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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/844,667	05/17/2022	11331823	88737-5	5267

59582 7590 04/27/2022
Dickinson Wright PLLC - Troy
2600 West Big Beaver Rd.
Suite 300
Troy, MI 48084-3312

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 231 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):

Tobias Einloft-Velte, Dautphetal, GERMANY;
Thomas Nispel, Dautphetal, GERMANY;
Noël Ritzen, Siegen, GERMANY;

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Weber Maschinenbau GmbH Breidenbach, Breidenbach, GERMANY;

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.

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)

59582 7590 01/26/2022
Dickinson Wright PLLC - Troy
2600 West Big Beaver Rd.
Suite 300
Troy, MI 48084-3312

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.
16/844,667	04/09/2020	Tobias Einloft-Velte	88737-5	5267

TITLE OF INVENTION: PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL

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	04/26/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
MICHALSKI, SEAN M	3724	083-088000

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 Dickinson Wright PLLC

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

Weber Maschinenbau GmbH Breidenbach

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Germany

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. 04-1061

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 /SCOTTAMcBAIN/

Date 4/21/2022

Typed or printed name SCOTTAMcBAIN

Registration No. 37181

Electronic Patent Application Fee Transmittal				
Application Number:		16844667		
Filing Date:		09-Apr-2020		
Title of Invention:		PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL		
First Named Inventor/Applicant Name:		Tobias Einloft-Velte		
Filer:		Scott A. McBain/Patience Morin		
Attorney Docket Number:		88737-5		
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:	45526464
Application Number:	16844667
International Application Number:	
Confirmation Number:	5267
Title of Invention:	PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL
First Named Inventor/Applicant Name:	Tobias Einloft-Velte
Customer Number:	59582
Filer:	Scott A. McBain/Patience Morin
Filer Authorized By:	Scott A. McBain
Attorney Docket Number:	88737-5
Receipt Date:	21-APR-2022
Filing Date:	09-APR-2020
Time Stamp:	11:29:18
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$1200
RAM confirmation Number	E20224KB30083252
Deposit Account	041061
Authorized User	Patience Morin
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	Issue Fee Payment (PTO-85B)	88737_5_IFT.pdf	290712	no	1
			1076ed0deeb1d2b7ff94ae2cf151cbf45fd05dd0		

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	38239	no	2
			f6ee3d6ddb7badf24a39ae76ac54ea4e01bf3560		

Warnings:

Information:

Total Files Size (in bytes):	328951
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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.

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**Courtesy Reminder for
Application Serial No: 16/844,667**

Attorney Docket No: 88737-5

Customer Number: 59582

Date of Electronic Notification: 01/26/2022

This is a courtesy reminder that new correspondence is available for this application. If you have not done so already, please review the correspondence. The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

An email notification regarding the correspondence was sent to the following email address(es) associated with your customer number:

DWPatents@dickinson-wright.com
tgood@dickinsonwright.com

To view your correspondence online or update your email addresses, please visit us anytime at <https://ppair-my.uspto.gov/pair/PrivatePair>.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov or call 1-866-217-9197.



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NOTICE OF ALLOWANCE AND FEE(S) DUE

59582 7590 01/26/2022
Dickinson Wright PLLC - Troy
2600 West Big Beaver Rd.
Suite 300
Troy, MI 48084-3312

EXAMINER

MICHALSKI, SEAN M

ART UNIT

PAPER NUMBER

3724

DATE MAILED: 01/26/2022

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/844,667	04/09/2020	Tobias Einloft-Velte	88737-5	5267

TITLE OF INVENTION: PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL

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	04/26/2022

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

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Commissioner for Patents
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Alexandria, Virginia 22313-1450

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CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

59582 7590 01/26/2022
Dickinson Wright PLLC - Troy
2600 West Big Beaver Rd.
Suite 300
Troy, MI 48084-3312

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Certificate of Mailing or Transmission

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(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/844,667	04/09/2020	Tobias Einloft-Velte	88737-5	5267

TITLE OF INVENTION: PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL

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nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	04/26/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
MICHALSKI, SEAN M	3724	083-088000

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,

1 _____

(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.

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.

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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
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/844,667	04/09/2020	Tobias Einloft-Velte	88737-5	5267
59582	7590	01/26/2022	EXAMINER	
Dickinson Wright PLLC - Troy 2600 West Big Beaver Rd. Suite 300 Troy, MI 48084-3312			MICHALSKI, SEAN M	
			ART UNIT	PAPER NUMBER
			3724	

DATE MAILED: 01/26/2022

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. 16/844,667	Applicant(s) Einloft-Velte et al.	
	Examiner SEAN M MICHALSKI	Art Unit 3724	AIA (FITF) Status Yes

-- 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 4/9/20.
☐ 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. 16025612.
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)	5. ☐ Examiner's Amendment/Comment
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.	6. ☒ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.	7. ☐ Other _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	

/SEAN M MICHALSKI/ Primary Examiner, Art Unit 3724	
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DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Allowable Subject Matter

2. Claims 1-20 allowed.

3. The following is an examiner's statement of reasons for allowance: The closest relevant art of record is considered to be Benson et al. (US 3,772,040) and Holzschneider (US 8,079,587).

4. In broad terms, Benson et al. discloses an interleaver machine, which is known in the art. The similar structure to the present application could be considered the background of the prior art to the task or device of interleaving paper / web/ sheet between a food item, or broadly any item needing interleaving. Benson discloses (analogously to claim 1, for example) An apparatus for a single-track or multitrack provision of web-like interleaved sheet material (see figure 1, and title... "interleafing frozen patties") at a cutting region (see cutting element 70 in figure 4, inter ali) in which products supplied on one track or on multiple tracks (P, 13, figure 4).

5. Benson does not show the cutting of the products, they are patties, and thus does not disclose "are cut into slices". Benson does however use interleaved sheets (from G, figure 4) are introduced which are cut off from the provided interleaved sheet material in the cutting region (As shown figure 4, by the cam driven rod 51). While this is a patty machine, cutting interleavers are also known to be applied to deli-slicers and the like, as seen in the cited art broadly. This does not constitute a patentable difference.

6. Benson further discloses the apparatus comprising: a material store (H figure 1); a removal device for a removal of a material web from the material store (80, 81, inter alia figure

1); a loop store (see loop formed, as at G figure 1) defining a space for the removed material web to form a loop, the loop store located between the material store and the cutting region (As shown in figure 1).

7. What Benson specifically lacks, and is apparently not well known in the art is having the loop store having a brake for the material web that actively increases the friction for the material web; and wherein the loop store comprises a contact surface for at least one region of the material loop at the outgoing side of the loop, wherein the contact surface belongs to the brake for the material web. Benson shows a loop guidance surface, which appears analogous to some aspects of the present applicant's brake, but which is in no way *active* or possessive of vacuum or pneumatic correction to the speed or friction of the web/ sheet, etc.

8. Using "brake" for sheets broadly is known, as in the cardboard handling mechanism of Holzschneider. Holzschneider at figure 1 shows a schematic of a cardstock cutting machine, but lacks any specific detail about the braking of the sheets. Holzschneider does make reference to other endeavors for braking sheets, to the following evidentiary extent "(10) Two different types of sheet braking device are known in the related art. [], for example, shows a sheet braking device that includes brushes. The braking brushes are slanted in the direction of sheet transport and exert a braking force on the sheet by slight pressure. (11) In an alternative solution to this mechanical sheet brake, pneumatic sheet brakes are used, e.g., as disclosed in EP 1 431 011 B1. The pneumatic sheet brakes are arranged in close proximity to the sheet and provide a partial vacuum, which acts as a braking force on the sheet moving past the pneumatic sheet brake." Looking specifically at EP 1 431 011 B1, of record, the particulars of the arrangement are not more specific than shown in figure 1 of Holzschneider and are substantially as explained. Holzschneider also confuses the record somewhat, by making reference to the movement of

sheets on ‘gripper carts’ which is different in mode and operation than a sliding web, such as that seen in the present application or in Benson. The closest classification search area, B65H2403/7253 which is to pneumatic control of sheet or filament handling, does not contain the type and nature of the claimed subject matter of the present application. Each reference means something different and distinct to the claimed type and manner of claimed brake which ‘actively increases the friction’ on the contact surface itself.

9. Even with this knowledge, the relevant foreign references do not make clear the mechanism by which such a brake type device, even a pneumatic or brush based mechanism could be added to a Benson equivalent device. The combination appears not to be obvious in light of the general knowledge and the specific teachings shown in the most relevant prior art, as cited. Therefore, claim 1, and its similar claim scope independent claims in the record of the present application are found to be allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEAN M MICHALSKI whose telephone number is (571)272-6752. The examiner can normally be reached Typically M-F 6a-3:30p East Coast Time.

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, Andrea Wellington can be reached on (571) 272-4483. 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.

/SEAN M MICHALSKI/
Primary Examiner, Art Unit 3724

Notice of References Cited	Application/Control No. 16/844,667		Applicant(s)/Patent Under Reexamination Einloft-Velte et al.	
	Examiner SEAN M MICHALSKI		Art Unit 3724	Page 1 of 4

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20190232513-A1	08-2019	Erne; Wouter Bart	B26D7/32	1/1
*	B	US-20190232512-A1	08-2019	VOTAVA; Mark J.	B26D1/225	1/1
*	C	US-20190152085-A1	05-2019	Reisz; Carsten	B65H16/106	1/1
*	D	US-20190152084-A1	05-2019	Schmeiser; Jorg	B26D5/007	1/1
*	E	US-20190030743-A1	01-2019	Einloft-Velte; Tobias	B26D7/27	1/1
*	F	US-20190023518-A1	01-2019	Gerhardt; Markus	B65H20/32	1/1
*	G	US-20190022886-A1	01-2019	Einloft-Velte; Tobias	B65H20/32	1/1
*	H	US-20190022885-A1	01-2019	Einloft-Velte; Tobias	B65H20/32	1/1
*	I	US-20180169888-A1	06-2018	Weber; Tobias	B26D7/0616	1/1
*	J	US-20180111283-A1	04-2018	Klockow; Scott Alan	B26D7/2614	1/1
*	K	US-20160286852-A1	10-2016	Gindrat; Pierre-Yves	B65H19/20	1/1
*	L	US-20160272440-A1	09-2016	Mayer; Josef	B65G47/68	1/1
*	M	US-20170368707-A1	12-2017	Keller; Markus	B26D7/0633	1/1

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
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	P					
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	R					
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 16/844,667		Applicant(s)/Patent Under Reexamination Einloft-Velte et al.	
	Examiner SEAN M MICHALSKI		Art Unit 3724	Page 2 of 4

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20170266831-A1	09-2017	Wachter; Daniel	B26D7/0625	1/1
*	B	US-20170259448-A1	09-2017	Weber; Tobias	B26D7/0625	1/1
*	C	US-20170165858-A1	06-2017	Bochtler; Alois	B26D7/0683	1/1
*	D	US-20170165712-A1	06-2017	FISCHER; Paul	B65H20/32	1/1
*	E	US-7601375-B2	10-2009	Langton; David	H04N1/2137	426/124
*	F	US-8080271-B2	12-2011	Langton; David	H04N1/2137	426/420
*	G	US-5117717-A	06-1992	Mally; Timothy G.	B26D5/20	53/157
*	H	US-7189308-B2	03-2007	Feit; Susan L.	D21H27/10	162/135
*	I	US-3675387-A	07-1972	Lekan; Henry N.	B65B25/08	53/157
*	J	US-3772040-A	11-1973	Benson; Ernest J.	B65B25/08	426/420
*	K	US-20160346951-A1	12-2016	Horberg; Winfried	B33Y80/00	1/1
*	L	US-9878462-B2	01-2018	Horberg; Winfried	B26D7/325	1/1
*	M	US-20120073249-A1	03-2012	Pryor; Glen F.	B65B41/12	53/514

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N	EP 1 431 011 B1	12-2003	Europe	Bayer, Gunther	B26D7/01
	O					
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Notice of References Cited	Application/Control No. 16/844,667		Applicant(s)/Patent Under Reexamination Einloft-Velte et al.	
	Examiner SEAN M MICHALSKI		Art Unit 3724	Page 3 of 4

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-9044872-B2	06-2015	Pryor; Glen F.	B65B25/08	1/1
*	B	US-20080250944-A1	10-2008	Pryor; Glen F.	B65B25/08	99/537
*	C	US-20160316770-A1	11-2016	van Blokland; Johannes Josephus Antonius	A21C14/00	1/1
*	D	US-20190047168-A1	02-2019	Bialy; Jurgen	B65B25/06	1/1
*	E	US-3787001-A	01-1974	Henry; Nelson R.	B65H23/085	242/417.2
*	F	US-4116399-A	09-1978	Mosburger; Hans	B65H19/1852	242/552
*	G	US-4176000-A	11-1979	Achelpohl; Fritz	B29C66/81427	156/510
*	H	US-4944467-A	07-1990	Snygg; Keijo K.	B65H23/06	242/422.9
*	I	US-5137225-A	08-1992	Biagiotti; Guglielmo	B65H19/30	242/521
*	J	US-5979308-A	11-1999	Kagi; Beat	B41F19/068	101/27
*	K	US-7424903-B2	09-2008	Kagi; Beat	B41F19/068	156/459
*	L	US-20020179767-A1	12-2002	Rapparini, Gino	B65H20/32	242/417.1
*	M	US-3848757-A	11-1974	Jordan; Ingo	B65B35/50	414/802

FOREIGN PATENT DOCUMENTS

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<i>Notice of References Cited</i>	Application/Control No. 16/844,667		Applicant(s)/Patent Under Reexamination Einloft-Velte et al.	
	Examiner SEAN M MICHALSKI		Art Unit 3724	Page 4 of 4

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*	B	US-3741079-A	06-1973	Bossons; Walter Howard	B31F5/027	493/350
*	C	US-3861612-A	01-1975	Kubo; Hagemu	B65H19/1815	242/555.6
*	D	US-20100112916-A1	05-2010	Epstein; Moshe	B65B57/04	451/396
*	E	US-20090230618-A1	09-2009	HOLZSCHNEIDER; Sascha	B65H29/686	271/270
*	F	US-8079587-B2	12-2011	Holzschneider; Sascha	B65H29/02	271/183
*	G	US-9334135-B2	05-2016	Grill; Martin	B65H29/6618	1/1
*	H	US-6145833-A	11-2000	Rodewald; Dennis W.	B65H29/20	271/182
*	I	US-5992844-A	11-1999	Dillinger; Daniel R.	B65H29/6618	271/182
*	J	US-4830355-A	05-1989	Jeschke; Willi	B65H29/683	271/183
*	K	US-4247094-A	01-1981	Vits; Hilmar	B65H29/241	271/183
*	L	US-20080169601-A1	07-2008	FRANK; Hendrik	B65H29/02	271/183
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FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<i>Search Notes</i> 	Application/Control No. 16/844,667	Applicant(s)/Patent Under Reexamination Einloft-Velte et al.
	Examiner SEAN M MICHALSKI	Art Unit 3724

CPC - Searched*		
Symbol	Date	Examiner
B26D1/565 or B23D33/04 or B65H39/16 or B26D7/32 or B65H2403/7253 or B26D2210/02 or B65H2301/412845 or B65H2408/217 or B65H20/32 or B65H2408/215	01/12/2022	smm

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* 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
Text specific to vacuum braking and braking for sheets, See attached	01/13/2022	smm
Updated and expanded search from parent 16025612	01/13/2022	SMM

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
B65H	2403/7253	01/13/2022	smm
B26D	2210/02; 7/32	01/13/2022	smm

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Issue Classification 	Application/Control No. 16/844,667	Applicant(s)/Patent Under Reexamination Einloft-Velte et al.
	Examiner SEAN M MICHALSKI	Art Unit 3724

CPC						
Symbol					Type	Version
B26D	/	1	/	565	F	2013-01-01
B26D	/	7	/	32	I	2013-01-01
B65H	/	39	/	16	I	2013-01-01
B23D	/	33	/	04	I	2013-01-01
B65H	/	20	/	32	I	2013-01-01
B65H	/	2408	/	217	A	2013-01-01
B65H	/	2301	/	412845	A	2013-01-01
B26D	/	2210	/	02	A	2013-01-01
B65H	/	2403	/	7253	A	2013-01-01
B65H	/	2408	/	215	A	2013-01-01

CPC Combination Sets					
Symbol				Type	Version
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NONE (Assistant Examiner)		Total Claims Allowed: 20	
/SEAN M MICHALSKI/ Primary Examiner, Art Unit 3724 (Primary Examiner)		13 January 2022 (Date)	O.G. Print Claim(s) 1
			O.G. Print Figure 1

Issue Classification 	Application/Control No. 16/844,667	Applicant(s)/Patent Under Reexamination Einloft-Velte et al.
	Examiner SEAN M MICHALSKI	Art Unit 3724

INTERNATIONAL CLASSIFICATION			
CLAIMED			
B26D7/32	/	7	/ 32
B65H20/32	/	20	/ 32

NON-CLAIMED			
B26D1/56	/	1	/ 56
B65H39/16	/	39	/ 16
B23D33/04	/	33	/ 04

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE (Assistant Examiner) (Date)		Total Claims Allowed: 20	
/SEAN M MICHALSKI/ Primary Examiner, Art Unit 3724 (Primary Examiner) (Date)		13 January 2022 O.G. Print Claim(s) 1	O.G. Print Figure 1

Issue Classification 	Application/Control No. 16/844,667	Applicant(s)/Patent Under Reexamination Einloft-Velte et al.
	Examiner SEAN M MICHALSKI	Art Unit 3724

☒ 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 (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 20	
/SEAN M MICHALSKI/ Primary Examiner, Art Unit 3724 (Primary Examiner) _____ (Date) _____		O.G. Print Claim(s) 1	O.G. Print Figure 1

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 431 011 B1

(12)

EUROPÄISCHE PATENTSCHRIFT

(45) Veröffentlichungstag und Bekanntmachung des
Hinweises auf die Patenterteilung:
10.05.2006 Patentblatt 2006/19

(51) Int Cl.:
B26D 7/01 ^(2006.01) **B26D 7/18** ^(2006.01)
B65H 29/68 ^(2006.01)

(21) Anmeldenummer: **03028663.7**

(22) Anmeldetag: **16.12.2003**

(54) **Bogenstanz- und -prägemaschine**

Device for press-cutting and creasing

Presse de découpage et cannelage

(84) Benannte Vertragsstaaten:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PT RO SE SI SK TR**

(30) Priorität: **19.12.2002 DE 10259556**

(43) Veröffentlichungstag der Anmeldung:
23.06.2004 Patentblatt 2004/26

(73) Patentinhaber: **Heidelberger Druckmaschinen
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(74) Vertreter: **Franzen, Peter
Heidelberger Druckmaschinen AG
Intellectual Property
Kurfürsten-Anlage 52-60
69115 Heidelberg (DE)**

(56) Entgegenhaltungen:
**DE-A- 2 454 056 DE-A- 19 945 114
DE-C- 944 857 GB-A- 2 032 322
US-A- 5 810 233 US-B1- 6 315 287**

EP 1 431 011 B1

Anmerkung: Innerhalb von neun Monaten nach der Bekanntmachung des Hinweises auf die Erteilung des europäischen Patents kann jedermann beim Europäischen Patentamt gegen das erteilte europäische Patent Einspruch einlegen. Der Einspruch ist schriftlich einzureichen und zu begründen. Er gilt erst als eingelegt, wenn die Einspruchsgebühr entrichtet worden ist. (Art. 99(1) Europäisches Patentübereinkommen).

Beschreibung

[0001] Die Erfindung betrifft eine Bogenstanz- und -prägemaschine mit einer Vorrichtung zum Ausbrechen von Abfällen aus einem gestanzten und geprägten Bogen, wobei die Vorrichtung eine Ausbrechplatte zur Auflage der Bögen aufweist und mit an umlaufenden Ketten befestigten Greiferwagen, die die Bögen an ihrer Vorderkante ergreifen und dann intermittierend durch die Ausbrechstation und weitere Stationen in der Maschine hindurchziehen.

[0002] Aus der DE 41 19 511 A1 ist eine Vorrichtung zum Abbremsen von Bögen, insbesondere Papier- oder Kartonbögen, die auf einem Bandförderer mit Abstand voneinander in einer Ebene transportiert werden bekannt. Vor der Stapelstelle, am Ende der Maschine befindet sich eine Abbremsvorrichtung in der zunächst ein Schuppenstrom erzeugt wird. Die Abbremsvorrichtung besteht aus mehreren, umlaufenden Riemen und einem Führungstisch. Der Führungstisch ist als Saugtisch ausgebildet, und die Riemen weisen in Umlaufrichtung Sauglöcher auf. So läßt sich die zwischen dem Riemen und dem Bogen befindliche Luft absaugen, damit sich die Bogenenden problemlos aus der Einlaufe Ebene an die Riemen legen, um so ein störungsfreies Schuppen der Bögen zu ermöglichen.

[0003] Eine gattungsgemäße Vorrichtung zum Ausbrechen von Abfällen aus Bögen ist in der DE OS 24 54 056 beschrieben. Die Bögen werden an einem Greiferwagen gehalten und mittels einer Kette intermittierend zwischen den Stationen verfahren. Die Ausbrechstation besteht dabei aus einem Oberteil und einem Unterteil, welche Auf- und Abwärtsbewegungen ausführen und an welchen Ausbrechwerkzeuge angeordnet sind. Das feste, dazwischenliegende Mittelteil besteht aus einer Platte. Um eine möglichst hohe Auslastung der Maschine zu erreichen, erfolgt das Zuführen der Bögen in die einzelnen Stationen mit hoher Geschwindigkeit. Die Bögen werden aus der Stanzstation kommend stark beschleunigt und in der Ausbrechstation abgebremst und lagegerecht positioniert. Das Positionieren des Greiferwagens erfolgt gegen einen mechanischen Anschlag. Bei den hohen Verzögerungen und dem Fahren gegen den mechanischen Anschlag kann sich der Bogen hinter dem Greiferwagen aufstauen und es kann zu einer unzureichenden Positionierung des Bogens in der Ausbrechstation kommen.

[0004] Aus der US 6,315,287 B1 ist ein Ausleger einer Bogen verarbeitenden Druckmaschine bekannt, bei der umlaufende Greifer die Bogen in einer Förderrichtung an eine Bogenbremse übergeben. Zur sicheren Übernahme der Bogen seitens der Bogenbremse sind an den seitlichen Rändern der Bogen verschiebbare Bogenführungen vorgesehen, welche die Bogen während der Übergabe an die Bogenbremse führen. Diese Bogenführungen können als Saugleisten ausgebildet sein.

[0005] Der Erfindung liegt die Aufgabe zugrunde, eine Ausbrechstation einer Bogenstanz- und -prägemaschine

in der Weise zu verbessern, dass der Bogen während des Zuführens in die Ausbrechstation gehalten wird, so dass ein Aufstauen des Bogens hinter dem Greiferwagen vermieden wird.

[0006] Diese Aufgabe wird mit den Merkmalen des kennzeichnenden Teils von Patentanspruch 1 gelöst. Durch die Anordnung von Saugöffnungen im Einlaufbereich der Bögen kann der Bogen unmittelbar während des Zuführens an die Ausbrechstation herangezogen werden. Das Vakuum an den Saugöffnungen zieht den Bogen an die Ausbrechplatte und verhindert somit ein Aufstauen des Bogens während des Verzögerens des Greiferwagens und beim Auftreffen auf den mechanischen Anschlag.

[0007] In den Zeichnungen ist eine bevorzugte Ausführungsform einer Ausbrecheinrichtung einer Bogenstanz- und -prägemaschine dargestellt.

[0008] Es zeigt

Figur 1 den prinzipiellen Aufbau einer Bogenstanz- und -prägemaschine,

Figur 2 die Seitenansicht auf eine Ausbrechstation einer Bogenstanz- und -prägemaschine,

Figur 3 die Draufsicht auf den Einlaufbereich einer Ausbrechplatte mit Ausbrechöffnungen,

Figur 4 den Schnitt durch eine Ausbrechplatte im Bereich einer Saugleiste.

[0009] In Figur 1 ist der prinzipielle Aufbau einer Bogenstanz- und -prägemaschine 1 zum Stanzen, Ausbrechen und Ablegen von Bögen aus Papier, Pappe und dergleichen dargestellt. Die Stanz- und Prägemaschine 1 besteht aus einer Stanzeinrichtung 2, einer Ausbrecheinrichtung 3 und einer Ablageeinrichtung 4, die von einem gemeinsamen Maschinengehäuse 5 getragen und umschlossen werden.

[0010] Die Bögen 6 werden von auf umlaufenden Ketten 7 befestigten Greiferstangen 8 an ihrer Vorderkante ergriffen und intermittierend durch die verschiedenen Stationen 2, 3 und 4 der Stanz- und Prägemaschine 1 hindurchgezogen.

[0011] Die Stanzstation 2 besteht aus einem Untertisch 9 und einem Obertisch 10. Der Untertisch 9 ist fest im Maschinengestell gelagert und mit einer Gegenplatte zum Stanzmesser versehen. Der Obertisch 10 ist vertikal hin- und herbewegbar gelagert.

[0012] Die Greiferstange 8 transportiert den Bogen 6 von der Stanz- und Prägestation 2 in die nachfolgende Ausbrechstation 3, die mit Ausbrechwerkzeugen ausgestattet ist. In der Ausbrechstation 3 werden mit Hilfe der Ausbrechwerkzeuge die nicht benötigten Abfallstücke aus dem Bogen 6 nach unten herausgestoßen, wodurch die Abfallstücke 11 in einen unter der Station eingeschobenen behälterartigen Wagen 12 fallen.

[0013] Von der Ausbrechstation 3 gelangt der Bogen

in die Ablagestation 4, wo der Bogen entweder nur einfach abgelegt wird, oder aber gleichzeitig eine Trennung der einzelnen Nutzen erfolgt. Die Ablagestation 4 kann auch eine Palette 13 enthalten, auf der die einzelnen Bögen in Form eines Stapels 14 aufgestapelt werden, so daß nach Erreichen einer bestimmten Stapelhöhe die Paletten mit den aufgestapelten Bögen 14 aus dem Bereich der Stanz- und Prägemaschine 1 weggefahren werden können.

[0014] Wie zu erkennen ist, tragen die Ketten 7 mehrere Greiferstangen 8, bspw. sind es hier 8, so daß mehrere Bögen 6 gleichzeitig in den verschiedenen Stationen 2, 3 und 4 bearbeitet werden können.

[0015] In Figur 2 ist eine bevorzugte Ausführungsform der Erfindung der Ausbrecheinrichtung 3 der Stanz- und Prägemaschine 1 näher dargestellt. Die Ausbrecheinrichtung 3 besteht aus einer Ausbrechplatte 15 und zwei mit Ausbrechwerkzeugen 17 versehenen vertikal hin- und her beweglichen Aufnahmerahmen 18 und 16. Der Bogen 6 wird über den Greiferwagen 8 und dieser wiederum über den Passeranschlag 19 in der Ausbrechstation 3 gehalten. Zum Ausbrechen des Abfalls sind in die Ausbrechplatte Ausbrechöffnungen 20 eingearbeitet.

[0016] Der Bogen 6 wird von der Stanzstation 2 kommend der Ausbrechstation 3 zugeführt. Im Einlaufbereich 21 sind in der Ausbrechplatte 15 Saugöffnungen 22 vorgesehen. An der Unterseite der Ausbrechplatte 15 sind umschaltbare pneumatische Einheiten 23 befestigt.

[0017] Die Bögen 6 werden mit hohen Taktfrequenzen und somit hohen Geschwindigkeiten der Ausbrechstation 3 zugeführt. Das Abbremsen des Greiferwagens 8 erfolgt ebenfalls mit einer hohen Verzögerung, so daß sich der Bogen 6 hinter dem Greiferwagen 8 aufstauen und gewölbt unter dem Ausbrechwerkzeug 17 zu liegen kommt, falls keine geeigneten Gegenmaßnahmen ergriffen werden. Durch den erfindungsgemäßen Einsatz der Saugöffnungen 22 wird nun der Bogen 6 während des Zuführens in die Ausbrechstation 3 an die Ausbrechplatte 15 herangezogen und an seiner Hinterseite abgebremst. Der Bogen 6 steht somit während des Zuführens unter einer ständigen Spannung und kann sich nicht aufstauen oder verwölben. Um die Bögen 6 beim Herausbewegen aus der Ausbrechstation 3 nicht unnötig festzuhalten, sind unterhalb der Saugöffnungen 22 umschaltbare pneumatische Einheiten 23 angeordnet. Die umschaltbaren pneumatischen Einheiten 23 sind in der Lage

1. einen Unterdruck zu erzeugen,
2. die Saugöffnungen 22 drucklos zu schalten und
3. einen Überdruck auf die Saugöffnungen 22 zu leiten.

[0018] Zum Herausbewegen der Bögen 6 kann nun der Unterdruck abgeschaltet und die Saugöffnungen 22 mit einem Überdruck versehen werden. Der Überdruck bedingt, daß die Bögen 6 von der Ausbrechplatte 15 gelöst werden. Insbesondere der Einsatz von antistatischer Druckluft hat sich als vorteilhaft herausgestellt.

[0019] Die Saugöffnungen 22 sind bevorzugt im Einlaufbereich 21 der Ausbrechstation angeordnet. Dies bietet den Vorteil, daß die Bögen 6 unmittelbar zu Beginn des Einführens in die Ausbrechstation 3 vom Unterdruck der Saugöffnungen 22 erfaßt werden können, so daß die Bögen 6 während der gesamten Zeit des Zuführens unter Spannung gehalten werden. In einer bevorzugten Ausführungsform der Erfindung werden zwei Reihen von Saugöffnungen 22 in Bogenlaufrichtung hintereinander in der Ausbrechplatte 15 angeordnet.

[0020] Die Figur 3 zeigt die Draufsicht auf den Einlaufbereich 21 einer Ausbrechplatte 15. Die Ausbrechplatte 15 ist mit Saugleisten 24 versehen. Die Saugleisten sind mit mehreren Saugöffnungen 22 versehen, die in diesem Fall mit drei Saugöffnungen 22 versehen sind, es können aber auch zwei oder mehr als drei Saugöffnungen 22 in den Saugleisten 24 enthalten sein. Zur Erzeugung eines größeren Halts und einer größeren Spannung auf die Bögen 6 sind in diesem bevorzugten Ausführungsbeispiel zwei Reihen von Saugleisten 24 in Bogenlaufrichtung hintereinander angeordnet. Die Saugleisten 24 sind über Druckleitungen 25 mit den pneumatischen Einheiten 23 verbunden, wie in Figur 4 dargestellt.

[0021] Die Figur 4 zeigt den Schnitt IV-IV aus Figur 3. Es ist ein Schnitt durch die Ausbrechplatte 15 im Einlaufbereich 21 dargestellt. Die Saugleisten 24 sind als Einsteckteile in die Ausbrechplatte 15 eingelassen. An der Unterseite der Ausbrechplatte 15 sind die Saugöffnungen 22 der Saugleisten 24 über eine Druckleitung 25 mit den umschaltbaren pneumatischen Einheiten 23 verbunden. Die pneumatische Einheit 23 ist wiederum über eine Druckleitung 25 mit einem Überdruck beaufschlagt. Über die pneumatische Einheit 23 kann die Saugöffnung 22 mit einem Unterdruck oder einem Überdruck versehen werden. Es ist ebenfalls möglich die Druckleitung 25 drucklos zu schalten, sollte aber die Ausbrecheinheit nicht zum Einsatz kommen, können die Saugöffnungen 22 drucklos geschaltet werden.

Patentansprüche

1. Bogenstanz- und -prägemaschine mit einer Vorrichtung zum Ausbrechen (3) von Abfällen aus einem gestanzten und geprägten Bogen (6), wobei die Vorrichtung (3) eine Ausbrechplatte (15) zur Auflage der Bögen (6) aufweist und mit an umlaufenden Ketten (7) befestigten Greiferwagen (8), die die Bögen (6) an ihrer Vorderkante ergreifen und dann intermittierend durch die Ausbrechstation (3) und weitere Stationen (2, 4) in der Maschine (1) hindurchziehen, **dadurch gekennzeichnet, dass** in der Ausbrechplatte (15) im Einlaufbereich (21) der Bögen (6) und vor den Ausbrechöffnungen (20) mindestens eine quer zur Bogenlaufrichtung verlaufende Reihe von Saugöffnungen (22) angeordnet ist, die von unten mit einem Unterdruck beaufschlagbar sind.

2. Bogenstanz- und -prägemaschine nach Anspruch 1, **dadurch gekennzeichnet, dass** zwei Reihen in Bogenlaufrichtung hintereinander, von Saugöffnungen (22) in der Ausbrechplatte (15) angeordnet sind.

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3. Bogenstanz- und -prägemaschine nach Anspruch 1, **dadurch gekennzeichnet, daß** quer zur Bogenlaufrichtung mindestens eine Saugleiste (24), vorzugsweise vier Saugleisten, mit jeweils mehreren Saugöffnungen (22) in der Ausbrechplatte (15) angeordnet ist, die mit einer Druckleitung (25) verbunden ist.

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4. Bogenstanz- und -prägemaschine nach Anspruch 3, **dadurch gekennzeichnet, daß** in Bogenlaufrichtung mindestens zwei Reihen von Saugleisten (24) in der Ausbrechplatte (15) angeordnet sind.

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5. Bogenstanz- und -prägemaschine nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, daß** an der Unterseite der Ausbrechplatte (15) im Bereich jeder Saugöffnung (22) oder Saugleiste (24) mindestens jeweils eine umschaltbare Einheit (23) zur Erzeugung eines Unterdrucks, zur Drucklosschaltung und zur Bereitstellung eines Überdrucks befestigt ist, die über eine Leitung (25) mit der Saugöffnung (22) oder Saugleiste (24) verbunden ist.

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Claims

1. Sheet punching and embossing machine including a device for stripping (3) waste out of a punched and embossed sheet (6), wherein the device (3) has a stripping plate (15) for supporting the sheets (6), and the machine including gripper carriages (8) fixed to revolving chains (7) and gripping the sheets (6) at their leading edges and intermittently drawing them through the stripping station (3) and further stations (2, 4) in the machine (1),

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characterized in

that at least one row of suction openings (22) extending perpendicular to the direction of sheet travel is arranged in the inlet region (21) of the sheets in the stripping plate (15) and upstream of the stripping openings (20), a vacuum being applicable to these suction openings (22) from below.

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2. Sheet punching and embossing machine according to claim 1,

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characterized in

that two rows of suction openings (22) are arranged in the stripping plate (15) behind one another in the direction of sheet travel.

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3. Sheet punching and embossing machine according to claim 1,

characterized in

that at least one suction bar (24), preferably four suction bars, each having several suction openings (22), is provided in the stripping plate (15), perpendicular to the direction of sheet travel, the suction bar (24) being connected to a pressure line (25).

4. Sheet punching and embossing machine according to claim 3,

characterized in

that at least two rows of suction bars (24) are arranged in the stripping plate (15) in the direction of sheet travel.

5. Sheet punching and embossing machine according to one of claims 1 to 4,

characterized in

that at least one respective switchable unit (23) for generating a vacuum, for depressurizing, and for providing a positive pressure, is provided on the underside of the stripping plate (15) in the region of each suction opening (22) or suction bar (24), the unit (23) being connected to the suction opening (22) or suction bar (24) via a line (25).

Revendications

1. Presse de découpage et de gaufrage de feuille comprenant un dispositif pour décortiquer (3) des déchets provenant d'une feuille (6) découpée et gaufrée, le dispositif (3) présentant une plaque de décortiquage (15) pour l'appui des feuilles (6) et avec des trains de pinces (8) fixées sur des chaînes (7) périphériques, qui saisissent les feuilles (6) sur leur bord avant et les font passer ensuite par intermittence à travers la station de décortiquage (3) et d'autres stations (2, 4) dans la machine (1), **caractérisée en ce que** dans la plaque de décortiquage (15) dans la zone d'entrée (21) des feuilles (6) et en amont des ouvertures de décortiquage (20) est disposée au moins une rangée, agencée transversalement au sens de passage de la feuille, d'orifices d'aspiration (22), qui peuvent être alimentés par en bas par une dépression.

2. Machine de découpage et de gaufrage de feuille selon la revendication 1, **caractérisée en ce que** deux rangées d'orifices d'aspiration (22) sont disposées dans le sens de passage de la feuille, l'une derrière l'autre, dans la plaque de décortiquage (15).

3. Presse de découpage et de gaufrage de feuille selon la revendication 1, **caractérisée en ce qu'**au moins une baguette d'aspiration (24), de préférence quatre baguettes d'aspiration, avec respectivement plusieurs orifices d'aspiration (22) sont disposées transversalement au sens de passage de la feuille dans

la plaque de décorticage (15), qui est reliée à une conduite sous pression (25).

4. Presse de découpage et de gaufrage de feuille selon la revendication 3, **caractérisée en ce qu'**au moins deux rangées de baguettes d'aspiration (24) sont disposées dans le sens de passage de la feuille dans la plaque de décorticage (15). 5
5. Presse de découpage et de gaufrage de feuille selon l'une quelconque des revendications 1 à 4, **caractérisée en ce que** sur le côté inférieur de la plaque de décorticage (15) dans la zone de chaque orifice d'aspiration (22) ou de chaque baguette d'aspiration (24) est fixée au moins respectivement une unité (23) réversible pour la génération d'une dépression, pour le circuit hors pression et pour la mise à disposition d'une surpression, qui est reliée par une conduite (25) à l'orifice d'aspiration (22) ou à la baguette d'aspiration (24). 10 15 20

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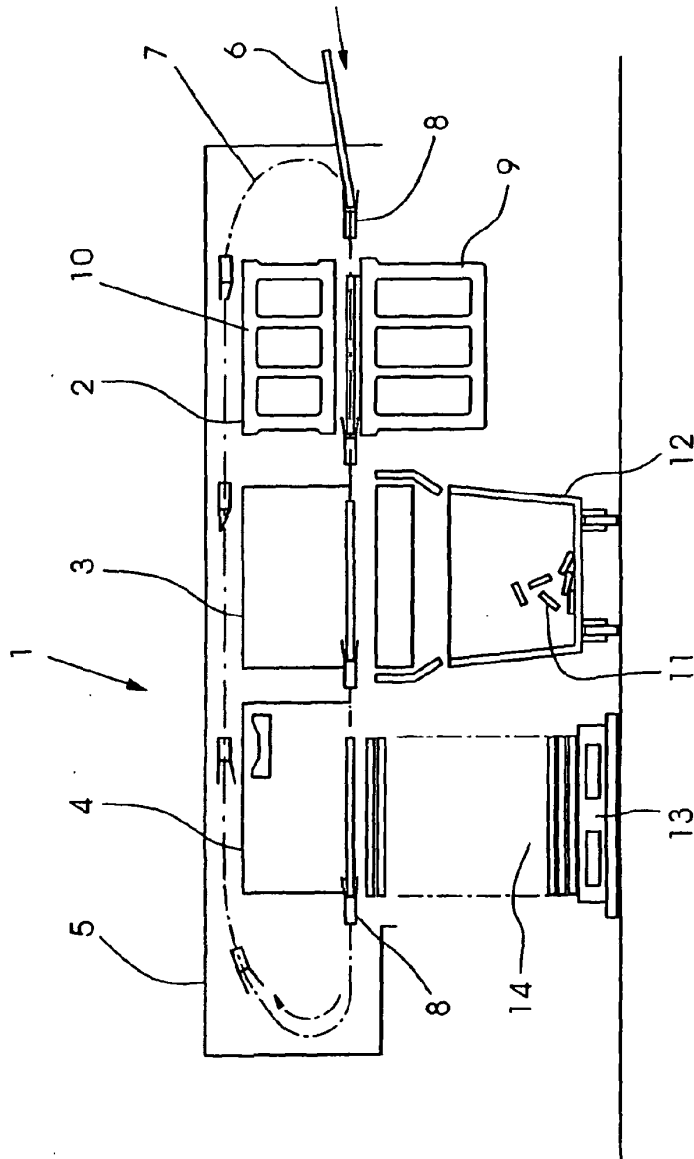


Fig. 1

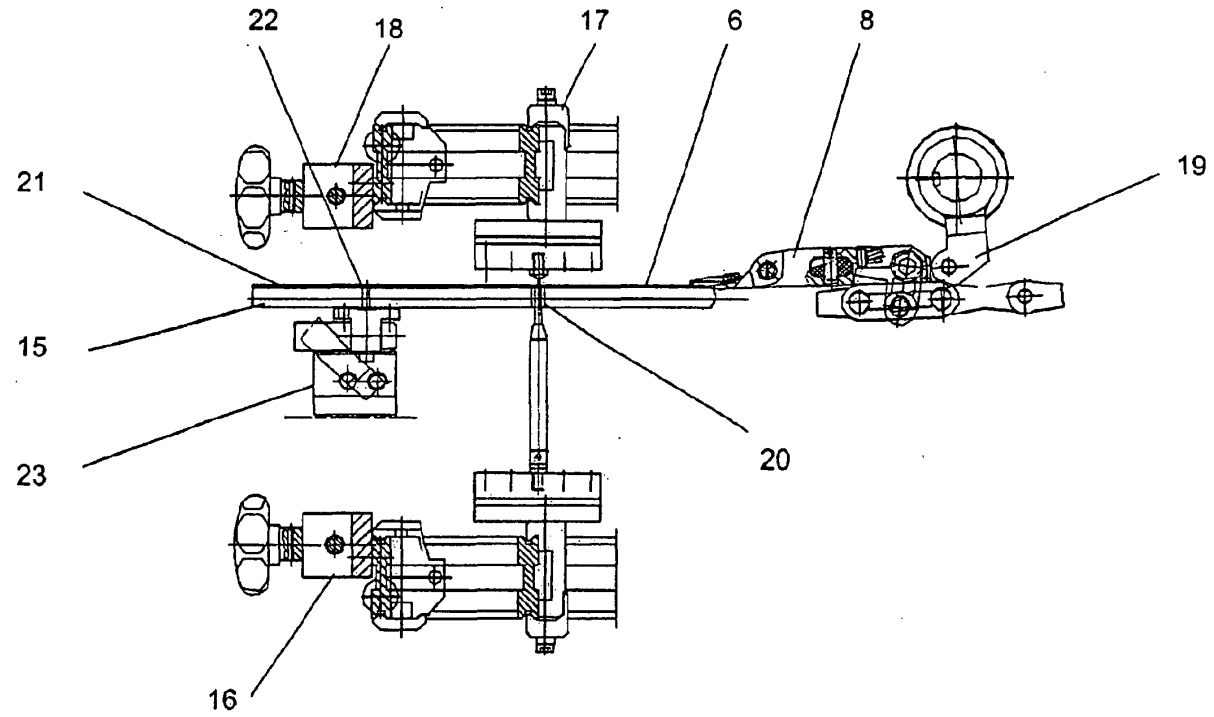


Fig.2

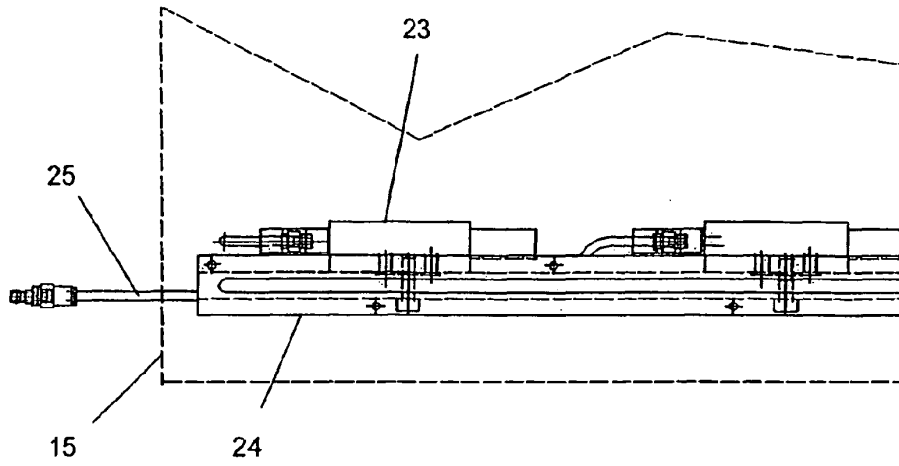


Fig.3

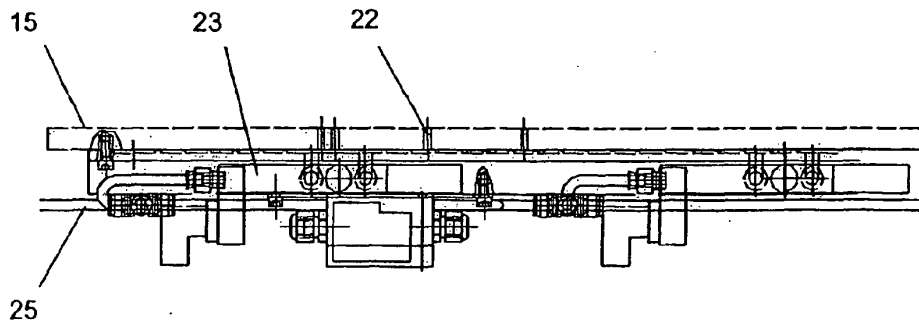


Fig.4

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	2,686	(B26D1/565 or B23D33/04 or B65H39/16 or B26D7/32 or B65H2403/7253 or B26D2210/02 or B65H2301/412845 or B65H2408/217 or B65H20/32 or B65H2408/215).cpc.	US-PGPUB; USPAT; EPO	OR	ON	2022/01/13 17:28
L3	989	(B26D2210/02).cpc.	US-PGPUB; USPAT; EPO	OR	ON	2022/01/13 17:41
S1	2,280	(B26D1/565 or B23D33/04 or B65H39/16 or B26D7/32 or B65H2403/7253 or B26D2210/02 or B65H2301/412845 or B65H2408/217 or B65H20/32 or B65H2408/215).cpc.	US-PGPUB; USPAT; EPO	OR	ON	2019/09/10 12:37
S2	0	(15/514944).APP.	USPAT; USOCR	OR	ON	2019/09/11 11:47
S3	13	(meat cheese food deli) with interleaver with (cutting slice slicer cutter)	USPAT; USOCR	OR	ON	2019/09/11 12:01
S4	1	(10/291,810).APP.	USPAT; USOCR	OR	ON	2019/09/11 12:36
S5	46	("1607552" "1762930" "1942438" "20030127204" "20040091585" "2142986" "2343065" "2637665" "3241968" "3525668" "3711314" "3985932" "4371553" "4375482" "4487657" "4919724" "5117717" "5160484" "5456800" "5695608" "5853542" "5858173" "5865953" "5876815" "5989696" "6263640" "6270577" "6740373" "6852198" "6919111").PN. OR ("7189308").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2019/09/11 12:36
S6	15	("3126683" "3388529").PN. OR ("3675387").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2019/09/11 12:42
S7	13	("3203037" "3481746" "3675387").PN. OR ("3772040").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2019/09/11 12:48
S8	7	pryor.in. and interleaver.ti.	US-PGPUB;	OR	ON	2019/09/11 12:57

			USPAT; USOCR			
S9	1	(13/214748).APP.	USPAT; USOCR	OR	ON	2019/09/11 12:58
S10	62	loop near form\$4 and (web sheet).clm. and (blower suction friction near3 surface) same (brake braking)	USPAT; USOCR	OR	ON	2019/09/11 13:03
S12	707	(B26D2210/02).cpc.	US- PGPUB; USPAT; EPO	OR	ON	2019/09/11 13:13
S13	23	S12 and interleaver	US- PGPUB; USPAT; EPO	OR	ON	2019/09/11 13:13
S14	0	(15/672640).APP.	USPAT; USOCR	OR	ON	2019/09/11 13:15
S15	53	loop near form\$4 and (web).clm. and (blower suction friction near3 surface) same (brake braking)	US- PGPUB; USPAT; USOCR	OR	ON	2019/09/11 16:00
S16	22	("1558156" "3584572" "4218026" "4253597" "4852382" "5448419" "5611272" "5718057" "5803392" "5813337" "5816155").PN. OR ("5979308").URPN.	US- PGPUB; USPAT; USOCR	OR	ON	2019/09/12 11:39
S17	21	loop with measure with (pressure) with (vacuum suction)	US- PGPUB; USPAT; EPO	OR	ON	2019/09/12 17:17
S18	1	"3848757".pn.	US- PGPUB; USPAT; EPO	OR	ON	2019/09/12 17:24
S19	1	("20020179767").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2019/09/12 17:24
S20	566	web with paper with splicing	US- PGPUB; USPAT; EPO	OR	ON	2019/09/17 14:24
S21	62	web with paper with splicing with continuous	US- PGPUB; USPAT; EPO	OR	ON	2019/09/17 14:24

S22	0	interleaver and web with splicing with continuous	US-PGPUB; USPAT; EPO	OR	ON	2019/09/19 06:27
S23	0	interleaver and web with splic\$	US-PGPUB; USPAT; EPO	OR	ON	2019/09/19 06:27
S24	87	interleaver and web with (connecting connector)	US-PGPUB; USPAT; EPO	OR	ON	2019/09/19 06:27
S25	2	web with (connecting connector) with automatic with (splice spliced splicing)	US-PGPUB; USPAT; EPO	OR	ON	2019/09/19 07:20
S26	3,040	(vacuum near4 braking) or (vacuum near surface with braking)	US-PGPUB; USPAT; FPRS; EPO	OR	ON	2022/01/13 11:44
S27	319	S26 and (sheet layer)	US-PGPUB; USPAT; FPRS; EPO	OR	ON	2022/01/13 11:45
S28	367	S26 and (sheet layer web)	US-PGPUB; USPAT; FPRS; EPO	OR	ON	2022/01/13 11:45
S29	1	(12/367602).APP.	USPAT; USOCR	OR	ON	2022/01/13 13:55
S30	15	("20040149097" "20070001385" "4247094" "4485708" "4830355" "4966521" "5060928" "5599012" "5611529" "5718176" "5992844" "6145833" "6494452" "6588582").PN. OR ("8079587").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2022/01/13 13:55
S31	28	(B65H2403/7253).cpc.	US-PGPUB; USPAT; EPO	OR	ON	2022/01/13 16:24

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	7	(B65H2403/7253).cpc.	US-PGPUB	OR	ON	2022/01/13 17:41

L4	570	(B26D2210/02).cpc.	US-PGPUB	OR	ON	2022/01/13 17:41
L5	327	(B26D7/32).cpc.	US-PGPUB	OR	ON	2022/01/13 17:42

1/13/2022 5:43:22 PM

C:\Users\smichalski\Documents\EAST\Workspaces\16844667.wsp

Bibliographic Data

Application No: 16/844,667

Foreign Priority claimed: ☒ Yes ☐ No

35 USC 119 (a-d) conditions met: ☒ Yes ☐ No ☐ Met After Allowance

Verified and Acknowledged: /SEAN M MICHALSKI/

Examiner's Signature

Initials

Title:

PROVIDING A CUTTING AREA WITH WEB-LIKE
INTERLEAVER MATERIAL

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
04/09/2020	083	3724	88737-5
RULE			

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CONTINUING DATA

This application is a CON of 16025612 07/02/2018 PAT 10647013

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GERMANY DE102017118934.3 08/18/2017

IF REQUIRED, FOREIGN LICENSE GRANTED**

04/16/2020

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/844,667	04/09/2020	Tobias Einloft-Velte	88737-5

CONFIRMATION NO. 5267

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PUBLICATION NOTICE



Title:PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL

Publication No.US-2020-0230838-A1

Publication Date:07/23/2020

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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.

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 16/844,667				
APPLICATION AS FILED - PART I										
(Column 1)		(Column 2)		SMALL ENTITY		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), (l), 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))	4	minus 3 = * 1			OR	x 460 =	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).						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	2180			
APPLICATION AS AMENDED - PART II										
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OTHER THAN SMALL ENTITY		
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	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))							OR		
	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)		SMALL ENTITY		OTHER THAN SMALL ENTITY		
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	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))							OR		
	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.										



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United States Patent and Trademark Office
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
16/844,667	04/09/2020	3654	2180	88737-5	20	4

CONFIRMATION NO. 5267

FILING RECEIPT



0000000118305649

59582
DICKINSON WRIGHT PLLC
2600 WEST BIG BEAVER ROAD
SUITE 300
TROY, MI 48084-3312

Date Mailed: 04/17/2020

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)

Tobias Einloft-Velte, Dautphetal, GERMANY;
Thomas Nispel, Dautphetal, GERMANY;
Noël Ritzen, Siegen, GERMANY;

Applicant(s)

Weber Maschinenbau GmbH Breidenbach, Breidenbach, GERMANY;

Power of Attorney: The patent practitioners associated with Customer Number 59582

Domestic Priority data as claimed by applicant

This application is a CON of 16/025,612 07/02/2018

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.)

GERMANY 102017118934.3 08/18/2017

GERMANY 102017114761.6 07/03/2017

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: 04/16/2020

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/844,667**

Projected Publication Date: 07/23/2020

Non-Publication Request: No

Early Publication Request: No
Title

PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL

Preliminary Class

242

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

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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 Assets Control, 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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United States Patent and Trademark Office

Office of the Chief Financial Officer

Document Code:WFEE

User :C46781

Sale Accounting Date:04/16/2020

Sale Item Reference Number

16844667

Effective Date

04/09/2020

Document Number

I20204F942133226

Fee Code

1201

Fee Code Description

INDEPENDENT CLAIMS IN
EXCESS OF 3

Amount Paid

\$460.00

Payment Method

Deposit Account

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA/82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	
Filing Date	Herewith
First Named Inventor	Tobias Einloft-Velte
Title	PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL
Art Unit	NYA
Examiner Name	NYA
Attorney Docket Number	88737-5 (W10685PUS2)

SIGNATURE of Applicant or Patent Practitioner

Signature	/Paul A. Rodriguez/	Date (Optional)	April 9, 2020
Name	Paul A.Rodriguez	Registration Number	63669
Title (if Applicant is a juristic entity)	Attorney for Applicant		
Applicant Name (if Applicant is a juristic entity)	Weber Maschinenbau GmbH Breidenbach		

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 2 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.**

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

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in the attached transmittal letter.

I hereby appoint the 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 in connection therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A or equivalent):

CUSTOMER NUMBER
59582

DICKINSON WRIGHT PLLC
2600 W. Big Beaver Rd., Suite 300
Troy, MI 48084
Phone (248) 433-7200

Please recognize or change the correspondence address for the application referenced in the attached transmittal letter to the address associated with the above-mentioned Customer Number.

I am the Applicant, being the Assignee or Person to Whom the Inventor is Under an Obligation to Assign.

Signature: _____

Date: 31.07.2019

Name: _____

Title: _____

Company: Weber Maschinenbau GmbH Breidenbach

weber®
Weber Maschinenbau GmbH Breidenbach
Günther-Weber-Straße 3
35236 Breidenbach
Telefon (064 65) 9 18 - 0
www.weber-meb.com

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL		
First Named Inventor/Applicant Name:		Tobias Einloft-Velte		
Filer:		Paul Anthony Rodriguez/Mary Aiello		
Attorney Docket Number:		88737-5 (W10685PUS2)		
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:	39109860
Application Number:	16844667
International Application Number:	
Confirmation Number:	5267
Title of Invention:	PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL
First Named Inventor/Applicant Name:	Tobias Einloft-Velte
Customer Number:	59582
Filer:	Paul Anthony Rodriguez/Mary Aiello
Filer Authorized By:	Paul Anthony Rodriguez
Attorney Docket Number:	88737-5 (W10685PUS2)
Receipt Date:	09-APR-2020
Filing Date:	
Time Stamp:	17:06:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$1720
RAM confirmation Number	E202049H07591862
Deposit Account	041061
Authorized User	Mary Aiello
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	Application Data Sheet	W10685PUS2_ADS_040920.pdf	1256172	no	9
			4be15a145563feb886dd345efac79cae4227b160		
Warnings:					
Information:					
2		W10685PUS2_Application_040920.pdf	216842	yes	39
			4ffe2a1a7383efebc2d31fb3459f25bc3f86f277		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Abstract		39	39	
	Claims		34	38	
	Specification		1	33	
Warnings:					
Information:					
3	Drawings-only black and white line drawings	W10685PUS2_Drawings_040920.pdf	852163	no	5
			0ec96219f60b1719d42d5c3d43e2f6824cdbc0d2		
Warnings:					
Information:					
4	Oath or Declaration filed	W10685PUS2_Declaration_040920.pdf	25557	no	2
			46535db0c3d2cb98bf1e5386c20b2705b6527ad3		
Warnings:					
Information:					
5	Power of Attorney	W10685PUS2_POA_filed_040920.pdf	1893648	no	2
			c3b5c300ef776f42a449acdc36662e0fe214e107		

Warnings:					
Information:					
6	Fee Worksheet (SB06)	fee-info.pdf	35278	no	2
			10b943d985ea77ab7ec03d73cf3e4164bb70fee		
Warnings:					
Information:					
Total Files Size (in bytes):				4279660	
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. <u>New Applications Under 35 U.S.C. 111</u> 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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <u>New International Application Filed with the USPTO as a Receiving Office</u> 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.					

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	88737-5
		Application Number	
Title of Invention	PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL		
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	
	Tobias		Einloft-Velte		
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service					
City	Dautphetal		Country of Residenceⁱ	DE	
Mailing Address of Inventor:					
Address 1	Im Ried 4a				
Address 2					
City	Dautphetal		State/Province		
Postal Code	35232		Countryⁱ	DE	
Inventor	2				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Thomas		Nispel		
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service					
City	Dautphetal		Country of Residenceⁱ	DE	
Mailing Address of Inventor:					
Address 1	Horchstrasse 8				
Address 2					
City	Dautphetal		State/Province		
Postal Code	35232		Countryⁱ	DE	
Inventor	3				Remove
Legal Name					

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	88737-5
		Application Number	
Title of Invention	PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL		

Prefix	Given Name	Middle Name	Family Name	Suffix
	Noel		Ritzen	
Residence Information (Select One) US Residency ☒ Non US Residency Active US Military Service				
City	Siegen		Country of Residence ⁱ	DE
Mailing Address of Inventor:				
Address 1	Goldener Spiegel 15			
Address 2				
City	Siegen		State/Province	
Postal Code	57074	Country ⁱ	DE	
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	59582
Email Address	Add Email Remove Email

Application Information:

Title of the Invention	PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL		
Attorney Docket Number	88737-5	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	5	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

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	88737-5
		Application Number	
Title of Invention	PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL		

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.

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.											
<table border="1"> <tr> <td>Please Select One:</td> <td>☒ Customer Number</td> <td>US Patent Practitioner</td> <td>☐ Limited Recognition (37 CFR 11.9)</td> </tr> <tr> <td>Customer Number</td> <td colspan="3">59582</td> </tr> </table>				Please Select One:	☒ Customer Number	US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)	Customer Number	59582		
Please Select One:	☒ Customer Number	US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)								
Customer Number	59582										

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	16025612	2018-07-02
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			Add

Foreign Priority Information:

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)¹ 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).

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	88737-5
		Application Number	
Title of Invention	PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL		

Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ^j (if applicable)	Remove
102017118934.3	DE	2017-08-18		
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ^j (if applicable)	Remove
102017114761.6	DE	2017-07-03		
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	88737-5
		Application Number	
Title of Invention	PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL		

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Abstract

The invention relates to an apparatus for a single-track or multitrack provision of web-like interleaved sheet material at a cutting region in which products supplied on one track or on multiple tracks are cut into slices and interleaved sheets are introduced which are cut off from the provided interleaved sheet material in the cutting region, having a material store; and having a removal device which is configured for a removal of a material web from the material store, wherein a loop store in which the material web forms a loop is provided for the material web.

Claims

What is claimed is:

1. An apparatus for a single-track or multitrack provision of web-like interleaved sheet material at a cutting region in which products supplied on one track or on multiple tracks are cut into slices and interleaved sheets are introduced which are cut off from the provided interleaved sheet material in the cutting region, the apparatus comprising:

a material store;

a removal device for a removal of a material web from the material store;

a loop store defining a space for the removed material web to form a loop, the loop store located between the material store and the cutting region, the loop store having a brake for the material web that actively increases the friction for the material web; and

wherein the loop store comprises a contact surface for at least one region of the material loop at the outgoing side of the loop, wherein the contact surface belongs to the brake for the material web.

2. The apparatus in accordance with claim 1, the apparatus further comprising at least one vacuum chamber, the at least one vacuum chamber having at least one opening located adjacent a path of the loop.

3. The apparatus in accordance with claim 2, the apparatus further comprising a device for determining a size of the loop formed in the loop store based on the detection of a pressure drop within the at least one vacuum chamber when the opening is at least partially covered by the loop.

4. The apparatus in accordance with claim 1, wherein at least a portion of the contact surface of the brake is air permeable, and wherein the material web is drawn onto the air permeable portion so as to actively increase the friction for the material web.

5. The apparatus in accordance with claim 4, wherein the air permeable portion of the contact surface bounds at least one vacuum chamber to which a suction device is connected or which belongs to a suction device.

6. The apparatus in accordance with claim 4, wherein the air permeable portion of the contact surface is convexly curved or has an arcuate contour.

7. The apparatus in accordance with claim 4, wherein the braking effect of the air permeable portion of the contact surface for the material web is settable and/or controllable by means of a suction device, by means of a blowing device or by means of an air circuit.

8. The apparatus in accordance with claim 1, wherein the web length entering the loop store per time unit is controllable by an internal or external control device in dependence on the loop size.

9. The apparatus in accordance with claim 8, wherein the removal device is controllable by the control device in dependence on the loop size.

10. The apparatus in accordance with claim 1, wherein the removal device is controllable such that the web length entering the loop store per time unit is continuously variable in dependence on the loop size.

11. The apparatus in accordance with claim 4, wherein the varying influence of the material loop on the suction device is provided as a measure for the loop size.

12. The apparatus in accordance with claim 1, wherein the result of a position determination of the material loop is provided as a measure for the loop size.

13. An apparatus for a single-track or multitrack provision of web-like interleaved sheet material at a cutting region in which products supplied on one track or on multiple tracks are cut into slices and interleaved sheets are introduced which are cut off from the provided interleaved sheet material in the cutting region, the apparatus comprising:

a material store;

a removal device for a removal of a material web from the material store;

a loop store defining a space for the removed material web to form a loop, the loop store located between the material store and the cutting region;

wherein the loop store comprises a suction device for the material loop which acts on the material loop at least in a region at the outgoing side;

wherein the loop store comprises a blowing device for the material loop which acts on the material loop; and.

wherein the suction device acts on an outer side of the material loop and the blowing device acts on an inner side of the material loop or vice versa.

14. The apparatus in accordance with claim 13, the apparatus further comprising a fan having a suction side belonging to the suction device and a pressure side belonging to the blowing device.

15. The apparatus in accordance with claim 13, wherein the suction device and the blowing device belong to a common air circuit.

16. The apparatus in accordance with claim 15, wherein the common air circuit is controllable by an internal or external control device in dependence on the loop size.

17. An apparatus for a single-track or multitrack slicing of food products having a product feed which supplies products to be sliced on one track or on multiple tracks to a cutting region in which a cutting blade moves in a rotating and/or revolving manner to cut the supplied products into slices, and having an apparatus for the provision of web-like interleaved sheet material at the cutting region in which the products supplied are cut into said slices and interleaved sheets are introduced which are cut off from the provided interleaved sheet material in the cutting region, said apparatus comprising:

a material store;

a removal device for a removal of a material web from the material store;

a loop store defining a space for the removed material web to form a loop, the loop store located between the material store and the cutting region, the loop store having a brake for the material web that actively increases the friction for the material web; and

wherein the loop store comprises a contact surface for at least one region of the material loop at the outgoing side of the loop, wherein the contact surface belongs to the brake for the material web.

18. The apparatus in accordance with claim 17, wherein a common control device is provided which is configured to coordinate the slicing of the products and the provision of the interleaved sheet material.

19. An apparatus for a single-track or multitrack slicing of food products having a product feed which supplies products to be sliced on one track or on multiple tracks to a cutting region in which a cutting blade moves in a rotating and/or revolving manner to cut the supplied products into slices, and having an apparatus for the provision of web-like interleaved sheet material at the cutting region in which the products supplied are cut into said slices and interleaved sheets are introduced which are cut off from the provided interleaved sheet material in the cutting region, said apparatus comprising:

a material store;

a removal device for a removal of a material web from the material store;

a loop store defining a space for the removed material web to form a loop, the loop store located between the material store and the cutting region;

wherein the loop store comprises a suction device for the material loop which acts on the material loop at least in a region at the outgoing side;

wherein the loop store comprises a blowing device for the material loop which acts on the material loop; and

wherein the suction device acts on an outer side of the material loop and the blowing device acts on an inner side of the material loop or vice versa.

20. The apparatus in accordance with claim 19, wherein a common control device is provided which is configured to coordinate the slicing of the products and the provision of the interleaved sheet material.

PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. Patent Application No. 16/025,612, filed July 2, 2018, which claims the priority of German Patent Application No. 102017118934.3, filed on August 18, 2017, and German Patent Application No. 102017114761.6, filed on July 3, 2017, each of which is incorporated herein by reference in their entirety.

BACKGROUND

[0002] The invention relates to an apparatus for a single-track or multitrack provision of web-like interleaved sheet material at a cutting region in which supplied products are cut into slices and interleaved sheets are introduced which are cut off from the provided interleaved sheet material in the cutting region.

SUMMARY

[0003] In the cutting region, slices cut off from the products can consequently be provided with the interleaved sheets introduced into the cutting region. In this respect, either interleaved sheets can e.g. be introduced between a respective two directly consecutive slices or interleaved sheets can be introduced beneath a respective slice and thus between this slice and a support surface of this slice. A respective interleaved sheet is then, for example, located beneath the lowest slice of a portion on the formation of portions from a plurality of slices. Such a function which is also called an underleaver function, however, does not preclude that, on the formation of portions, a respective interleaved sheet is not only disposed beneath the lowest slice, but one or more interleaved sheets are also introduced between a respective two consecutive slices within the portion. Independently of whether an underleaver function is provided or not, a respective interleaved sheet can generally be introduced within a portion either between each pair of directly consecutive

slices or only between one or more pairs of directly consecutive slices, e.g. between every n th pair, where $n > 1$.

[0004] Such apparatus are generally known in the field of the slicing of food products and are also called interleavers or underleavers. An interleaver can in this respect - as mentioned above - also perform an underleaver function and vice versa. The present disclosure therefore not only applies to the interleavers primarily explained here or to the provision of interleaved sheets or interleaved sheet material between a respective two directly consecutive slices, but also to so-called underleavers which serve to place a sheet beneath products. It is ensured by such an underleaved sheet feed that at least the total lower side of the products does not directly lie on a support surface, for example, on a conveying device. When only the term "interleaver" is used in each case in the following, the respective statements and the respective disclosure - where sensible - will also apply to an "underleaver". As already mentioned, one and the same apparatus for the provision of interleaved sheet material or of interleaved sheets can perform both an interleaver function and an underleaver function in dependence on the respective application, i.e. an interleaver is simultaneously also an underleaver, and vice versa, within the framework of this disclosure.

[0005] The invention also relates to an apparatus for slicing food products, having a product feed which supplies products to be sliced to a cutting region in which a cutting blade moves in a rotating and/or revolving manner to cut the supplied products into slices; and having an interleaver or underleaver in accordance with the invention.

[0006] Such cutting apparatus are also called slicers or high-speed slicers, the latter against the background that bar-like or loaf-like food products can e.g. be sliced by such machines at high cutting speeds of several hundred to some thousand slices per minute. In many applications, stacked or overlapping portions are, for example, formed from the cut-off slices falling onto a support surface e.g. formed by a portioning belt. An interleaver, for example, serves to introduce interleaved sheets between directly consecutive slices of a portion so that the slices can later be separated from one another more easily. Paper or a plastic film, for example, serves as the material for the interleaved sheets.

[0007] In accordance with the progress in the development of cutting machines, in particular with respect to speed, accuracy and variety, ever higher demands are also made on the interleavers or underleavers. Known interleaver or underleaver concepts which generally provide satisfactory results frequently no longer meet these increased demands.

[0008] There is consequently a need for an improved interleaver or underleaver technology in particular in the field of the slicing of food products by means of high-speed slicers. In particular the operation of interleavers and underleavers on multiple tracks and individually per track is more and more in the foreground.

DETAILED DESCRIPTION

[0009] It is a problem with the known interleavers or underleavers that the ejection of the material web into the cutting region is a highly dynamic process which is the more difficult to manage, the greater the cutting speed is. The required decoupling between this highly dynamic process, on the one hand, and the sluggish material store from which the material web is removed, on the other hand, therefore has to be able to provide a sufficiently large web length at all times so that it is ensured that the material web does not have to be removed from a sluggish material store, such as a material roll, at any point in time.

[0010] It is the object of the invention to improve an apparatus for the provision of web-like interleaved sheet material to the extent that the process of the ejection of the material web into the cutting region is also reliably decoupled from the process of the removal of the material web from the material store at comparatively high cutting speeds.

[0011] The object is satisfied by the features of the independent claims.

[0012] The apparatus in accordance with the invention is configured for a single-track or multitrack provision of web-like interleaved sheet material and comprises a material store as well as a removal device which is configured for a removal of a material web from the material store, wherein a loop store in which the material web forms a loop is provided for the material web.

[0013] The material loop so-to-say forms a non-sluggish, dynamic material store from which the web length respectively required in the cutting region can be removed practically without a delay. It is hereby advantageously avoided that strains occur in the material web on the acceleration of the material web.

[0014] In accordance with a preferred embodiment, the loop store comprises a brake for the material web. It is hereby ensured that the material web is tensioned at all times.

[0015] Provision can furthermore be made that the loop store comprises a suction device for the material loop. The material web can hereby be influenced in a simple and effective manner to ensure a desired web extent within the loop store.

[0016] The suction device can furthermore serve to exert a braking effect on the material web.

[0017] In accordance with a further embodiment, the loop store comprises a blowing device for the material loop. The extent of the material web in the loop store can likewise be directly influenced by a blowing device or a respective loop formation can thereby be assisted.

[0018] Provision is preferably made that the suction device acts on an outer side of the material loop and the blowing device acts on an inner side of the material loop. The action on the material web can also take place in reverse order in dependence on a respective desired extent of the material web in the loop store. Provision can furthermore be made that the material web forms more than one material loop in the loop store. A respective desired loop formation can be implemented or assisted by more than one suction device and/or by more than one blowing device.

[0019] A suction device and a blowing device can belong to a common air circuit. The influencing of the material web within the loop store can hereby be implemented in a particularly simple and effective manner.

[0020] The air circuit, in particular the strength and/or the direction of an air flow, can be settable and/or controllable by an internal or external control device in dependence on the loop size.

[0021] A fan is preferably provided whose suction side belongs to a suction device and whose pressure side belongs to a blowing device.

[0022] If the apparatus is of multitrack design, a fan be provided in accordance with an embodiment which acts individually per track and which can provide an individually settable suction effect and pressure effect for each of the material webs running in the individual tracks.

[0023] Provision can furthermore be made that the loop store comprises a contact surface for at least one region of the material loop at the outgoing side. The contact surface can guide the material web on its way out of the loop store.

[0024] Provision can furthermore be made that the contact surface belongs to a brake for the material web.

[0025] The contact surface is preferably air permeable, wherein the contact surface bounds at least one vacuum chamber to which a suction device is connected or which belongs to a suction device. The air permeable contact surface can e.g. simply be a perforated metal sheet.

[0026] If the apparatus is of multitrack design, the arrangement of the contact surface and the vacuum chamber can be of multitrack design in accordance with an embodiment. An individually settable braking effect can hereby in particular be set for each of the material webs running in the individual tracks.

[0027] In accordance with an embodiment, the contact surface is convexly curved, wherein the contact surface in particular has an arcuate contour.

[0028] A wrapping around of the contact surface by the material web results from such a formation of the contact surface. This is in particular advantageous when the contact surface acts as a brake for the material web in that the contact surface which is, for example,

provided with openings e.g. bounds a vacuum chamber. It is of advantage in this respect that the material web can at least approximately extend tangentially to the curved contact surface in the region of the transition toward the contact surface and/or in the region of the transition away from the contact surface. Such a web extent in the region of a contact surface active as a brake has been found to be particularly advantageous.

[0029] Provision can furthermore be made that a braking effect of the contact surface for the material web is settable and/or controllable by means of a suction device, by means of a blowing device or by means of an air circuit, preferably comprising a suction device and a blowing device, in particular via an air flow and/or via an air volume flow.

[0030] Provision can be made in accordance with a further embodiment to provide a secondary air apparatus, which is in particular settable, at the suction side - that is e.g. at the suction side of a fan or in a vacuum chamber. The braking effect of the contact surface can hereby be homogenized. It is possible to avoid too large a braking effect on the material web by using a secondary air apparatus which can be configured as a flap or as a membrane, for example. A relatively high braking effect can in particular occur without a secondary air apparatus when the loop of the material web is comparatively large such that a relatively large portion of the contact surface is covered by the material web and e.g. a relatively large number of openings formed in the contact surface are closed by the material web.

[0031] In accordance with an embodiment of the invention, a device is provided which is configured to determine a measure for the loop size, in particular for the lower position and/or upper position of the loop. The position of the apex or of a region of the loop comprising the apex can be defined as the position of the loop.

[0032] An internal or external control apparatus can furthermore be provided which is configured to control the web length entering the loop store per time unit in dependence on the loop size.

[0033] The removal device which serves to remove the material web from the material store can be controllable by the control device in dependence on the loop size.

[0034] The removal device can be controllable such that the removal of the material web is started on reaching a predefined minimal loop size and is ended on reaching a predefined maximum loop size. A regulation of comparatively simple design can hereby be implemented.

[0035] In accordance with a further embodiment, the removal device can be controllable such that the web length entering the loop store per time unit is continuously variable, in particular in a ramp-like manner, in dependence on the loop size.

[0036] The reaching of a predefined minimal loop size and/or the reaching of a predefined maximum loop size can be provided as a measure for the loop size. Such a concept can be implemented in a comparatively simple manner since only two extreme values have to be detected for the loop size. The minimal loop size can be defined by a predefined or predefinable upper position of the loop. The maximum loop size can be defined by a predefined or predefinable lower position of the loop.

[0037] Provision can be made in an embodiment that a speed of the material web entering the loop store is calculated, which speed is adapted to the respective operating situation and is accordingly changed on the occurrence of predefined conditions. The speed of the material web can thus e.g. be correspondingly increased or decreased on reaching a predefined minimal loop size and on reaching a predefined maximum loop size.

[0038] In accordance with a further embodiment, the varying influence of the material loop on a suction device can be provided as a measure for the loop size. A suction device which is anyway provided can in this respect additionally be used to influence the material web in order to obtain information on the current loop size. Openings formed in a contact surface disposed in the flow path of the suction device can, for example, result in changes in the pressure conditions and/or flow conditions which are to be detected and which occur when the loop size and consequently the number of openings closed by the material web change.

[0039] The result of a vacuum measurement in one or more vacuum chambers can preferably be provided as a measure for the loop size.

[0040] Alternatively or additionally, a local vacuum measurement can provide a measure for the loop size, in which vacuum measurement the pressure in the vacuum chamber or vacuum chambers does not need to be measured, but it is rather sufficient to measure the local pressure in a volume, in particular in a much smaller volume, e.g. in a region behind the contact surface. A plurality of such volumes that are arranged at different positions, which e.g. differ with respect to height and represent different loop sizes, can be provided for local pressure measurements.

[0041] The varying influence of the material loop on an air permeable contact surface can furthermore be provided as a measure for the loop size.

[0042] In particular if the apparatus is of multitrack design, a plurality of vacuum chambers or a vacuum chamber divided into a plurality of individual chambers can be provided, wherein the chambers are bounded by a contact surface for the material web or for the material webs. A differentiated, spatially resolved image of the cover of the support surface can be obtained by vacuum measurements which take place in the individual chambers. In particular in a multitrack operation, the loop sizes can hereby be determined individually per track when the chambers are arranged and/or aligned in a corresponding track-specific manner.

[0043] In accordance with a further embodiment of the invention, the result of a position determination of the material loop is provided as a measure for the loop size.

[0044] In general and independently of the specific measurement method, the loop size can be determined by determining the position of the loop in the loop store. For example, the position of the lower loop end, i.e. of the apex of the loop, is a measure for the loop size when a loop hangs in the loop store. If the loop increases in size and a sensor arranged in the loop store at a specific height, which e.g. corresponds to a predefined maximum loop size, detects the presence of the lower loop end at this height for the first time at a specific point in time, the loop has reached its predefined maximum size at this point in time. A plurality of sensors can be arranged at different heights. However, this is not compulsory. A sensor which is active at that height which corresponds to the predefined

maximum loop size is sufficient to recognize the reaching of the maximum loop size and e.g. to communicate it to a control.

[0045] The invention also relates to an apparatus and to a method for the single-track or multitrack provision of web-like interleaved sheet material at a cutting region in which products supplied on one track or on multiple tracks are cut into slices and interleaved sheets are introduced which are cut off from the provided interleaved sheet material in the cutting region, wherein at least one material web which forms a loop in a loop store is removed from at least one material store; wherein at least one sensor for detecting the loop, in particular the lower loop end, and means for moving the material web toward a contact surface are provided, at least one part of the sensor being integrated into said contact surface; and wherein the sensor is configured such that the loop is only detected when the material web contacts the contact surface in the region of the part of the sensor integrated into the contact surface.

[0046] The integration of the sensor or of a part of the sensor into the contact surface also comprises an arrangement of the sensor or of the sensor part in the region of the contact surface, i.e. in a plane which does not coincide with the plane defined by the contact surface. In other words, the sensor or the sensor part can, in particular slightly, project or be set back with respect to the contact surface.

[0047] This concept represents an independent subject of the present disclosure for which protection is also claimed independently.

[0048] The mentioned sensor part is in particular a part of the sensor which is sensitive in the widest sense with respect to the material web and which responds to the presence of the material web. Different measurement principles can be used in this respect.

[0049] The sensor or the sensor part integrated into the contact surface is preferably arranged such that the loop is only recognized when the loop has reached a predefined maximum loop size.

[0050] The contact surface can bound a vacuum chamber, for example, in such a manner as is described in another passage of the present disclosure. In accordance with a

possible measurement principle, the sensor can comprise a separate measurement space which is in particular relatively small in comparison with the vacuum chamber and to which a vacuum source, e.g. a vacuum pump, and a pressure measurement device are connected. A measurement opening can be provided in the contact surface as a part of the sensor which is integrated into the contact surface and it communicates with the measurement space of the sensor. The measurement opening can also be formed by the sensor itself. As soon as this opening is at least partly closed by the material web which is sucked in by means of the vacuum chamber and which is thereby moved toward the measurement opening, that is the material web contacts at least one part of the margin of the sensor bounding the opening or at least one part of the contact surface, the pressure within the measurement space acted on by the vacuum source drops. This change in pressure is detected by means of the measurement device and can be communicated to a control. The loop and in particular the reaching of a predefined maximum loop size to which the position of the measurement opening corresponds can be recognized in this manner.

[0051] Other positions of the loop, for example a predefined minimal loop size to which a sensor arranged at another position or its measurement opening corresponds, can alternatively or additionally also be recognized by a different position of the sensor or of the measurement opening or by further sensors.

[0052] An alternative measurement principle of a loop detector in accordance with a further embodiment of this aspect of the invention provides that the sensor or the mentioned sensor part responds to a contact with the material web. The sensor or the sensor part can e.g. be active capacitively, inductively, electromechanically and/or electrostatically. The sensor can in turn communicate the recognition of the loop to a control.

[0053] In a multitrack design, a loop detector can be provided for each material web, with the individual loop detectors being able to be operated independently of one another. A loop detection individually per track can hereby be implemented.

[0054] Independently of whether one or more such sensors or loop detectors are provided, the loop detector or the loop detectors is/are adjustable in the transverse direction to be able to be aligned with the respective track. The correct transverse position of a loop detector in particular depends on the width of the respective material web and on the number of tracks. The number of tracks of the interleaver or underleaver, and thus in the loop store, as well as the width of the material webs can vary in dependence on the respective application. Loop detectors adjustable in the transverse direction are therefore advantageous.

[0055] If a multitrack slicer is provided with an interleaver in accordance with the invention, a common control device is preferably provided which is configured to coordinate the slicing of the products and the provision of the interleaved sheet material individually per track.

[0056] The invention will be described in the following by way of example with reference to the drawing. There are shown:

BRIEF DESCRIPTION OF THE DRAWINGS

[0057] Fig. 1 schematically, a side view of a slicer with an interleaver in accordance with an embodiment of the invention and three individual representations shown schematically;

[0058] Figs. 2 – 4 schematically in each case, an embodiment of a feed unit of an interleaver; and

[0059] Figs. 5 and 6 schematically in each case, in a side view simplified with respect to Fig. 1, a slicer with an interleaver/underleaver in accordance with a further embodiment of the invention.

[0060] The large representation in Fig. 1 shows a multitrack high-speed slicer, that is an apparatus for a multitrack slicing of food products such as sausage, meat or cheese, in a schematic side view which is not to scale.

DETAILED DESCRIPTION

[0061] In the embodiment shown, the slicer is operated on four tracks. Four products 11 to be sliced are disposed next to one another on a product support 53 inclined to the horizontal. A product feed 49 comprises for each track, that is for each of the four products 11, a product holder 46, also called a product gripper, which holds the product 11 at the rear end and supplies it in the supply direction indicated by the arrow to a cutting plane 50 which extends perpendicular to the product support 53 and in which a cutting blade 51 moves by whose cutting edge the cutting plane 50 is defined.

[0062] The cutting blade 51 can be a so-called scythe-like blade or spiral blade which has a cutting edge extending in a scythe-like form or spiral form and which only rotates about a blade axis, not shown. Alternatively, the cutting blade 51 can be a so-called circular blade which has a circular cutting edge, which rotates about its own blade axis and which additionally revolves in a planetary motion about an axis extending offset in parallel from the blade axis in order to produce the cutting movement relative to the products 11 required to cut off slices 13 from the products 11.

[0063] The product feed 49 can be operated individually per track, i.e. the product holders 46 can generally move independently of one another in the supply direction and thus supply the individual products 11 to the cutting plane 50 at different speeds and with different speed profiles. This also applies if product support belts which are drivable individually per track are used instead of a passive product support 53 as the product feed 49 instead of the product holders 46 or in addition to the product holders 46. The slicing process can hereby be individually controlled in each track independently of the respective other tracks, in particular with the aim of an exact weight production of slices 13 or portions formed from a respective plurality of slices 13 while taking into account the individual product properties such as in particular weight distribution and cross-sectional profile.

[0064] It is also possible to stop the product holder 46 in a track or to move it against the supply direction in order temporarily not to cut off any slices 13 from the respective product 11 while the products 11 continue to be sliced in the other tracks. The product feed 49 on individual tracks can also take into account the cutting movement of

the cutting blade 51 which is characterized in that a respective slice 13 is indeed cut off from all the products 11 per cutting movement - that is per revolution or rotation of the cutting blade 51 - but this does not take place at the exact same time, the cut-off slices 13 of the products 11 rather falling onto the support surface, formed by a so-called portioning belt 55 here, consecutively in time due to the passage of the cutting blade 51 through the products 11 which requires a specific duration of time.

[0065] For many products 11, for example ham or some types of cheese, it is desired for the respective slices 13 which are disposed above one another and, for example, form a stack-like portion or an overlapping portion to be separate from one another so that they can later be individually removed more easily by a consumer from a package including the portion. In the field of high-speed slicers, this purpose is served by so-called interleavers, that is apparatus for the provision of web-like interleaved sheet material, by means of which it is possible to introduce interleaved sheets 15 between directly consecutive slices 13.

[0066] There are interleavers in different designs. In accordance with a widespread mode of operation, which is also provided for the interleaver in accordance with the invention shown here, the endless material webs 19 are ejected in the region of the cutting plane 50 coming from below in accordance with the clocking predefined by the cutting movement of the cutting blade 51. This takes place such that the front end of the respective material web 19 is disposed in front of the cut surface of the respective product 11 and, together with the slice 13 which is cut off next, is cut off from the material web 19 by means of the cutting blade 51 and thus forms an interleaved sheet 15. This interleaved sheet comes to lie on the portioning belt 55 or on the previously cut-off slice 13 and beneath that slice 13 with which the interleaved sheet 15 was previously cut off together.

[0067] The design and the mode of operation of such slicers and also the basic principle of an interleaver are sufficiently known to the skilled person so that it is not necessary to look at them in any more detail in the following.

[0068] The interleaver in accordance with the invention which is integrated into the slicer is of multitrack design and is configured to continuously provide the interleaved

sheet material on individual tracks. The design and the mode of operation of the interleaver will be explained in the following using the example of a four-track operation. The interleaver in accordance with the invention can, however, also be operated on one track, on two tracks or on three tracks by a comparatively simple conversion. The respective operating mode is, for example, dependent on the products to be sliced, on the conveying and sorting devices connected downstream and on the type of packaging or on the packaging machine. The interleaver in accordance with the invention is generally designed such that an operation with any desired number of tracks and consequently also with more than four tracks is possible.

[0069] For each of the four tracks S1, S2, S3 and S4, the provision of the interleaved sheet material comprises the removal of the material from a material store formed by a material roll 17, the storage of material in a loop store 61, the guidance of the material in a region between the loop store 61 and an output device 71, and the outputting of the material by means of the output device 71.

[0070] For each track, the removal of the material web 19 from the material roll 17 comprises the roll\ng off of the material web 19 by means of a roll-off drive 21 and the conveying of the material web 19 into the loop store 61 by means of a conveying device 23 common to all the tracks. The individual roll-off drives 21 and the common conveying device 23 form a removal device of the interleaver in accordance with the invention.

[0071] For each track, the storage of the material web 19 takes place by the formation of a material loop 20 in the loop store 61. The individual material webs 19 or loops 20 are laterally guided by dividing walls (not shown) in the loop store 61 to ensure the accuracy of the material webs 19 on the tracks.

[0072] In the embodiment shown, the total transport path for the material web 19 between the loop store 61 and the output device 71 is formed by a shaft 111 in which the individual material webs 19 are guided. Such a design is indeed possible in practice. However, further devices which will not be looked at in any more detail at this point are preferably provided between the loop store 61 and the output device 71 in addition to a purely guidance section such as is formed by the shaft 111 in Fig. 1.

[0073] The outputting of the individual material webs 19 respectively comprises the removal of the material web 19 from the loop store 61 and the ejection of the material web 19 into the cutting region, that is before the cut surface of the respective product 11, as explained above. The material web 19 is pulled from the loop store 61 on the removal. The material web 19 is in this respect simultaneously advanced into the cutting region and is thus ejected.

[0074] These individual regions of the interleaver in accordance with the invention, that is the removal device comprising the individual roll-off drives 21 and the common conveying device 23, the loop store 61 and the output device 71, will be described in more detail in the following. If not otherwise stated, the respective description of the function and design applies to each of the individual tracks.

[0075] The interplay of these individual functional units of the interleaver with one another and also the interplay of the interleaver with the functional units of the slicer, in particular - but not exclusively - with the cutting blade 51 and with the product feed 49, is controlled by a control device 39 which can be the central control device of the slicer and thus a control device which is external with respect to the interleaver. Alternatively, the interleaver can have an internal control device which cooperates with a control device of the slicer.

[0076] Furthermore, the interleaver can additionally receive external signals e.g. from a camera system which monitors the portions produced by means of the slicer or the portion formation from the cut-off slices.

[0077] The material rolls 17 of the individual tracks are rotatably supported about a common axis of rotation 33 defined by a common mandrel. Each material roll 17 comprises a roll core 113 at which the material web 19 is wound. The material rolls 17 are freely rotatable at the mandrel to the extent that the rotational drive for the material rolls 17 for the rolling off of the material webs 19 does not takes place via this common mandrel.

[0078] Instead, a separate roll-off drive 21 is provided for each material roll 17. Each roll-off drive 21 comprises a drive arm 27 pivotable about a pivot axis 28. Each drive

arm 27 comprises a support, not shown, to whose one end a drive roller 30 is attached and to whose other end a deflection roller 32 is attached. An endless belt 25 revolving around the drive roller 30 and the deflection roller 32 serves as a drive member for the material roll 17; it is configured as a friction belt and serves to cooperate in a force-transmitting manner with the wound material web 19 of the material roll 17 via the turn facing the material roll 17.

[0079] As is also shown in the schematic representation at the top right in Fig. 1, each drive roller 30 is rotationally fixedly connected to a drive shaft 31 which can be set into rotation by means of a drive motor M via a drive belt 24 in order to drive the friction belt 25 and to roll the material web 19 off from the material roll 17 in this manner.

[0080] Since the four tracks S1, S2, S3 and S4 of the interleaver extend in parallel and four material rolls 17 are thus also seated next to one another on the common mandrel, the four drive arms 27 are accordingly arranged offset from one another in the transverse direction. This is indicated in the schematic representation at the top right in Fig. 1 by the association of the tracks S1 to S4 with the individual drive rollers 30 of the drive arms 27.

[0081] The spatial arrangement of the drive arms 27 and the manner of the rotational drive for the drive rollers 30 are particularly advantageous. The axes of rotation 29 of the drive shafts 31 and thus of the drive rollers 30 each coincide with the pivot axis 28 of the respective drive arm 27. In this respect, a single common pivot axis 28 is not provided for all the drive arms 27. Instead, the drive arms 27 are combined pair-wise, wherein a common pivot axis is provided for each pair. Two drive arms 27 pivotable about an upper pivot axis 28 are in this respect associated with the tracks S1 and S3, whereas two drive arms 27 which are pivotable about a lower pivot axis 28 are associated with the tracks S2 and S4.

[0082] In the embodiment shown, all the drive arms 27 have the same length and the upper pivot axis 28 and the lower pivot axis 28 are disposed at a circular cylinder about the common axis of rotation 33 of the material rolls 17. Alternatively, the drive arms 27 can be of different lengths and the pivot axes 28 can be arranged in a different manner.

[0083] A respective coaxial shaft drive 35 or 37 is provided for both the upper pair of drive arms 27 and the lower pair of drive arms 27. The two drive motors M1 and M3 belong to the upper coaxial shaft drive 35, whereas the lower coaxial shaft drive 37 comprises the two drive motors M4 and M2. A motor M3 or M4 respectively is connected to an inner drive shaft 31 for the drive roller 30 which is disposed further away axially, whereas the respective other motor M1 or M2 is connected to a hollow shaft 31 which surrounds the inner drive shaft 31 and on which the more closely disposed drive roller 30 is seated.

[0084] As already mentioned, the drive motors M1 to M4 are not directly connected to the drive shafts 31, but rather via drive belts 24. This enables a displaced or an offset positioning of the motors and consequently an ideal use of the space available in the interleaver. Furthermore, the interleaver can hereby be designed comparatively narrow since the motors M1 to M4 respectively do not need to be positioned in the axial extension of the drive shafts 31.

[0085] A further advantage of this drive concept comprises all of the motors M1 to M4, including the drive belts 24, only being arranged at one side of the interleaver. This region is therefore more easily accessible via the other side of the interleaver. It is particularly advantageous that all the drive rollers 30, and thus the drive arms 27, can be plugged onto the respective drive shaft 31 and can be removed from it from the same side - namely starting from the "preferred" operating side. This not only facilitates cleaning and servicing, but also enables a simple and fast conversion, for example, when a slicer and interleaver operation should be converted to a different number of tracks.

[0086] These advantages also apply to the arrangement of the material rolls 17 which can all be plugged onto the common mandrel and can be removed from it from the same side - and indeed from the same side as the roll-off drives 21. It is therefore sufficient if the functional regions of the interleaver are only accessible from one side.

[0087] A pivot drive, not shown, is additionally provided for each drive arm 27. The pivot drive can, for example, comprise a piston-in-cylinder arrangement. The drive arms 27 can hereby each be pivoted into a passive state in which the friction belt 25 is out of frictional engagement with the material roll 71. This passive state can, for example, be a parked position into which the drive arms 27 are pivoted when new material rolls 17 are to be inserted.

[0088] The fact that in accordance with the invention the respective friction belt 25 of the roll-off drives 21 engages in a force-transmitting manner at the outer periphery of the material roll 17 to roll off the material web 19 has the advantage that the roll-off rate, i.e. the web length rolled off per time unit, is independent of the current diameter of the material roll 17 and thus of its degree of consumption. The above-mentioned pivot drives (not shown) can each pretension the drive arm 27 in the direction of the axis of rotation 33 of the material roll 17 with a predefined force or with a predefined torque such that the drive arm 27 is adjusted to track the diameter of the material roll 17, which decreases during operation, and the frictional engagement between the friction belt 25 and the wound material web 19 is always of the same magnitude.

[0089] A material roll 17 which is almost consumed and whose diameter is only a little larger than the diameter of the roll core 113 is shown by a dashed circle. An upper drive arm 27 and a lower drive arm 27 are shown by a dashed line to illustrate a state pivoted correspondingly far in the direction of the axis of rotation 33 of the material rolls 17.

[0090] The operation of the roll-off drives 21 depends on demands of the central control device 39. If less material or temporarily no material is required in a track, the roll-off rate of the respective track can be correspondingly changed by reducing the revolution speed of the friction belt 25 or by switching off the drive motor M. In a non-driving state with the drive motor M switched off, the frictional belt 25 of the respective drive arm 27 remains in frictional engagement with the wound material web 19; it is therefore not, for instance, pivoted out of engagement with the material roll 17 by means of the above-mentioned pivot drive (not shown). This has the advantage that the frictional belt 25 is

active as a brake for the material roll 17, whereby a further rotation of the material roll 17 caused by inertia is prevented.

[0091] The removal of the material webs 19 from the material rolls 17 not only comprises the rolling off by means of the above-explained roll-off drives 21, but also the conveying of the material webs 19 into the loop store 61. For this purpose, the removal device comprises a conveying device 23 which is additionally shown schematically at the top of Fig. 1 at its center.

[0092] The conveying device 23 comprises a conveying roller 47 for each track 81 to 84, said conveying roller forming a conveying gap for the respective material web 19 together with a counter-roller 48. All of the conveying rollers 47 are seated on a common drive shaft 45, that is they are only driven together, and indeed via a common drive motor 41 which sets the common drive shaft 45 of the conveying rollers 47 into rotation via a drive belt 42.

[0093] The operation of this conveying device 23 individually per track is achieved in that a slip clutch 43 which is arranged between the conveying roller 47 and the common drive shaft 31 is associated with each conveying roller 47. The slip clutches 43 are each magnetic clutches whose switching points can be set.

[0094] The conveying device 23 is operated via the control device 39 such that the material webs 19 are each always held under tension between the respective material roll 17 and the respective conveying roller 47. During operation, the common drive shaft 45 can rotate at a constant rotational speed which is coordinated with an expected operation of the interleaver for the respective cutting program of the slicer. If the roll-off drive 21 is stopped in a track or if the roll-off rate is reduced in a track, an active intervention in the operation of the conveying device 23 is not required since a roll-off rate in a track that falls below the conveying rate of the conveying device 23 is taken up by the clutch 43 of this track without the respective material web 19 being excessively strained or even tearing.

[0095] An advantage of this concept comprises the conveying device 23 only requiring a single drive comprising a drive motor 41 and a drive belt 42 and only requiring

a single common drive shaft 45 for all the tracks S1 to S4 and no design or technical control measures being necessary to implement an active operation of the conveying device 23 individually per track.

[0096] If the clutch 43 is not currently active in one of the tracks and temporarily no material is thus conveyed into the loop store 61 in this track, the conveying rate of the conveying device 23 determines the web length entering the loop store 61 per time unit in each track. Since the operation of the individual roll-off drives 21 which is controlled via the control device 39 ultimately decides whether and how much material is rolled off from the respective material roll 17 per time unit in the individual tracks, the individual conveying rates into the loop store 61 are ultimately determined by the individual roll-off rates.

[0097] The track-specific material requirement in the cutting region is determined by the control device 39 and is ensured by a corresponding track-specific control of the roll-off drives 21. The loop store 61 ensures a decoupling in each track between the sluggish material roll 17, on the one hand, and the highly dynamic output device 71, on the other hand, which, in the cycle of the cutting blade 51, has to output a web length corresponding to the length of the respective required interleaved sheet 15, in each case on short notice. Such a highly dynamic cyclic ejection of relatively long material sections would be incompatible with a pulling off of the material web 19 directly from the material roll 17.

[0098] The control device 39 therefore ensures that a web length which is sufficiently large for a disruption-free output operation of the output device 71 is available in the loop store 61 in each track at all times in that a material loop 20 which is always sufficiently large is provided in the loop store 61.

[0099] The formation and maintenance of these material loops 20 in the individual tracks is achieved by a sufficiently large "replenishment" by means of the removal device, that is by means of the roll-off drives 21 and the conveying device 23, on the one hand, and by an air circuit comprising a combined suction and blowing device 63, 65, on the other hand.

[0100] The suction side of a fan 64 belonging to this combined suction and blowing device 63, 65 is connected via a suction line 66 to a vacuum housing 68 in which a plurality of vacuum chambers 69 are formed which are separate from one another in a technical flow aspect within the housing 68. The pressure in each vacuum chamber 69 can be measured by means of sensors, not shown, and can be provided to the control device 39.

[0101] The housing 68 is bounded toward a loop region of the loop store 61 by a curved contact surface 67 in which openings are formed via which air can move from the loop region into the individual vacuum chambers 69, such as is indicated by the small arrows. The vacuum chambers 69 are each connected to the suction line 66 and thus to the suction side of the fan 64 whose pressure side is directed into the loop region, such as is indicated by the arrow in Fig. 1.

[0102] This air circuit has the effect that a designated material loop 20 is always formed and that the material web 19 contacts the contact surface 67 of the vacuum housing 68 in the designated manner. Since the material web 19 is sucked toward the contact surface 67 due to the vacuum present in the vacuum chambers 69, the contact surface 67 simultaneously serves as a brake for the material webs 19. The material webs 19 are hereby always held under a light tension, whereby the material webs 19 are prevented from compressing when the output device 71 which works in the cutting cycle pulls the material webs 19 out of the loop store 61 in a highly dynamic manner. The braking effect of the contact surface 67 or of the vacuum chambers 69 is in this respect set such that this highly dynamic removal process is not impaired.

[0103] The control device 39 can recognize by means of the mentioned pressure sensors in the vacuum chambers 69 which vacuum chamber 69 is covered by the material web 19 and which is not. A measure for the current size of the material loop 20 in the loop region of the loop store 61 can be derived from this information in a simple manner with sufficient accuracy. The material web 19 drawn as a dashed line is shown with a maximum loop size in Fig. 1. The extent of the material web 19 with a minimal loop size, in which only the uppermost vacuum chamber 69 is partly covered by the material web 19, is indicated by a dotted line.

[0104] The control 39 can activate or deactivate the individual roll-off drives 21 individually per track in accordance with the individual loop sizes determined in this manner or it can change the individual roll-off rates by a corresponding control of the motors M1 to M4 to ensure that a sufficiently large material loop 20 is present for each track at all times to maintain the above-explained decoupling between the respective track of the output device 71 and the associated material roll 17.

[0105] The output device 71 is likewise configured for an operation individually per track.

[0106] For this purpose, a feed unit 73 comprises a feed roll 74 for each of the tracks S1 to S4, as will be explained in more detail in the following with reference to two possible embodiments in accordance with Figs. 2 and 3. The feed rolls 74 have a common axis of rotation 99, wherein a separate drive motor A1, A2, A3 or A4 is provided for each feed roll 74 and cooperates via a drive belt 78 with a drive shaft 83 (cf. Fig. 2) to which the respective feed roll 74 is rotationally fixedly connected.

[0107] As Fig. 2 shows, the two feed rolls 74 for the tracks S1 and S2 are driven via a right coaxial shaft drive 79, whereas a left coaxial shaft drive 81 drives the two feed rolls 74 of the other two tracks S3 and S4. The respective inwardly disposed feed roll 74 is driven via an inwardly disposed drive shaft 83, whereas the respective outwardly disposed feed roll 74 is driven via a hollow shaft 83 surrounding the inwardly disposed drive shaft 83.

[0108] In this manner, a drive individually per track of four feed rolls 74 arranged next to one another at a common axis of rotation 99 can be implemented for the feed unit 73 of the output device 71.

[0109] An alternative design for a four-track drive comprising four individually drivable feed rolls 74 is schematically shown in Fig. 3. Two axes of rotation 91 which extend in parallel are provided here, wherein a respective two two-track units 95 are arranged next to one another at each of the two axes 91. Each two-track unit 95 comprises a feed roll 74 and a pressing roller 76 which are rotationally fixedly connected to one

another and which can, for example, be formed in one piece with one another. Each feed roll 74 cooperates directly with a respective material web 19, whereas the co-rotating pressing roller 76 is provided with a freewheeling function with respect to the material web 19 in its track. The freewheeling function is implemented in that the pressing roller 76 supports a freely rotatable pressing sleeve 98 for the material web 19 via a rolling element bearing 97.

[0110] A feed roll 74 at the one axis 91 and a pressing unit comprising the pressing roller 76 and the pressing sleeve 98 at the other axis 91 therefore form a pair 98 for each of the tracks S1 to S4, said pair forming a feed gap for the respective material web 19.

[0111] Each two-track unit 95 can, for example, be rotated about the respective axis 91 via a drive belt, not shown, by means of an associated drive motor (not shown), wherein the two axes 91 are driven with an opposite rotational sense. Adjacent two-track units 95 at a common axis 91 are rotatable relative to one another. For this purpose, a respective axial extension of a pressing roller 76 engages into an end-face depression of the adjacent feed roll 74 at which the extension of the pressing roller 76 is supported in the radial direction by a rolling element bearing 96.

[0112] Due to this arrangement, a feed individually per track for four tracks S1 to S4 disposed next to one another is implemented as a particularly compact unit into which the counter-units or pressing units 76, 98 associated with the individual feed rolls 74 are integrated. A division into a feed unit, on the one hand, and into a counter-unit, on the other hand, as in the embodiment in accordance with Figs. 1 and 2, is consequently not provided here.

[0113] As Fig. 1 shows, in the embodiment shown here, a counter-unit 75 is provided in addition to the feed unit 73 comprising the four feed rolls 74 which can be driven individually per track. The counter-unit 75 can have at least one associated pressing roller 76 for each feed roll 74, which pressing roller is supported in an elastic or a resilient manner such as is indicated schematically in Fig. 1 by the suspension 77 and is indicated schematically in Fig. 4 by a piston-in-cylinder arrangement 109 configured as a suspension.

[0114] Alternatively, the counter-unit 75 can have a plurality of counter-elements arranged distributed along an axis extending in parallel with the axis of rotation 99 of the feed rolls 74, in particular counter-elements in the form of individually resiliently supported pressing rolls or pressing rollers each having a diameter which is small with respect to the feed rolls 74. These counter-elements which are not driven form a feed gap for one of the material webs 19 with each of the feed rolls 74. Such counter-units or pressing units for output devices of interleavers are generally known so that it is not necessary to look at them in more detail.

[0115] As the representation at the bottom left in Fig. 1 shows schematically, it is a special feature of the output device 71 that the feed unit 73 and the counter-unit 75 are attached to a stationary mount 70, fastened to a machine frame 115 of the slicer, together with a cutting edge 85 which is also called cutting glasses, a molded tray or a counter-blade.

[0116] The mount 70 and the components counter-unit 75, feed unit 73 and cutting edge 85 are configured corresponding to one another such that these components can only be mounted at the mount 70, without tools, in a single order.

[0117] In this respect, the counter-unit 75 is first arranged at the mount 70. The counter-unit 75 is fixed and secured in its desired position by a subsequent attachment of the feed unit 73. The attachment of the feed unit 73 requires a combined turn-pivot movement into an end position which - as indicated by the arrow in the large representation of Fig. 1 - has the consequence that, on the attachment of the feed unit 73, all the drive belts 78 of the drive motors A1 to A4 are simultaneously tensioned which were previously, in the relaxed state, placed around the drive shafts 83 of the feed rolls 74 projecting at both sides. Accordingly, the drive belts 78 are automatically relaxed on the removal of the feed unit 73.

[0118] Finally, the cutting edge 85 is attached to the mount 70. The cutting edge 85 in turn positions and secures the feed unit 73 in its desired position. A clamping device 117 comprising two clamping pins 117 which are pneumatically adjustable relative to the mount 70 - as indicated by the two double arrows - positions and subsequently secures the

cutting edge 85 and thus all three components counter-unit 75, feed unit 73 and cutting edge 85 at the mount 70.

[0119] The mount 70 can furthermore serve for the attachment of further devices. Thus it may e.g. be necessary in practice to set the so-called cutting gap between the cutting blade 51 and the cutting edge 85 to a specific value. In this connection, sensors such as vibration sensors can be used which can be attached to the mount 70 or integrated into the mount 70.

[0120] A simple and reliable assembly and dismantling of the three named components without tools is implemented in this manner.

[0121] A query can additionally take place by the control device 39 by means of the clamping pins 117 and it can be recognized whether a cutting edge 85 is present at all and whether - in dependence on the respective set cutting program - the correct cutting edge 85 has been mounted. When a cutting edge 85 is missing, the clamping pins 117, for example, extend further than when the correct cutting edge 85 is present - this incorrect positioning of the clamping pins 117 can be recognized by the control device 39.

[0122] As already explained above, the ejection of the material web 19 by means of the output device 71 takes place such that the front end of the material web 19 is disposed in front of the cut surface of the respective product 11 so that it can be cut off from the material web 19 by means of the cutting blade 51 together with the slice 13 to be cut off next and can thus form an interleaved sheet 15.

[0123] To influence the front end of the material web 19 in this sense, a vacuum is generated by means of an air flow in the region between the material web 19 and the cut surface of the product 11 and has the effect that the front end of the material web 19 is placed against the cut surface. This concept is generally known. The air flow can e.g. be generated in that compressed air is ejected via a gap extending transversely to the material web 19 or via a plurality of openings arranged distributed in the transverse direction.

[0124] As Fig. 4 shows, in accordance with the invention, an individually variable air flow 87 is generated for each of the tracks S1 to S4 via the feed unit 73 such that the

free ends of the individual material webs 19 can be influenced individually per track. The individual air flows 87 can be varied individually per track in a time regard and with respect to their strength.

[0125] This is achieved in that, for each track S1 to S4, a plurality of outlet openings are arranged distributed transversely to the respective material web 19 in the front region of the feed unit 73 above the outlet gap for the individual material webs 19 which is formed by the feed unit 73 and by the counter-unit 75.

[0126] Each outlet opening belongs to an outlet passage 101 formed in the feed unit 73, with all the outlet passages 101 starting from a common distributor space 103 which is in communication with a compressed air source, not shown, via an inlet passage 105 and via a supply line 107. Each supply line 107 is provided with a controllable valve 108. The valves 108 can be controlled individually per track via an adjustment device 89.

[0127] The time behavior and the strength of the respective air flow 87 can hereby be varied for each of the tracks S1 to S4 independently of the respective other tracks.

[0128] The rail 72 also shown in Fig. 4 is a replaceable wear part which preferably comprises plastic and which serves as a cutting edge which cooperates with the cutting blade 51 on the cutting through of the individual material webs 19.

[0129] The interleaver can be configured to automatically connect consecutive material webs 19 to one another in each of the individual tracks S1 to S4. In Fig. 1, possible positions are schematically shown at which a connection device V integrated into the interleaver can be arranged.

[0130] A change device which is configured to automatically replace a respective used material roll 17 with a material roll 17 to be used is not shown in Fig. 1. The change device can be arranged outside the interleaver or can at least partly be integrated into the interleaver. A separate change device can be provided for each of the tracks S1 to S4. Alternatively, a plurality of tracks or all the tracks can have a common change device.

[0131] A multitrack design of the interleaver can also be implemented in that a common rotatably supported material roll 17 is provided for a plurality of tracks S, with a device T for dividing the material web 19 into a plurality of individual material webs 19 being provided for the material web 19 of this common material roll 17. A possible position at which such a division device T integrated into the interleaver can be arranged is schematically indicated in Fig. 1. Only one roll-off drive 21 is then provided for these tracks S, i.e. for the respective material roll 17.

[0132] In this respect, it is e.g. possible that a four-track interleaver is implemented in that two material rolls 17 are provided with which a roll-off drive 21 and a division device T are respectively associated, i.e. from whose material web 19 a respective two individual material webs 19 arise such that four individual material webs 19 move to the devices arranged downstream of the division devices T, such as in the case that a separate material roll 17, and no division device T, is provided for each track S.

[0133] Different combinations are conceivable. For example, in a four-track interleaver, a respective separate material roll can e.g. be provided for two tracks and a common material roll and a division device can be provided for two further tracks.

[0134] A handling of the individual material webs 19 individually per track in a continuous manner is consequently possible in the interleaver in accordance with the invention such that the interleaver can be operated by means of the control device 39 in dependence on the cutting process in such a manner that the interleaver operation on individual tracks can be perfectly coordinated with the cutting operation on individual tracks.

[0135] It must also be mentioned for reasons of completeness that an interleaver configured on one track or temporarily operated on one track can have a roll-off drive, such as is respectively described above for one of the tracks S1 to S4.

[0136] With the exception of the differences described below, the embodiments shown in Figs. 5 and 6 each correspond to the embodiment of Fig. 1. Mutually

corresponding components for which the same reference numerals are used are therefore not explained in more detail. In this respect, reference is made to the statements on Fig. 1 and - where applicable - also to the statements on Figs. 2, 3 and 4.

[0137] Figs. 5 and 6 each show a possibility of detecting the reaching of a predefined maximum loop size in the loop store 61, and indeed in each case by means of a sensor 159, also called a loop detector, provided for the respective track. Such a sensor 159 is provided for each track. The sensors 159 are e.g. arranged next to one another in the transverse direction Q and can be adjustable in the transverse direction, in particular for track alignment.

[0138] Reference is additionally made to the corresponding statements in the introductory part on this loop detection or loop size determination.

[0139] In accordance with Fig. 5, the sensor 159 comprises a measurement space which is open toward the contact surface 67 of the vacuum chamber 69 and for this purpose, for example, has a measurement opening which can alternatively be formed by one of the openings formed in the contact surface 67. A vacuum source 157, e.g. in the form of a vacuum pump, and a measurement device configured as a manometer 161 are connected to the measurement space. The manometer 161 communicates with the control 39.

[0140] If the loop 20 reaches a specific size in the loop store 61, the measurement opening of the sensor 159 which is in this respect active as the sensitive part of the sensor 159 is at least partly closed in accordance with Fig. 5 and the sensitive part of the sensor 159 which e.g. works capacitively is contacted in accordance with Fig. 6, and indeed by the respective material web 19 which is sucked toward the contact surface 67 and which forms the loop 20.

[0141] In accordance with Fig. 5, the pressure is then reduced in the measurement space such that this pressure difference or the detection of the pressure difference can be communicated to the control 39. In accordance with Fig. 6, the sensor 159 likewise communicates the response of the sensitive part of the sensor 159 with respect to the material web 19 to the control 39.

[0142] The manometer 161 and/or the vacuum source 157 can also be integrated into the sensor 159 in the embodiment in accordance with Fig. 6.

[0143] In Fig. 5 and Fig. 6, a drive motor 151 for the cutting blade 51 and a deflection roller 153 arranged downstream of the loop store 161 are respectively shown for each of the material webs 19.

Reference numeral list

[0144]	11	product
[0145]	13	slice
[0146]	15	interleaved sheet
[0147]	17	material roll
[0148]	19	material web
[0149]	20	loop
[0150]	21	roll-off drive
[0151]	23	conveying device
[0152]	24	drive belt
[0153]	25	friction belt, drive member
[0154]	27	drive arm
[0155]	28	pivot axis
[0156]	29	axis of rotation of the drive shafts
[0157]	30	drive roller
[0158]	31	drive shaft

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[0159]	32	deflection roller
[0160]	33	axis of rotation of the material rolls
[0161]	35	upper coaxial shaft drive
[0162]	37	lower coaxial shaft drive
[0163]	39	control device
[0164]	41	drive of the conveying device
[0165]	42	drive belt
[0166]	43	clutch
[0167]	45	drive shaft
[0168]	46	product holder
[0169]	47	conveying roller
[0170]	48	counter-roller
[0171]	49	product feed
[0172]	50	cutting plane
[0173]	51	cutting blade
[0174]	53	product support
[0175]	55	portioning belt
[0176]	61	loop store
[0177]	63	suction device, brake
[0178]	64	fan

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[0179]	65	blowing device
[0180]	66	suction line
[0181]	67	contact surface
[0182]	68	housing
[0183]	69	vacuum chamber
[0184]	70	mount
[0185]	71	output device
[0186]	72	rail
[0187]	73	feed unit
[0188]	74	feed roll
[0189]	75	counter-unit
[0190]	76	pressing roller
[0191]	77	suspension
[0192]	78	drive belt
[0193]	79	right coaxial shaft drive
[0194]	81	left coaxial shaft drive
[0195]	83	drive shaft
[0196]	85	cutting edge
[0197]	87	compressed air flow
[0198]	89	adjustment device

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[0199]	91	common axis
[0200]	93	pair
[0201]	95	two-track unit
[0202]	96	rolling element bearing
[0203]	97	rolling element bearing
[0204]	98	pressing sleeve
[0205]	99	common axis of rotation
[0206]	101	outlet passage
[0207]	103	distributor space
[0208]	105	inlet passage
[0209]	107	supply line
[0210]	108	valve
[0211]	109	piston-in-cylinder arrangement
[0212]	111	shaft
[0213]	113	roll core
[0214]	115	machine frame
[0215]	117	clamping pin
[0216]	151	drive motor for the cutting blade
[0217]	153	deflection roller
[0218]	155	pivot drive

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[0219]	157	vacuum source
[0220]	159	sensor
[0221]	161	measurement device

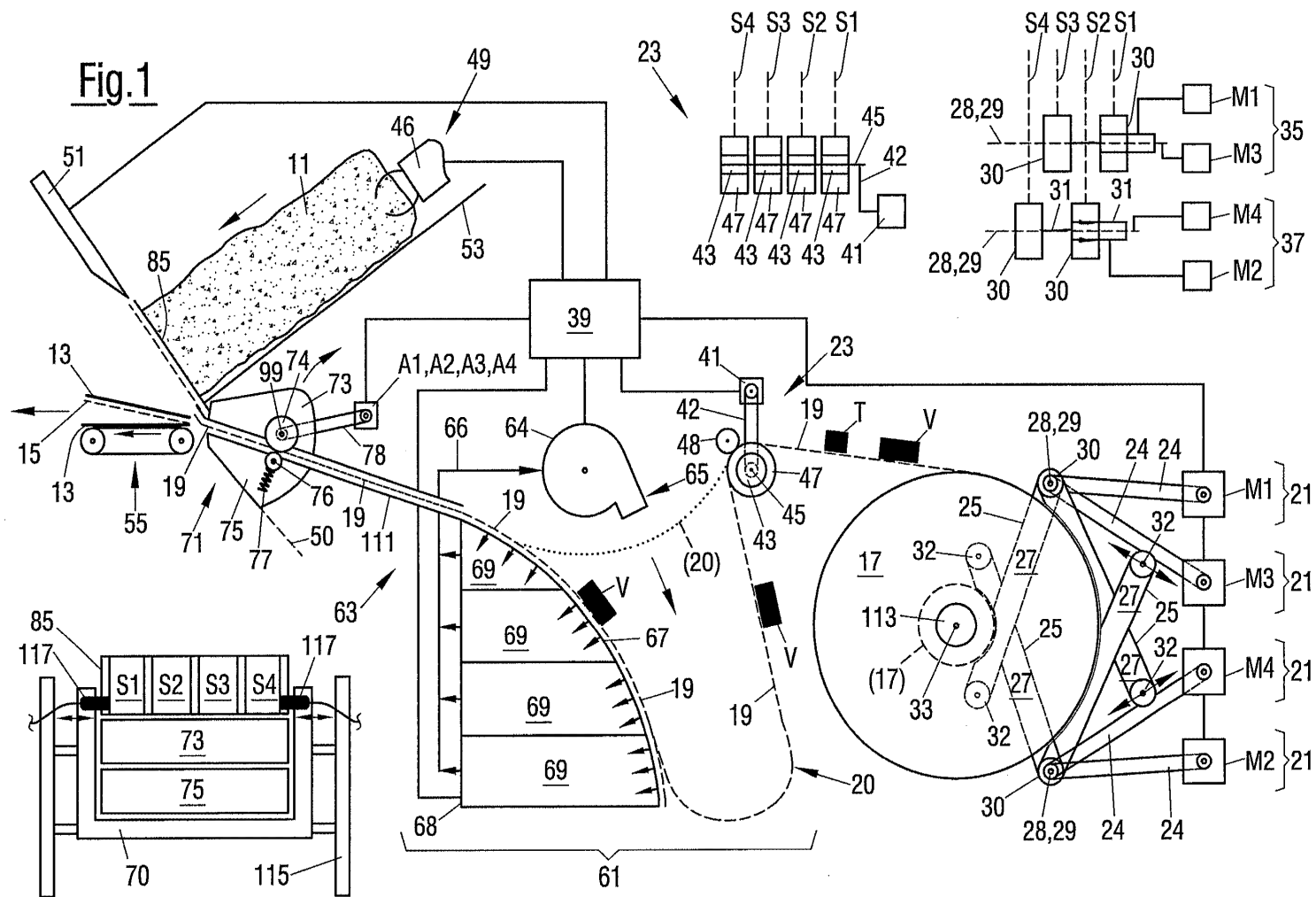


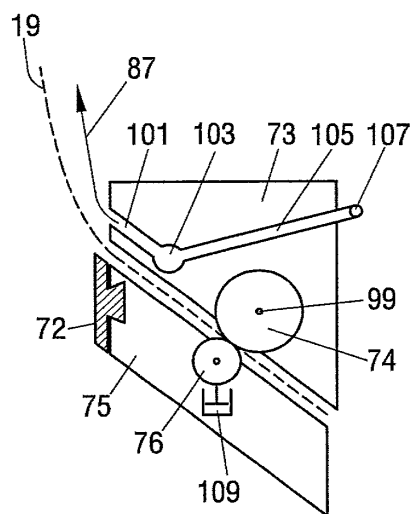
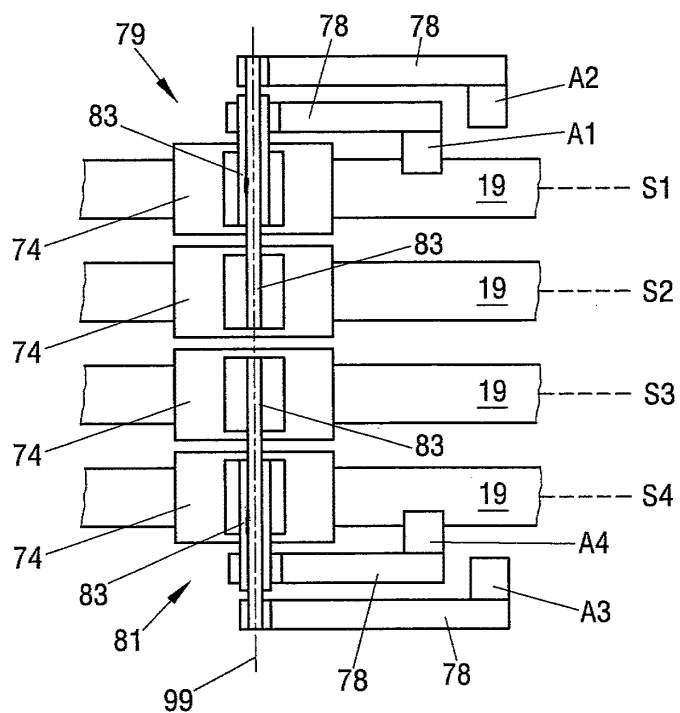
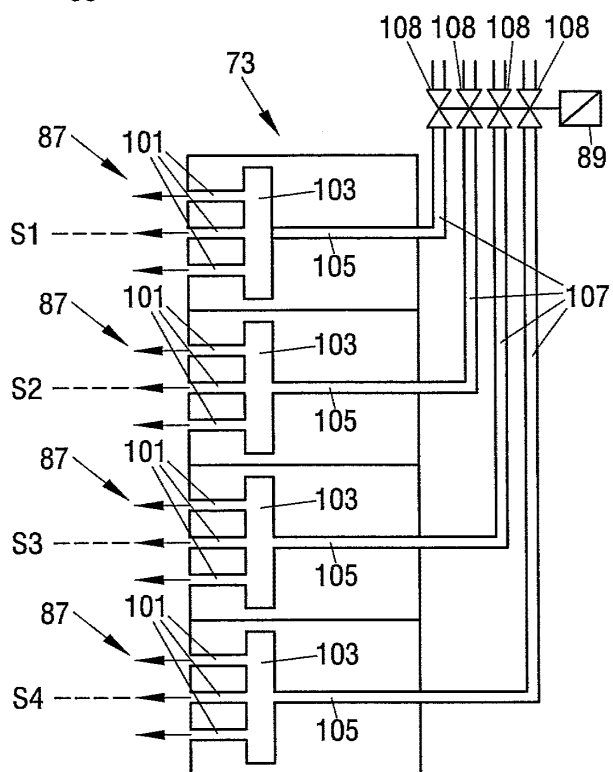
Fig.2Fig.4

Fig.3

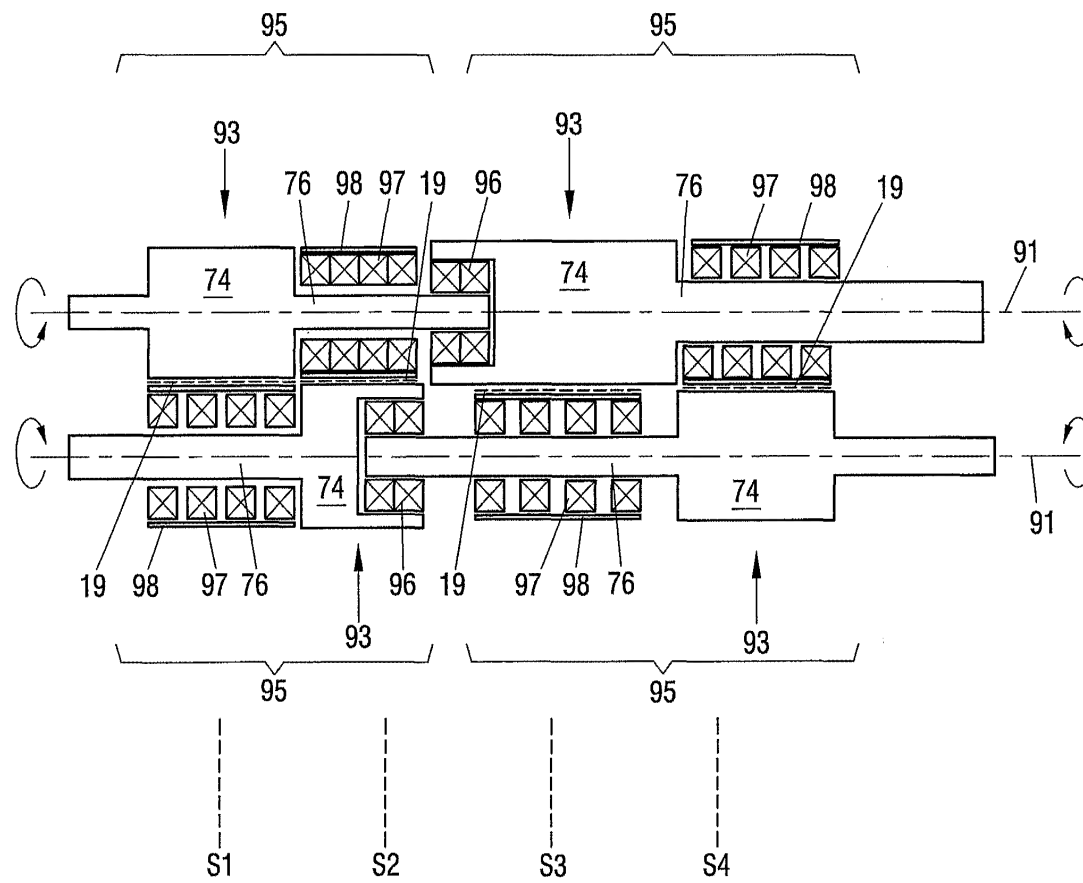


Fig.5

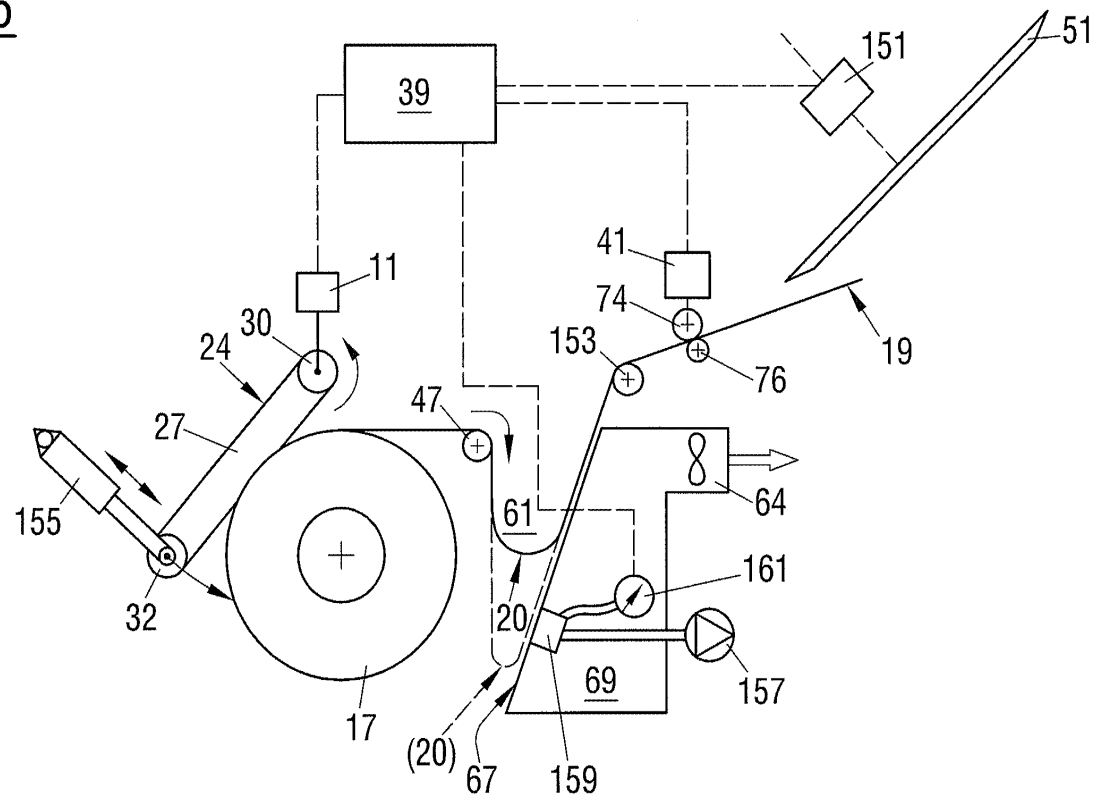
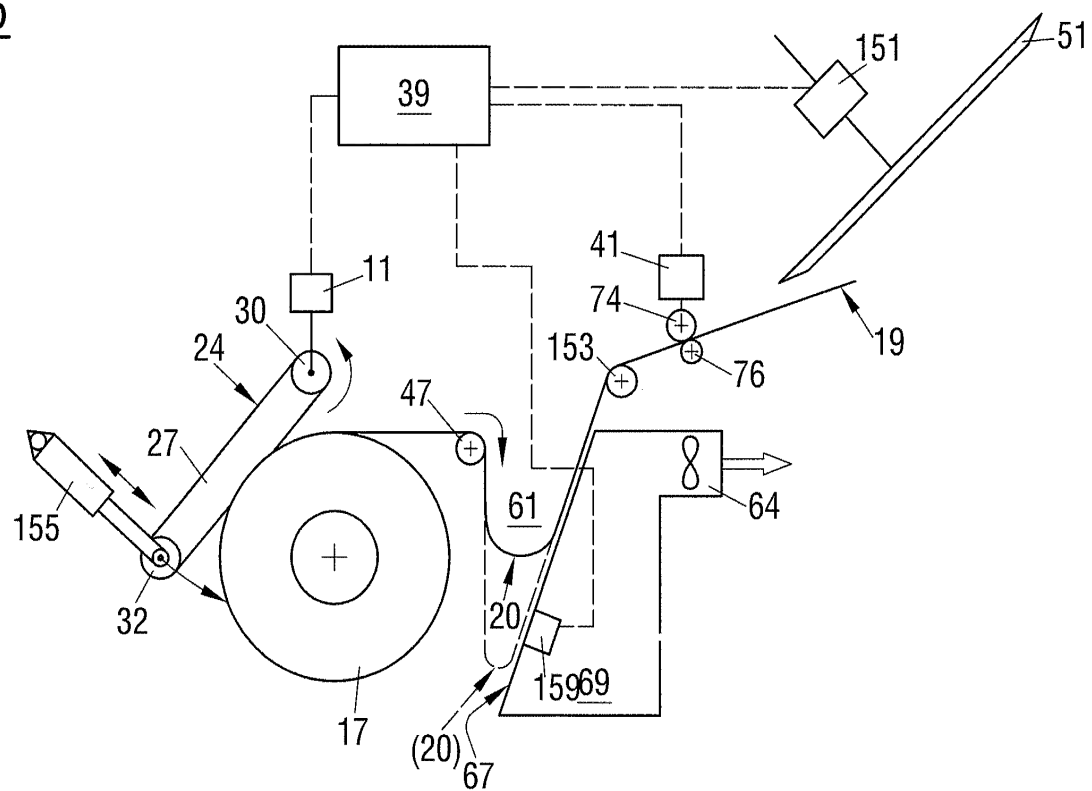


Fig.6



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Declaration for Utility Patent Application
37 C.F.R. 1.63

Title of Invention: **PROVIDING A CUTTING AREA WITH WEB-LIKE INTERLEAVER MATERIAL**

As the/a below-named inventor, I hereby declare that:

This declaration is directed to: ☐ The attached application, or
☒ United States application or PCT international application number 16/025,612 filed on July 2, 2018.

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 have reviewed and understand the contents of the application, including the claims.

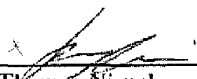
I am aware of the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in 37 C.F.R. Section 1.56.

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 five (5) years, or both.

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