外周と、前記フランジ部下面とに、前記二次成形金型が当接するように構成されている請求項１記載の樹脂製クリップ。
【請求項３】

前記シールパッドのスカート部は、前記フランジ部下面における被着部の内周から、脚部先端側に折り返される折返部を介して斜め外方に延設されている請求項１又は２記載の樹脂性クリップ。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】

本発明は、例えば、自動車内装部品等の被取付部材をパネルに固定するために用いられる樹脂製クリップに関する。

【０００２】

【従来の技術】

例えば、トリムボード等の自動車内装部品を、自動車のボディー等のパネル部材等に取付ける場合など、各種の分野で樹脂製クリップが幅広く使用されている。

【０００３】

この樹脂製クリップとしては、被取付部材に係合する頭部と、この頭部から延出された軸部と、この軸部の外周に形成されたフランジ部と、このフランジ部の下面側に延出される脚部とで構成されているものが知られている。そして、被取付部材の孔に樹脂製クリップの頭部を係合させて、頭部とフランジ部との間で被取付部材を保持し、この状態で樹脂製クリップの脚部をパネルの孔に押し込むことによって、フランジ部をパネルの表面に当接させて押圧するとともに、脚部がパネルの裏面の孔縁に弾性的に係止されて、被取付部材とパネルとが固定されるようになっている。

【０００４】

このとき、用途によってはパネル側から被取付部材側への水分や空気等の流入を防止する必要があるため、フランジ部には密封性が要求される場合がある。このため、フランジ部を弾性材料等からなるシールパッドとして、パネルの孔の空隙をシールし、パネル内側と外側との遮断が行なわれている。

【０００５】

このような、被取付部材とパネルとを連結し、シール性を有する樹脂製クリップとして、例えば、実開平５－９４５１７号公報には、パネルに穿つ係止孔に脚部を挿通して掛け止め、脚部上端部に設ける鍔部をパネルの表面に接面させて止着するようにした止め具において、前記脚部は所要剛性を有した硬質の熱可塑性合成樹脂を材料に成形し、その上端部外周面から前記鍔部の連結部となる鍔片を張り出す如く一体に形成する一方、鍔部は所要弾性を有した軟質の熱可塑性合成樹脂を材料に傘形に形成して上記鍔片の周縁部に嵌合させ一体に結合させてなる止め具が開示されており、その実施の態様においては、この止め具を二色成形によって製造することが記載されている。

【０００６】

【特許文献１】

実開平５－９４５１７号公報

【０００７】

【発明が解決しようとする課題】

しかしながら、上記実開平５－９４５１７号公報に記載された止め具においては、シールパッドとなる鍔部がフランジ状の鍔片の全体を包み込むように覆われており、鍔片裏面側の鍔部は、脚部外周の最も外径側に突出した部分より内側にまで入り込んでいる。

【０００８】

このため、この鍔部を二色成形によって製造する際には、鍔片に鍔部を形成する際に、鍔部の金型を鍔片の延出方向、すなわち脚部の軸方向に対して左右に割型にして製造する必要がある。その結果、鍔部のシール面となる側にも、左右に割った金型の継ぎ目、いわゆるパーティングラインと呼ばれる分割線が写し出される。このシール面に写し出された分割線は、他の部分より突出するとともに、シール面を法線方向に横断するように形成されるため、シール面がパネルと当接した際に、分割線に沿って空隙が生じて、鍔部のシール性が低下するという問題があった。

【０００９】
また、あらかじめ形成される脚部には、脚部をパネルに係止するために必要な弾性を得るための空間が設けられている。しかし、上記の止め具においては、鍔部がフランジ状の鍔片の全体を包み込むように覆われるため、鍔部の成形時において軟質の熱可塑性合成樹脂が脚部の空間に流れ込んで、空間が埋まってしまう可能性があり、これによって、脚部の弾性力が低下してパネルへの係止が不充分となったり、不要なバリが発生する虞れがあった。
【００１０】
したがって、本発明の目的は、パネル表面に弾性当接するシールパッドのシール面にパーティングラインが生じず、充分なシール性が得られるとともに、脚部に設けられた空間に二次成形時の樹脂が流れ込まないようにした樹脂製クリップを提供することにある。
【００１１】
【課題を解決するための手段】
上記目的を達成するため、本発明の第１は、被取付部材に係合する頭部と、この頭部から延出された軸部と、この軸部の外周に形成されたフランジ部と、このフランジ部の下面側に延出され、前記被取付部材を固定すべきパネルに設けられた孔に挿入されて係止される脚部とを有するクリップ本体と、
前記クリップ本体の前記フランジ部外周に被着された被着部と、この被着部の前記フランジ部下面を覆う部分から斜め外方に向けて広がるスカート部とを有するシールパッドとを備えた樹脂製クリップにおいて、
前記フランジ部下面の前記シールパッドの前記被着部内周が、前記脚部外周の最も外径側に突出した部分よりも外側に配置されており、
前記フランジ部下面の前記シールパッドの前記被着部内周から、前記フランジ部と前記脚部との接合部に至る部分には、周状の凹部又は段部が形成されており、
前記スカート部の下面にはパーティングラインが生じていないことを特徴とする樹脂製クリップを提供するものである。
【００１２】
上記発明によれば、前記フランジ部下面の前記シールパッドの前記被着部内周が、前記脚部外周の最も外径側に突出した部分よりも外側に配置されているので、クリップ本体を一次成形した後にシールパッドを二次成形するにあたり、二次成形時のスカート部の金型を、クリップ本体の脚部を囲むような筒状として上下に可動可能に構成できる。これによって、スカート部を割型にすることなく一つの金型で成型でき、その結果、スカート部にパーティングラインが生じることがないので、シールパッドがパネル表面に弾性当接する際に充分なシール性を得ることができる。
【００１３】
また、前記フランジ部下面の前記シールパッドの前記被着部内周から、前記フランジ部と前記脚部との接合部に至る部分には、周状の凹部又は段部が形成されている。この周状の凹部又は段部は、脚部とスカート部とを分離する境界となるので、二次成形時に溶融樹脂がクリップ本体の脚部の空間に流れ込むのを防止する機能を果たす。そして、これにより脚部の空間が樹脂で埋まることがないので脚部の弾性力が低下するのを防止できる。
【００１４】
また、周状の凹部又は段部は、二次成形時に溶融樹脂が境界から滲み出てバリを形成することも防止できるため、バリ取り等の二次加工を行なう必要がなくなり生産性が向上でき、また、材料の歩留まりも向上できる。
【００１５】
本発明の第２は、上記第１の発明において、前記シールパッドは、一次成形された前記クリップ本体を二次成形金型内に配置した状態で二次成形することによって形成されたものであり、前記周状の凹部内周又は段部外周と、前記フランジ部下面とに、前記二次成形金型が当接するように構成されている樹脂製クリップを提供するものである。
【００１６】

上記発明によれば、周状の凹部内周又は段部外周と、フランジ部下面とに、二次成形金型が当接することによって、クリップ本体の脚部とスカート部とが金型によって確実に分離されるので、二次成形時に樹脂材料が脚部の空間に流れ込むことを有効に防止できる。

本発明の第３は、上記第１又は第２の発明において、前記シールパッドのスカート部は、前記フランジ部下面における被着部の内周から、脚部先端側に折り返される折返部を介して斜め外方に延設されている樹脂性クリップを提供するものである。

【００１７】

【発明の実施の形態】

以下、図１～６に基づいて、本発明の一実施形態を説明する。

【００１８】

図１、２に示すように、この樹脂製クリップ１０は、クリップ本体２０と、シールパッド４０とで構成されている。

【００１９】

図１、２を併せて参照すると、クリップ本体２０は、環状をなすフランジ状の頭部２１と、この頭部２１から延出される軸部２２と、この軸部２２の外周に形成された環状のフランジ部２４と、このフランジ部２４の下面側に延出される脚部２６とが一体に成形されている。

【００２０】

頭部２１の中心には、軸部２２からフランジ部２４に到達する深さで凹部２３が形成されており、この凹部２３を利用して、一次成形後にクリップ本体２０を支持して、二次成形時にクリップ本体２０の位置決めが可能となっている。

【００２１】

フランジ部２４の下面はストレートではなく、この実施形態においては、フランジ部２４の下面から脚部２６に連続する部分には環状の段部２５が形成されており、環状の段部２５を介して脚部２６が延出されている。この環状の段部２５によって、二次成形における射出樹脂がクリップ本体２０の脚部の側へ回り込んでバリを発生したり、脚部２６の空間内に流れ込んだりすることを有効に防止できる。

【００２２】

なお、本発明においては、フランジ部２４下面の被着部４１内周から、前記フランジ部と前記脚部との接合部に至る部分には、凹部又は段部が形成されていればよく、例えば、図５（ｂ）に示すように、フランジ部２４の下面に凹部３５が形成されていてもよい。

【００２３】

また、フランジ部２４の形状は特に限定されず、四角形等の角をもった形状をなしていてもよい。更に、上記の段部２５又は凹部３５も必ずしも環状には限定されず、周状に形成されていればよい。

【００２４】

図２のＨで示されるクリップ本体２０の軸方向における段部２５の高さ、又は凹部３５の高さとしては、０．３ｍｍ程度以上であることが好ましい。前記高さが０．３ｍｍ程度未満であると、二次成形時のシールパッド４０の射出樹脂が金型を越えて脚部側に回り込みやすくなるので好ましくない。

【００２５】

脚部２６は、その外周を形成する２組の、横断面が円弧状の弾性係止部２８、２８と、中央の柱状部２７とからなり、それぞれの弾性係止部２８、２８と、中央の柱状部２７との間には、係止時に弾性を得るための空間３０が形成されている。そして、弾性係止部２８、２８は、フランジ部２４側の縮径部２８ａから次第に拡径した後、次第に縮径して先端２９を形成している。

【００２６】

なお、本発明においては、脚部２６の形状はパネルの係止孔に挿通して係止できる構造であればよく、特に上記の形状には限定されない。例えば、上記の縮径部２８ａがフランジ部２４と接合されておらず、弾性腕としてパネルに係止できるような構造のものであって

もよい。

【００２７】

クリップ本体２０の材質としては、公知の樹脂が使用可能であり特に限定されないが、耐熱性を有して磨耗や変形を生じ難い樹脂であることが好ましい。このような樹脂としては、例えば、ポリアセタール樹脂（ＰＯＭ）が挙げられる。

【００２８】

一方、シールパッド４０は、フランジ部２４の上面から下面の一部にかけて覆う被着部４１と、フランジ部２４下面における被着部４１の内周から折返部４５を介して斜め外方に向けて広がるスカート部４２とで形成されている。

【００２９】

シールパッド４０の材質としては、パネル表面とのシール密封性に優れ、柔軟性を有する弾性材料であることが好ましく、このような樹脂としては、例えば、熱可塑性エラストマー樹脂が挙げられる。

【００３０】

本発明においては、このシールパッド４０のフランジ部２４の下面における被着部４１内周が、脚部２２の弾性係止部２８の最も外径側に突出した部分よりも外側に配置されていることを特徴としている。

【００３１】

すなわち、図２においては、シールパッド４０の折返部４５とクリップの軸線を挟んで対向する折り返し部４５との間の距離W_2と、弾性係止部２８の最大外径W_1との関係が、$W_2 > W_1$となるように、フランジ２４下面の被着部４１の内周が形成されていることが必要である。これにより、後述する製造方法によって、スカート部４２にパーティングラインが生じないように二次成形を行なうことができる。

【００３２】

なお、本発明においては、スカート部４２は必ずしも環状でなくてもよく、例えば四角形等の角をもった形状であってもよい。

【００３３】

また、本発明におけるシールパッド４０の折返部４５は、この実施形態のように、フランジ部２４下面における被着部４１の内周から垂直に立ち上がった後に斜め外方に向けて広がっていてもよく、図５（ｃ）に示すように、被着部４１の内周からテーパー部を介して斜め外方に向けて広がる、折返部４５’のようになっていてもよい。

【００３４】

また、図２の長さＬで示される段部２５と折返部４５とでなす幅、又は、図５（ｂ）における凹部３５の底面の幅は、０．３ｍｍ程度以上であることが好ましい。前記幅が０．３ｍｍ程度未満であると、二次成形時のシールパッド４０の射出樹脂が金型を越えて脚部側に回り込みやすくなるので好ましくない。

【００３５】

次に、図３、４を参照しながら、この樹脂製クリップ１０の製造方法について説明する。本発明の樹脂製クリップ１０は射出成形によって製造することができ、なかでも、いわゆるインサート成形又は２色成形等を用いた２段階の成形工程で製造することができる。

【００３６】

例えば２色成型の場合、まず、図３（ａ）に示すように、頭部金型７１、クリップ本体２０の軸方向に対して左右に分割可能な一対の本体部金型７２ａ、７２ｂを用いて、一次成形工程によってクリップ本体２０を成型する。その後、図３（ｂ）に示すように、本体部金型７２ａ、７２ｂをクリップ本体２０の軸方向に対して左右に開く。なお、インサート成型の場合には、ここで頭部金型７１からクリップ本体２０を取り外す。

【００３７】

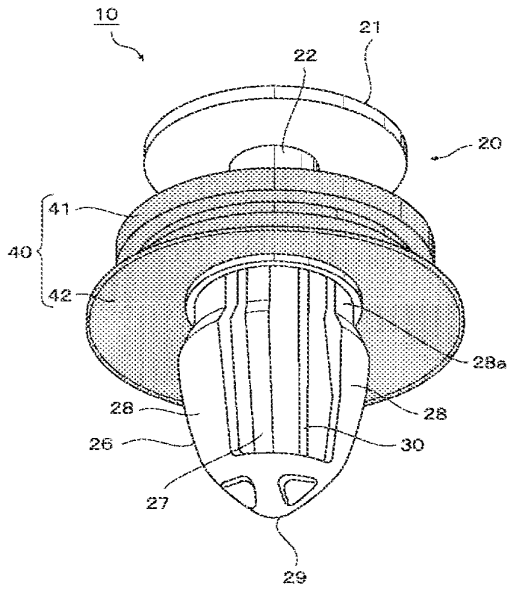
成形装置としては、従来公知の射出成形装置を用いることができ特に限定されない。また、温度や圧力等の成形条件も、樹脂の種類等に応じて適宜設定可能であり特に限定されない。

【００３８】
次に、図４に示すような二次成形工程を行なう。すなわち、上記一次成形後のクリップ本体２０及び頭部金型７１を、二次成形金型内に配置した状態で、シールパッド４０を二次成形によって形成する。
【００３９】
二次成形金型は、図４（Ｂ）に示すように、一次成形時の頭部金型７１と、被着部４１及びスカート部４２の上面を成形するための被着部金型８２ａ、８２ｂと、スカート部４２の下面を成形するための円筒状のスカート部金型８３とから構成されている。
【００４０】
被着部金型８２ａ、８２ｂは、クリップ本体２０の軸方向に対して左右に開閉可能な一対の金型であって、頭部２１が嵌合可能な空間８７ａ、８７ｂ、及び被着部４１及びスカート部４２の上面を成形するための、被着部キャビティ８８ａ、８８ｂが形成されている。
【００４１】
スカート部金型８３は、クリップ本体２０の脚部２６を囲むような円筒状をなし、その上面には、スカート部４２の下面を成型するための、スカート部キャビティ８９が形成されている。
【００４２】
そして、図４（Ａ）に示すように、頭部金型７１にクリップ本体２０を保持した状態で、被着部金型８２ａ、８２ｂを左右から閉じ、スカート部金型８３を下方から閉じると、被着部キャビティ８８ａ、８８ｂと、スカート部キャビティ８９とからなるシールパッドキャビティ９０が形成される。この状態でシールパッドキャビティ９０に射出樹脂を流すことによって、シールパッド４０が形成される。
【００４３】
その後、図４（Ｂ）に示すように、被着部金型８２ａ、８２ｂを左右に開き、スカート部金型８３を下方に開き、最後に頭部金型７１を上方に開くことによって、樹脂製クリップ１０を取り出すことができる。
【００４４】
なお、この二次成形においても、成形装置としては、従来公知の射出成形装置を用いることができ特に限定されない。また、温度や圧力等の成形条件も、樹脂の種類等に応じて適宜設定可能であり特に限定されない。
【００４５】
このように、本発明においては、フランジ部２４の下面におけるシールパッド４０の被着部４１内周が、脚部２２の弾性係止部２８の最も外径側に突出した部分よりも外側に配置されるように金型が構成されている。したがって、スカート部金型８３を円筒状とし、クリップ本体２０の下方から脚部２６を囲むようにスカート部金型８３を配置できる。これにより、スカート部４２の下面を割型にすることなく成型できるので、スカート部４２の下面にパーティングラインが生じないようにスカート部４２を成形することができる。
【００４６】
また、二次成形におけるスカート部４２付近の拡大断面図である図５（ａ）に示すように、この実施形態においては、スカート部金型８３は、クリップ本体２０のフランジ部２４の下面と、これに続く段部２５の垂直面とに当接するように構成されている。
【００４７】
このように、スカート部金型８３がフランジ部２４の下面側において少なくとも２面に当接することで、二次成形における射出樹脂が、クリップ本体２０の脚部の側へ回り込んでバリとなったり、脚部２６の空間３０内に流れ込んだりすることをより確実に防止できる。
【００４８】
なお、図５（ｂ）に示すように、一次成形においてフランジ部２４の下面に凹部３５が形成されている場合には、その凹部３５に金型の凸部が当接するようにスカート部金型８５が構成されていれば、前述と同様の効果が得られる。

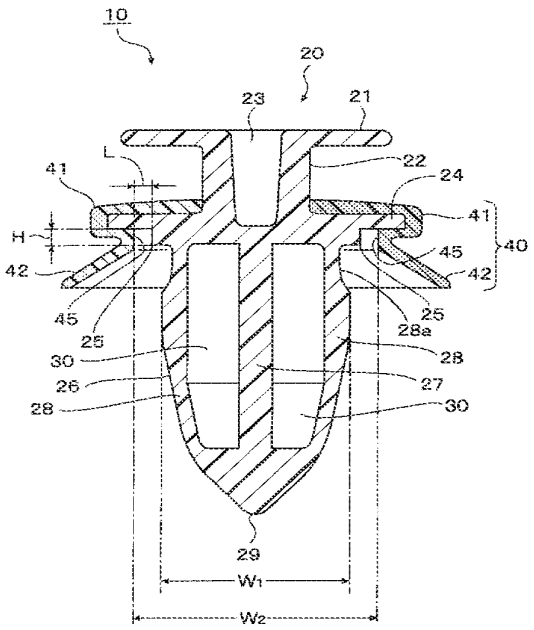
【００４９】
また、図５（ｃ）に示すように、折返部４５’が、被着部４１の内周からテーパー部を介して斜め外方に向けて広がるように、スカート部金型８６が構成されていてもよい。これにより、二次成形後にスカート部金型８６を下方に開く際に、シールパッド４０’のスカート部４２’が抜けやすくなる。
【００５０】
次に、図６を参照しながら、この樹脂製クリップ１０の作用について説明する。
【００５１】
まず、内装パネル等の被取付部材６０の取付け孔６１に、樹脂製クリップ１０の頭部２１を係合させて、頭部２１とフランジ部２４の被着部４１との間で被取付部材６０を保持する。ここで取付け孔６１は、例えば、頭部２１より大きい径の孔と、該孔から伸びる頭部２１より幅の狭い孔とからなる鍵穴状等に形成されている。これにより、樹脂製クリップ１０の頭部２１を上記の大きい径の孔を通して貫き、次に、軸部２２を上記の狭い孔に移動させることによって、取付け孔６１に係合させることができる。
【００５２】
この状態で、樹脂製クリップ１０の脚部２６の先端２９を、パネル５０の係止孔に押し込んでいくと、脚部２６の弾性係止部２８が空間部３０によって縮径されながら挿入される。このとき、シールパッド４０のスカート部４２の下面はパネル５０表面に当接される。
【００５３】
さらに樹脂製クリップ１０を押し込むと、弾性係止部２８は、その最大外径を越えたのちに拡径し、縮径部２８ａが係止孔に到達した時点で、図６のように係止されて、被取付部材６０とパネル５０とが固定される。
【００５４】
このとき、シールパッド４０のスカート部４２の下面はシール面となって押圧され、パネル５０の表面に密着シールされる。そして、上記のように、スカート部４２下面であるシール面にはパーティングラインが生じていないのでシール性が低下することがなく、パネル５０側から被取付け部品６０側への、水分や空気等の浸入を有効に防止できる。
【００５５】
【発明の効果】
以上説明したように、本発明によれば、二次成形時のスカート部の金型を割型にする必要がないのでスカート部のシール面にパーティングラインが生じず、シールパッドがパネル表面に弾性当接する際に充分なシール性を得ることができる。また、フランジ部下面のシールパッドの被着部内周から、フランジ部と脚部との接合部に至る部分に形成された環状の凹部又は段部によって、脚部とスカート部とが分離されるので、二次成形時の樹脂材料がクリップ本体の脚部の空間に流れ込むことを有効に防止できる。
【図面の簡単な説明】
【図１】本発明による樹脂製クリップの一実施形態を示す斜視図である。
【図２】同樹脂製クリップの断面図である。
【図３】同樹脂製クリップの製造方法の一実施形態を示し、（ａ）は一次成形終了後で金型が閉じた状態の断面図、（ｂ）は一次成形終了後に左右の金型を開いた状態の断面図である。
【図４】同樹脂製クリップの製造方法の一実施形態を示し、（Ａ）は二次成形における金型が閉じた状態の断面図、（Ｂ）は二次成形終了後に金型から樹脂製クリップを取り出した状態の断面図である。
【図５】本発明の樹脂製クリップを二次成形する際のスカート部付近の拡大断面図である。
【図６】同樹脂製クリップを用いて被取付部材とパネルとを連結した状態を示す断面図である。
【符号の説明】

１０　樹脂製クリップ
２０　クリップ本体
２１　頭部
２２　軸部
２３　凹部
２４　フランジ部
２５　段部
２６　脚部
２７　柱状部
２８　弾性係止部
２８ａ　縮径部
２９　先端
３０　空間部
３５　凹部
４０、４０’　シールパット
４１　被着部
４２、４２’　スカート部
４５、４５’　折返部
５０　パネル
６０　被取付部材
６１　取付け孔
７１　頭部金型
７２ａ、７２ｂ　本体部金型
８２ａ、８２ｂ　被着部金型
８３、８５、８６　スカート部金型
８７ａ、８７ｂ　空間
８８ａ、８８ｂ　被着部キャビティ
８９　スカート部キャビティ
９０　シールパットキャビティ

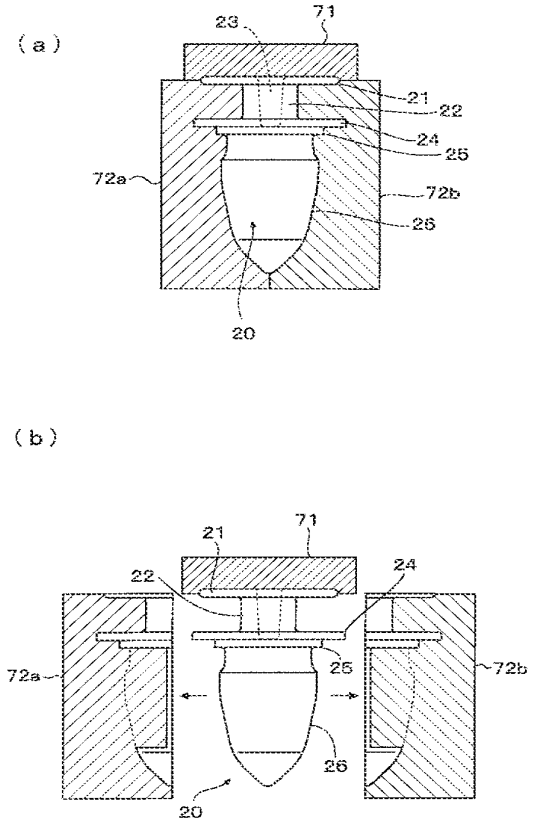
【図１】


10
21
22
20
41
40
42
28a
28
26
30
27
29

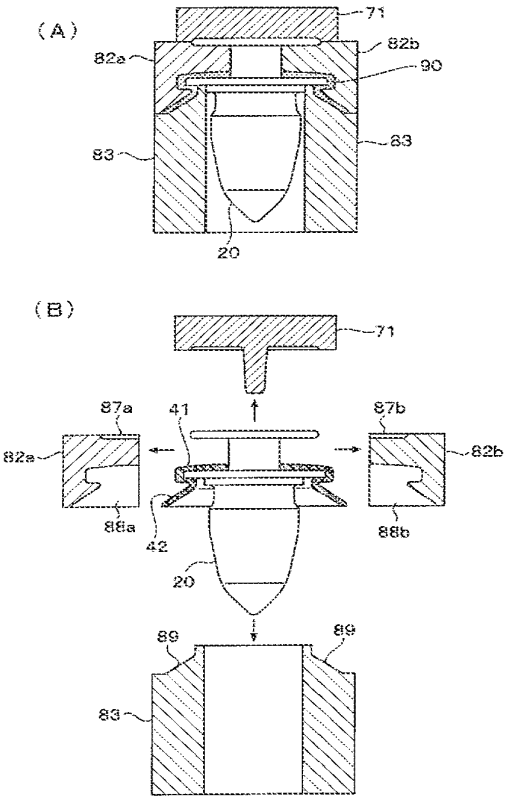
【図２】


10
20
23
21
L
22
24
41
H
41
40
42
45
42
45
25
28a
25
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28
26
27
28
30
29
W1
W2

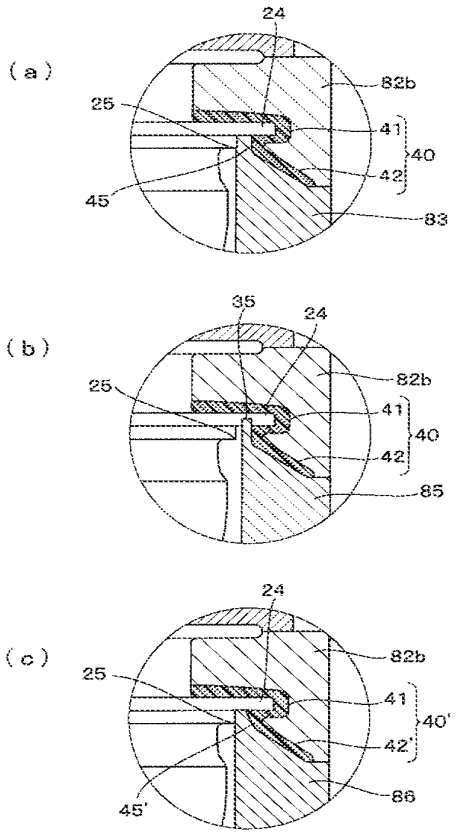
【図３】


(a)
23
71
21
22
24
25
72a
72b
26
20
(b)
21
71
22
24
25
72a
72b
26
20

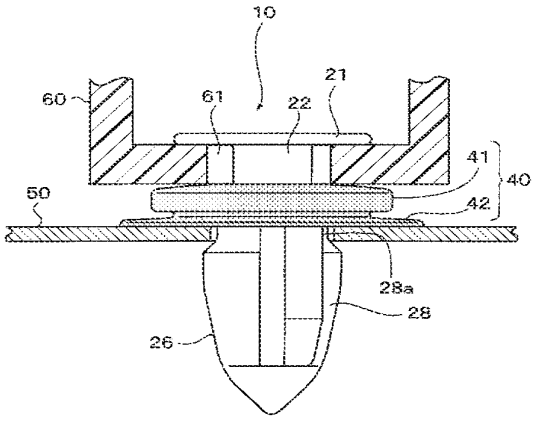
【図４】


(A)
71
82b
82a
90
83
83
20
(B)
71
87a
41
87b
82a
82b
88a
88b
42
20
89
89
83

【図５】


(a)
24
82b
25
41
40
42
45
83
(b)
35
24
82b
25
41
40
42
85
(c)
24
82b
25
41
40'
42'
45'
86

【図６】


10
60
61
22
21
41
40
50
42
28a
28
26

フロントページの続き

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[illegible]

Request for certificate

November 26, 2020

To the Commissioner of the Japan Patent Office

1. Designation of matter
   Japanese Patent No. 4252827

2. Requestor

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3. Title of document to be certified
   Patent Gazette (Japanese Patent No. 4252827)

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December 4, 2020

Commissioner of the Japan Patent Office KASUTANI, Toshihide
[seal:] Seal of the Commissioner of the Japan Patent Office

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(65) Japanese unexamined patent application publication number	Japanese Unexamined Patent Application Publication 2004-278731 (P2004-278731A)	(74) Agent	100086689 Patent attorney MATSUI, Shigeru
(43) Japanese unexamined patent application publication date	October 7, 2004 (10.7.2004)	(72) Inventor	SAWATANI, Seiji c/o Piolax Inc., 51 Iwai-cho, Hodogaya-ku, Yokohama-shi, Kanagawa-ken
Examination request date	December 20, 2005 (12.20.2005)	Examiner	NAGAYA, Yojiro
		(56) References	Japanese Unexamined Utility Model Application Publication H05-094517 (JP, U) Japanese Unexamined Patent Application Publication H03-180311 (JP, A)

Continued on the last page

(54) (Title of the invention) Resin clip

(57) (Scope of patent claims)
(Claim 1)

A resin clip comprising: a clip main body having a head part which engages with a member to be attached, a shaft part extending from the head part, a flange part formed on the outer circumference of the shaft part, and a leg part which extends to the bottom surface side of the flange part and is inserted and locked into a hole provided in a panel to which said member to be attached is to be secured, and

a seal pad having an adhered part which is adhered to the outer circumference of said flange part of said clip main body and a skirt part which widens diagonally outward from the portion of the adhered part that covers the bottom surface of said flange part,

the resin clip being characterized in that the inner circumference of said adhered part of said seal pad on the bottom surface of said flange part is arranged outward from the most radially outward protruding portion of the outer circumference of said leg part;

a circumferential recessed part or stepped part is formed in the portion of the bottom surface of said flange part extending from the inner circumference of said adhered part of said seal pad to the joint between said flange part and said leg part; and

no parting line occurs on the bottom surface of said skirt part.

(Claim 2)

A resin clip as set forth in claim 1, wherein said seal pad is formed through secondary molding in a state where said clip main body, obtained through primary molding, has been arranged in a secondary molding die, wherein said secondary molding die is configured so as to contact the inner circumference of said circumferential recessed part or the outer circumference of said stepped part, and the bottom surface of said flange part.

(Claim 3)

A resin clip as set forth in claim 1 or 2, wherein the skirt part of said seal pad is provided extending diagonally outward via a fold-back part which is folded back from the inner circumference of the adhered part on the bottom surface of said flange part to the tip end side of the leg part.

(Detailed description of the invention)

(0001)

(Technical field of the invention)

The present invention relates to a resin clip used for securing members to be attached, such as automotive interior trim parts, to a panel.

(0002)

(Prior art)

Resin clips are widely used in various fields, for example, when attaching automotive interior trim parts such as trim boards to a panel member, etc. of an automobile body or the like.

(0003)

A known resin clip comprises a head part which engages the member to be attached, a shaft part which extends from the head part, a flange part formed on the outer circumference of the shaft part, and a leg part extending to the bottom surface side of the flange part. The head part of the resin clip is engaged into a hole of the member to be attached so as to hold the member to be attached between the head part and the flange part, and in this state, the leg part of the resin clip is pushed into a hole in the panel, thereby pressing the flange part into contact with the outer surface of the panel and locking the leg part elastically against the edge of the hole on the inner surface of the panel, thus securing the member to be attached and the panel.

(0004)

Here, depending on the application, there may be a need to prevent the inflow of water, air or the like from the panel to the side of the member to be attached, and thus the flange part may need to have sealing characteristics. Thus, the flange part is made into a seal pad composed of elastic material, etc. so as to seal the void of the hole in the panel and isolate the inner side of the panel from the outer side.

(0005)

As a resin clip which links a member to be attached with a panel in this manner and has sealing characteristics, Japanese Unexamined Utility Model Application Publication H5-94517 discloses a fastener whereby a leg part is inserted and latched into a locking hole formed in a panel, and a collar part provided on the upper end of the leg part is brought into planar contact with and affixed to the outer surface of the panel, wherein the leg part is molded using a hard thermoplastic synthetic resin having the required rigidity as the material, with a collar tab that serves as a connecting piece to the collar part being integrally molded therewith so as to protrude from the outer circumferential surface of the upper end of the leg part, while the collar part is formed in an umbrella shape using a soft thermoplastic synthetic resin having the required elasticity as the material and is fitted to and integrally joined with the circumferential edge part of the aforementioned collar tab, and in an embodiment of the same, the manufacturing of this fastener through two-color molding is described.

(0006)

(Patent document 1)

Japanese Unexamined Utility Model Application Publication H5-94517

(0007)

(Problem to be solved by the invention)

However, in the fastener described in aforementioned Japanese Unexamined Utility Model Application Publication H5-94517, the collar part that serves as the seal pad is provided over the flange-shaped collar tab so as to envelop the entire collar tab, and the collar part on the bottom side of the collar tab extends further inward than the most radially outward projecting portion of the outer circumference of the leg part.

(0008)

Thus, when this collar part is manufactured through two-color molding, when forming the collar part on the collar tab, it is necessary to split the die for the collar part in the left-right direction relative to the direction of extension of the collar tab, i.e. the axial direction of the leg part. As a result, the seam of the die split in the left-right direction, i.e. a dividing line known as a parting line, is transferred also to the side of the collar part that becomes the sealing surface. The diving line transferred to the sealing surface protrudes more than the other areas and is formed so as to transect the sealing surface in the normal direction, so there is the problem that when the sealing surface is brought into contact with the panel, a void occurs along the dividing line and the sealing performance of the collar part is reduced.

(0009)
Furthermore, in the leg part that is formed in advance, a space is provided in order to achieve the elasticity necessary for locking the leg part into the panel. However, in the above-described fastener, since the collar part is provided over the flange-shaped collar tab so as to envelop the entire collar tab, during molding of the collar part, the soft thermoplastic synthetic resin may flow into the space of the leg part and fill that space, as a result of which the elastic force of the leg part may decrease and the locking engagement with the panel may become insufficient, and unnecessary burrs may be produced.
(0010)
Therefore, it is an object of the present invention to provide a resin clip in which no parting line occurs on the seal surface of the seal pad which elastically contacts the outer surface of the panel, and which provides sufficient sealing performance and avoids inflow of resin during secondary molding into the space provided in the leg part.
(0011)
(Means for solving the problem)

To achieve the aforesaid object, the present invention provides, in its first aspect, a resin clip comprising: a clip main body having a head part which engages with a member to be attached, a shaft part extending from the head part, a flange part formed on the outer circumference of the shaft part, and a leg part which extends to the bottom surface side of the flange part and is inserted and locked into a hole provided in a panel to which said member to be attached is to be secured, and

a seal pad having an adhered part which is adhered to the outer circumference of said flange part of said clip main body and a skirt part which widens diagonally outward from the portion of the adhered part that covers the bottom surface of said flange part,

the resin clip being characterized in that the inner circumference of said adhered part of said seal pad on the bottom surface of said flange part is arranged outward from the most radially outward protruding portion of the outer circumference of said leg part;

a circumferential recessed part or stepped part is formed in the portion of the bottom surface of said flange part extending from the inner circumference of said adhered part of said seal pad to the joint between said flange part and said leg part; and

no parting line occurs on the bottom surface of said skirt part.
(0012)
According to the invention as described above, the inner circumference of the adhered part of the seal pad on the bottom surface of the flange part is arranged outward from the most radially outward protruding portion of the outer circumference of the leg part, so when secondary molding of the seal pad is performed after primary molding of the clip main body, the die for the skirt part used in secondary molding can be configured to have a tubular shape that surrounds the leg part of the clip main body and to be vertically movable. Thus, the skirt part can be molded with a single die without using a split die, and as a result, no parting line occurs on the skirt part and thus sufficient sealing performance can be obtained when the seal pad is brought into elastic contact with the outer surface of the panel.
(0013)
Furthermore, a circumferential recessed part or stepped part is formed in the portion of the bottom surface of the flange part extending from the inner circumference of the adhered part of the seal pad to the joint between the flange part and the leg part. This circumferential recessed part or stepped part serves as a boundary separating the leg part and the skirt part, and thus serves the function of preventing molten resin from flowing into the space of the leg part of the clip main body during secondary molding. The space of the leg part is thus not filled with resin, so decrease in elastic force of the leg part can be prevented.
(0014)
Furthermore, the circumferential recessed part or stepped part makes it possible to prevent molten resin from oozing out past the boundary and causing burrs during secondary molding, thus eliminating the need to perform secondary machining such as burr removal, thus making it possible to increase productivity and to improve material utilization.
(0015)

In a second aspect, the present invention provides a resin clip as in the first aspect of the invention described above, wherein said seal pad is formed through secondary molding in a state where said clip main body, obtained through primary molding, has been arranged in a secondary molding die, wherein said secondary molding die is configured so as to contact the inner circumference of said circumferential recessed part or the outer circumference of said stepped part, and the bottom surface of said flange part.
(0016)

According to the invention as above, the secondary molding die contacts the inner circumference of the circumferential recessed part or the outer circumference of the stepped part, and the bottom surface of the flange part, so that the leg part of the clip main body and the skirt part are reliably separated by the die, thus effectively preventing resin material from flowing into the space of the leg part during secondary molding.

In a third aspect, the present invention provides a resin clip as in the first or second aspect of the invention described above, the skirt part of said seal pad is provided extending diagonally outward via a fold-back part which is folded back from the inner circumference of the adhered part on the bottom surface of said flange part to the tip end side of the leg part.

(0017)

(Embodiments of the invention)

An embodiment of the present invention will be described below based on FIG. 1 through 6.

(0018)

As shown in FIG. 1 and 2, the resin clip 10 is composed of a clip main body 20 and a seal pad 40.

(0019)

Referring to FIG. 1 and 2 together, the clip main body 20 integrally comprises a flange-shaped head part 21 which forms a ring shape, a shaft part 22 extending from the head part 21, a ring-shaped flange part 24 formed on the outer circumference of the shaft part 22, and a leg part 26 extending to the bottom surface side of the flange part 24.

(0020)

In the middle of the head part 21, a recessed part 23 is formed to a depth reaching from the shaft part 22 to the flange part 24. This recessed part 23 is used to support the clip main body 20 after primary molding and enables positioning of the clip main body 20 during secondary molding.

(0021)

The bottom surface of the flange part 24 is not straight, and in this embodiment, a ring-shaped stepped part 25 is formed in the portion connecting the bottom surface of the flange part 24 to the leg part 26, and the leg part 26 extends via the ring-shaped stepped part 25. This ring-shaped stepped part 25 effectively prevents the resin injected during secondary molding from spilling over to the leg part side of the clip main body 20 and causing burrs or flowing into the space of the leg part 26.

(0022)

It should be noted that in the present invention, either a recessed part or a stepped part should be formed in the area extending from the inner circumference of the adhered part 41 of the bottom surface of the flange part 24 to the junction between the flange part and the leg part; for example, a recessed part 35 may be formed on the bottom surface of the flange part 24, as shown in FIG. 5 (b).

(0023)

Furthermore, the shape of the flange part 24 is not particularly limited and may also be an angular shape such a quadrangle. Moreover, the aforementioned stepped part 25 or recessed part 35 is not necessarily limited to a ring shape and may be also be formed in a circumferential shape.

(0024)

The height of the stepped part 25 in the axial direction of the clip main body 20 shown by H in FIG. 2 or the height of the recessed part 35 is preferably about 0.3 mm or greater. If said height is less than about 0.3 mm, resin injected for the seal pad 40 during secondary molding can easily spill over past the die to the leg part side, which is undesirable.

(0025)

The leg part 26 comprises two elastic locking parts 28, 28 with a circular arc shaped transverse cross-section, forming the outer circumference of the leg part, and a central columnar part 27, and a space 30 for providing elasticity during locking is formed between each elastic locking part 28, 28 and the central columnar part 27. The elastic locking parts 28, 28 gradually increase in diameter starting from the flange part 24 side reduced diameter part 28a, and then gradually decrease in diameter to form a tip end 29.

(0026)

It should be noted that in the present invention, the shape of the leg part 26 need only be a structure which allows insertion and locking into the locking hole of the panel, said shape not being particularly limited. For example, a structure may employed, wherein the reduced diameter part 28a is not joined to the flange part 24 and is able to lock to the panel as an elastic arm.

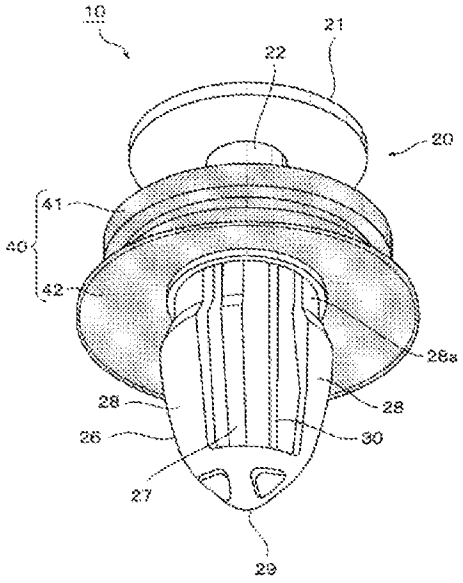
(0027)
As the material of the clip main body 20, a known resin can be used, but the material is not limited thereto. A resin which has heat resistance and is not prone to wear or deformation is preferable. An example of such a resin that can be mentioned is polyacetal resin (POM).
(0028)
Furthermore, the seal pad 40 is formed from an adhered part 41 which covers the flange part 24 from the top surface to a portion of the bottom surface, and a skirt part 42 which extends from the inner circumference of the adhered part 41 on the bottom surface of the flange part 24 via a fold-back part 45 diagonally outward.
(0029)
The material of the seal pad 40 is preferably a flexible elastic material with excellent seal tightness against the panel surface, with examples of such material including thermoplastic elastomer resin.
(0030)
The present invention is characterized in that the inner circumference of the adhered part 41 on the bottom surface of the flange part 24 of the seal pad 40 is arranged outward from the most radially outward protruding portion of the elastic locking part 28 of the leg part 22.
(0031)
Namely, in FIG. 2, the inner circumference of the adhered part 41 of the bottom surface of the flange part 24 needs to be formed such that the relationship $W_2>W_1$ obtains between the distance W_2 between the fold-back part 45 of the seal pad 40 and the fold-back part 45 opposed to it across the axis of the clip, and the maximum outside radius W_1 of the elastic locking part 28. This makes it possible to perform secondary molding by the manufacturing method described below in a manner that no parting line occurs in the skirt part 42.
(0032)
It should be noted that in the present invention, the skirt part 42 does not necessarily need to be ring-shaped, and may also be an angular shape, for example, a quadrangle.
(0033)
Furthermore, the fold-back part 45 of the seal pad 40 in the present invention may rise vertically from the inner circumference of the adhered part 41 on the bottom surface of the flange part 24 and then widen diagonally outward as in this embodiment, or it may widen diagonally outward via a tapered part extending from the inner circumference of the adhered part 41, in the manner of fold-back part 45' shown in FIG. 5 (c).
(0034)
Furthermore, the width of the stepped part 25 and fold-back part 45, indicated as length L in FIG. 2, or the width of the bottom surface of the recessed part 35 in FIG. 5 (b), is preferably about 0.3 mm or greater. If said width is less than about 0.3 mm, resin injected for the seal pad 40 during secondary molding can easily spill over past the die to the leg part side, which is undesirable.
(0035)
Next, a method of manufacturing this resin clip 10 will be described while referring to FIGS. 3 and 4. The resin clip 10 of the present invention can be manufactured through injection molding, including two-stage molding processes using so-called insert molding, two-color molding and the like.
(0036)
For example, in the case of two-color molding, first, as shown in FIG. 3 (a), the clip main body 20 is molded through a primary molding step using a head part die 71 and a pair of main body part dies 72a, 72b which can be split in the left-right direction relative to the axial direction of the clip main body 20. Then, as shown in FIG. 3 (b), the main body part dies 72a, 72b open in the left-right direction relative to the axial direction of the clip main body 20. It should be noted that in the case of insert molding, the clip main body 20 is removed here from the head part die 71.
(0037)
The molding device is not particularly limited, and injection molding devices known in the prior art can be used. Furthermore, the molding conditions such as temperature and pressure are not particularly limited and can be set as appropriate depending on the type of resin, etc.

(0038)
Next, a secondary molding step is performed, as shown in FIG. 4. Namely, the seal pad 40 is formed through secondary molding in a state where the clip main body 20 and head part die 71 after the aforementioned primary molding have been arranged inside a secondary molding die.
(0039)
The secondary molding die, as shown in FIG. 4 (B), comprises the head part die 71 from primary molding, adhered part dies 82a, 82b for molding the top surface of the skirt part 42 and the adhered part 41, and a round tubular skirt part die 83 for molding the bottom surface of the skirt part 42.
(0040)
The adhered part dies 82a, 82b are a pair of dies which can be opened and closed in the left-right direction relative to the axial direction of the clip main body 20, in which are formed spaces 87a, 87b into which the head part 21 can fit, and adhered part cavities 88a, 88b for molding the top surface of the skirt part 42 and the adhered part 41.
(0041)
The skirt part die 83 has a round tubular shape which surrounds the leg part 26 of the clip main body 20, and on the top surface thereof is formed a skirt part cavity 89 for molding the bottom surface of the skirt part 42.
(0042)
As shown in FIG. 4 (A), in a state with the clip main body 20 being held by the head part die 71, the adhered part dies 82, 82b are closed from the left and right and the skirt part die 83 is closed from the bottom, thus forming a seal pad cavity 90 comprising adhered part cavities 88a, 88b and skirt part cavity 89. In this state, injected resin is made to flow into the seal pad cavity 90, thus forming the seal pad 40.
(0043)
Then, as shown in FIG. 4 (B), the adhered part dies 82a, 82b are opened in the left-right direction, the skirt part die 83 is opened downward, and finally the head part die 71 is opened upward, thus allowing the resin clip 10 to be removed.
(0044)
It should be noted that for this secondary molding as well, the molding device is not particularly limited, and injection molding devices known in the prior art can be used. Furthermore, the molding conditions such as temperature and pressure are not particularly limited and can be set as appropriate depending on the type of resin, etc.
(0045)
In this way, in the present invention, the dies are configured such that the inner circumference of the adhered part 41 of the seal pad 40 on the bottom surface of the flange part 24 is arranged outward from the most radially outward protruding portion of the elastic locking part 28 of the leg part 22. Therefore, the skirt part die 83 can be made in a round tubular shape, allowing the skirt part die 83 to be arranged surrounding the leg part 26 from below the clip main body 20. The bottom surface of the skirt part 42 can thereby be molded without die splitting, thus making it possible to mold the skirt part 42 without a parting line occurring on the bottom surface of the skirt part 42.
(0046)
Furthermore, as shown in the FIG. 5 (a), which is an enlarged cross-sectional view of the vicinity of the skirt part 42 during secondary molding, in this embodiment, the skirt part die 83 is configured so as to contact the bottom surface of the flange part 24 of the clip main body 20 and the vertical surface of the stepped part 25 which continues from said bottom surface.
(0047)
In this way, the skirt part die 83 contacts at least two surfaces on the bottom surface side of the flange part 24, thus making it possible to more reliably prevent the resin injected during secondary molding from spilling over to the side of the leg part of the clip main body 20 and causing burrs, and flowing into the space 30 of the leg part 26.
(0048)
It should be noted that when a recessed part 35 is formed on the bottom surface of the flange part 24 during primary molding, as shown in FIG. 5 (b), if the skirt part die 85 is configured so that a protruding part of the die contacts the recessed part 35, a similar effect will be obtained to that described above.

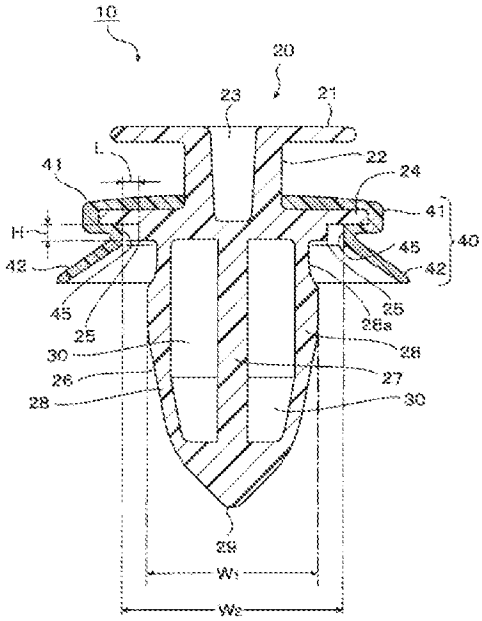
(0049)
Furthermore, as shown in FIG. 5 (c), the skirt part die 86 may be configured such that the fold-back part 45' widens diagonally outward from the adhered part 41 via a tapered part. This makes it possible to more easily remove the skirt part 42' of the seal pad 40' when the skirt part die 86 is opened downward after secondary molding.
(0050)
Next, the function of the resin clip 10 will be described while referring to FIG. 6.
(0051)
First, the head part 21 of the resin clip 10 is engaged into an attachment hole 61 of a member to be attached 60, such as an interior trim panel, retaining the member to be attached 60 between the head part 21 and the adhered part 41 of the flange part 24. Here, the attachment hole 61 is formed, for example, in a keyhole shape comprising a hole with a larger diameter than the head part 21 and a hole of a narrower width than the head part 21 extending from the larger diameter hole. The head part 21 of the resin clip 10 can thereby be engaged with the attachment hole 61 by inserting the head part through the larger diameter hole and then moving the shaft part 22 into the narrow hole.
(0052)
In this state, as the tip end 29 of the leg part 26 of the resin clip 10 is pushed further into the locking hole of the panel 50, the elastic locking part 28 of the leg part 26 is inserted while being reduced in diameter by the space part 30. Here, the bottom surface of the skirt part 42 of the seal pad 40 contacts the outer surface of the panel 50.
(0053)
As the resin clip 10 is pushed in further, the elastic locking part 28, after its maximum outside diameter passes through, expands in diameter, and once the reduced diameter part 28a reaches the locking hole, the elastic locking part is locked as shown in FIG. 6, thereby securing the member to be attached 60 to the panel 50.
(0054)
Here, the bottom surface of the skirt part 42 of the seal pad 40 forms a sealing surface and is depressed and tightly sealed to the outer surface of the panel 50. Furthermore, since no parting line occurs on the sealing surface, i.e. the bottom surface of the skirt part 42, as described above, the sealing performance is not reduced, and penetration of water, air, etc. from the panel 50 side to the side of the part to be attached 60 can be effectively prevented.
(0055)
(Effect of the invention)
According to the present invention as described above, there is no need to use a split die as the die for the skirt part during secondary molding, so no parting line occurs on the sealing surface of the skirt part, and sufficient sealing performance can be obtained when the seal pad is brought into elastic contact with the outer surface of the panel. Furthermore, the leg part and skirt part are separated by the ring-shaped recessed part or stepped part formed in the area extending from the inner circumference of the adhered part of the seal pad on the bottom surface of the flange part to the junction between the flange part and the leg part, thus making it possible to effectively prevent resin material from flowing into the space of the leg part of the clip main body during secondary molding.
(Brief description of the drawings)
(Fig. 1) is a perspective view illustrating an embodiment of a resin clip according to the present invention.
(Fig. 2) is a cross-sectional view of the same resin clip.
(Fig. 3) illustrates an embodiment of a manufacturing method for the same resin clip, where (a) is a cross-sectional view of the state with the dies closed after primary molding, and (b) is a cross-sectional view of the state with the left and right dies open after primary molding.
(Fig. 4) illustrates an embodiment of a manufacturing method for the same resin clip, where (A) is a cross-sectional view of the state with the dies closed after secondary molding, and (B) is a cross-sectional view of the state with the resin clip removed from the dies after secondary molding.
(FIG. 5) is an enlarged cross-sectional view of the vicinity of the skirt part during secondary molding of a resin clip according to the present invention.
(FIG. 6) is a cross-sectional view illustrating the state where a member to be attached has been connected to a panel using the same resin clip.
(Description of references)

10 Resin clip
20 Clip main body
21 Head part
22 Shaft part
23 Recessed part
24 Flange part
25 Stepped part
26 Leg part
27 Columnar part
28 Elastic locking part
28a Reduced diameter part
29 Tip end
30 Space part
35 Recessed part
40, 40' Seal pad
41 Adhered part
42, 42' Skirt part
45, 45' Fold-back part
50 Panel
60 Member to be attached
61 Attachment hole
71 Head part die
72a, 72b Main body part die
82a, 82b Adhered part die
83, 85, 86 Skirt part die
87a, 87b Space
88a, 88b Adhered part cavity
89 Skirt part cavity
90 Seal pad cavity

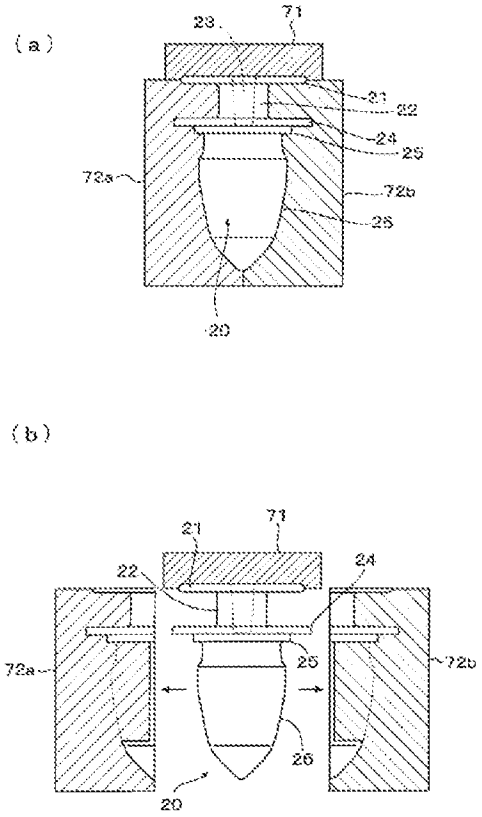
[FIG. 1]



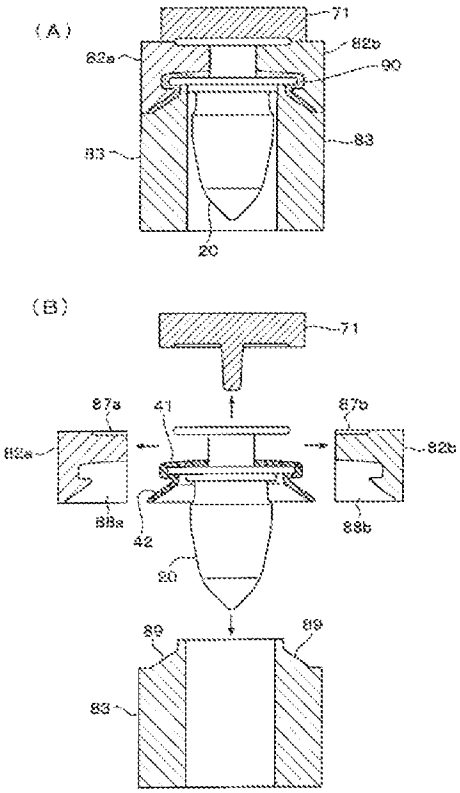
[FIG. 2]



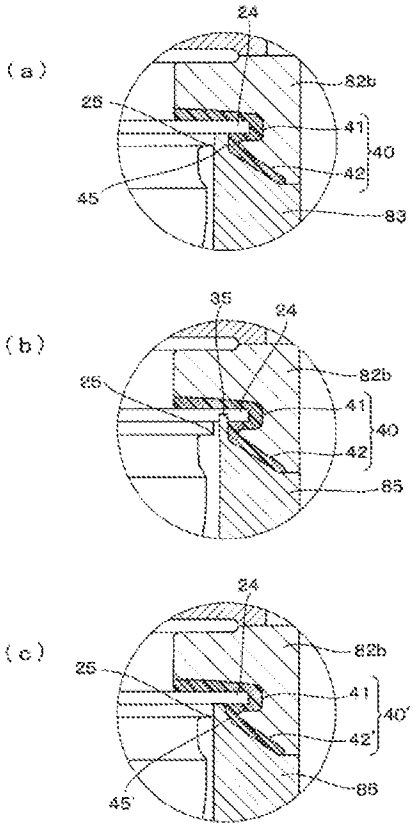
[FIG. 3]



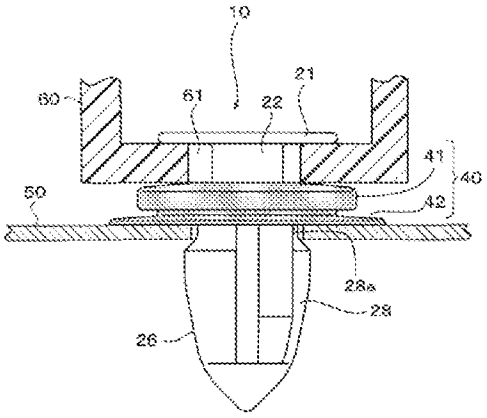
[FIG. 4]



[FIG. 5]


(a)
24
82b
28
41
40
42
45
83
(b)
35
24
82b
85
41
40
42
85
(c)
24
82b
25
41
40'
42'
45'
85

[FIG. 6]


10
60
61
22
21
41
40
50
42
28a
28
26

Continuation of the front page

(58) Fields searched (Int.Cl., DB Name)
F16B 5/00-5/12; 17/00-19/14
B29C 45/00-45/84

Electronic Acknowledgement Receipt

EFS ID:	41874648
Application Number:	16897947
International Application Number:	
Confirmation Number:	8594
Title of Invention:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL
First Named Inventor/Applicant Name:	Derek Scroggie
Customer Number:	160504
Filer:	Nicholas P. Schmidbauer./Cyndy Marcello
Filer Authorized By:	Nicholas P. Schmidbauer.
Attorney Docket Number:	480805.00748(61823-US-C)
Receipt Date:	09-FEB-2021
Filing Date:	10-JUN-2020
Time Stamp:	12:21:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	61823-US-C-IDS3-Trans-9FEB21.pdf	101400 bea959a70ae1ffdf7dbcf573497de6a3948a17eb	no	1

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	61823-US-C-IDS3-9FEB21.pdf	1034470 2cc9ef4f254918ed6d4a01edceb8e9906d9bfd26	no	4
Warnings:					
Information:					
A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems.					
3	Foreign Reference	WO2011043352A1.pdf	15464158 28a0c5011f8b53ea3916b338fb80d0595adecd58	no	44
Warnings:					
Information:					
4	Foreign Reference	JP4806495.pdf	2184425 bf364254d8badfb4ce98ebd6a68c39e6ea94be81	no	16
Warnings:					
Information:					
5	Foreign Reference	JP4252827-.pdf	23265172 dc7f16a526cc7c83e4e2bfa94696bc5d1eb9c8a5	no	24
Warnings:					
Information:					
		Total Files Size (in bytes):	42049625		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Illinois Tool Works Inc.	)
Serial No.:	16/897,947	)
Filed:	2020-06-10	)
For:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL	)
Group Art Unit:	3677	)
Confirmation No.:	8594	)
Examiner:	Not yet assigned	)

CERTIFICATE OF EFS FILING

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, on the date below.

February 9, 2021

/Cyndy Marcello/
Cyndy Marcello

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

The patents and/or publications listed on the enclosed Form PTO/SB/08a are being brought to the attention of the Examiner pursuant to 37 CFR §§ 1.56, 1.97, and 1.98. Copies of any foreign publications or other documents are enclosed as necessary.

This Information Disclosure Statement is being filed, to the best of the undersigned's knowledge, before issuance of a first Office action. In accordance with 37 C.F.R. § 1.97(b), no certification or fee is required. However, should the Examiner deem otherwise, the Examiner is hereby requested and authorized to charge the appropriate fee to Deposit Account No. 17-0055.

The identification of any document in the attached Form PTO/SB/08a is not an admission that such document is in fact prior art or is material to patentability relative to the instant application.

An early and favorable action on the merits is respectfully requested.

Respectfully submitted,

QUARLES & BRADY LLP
300 N. LaSalle Street, Suite 4000
Chicago, Illinois 60654
312.715.5072

February 9, 2021

By: /NPSchmidbauer/
Nicholas P. Schmidbauer
Reg. No. 56,610

QB\66944212.1

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/897,947	06/10/2020	Derek Scroggie	480805.00748(61823-US-C)	8594

160504 7590 09/01/2022

QUARLES & BRADY LLP/ITW Automotive OEM
Attn: IP Docket
411 E. WISCONSIN AVE.
SUITE 2400
MILWAUKEE, WI 53202-4428

EXAMINER	
DELISLE, ROBERTA S	

ART UNIT	PAPER NUMBER
3677	

NOTIFICATION DATE	DELIVERY MODE
09/01/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pat-dept@quarles.com

Office Action Summary	Application No. 16/897,947	Applicant(s) Scroggie et al.	
	Examiner ROBERTA S DELISLE	Art Unit 3677	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 6/10/2020.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-20 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-20 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 6/10/2020 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

2. Claim Status:

a. Claims 1-20 Pending

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on nonstatutory double patenting provided the reference application or patent either is shown to be

commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP § 2146 *et seq.* for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

4. Claims 1-20 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 10,683,882. Although the claims at issue are not identical, they are not patentably distinct from each other because require a retainer head, collar (i.e. second platform), seal, and clip portion.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERTA S DELISLE ("Bobbi") whose telephone number is (571)270-3746. The examiner can normally be reached M-F: 7 am - 3 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Victor D Batson can be reached on 571-272-6987. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ROBERTA S DELISLE/
Primary Examiner, Art Unit 3677

rsd

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/897,947	Scroggie et al.
	Examiner	Art Unit
	ROBERTA S DELISLE	3677

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	08/10/2022								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
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	14	✓								
	15	✓								
	16	✓								
	17	✓								
	18	✓								
	19	✓								
	20	✓								

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/897,947	Scroggie et al.
	Examiner	Art Unit
	ROBERTA S DELISLE	3677

CPC - Searched*		
Symbol	Date	Examiner
F16B 2/22; 5/00, 06, 0084, 0607, 0657; 19/00, 008; 21/086; 2005/0678	08/10/2022	rsd
Y10T 24/44026; 29/49828	08/10/2022	rsd

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
411	508-510	08/10/2022	rsd

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Inventors name search	08/10/2022	rsd
Forward / backward citation searching	08/10/2022	rsd
Text searching	08/10/2022	rsd
IPR2021-00724 Reviewed Petition for Inter Partes Review of US Patent Number 10,683,882	08/10/2022	rsd
Consulted SPE: I. Spar regarding PTAB documents	08/11/2022	rsd
NOTE: No PTO-892 dues to extensive IDS references	08/26/2022	rsd

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/897,947	Scroggie et al.
	Examiner	Art Unit
	ROBERTA S DELISLE	3677

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16897947
Filing Date	2020-06-10
First Named Inventor	SCROGGIE, Derek
Art Unit	
Examiner Name	
Attorney Docket Number	480805.00748(61823-US-C)

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6659701	B1	2003-12-09	Risdale	
	2	8936420	B2	2015-01-20	Scroggie, et al.	
	3	9873388	B2	2018-01-23	Meyers, et al.	
	4	10451100	B2	2019-10-22	Flynn	
	5	10688943	B2	2020-06-23	Bachelder, et al.	

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	1	20030156917	A1	2003-08-21	Heflin, et al.	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16897947
	Filing Date	2020-06-10
	First Named Inventor	SCROGGIE, Derek
	Art Unit	
	Examiner Name	
	Attorney Docket Number	480805.00748(61823-US-C)

	2	20070166127	A1	2007-07-19	Scroggie, et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16897947
Filing Date	2020-06-10
First Named Inventor	SCROGGIE, Derek
Art Unit	
Examiner Name	
Attorney Docket Number	480805.00748(61823-US-C)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

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See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/NPSchmidbauer/	Date (YYYY-MM-DD)	2020-08-27
Name/Print	Nicholas P. Schmidbauer	Registration Number	56610

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Application Number	16897947
Filing Date	2020-06-10
First Named Inventor	SCROGGIE, Derek
Art Unit	3677
Examiner Name	-
Attorney Docket Number	480805.00748(61823-US-C)

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	4252827	JP	B2	2009-01-30	Piolax Inc.		☓
	2	2011/043352	WO	A1	2011-04-14	Nifco Inc.		☒
	3	4806495	JP	B2	2011-08-19	Suiryo Plastics Co., Ltd., et al.		☒

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Examiner Name	-
Attorney Docket Number	480805.00748(61823-US-C)

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EXAMINER SIGNATURE

Examiner Signature	/ROBERTA S DELISLE/	Date Considered	08/10/2022

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Signature	/NPSchmidbauer/	Date (YYYY-MM-DD)	2021-02-09
Name/Print	Nicholas P. Schmidbauer	Registration Number	56610

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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	1495	411/508-510.ccls.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/10 12:32 PM
L2	40	((("SCROGGIE") near3 ("Derek")) OR (("BOZINOVSKI") near3 ("Michelle")) OR (("MURAWSKI") near3 ("Robert"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2022/08/10 12:54 PM
L3	43	("20110243688"|"4778320"|"5865500"|"6805524"|"7481474"|"5573362"|"6305055"|"20110119875"|"3745612"|"5028187"|"5704753"|"7927050"|"20100098515"|"8511631"|"20100029376"|"3249973"|"3550217"|"20050079033"|"5339491"|"5797714"|"6572317"|"20130129450"|"20060099051"|"20100009851"|"3678797"|"3771275"|"7770266"|"20060086765"|"5393185"|"6974292"|"4534530"|"5173026"|"8561265"|"8883059"|"5319839"|"6715185"|"5419606"|"3577603"|"3988808"|"5458365"|"7017239").PN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/10 12:58 PM
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		"9873388").pn.					
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L11	217	f16b5/0607.cpc.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/10 01:29 PM
L12	764	f16b5/0657.cpc.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/10 01:31 PM
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L15	253	f16b19/008.cpc.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/26 09:26 AM
L16	1488	f16b21/086.cpc.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/26 09:29 AM
L17	107	f16b2005/0678.cpc.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/26 09:37 AM
L18	1516	y10t24/44026.cpc.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/26 09:38 AM
L19	2441	y10t29/49828.cpc.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/26 09:46 AM
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L21	0	("2019/0145450").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/26 09:58 AM
L22	2	(press ADJ in ADJ (fastener OR retainer))	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/26 09:59 AM
L23	23	("2015159" | "2191771" | "2269708" | "3477334" | "4776739" | "5340254" | "5489179" | "5741104" | "5749692" | "5907891" | "6340277" | "7807911" | "7819614" | "8348576" | "8616817" | "8651787" | "8858144" | "8888428" | "9903409").pn. OR ("10704581").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/26 09:59 AM
L24	2368	(clip ADJ retainer)	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/26 10:00 AM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Examiner Name	
Attorney Docket Number	480805.00748(61823-US-C)

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	1	3249973	A	1966-05-10	Seckerson	
	2	3550217	A	1970-12-29	Collyer	
	3	3577603	A	1971-05-04	Seckerson	
	4	3678797	A	1972-07-25	Seckerson	
	5	3745612	A	1973-07-17	Seckerson	
	6	3771275	A	1973-11-13	Seckerson	
	7	3988808	A	1976-11-02	Poe	
	8	D268006	S	1983-02-22	Wollar	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /R.S.D/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16897947
	Filing Date	2020-06-10
	First Named Inventor	SCROGGIE, Derek
	Art Unit	
	Examiner Name	
	Attorney Docket Number	480805.00748(61823-US-C)

	9	D268894	S	1983-05-10	Wollar	
	10	D273091	S	1984-03-20	Kurosaki	
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	Attorney Docket Number	480805.00748(61823-US-C)

	20	D297615	S	1988-09-13	Nakama	
	21	4778320	A	1988-10-18	Nakama	
	22	D298736	S	1988-11-29	Shiraishi	
	23	5028187	A	1991-07-02	Sato	
	24	D324168	S	1992-02-25	Fujioka	
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	Art Unit	
	Examiner Name	
	Attorney Docket Number	480805.00748(61823-US-C)

	31	5339491	A	1994-08-23	Sims	
	32	D354219	S	1995-01-10	Shimajiri	
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	Examiner Name	
	Attorney Docket Number	480805.00748(61823-US-C)

	42	D382466	S	1997-08-19	Hirose	
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	Art Unit	
	Examiner Name	
	Attorney Docket Number	480805.00748(61823-US-C)

	53	D464873	S	2002-10-29	Nemoto	
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	58	6805524		2004-10-19	Kanie	
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	63	7017239	B2	2006-03-28	Kurily, et al.	

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	Examiner Name	
	Attorney Docket Number	480805.00748(61823-US-C)

	64	D529793	S	2006-10-10	Kuroda	
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	66	D564344	S	2008-03-18	Nakazato	
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	First Named Inventor	SCROGGIE, Derek
	Art Unit	
	Examiner Name	
	Attorney Docket Number	480805.00748(61823-US-C)

	75	7770266	B1	2010-08-10	Higgins	
	76	D625587	S	2010-10-19	Obuchi, et al.	
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	85	D675506	S	2013-02-05	Araki	

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	First Named Inventor	SCROGGIE, Derek
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	Examiner Name	
	Attorney Docket Number	480805.00748(61823-US-C)

	86	D675507	S	2013-02-05	Araki	
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	First Named Inventor	SCROGGIE, Derek
	Art Unit	
	Examiner Name	
	Attorney Docket Number	480805.00748(61823-US-C)

	97	D723906	S	2015-03-10	Kato, et al.	
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20050079033	A1	2005-04-14	Benedetti	
	2	20050150087	A1	2005-07-14	Lyndan	

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	Examiner Name	
	Attorney Docket Number	480805.00748(61823-US-C)

	3	20060086765	A1	2006-04-27	Harberts	
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Examiner Name	
Attorney Docket Number	480805.00748(61823-US-C)

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	1174079	JP	S	2003-05-26	Nifco, Inc.		☒
	2	2009123616	WO	A1	2009-10-08	TS Tech Co.		☐
	3	2913738	FR	B1	2009-10-30	A. Raymond Et Cie Societe En Commandite Simple		☒
	4	2017205022	WO	A1	2017-11-30	Illinois Tool Works Inc.		☐

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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EXAMINER SIGNATURE

Examiner Signature	/ROBERTA S DELISLE/	Date Considered	08/10/2022

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

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Filing Date	2020-06-10
First Named Inventor	SCROGGIE, Derek
Art Unit	
Examiner Name	
Attorney Docket Number	480805.00748(61823-US-C)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/NPSchmidbauer/	Date (YYYY-MM-DD)	2020-06-12
Name/Print	Nicholas P. Schmidbauer	Registration Number	56610

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/897,947	Filing Date 06/10/2020	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $460 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	11/09/2022	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	SLIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/TONGELINA C TUBBS/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Illinois Tool Works Inc.	)
Serial No.:	16/897,947	)
Filed:	June 10, 2020	)
Title:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL	)
Group Art Unit:	3677	)
Examiner:	Roberta S. Delisle	)

Confirmation No. 8594

CERTIFICATE OF EFS FILING

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, on the date below.

November 9, 2022

/Cyndy Marcello/
Cyndy Marcello

AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

In response to the non-final Office action dated September 1, 2022, ("Office action"), please consider the following:

Amendments to the Claims begin on page 2; and

Remarks may be found on page 8.

Amendments to the Claims

1. (Currently Amended) A press-in retainer, comprising:

a retainer head including a collar and a seal disposed at least partially about the collar; and

a clip portion projecting from the collar,

wherein the seal includes a main body engaging the collar and a sealing foot projecting at an obtuse angle from a distal surface of the main body to a free edge when in an unstressed condition such that the sealing foot is disposed entirely outboard from the collar, wherein the sealing foot is contiguous with the main body, the obtuse angle facing the clip portion, wherein the sealing foot is configured to flex from the unstressed condition toward a substantially flattened condition about a living hinge located at an intersection of the sealing foot and body portion while remaining entirely outboard from the main body, and wherein, in the substantially flattened condition, the obtuse angle between the sealing foot and the distal surface of the main body approaches a flat contiguous surface.

2. (Original) The press-in retainer of claim 1, wherein the press-in retainer is configured to join a surface element to a support structure, and wherein the clip portion is configured for insertion into an acceptance opening of the support structure.

3. (Original) The press-in retainer of claim 2, wherein the retainer head and the clip portion are molded as a unitary structure.

4. (Original) The press-in retainer of claim 2, wherein the clip portion comprises a stem extending from the collar.

5. (Original) The press-in retainer of claim 4, wherein the clip portion comprises at least one flexible wing that extends in an angled relation away from an end of the stem, wherein the flexible wing comprises a dogleg configuration with a proximal face surface and a distal face surface, wherein the proximal face surface extends from the end of the stem radially outwardly, toward the

collar, and to the distal face surface, and wherein the distal face surface extends from the proximal face surface radially inwardly, toward the collar, and to a free tip of the flexible wing.

6. (Original) The press-in retainer of claim 5, wherein the flexible wing is configured to flex toward the stem during insertion through the acceptance opening of the support structure, and wherein the distal face surface is configured to press against an interior surface of the acceptance opening to urge the retainer downwardly into the acceptance opening.

7. (Original) The press-in retainer of claim 6, wherein the seal is configured to flex from the unstressed condition toward the substantially flattened condition to bring the surface element toward the support structure in response to the distal face surface pressing against the interior surface of the acceptance opening to urge the retainer downwardly into the acceptance opening.

8. (Original) The press-in retainer of claim 2, wherein the collar includes an interior collar portion and a reduced thickness outer annular lip disposed circumferentially about the interior collar portion, and wherein the outer annular lip extends outwardly from a perimeter of the interior collar portion.

9. (Original) The press-in retainer of claim 8, wherein the main body of the seal is annular and further includes a circumferential acceptance slot that extends circumferentially along an inner diameter of the main body, and wherein the circumferential slot is configured to receive the outer annular lip of the collar.

10. (Original) The press-in retainer of claim 2, wherein the free edge of the sealing foot is configured to maintain sliding contact with the support structure as the seal flexes from the unstressed condition toward the substantially flattened condition.

11. (Currently Amended) A retainer assembly configured to join a surface element to a support structure so that the surface element assumes a contacting abutting relation with the support structure, the support structure having an acceptance opening, the retainer assembly comprising:

a retainer head including a collar, a platform, and a neck disposed between the collar and the platform, the retainer head being configured for placement into a channel defined by the surface element;

a seal disposed about a perimeter of the collar and comprising an annular main body and a sealing foot, the sealing foot being connected to the main body by a living hinge extending along a perimeter of the main body and being disposed entirely outboard from the collar, and the sealing foot extending from the living hinge to a free edge, wherein an inner diameter of the main body at least partially contacts an outer diameter of the collar, wherein a contacting surface of the sealing foot is contiguous with a distal surface of the main body, the contacting surface and the distal surface both facing away from the retainer head, and wherein the contacting surface forms an obtuse angle with the distal surface when the seal is in an unstressed condition; and

a clip portion extending from the collar of the retainer head, the clip portion being configured for insertion into the acceptance opening of the support structure, and the clip portion comprising at least one surface that is configured to press against an interior surface of the acceptance opening to urge the retainer assembly further into the acceptance opening,

wherein the seal is configured to flex from the unstressed condition toward a fully flexed condition to bring the surface element closer to the support structure, and wherein, in the fully flexed condition, the free edge of the sealing foot is disposed radially outwardly and closer to the retainer head such that the contacting surface of the sealing foot and the distal surface of the main body form an angle greater than the obtuse angle of the unstressed condition.

12. (Original) The retainer assembly of claim 11, wherein the retainer head and the clip portion are molded as a unitary structure.

13. (Original) The retainer assembly of claim 11, wherein the clip portion comprises a stem extending from the collar.

14. (Original) The retainer assembly of claim 13, wherein the clip portion comprises at least one flexible wing that extends in an angled relation away from an end of the stem, wherein the flexible wing comprises a dogleg configuration with a proximal face surface and a distal face surface, wherein the proximal face surface extends from the end of the stem radially outwardly, toward the collar, and to the distal face surface, and wherein the distal face surface extends from the proximal face surface radially inwardly, toward the collar, and to a free tip of the flexible wing.

15. (Original) The retainer assembly of claim 14, wherein the at least one flexible wing is configured to flex toward the stem during insertion through the acceptance opening of the support structure, and wherein the distal face surface is configured to press against the interior surface of the acceptance opening to urge the retainer assembly downwardly into the acceptance opening.

16. (Original) The retainer assembly of claim 13, wherein the clip portion comprises a pair of flexible wings that extend in angled relation away from an end of the stem in opposing directions, wherein each of the pair of flexible wings comprises a dogleg configuration with a proximal face surface and a distal face surface, wherein the proximal face surface extends from the end of the stem radially outwardly, toward the collar, and to the distal face surface, and wherein the distal face surface extends from the proximal face surface radially inwardly, toward the collar, and to a free tip of the flexible wing, and wherein the distal face surface is configured to press against the interior surface of the acceptance opening to urge the retainer assembly downwardly into the acceptance opening.

17. (Currently Amended) A retainer assembly configured to join a surface element to a support structure, the support structure having an acceptance opening, the retainer assembly comprising:

a retainer head including a collar, a platform, and a neck disposed between the collar and the platform, the retainer head being configured for placement into a channel defined by the surface element;

a seal disposed about a perimeter of the collar and comprising an annular main body and a sealing foot, the sealing foot being connected to the main body by a living hinge extending along a perimeter of the main body and being disposed entirely outboard from the collar, and the sealing foot extending from the living hinge to a free edge that is disposed radially outwardly from the living hinge, wherein an inner diameter of the main body at least partially contacts an outer diameter of the collar, wherein a contacting surface of the sealing foot is contiguous with a distal surface of the main body, the contacting surface and the distal surface both facing away from the retainer head, and wherein the contacting surface forms an obtuse angle with the distal surface when the seal is in an unstressed condition; and

a clip portion extending from the collar of the retainer head,

wherein the collar includes an interior collar portion and a reduced thickness outer annular lip disposed circumferentially about the interior collar portion such that a step is disposed at an intersection of the interior collar portion and the outer annular lip, the outer annular lip extending radially outwardly from a perimeter of the interior collar portion, and

wherein the main body of the seal further includes a circumferential acceptance slot that extends circumferentially along the inner diameter of the main body and is configured to receive the annular lip of the collar.

18. (Original) The retainer assembly of claim 17, wherein the clip portion is configured for insertion into the acceptance opening of the support structure and comprises at least one angled surface that is configured to press against an interior surface of the acceptance opening to urge the retainer further into the acceptance opening.

19. (Original) The retainer assembly of claim 18, wherein the seal is configured to flex from the unstressed condition toward a fully flexed condition to bring the surface element closer to the

support structure in response to the at least one angled surface pressing against the interior surface of the acceptance opening to urge the retainer assembly downwardly into the acceptance opening, wherein, in the fully flexed condition, the free edge of the sealing foot is disposed farther radially outwardly and closer to the retainer head than in the unstressed condition, and wherein, in the fully flexed condition, the contacting surface of the sealing foot and the distal surface of the main body form an angle greater than the obtuse angle of the unstressed condition.

20. (Original) The retainer assembly of claim 19, wherein the free edge of the sealing foot is configured to maintain sliding contact with the support structure as the seal flexes from the unstressed condition toward the fully flexed condition.

REMARKS

Claims 1-20 are pending and at issue in the present application. In this response, claims 1, 11, and 17 have been amended for purposes of clarity. Support for these amendments to the claims can be found throughout the original specification and at least in pars. [0025] and [0026] and FIGS. 3 and 5 of the as-filed application. Applicant respectfully submits that the amendments presented herein do not broaden the scope of the independent claims and, thus, the amendments may be entered without further searching.

In the Office action, claims 1-20 are rejected on the grounds of nonstatutory double patenting as allegedly being unpatentable over claims 1-20 of U.S. Patent No. 10,683,882.

Applicant traverses the rejection presented in the Office action and, in view of the remarks herein, Applicant respectfully requests the Office withdraw the rejection and allow the claims. No new matter has been introduced by way of this amendment. Applicant encourages the Examiner to call the undersigned to resolve any outstanding issues.

Double Patenting Rejection

Claims 1-20 stand rejected on the grounds of nonstatutory double patenting as allegedly being unpatentable over claims 1-20 of U.S. Patent No. 10,683,882.

With this response, Applicant submits a terminal disclaimer with respect to U.S. Patent No. 10,683,882. As such, Applicant respectfully requests withdrawal of the double patenting rejection.

CONCLUSION

In view of the above, Applicant respectfully requests withdrawal of the rejection and allowance of all pending claims. If there are any issues remaining that can be resolved by telephone, the examiner is invited to call the undersigned attorney.

Deposit Account Authorization

Aside from the terminal disclaimer fee, no additional fees are believed to be due with this communication. However, the Commissioner is hereby authorized to charge any deficiency in fees paid or any additional fees, except issue fees, which may be required under 37 C.F.R. §§ 1.16 or 1.17, to Deposit Account No. 17-0055.

Respectfully submitted,

QUARLES & BRADY LLP
300 N. LaSalle Street, Suite 4000
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Date: November 9, 2022

By: /NPSchmidbauer/
Nicholas P. Schmidbauer
Reg. No. 56,610
Attorney for Applicant

PTO/AIA/26 (04-14)
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TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	Docket Number (Optional) 480805.00748(61823-US-C)

In re Application of: SCROGGIE, et al.

Application No.: 16897947

Filed: 2020-06-10

For: PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

The applicant, Illinois Tool Works Inc., owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 10683882 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

expires for failure to pay a maintenance fee;
is held unenforceable;
is found invalid by a court of competent jurisdiction;
is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
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is reissued; or
is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

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1. ☐ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

I hereby acknowledge that any willful false statements made are punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

2. ☑ The undersigned is an attorney or agent of record. Reg. No. 56610

/NPSchmidbauer/ — Signature
2022-11-09 — Date

Nicholas P. Schmidbauer — Typed or printed name

Attorney of Record — Title
312-715-5000 — Telephone Number

☑ Terminal disclaimer fee under 37 CFR 1.20(d) included.

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Electronic Patent Application Fee Transmittal

Application Number:	16897947
Filing Date:	10-Jun-2020
Title of Invention:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL
First Named Inventor/Applicant Name:	Derek Scroggie
Filer:	Nicholas P. Schmidbauer./Cyndy Marcello
Attorney Docket Number:	480805.00748(61823-US-C)

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
STATUTORY OR TERMINAL DISCLAIMER	1814	1	170	170
		Total in USD ($)		**170**

Electronic Acknowledgement Receipt

EFS ID:	46993965
Application Number:	16897947
International Application Number:	
Confirmation Number:	8594
Title of Invention:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL
First Named Inventor/Applicant Name:	Derek Scroggie
Customer Number:	160504
Filer:	Nicholas P. Schmidbauer./Cyndy Marcello
Filer Authorized By:	Nicholas P. Schmidbauer.
Attorney Docket Number:	480805.00748(61823-US-C)
Receipt Date:	09-NOV-2022
Filing Date:	10-JUN-2020
Time Stamp:	18:14:29
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$170
RAM confirmation Number	E2022A9I15011811
Deposit Account	170055
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	Multipart Description/PDF files in .zip description				
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	Amendment/Request for Reconsideration-After Non-Final Rejection		1	1	
	Claims		2	7	
	Applicant Arguments/Remarks Made in an Amendment		8	9	
Warnings:					
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2	Terminal Disclaimer Filed	61823-US-C-Terminal-Disclaimer-9NOV22.pdf	155539 d0cd31f2739c82f16dd4f81576dd7b0805c9ff16	no	2
Warnings:					
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3	Fee Worksheet (SB06)	fee-info.pdf	38302 2612e7bff58c60bb3955c501b1e143ac7a7e6a0e	no	2
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(Not for submission under 37 CFR 1.99)

Application Number	16897947
Filing Date	2020-06-10
First Named Inventor	Derek Scroggie
Art Unit	3677
Examiner Name	ROBERTA S DELISLE
Attorney Docket Number	480805.00748(61823-US-C)

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4188040	A	1980-02-12	Franz-Josef Wolf	
	2	4888919	A	1989-12-26	Gordon G. Strosberg	
	3	4906154	A	1990-03-06	William L. Sheppard	
	4	5857244	A	1999-01-12	Brian Edward Edwards	
	5	7152281	B2	2006-12-26	Derek Scroggie	
	6	7444721	B2	2008-11-04	Michael Walter Smith	
	7	7784159	B2	2010-08-31	Daniel James Dickinson	
	8	8561265	B2	2013-10-22	Steven M. Benedetti	

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	Application Number	16897947
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	First Named Inventor	Derek Scroggie
	Art Unit	3677
	Examiner Name	ROBERTA S DELISLE
	Attorney Docket Number	480805.00748(61823-US-C)

	9	8950042	B2	2015-02-10	Michael Walter Smith	
	10	9150145	B2	2015-10-06	Dennis WANDELT	
	11	9649993	B1	2017-05-16	Daniel James Dickinson	

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	1	20050189775	A1	2005-09-01	Todd De Pue	
	2	20060117535	A1	2006-06-08	Derek Fraser	
	3	20080066266	A1	2008-03-20	Derek Scroggie	
	4	20120261942	A1	2012-10-18	Steven M. Benedetti	

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	Application Number	16897947
	Filing Date	2020-06-10
	First Named Inventor	Derek Scroggie
	Art Unit	3677
	Examiner Name	ROBERTA S DELISLE
	Attorney Docket Number	480805.00748(61823-US-C)

	1	4248681	JP	B2	2009-04-02	Daiwa Kasei Ind Co Ltd		
	2	2012092473	WO	A1	2012-07-05	Illinois Tool Works Inc.		

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	1	GM Rocker Mounting Clip with Sealer 11571175 (for Chevrolet Traverse 2010), Car-Pak Manufacturing Company, Troy, Michigan, February 2009, Page 3 (http://www.usrubberparts.de/catalogs/carpak_zusatzkatalog.pdf).	
	2	GM Rocker Moulding & Grille Moulding Clip 25724529 (for Pontiac Bonneville 1992+) (Source: Au-ve-co Products Co., 2008, The Complete Fastener Line, Section 20, General Motors Clips & Fasteners, page 417 (http://www.srubberparts.de/catalogs/carpak_zusatzkatalog.pdf).	
	3	GM Rocker Panel Moulding Clip With Sealer GM 5480852 (for Chevrolet Equinox 2005) Car-Pak Manufacturing Company, Troy, Michigan, February 2009, Page 12 http://www.usrubberparts.de/catalogs/carpak_zusatzkatalog.pdf).	
	4	Termax Part No. 71093 Sealing - Umbrella Clip, "Termax Corporation Fastener Systems Catalog," p. 4-23, at least as early as February 18, 2010 (153 pages).	
	5	Termax Part No. 71101 Sealing Umbrella Clip for 0.5-1.5 Panel, Termax Corporation, Lake Zurich, Illinois, at least as early as July 29, 2010 (1 page).	
	6	Termax Part No. 71103 Sealing Umbrella Clip for 1.5-2.5 Panel, Termax Corporation, Lake Zurich, Illinois, at least as early as December 6, 2011 (1 page).	
	7	Decision in Inter Partes Review No. IPR2021-00724, for Patent No. 10683882B2, Termax LLC v. Illinois Tool Works Inc., dated October 4, 2022 (67 pages).	

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	Application Number	16897947
	Filing Date	2020-06-10
	First Named Inventor	Derek Scroggie
	Art Unit	3677
	Examiner Name	ROBERTA S DELISLE
	Attorney Docket Number	480805.00748(61823-US-C)

EXAMINER SIGNATURE			
Examiner Signature		Date Considered	

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	Application Number	16897947
	Filing Date	2020-06-10
	First Named Inventor	Derek Scroggie
	Art Unit	3677
	Examiner Name	ROBERTA S DELISLE
	Attorney Docket Number	480805.00748(61823-US-C)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/NPSchmidbauer/	Date (YYYY-MM-DD)	2022-11-16
Name/Print	Nicholas P. Schmidbauer	Registration Number	56610

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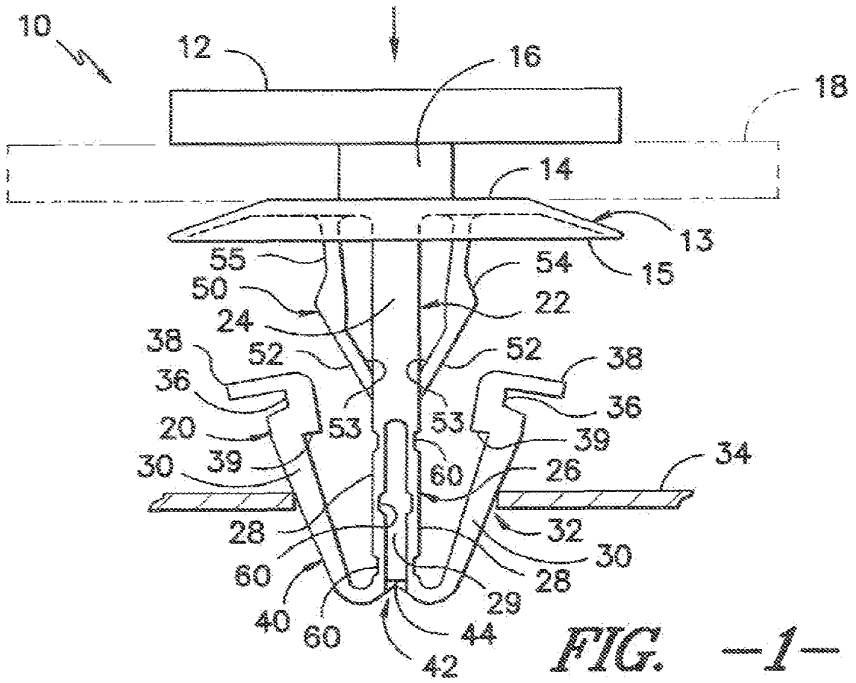


FIG. —1—

(57) Abstract: A press-in fastener adapted to join a first component to a second component. The fastener includes a proximal head and a distal base clip portion below the head. The base clip portion includes an axially displaceable post structure and a pair of opposing wings extending in upwardly angled relation away from the travel path defined by the post structure. Collapsible legs engage the wings in operative connection to the post structure. As the fastener is pressed inwardly, upon encountering resistance from the second component, the legs collapse in folded relation as the post structure travels axially between the wings.

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Collapsible Retainer

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This Application claims the benefit of, and priority from, United States Provisional Application Serial No. 61/429,017 filed December 31, 2010. The contents of such prior application are hereby incorporated by reference in their entirety as if fully set forth herein.

FIELD OF THE INVENTION

[0002] The present invention relates generally to fasteners used as intermediate connectors between a first component and a second component disposed in juxtaposed relation to one another. More particularly, the present invention relates to push-through fasteners including a head portion adapted to operatively engage a first component and a base clip portion extending away from the head portion and adapted to engage a second component such as a panel or other structure.

BACKGROUND OF THE INVENTION

[0003] In many assemblies it is necessary to connect one panel or object to another panel or object. For example, in the construction of automobiles, various panels and structures are often connected to other panels or structures or to the automobile frame using press-fit fasteners (also known as "retainers"). It is known that such fasteners may have a head portion and a base clip portion with a generally "W" shape projecting away from the head portion. In using such fasteners, the head of the fastener may be attached to an attachment structure such as a

doghouse, return flange or the like on one component with the base clip projecting outwardly for insertion in an opening within the second component to complete the connection.

[0004] A number of prior component connection devices and techniques are known and disclosed in the art. These include the connection devices and techniques disclosed in U.S. Pat. Nos. 5,797,714; 5,851,097; 6,715,185; 7,017,239; 7,152,281; 7,698,787 and U.S. Application No. 2007/0166127, all of which are incorporated by reference as if fully set forth herein. While each of these constructions provides various benefits, further improvements may nonetheless be desirable. In particular, improved constructions facilitating so called "blind" insertion while nonetheless providing a low profile, strong connection following insertion may be desirable.

SUMMARY OF THE INVENTION

[0005] The present invention provides advantages and alternatives over the prior art by providing an improved fastener with an extended collapsible lead-in to aid in insertion. In this regard, in accordance with one exemplary aspect, the present invention provides a fastener adapted to join a first component to a second component. The fastener includes a proximal head and a distal base clip portion below the head. The base clip portion includes a central post structure and a pair of opposing wings extending in upwardly angled relation away from the axis defined by the post structure. Collapsible legs engage the wings in operative connection to the post structure. As the fastener is pressed inwardly, upon encountering resistance from the second component, the post structure travels axially relative to the wings such that the legs collapse in folded relation.

[0006] In accordance with one exemplary feature, the present invention provides a push-through fastener for joining a first component to a second component. The fastener includes a head adapted to engage the first component and a base clip portion disposed below the head and adapted for insertion into an acceptance opening in the second component. The base clip

portion includes a pair of flexible wing elements and a post structure of non-collapsible construction projecting along an axial travel path between the wing elements. The post structure is operatively connected to the head such that linear movement of the head is translated to the post structure. The wing elements extending upwardly at acute angles relative to the post structure travel path, at least one collapsible leg operatively connects each of the wing elements to the post structure such that the leg collapses into a folded condition upon application of axial compression as the head is pressed towards the second component and the post structure moves axially between the wing elements following insertion of the base clip portion into the acceptance opening. A method of joining a first component to a second component is also provided. Other advantages and features will become apparent upon review of the following detailed description of potentially preferred embodiments and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. 1 is a schematic side view illustrating an exemplary embodiment of a fastener consistent with the present invention;

[0008] FIG. 2 is a schematic view similar to FIG. 1, illustrating initial insertion of the fastener into a panel opening;

[0009] FIG. 3 is a view similar to FIGS. 1 and 2 illustrating an intermediate insertion stage of the fastener into a panel opening;

[0010] FIG. 4 is a view similar to FIGS. 1-3, illustrating the final stage of insertion of the fastener into a panel opening;

[0011] FIG. 5 is a schematic view illustrating another exemplary embodiment of a fastener consistent with the present invention at an initial stage of insertion into a panel opening;

[0012] FIG. 6 is a schematic view similar to FIG. 5, illustrating a final stage of insertion into a panel opening;

[0013] FIG. 7 is a schematic view illustrating another exemplary embodiment of a fastener consistent with the present invention at an initial stage of insertion into a panel opening;

[0014] FIG. 8 is a schematic view similar to FIG. 7, illustrating an intermediate stage of insertion into a panel opening;

[0015] FIG. 9 is a view similar to FIGS. 7 and 8, illustrating the final stage of insertion of the fastener into a panel opening;

[0016] FIG. 10 is a schematic perspective view illustrating another exemplary embodiment of a fastener consistent with the present invention;

[0017] FIG. 11 is a schematic side view illustrating the fastener of FIG. 10 at an initial stage of insertion into a panel opening;

[0018] FIG. 12 is a schematic view similar to FIG. 11, illustrating an intermediate stage of insertion into a panel opening; and

[0019] FIG. 13 is a view similar to FIGS. 11 and 12 illustrating the final stage of insertion of the fastener into a panel opening.

[0020] Before the exemplary embodiments of the invention are explained in detail, it is to be understood that the invention is in no way limited in its application or construction to the details and the arrangements of the components set forth in the following description or illustrated in the drawings. Rather, the invention is capable of other embodiments and being

practiced or being carried out in various ways. Also, it is to be understood that the phraseology and terminology used herein are for purposes of description only and should not be regarded as limiting. The use herein of terms such as "including" and "comprising" and variations thereof is meant to encompass the items listed thereafter and equivalents thereof as well as additional items and equivalents thereof.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0021] Reference will now be made to the drawings, wherein to the extent possible, like elements are designated by like reference numerals throughout the various views. Referring to FIG. 1, an exemplary fastener 10 is illustrated. By way of example only, any of the embodiments described herein may be formed as a unitary structure from injection molded polymer such as nylon, acetal resin or the like, although other materials my likewise be used. As shown, the fastener 10 includes a table-like head 12 defining a raised platform disposed in opposing relation to a support collar 13 such as an umbrella flange or the like. By way of example only, the support collar 13 may include a relatively rigid upper support platform 14 of disc-like configuration with a continuous or discontinuous pliable skirt 15 disposed radially about the support platform 14. As will be appreciated, while the support platform 14 and the pliable skirt 15 may be formed from a common polymeric material as part of the unitary molded structure, different rigidity levels may be achieved in these and other components by varying the thickness. A neck structure 16 in the form of a reduced diameter post extends between the upper support platform 14 and the underside of the head 12. The head 12 and the support platform 14 may have a generally circular shape, although polymeric shapes such rectangles, hexagons, squares and the like may be used. In any event, the effective outer diameters defined by the head 12 and the support platform 14 are preferably greater than the effective outer diameter defined by the neck structure 16.

[0022] In operation, the fastener 10 may be operatively secured to a first component 18 (shown in phantom) such as an intermediate connector in the form of a doghouse connector,

return flange or the like by sliding the head 12 into a slot in the intermediate connector in a manner as will be well known to those of skill in the art. The intermediate connector may, in turn, be attached to an overlying panel such as a decorative panel or other structure. Likewise, the head 12 may be connected directly to an overlying component by techniques such as tape, adhesive bonding, mechanical joining or the like.

[0023] As illustrated, the fastener 10 further includes base clip portion designated generally as 20 extending away from the underside of the support platform 14. In the exemplary construction, the base clip portion 20 includes a central post structure 22 including a proximal post segment 24 of substantially incompressible solid character projecting away from the support platform 14. The central post structure 22 also includes a distal post segment 26 of split-leg construction including a pair of spaced apart collapsible legs 28 disposed in the axial direction on either side of a longitudinal gap 29. The collapsible legs 28 are adapted for collapse into an accordion folded condition upon the application of compressive force in a manner as will be described further hereinafter.

[0024] As illustrated, in the exemplary embodiment, wing elements 30 extend upwardly in angled relation away from the distal ends of the legs 28 such that the complementary legs 28 and the wing elements 30 cooperatively form acute angles. Each of the wing elements 30 is integral with the corresponding leg 28. The wing elements 30 are adapted to flex inwardly to permit passage through an acceptance opening 32 in an attachment panel 34. By way of example only, the attachment panel 34 may be a support panel for vehicle trim or the like. As best seen through joint reference to FIGS. 2 and 3, each of the wings includes an outboard undercut 36 for receipt of the edge of the attachment panel 34 and an overhang defining a shoulder stop 38 which snaps behind an upper surface of the attachment panel 34 upon full insertion (FIG. 3). In the exemplary embodiment, each of the wing elements further includes an inboard ledge 39 extending towards the central post structure 22 at a position below the outboard undercut 36. The inboard ledge 39 defines a catch surface to aid in securing the fastener in place upon full insertion in a manner as will be described further hereinafter.

[0025] As illustrated, the lower portions of the wings 30 cooperatively form a relatively long and narrow lead-in nose 40 extending to a distal cusp 42 formed at the intersection of the wings 30. In this regard, the lead-in nose 40 extends outwardly a substantial distance away from the head 12 and support collar 13 such that it may be seen by a user during insertion into an opening in the attachment panel 34. This may facilitate so called "blind attachment" wherein the acceptance opening 32 may be hidden from view during the assembly process. In the exemplary construction, an integral frangible bridge connection 44 extends in joining relation between the wings at the distal cusp 42. The frangible bridge connection 44 thus holds the legs 28 in connected, spaced relation relative to one another during the initial assembly stages shown in FIGS. 1 and 2.

[0026] As best seen through joint reference to FIGS. 2 and 3, upon full insertion of the wing elements 30 into the acceptance opening in the attachment panel 34, shoulder stops 38 engage an upper surface of the attachment panel 34 adjacent the acceptance opening 32, thereby blocking further advancement of the attachment panel 34 relative to the wing elements 30 (FIG. 2). Upon the application of further compressive force in the direction shown by the force arrows, the proximal post segment 24 continues to move inwardly in sunken relation between the wing elements 30 (FIG. 3).

[0027] As shown, a support frame 50 is disposed outboard of the proximal post segment 24 and generally inboard of the wing elements 30. In the illustrated exemplary embodiment, the support frame 50 is made up of a pair of integral ribs 52 of dog-leg configuration extending between the proximal post segment 24 and the underside of the support collar upper platform 14. As shown, each rib 52 includes a lower segment 53 extending in upwardly angled relation away from the proximal post segment 24 to an enlarged nose 54 projecting radially outboard from the proximal post segment 24. Each rib 52 further includes an upper segment 55 extending between the enlarged nose 54 and the upper platform 14 of the support collar 13.

[0028] As will be understood through comparison of FIGS. 2-4, once the shoulder stops 38 engage the attachment panel 34, further inward pressing of the fastener 10 causes inboard surfaces of the wing elements 30 to be pressed against outboard surfaces at the lower segments 53 of ribs 52. As the head 12 and support collar 13 are advanced further by pressing in the direction of the illustrated force arrows, there is relative movement between the central post structure 22 and the wing elements 30 thereby causing the proximal post segment 24 to move into sunken relation between the wing elements 30. During this relative movement, the upwardly angled lower segments 53 act as camming surfaces, causing the free ends of the wing elements 30 to move radially outwardly (FIG. 3) until the inboard ledge 39 engages an inwardly angled upper surface of the nose 54 (FIG. 4). In this condition, the perimeter edges of the acceptance opening are pressed into the outboard undercut 36 and the inboard ledge 39 is supported on the upper surface of the nose 54. In addition, the shoulder stops 38 are covered by the support collar 13.

[0029] As will be appreciated, during the camming movement of the free ends of the wing elements 30, the central post structure 22 is placed into compression and a separating force is developed at the distal cusp 42 as the wing elements 30 attempt to rotate to a more vertical orientation to relieve applied stresses. When the separating force at the distal cusp 42 reaches a sufficient level, the molded-in frangible bridge connection 44 ultimately fractures, thereby permitting the wing elements 30 to pivot outwardly (FIG. 3).

[0030] In the exemplary construction, each of the legs 28 has an axial compressive strength which is less than the proximal post segment 24 such that the legs 28 collapse into a folded condition preferentially to the proximal post segment 24 upon application of axial compression as the head 12 and support platform 14 are pressed inwardly towards the attachment panel 34 following insertion of the base clip portion 20 into the acceptance opening 32.

[0031] By way of example only, in the illustrated exemplary embodiment, the spaced-apart legs 28 forming the distal post segment 26 may incorporate an arrangement of living hinges 60

disposed along their lengths. In operation, the living hinges 60 cause the legs 28 to fold in an accordion manner in response to compression following fracture of the bridge connection 44. By way of example only, the living hinges 60 may be in the form of molded-in indentures disposed at positions along the legs where bending is desired. As will be appreciated, the presence of such an indenture produces a localized reduction in compressive strength such that the leg 28 will tend to fold about the axis of the indenture. In the illustrated embodiment, three indentures are disposed along the length of each leg to provide a tri-fold structure with alternating directional folds. In particular, in the exemplary construction, a first indenture which projects inboard is disposed substantially at the intersection between the leg 28 and the proximal post segment 24. A second indenture which projects outboard is disposed substantially at the midpoint of the leg 28. A third indenture which projects inboard is disposed substantially at the intersection between the leg 28 and the attached wing element 30. Such an arrangement provides the collapsible tri-fold arrangement shown in FIG. 4. Of course, a greater or lesser number of indentures may be used if desired. Regardless of the actual fold structure, once the folds have been made, the folded legs 28 act as spacers to hold the wing elements 30 to the outboard position in wedged relation to the attachment panel 34.

[0032] FIGS. 5 and 6 illustrate an alternative construction for a fastener 110 consistent with the present disclosure wherein elements corresponding to those described previously are designated by like reference numerals within a 100 series. In this exemplary construction, the fastener 110 is substantially identical with the embodiment of FIGS. 1-4 but with the difference that the legs 128 are relatively thin, continuous structures along their length without the presence of molded-in living hinges.

[0033] As will be understood through comparison of FIGS. 5 and 6, once the shoulder stops 138 engage the attachment panel 134, further inward pressing of the fastener 110 causes inboard surfaces of the wing elements 130 to be pressed against outboard surfaces of the lower segments 153 of ribs 152. As the fastener 110 is advanced further, the lower segments 153 act as camming surfaces, causing the free ends of the wing elements 130 to move radially outwardly

until the inboard ledge 139 engages an upper surface of the nose 154 (FIG. 6). In this condition, the perimeter edges of the acceptance opening 132 are pressed into the outboard undercut 136 and the inboard ledge 139 is supported on the upper surface of the nose 154.

[0034] As will be appreciated, during the camming movement of the free ends of the wing elements 130, the central post structure 122 is placed into compression and a separating force is developed at the distal cusp 142 as the wing elements 130 attempt to rotate to a more vertical orientation to relieve applied stresses. When the separating force at the distal cusp 142 reaches a sufficient level, the molded-in frangible bridge connection 144 ultimately fractures, thereby permitting the wing elements 130 to pivot outwardly.

[0035] In the illustrated exemplary embodiment, the spaced-apart legs 128 forming the distal post segment 126 are sufficiently thin to fold in a generally accordion fashion in response to compression following fracture of the bridge connection 144. In this regard, while the legs 128 are illustrated as folding in a tri-fold serpentine pattern, other accordion folds may occur. Moreover, the folds may be symmetrical or non-symmetrical on each side of the fastener. Regardless of the actual fold structure, once the folds have been made, the folded legs 128 act as spacers to hold the wing elements 130 to the outboard position in wedged relation to the attachment panel 134. Of course, it is also contemplated that combinations of legs with and without living hinges may be used if desired.

[0036] FIGS. 7-9 illustrate an alternative construction for a fastener 210 wherein elements corresponding to those described previously are designated by like reference numerals within a 200 series. In this exemplary construction, the head 212 is provided with an attachment tape 270 or other adhesive attachment element for direct connection to an overlying panel or other structure (not shown). A compressively stable proximal post segment 224 projects downwardly away from the underside of the head 212 to a collapsible segment 226 formed by a pair of outwardly bowed foldable legs 228 separate by a longitudinal gap 229. In this embodiment, the

proximal post segment 224 includes a pair of radially projecting ears 272 of generally trapezoidal profile.

[0037] As illustrated, wing elements 230 extend upwardly in angled relation away from the distal ends of the legs 228 such that the complementary legs 228 and the wing elements 230 cooperatively form acute angles with the wing elements 230 being integral with the connected legs 228. The wing elements 230 are adapted to flex inwardly to permit passage through an acceptance opening 232 in an attachment panel 234 such as a support panel for vehicle trim or the like.

[0038] In the exemplary embodiment, a hook structure 275 of dogleg configuration is provided at the free end of each of the wing elements 230. As shown, the hook structures 275 each include an outboard overhang 276 to define a shoulder stop 238 which snaps behind an upper surface of the attachment panel 234 upon full insertion (FIG. 9). In the exemplary embodiment, each of the hook structures 275 further includes an inboard hooking arm 277 angled downwardly and radially inwardly relative to the outboard overhang 276. An integral connection tab 278 of flexible character may extend between the main body of the wing element 230 and the hook structure 275. As best illustrated in FIG. 8, such a connection tab permits limited rotation of the hook structure during insertion.

[0039] As will be understood through comparison of FIGS. 8 and 9, as the fastener 210 is advanced, the lower surfaces of the radially projecting ears 272 act as camming surfaces against the inboard hooking arms 277, thereby causing the free ends of the wing elements 230 to move radially outwardly as the inboard hooking arms 277 move over the radially projecting ears 272 until snapping behind the upper surface of the ears (FIG. 9). In this condition, on each side the outboard overhang is held securely against the upper surface of the attachment panel 234 with the inboard hooking arm 277 supported on the upper surface of the corresponding radially projecting ear 272.

[0040] As will be appreciated, during the camming movement of the free ends of the wing elements 230, the legs 228 are placed into compression due to the blocking action between the outboard overhang 276 and the attachment panel 234. In the illustrated exemplary embodiment, the spaced-apart legs 228 incorporate an arrangement of living hinges 260 disposed along their lengths. In operation, the living hinges 260 cause the legs 228 to fold in an accordion manner in response to compression without requiring fracture of the bridge connection 244. By way of example only, in the exemplary configuration, the living hinges 260 may be in the form of molded-in curves at positions of slightly reduced material thickness along the legs 228. As will be appreciated, the presence of such a curve promotes localized bending at that location such that the leg 228 will tend to fold about the axis of the curve.

[0041] In the illustrated embodiment, the legs 228 have a recurved bow configuration incorporating a major central curve projecting outwardly in combination with upper and lower minor curves projecting inwardly along the length of each leg to provide a tri-fold structure with alternating directional folds. In particular, in the exemplary construction, an upper minor curve projects inboard and is disposed substantially at the intersection between the leg 228 and the proximal post segment 224. A major central curve projects outboard and is disposed substantially at the midpoint of the leg 228. A lower minor curve which is substantially the same as the upper minor curve projects inboard is disposed substantially at the intersection between the leg 228 and the attached wing element 230. Such an arrangement provides the collapsible tri-fold arrangement shown in FIG. 9. A greater or lesser number of curves may be used if desired.

[0042] FIGS. 10-13 illustrate an alternative construction for a fastener 310 of unitary molded construction wherein elements corresponding to those described previously are designated by like reference numerals within a 300 series. In this exemplary construction, the head 312 is spaced apart from an underlying support platform 314 extending radially outwardly from a neck structure 316 between the head 312 and the support platform 314. In the illustrated exemplary configuration, the head 312 and the support platform 314 are each substantially

rectangular in configuration and are disposed in generally parallel planes. In this embodiment, the length dimensions of the rectangular head 312 and the support platform 314 are oriented in transverse relation at approximately 90 degrees relative to one another. As will be appreciated, such an arrangement provides bi-directional support relative to a first component 318 (shown in phantom FIG. 11) such as an intermediate connector in the form of a doghouse connector, return flange or the like as will be well known to those of skill in the art.

[0043] In the illustrated exemplary construction, a compressively stable post segment 324 projects downwardly away from the underside of the support platform 314. As shown, the post segment 324 may have a generally flat or wedge-shaped profile. As best seen in the cross-sectional views of FIGS. 11-13, in the exemplary embodiment a distal tab portion 326 projects downwardly away from the post segment 324 for use in maintaining alignment of the post segment upon compression of the fastener 310 in a manner to be described hereinafter. In the illustrated exemplary construction, flexible arm elements 327 extend in angled relation upwardly away from opposite sides of the post segment 324. As shown, the flexible arm elements 327 intersect the post segment 324 at an elevation such that the distal tab portion 326 projects downwardly away from the intersection location.

[0044] As best seen in FIG. 11, the fastener 310 further includes base clip portion 320 disposed below the support platform 314. The base clip portion 320 has a generally angled geometry formed by a pair of flexible wing elements 330 which extend in upwardly angled relation away from a distal cusp 342 at the apex of the base clip portion 320 to define an angled lead-in nose 340. In the condition illustrated in FIG. 11, the lead-in nose 340 may be positioned a significant distance away from the head 312 and support platform 314. This extended distance may facilitate insertion into an acceptance opening 332 in an attachment panel 334 as previously described. In the exemplary embodiment, each of the wing elements 330 includes an inboard ledge 339 extending generally towards the post segment 324. The inboard ledge 339 defines a catch surface to aid in securing the fastener in place upon full insertion in a manner as will be described further hereinafter.

[0045] In the embodiment illustrated in FIGS. 10-13, foldable legs 380 extend between the upper ends of each wing element 330 and the opposing lateral sides of the support platform 314 thus forming an operative connection between the wing elements 330 and post segment 324 which projects downwardly from support platform 314. As will be understood, while only a single leg 380 is shown as extending between each wing element 330 and the support platform 314, two or more such foldable legs may likewise be used on each side if desired.

[0046] In the illustrated exemplary embodiment, each of the foldable legs 380 has a generally bi-fold construction to permit collapse upon the application of compressive force during the insertion process as will be described further. The foldable legs 380 each include an outwardly projecting living elbow hinge 382 located at an intermediate position between the wing element 330 and the support platform 314. An inwardly projecting living elbow hinge 383 is disposed substantially at the intersection between each of the foldable legs 380 and the corresponding wing elements 330. Thus, the living elbow hinges 382, 383 fold in opposite directions. A living pivot hinge 384 may also be disposed at the intersections between each of the foldable legs 380 and the support platform 314 to facilitate a pivoting action by the foldable arms relative to the support platform during folding. Of course, it is to be understood that the various living hinges may be of any suitable form which facilitates the desired bending action.

[0047] As illustrated, in the exemplary configuration the wing elements 330 are connected at their lower ends by a bridge structure 386 overlying the distal cusp 342. A pair of detents 385 may extend upwardly away from the bridge structure so as to project generally towards the support platform 314. As best seen in FIG. 10, the detents 385 may be spaced in offset relation to one another with a separation distance in the depth direction to receive the distal tab portion 326 in relatively tight, wedge-fitting relation with the detents on opposite sides of the distal tab portion 326. In this regard, the distal tab portion 326 may have a slightly angled lower edge to facilitate wedge insertion. Thus, the distal tab portion 326 may be press fit between the detents

385 when the foldable legs 380 are collapsed (FIG. 12) as an aid to maintaining alignment during final insertion between the position of FIG. 12 and the position of FIG. 13.

[0048] As illustrated, in the exemplary embodiment the upper ends of the wing elements 330 each have a generally dogleg configuration defining an outwardly projecting nose 387 below the intersection with the corresponding foldable leg 380. This structure provides an indentation above the nose 387for receipt of the attachment panel 334 upon full insertion (FIG. 13) in a manner as will now be described. Referring now to FIGS. 11-13, according to the illustrated exemplary practice, the lead in nose 340 of the fastener 310 with the attached first component 318 may be inserted into an acceptance opening 332 in an attachment panel 334. Upon engagement between the wing elements 330 and the perimeter of the acceptance opening (FIG. 11), resistance is established such that continued pressing causes the foldable legs 380 to be placed into compression. As the pressing action continues the foldable legs 380 are caused to fold at the living hinges so as to substantially collapse (FIG. 12). As the foldable legs 380 are caused to collapse, the post segment 324 is concurrently moved axially downwardly towards the bridge structure 386 such that the inboard ledges 339 latch over the flexible arm elements 327 and the distal tab portion 326 is captured between the detents 385.

[0049] Once the collapsed condition illustrated in FIG. 12 has been achieved, further axial movement of the post segment 324 is prevented and the continued application of pressing force urging the first component 318 towards the attachment panel 334, causes an inward flexing of the wing elements 330 and the flexible arm elements 327 as the base clip portion 320 is forced through the acceptance opening 332. Upon the continued application of pressing force, the insertion of the fastener may continue with the perimeter edges of the acceptance opening eventually passing over the outwardly projecting noses 387 until the surfaces of the attachment panel 334 outboard from the acceptance opening are blocked by the collapsed foldable legs 380 (FIG. 13). In this condition, the perimeter edges of the acceptance opening 332 are pressed into the indentations above the outwardly projecting noses 387. As will be appreciated, once attachment has been established, the outwardly projecting noses 387 aid in blocking withdrawal

of the fastener. In addition, a tight, wedged relation is maintained by the outward biasing forces applied from the inwardly flexed wing elements 30. Thus, a secure and low profile connection is established between the first component 318 and attachment panel 334.

[0050] Of course, variations and modifications of the foregoing are within the scope of the present invention. Thus, it is to be understood that the invention disclosed and defined herein extends to all alternative combinations of two or more of the individual features mentioned or evident from the text and/or drawings. All of these different combinations constitute various alternative aspects of the present invention. The embodiments described herein explain the best modes known for practicing the invention and will enable others skilled in the art to utilize the invention. The claims are to be construed to include alternative embodiments and equivalents to the extent permitted by the prior art.

What is claimed is:

1. A press-in fastener for joining a first component to a second component, said fastener comprising:

a head adapted to engage the first component; and

a base clip portion disposed below the head and adapted for insertion into an acceptance opening in the second component, the base clip portion including a pair of flexible wing elements and a post structure of substantially incompressible construction disposed along an axial travel path between the wing elements, the wing elements extending upwardly at acute angles relative to the post structure travel path, the post structure being operatively connected to the head such that linear movement of the head is translated to the post structure, at least one collapsible leg operatively connecting each of the wing elements to the post structure such that said at least one collapsible leg collapses into a folded condition upon application of axial compression as the head is pressed towards the second component and the post structure moves axially between the wing elements following insertion of the base clip portion into the acceptance opening.

2. The press-in fastener as recited in Claim 1, wherein the fastener is of unitary molded polymer construction.

3. The press-in fastener as recited in Claim 1, wherein each of the wing elements includes an outboard projecting shoulder stop adapted to blockingly engage an upper surface of the second component.

4. The press-in fastener as recited in Claim 3, wherein each of the wing elements includes an undercut disposed below the shoulder stop adapted to engage a perimeter edge of the acceptance opening.

5. The press-in fastener as recited in Claim 1, wherein each of the wing elements includes an inboard ledge or hooking arm adapted to engage an opposing projection extending away from the post structure as the head is pressed towards the second component following insertion of the base clip portion into the acceptance opening.

6. The press-in fastener as recited in Claim 1, wherein a pair of ribs of dogleg configuration extends between the post structure and an overlying support platform disposed below the head, at least one of the ribs including an outwardly projecting nose having an outwardly angled lower surface adapted to slidingly engage an inboard surface of an opposing wing element as the head and support platform are pressed towards the second component following insertion of the base clip portion into the acceptance opening.

7. The press-in fastener as recited in Claim 6, wherein the outwardly projecting nose includes an inwardly angled upper surface adapted to engage an inboard ledge of an opposing wing element as the head and support platform are pressed towards the second component following insertion of the base clip portion into the acceptance opening.

8. The press-in fastener as recited in Claim 1, wherein a hook structure of dogleg configuration including an downwardly angled inboard hooking arm is disposed at a free end of each of the wing elements.

9. The press-in fastener as recited in Claim 8, wherein the post structure includes a pair of opposing, outwardly projecting ears, and wherein each of the inboard hooking arms is adapted to latch over an opposing one of the outwardly projecting ears as the head is pressed towards the second component following insertion of the base clip portion into the acceptance opening.

10. The press-in fastener as recited in Claim 1, wherein an overlying support platform is disposed below the head in overlying relation to the post structure, and wherein a pair of

upwardly angled flexible arm elements extend away from opposing sides of the post structure, and wherein each of the wing elements includes an inboard ledge adapted to engage an opposing one of the flexible arm elements as the head is pressed towards the second component following insertion of the base clip portion into the acceptance opening.

11. The press-in fastener as recited in Claim 10, wherein at least one collapsible leg extends between an upper portion of each wing element and the support platform.

12. The press-in fastener as recited in Claim 11, wherein at least one collapsible leg includes a plurality of living hinges arranged in alternating in-board and out-board orientation along the collapsible leg such that the collapsible collapses upon application of axial compression as the head is pressed towards the second component following insertion of the base clip portion into the acceptance opening.

13. The press-in fastener as recited in Claim 12, wherein the wing elements cooperatively form a distal cusp disposed below a molded-in bridge connection between the wing elements, and wherein a pair of spaced-apart detents projects upwardly away from the bridge connection, the post structure including a downwardly projecting distal tab portion sized and shaped for receipt between the detents when the post structure has moved axially between the wing elements following insertion of the base clip portion into the acceptance.

14. The press-in fastener as recited in Claim 1, wherein each of the collapsible legs includes a plurality of living hinges arranged in alternating in-board and out-board orientation such that the leg collapses into an accordion folded condition upon application of axial compression as the head is pressed towards the second component following insertion of the base clip portion into the acceptance opening.

15. The press-in fastener as recited in Claim 1, wherein at least one of the collapsible legs is free of living hinges.

16. A press-in fastener as recited in claim 1, wherein a collapsible leg extends between a lower portion of each wing element and a distal end of the post structure, the legs being separated by a longitudinal gap, each of the legs including a plurality of living hinges disposed along the length, the living hinges being arranged in alternating in-board and out-board orientations along the legs, wherein the legs have an axial compressive strength less than the post structure such that the legs collapse into an accordion folded condition preferentially to the post structure upon application of axial compression as the head is pressed towards the second component following insertion of the base clip portion into the acceptance opening.

17. A press-in fastener for joining a first component to a second component, said fastener comprising a unitary molded polymer structure including:

a head adapted to engage the first component ;

a neck extending downwardly from the head, the neck having an effective diameter less than the head;

a support platform disposed below the neck, the support platform projecting outwardly away from the neck in transverse orientation to the head; and

a base clip portion disposed below the head and adapted for insertion into an acceptance opening in the second component, the base clip portion including a pair of flexible wing elements and a post structure disposed along an axial travel path between the wing elements, the wing elements extending upwardly at acute angles relative to the post structure travel path, the post structure extending downwardly from the support platform in operative connection to the head such that linear movement of the head is translated to the post structure, at least one collapsible leg extending between an upper portion of each wing element and the support platform to operatively connect each of the wing elements to the post structure such that said at least one collapsible leg collapses into a folded condition upon application of axial compression as the head is pressed towards the second component and the post structure moves axially between the wing elements following insertion of the base clip portion into the acceptance opening, wherein a pair of upwardly angled flexible arm elements extend away from opposing

sides of the post structure, and wherein each of the wing elements includes an inboard ledge adapted to engage an opposing one of the flexible arm elements as the head is pressed towards the second component following insertion of the base clip portion into the acceptance opening and wherein the wing elements cooperatively form a distal cusp disposed below a molded-in bridge connection between the wing elements with a pair of spaced-apart detents projects upwardly away from the bridge connection, the post structure including a downwardly projecting distal tab portion sized and shaped for receipt between the detents when the post structure has moved axially between the wing elements.

18. A press-in fastener as recited in claim 17, wherein each collapsible leg includes a plurality of living hinges arranged in alternating in-board and out-board orientation along the collapsible leg such that the collapsible leg collapses upon application of axial compression as the head is pressed towards the second component following insertion of the base clip portion into the acceptance opening.

19. A press-in fastener as recited in claim 17, wherein each of the wing elements includes an outwardly projecting nose disposed below an intersection with the corresponding collapsible leg.

20. A method of joining a first component to a second component, the method comprising the steps of:

providing a press-in fastener, said fastener comprising a head adapted to engage the first component and a base clip portion disposed below the head and adapted for insertion into an acceptance opening in the second component, the base clip portion including a pair of flexible wing elements and a post structure of substantially incompressible construction disposed along an axial travel path between the wing elements, the wing elements extending upwardly at acute angles relative to the post structure travel path, the post structure being operatively connected to the head such that linear movement of the head is translated to the post structure, at least one collapsible leg operatively connecting each of the wing elements to the post structure such that

said at least one collapsible leg collapses into a folded condition upon application of axial compression as the head is pressed towards the second component and the post structure moves axially between the wing elements following insertion of the base clip portion into the acceptance opening; and

pressing the base clip portion into an acceptance opening in the second component, such that the collapsible legs collapse into a folded condition preferentially to the post structure upon application of axial compression as the head is pressed towards the second component following insertion of the base clip portion into the acceptance opening.

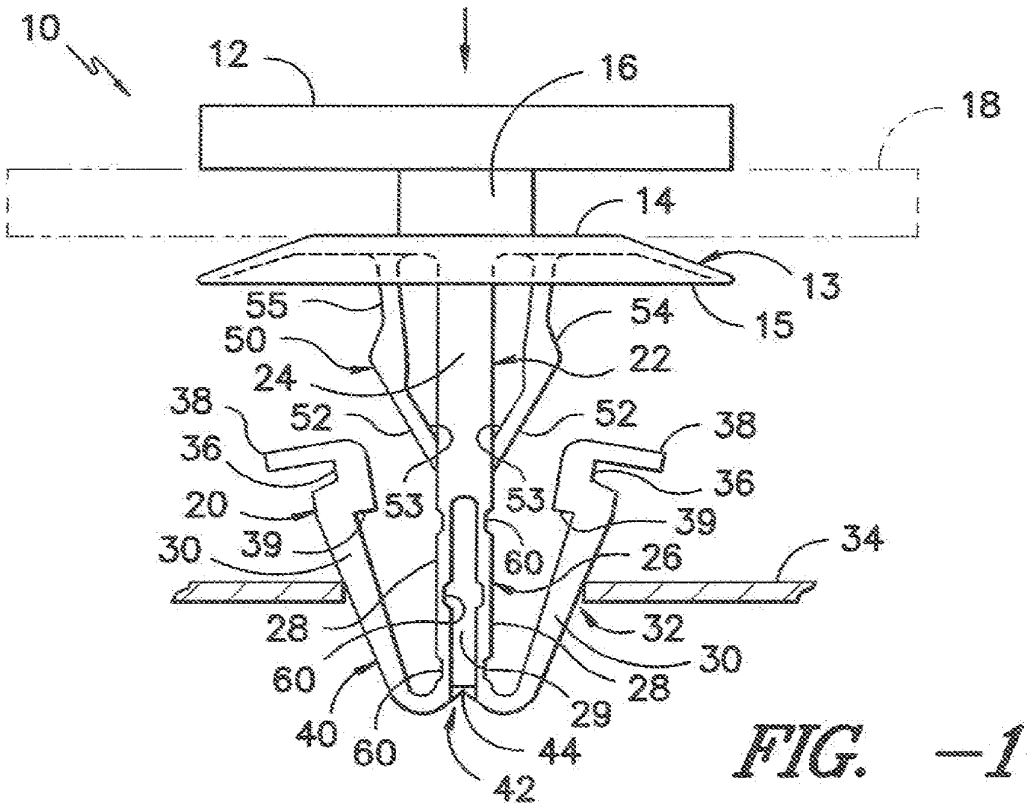

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FIG. —1—

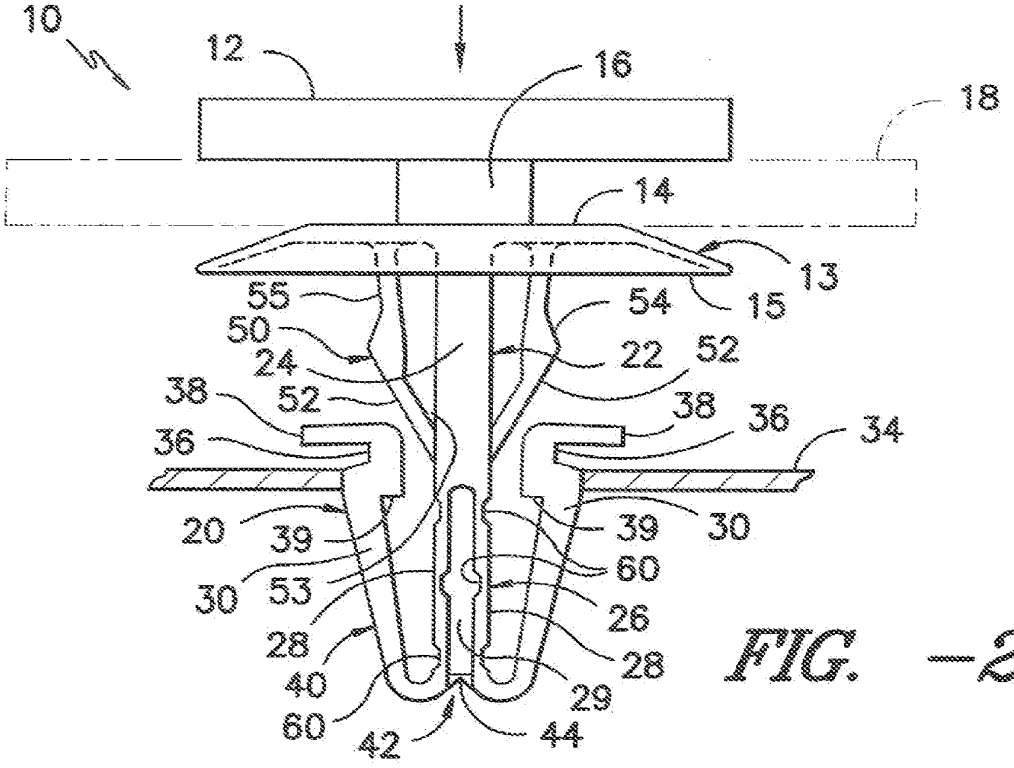

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FIG. —2—

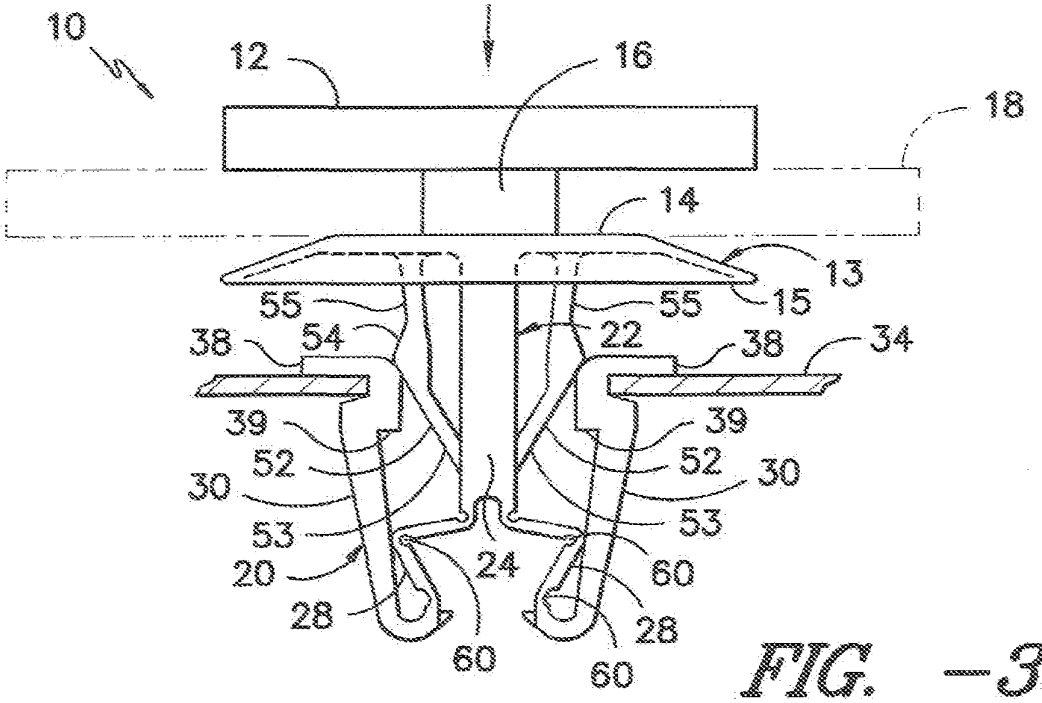

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FIG. —3—

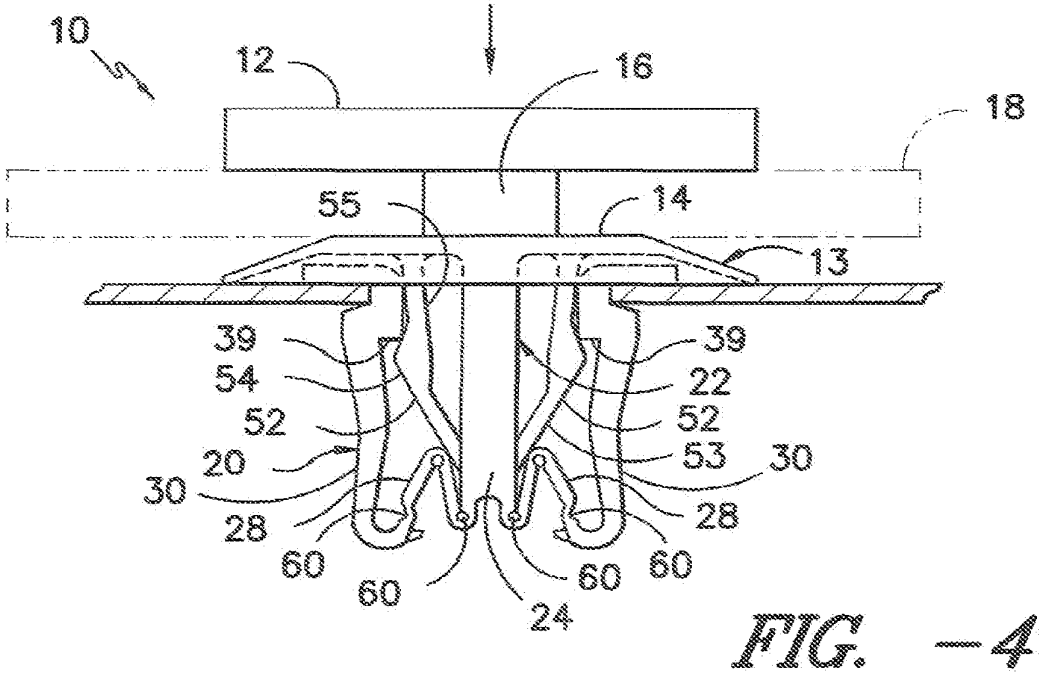

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FIG. —4—

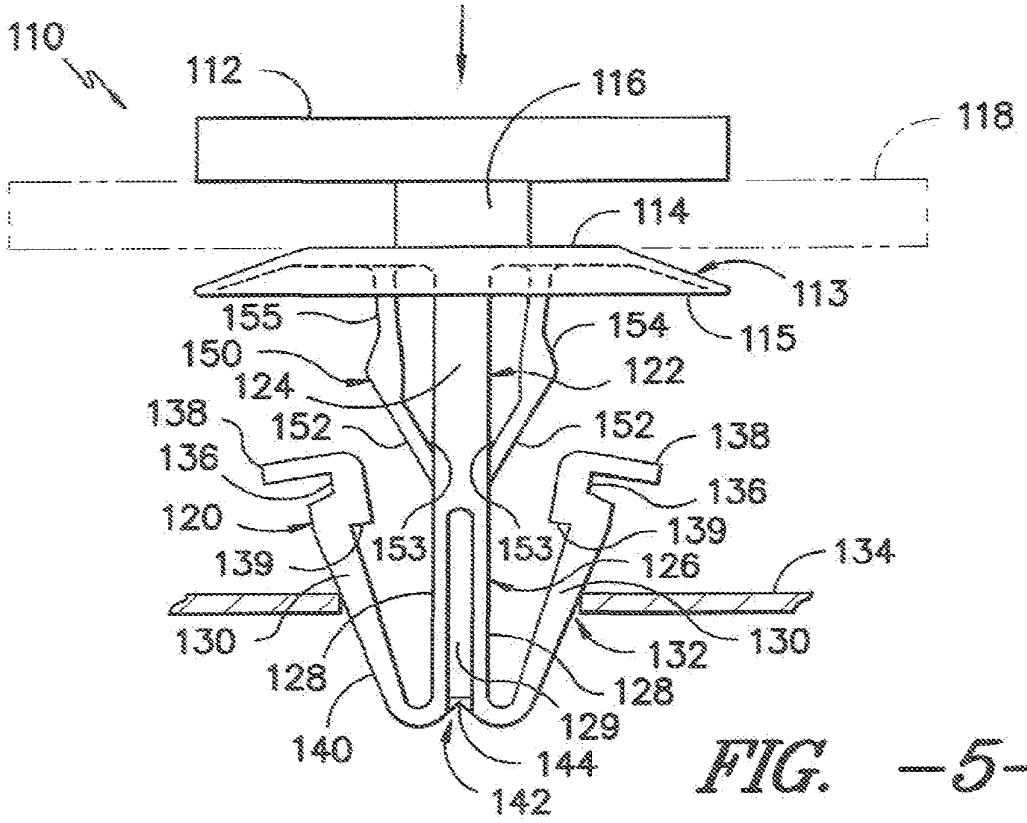

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FIG. —5—

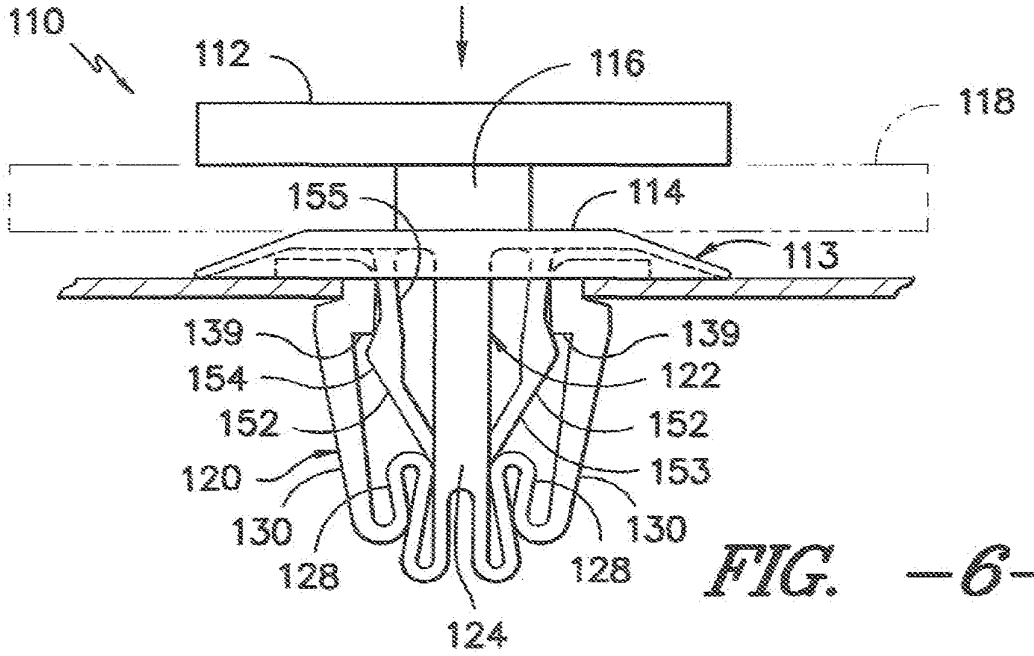

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FIG. —6—

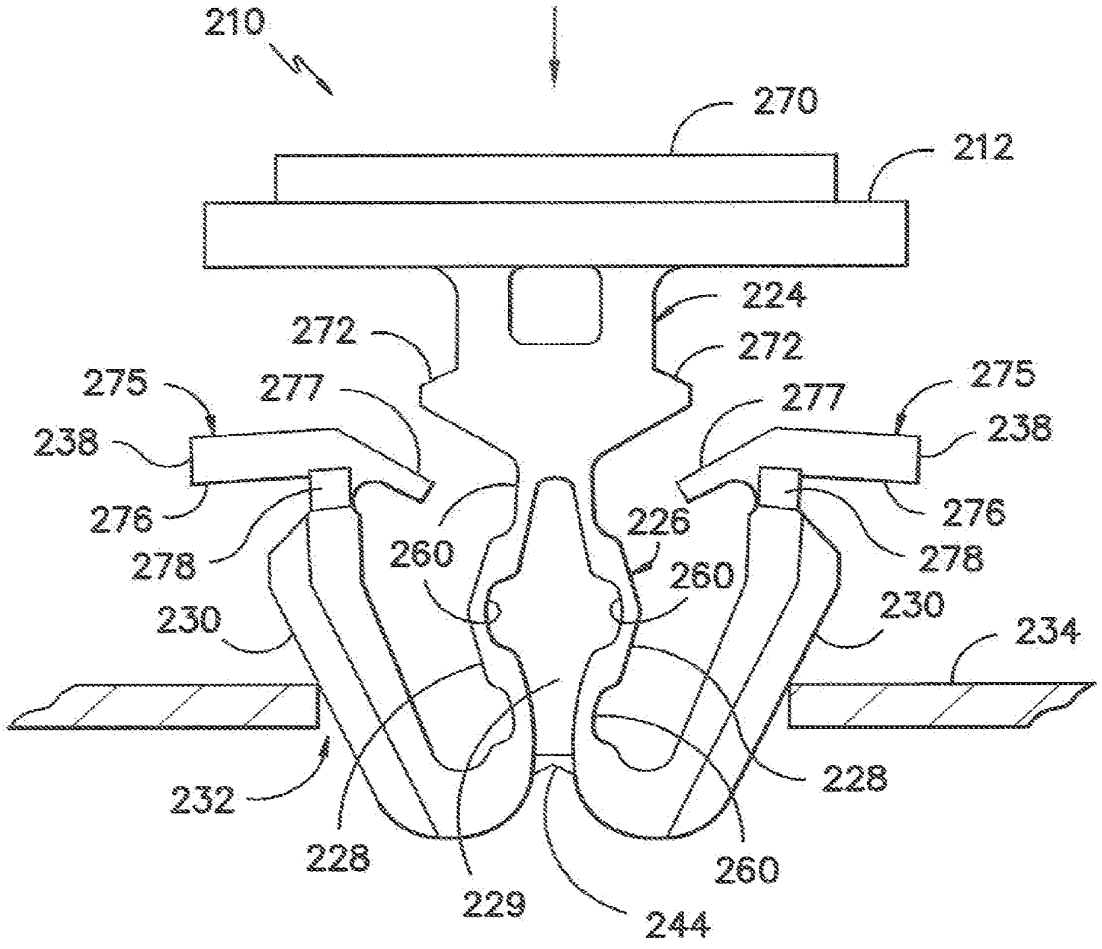

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FIG. —7—

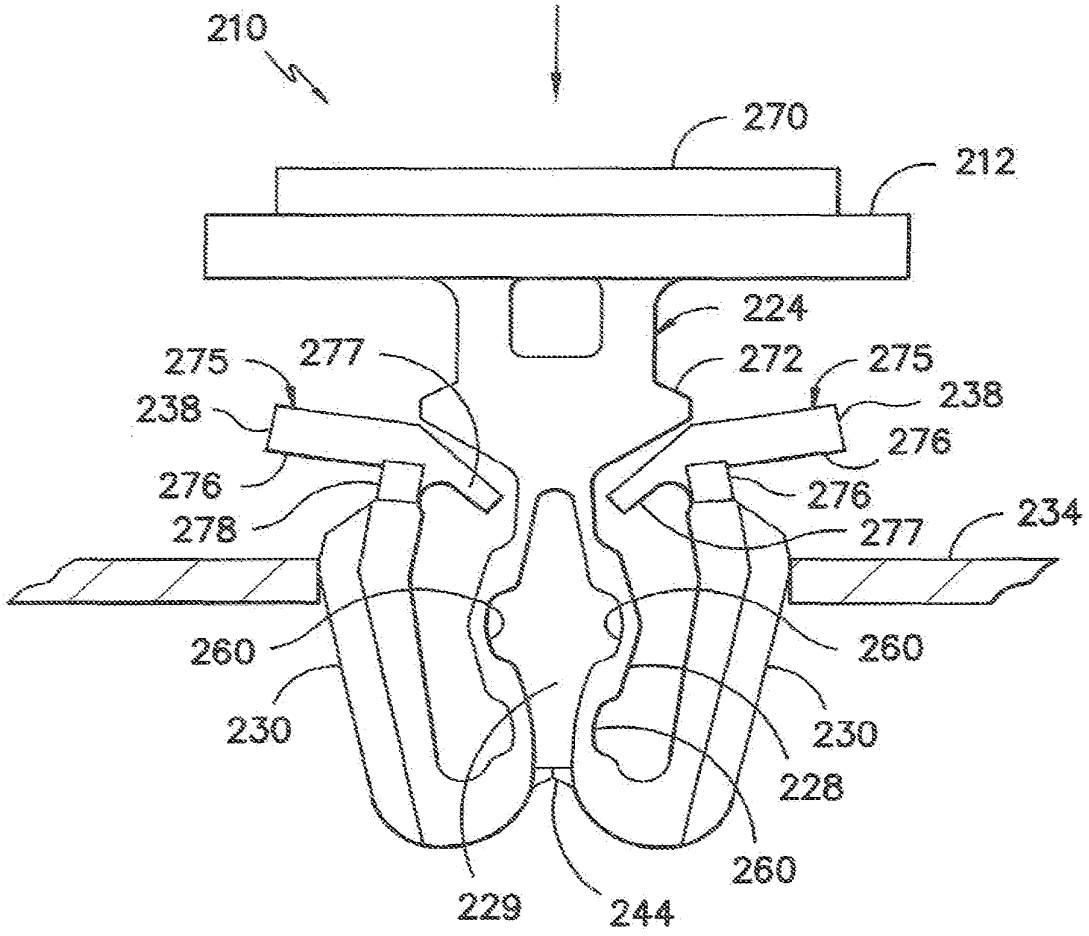

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FIG. —8—

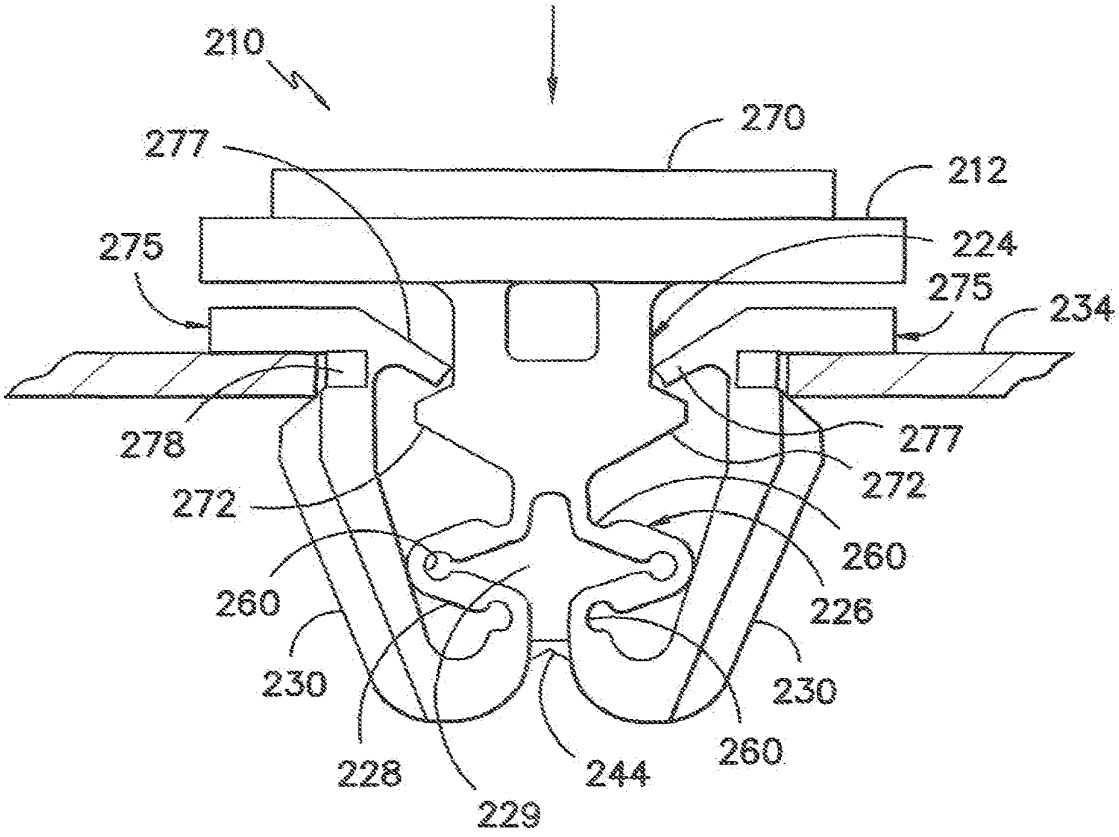

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FIG. —9—

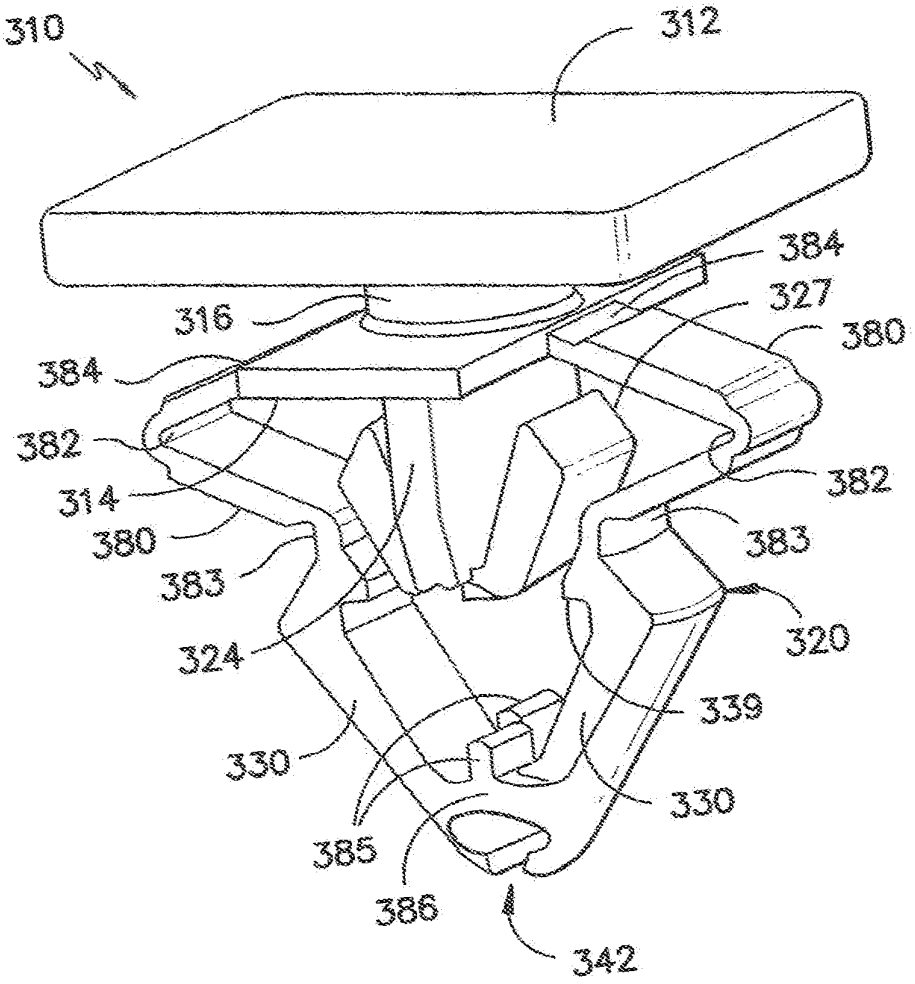

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FIG. –10–

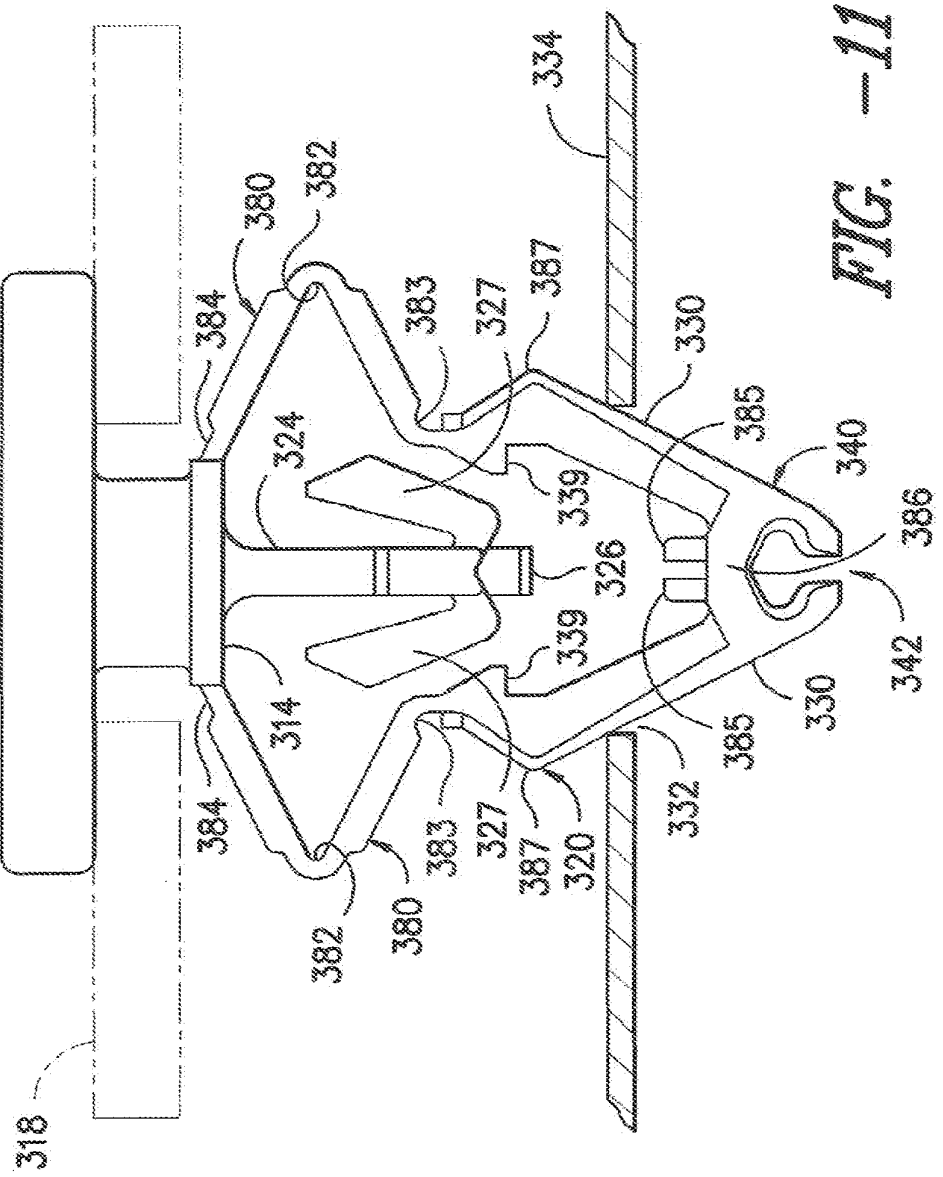

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FIG. -11-

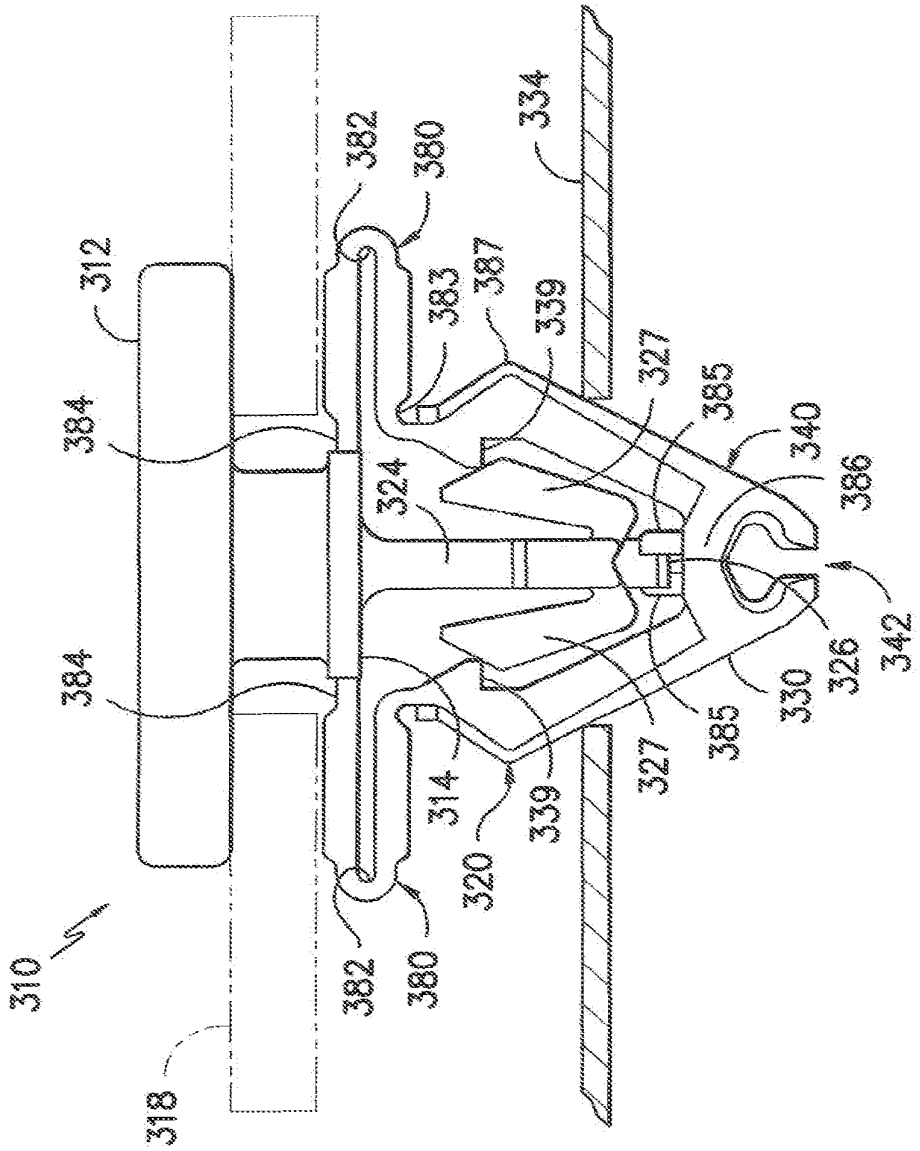

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FIG. -12-

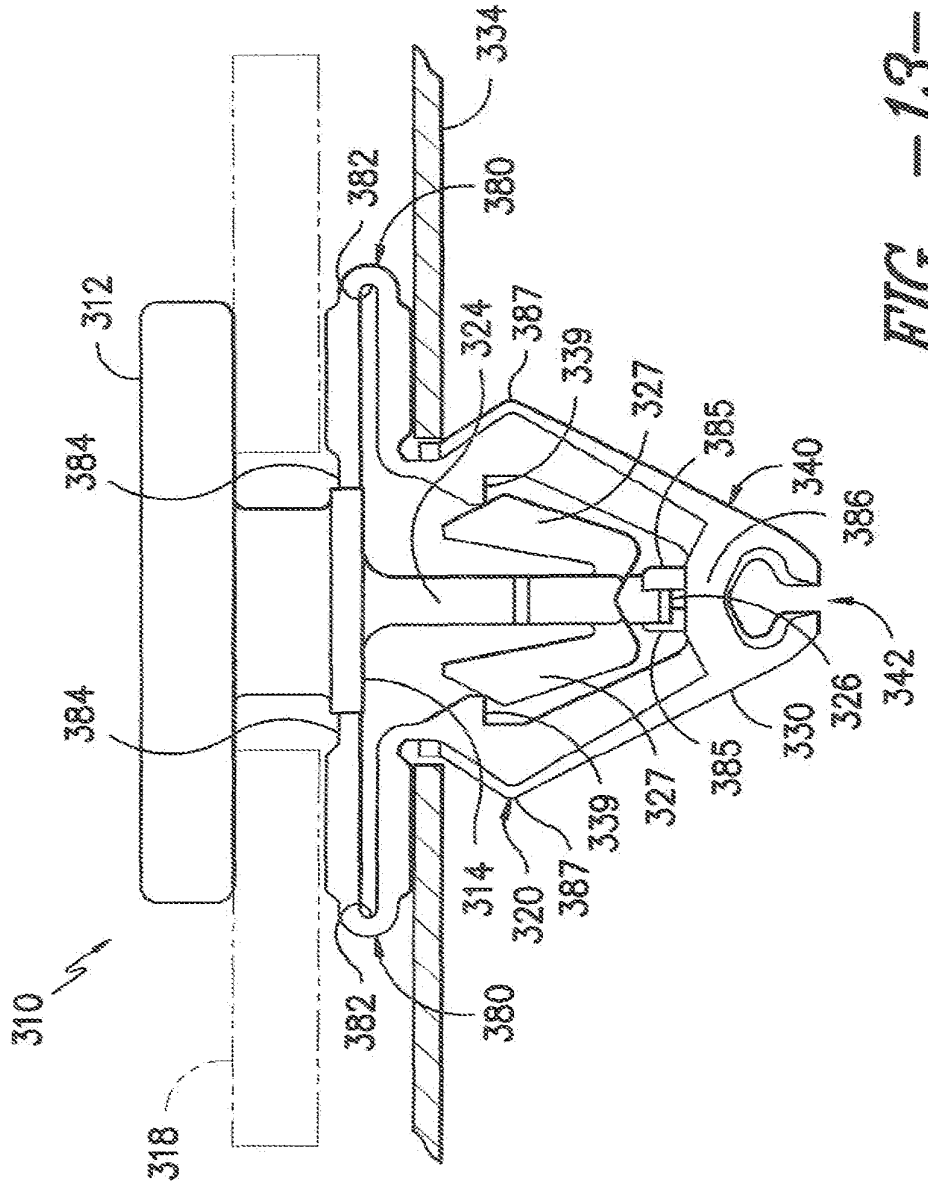

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FIG. -13-

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2011/067813

A. CLASSIFICATION OF SUBJECT MATTER
INV. F16B5/06
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F16B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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X Y	JP 2002 106519 A (PIOLAX INC) 10 April 2002 (2002-04-10) figures	1,14 11-13,16

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A	US 4 122 583 A (GRITTNER HEINZ ET AL) 31 October 1978 (1978-10-31) figures	1

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

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"E" earlier document but published on or after the international filing date

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
28 March 2012	05/04/2012

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Pirog, Pawel

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	ES 2 335 254 A1 (INDUSTRUAS ALEGRE S A [ES] IND ALEGRE S A [ES]) 23 March 2010 (2010-03-23) figures -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
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ES 2335254 A1	23-03-2010	NONE	

Europäisches Patentamt
European Patent Office
Office européen des brevets

Espacenet

JP4248681B2 null

Applicants: DAIWA KASEI IND CO LTD

Inventors: KUME KIYOTAKA,KAMIYA HARUHISA

Classifications:
IPC ***F16B2/22; F16B5/06;***

Priorities: JP15539299A 1999-06-02

Application: JP15539299A·1999-06-02

Publication: JP4248681B2·2009-04-02

Published as: **JP2000346016A;** JP4248681B2

null

Abstract

Abstract not available for JP4248681B2 -- abstract of corresponding document: JP2000346016A

PROBLEM TO BE SOLVED: To removably attach an attaching member to a panel of a vehicle body or the like with the use of a retainer having a single structure, and enhance the sealability. SOLUTION: A retainer for removably attaching a certain attaching member 3 to a panel 1 of a vehicle body or the like, comprises a base shank part 6 made of a hard resin and a water stop part made of a soft resin, which are integrally molded. The base shank part 6 has a fitting part 7 which can attached to the attaching member, and a locking part 15 which is formed so as to be disengageably fitted in an attaching hole 2 formed in the panel 1. Meanwhile, the water stop part has pressing pieces 23, 24 which can be made into press- contact with the panel 1 around the attaching hole 2 between the fitting part 7 and the locking part 15.

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(51)Int.Cl.　F I
F16B 2/22 (2006.01)　F16B 2/22 B
F16B 5/06 (2006.01)　F16B 5/06 D

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(22)出願日　平成11年6月2日(1999.6.2)
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(43)公開日　平成12年12月12日(2000.12.12)
審査請求日　平成18年5月26日(2006.5.26)

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(54)【発明の名称】留め具

(57)【特許請求の範囲】
【請求項1】
車両ボデーなどのパネルに所定の取付部材を着脱可能に取付けるための留め具であって、
硬質樹脂材からなる基軸部と軟質樹脂材からなる止水部との一体成形によって構成され、基軸部は、取付部材に取付け可能な嵌合部と、パネルにあけられた取付孔に係脱可能に形成された係止部とを備え、前記止水部は、嵌合部と係止部との間において取付孔周りのパネルに圧着可能な第１圧着片と第２圧着片とを備え、第１圧着片は止水部の基板外周から外側に向けて延出され、第２圧着片は第１圧着片の内側において止水部の基板から第１圧着片との間に空間部をもって外側に向けて延出されている留め具。
【請求項2】
請求項１記載の留め具であって、
基軸部はその軸心部において係止部の先端から突出する長さの軸部を備え、止水部は軸部の外周に位置して取付孔に弾性をもって当接可能な弾性ガイド片を備えている留め具。

【発明の詳細な説明】
【０００１】
【発明の属する技術分野】
この発明は、車両ボデーなどのパネルに対してオーバーフェンダーなどの取付部材を着脱可能に取付けるために用いる留め具に関する。
【０００２】

【従来の技術】
従来、車両ボデーなどのパネルにオーバーフェンダーなどの取付部材を着脱可能に取付けるには、例えば合成樹脂製の雌雄二部材からなる留め具を使用している。パネルには一般的に複数個の取付孔があけられ、これらの取付孔には、雌部材がパネルとの間にパッキンを挟んで取付けられるようになっている。
【０００３】
一方、雄部材は取付部材の裏面に形成された取付用台座に対してスライド可能に取付け可能になっている。また雄部材には、雌部材に挿通させることで互いに係止する係止部が形成されている。そこでパネルに対する取付部材の取付けに際しては、まず雄部材の係止部に雌部材をパッキンを挟んで組み付け、かつ雄部材を取付部材の取付用台座に取付けておく。この後、雌部材をパネルの取付孔にパッキンを挟んで挿入することにより、取付部材がパネルに取付けられる。この取付状態において、パネルと雌部材との間及び雌部材と雄部材との間は、それぞれのパッキンによってシールされる。
【０００４】
【発明が解決しようとする課題】
従来の留め具では雌雄二部材を有し、これらの二部材及び二種類のパッキンをあらかじめ組み付けておくための手間が必要であり、かつ一つの留め具が複数の個別部品で構成されているため、部品管理も煩雑となる。またパネルから取付部材を取外したときには、パネル側に雌部材が残される。したがって取付部材を再び取り付けるときには、雌部材の小径の孔に雄部材の係止部を挿入しなければならず、しかもリサイクルの際にはパネルから雌部材を取外さなければならない。なお雌雄二部材に対して個々に組み付けられるパッキンでは、わずかながら水漏れを起こすことがある。
【０００５】
本発明は、前記課題を解決するためになされてもので、その目的は、車両ボデーなどのパネルに対し、取付部材を単一構造の留め具によって着脱可能に取り付けることを可能とし、しかもシール性の向上を図ることである。
【０００６】
【課題を解決するための手段】
本発明は前記目的を達成するものであって、請求項１記載の発明は、車両ボデーなどのパネルに所定の取付部材を着脱可能に取付けるための留め具であって、硬質樹脂材からなる基軸部と軟質樹脂材からなる止水部との一体成形によって構成されている。そして基軸部は、取付部材に取付け可能な嵌合部と、パネルにあけられた取付孔に係脱可能に形成された係止部とを備えている。一方、前記止水部は、嵌合部と係止部との間において取付孔周りのパネルに圧着可能な第１圧着片と第２圧着片とを備えている。第１圧着片は止水部の基板外周から外側に向けて延出され、第２圧着片は第１圧着片の内側において止水部の基板から第１圧着片との間に空間部をもって外側に向けて延出されている。
【０００７】
このように留め具は基軸部と止水部との一体成形による単体部品であるため、その取り扱い及びパネルに対する取付部材の取り付け作業が容易であるとともに、部品管理も簡素化される。またパネルから取付部材を取外したときに、パネル側には何も残らないので、取付部材を再び取り付けるときも当初と同じ作業でよく、かつリサイクルにも適している。しかも基軸部と一体成形された止水部の圧着片が取付孔周りのパネルに圧着されることで、この取付孔のシール性を確保しているので、止水機能が高い。
【０００８】
請求項２記載の発明は、請求項１記載の留め具であって、基軸部はその軸心部において係止部の先端から突出する長さの軸部を備えている。また止水部は軸部の外周に位置して取付孔に弾性をもって当接可能な弾性ガイド片を備えている。この構成によれば、パネルの取付孔に係止部を挿入するときに留め具の軸部がその案内をするとともに、取付孔の内周に弾性ガイド片が当接され、留め具が取付孔に対して適正な姿勢に保たれる。
【０００９】

【発明の実施の形態】
本発明の実施形態を図面にしたがって説明する。
図１は留め具の正面図、図２は図１の下面図、図３は図２のＡ－Ａ線断面図、図４は図２のＢ－Ｂ線断面図、図５は留め具の使用状態を表した断面図である。本実施形態の留め具は、例えば図５に示すように、車両ボデーなどのパネル１にあけられた複数の取付孔２に対して、例えばオーバーフェンダーなどの取付部材３を着脱可能に取付けるためのものである。
【００１０】
この留め具は、所定の剛性を有する硬質樹脂材からなる基軸部６と、弾性を有する軟質樹脂材からなる止水部２１との一体成形（二色成形）によって構成されている。基軸部６は、図５で示すように取付部材３の裏面側の所定の位置に形成された取付用台座４にスライド可能に嵌合される板状の嵌合部７が形成されている。また嵌合部７には首部８を介して同じく板状の係止受け部９が形成され、嵌合部７と係止受け部９との間は、取付用台座４の縁部が係合する受け溝１０となっている。
【００１１】
また係止受け部９の中心箇所には軸部１１が所定長さで形成され、この軸部１１の内部は前記首部８を通じて嵌合部７の中心部で開口する中空部１２となっている。また軸部１１の先端には所定長さで例えば断面略十字形状の挿入部１３が形成されている。さらに係止受け部９には、軸部１１を中心とする円周上において係止部１５が形成されている。この係止部１５は、パネル１の取付孔２に挿通できるように、円周上で等角度位置に配置された４本の係止片１６により構成されている。これらの係止片１６の外側面は、取付孔２の内周に沿うように円弧面となっている。そして各係止片１６の先端部には、図４に示すように急傾斜の傾斜面１８と緩い傾斜の傾斜面１９とを有する係止爪１７が形成されている。
【００１２】
前記止水部２１は基軸部６の外周部において一体化されている。この止水部２１は、パネル１の取付孔２の周りをシールする２枚の圧着片２３，２４と、軸部１１に沿って形成された４枚の弾性ガイド片２６とより構成されている。すなわち、係止受け部９の片面側には所定の厚さで止水部２１の基板２２が形成され、その外周には図３および図４に示すように係止受け部９の外周に形成した凹部９ａから所定の角度で外側に向けて延出された吸盤状の第１圧着片２３が形成されている。また第１圧着片２３の内側には、図４に示すように係止部１５の基部から所定の角度で外側に向けて延出された吸盤状の第２圧着片２４が形成されている。この第２圧着片２４の断面形状は、第１圧着片２３より若干薄肉となっている。また両圧着片２３，２４の間には空間部２５がある。
【００１３】
弾性ガイド片２６は、基板２２から挿入部１３の十字形状の各片に向けて形成されている。つまり弾性ガイド片２６は、所定の幅を有する保持片２７と、これらの先端側に形成されたテーパー面２８とを備えている。なお各保持片２７は前記の各係止片１６の間に位置しており、取付孔２に挿入可能となっている。
【００１４】
前記構成の留め具によりパネル１に取付部材３を取り付ける手順について説明する。
先ず、留め具の嵌合部７を取付部材３の取付用台座４に嵌め込む。そして基軸部６の先端の挿入部１３をパネル１の取付孔２に挿入する。この挿入に伴って各弾性ガイド片２６のテーパー面２７が取付孔２の内周に当接して取付孔２に対する挿入部１３の挿入を案内する。
【００１５】
これで取付部材３に外力を与えていくと、係止部１５が取付孔２に挿入され、各係止片１６の係止爪１７における緩い傾斜面１９が孔内周に案内されて各係止片１６が軸部１１の側へ撓む。これと並行して各保持片２７が孔内周に接し、両圧着片２３，２４がパネル１に近接する。各係止爪１７の緩い傾斜面１９が取付孔２を通過すると、係止片１６の撓み

が戻り、係止爪１７は取付孔２に係止される。これと同時に両圧着片２３，２４がパネル１の取付孔２周りに圧着される。これにより取付部材３がパネル１に取り付けられる。

【００１６】

取付部材３を取り外す場合には、この取付部材３を強く引っ張ると各係止爪１７の急な傾斜面１８が取付孔２の内周に案内され、各係止片１６が軸部１１の側に撓み、傾斜面１８が孔縁を通過する。この結果、係止部１５が取付孔２から抜き取られ、パネル１から取付部材３を取り外すことができる。このとき、留め具は取付部材３の側に付いており、パネル１の側には何も残らない。

【００１７】

このように本実施の形態の留め具によれば、パネル１に対する取付部材３の取付作業が容易となり、また取付孔２周りのシール性がよくなる。そしてパネル１から取付部材２を取り外した際、このパネル１の側には何も残らないので、再び取付部材２を取付ける作業が容易になるとともに、リサイクルにも都合がよい。またこの留め具の取付孔２への係止状態は、各係止片１６の係止爪１７と内外二重の圧着片２３，２４との間にパネル１が保持され、かつ取付孔２の内周には弾性ガイド片２６の保持片２７が当接している。したがって留め具が取付孔２に対して適正な姿勢に保持され、ひいては取付部材３の取付け状態が安定する。

【００１８】

なお、係止片１６，弾性ガイド片２６を４箇所に形成した場合を例示したが、これに限定するものではなく、例えば３箇所、５箇所等とする構成であってもよい。また挿入部１３を断面略十字形状に形成したが、この形状についても何ら限定するものではない。

【図面の簡単な説明】

【図１】留め具の正面図である。

【図２】図１の下面図である。

【図３】図２のＡ－Ａ線断面図である。

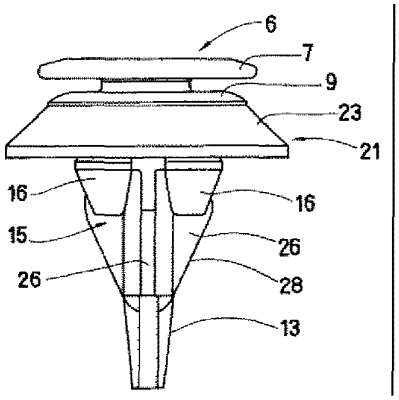
【図４】図２のＢ－Ｂ線断面図である。

【図５】留め具による取付部材の取付状態の断面図である。

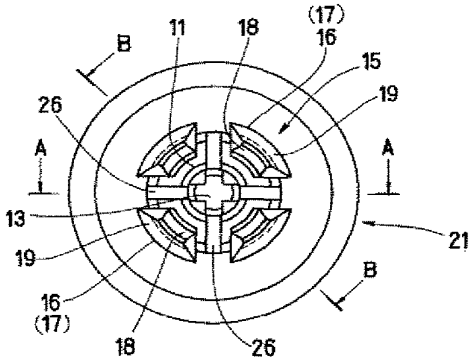
【符号の説明】

１　パネル
２　取付孔
３　取付部材
５　留め具
６　基軸部
７　嵌合部
１５　係止部
２１　止水部
２３，２４　圧着片

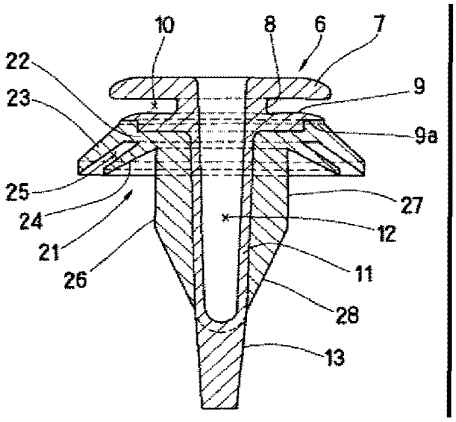
【図1】


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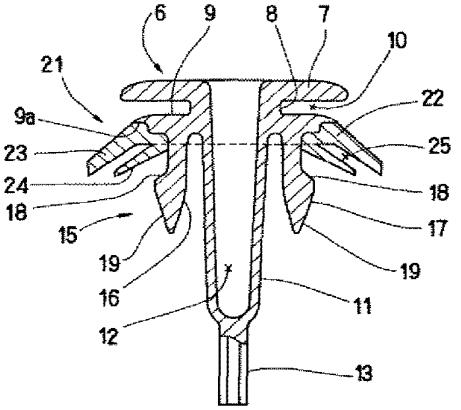
【図2】


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A
A
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B
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(17)
18
26

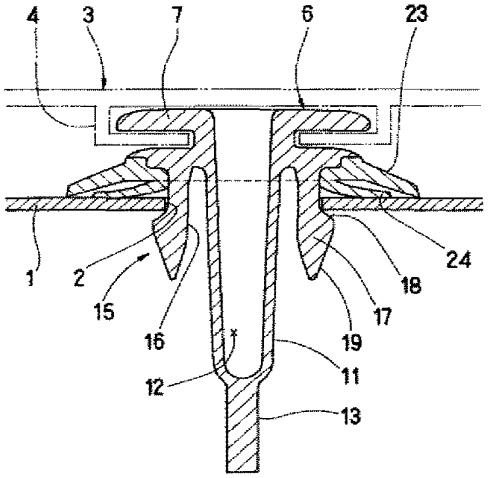
【図3】


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【図4】


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【図5】


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審査官　長屋　陽二郎

(56)参考文献　特開平０５－０７１５１９（ＪＰ，Ａ）
実開平０６－０７１９１１（ＪＰ，Ｕ）
実開平０５－０８３４２６（ＪＰ，Ｕ）

(58)調査した分野(Int.Cl.，ＤＢ名)
F16B　2/22
F16B　5/06

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Filing Date:	10-Jun-2020
Title of Invention:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL
First Named Inventor/Applicant Name:	Derek Scroggie
Filer:	Nicholas P. Schmidbauer./Cyndy Marcello
Attorney Docket Number:	480805.00748(61823-US-C)

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	1806	1	260	260
		Total in USD ($)		**260**

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First Named Inventor/Applicant Name:	Derek Scroggie
Customer Number:	160504
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Deposit Account	170055
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37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	61823-US-C_IDS4Transmittal-16NOV22.pdf	111331 63a30ccb07484e2c276d55e6e426e86c2ad0cbbc	no	1
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	61823-US-C-IDS4-16NOV22.pdf	1035464 1f6d7032aa6549b2491ee58fa7d66194bda39994	no	6
Warnings:					
Information:					
3	Foreign Reference	WO2012092473-.pdf	1534289 7689f99ae94189ee0748623f479374105d49f215	no	37
Warnings:					
Information:					
4	Foreign Reference	JP4248681B2-.pdf	339013 660e93e6d953a67d662c53c2098a7643cfb114d8	no	7
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Information:					
5	Non Patent Literature	NPL1-Clip-Traverse.pdf	4295362 ec009a062ba7310484f50d789bbcb1bbb22160cd	no	68
Warnings:					
Information:					
6	Non Patent Literature	NPL2-Clip-Bonneville.pdf	4295362 ec009a062ba7310484f50d789bbcb1bbb22160cd	no	68
Warnings:					
Information:					

7	Non Patent Literature	NPL3-Clip-Equinox.pdf	4295362 ec009a062ba7310484f50d789bbcb1bbb22160cd	no	68
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Information:					
8	Non Patent Literature	NPL4-Termax-71093.pdf	15511451 e3944fd1287ffab1101ca2a16f50eab6b87e9b26	no	153
Warnings:					
Information:					
9	Non Patent Literature	NPL5-Termax-71101.pdf	124571 4c1a22257c4d85317df88181141ca1e76af3fd9d	no	1
Warnings:					
Information:					
10	Non Patent Literature	NPL6-Termax-71103.pdf	125136 454f0b65548ead5ca41a5ff0a3c154c86f400ec1	no	1
Warnings:					
Information:					
11	Non Patent Literature	NPL7-IPR2021-00724-FD-final.pdf	1099233 fb26a26ddff88240f61b5194585e4d2af4c59988	no	67
Warnings:					
Information:					
12	Fee Worksheet (SB06)	fee-info.pdf	38510 fa13d8123065b1ef6a7cbb54fac1988df1888144	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	32805084	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Illinois Tool Works Inc.	)
Serial No.:	16/897,947	)
Filed:	2020-06-10	)
For:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL	)
Group Art Unit:	3677	)
Confirmation No.:	8594	)
Examiner:	Delisle, Roberta S.	)

CERTIFICATE OF EFS FILING

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, on the date below.

November 16, 2022

/Cyndy Marcello/
Cyndy Marcello

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

The patents and/or publications listed on the enclosed Form PTO/SB/08a are being brought to the attention of the Examiner pursuant to 37 CFR §§ 1.56, 1.97, and 1.98. Copies of any foreign publications or other documents are enclosed as necessary.

This Information Disclosure Statement is being filed, to the best of the undersigned's knowledge, after issuance of a non-final office action but before issuance of a final Office action. In accordance with 37 C.F.R. § 1.97(c), the appropriate fee has been provided. The Examiner is hereby requested and authorized to charge the appropriate fee to Deposit Account No. 17-0055.

The identification of any document in the attached Form PTO/SB/08a is not an admission that such document is in fact prior art or is material to patentability relative to the instant application.

An early and favorable action on the merits is respectfully requested.

Respectfully submitted,

QUARLES & BRADY LLP
300 N. LaSalle Street, Suite 4000
Chicago, Illinois 60654
312.715.5072

November 16, 2022

By: /NPSchmidbauer/
Nicholas P. Schmidbauer
Reg. No. 56,610

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

160504 7590 11/23/2022

QUARLES & BRADY LLP/ITW Automotive OEM
Attn: IP Docket
411 E. WISCONSIN AVE.
SUITE 2400
MILWAUKEE, WI 53202-4428

EXAMINER
DELISLE, ROBERTA S

ART UNIT	PAPER NUMBER
3677	

DATE MAILED: 11/23/2022

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/897,947	06/10/2020	Derek Scroggie	480805.00748(61823-US-C)	8594

TITLE OF INVENTION: PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	02/23/2023

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

160504 7590 11/23/2022

QUARLES & BRADY LLP/ITW Automotive OEM
Attn: IP Docket
411 E. WISCONSIN AVE.
SUITE 2400
MILWAUKEE, WI 53202-4428

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/897,947	06/10/2020	Derek Scroggie	480805.00748(61823-US-C)	8594

TITLE OF INVENTION: PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	02/23/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
DELISLE, ROBERTA S	3677	411-508000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required) ❑ Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/897,947	06/10/2020	Derek Scroggie	480805.00748(61823-US-C)	8594

160504 7590 11/23/2022

QUARLES & BRADY LLP/ITW Automotive OEM
Attn: IP Docket
411 E. WISCONSIN AVE.
SUITE 2400
MILWAUKEE, WI 53202-4428

EXAMINER	
DELISLE, ROBERTA S	
ART UNIT	**PAPER NUMBER**
3677	

DATE MAILED: 11/23/2022

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 16/897,947	Applicant(s) Scroggie et al.	
	Examiner ROBERTA S DELISLE	Art Unit 3677	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to Remarks filed 11/9/2022.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-20 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/ROBERTA S DELISLE/
Primary Examiner, Art Unit 3677

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/897,947	Scroggie et al.
	Examiner	Art Unit
	ROBERTA S DELISLE	3677

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☑ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	08/10/2022	11/14/2022							
	1	✓	=							
	2	✓	=							
	3	✓	=							
	4	✓	=							
	5	✓	=							
	6	✓	=							
	7	✓	=							
	8	✓	=							
	9	✓	=							
	10	✓	=							
	11	✓	=							
	12	✓	=							
	13	✓	=							
	14	✓	=							
	15	✓	=							
	16	✓	=							
	17	✓	=							
	18	✓	=							
	19	✓	=							
	20	✓	=							

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/897,947	Scroggie et al.
	Examiner	Art Unit
	ROBERTA S DELISLE	3677

CPC								
Symbol							Type	Version
F16B	/	5	/	0084			F	2013-01-01
F16B	/	5	/	0607			I	2013-01-01
F16B	/	2	/	22			I	2013-01-01
F16B	/	19	/	00			I	2013-01-01
F16B	/	19	/	008			I	2013-01-01
F16B	/	21	/	086			I	2013-01-01
F16B	/	2005	/	0678			A	2013-01-01
Y10T	/	24	/	44026			A	2015-01-15
Y10T	/	29	/	49828			A	2015-01-15
F16B	/	5	/	0657			A	2013-01-01
F16B	/	5	/	00			A	2013-01-01

CPC Combination Sets								
Symbol							Type	Set	Ranking	Version
	/		/							

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/ROBERTA S DELISLE/ Primary Examiner, Art Unit 3677	14 November 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No.: 20221114

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/897,947	Scroggie et al.
	Examiner	**Art Unit**
	ROBERTA S DELISLE	3677

INTERNATIONAL CLASSIFICATION				
CLAIMED				
F16B	/	19	/	00

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**
411	508

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/ROBERTA S DELISLE/ Primary Examiner, Art Unit 3677	14 November 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No.: 20221114

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/897,947	Scroggie et al.
	Examiner	**Art Unit**
	ROBERTA S DELISLE	3677

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☑ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/ROBERTA S DELISLE/ Primary Examiner, Art Unit 3677	14 November 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No.: 20221114

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/897,947	Scroggie et al.
	Examiner	Art Unit
	ROBERTA S DELISLE	3677

CPC - Searched*		
Symbol	Date	Examiner
F16B 2/22; 5/00, 06, 0084, 0607, 0657; 19/00, 008; 21/086; 2005/0678	08/10/2022	rsd
Y10T 24/44026; 29/49828	08/10/2022	rsd
F16B 19/00	11/14/2022	rsd

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
411	508-510	08/10/2022	rsd
411	508	11/14/2022	rsd

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/897,947	Scroggie et al.
	Examiner	Art Unit
	ROBERTA S DELISLE	3677

Search Notes		
Search Notes	**Date**	**Examiner**
Inventors name search	08/10/2022	rsd
Forward / backward citation searching	08/10/2022	rsd
Text searching	08/10/2022	rsd
IPR2021-00724 Reviewed Petition for Inter Partes Review of US Patent Number 10,683,882	08/10/2022	rsd
Consulted SPE: I. Spar regarding PTAB documents	08/11/2022	rsd
NOTE: No PTO-892 dues to extensive IDS references	08/26/2022	rsd
Reviewed cited prior art of record	11/14/2022	rsd
Forward / backward citation searching	11/14/2022	rsd
Text searching	11/14/2022	rsd

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
F16B	19/00	11/14/2022	rsd
411	508	11/14/2022	rsd

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	16897947
Filing Date	2020-06-10
First Named Inventor	Derek Scroggie
Art Unit	3677
Examiner Name	ROBERTA S DELISLE
Attorney Docket Number	480805.00748(61823-US-C)

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4188040	A	1980-02-12	Franz-Josef Wolf	
	2	4888919	A	1989-12-26	Gordon G. Strosberg	
	3	4906154	A	1990-03-06	William L. Sheppard	
	4	5857244	A	1999-01-12	Brian Edward Edwards	
	5	7152281	B2	2006-12-26	Derek Scroggie	
	6	7444721	B2	2008-11-04	Michael Walter Smith	
	7	7784159	B2	2010-08-31	Daniel James Dickinson	
	8	8561265	B2	2013-10-22	Steven M. Benedetti	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /R.S.D/

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	Art Unit	3677
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	Attorney Docket Number	480805.00748(61823-US-C)

	9	8950042	B2	2015-02-10	Michael Walter Smith	
	10	9150145	B2	2015-10-06	Dennis WANDELT	
	11	9649993	B1	2017-05-16	Daniel James Dickinson	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20050189775	A1	2005-09-01	Todd De Pue	
	2	20060117535	A1	2006-06-08	Derek Fraser	
	3	20080066266	A1	2008-03-20	Derek Scroggie	
	4	20120261942	A1	2012-10-18	Steven M. Benedetti	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16897947
	Filing Date	2020-06-10
	First Named Inventor	Derek Scroggie
	Art Unit	3677
	Examiner Name	ROBERTA S DELISLE
	Attorney Docket Number	480805.00748(61823-US-C)

	1	4248681	JP	B2	2009-04-02	Daiwa Kasei Ind Co Ltd		
	2	2012092473	WO	A1	2012-07-05	Illinois Tool Works Inc.		

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	GM Rocker Mounting Clip with Sealer 11571175 (for Chevrolet Traverse 2010), Car-Pak Manufacturing Company, Troy, Michigan, February 2009, Page 3 (http://www.usrubberparts.de/catalogs/carpak_zusatzkatalog.pdf).	
	2	GM Rocker Moulding & Grille Moulding Clip 25724529 (for Pontiac Bonneville 1992+) (Source: Au-ve-co Products Co., 2008, The Complete Fastener Line, Section 20, General Motors Clips & Fasteners, page 417 (http://www.srubberparts.de/catalogs/carpak_zusatzkatalog.pdf).	
	3	GM Rocker Panel Moulding Clip With Sealer GM 5480852 (for Chevrolet Equinox 2005) Car-Pak Manufacturing Company, Troy, Michigan, February 2009, Page 12 http://www.usrubberparts.de/catalogs/carpak_zusatzkatalog.pdf).	
	4	Termax Part No. 71093 Sealing - Umbrella Clip, "Termax Corporation Fastener Systems Catalog," p. 4-23, at least as early as February 18, 2010 (153 pages).	
	5	Termax Part No. 71101 Sealing Umbrella Clip for 0.5-1.5 Panel, Termax Corporation, Lake Zurich, Illinois, at least as early as July 29, 2010 (1 page).	
	6	Termax Part No. 71103 Sealing Umbrella Clip for 1.5-2.5 Panel, Termax Corporation, Lake Zurich, Illinois, at least as early as December 6, 2011 (1 page).	
	7	Decision in Inter Partes Review No. IPR2021-00724, for Patent No. 10683882B2, Termax LLC v. Illinois Tool Works Inc., dated October 4, 2022 (67 pages).	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16897947
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	Art Unit	3677
	Examiner Name	ROBERTA S DELISLE
	Attorney Docket Number	480805.00748(61823-US-C)

EXAMINER SIGNATURE			
Examiner Signature	/ROBERTA S DELISLE/	Date Considered	11/18/2022

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Application Number	16897947
	Filing Date	2020-06-10
	First Named Inventor	Derek Scroggie
	Art Unit	3677
	Examiner Name	ROBERTA S DELISLE
	Attorney Docket Number	480805.00748(61823-US-C)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/NPSchmidbauer/	Date (YYYY-MM-DD)	2022-11-16
Name/Print	Nicholas P. Schmidbauer	Registration Number	56610

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Bibliographic Data

Application No: 16/897,947

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /ROBERTA S DELISLE/ Examiner's Signature | Initials

Title: PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
06/10/2020	411	3677	480805.00748(61823-US-C)
RULE			

APPLICANTS

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INVENTORS

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Michelle E. Bozinovski, Oakland Charter Township, MI, UNITED STATES

Robert A. Murawski, Clinton Township, MI, UNITED STATES

CONTINUING DATA

This application is a CON of 15987986 05/24/2018 PAT 10683882

15987986 is a CON of 14652819 06/17/2015 PAT 9982694

14652819 is a 371 of PCT/US2013/073861 12/09/2013

PCT/US2013/073861 has PRO of 61739604 12/19/2012

FOREIGN APPLICATIONS

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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	966	411/508.ccls.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/11/14 08:36 AM
L2	361	f16b19/00.cpc.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/11/14 08:48 AM
L3	124	("20050079033"|"20060231690"|"20110243688"|"5339491"|"5458365"|"5797714"|"6572317"|"D298736"|"D354219"|"D355113"|"D378349"|"D577284"|"D590242"|"D625587"|"8936420"|"20100029376"|"20100098515"|"20110119875"|"3550217"|"5704753"|"6715185"|"D273091"|"D291054"|"D326049"|"D326605"|"D382468"|"D617178"|"D640917"|"D701112"|"D723906"|"9873388"|"3249973"|"3577603"|"D293883"|"D410194"|"D464873"|"D666900"|"D675506"|"D688937"|"20070166127"|"20030156917"|"6659701"|"20130129450"|"3988808"|"748147"|"D284934"|"D293882"|"D297615"|"D529793"|"D564344"|"D566535"|"D675507"|"D701450"|"D724419"|"10688943"|"20060086765"|"20060099051"|"3771275"|"4778320"|"5028187"|"5419606"|"6305055"|"D268894"|"D293884"|"D297613"|"D297614"|"D324168"|"D325696"|"D390776"|"D456699"|"D500245"|"D536956"|"D589333"|"D686487"|"D695600"|"D803037"|"D863049"|"20150322985"|"3678797"|"3745612"|"4534530"|"5173026"|"6805524"|"8561265"|"8883059"|"D291057"|"D362176"|"D380667"|"D382466"|"D471084"|"D484779"|"D498414"|"D632550"|"10451100"|"20050150087"|"58	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/11/14 08:51 AM

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PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	321	f16b19/00.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2022/11/14 08:53 AM
N2	853	411/508.ccls.	(US-PGPUB; USPAT)	OR	ON	ON	2022/11/14 08:57 AM

PTO/SB/30EFS (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	16897947	Filing Date	2020-06-10	Docket Number (if applicable)	480805.00748(61823-US-C)	Art Unit	3677
First Named Inventor	SCROGGIE, Derek			Examiner Name	DELISLE, Roberta S.		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☐ Amendment/Reply
- ☒ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 170055

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

X Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/NPSchmidbauer/	Date (YYYY-MM-DD)	2022-12-06
Name	Nicholas P. Schmidbauer	Registration Number	66610

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
713-3314PCT		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/US2013/073861	9 December 2013 (09-12-2013)	19 December 2012 (19-12-2012)
Applicant		
ILLINOIS TOOL WORKS INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**
   a. With regard to the **language,** the international search was carried out on the basis of:
      [X] the international application in the language in which it was filed
      [ ] a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))
   b. [ ] This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).
   c. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. [ ] **Certain claims were found unsearchable** (See Box No. II)

3. [ ] **Unity of invention is lacking** (see Box No III)

4. With regard to the **title,**
   [X] the text is approved as submitted by the applicant
   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**
   [ ] the text is approved as submitted by the applicant
   [X] the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings,**
   a. the figure of the **drawings** to be published with the abstract is Figure No. 3
      [ ] as suggested by the applicant
      [X] as selected by this Authority, because the applicant failed to suggest a figure
      [ ] as selected by this Authority, because this figure better characterizes the invention
   b. [ ] none of the figures is to be published with the abstract

Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

A connection assembly adapted to join a surface element 12 to an underlying support structure 14 while maintaining a substantially zero gap abutting relation between the surface element and the support structure. The connection assembly includes a press-in retainer 10 with a circumferential seal 50 having a sealing foot 54. The sealing foot flexes about a living hinge 56 while maintaining continuous sliding contact with the support panel without interfering with downward movement of the retainer.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/073861

A. CLASSIFICATION OF SUBJECT MATTER
INV. F16B5/06 F16B19/00 F16B21/08
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F16B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 173 026 A (CORDOLA JEAN-PIERRE [FR] ET AL) 22 December 1992 (1992-12-22) cited in the application	1-4
Y	column 3, lines 1-6; figure 6	5-20
Y	US 2011/243688 A1 (KLEIN JEAN LUC [FR] ET AL) 6 October 2011 (2011-10-06) paragraphs [0026], [0053]	1-20
Y	FR 2 913 738 A1 (RAYMOND ET CIE SOC EN COMMANDI [FR]) 19 September 2008 (2008-09-19) page 3, lines 9-34	1-8, 10-16,20
Y	WO 2009/123616 A1 (TS TECH CO LTD [JP]; IWASAKI TAKASHI [US]) 8 October 2009 (2009-10-08) paragraphs [0029], [0030]	8-10, 17-20

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
21 March 2014	28/03/2014

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Rochus, Johann

1

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2013/073861

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5173026 A	22-12-1992	ES 1020240 U	01-06-1992
		FR 2673249 A1	28-08-1992
		IT 1263297 B	05-08-1996
		JP H0571519 A	23-03-1993
		US 5173026 A	22-12-1992
US 2011243688 A1	06-10-2011	CN 102257281 A	23-11-2011
		EP 2344777 A1	20-07-2011
		FR 2938025 A1	07-05-2010
		KR 20110074944 A	04-07-2011
		US 2011243688 A1	06-10-2011
		WO 2010051987 A1	14-05-2010
FR 2913738 A1	19-09-2008	CN 101675255 A	17-03-2010
		EP 2140149 A1	06-01-2010
		FR 2913738 A1	19-09-2008
		JP 4967031 B2	04-07-2012
		JP 2010521632 A	24-06-2010
		KR 20090108717 A	16-10-2009
		US 2010098515 A1	22-04-2010
		WO 2008113438 A1	25-09-2008
WO 2009123616 A1	08-10-2009	EP 2268166 A1	05-01-2011
		JP 2011516325 A	26-05-2011
		US 2011119875 A1	26-05-2011
		WO 2009123616 A1	08-10-2009

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2013/073861	09.12.2013	19.12.2012

International Patent Classification (IPC) or both national classification and IPC
INV. F16B5/06 F16B19/00 F16B21/08

Applicant
ILLINOIS TOOL WORKS INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Fax: +49 89 2399 - 4465	see form PCT/ISA/210	Rochus, Johann Telephone No. +49 89 2399-8913

Form PCT/ISA/237 (Cover Sheet) (July 2009)

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

   a. (means)

      ☐ on paper

      ☐ in electronic form

   b. (time)

      ☐ in the international application as filed

      ☐ together with the international application in electronic form

      ☐ subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	5-20
	No:	Claims	1-4
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-20
Industrial applicability (IA)	Yes:	Claims	1-20
	No:	Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Reference is made to the following documents:

D1 US 5 173 026 A (CORDOLA JEAN-PIERRE [FR] ET AL) 22 December 1992 (1992-12-22)

D2 US 2011/243688 A1 (KLEIN JEAN LUC [FR] ET AL) 6 October 2011 (2011-10-06)

D3 FR 2 913 738 A1 (RAYMOND ET CIE SOC EN COMMANDI [FR]) 19 September 2008 (2008-09-19)

D4 WO 2009/123616 A1 (TS TECH CO LTD [JP]; IWASAKI TAKASHI [US]) 8 October 2009 (2009-10-08)

Ad point V.:

1 In D1, there is disclosed a connection assembly 13 adapted to join a surface element 17 to an underlying support structure 18 while maintaining a substantially zero gap, abutting relation between the surface element 17 and the support structure 18 during use, the connection assembly 13 comprising: a press-in retainer adapted for insertion into an acceptance opening 20 in the support structure 18 to establish operative connecting engagement between the surface element 17 and the support structure 18, the retainer including a retainer head 2 and a clip portion 3 of arrowhead configuration projecting outwardly away from the retainer head 2, wherein the retainer head 2 includes an upper platform 6 and an annular platform 4 defining a lower collar positioned in spaced relation below the upper platform 6, wherein the clip portion 3 comprises a central stem 7B extending downwardly away from the lower collar 4 and a pair of flexible wings 7A, 7C extending in upward angled relation away from the central stem 7B, the retainer further including a seal 14 disposed at least partially about the lower collar 4, the seal 14 having a durometer lower than the lower collar 4 and including a body portion engaging the lower collar 4 and a sealing foot 15 projecting downwardly and radially outwardly away from the body portion to a free edge such that the sealing foot 15 is disposed outboard from the lower collar 4 and the underside of the sealing foot 15 forms an obtuse angle relative to the plane of the underside of the lower collar 4, and wherein the sealing foot 15 flexes about a living hinge while remaining outboard from the lower collar 4 and maintaining sliding

contact with the support structure 18 in response to applied pressure between the seal 14 and the support structure 18 during use, as Fig. 6 shows (column 3, lines 1 - 6).

As the connection assembly of claim 1 of the application does not differ from that of above, claim 1 does not fulfill the requirements of Art. 33(2) PCT.

2 In D2, there is disclosed a connection assembly adapted to join a surface element to an underlying support structure while maintaining a substantially zero gap, abutting relation between the surface element and the support structure during use, the connection assembly comprising:
a press-in retainer 1 adapted for insertion into an acceptance opening in the support structure to establish operative connecting engagement between the surface element and the support structure, the retainer 1 including a retainer head 2 and a clip portion 3 of arrowhead configuration projecting outwardly away from the retainer head 2, wherein the retainer head 2 includes an upper platform and an annular platform 4 defining a lower collar positioned in spaced relation below the upper platform, wherein the clip portion 3 comprises a central stem 10 extending downwardly away from the lower collar 4 and flexible wings 12 extending in upward angled relation away from the central stem 10, the retainer 1 further including a seal 52 disposed at least partially about the lower collar 4, the seal 52 including a body portion engaging the lower collar 4 and a sealing foot projecting downwardly and radially outwardly away from the body portion to a free edge such that the sealing foot is disposed outboard from the lower collar 4 and the underside of the sealing foot forms an obtuse angle relative to the plane of the underside of the lower collar 4, and wherein the sealing foot flexes about a living hinge while remaining outboard from the lower collar 4 and maintaining sliding contact with the support structure in response to applied pressure between the seal 52 and the support structure during use (paragraph [0026], [0053]).

The connection assembly of claim 1 of the application differs therefrom in that
a) there is a pair of flexible wings, and

b) the seal has a durometer lower than the the lower collar.

Difference a) is just a design feature, retainers comprising a pair of flexible wings being widely known such as from D1, D3 and D4;

difference b) aims to a better sealing between the retainer and the support structure as indicated in paragraph [0010] of the description. But again, it is widely known to use softer materials for the seal than for the body of the retainer, such as disclosed in D1 or D3.

Thus, each of D1 and D3 provide solutions for the problems underlying these differences. Applying the solutions given in D1 or D3 to a retainer as known from D2 leads to a connection assembly as claimed in claim 1.

Claim 1, therefore, does also not fulfill the requirements of Art. 33(3) PCT.

3 The features of dependent claims 2 to 4 are known from D1, those of claims 5 to 7 are known per se from D3, and those of claims 8 and 9 per se from D4:

claim 2: D1, column 3, lines 1 - 6;
claim 3: D1, Fig. 4;
claim 4: D1, column 3, lines 1 - 6;
claim 5: D3, page 4, line 3: acetal;
claim 6: D3, page 4, line 5: thermoplast K;
claim 7: D3, page 4, lines 3 - 5;
claim 8: D4, Fig. 2; and
claim 9: D4, Fig. 2.

Thus, the features of the dependent claims could not be used together with those of claim 1 to form the basis for an independent claim which could fulfill the requirements of the PCT.

4 In D4, there is disclosed a connection assembly adapted to join a surface element R to an underlying support structure P while maintaining a substantially zero gap abutting relation between the surface element R and the support structure P during use, the connection assembly comprising: a press-in retainer C adapted for insertion into an acceptance opening p_1 in the support structure P to establish operative connecting engagement between the surface element R and the support structure P, the retainer C including a retainer head c_1, c_2, c_3 and a clip portion c_4 of arrowhead configuration projecting outwardly away from the retainer head, wherein the retainer head includes an upper platform c_3, an annular platform c_2 defining a lower collar having a perimeter edge positioned in spaced relation below the upper platform c_3, and a connective neck structure c_1 extending between the upper platform c_3 and the lower collar c_2, wherein the clip portion c_4 comprises a central stem extending downwardly away from the lower collar c_2 such that the lower collar c_2 is oriented substantially perpendicular to an axis defined by the stem, a pair of flexible wings extending in upward angled relation away from the central stem, the flexible wings terminating at wing tips disposed in spaced relation below the lower collar c_2, wherein the flexible wings each have a dog-leg configuration including a radially inwardly angled segment defining an angled biasing surface disposed between a radially outwardly angled

segment and a free end, the angled biasing surface being adapted to press against an interior surface of the acceptance opening p_1 to urge the retainer C downwardly into the acceptance opening p_1;
a preformed surface element having a contact surface (fig. 2: lowermost part of surface element R) configured to abut the support structure P in a substantially gapless relation during use; and
an intermediate connector F operatively connected to the surface element R and adapted to receive and retain the retainer head such that upon insertion of the retainer C into the acceptance opening p_1 in the support structure P, an operative connection is established between the surface element R and the support structure P, wherein the surface element R is configured such that when the retainer C is held between the intermediate connector F and the support structure P, the contact surface of the surface element R is at an elevation such that it abuts the support structure P (paragraphs [0029], [0030]).

Independent claim 10 of the application differs from that of above in that the retainer further includes a monolithic seal disposed about the perimeter edge of the lower collar, the seal having a durometer lower than the lower collar, the seal including a body portion at least partially surrounding the perimeter edge and the seal further including an integral hingeing sealing foot projecting downwardly and radially outwardly away from the body portion to a free edge such that the sealing foot is disposed entirely outboard from the underside of the lower collar and forms an obtuse angle relative to the underside of the lower collar, and wherein the sealing foot flexes about a living hinge while remaining outboard from the lower collar and maintaining sliding contact with the support panel in response to applied pressure between the seal and the support panel and the lower collar remains spaced in elevated relation away from the support structure during use.

These features solve the problem of a better sealing function between the retainer and the support structure.

However, this problem is already solved by the retainer of D2 which contains a seal with the above seal features. Applying the teachings of D2 to the retainer of D4 leads to a connection assembly which finally would comprise all features of independent claim 10. Claim 10, therefore, does not fulfill the requirements of Art. 33(3) PCT.

5 The features of dependent claims 11 and 12 are known per se from D2, those of claims 13 to 16 per se from D3, and those of claims 17 to 19 of D4:

claim 11: D2, paragraph [0025];
claim 12: D2, paragraph [0053];
claim 13: D3, page 3, lines 27 - 30;
claim 14: cf. claim 5;
claim 15: cf. claim 6;
claim 16: cf. claim 7;
claim 17: D4, Fig. 2;
claim 18: D4, Fig. 2; and
claim 19: D4, Fig. 4.

Thus, the features of the dependent claims 11 - 19 could not be used together with those of claim 10 to form the basis for an independent claim which could fulfill the requirements of the PCT.

6 In D1, there is disclosed a method of connecting a surface element to an underlying support structure while maintaining a substantially zero gap abutting relation between the surface element and the support structure during use, the method comprising:
providing a press-in retainer adapted for insertion into an acceptance opening in the support structure to establish operative connecting engagement between the surface element and the support structure, the retainer including a retainer head and a clip portion of arrowhead configuration projecting outwardly away from the retainer head, wherein the retainer head includes an upper platform, an annular platform defining a lower collar having a perimeter edge positioned in spaced relation below the upper platform, and a connective neck structure extending between the upper platform and the lower collar, wherein the clip portion comprises a central stem extending downwardly away from the lower collar and a pair of flexible wings extending in upward angled relation away from the central stem, the flexible wings terminating at wing tips disposed in spaced relation below the lower collar, wherein the flexible wings each have a dog-leg configuration including a radially inwardly angled segment defining an angled biasing surface disposed between a radially outwardly angled segment and a free end, the angled biasing surface being adapted to press against an interior surface of the acceptance opening to urge the retainer downwardly into the acceptance opening, the retainer further including a monolithic seal disposed about the perimeter edge of the lower collar, the seal having a durometer lower than the lower collar, the seal including a body portion at least partially surrounding the perimeter edge and the seal further including an integral hingeing sealing foot projecting downwardly and radially outwardly away from the body portion to a free edge

such that the sealing foot is disposed entirely outboard from the underside of the lower collar and forms an obtuse angle relative to the underside of the lower collar, and wherein the sealing foot flexes about a living hinge while remaining outboard from the lower collar and maintaining sliding contact with the support structure in response to applied pressure between the seal and the support structure during use;
providing a preformed surface element having a contact surface configured to abut the support structure in a substantially gapless relation during use; and inserting the retainer into an acceptance opening in the support structure, to establish an operative connection between the surface element and the support structure, wherein the surface element is configured such that when the retainer is held between the intermediate connector and the support structure, the contact surface of the surface element is at an elevation such that it abuts the support structure while the sealing foot is in flexed contacting relation with the support structure and the lower collar remains spaced in elevated relation away from the support structure.

Method claim 20 of the application differs therefrom in securing the retainer head within an intermediate connector operatively connected to the surface element.

This is just one of the possibilities the person skilled in the art has to provide the connection between the retainer and the surface element. Additionally, such type of connection is known from D4.

Consequently, the features of claim 20 could not be considered to comprise an inventive step according to Art. 33(3) PCT.

Ad point VII.:

7 In claims 1, 10 and 20, a support panel is mentioned which is not defined. However, it appears that this should be the support structure. Therefore, the expression 'support structure' is used within this opinion.

8 The independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art as mentioned above being placed in the preamble (Rule 6.3(b)(i) PCT) and the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

9 The features of claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

10 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in D2 to D4 is not mentioned in the description, nor are these documents identified therein.

Electronic Patent Application Fee Transmittal

Application Number:	16897947
Filing Date:	10-Jun-2020
Title of Invention:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL
First Named Inventor/Applicant Name:	Derek Scroggie
Filer:	Nicholas P. Schmidbauer./Cyndy Marcello
Attorney Docket Number:	480805.00748(61823-US-C)

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
RCE- 1ST REQUEST	1801	1	1360	1360
		Total in USD ($)		**1360**

Electronic Acknowledgement Receipt

EFS ID:	47149927
Application Number:	16897947
International Application Number:	
Confirmation Number:	8594
Title of Invention:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL
First Named Inventor/Applicant Name:	Derek Scroggie
Customer Number:	160504
Filer:	Nicholas P. Schmidbauer./Cyndy Marcello
Filer Authorized By:	Nicholas P. Schmidbauer.
Attorney Docket Number:	480805.00748(61823-US-C)
Receipt Date:	06-DEC-2022
Filing Date:	10-JUN-2020
Time Stamp:	11:30:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1360
RAM confirmation Number	E2022B6B31041692
Deposit Account	170055
Authorized User	Cyndy Marcello

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	61823-US-C_IDS5Transmittal-6DEC22.pdf	110921 0e7a235de1733cf4feb89b7c6d9716dc11a50eed	no	1
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	61823-US-C-IDS5.pdf	1263207 2cc0ef592cc06cfce7fa1fe904bf725ed25e18eb	no	4
Warnings:					
Information:					
A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems.					
3	Request for Continued Examination (RCE)	61823-US-C-RCE.pdf	1666990 658d84f7a0e00ac0cf2d2c03cf3ae79be9e214ec	no	3
Warnings:					
Information:					
4	Other reference-Patent/Application/ Search Documents	NPL1-ISR-WO.pdf	559793 7d3bdda899589349a55308e7ca006f495058627	no	14
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	38392 016e16a79920907a1f4e6b83b9e80634e1f417e2	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	3639303		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Illinois Tool Works Inc.	)
Serial No.:	16/897,947	)
Filed:	2020-06-10	)
For:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL	)
Group Art Unit:	3677	)
Confirmation No.:	8594	)
Examiner:	Delisle, Roberta S.	)

CERTIFICATE OF EFS FILING

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, on the date below.

December 6, 2022

/Cyndy Marcello/
Cyndy Marcello

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

The patents and/or publications listed on the enclosed Form PTO/SB/08a are being brought to the attention of the Examiner pursuant to 37 CFR §§ 1.56, 1.97, and 1.98. Copies of any foreign publications or other documents are enclosed as necessary.

This Information Disclosure Statement is being filed after issuance of a notice of allowance. A Request for Continued Examination and the requisite fee has been provided. The Examiner is hereby requested and authorized to charge the appropriate fee to Deposit Account No. 17-0055.

The identification of any document in the attached Form PTO/SB/08a is not an admission that such document is in fact prior art or is material to patentability relative to the instant application.

An early and favorable action on the merits is respectfully requested.

Respectfully submitted,

QUARLES & BRADY LLP
300 N. LaSalle Street, Suite 4000
Chicago, Illinois 60654
312.715.5072

December 6, 2022

By: /NPSchmidbauer/
Nicholas P. Schmidbauer
Reg. No. 56,610

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16897947
Filing Date	2020-06-10
First Named Inventor	Derek Scroggie
Art Unit	3677
Examiner Name	ROBERTA S DELISLE
Attorney Docket Number	480805.00748(61823-US-C)

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16897947
	Filing Date	2020-06-10
	First Named Inventor	Derek Scroggie
	Art Unit	3677
	Examiner Name	ROBERTA S DELISLE
	Attorney Docket Number	480805.00748(61823-US-C)

	1	International Search Report and Written Opinion for PCT/US2013/073861, mailed March 28, 2014 (14 pages)

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16897947
	Filing Date	2020-06-10
	First Named Inventor	Derek Scroggie
	Art Unit	3677
	Examiner Name	ROBERTA S DELISLE
	Attorney Docket Number	480805.00748(61823-US-C)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/NPSchmidbauer/	Date (YYYY-MM-DD)	2022-12-06
Name/Print	Nicholas P. Schmidbauer	Registration Number	56610

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

160504 7590 01/12/2023

QUARLES & BRADY LLP/ITW Automotive OEM
Attn: IP Docket
411 E. WISCONSIN AVE.
SUITE 2400
MILWAUKEE, WI 53202-4428

EXAMINER
DELISLE, ROBERTA S

ART UNIT	PAPER NUMBER
3677	

DATE MAILED: 01/12/2023

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/897,947	06/10/2020	Derek Scroggie	480805.00748(61823-US-C)	8594

TITLE OF INVENTION: PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	04/12/2023

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

160504 7590 01/12/2023

QUARLES & BRADY LLP/ITW Automotive OEM
Attn: IP Docket
411 E. WISCONSIN AVE.
SUITE 2400
MILWAUKEE, WI 53202-4428

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/897,947	06/10/2020	Derek Scroggie	480805.00748(61823-US-C)	8594

TITLE OF INVENTION: PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	04/12/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
DELISLE, ROBERTA S	3677	411-508000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required) ❑ Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/897,947	06/10/2020	Derek Scroggie	480805.00748(61823-US-C)	8594

160504 7590 01/12/2023

QUARLES & BRADY LLP/ITW Automotive OEM
Attn: IP Docket
411 E. WISCONSIN AVE.
SUITE 2400
MILWAUKEE, WI 53202-4428

EXAMINER	
DELISLE, ROBERTA S	
ART UNIT	**PAPER NUMBER**
3677	

DATE MAILED: 01/12/2023

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 16/897,947	Applicant(s) Scroggie et al.	
	Examiner ROBERTA S DELISLE	Art Unit 3677	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to RCE filed 12/6/2022.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-20 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/ROBERTA S DELISLE/
Primary Examiner, Art Unit 3677

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/897,947	Scroggie et al.
	Examiner	Art Unit
	ROBERTA S DELISLE	3677

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	08/10/2022	11/14/2022	12/07/2022						
	1	✓	=	=						
	2	✓	=	=						
	3	✓	=	=						
	4	✓	=	=						
	5	✓	=	=						
	6	✓	=	=						
	7	✓	=	=						
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	11	✓	=	=						
	12	✓	=	=						
	13	✓	=	=						
	14	✓	=	=						
	15	✓	=	=						
	16	✓	=	=						
	17	✓	=	=						
	18	✓	=	=						
	19	✓	=	=						
	20	✓	=	=						

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/897,947	Scroggie et al.
	Examiner	**Art Unit**
	ROBERTA S DELISLE	3677

CPC								
Symbol							**Type**	**Version**
F16B	/	5	/	0084			F	2013-01-01
F16B	/	5	/	0607			I	2013-01-01
F16B	/	2	/	22			I	2013-01-01
F16B	/	19	/	00			I	2013-01-01
F16B	/	19	/	008			I	2013-01-01
F16B	/	21	/	086			I	2013-01-01
F16B	/	2005	/	0678			A	2013-01-01
Y10T	/	24	/	44026			A	2015-01-15
Y10T	/	29	/	49828			A	2015-01-15
F16B	/	5	/	0657			A	2013-01-01
F16B	/	5	/	00			A	2013-01-01

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/ROBERTA S DELISLE/ Primary Examiner, Art Unit 3677	07 December 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No.: 20221207

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/897,947	Scroggie et al.
	Examiner	**Art Unit**
	ROBERTA S DELISLE	3677

INTERNATIONAL CLASSIFICATION				
CLAIMED				
F16B	/	19	/	00

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**
411	508

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/ROBERTA S DELISLE/ Primary Examiner, Art Unit 3677	07 December 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No.: 20221207

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/897,947	Scroggie et al.
	Examiner	Art Unit
	ROBERTA S DELISLE	3677

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/ROBERTA S DELISLE/ Primary Examiner, Art Unit 3677	07 December 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No.: 20221207

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/897,947	Scroggie et al.
	Examiner	Art Unit
	ROBERTA S DELISLE	3677

CPC - Searched*		
Symbol	**Date**	**Examiner**
F16B 2/22; 5/00, 06, 0084, 0607, 0657; 19/00, 008; 21/086; 2005/0678	08/10/2022	rsd
Y10T 24/44026; 29/49828	08/10/2022	rsd
F16B 19/00	11/14/2022	rsd
F16B 19/00	12/07/2022	rsd

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**
411	508-510	08/10/2022	rsd
411	508	11/14/2022	rsd
411	508	12/07/2022	rsd

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/897,947	Scroggie et al.
	Examiner	Art Unit
	ROBERTA S DELISLE	3677

Search Notes		
Search Notes	**Date**	**Examiner**
Inventors name search	08/10/2022	rsd
Forward / backward citation searching	08/10/2022	rsd
Text searching	08/10/2022	rsd
IPR2021-00724 Reviewed Petition for Inter Partes Review of US Patent Number 10,683,882	08/10/2022	rsd
Consulted SPE: I. Spar regarding PTAB documents	08/11/2022	rsd
NOTE: No PTO-892 dues to extensive IDS references	08/26/2022	rsd
Reviewed cited prior art of record	11/14/2022	rsd
Forward / backward citation searching	11/14/2022	rsd
Text searching	11/14/2022	rsd
Reviewed cited prior art of record	12/07/2022	rsd
Forward / backward citation searching	12/07/2022	rsd
Text searching	12/07/2022	rsd

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
F16B	19/00	11/14/2022	rsd
411	508	11/14/2022	rsd
F16B	19/00	12/07/2022	rsd
411	508	12/07/2022	rsd

Bibliographic Data

Application No: 16/897,947

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /ROBERTA S DELISLE/ Examiner's Signature | Initials

Title: PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
06/10/2020	411	3677	480805.00748(61823-US-C)
RULE			

APPLICANTS

Illinois Tool Works Inc., Glenview, IL,

INVENTORS

Derek Scroggie, Macomb, MI, UNITED STATES

Michelle E. Bozinovski, Oakland Charter Township, MI, UNITED STATES

Robert A. Murawski, Clinton Township, MI, UNITED STATES

CONTINUING DATA

This application is a CON of 15987986 05/24/2018 PAT 10683882

15987986 is a CON of 14652819 06/17/2015 PAT 9982694

14652819 is a 371 of PCT/US2013/073861 12/09/2013

PCT/US2013/073861 has PRO of 61739604 12/19/2012

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

06/18/2020

STATE OR COUNTRY

UNITED STATES

ADDRESS

QUARLES & BRADY LLP/ITW Automotive OEM
Attn: IP Docket
411 E. WISCONSIN AVE.
SUITE 2400
MILWAUKEE, WI 53202-4428
UNITED STATES

FILING FEE RECEIVED

$1,720

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16897947
Filing Date	2020-06-10
First Named Inventor	Derek Scroggie
Art Unit	3677
Examiner Name	ROBERTA S DELISLE
Attorney Docket Number	480805.00748(61823-US-C)

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /R.S.D/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16897947
	Filing Date	2020-06-10
	First Named Inventor	Derek Scroggie
	Art Unit	3677
	Examiner Name	ROBERTA S DELISLE
	Attorney Docket Number	480805.00748(61823-US-C)

	1	International Search Report and Written Opinion for PCT/US2013/073861, mailed March 28, 2014 (14 pages)

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/ROBERTA S DELISLE/	Date Considered	12/07/2022

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Application Number	16897947
	Filing Date	2020-06-10
	First Named Inventor	Derek Scroggie
	Art Unit	3677
	Examiner Name	ROBERTA S DELISLE
	Attorney Docket Number	480805.00748(61823-US-C)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/NPSchmidbauer/	Date (YYYY-MM-DD)	2022-12-06
Name/Print	Nicholas P. Schmidbauer	Registration Number	56610

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /R.S.D/

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	966	411/508.ccls.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/12/07 08:19 AM
L2	362	f16b19/00.cpc.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/12/07 08:32 AM
L3	138	("20050079033"|"20060231690"|"20110243688"|"5339491"|"5458365"|"5797714"|"6572317"|"D298736"|"D354219"|"D355113"|"D378349"|"D577284"|"D590242"|"D625587"|"8936420"|"8561265"|"20100029376"|"20100098515"|"20110119875"|"3550217"|"5704753"|"6715185"|"D273091"|"D291054"|"D326049"|"D326605"|"D382468"|"D617178"|"D640917"|"D701112"|"D723906"|"9873388"|"20120261942"|"20050189775"|"20080066266"|"4906154"|"7444721"|"3249973"|"3577603"|"D293883"|"D410194"|"D464873"|"D666900"|"D675506"|"D688937"|"20070166127"|"20030156917"|"6659701"|"20130129450"|"3988808"|"7481474"|"D284934"|"D293882"|"D297615"|"D529793"|"D564344"|"D566535"|"D675507"|"D701450"|"D724419"|"10688943"|"20060086765"|"20060099051"|"3771275"|"4778320"|"5028187"|"5419606"|"6305055"|"D268894"|"D293884"|"D297613"|"D297614"|"D324168"|"D325696"|"D390776"|"D456699"|"D500245"|"D536956"|"D589333"|"D686487"|"D695600"|"D803037"|"D863049"|"4188040"|"7152281"|"20150322985"|"3678797"|"3745612"|"4534530"|"5173026"|"6805524"|"8561265"|"8883059"|"D291057"|"D36	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/12/07 08:36 AM

		2176"|"D380667"|"D382466"|"D471084"|"D484779"|"D498414"|"D632550"|"10451100"|"7784159"|"20050150087"|"5865500"|"6910840"|"6974292"|"7770266"|"8511631"|"D381258"|"D451789"|"D675508"|"D817162"|"20060117535"|"5857244"|"9649993"|"20180339665"|"5319839"|"5393185"|"5573362"|"7017239"|"7927050"|"D268006"|"D324992"|"D392554"|"D566534"|"D582262"|"D635451"|"D664027"|"D665245"|"D673841"|"D704538"|"D752952"|"D768472"|"4888919"|"8950042"|"9150145").PN.					
L4	659	("4312165" | "5086997" | "20090211065" | "20130255065" | "5211519" | "5387065" | "5641255" | "6039523" | "6264393" | "7033121" | "7188393" | "7222398" | "7231696" | "7536755" | "7549199" | "7862274" | "20090000085" | "20140047679" | "20160138629" | "20160298668" | "20170198738" | "20170291558" | "D242428" | "D358212" | "D366115" | "D441448" | "D574958" | "D614941" | "D706893" | "D744106" | "D773926" | "D801796" | "D803038" | "D803039" | "D828153" | "D830820" | "D831475" | "D831476" | "D836976" | "D837047" | "20110056166" | "20110257691" | "3444596" | "3476008" | "4762437" | "D704539" | "D723906" | "8984715" | "20090000085" | "20110167590" | "20110283490" | "20120246896" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/12/07 08:50 AM

		"20150121665" | "20150173466" | "20150298623" | "3988808" | "4861208" | "4927287" | "4952106" | "5085545" | "5193961" | "5201623" | "5211519" | "5370484" | "5375954" | "5689863" | "5795118" | "6089805" | "6364586" | "6431585" | "6979162" | "7237995" | "8347465" | "9103363" | "20020001513" | "20020026693" | "20040020016" | "20050019130" | "20050091802" | "20050214069" | "20050220561" | "20130287518" | "20140093325" | "20150176621" | "6514024" | "7690876" | "D666900" | "D674273" | "D768468" | "D768472" | "20040151560" | "20050123372" | "20050152765" | "20110097172" | "20130216297" | "20140133937" | "20150104272" | "4122583" | "5366332" | "6835037" | "6857168" | "6928705" | "7051408" | "7287945" | "7311229" | "7572089" | "9080588" | "9488209" | "9533718" | "20020194710" | "20050105987" | "20060290155" | "20080086850" | "20080098576" | "20080289155" | "20100026028" | "20110163562" | "20140263895" | "20150251624" | "20150321622" | "20160016522" | "20160138629" | "20160144801" | "20160229368" | "20160375840" | "4668145" | "4787795" | "5573362" | "5630256" |					

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		"20090067921" | "20090190993" | "20100278612" | "20120085630" | "20120272506" | "20130017014" | "0265863" | "3327988" | "D282906" | "D381258" | "D566535" | "D704539" | "20080298925" | "D380959" | "D497536" | "D619449" | "D695591" | "D699545" | "20080128966" | "20100038834" | "20130043626" | "20140154911" | "2100017" | "2143603" | "2540396" | "4043579" | "5263233" | "5662375" | "5759004" | "5887319" | "5987714" | "6021986" | "6141837" | "6250708" | "6279207" | "6322126" | "6341466" | "6353981" | "6381811" | "6629809" | "6691380" | "6718599" | "6719352" | "6796006" | "6868588" | "7849567" | "20040083582" | "20050217082" | "20050236861" | "20050246870" | "20060071475" | "4122583" | "4312614" | "5028187" | "5178501" | "5689863" | "5797714" | "5851097" | "6511273" | "6715185" | "7017239" | "7152281" | "7243401" | "7351023" | "7698787" | "8671527" | "20030156917" | "20040181917" | "20070166127" | "2200702" | "2343235" | "2365422" | "3029486" | "3093874" | "3106413" | "3127965" | "3131742" | "3149850" | "3184769" | "3262722" | "3272952" | "3286577" | "3355205" | "3549477" | "RE27085" | "3622167" | "3627334" | "3649059" | "3651545" | "3655424" | "3661046" | "3905270" | "3910588"					

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L5	829	("D325696" | "D326049" | "D382466" | "D456699" | "D484779" | "D536956" | "7222398" | "D589333" | "D590241" | "D617178" | "4396329" | "5211519" | "D354219" | "D355113" | "D380667" | "D382468" | "D390776" | "5797714" | "D456699" | "6398473" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/12/07 08:56 AM

		"6406236" | "6481942" | "6719513" | "D498414" | "D500245" | "6910840" | "6974292" | "D529793" | "D564344" | "D566534" | "D566535" | "D589333" | "7503528" | "D590241" | "D632550" | "D635451" | "2956605" | "3749820" | "3957250" | "4028489" | "4049905" | "4070007" | "D247801" | "4684107" | "4692567" | "4883923" | "5085409" | "D378349" | "D381258" | "D416189" | "6380490" | "D467161" | "7549829" | "D629105" | "D629520" | "D629904" | "D632550" | "D635451" | "D648210" | "20100200826" | "D268006" | "D298801" | "D326605" | "D460716" | "D492581" | "D505846" | "D589333" | "D602770" | "D625657" | "D625658" | "4505611" | "4810147" | "4867599" | "5038444" | "5106223" | "5297322" | "5507610" | "5651634" | "5855461" | "6039523" | "6287043" | "6572317" | "7481474" | "7698787" | "20040016088" | "20060000064" | "20070098523" | "20070166127" | "D293882" | "D374610" | "D390776" | "D456699" | "D498414" | "6910840" | "D564344" | "D566534" | "D566535" | "D589333" | "D590241" | "D617178" | "D625587" | "20050244250" | "D293882" | "D374610" | "D390776" | "D456699" | "D498414" | "6910840" | "D564344" | "D566534" | "D566535" | "D589333" | "D590241" | "D617178" | "D625587"				

		| "20050244250" | "D410194" | "D413508" | "D467198" | "D495971" | "D502891" | "D529793" | "D537382" | "D563269" | "D576074" | "D576518" | "D577631" | "D593902" | "D617178" | "D617234" | "2322656" | "2329688" | "2424757" | "2542883" | "2607971" | "2825948" | "3525129" | "3673643" | "3864789" | "4133246" | "4245652" | "4402118" | "4431355" | "4595325" | "4609170" | "4683622" | "4701984" | "4712341" | "4792475" | "4981310" | "5092550" | "5095592" | "5129768" | "5367751" | "5373611" | "5422789" | "5542158" | "5795118" | "5887319" | "5919019" | "5987714" | "5992914" | "6074150" | "6101686" | "6141837" | "6203240" | "6279207" | "6353981" | "6381811" | "6527471" | "6648542" | "6691380" | "6718599" | "6745440" | "6846125" | "6868588" | "6928705" | "7188392" | "3722037" | "3727271" | "D273091" | "D293884" | "4787795" | "4823978" | "5592719" | "D410194" | "6209178" | "D490767" | "7347655" | "7581361" | "D601567" | "3385158" | "D218226" | "3722037" | "D240599" | "3991446" | "D259466" | "D261357" | "D273091" | "D325696" | "D326049" | "D326408" | "5193464" | "D372192" | "5579686" | "D512627" | "D517900" | "D536956" | "7222398" | "D557409" | "3905270" | "4427328" | "D293883" | "D293884" | "4716633" | "D297614" | "D297615" | "4810147" | "D318792" | "D326605" | "5165833" | "5173026" | "5191513"					

		| "D354219" | "D355113" | "5509182" | "D378349" | "D380667" | "5651634" | "D382466" | "D382468" | "5704753" | "D390776" | "5797714" | "D456699" | "6572317" | "D484779" | "D498414" | "D500245" | "6910840" | "6974292" | "D529793" | "D564344" | "D566534" | "D566535" | "D567640" | "D570202" | "D577284" | "3029486" | "3093874" | "3905270" | "D268006" | "4393551" | "4422276" | "4427328" | "4431355" | "4472918" | "4489465" | "4505611" | "4715095" | "4778320" | "4810147" | "4861208" | "4938645" | "4987656" | "5011356" | "5039267" | "5046223" | "5106223" | "5152582" | "5165833" | "5173026" | "5191513" | "5217337" | "5301396" | "5316423" | "5319839" | "5322402" | "D354219" | "D355113" | "5393185" | "5468108" | "5507610" | "5551817" | "5573362" | "5586853" | "5592719" | "5651634" | "5689863" | "5694666" | "5704753" | "D390776" | "5724709" | "5775859" | "5851097" | "5975820" | "6039523" | "6209178" | "6264393" | "6287043" | "6305055" | "6336768" | "D456699" | "6449814" | "6572317" | "6910840" | "20020028123" | "20050095084" | "4677714" | "D291532" | "4897005" | "5423646" | "5713707" | "5961264" | "6450747" | "6688825" | "6805524" | "6971830" | "6974289" | "7182563" | "D566535" | "5966782" | "6074150" | "6101686" | "6381811" | "6405413" | "6449814" | "6671934" | "6691380" | "6796006" | "6868588" |					

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L8	1014	((interference ADJ fit) ADJ (fastener OR retainer))	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/12/07 09:45 AM
L9	2	((press ADJ in) ADJ (fastener OR retainer))	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/12/07 09:59 AM
L10	19551	((interference ADJ fit) SAME (fastener OR retainer))	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/12/07 10:00 AM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	322	f16b19/00.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2022/12/07 08:40 AM
N2	853	411/508.ccls.	(US-PGPUB; USPAT)	OR	ON	ON	2022/12/07 08:42 AM

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

160504 7590 01/12/2023
QUARLES & BRADY LLP/ITW Automotive OEM
Attn: IP Docket
411 E. WISCONSIN AVE.
SUITE 2400
MILWAUKEE, WI 53202-4428

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

Debra M. Szumowski	(Typed or printed name)
/Debra M. Szumowski/	(Signature)
January 12, 2023	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/897,947	06/10/2020	Derek Scroggie	480805.00748(61823-US-C)	8594

TITLE OF INVENTION: PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	04/12/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
DELISLE, ROBERTA S	3677	411-508000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Quarles & Brady LLP
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE	(B) RESIDENCE: (CITY and STATE OR COUNTRY)
Illinois Tool Works Inc.	Glenview, IL

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 170055

5. **Change in Entity Status** (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /NPSchmidbauer/ Date 2023-01-12

Typed or printed name Nicholas P. Schmidbauer Registration No. 56,610

Electronic Patent Application Fee Transmittal

Application Number:	16897947
Filing Date:	10-Jun-2020
Title of Invention:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL
First Named Inventor/Applicant Name:	Derek Scroggie
Filer:	Nicholas P. Schmidbauer./Debra Szumowski
Attorney Docket Number:	480805.00748(61823-US-C)

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	1501	1	1200	1200

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1200**

Electronic Acknowledgement Receipt

EFS ID:	47359674
Application Number:	16897947
International Application Number:	
Confirmation Number:	8594
Title of Invention:	PUSH THROUGH RETAINER CONNECTION WITH INTEGRATED HINGING SEAL
First Named Inventor/Applicant Name:	Derek Scroggie
Customer Number:	160504
Filer:	Nicholas P. Schmidbauer./Debra Szumowski
Filer Authorized By:	Nicholas P. Schmidbauer.
Attorney Docket Number:	480805.00748(61823-US-C)
Receipt Date:	12-JAN-2023
Filing Date:	10-JUN-2020
Time Stamp:	13:37:28
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1200
RAM confirmation Number	E20231BD37553615
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	480805-00748_issue_fee_transmittal.pdf	989619 f19666dee9c602692e5baa55b7b5cea8986ff60e	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	38384 6fa9f6891cfeb6a513b7ee43c5feb2cc59967242	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1028003		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
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www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/897,947	02/14/2023	11578740	480805.00748(61823-US-C)	8594

160504 7590 01/25/2023

QUARLES & BRADY LLP/ITW Automotive OEM
Attn: IP Docket
411 E. WISCONSIN AVE.
SUITE 2400
MILWAUKEE, WI 53202-4428

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 367 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PAIR WEB site http://pair.uspto.gov for additional inventors):

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Robert A. Murawski, Clinton Township, MI;

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Illinois Tool Works Inc., Glenview, IL;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.