UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

KOKI HOLDINGS AMERICA LTD.

Petitioner

v.

KYOCERA SENCO INDUSTRIAL TOOLS, INC.

Patent Owner.

DECLARATION OF GLENN E. VALLEE, PH.D

Case No. IPR2025-00264

Mail Stop Patent Board
Patent Trial and Appeal Board
U.S. Patent and Trademark Office
PO Box 1450
Alexandria, VA 22313-1450

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I. INTRODUCTION

A. Background

1. My name is Glenn E. Vallee, Ph.D.

2. I have been retained by Koki Holdings America Ltd. ("Koki" or "Petitioner") as an independent expert consultant.

3. I have been asked to provide my opinions on various issues pertinent to the validity of U.S. Patent No. 11,845,167 (the '167 patent).

4. In forming my opinions, I rely on my knowledge and experience in the field, and on the documents and information referenced in this declaration. If called to testify in this matter, I am prepared to explain in detail, with appropriate visual aids, the opinions expressed in this declaration and my basis for those opinions.

B. Qualifications

5. I am employed by Western New England University as an Associate Professor and Chair of Mechanical Engineering. My background is in the areas of mechanical engineering, design, product development and quality assurance. I teach courses in Mechanical Design, Kinematics, Vibrations, Mechanics of Materials, Materials Science and a Product Development and Innovation (PDI) course where students design consumer products having commercial potential. Six utility patents have been filed for student inventions developed in the course. I also teach undergraduate engineers how to design products involving air flow. Finally, I teach laboratory courses where students utilize a variety of electrical transducers and data

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acquisition systems. I received a Ph.D. in Mechanical Engineering and Applied Mechanics from the University of Rhode Island in 1995, where my thesis research focused on the mechanical behavior of elastomeric materials under impact loading. I received a Master of Science degree in Mechanical Engineering and Applied Mechanics in 1990 where my thesis research focused on the mechanical behavior of an epichlorohydrin elastomer used as an impact absorber in pneumatic fastening tools.

6. I also serve as a consultant in the areas of mechanical engineering design, numerical stress analysis, new product development and mechanical testing. In this capacity I've worked on a number of products related to power nailers since 2002. I developed and fabricated a prototype CO2 cartridge powered fastening tool, developed a dynamic material model for a nitrile elastomer used in impact bumpers in pneumatic fastening tools and also developed a dynamic load-deflection test system for verifying the response of impact bumpers in pneumatic fastening tools as predicted using finite element analysis. I have also served as project supervisor and advisor for a number of Capstone Senior Design Projects related to pneumatic nailers. These projects included the design and fabrication of recoil reduction devices for pneumatic and powder actuated nailers, the development of a predictive design methodology for polymeric components used in pneumatic nailers which are susceptible to creep rupture failures, the development of a double capacity

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pneumatic nailer magazine, and the development of a portable energy measuring device for pneumatic nailers. I have also served as a technical expert in product liability and patent litigation involving nailers, as well as other products. I am a member of the American Society of Mechanical Engineers (ASME member no. 1259837) and I am a licensed Professional Engineer (RI Lic. No. 6765).

7. As set forth in more detail in my curriculum vitae, I have substantial experience in the areas of mechanical engineering, product design and development, quality assurance and mechanical testing. Before joining Western New England University, I served as the Director of Engineering and Quality Assurance, Worldwide for Remington Products Company, L.L.C. in Bridgeport, CT from 1997 until 2002. Remington Products Company is a major manufacturer of products, including electric shavers, beard trimmers and hair dryers. My responsibilities included directing the activities of Design and Product Engineering, Quality Assurance and Manufacturing departments in the U.S., U.K., and Asia. I was responsible for the design and development of international consumer products, and for focusing new product engineering toward continuously improving customer satisfaction through improved product design, performance, and quality. I gained considerable experience in the utilization of rechargeable batteries in a number of different products, including the use of NiCad and Nickel metal hydride battery technologies.

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8. Before my employment at Remington Products, I served as the Manager of the Engineering Laboratories at the Stanley Bostitch Company, now a division of Stanley/Black & Decker. Stanley Bostitch is a leading manufacturer of pneumatic nailers and staplers, and a variety of hand tools such as hammer tackers and staplers. I was employed by Stanley Bostitch from 1985 until 1997, serving first as a Technician, then Test Engineer, then Product Design/Development Engineer and was promoted to Manager of the Engineering Laboratories in 1995. A large portion of my work at Bostitch focused on pneumatic nailers, but I was involved in the development of all products. My work as a Technician and then Test Engineer allowed me to acquire experience in conducting and developing test methodologies for all products. I also worked on the development of a portable combustion nailer which utilized both MAPP gas and rechargeable NiCad battery technology. My work as a Product Design/Development Engineer involved designing and developing products from conception through manufacture and quality control. As the Manager of the Engineering Laboratories, I managed the largest of the Engineering Laboratories in Stanley Works and supervised 18 employees. This position required that I coordinate testing and allocate resources to meet stringent scheduling requirements of the Product Development, Manufacturing and Marketing departments.

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9. I am an inventor on 9 patents, including patents related to pneumatic nailers, hand tools, surgical devices and a water purification system. I have given deposition testimony as a technical expert fifteen times in patent related matters and I have testified three times before the International Trade Commission. I have also given deposition testimony in cases involving a Petition for *Inter Partes* Review ("IPR") for patents related to hole Saws and accessories for mobile phones, and cases involving patent infringement and/or non-infringement related to gas spring-powered nailers and beveling miter saws, and a number of consumer products, including spring-loaded desktop staplers, air mattresses with embedded air pumps, hand held razors, recreational coolers, hoverboards, toy car and track systems, and e-cigarettes, where again I served as a technical expert. I have also given deposition testimony eight times as a technical expert in product liability matters and I have testified in court four times in such matters.

10. A copy of my curriculum vitae, which further expands on my qualifications and expertise and includes a listing of other cases in which I have testified as an expert at trial or by deposition within the preceding five years, as well as articles I have published is attached as Appendix A.

11. I am being compensated for my time at my standard rate of $500 per hour. For time spent providing deposition and trial testimony, I am being compensated at my standard rate of $600 per hour. I am also being reimbursed for

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reasonable expenses and out-of-pocket expenses at cost. My compensation is in no way contingent on the nature of my findings, the presentation of my findings in testimony, or the outcome of this or any other proceeding. I have no other interest in this proceeding.

II. MATERIALS CONSIDERED

12. In forming my opinions, in addition to my knowledge and experience, I have considered the materials cited in this Declaration and the following documents and things that I have obtained, or that have been provided to me:

- The '167 Patent;
- The '167 Patent's prosecution history and the references cited therein;
- The various prior art references cited in this Declaration;

13. In addition to the materials provided to me, I have also relied on my own education, training, experience, and knowledge in the field of mechanical engineering.

14. I may rely on any of these materials, experiences and knowledge, in addition to the evidence specifically cited as supportive examples in particular sections of this report, as additional support for my opinions.

15. I reserve the right to supplement or amend this report if additional facts and information that affect my opinions become available.

III. LEGAL PRINCIPLES

16. In expressing my opinions and considering the subject matter of the claims of the ’167 Patent and the other documents I considered, I am relying upon and applying certain legal principles that I have been provided. My understanding of these principles is reflected below.

17. I understand that the prior art and claimed invention should be viewed from the reference point of a person of ordinary skill in the art. I understand that a person having ordinary skill in the art is a hypothetical person used to analyze the prior art without the benefit of hindsight. A person of ordinary skill in the art is presumed to be a person who thinks along the lines of conventional wisdom in the art and is not one who undertakes to innovate, whether by extraordinary insights or by patient and often expensive systematic research. I understand that the hypothetical person of ordinary skill is presumed to have knowledge of all references that are sufficiently related to one another and to the pertinent art, and to have knowledge of all arts reasonably pertinent to the particular problem that the claimed invention addresses.

18. I understand that invalidity of an issued patent in an IPR proceeding must be shown by a preponderance of the evidence.

19. I understand that determining anticipation of a patent claim requires a comparison of the construed claim language with the prior art on a limitation-by-

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limitation basis. I understand that a prior art reference "anticipates" a patent claim, and thus renders it invalid, if all elements of the claim are disclosed in that prior art reference either explicitly or inherently, i.e., necessarily present or implied.

20. I understand that patent claims are obvious if the claimed subject matter of each claim as a whole would have been obvious to a person of ordinary skill in the art as of the date of invention. This determination is made after weighing factors that include: (1) the level of ordinary skill in the pertinent art; (2) the scope and content of the prior art; (3) the differences between the prior art as a whole and the claim at issue; and (4) secondary considerations of non-obviousness, if any. I understand that framework for analyzing obviousness should be an expansive and flexible approach using common sense. I understand that claims directed to nothing more than a combination of known elements driven by non-innovative factors such as market demands should be obvious. I also understand that if a person of ordinary skill in the art can implement the claimed invention as a predictable variation of a known product, it is obvious.

21. I have been informed of other factors that may show obviousness, including (1) whether the claims are directed to a combination of old elements with no change to their functions that yields predictable results, (2) whether the claims simply substitute one known element for another to obtain predictable results, (3) whether the claimed solution was that were obvious to try from a finite number of

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identified, predictable solutions, with a reasonable expectation of success, and (4) whether there was an explicit teaching, suggestion, or motivation in the prior art.

22. I understand that even if a claimed invention involves more than the substitution of one known element for another or the application of a known technique to a piece of prior art ready for improvement, the invention may still be obvious. In such circumstances, the analysis looks at interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skilled in the art to determine if the claimed invention is obvious.

23. I understand that secondary considerations of non-obviousness may include (1) a long-felt but unmet need in the prior art that was satisfied by the invention of the patent; (2) commercial success or lack of commercial success of processes covered by the patent; (3) unexpected results achieved by the invention; (4) praise of the invention by others skilled in the art; (5) respect for the patent in the form of arms-length bona fide licenses under the patent by others; and (6) deliberate copying of the invention. I also understand that there must be a relationship between any alleged secondary considerations and the claimed invention.

IV. TECHNOLOGY BACKGROUND

24. The technology at issue in this investigation involves fastener driving tools, which include staplers, nailers, or other fastener tools. The primary product

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in this field has been powered nailers or nail guns. Nailers were commercially introduced starting in the 1950s to assist in construction projects, such as building houses.

25. A powered nailer is a tool that is used to drive nails, staples, or other linearly driven fasteners into wood, metal, or other types of material. Powered nailers are used in many types of construction, ranging from heavy-duty and high-volume applications to smaller jobs and precision work. Some example of powered nailers include: (i) framing nailers that handle large projects such as framing houses and building decks; (ii) finishing nailers used for assembling furniture and installing cabinets; (iii) brad nailers used for securing crown molding or baseboards; and (iv) roofing nailers for applying roof shingles.

26. Nailers require a power source to drive the fastener into a workpiece during operation. There have conventionally been two main types of powered nailers: pneumatic nailers and combustion nailers.

27. Pneumatic nailers have been used for decades to quickly and efficiently drive a wide variety of different nails in many different work environments, including construction, furniture assembly and pallet fabrication. These nailers typically use compressed air from a separate compressor as the working fluid connected to the nailer using an air hose. The compressor is driven using an electric motor with the compressed air stored in a gas reservoir. Once the nailer is connected

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to the compressed air supply, an internal reservoir within the body of the nailer stores the compressed air. This reservoir typically surrounds a portion of a piston-cylinder arrangement used to drive fasteners. This location of the reservoir allows for quick transfer of the compressed gas to the engine. When the nailer is activated, the compressed gas is delivered to the piston which then drives a nail. This piston is connected to a driver, which is a component that drives the nail into the workpiece. As the gas expands above the piston, the piston is forced down the cylinder which in turn moves the driver down the drive channel and in contact with the head of the nail located at the bottom of the drive channel. This action causes the nail to be driven into a workpiece. Once the nail has been driven, a portion of the remaining compressed gas can be used to return the piston to its original position at the top of the cylinder so that the process may be repeated.

28. Combustion nailers arose from the desire to have a cordless tool that could be moved throughout a job site without being tied to a separate compressor. With pneumatic nailers, the tool itself not only has to be connected to a separate compressor, but the compressor likewise has to be wired to a source of power to supply its energy requirements. Combustion nailers provide a tool that has no hose or electrical wiring but instead use combustible fuel canisters. Like a car with an internal combustion engine, combustion nailers ignite a flammable gas with a spark such that it expands in a chamber containing a piston. The piston then drives the

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driver into the nail which is then driven into the workpiece in the same fashion as a pneumatic nailer as described above. Combustion nailers solved the problem of pneumatic nailers in that they "cut the cord" to the compressor.

29. However, combustion nailers have their own issues. One issue is that, again like a car with an internal combustion engine, they require a costly supply of fuel to operate and must be periodically refueled. Another issue, again like a car with an internal combustion engine, is that combustion nailers emit fumes and other waste products from the combustion process that may result in undesirable smells and raise health concerns for the tool's operator.

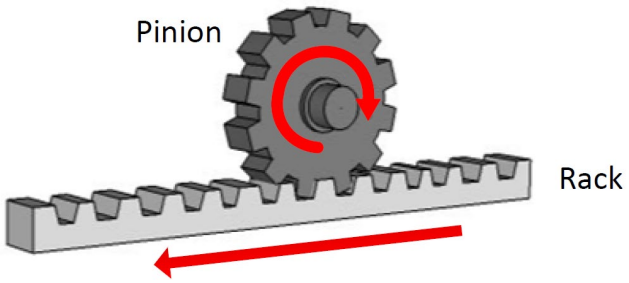
30. Over the years, engineers in this field have occasionally considered nailer designs that could have the cordless benefits of a combustion nailer but without its fuel requirements or combustion byproducts. The primary manifestation of that consideration has been to use the well-known gas spring approach. In a gas spring nailer, a gas chamber containing a finite amount of a compressible gas, typically air, includes a drive piston which serves as a movable wall which may be used to adjust the volume of the chamber. A drive mechanism moves the drive piston in a direction opposite the driving direction to compress the gas within the gas chamber. The driver can be moved from this upper driving position by the pressure of the compressed gas for driving the fasteners. However, historically realization of this design had been limited by its energy requirements relative to

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commercially existing battery technologies that had not developed far enough to meet those energy demand requirements.

31. One such gas spring nailer was described by Roger Sollberger in a patent application he filed in 1978. The patent application eventually issued as U.S. Patent No. 4,215,808 ("Sollberger"). Sollberger modified the standard pneumatic nailer known since the 1950s by removing the external compressor and hose, thus improving portability. Sollberger describes a device which utilized a gas spring to provide the energy to drive the fasteners (called a gas spring or gas spring nailer). The gas spring is charged by using a motor driving a rack-and-pinion gear that "jacks" a piston to an upper driving position (thereby compressing the air above the piston) and then releasing the driver to drive the fastener into a workpiece.

32. Generally, a rack and pinion gear is a linear actuator that includes a pair of gears that converts rotational motion to linear motion. While there are many variations of rack and pinion gears, an illustration of a typical rack and pinion is provided below:



33. The circular gear is the "pinion" and engages teeth on a linear gear bar called the "rack". Typically, the pinion is in a fixed position and a rotational motion applied to the pinion causes the rack to move relative to the pinion. This operation translates rotational motion of the pinion into linear motion of the rack.

34. Masayoshi Kondo of Makita Corporation developed further improvements to gas spring nailers. In 1996, Kondo filed a U.S. patent application that ultimately issued as U.S. Patent No. 5,720,423 ("Kondo"). In his patent, Kondo integrated the driving motor into the body of the nailer, with the motor energized using an on-board battery. Integrating the driving motor into the body of the nailer eliminated the need for an external motor and associated components like those described by Sollberger (*e.g.*, drive cable and power cord). Similar to Sollberger, Kondo's device used a gas spring energized by compressing the gas spring using a piston lifted by a drive member connected to the motor via a gear train. Kondo also described the use of an air replenishing device within the tool that supplied compressed air to the air chamber when the pressure within the air chamber is lower than a predetermined value. Kondo also described lifting the drive member using a rotating drive gear containing a pair of crank pins used to raise the drive member to compress the gas spring.

35. Chris Pedicini contributed additional improvements to gas spring nailers described in a patent application that published as U.S. Patent Application

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Publication No. 2006/01800631 ("Pedicini"). Pedicini described using a rack and pinion system which is capable of decoupling from the driving member. In this design, some of the teeth of the pinion are removed which allows the rack, piston and anvil assembly to disengage from the drive when the rack is presented with the missing pinion teeth. At this disengagement point, the piston, rack and anvil assembly (called a fastener driving output assembly) is driven by the highly compressed air and rapidly drives the fastener into a workpiece. The fastener driving assembly is effectively decoupled from the motor drive assembly, which increases the durability of the device. Additionally, a release valve is included to replenish any air which may be lost between nail drives.

36. However, the problem with each of these approaches was that battery technologies had not yet progressed to the point where a reasonably priced portable battery pack could provide the power needed to make these tools commercially marketable. Cost effective battery technology was the key missing element. But battery technologies continued to advance, largely driven by smartphones and other computer technologies in the early 2000s. Eventually battery technologies sufficiently advanced to the point that the old gas spring designs of Sollberger, Kondo, Pedicini, and others could be taken off the shelf and made into commercially marketable products.

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37. The recent introduction of gas spring nailers strongly mirrors the growing availability of electrically powered cars. Both were designed years ago but limited by insufficiently powered battery technologies. Both were desirable because they removed the need for constant refueling of combustible fuel and eliminated the hazardous combustion byproducts that harm both people and the environment. And both were unlocked not by some dramatic invention in their own field, but simply by advancements in unrelated battery technologies developed by others. The actual implementation of gas spring nailers largely matches its dormant predecessors, with only minor differences due to particular design choices or incremental improvements to specific aspects of the tool.

38. The '167 Patent acknowledges prior art designs of gas spring nailers, such as Sollberger and Kondo, and describes a gas spring nailer that is said to be an improvement over those prior art designs. ('167 Patent at 1:58-2:2). In particular, the '167 Patent describes a structural departure from the rack and pinion lifting system used by Sollberger and Pedicini. The lifter mechanism in the '167 Patent includes contact surfaces on the driving member which are inclined at an angle of 90 degrees with respect to the lifting direction. The '167 Patent describes a lifting function carried out by a rotating gear cam (referred to as a "lifting member") with pins extending from its face surface that make contact with protrusions (*i.e.*, teeth) on a "driving member." Because the pins extend from the face surface instead being

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located on the outer perimeter, there does not need to be a one-to-one relationship between the pins and the teeth and therefore, these pins can be spaced differently from the spacing of the teeth on the driving member, so as to allow for positions which better facilitate lifting of the driving member in a portable tool and more quickly release the driving member for a driving stroke.

39. In response to an office action issued during prosecution of the applications that ultimately led to the '167 patent, one of the named inventors, Thomas A. McCardle, submitted an affidavit discussing the prior art, disadvantages of prior nailer designs, and the advantages of Complainant's patented design as compared to the prior art. Specifically, McCardle discussed (i) U.S. Patent No. 4,215,808 ("Sollberger"); (ii) U.S. Patent No. 2,575,455 "(Lang"); (iii) U.S. Patent No. 6,997,367 ("Hu"); and, (iv) U.S. Patent No. 7,225,961 ("Lee"). For instance, McCardle criticized Sollberger for having a one-to-one relationship between the linear gear and the driven rack because the gear can rotate one time for every lift cycle. McCardle contrasted this with the Complainant's patent design where the lifter's design allowed for variability of the lift height. (McCardle Affidavit at 5). McCardle also noted that in Complainant's design, the piston is held at what he calls a "ready position," which is the point at which "a fastener driving movement is imminent" and the piston "is capable of being released virtually immediately." (*Id*. at 5, 10). McCardle further explains that since the piston's rest position is at the top

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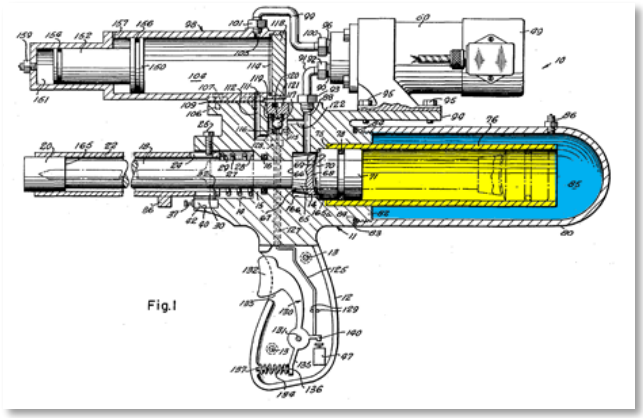
of the cylinder "when the user pulls the trigger, the piston is already in its proper position to initiate driving a fastener." (*Id*. at 10).

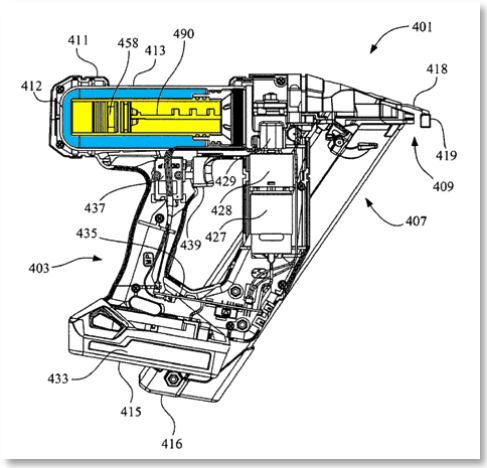
A. The Haley Prior Art

40. U.S. Pat. No. 3,150,488 ("Haley") issued on September 29, 1964 and is prior art to the '167 Patent.

41. Haley is directed to a gas spring nailer and predates all three prior art references discussed in the '167 Patent. One of the stated goals of Haley "is to provide a new and improved power device having a power reservoir in which a compressible fluid, such as gas, is maintained under pressure, and is employed to impart movement to a non-compressible driving fluid which in turn actuates a suitable driving means, such as a drive piston or hammer of a hand tool." Haley at 1:17–23. Haley's "power reservoir" consists of a storage chamber 85 (blue, below left) that entirely surrounds the piston cylinder (yellow), which is the same arrangement of the '167 Patent (below right). *See* Haley at Fig. 1 (below left); '167 Patent at Fig. 17 (below right). The Haley prior art thus disclosed this key feature that the '167 Patent inventors later claimed to be their contribution to gas spring nailers.

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42. Haley also described reusing the same pressurized gas for multiple driving operations instead of using either an on-board source of pressurized gas or an external hose connected to a pressurized gas source. Haley taught use of O-rings or other suitable means to seal in the pressurized gas in its main storage chamber. *See, e.g.,* Haley at 3:35–45.

43. Haley also described a sophisticated control scheme for managing both the lifting and driving stages of the operation cycle. Of course, since Haley dates back to 1964 the control is carried out by a hardwired circuit rather than a modern programmed computer. But that change to using a programmed computer became rudimentary now that cheap, tiny, and powerful microprocessors have become ubiquitous.

44. Haley's lifting approach also reflects the era in which it came about. In particular, Haley uses a hydraulic system that pumps an incompressible liquid to lift its piston against the pressurized gas in the main storage chamber. That approach

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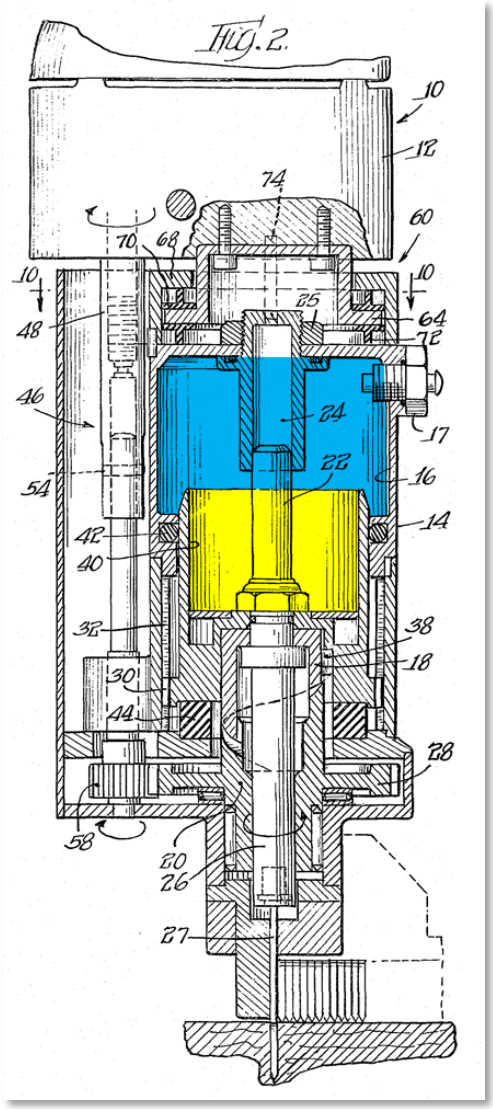
was powerful, but also unrefined, messy, and inefficient. It was one of a number of Haley's aspects that was ripe for improvement by the later inventions that followed, including those of the admitted prior art references described above.

B. The Enstrom/Saari Prior Art

45. U.S. Patent No. 3,913,685 ("Enstrom") issued on October 21, 1975. U.S. Pat. No. 3,924,692 ("Saari") issued on December 9, 1975. Both are prior art to the '167 Patent.

46. Both Enstrom and Saari were filed by the same company (Illinois Tool Works, Inc.) on the same day (February 6, 1974) and describe the same fastener driving tool using compressible gas as the spring means. Accordingly, in my opinion one of ordinary skill in the art would have looked at Enstrom and Saari's teachings together and would have combined them as a matter of course. To the extent there are aspects described in only one of Enstrom or Saari, one of ordinary skill in the art would understand that that is due to their separate focuses on different inventive aspects of the tool (warranting the separate patents for different inventors). Accordingly, one of ordinary skill in the art would combine the two teachings to achieve the complete tool worked on by Enstrom and Saari for Illinois Tool Works, Inc. As such, in this report I refer to the combined teachings of Enstrom and Saari together as Enstrom/Saari.

47. Enstrom/Saari explain that pneumatic nailers "require[] convenient sources of compressors and air hoses which makes a tool undesirable for the various remote locations required on a construction site," while combustible fuel nailers "provide a high energy source for a single shot tool but suffer from certain disadvantages, such as the noise and disposal of cartridges." Enstrom at 1:10–18. Enstrom/Saari therefore describe a driving tool (below) with an air spring mechanism that includes a cup-like piston with a displacement volume (yellow) that is lifted up to compress air in a surrounding chamber (light blue). The lifting is accomplished by co-acting helicoidal cams moved by an electrically powered drive train.



C. The Level of Ordinary Skill in the Art

48. I understand that factors that may be considered in determining the level of ordinary skill in the art include the educational level of the inventor; the type of problems encountered in the art; the prior solutions to the problems; the rapidity with which innovations were made; the sophistication of the technology; and the educational level of active workers in the field.

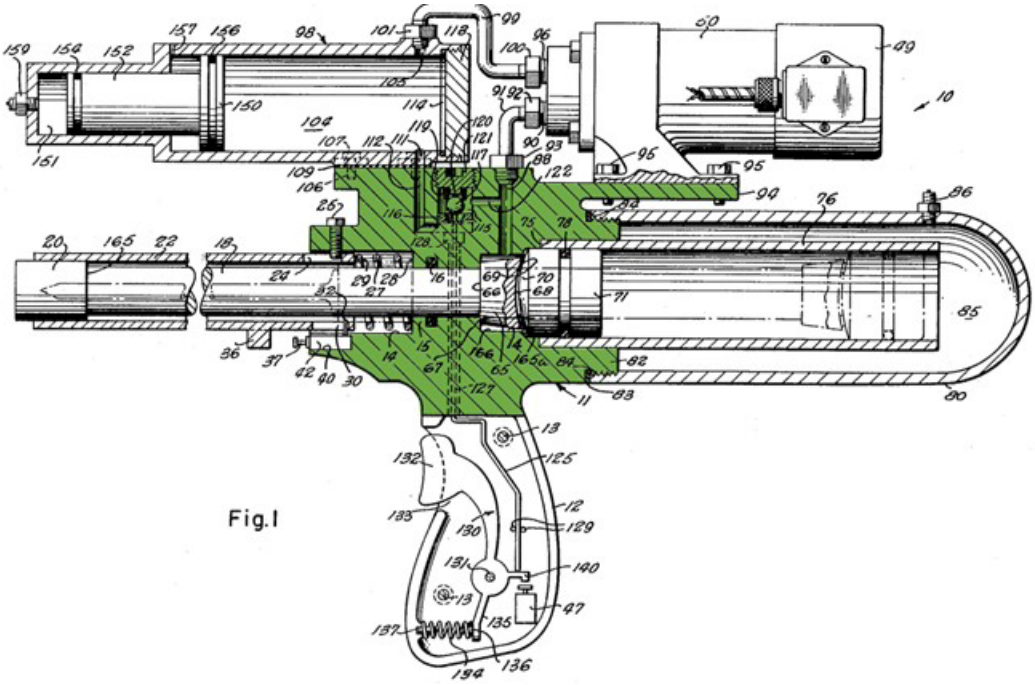
49. Applying this standard, I believe that a person of ordinary skill relevant to the ’167 Patent would have either (i) a Master’s degree in mechanical engineering with at least two years of experience in power nailer design; (ii) a Bachelor’s degree in mechanical engineering with at least five years of experience in powered nailer design; or (iii) ten (or more) years of experience in powered nailer design. This experience in powered nailer design would include mechanical design, tool design, manufacturing, mechanics of materials, stress analysis, ergonomics, and human factors. I understand that International Trade Commission (ITC) agreed that the level of skill proposed above best reflects the level of skill in the art at the time of patents that are related to the ’167 Patent. Not only do I meet this level of skill, but I have taught persons of ordinary skill in my capacity as a professor at Western New England University. I have further applied this level of ordinary skill in reaching my conclusions in this report.

V. CLAIMS 1–15 ARE OBVIOUS BASED ON HALEY IN VIEW OF LAI

A. Claim 1

50. ***Element [1.P]****:* Haley discloses “[a] portable fastener driving tool.” Haley’s “invention relates to power devices and more particularly to a pressure fluid power device for operating hand tools.” Haley, 1:7–9.

51. ***Element [1.1]***: Haley discloses "a housing with a storage chamber that contains a pressurized gas that is always above atmospheric pressure." Haley discloses "a housing" ("housing 40," green). Haley, 2:47, Fig. 1.



52. Haley refers to its storage chamber as "chamber 85" (blue) which is a chamber formed by "elongate accumulator shell 80." Haley, Fig. 1; 3:40–54. Haley's storage chamber "contains a pressurized gas that is always above atmospheric pressure." Haley states that "the gas introduced into the gas chamber 35 may be initially of a relatively large value, say 1,000 pounds per square inch." Haley, 7:1–13. During operation, the movement of the accumulator piston upward causes the gas pressure in chamber 85 to increase up to a higher value, such as 2,000 psi. Haley, 7:6–10. Both values are above atmospheric pressure (14.7 psi).

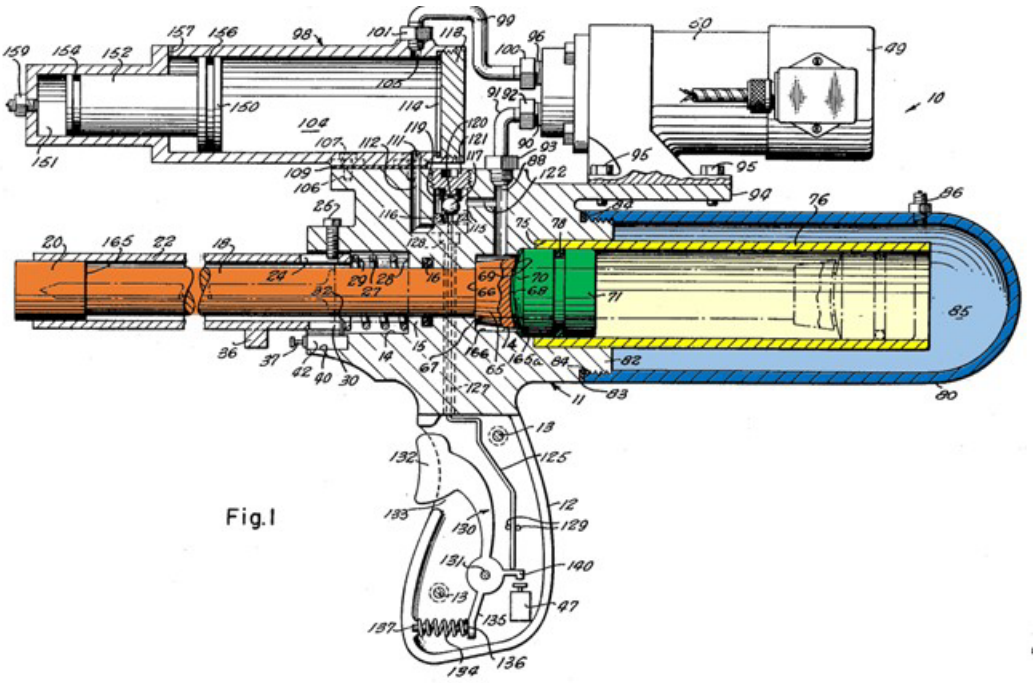


Fig. 1

53. ***Element [1.2]***: Haley discloses "a hollow cylinder that includes a movable piston." Haley refers to its hollow cylinder (yellow) as "extension cylinder 76," refers to the piston (green) within that hollow cylinder as "accumulator piston 71," and says that the piston is "moveable within the cylinder extension." Haley, 3:33–39, Figs. 1, 3–4.

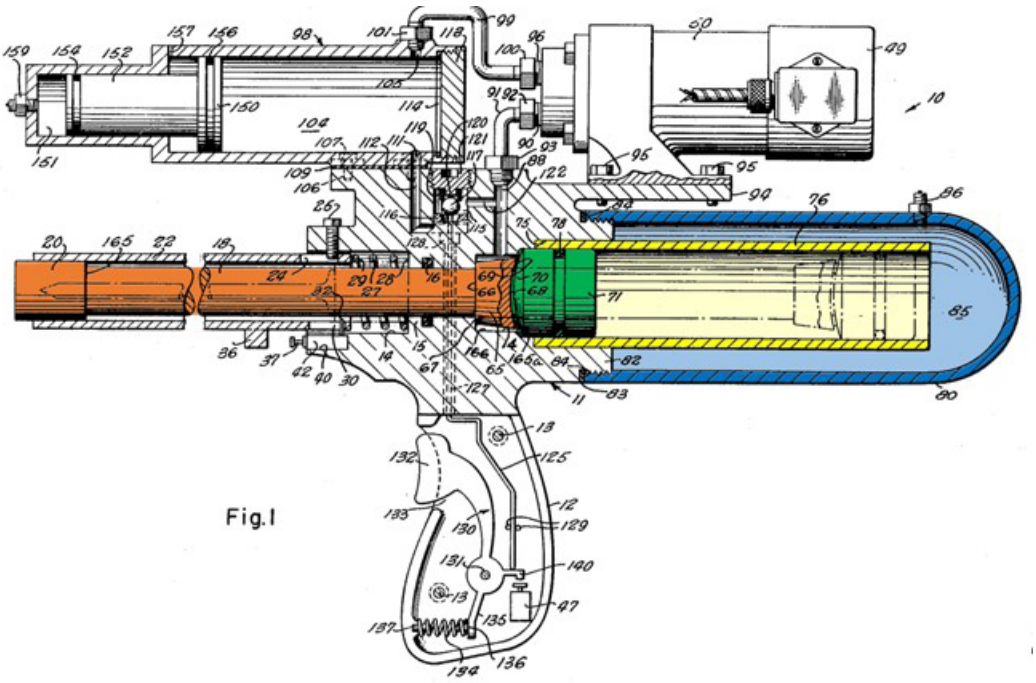


Fig.1

54. ***Element [1.3]***: Haley discloses "a movable driver that is in communication with said piston at least during a drive stroke." Haley's "movable driver" ("drive piston 18" and its "hammerhead 20," orange) is in communication with its piston ("accumulator piston 71," green) during a drive stroke. Haley, 2:20–23, 5:51–70, 5:74–6:7, Fig. 1, 3–4.

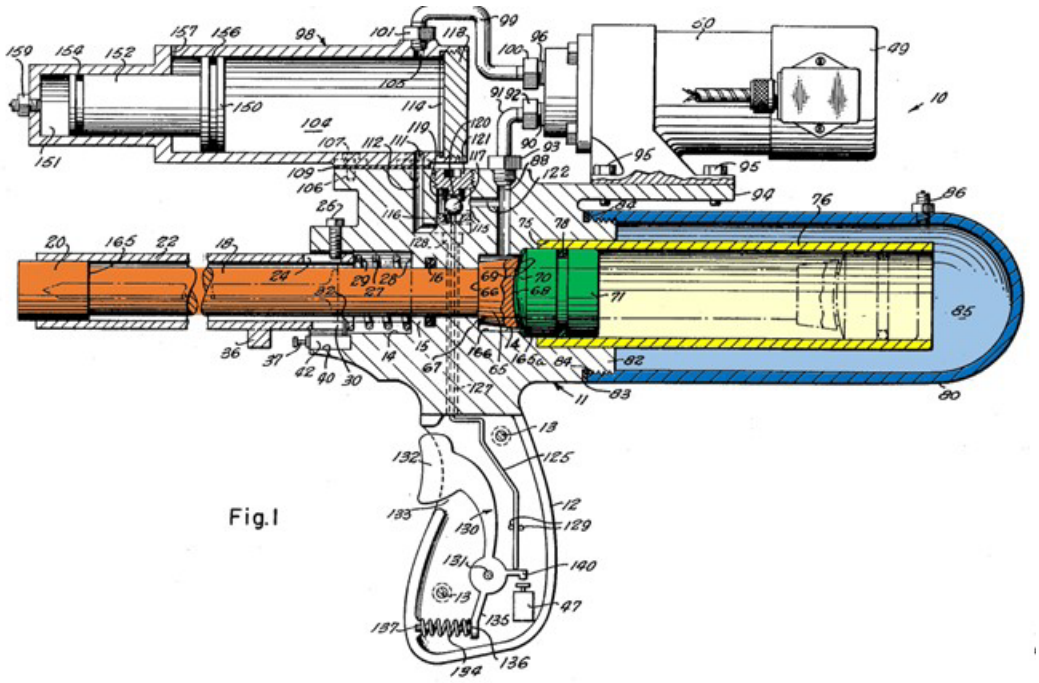


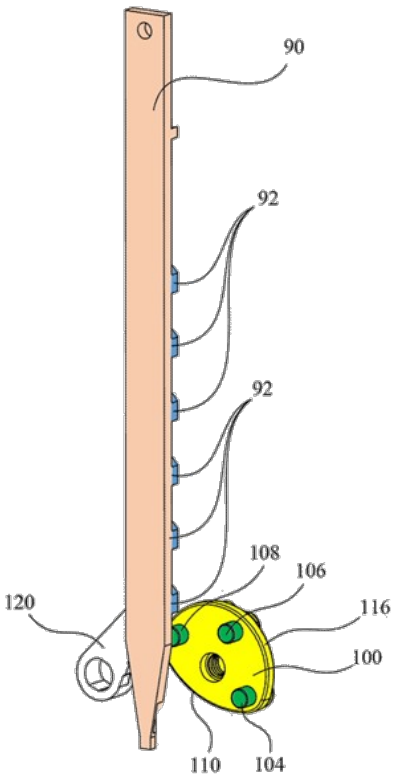
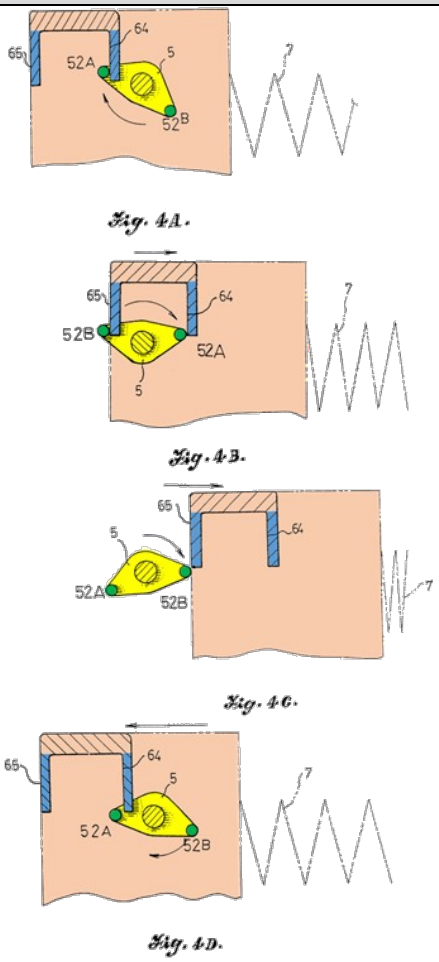
Fig.1

55. ***Element [1.4]***: Haley discloses a hydraulic lifting mechanism and thus does not have "a lifter that is in communication with said driver at least during a return stroke." It was obvious—at the filing of the '167 patent—to replace Haley's hydraulic lifter with the claimed "lifter," and to modify Haley's driver to have a protrusion so that it can be mechanically engaged by that lifter to move it through its return stroke, as disclosed by U.S. Patent No. 5,503,319 ("Lai").

56. Lai discloses an electrically powered, mechanical lifting mechanism with a structure that is essentially identical to the "lifter member" disclosed in the '167 patent. *Compare* '167 patent, Fig. 12 with Lai, Figs. 3–4. The "lifter" of the '167 patent includes a rotatable cam lifter 100 (yellow, below left), with pin 104, 106, and 108 (green) on its face surface that engage protrusions 92 (blue) on the driver member 90 (orange). '167 patent, 9:36–52, 16:39–53, Fig. 12. The '167

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patent also discloses two-pin variants: lifter members 465 and 480 in Figs. 31 and 33. '167 patent, 32:21–36, 32:54–33:2. Lai discloses a rotatable cam 5 (yellow, below right), with pins 52A and 52B (green) on its face surface that engage two protrusions 64 and 65 (blue) from a U-shaped member 61 on the driver member 6 ("hammer," orange). Lai, 1:62–63, 2:14–25, Figs. 4A–D. Lai's lifter member is moved by a prime mover ("motor 3"). Lai, 2:14–16, Fig. 2.

'167 Patent Lifter	**Lai Lifter Member**
 Fig. 12	

57. While Lai is directed to an "electric stapling gun" (*see* Lai, 1:1–2), a person of ordinary skill in the art ("POSITA") would consider staplers to be a

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subcategory of nailers. For instance, U.S. Patent No. 4,834,278 ("Lin," Ex. 1010) is titled "Structure of DC Motorized Nailing Machine" and discloses a preferred embodiment that drives staples. *See generally* Ex. 1010. Lin is also analogous art because it is directly pertinent to the problem of needing a compact lifting mechanism that can be powered by a portable battery. Thus, Lin is directly relevant prior art for the '167 patent.

58. Moreover, developments in portable nailers would tend to appear first in the context of portable staplers such as Lin and Lai due to the lower power needed to drive staples as compared to nails, and these improvements would later be applied generally to portable nail guns, notwithstanding their larger power drain requirements, as battery technology continued to improve. In addition, while Lin and Lai use metal springs rather than compressed gas springs, a POSITA would consider metal springs and compressed gas springs to be interchangeable depending on the use case. This is reflected by various prior art references—for example, the Saari patent discloses an embodiment "which utilizes a compressible gas, such as air or the like, as the spring means" (Saari, 4:1–3) and U.S. Publication No. 2006/0261127 ("Wolf," Ex. 1011) likewise discloses an embodiment where "the compression spring element 42 is formed as a gas spring (Wolf, ¶[0048]). The '167 patent itself reflects this interchangeability with an embodiment where the compressed gas spring is exchanged for "a mechanical spring 496, which could be a

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fast-acting coil spring." '167 patent, 29:3–8. Thus, a POSITA would look to Lai's portable stapler design for improvements to incorporate into nailers such as Haley's nail gun and would have done so by the filing of the '167 patent as battery technologies had continued to progress following Lai's issuance in 1996.

59. In addition, a POSITA at the filing of the '167 patent would have been motivated to replace Haley's hydraulic lifting mechanism with Lai's lifter member. Haley's hydraulic lifting mechanism is bulky and subject to the risk of hydraulic fluid leaking into the compressed gas chambers. This problem was explicitly discussed less than a decade later in U.S. Patent No. 3.636,707 (Ex. 1012), which explained that "[t]he Haley devices are cumbersome, too heavy for prolonged use by an operator and subject to comingling of the noncompressible fluid with the compressible fluid or gas resulting in malfunctioning of the devices as well as having too long a time cycle between operative strokes thereof." Ex. 1012 [Saari'707], 1:12–16.

60. These identified problems stemmed solely from Haley's hydraulic lifting mechanism. A complete solution to Haley's identified problem was not feasible at the time of Saari '707 and that the improvement offered by Saari '707 could only address the cumbersomeness factor by moving the hydraulic pump off the tool. Ex. 1012 [Saari'707], 5:20–28. Not long after that, the same inventor (Saari) disclosed another powered nailer in U.S. Patent No. 3,924,692 ("Saari," Ex.

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1006) that eliminated the hydraulic lifting mechanism and replaced it with an electrically powered mechanical lifter. *See generally* Saari. That trend to electrically powered mechanical lifting mechanisms is also reflected by Lin, which denigrates both "pneumatic power operated and motorized stapling machines" because they are "not portable and the utility of which are within the confines of the area where power source is available." Lin, 1:27–30. Lin's proposed solution involved "a nailing machine to make use of battery power to drive a DC motor so as to turn round gear set, ball screws and gear wheel, letting spring and guide block start nailing." Lin, 1:56–58.

61. Lai refines the battery-powered mechanical lifter of Lin. Lai expressly discusses its benefits in efficiency, power, and compactness over the prior art (such as Lin, which is prior art of record in Lai). *See, e.g.,* Lai, cover page. Specifically, Lai identifies an "ideal" electric stapling gun as being "energy saving, strong in hitting force and compact in size" and explains that its disclosed lifter member with two pins that engage two protrusions of the U-shaped member 61 leads to "1.8 times the compression of the prior art," "provide the same hitting effect with less power consumption," and be "smaller in size thereby increasing flexibility." Lai, 1:9–10. 2:26–45.

62. At the time of the filing of the '167 patent, would have solved Haley's problem by incorporating Lai's lifter member. Lai was a known solution to Haley's

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identified problem of being bulky (solved by Lai's use of a compact mechanical lifter member rather than a bulky hydraulic lifting mechanism, as well as due to Lai's improved design for its specific mechanical lifter member) and Haley's identified problem of being subject to the risk of hydraulic fluid leaking (solved by Lai's use of a mechanical lifter member rather than a hydraulic lifting mechanism). A POSITA would have been able to implement Lai's lifter member in Haley with predictable results. Specifically, Lai teaches adding a "U-shaped member 61" with protrusions to the driver blade (as a modification to prior art such as Lin, which has a driver blade without protrusions) that can be engaged by pins 52A and 52B of Lai's lifter member. Lai, 2:4–7. In the same way, a POSITA would have understood that by adding protrusions to Haley's driver blade it could be lifted by Lai's lifter member and would have achieved the same results predicted by Lai. For example, the elimination of the closed hydraulic system of Haley would allow Haley's driver blade to be modified away from the circular cross section typically required for hydraulic seals. The majority of the driver blade cross section could then be easily modified to have a thinner, rectangular cross section which would significantly reduce the driver blade weight and allow the addition of Lai's protrusions 64 and 65 to be added. Hayley's hydraulic system which includes the bulky pump and piston could them be replaced with Lai's battery operated motor and rotating cam and pin

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arrangement in a position adjacent to the driver member to allow lifting of the driver member.

63. There is an additional, independent motivation to replace Haley's hydraulic lifting mechanism with Lai's lifter member due to market forces and design needs favoring a portable, battery-powered nailer. POSITAs in the field had repeatedly highlighted the problems with prior nailer designs. Lin, 1:6–31 (discussing state of the art in 1989); Kondo, 1:9–44 (same for 1998); Pedicini, ¶¶[0003]–[0019] (same for 2006). Artisans repeatedly noted over the years that corded power nailers (with a pneumatic air hose, an electrical power cable, or both) were not ideal because of their lack of portability. Lin, 1:21–26; Kondo, 1:9–29; Pedicini, ¶[0005]. But the commercially available portable power nailers were either combustion nailers (which required costly fuel and emitted waste fumes) or electrical flywheel nailers (which had low power output). Pedicini, ¶¶[0006]–[0007].

64. The clear and obvious solution presented by the prior art was to take the compressed gas spring design first conceived by Haley and make it portable by implementing the battery-powered lifter member of Lai. The only missing piece for that solution was a reasonably priced portable battery pack that could provide the power needed to make these off-the-shelf designs commercially feasible. Battery technologies continued to advance, largely driven by smartphones and electric

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vehicles in the early 2000s, such that by the filing of the '167 patent, it was obvious to obtain a portable, battery-powered nailer by combining Haley's compressed gas nailer design with Lai's battery-powered lifter member. Put another way, the compressed gas nailer claimed by the '167 patent was not unlocked by any innovation in the field of powered nailers, but rather was an obvious combination of old, off-the-shelf designs that was motivated by the market need for a battery-powered nailer and the market availability of suitable portable batteries.

65. ***Element [1.5]***: The combination of Haley and Lai discloses "a prime mover." Lai's lifter is moved by a prime mover ("motor 3"). Lai, 2:14–16, Fig. 2.

66. ***Element [1.6]***: The combination of Haley and Lai discloses "a source of electrical energy that is removably attached to said housing." Lai's motor is powered by a source of energy (Lai's battery 2), which is removably attached to the housing as reflected by Fig. 1 showing battery 2 (purple) attached and Fig. 2 showing battery 2 detached and showing an internal attachment clip (orange). Lai, Figs. 1–2; 1:25–35, 1:44–54, 1:60–62, 2:2.

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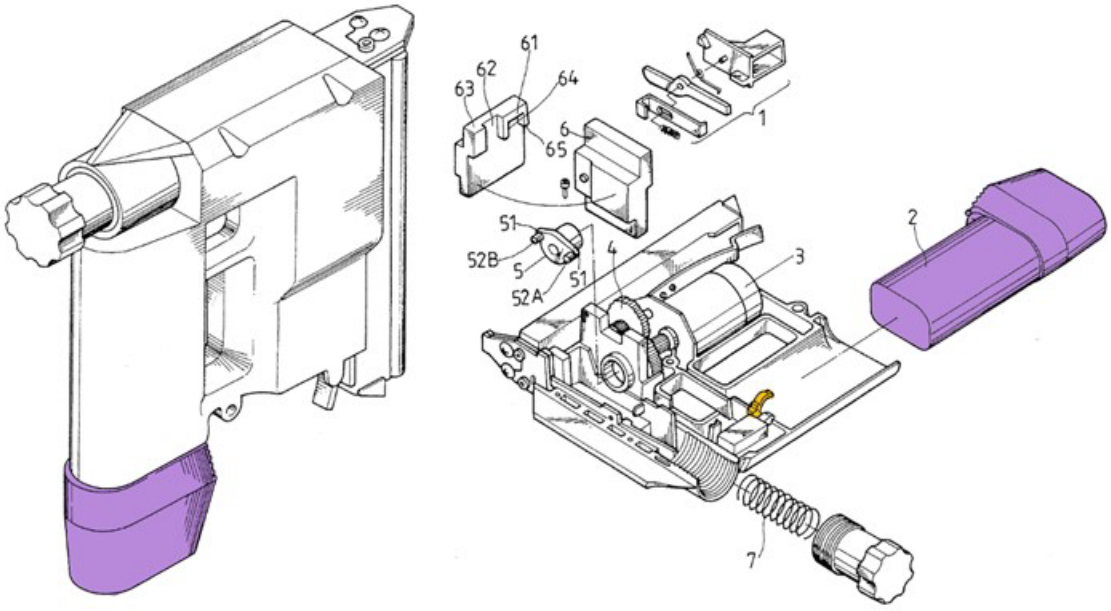


Fig. 1.

FIG. 2

67. ***Element [1.7]***: Haley discloses "said storage chamber being in fluidic communication with a first end of said hollow cylinder." Haley's main storage chamber 85 (blue) is in fluidic communication with the first end of hollow cylinder 76 (yellow), which is shown in Figure 1, where the first end of cylinder 76 (right) is open to chamber 85.

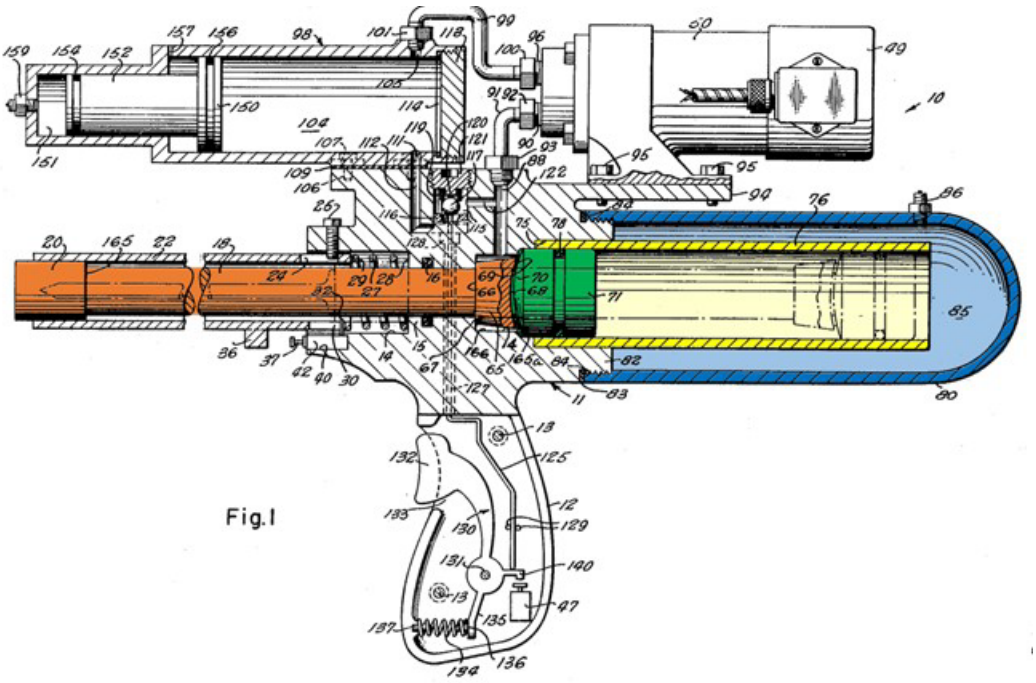


Fig.1

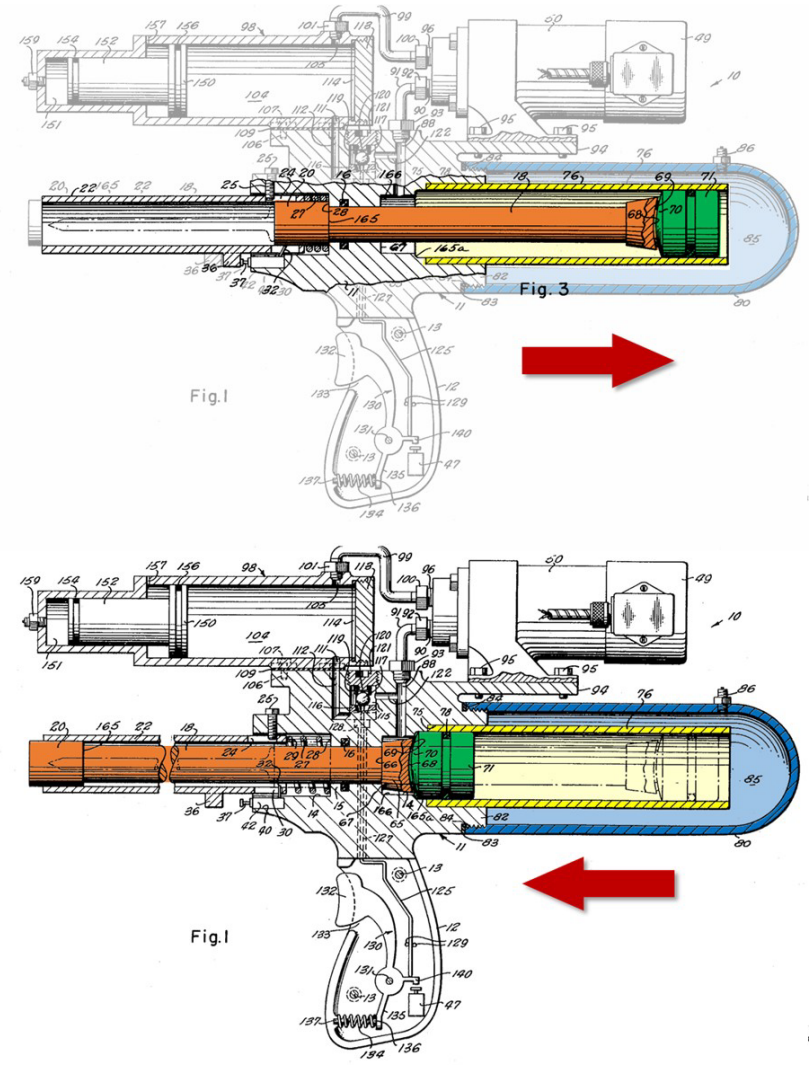
68. ***Element [1.8]***: Haley discloses "said storage chamber including a removable top cap at a location proximal to said first end of said hollow cylinder." Haley's "elongate accumulator shell 83" (blue) is a removable top cap "threaded on the rearward extension 82 of the body" proximal to the first end (right in Fig. 1) of the hollow cylinder 76. Haley, 3:40–45, Fig. 1.

69. ***Element [1.9]***: Haley discloses "wherein: said piston travels through said hollow cylinder between a higher pressure position and a lower pressure position; said piston has a rest position between operational cycles; and a location of said rest position is proximal to said higher pressure position."

70. Haley's piston ("accumulator piston 71," green) travels through the hollow cylinder ("extension cylinder 76," yellow) between a higher pressure

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position (the rightward position shown in Fig. 3, which Haley says can be 2,000 psi) and a lower pressure position (leftward position shown in Fig. 1, which Haley says can be 1,000 psi). Haley, Figs. 1, 3, 7:4–10.



71. Haley discloses two rest positions: the lower position following a drive stroke shown in Fig. 1, which Haley refers to as the "normal at rest" position (Haley, 5:22–23), and the higher position following a return stroke shown in Fig. 3, which is at or near what Haley refers to as the "fully retracted or cocked position" (Haley,

6:13–14). Haley expressly discloses that the tool will rest at or near the higher position (after the return stroke)—if the guide barrel "has not been moved inwardly . . . movement of the drive piston and the accumulator piston will stop." Haley, 5:70–74, Fig. 3; The piston and driver will rest in that position until "the forward end of the guide barrel is then pressed against the work piece or structure into which the nail is to be driven," at which point "the motor 49 is once again connected to the input circuit 52." Haley, 5:74–6:7.

72. ***Element [1.10]***: Haley discloses "said pressurized gas is not vented to atmosphere after said drive stroke." While Haley's main storage chamber has a "valve 86," that valve is only a connection point by which compressed gas may be introduced from an external gas supply to initially charge the chamber 85 to then be re-used for a plurality of said operating cycles. Haley, Fig. 1 and 3:45–47. Haley discloses a sealing means 83 for its elongate accumulator shell 80 (which contains the storage chamber, "chamber 85") to "effect a fluid tight seal," which prevents the pressurized gas from being vented to the atmosphere and allows it to instead be re-used. Haley, 3:40–45, Fig. 1.

B. Claim 2

73. The combination of Haley and Lai discloses "said movable driver including at least one protrusion; and said lifter including at least one extension;

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wherein: said at least one extension of the lifter mechanically engages with said at least one protrusion of the driver during said return stroke."

74. In this combination, the driver would have protrusions mechanically engaged by extensions of the lifter. The lifter taught by Lai includes extensions protruding from its surface (pins 52A and 52B, green) that fit between the spaced-apart protrusions of the driver (blue). Lai, Figs. 3–4, 2:13–21.

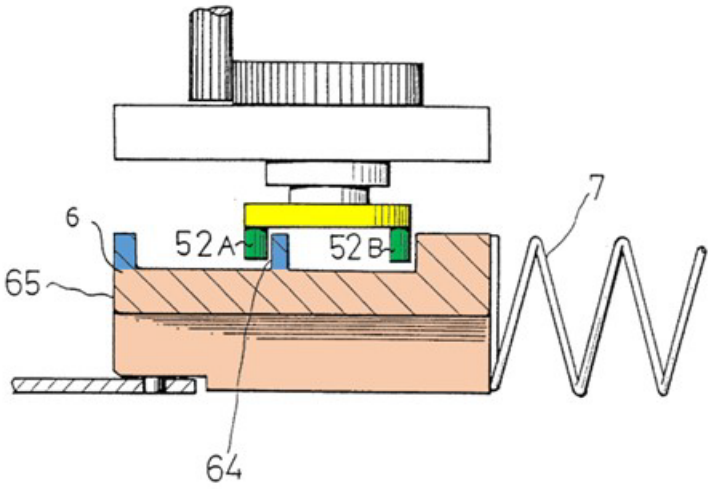


Fig. 3.

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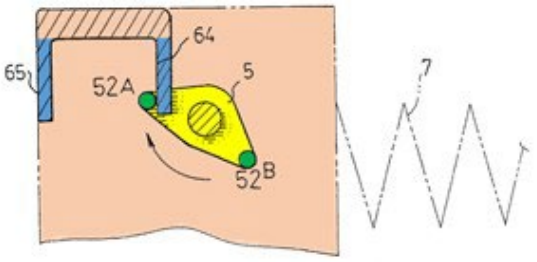


Fig. 4A.

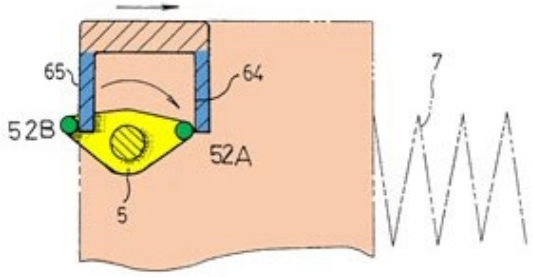


Fig. 4B.

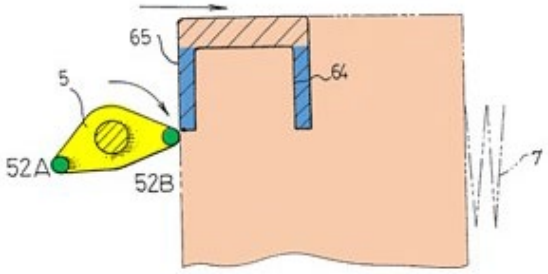


Fig. 4C.

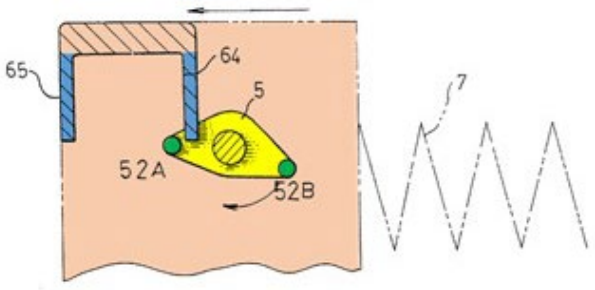
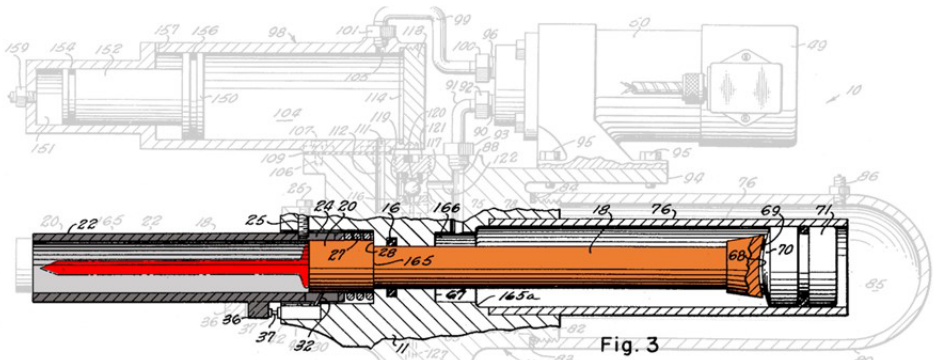
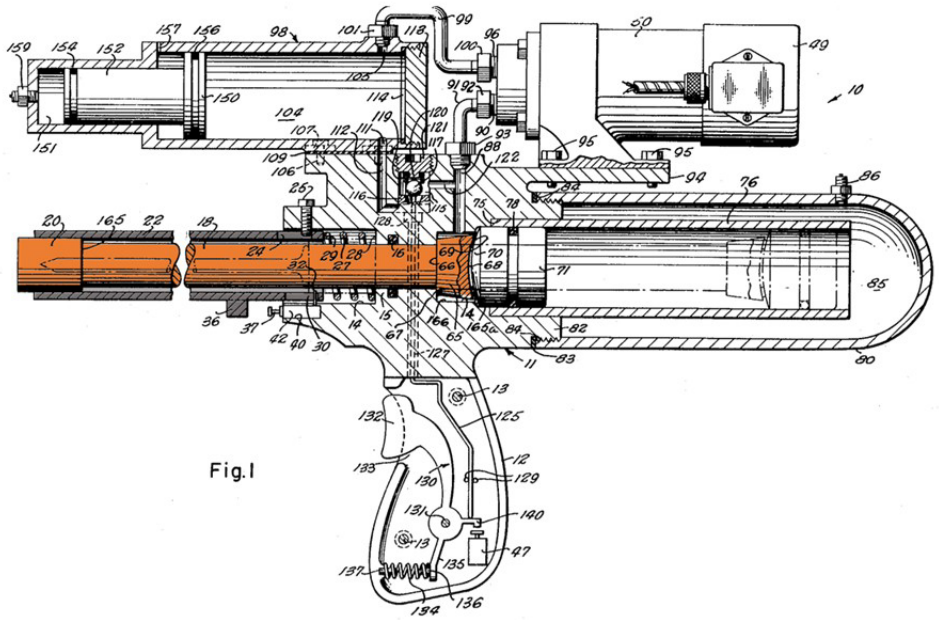


Fig. 4D.

C. Claim 3

75. ***Element [3.1]***: Haley discloses "a guide body with a linear passageway for said driver." Haley discloses a guide body ("guide barrel 22," grey) with a linear passageway for the driver (orange). Haley, 2:23–27, Figs. 1, 3.





76. ***Element [3.2]***: The combination of Haley and Lai discloses "wherein: said lifter moves in a rotational motion and causes said driver to move in a linear motion along said linear passageway."

77. The lifter taught by Lai is a rotatable component that is rotated in the clockwise direction (curved arrows) such that its extensions (green) engage the protrusions on the driver (blue) to cause the driver (orange) to move in a linear direction (straight arrows) within the driver track of the guide body toward the ready position. Lai, Figs. 4A–D, 1:62–63, 2:14–25.

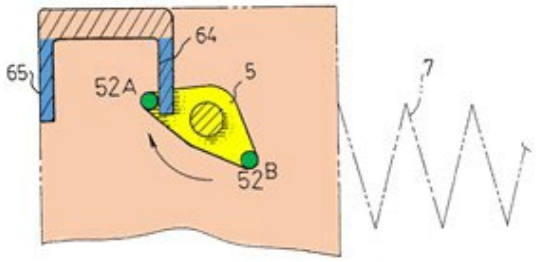


Fig. 4A.

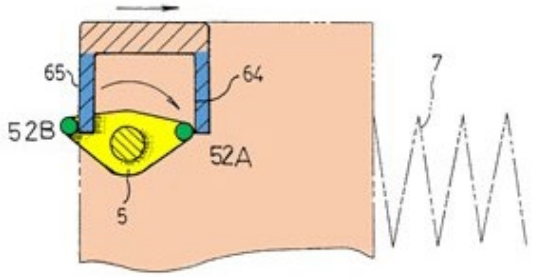


Fig. 4B.

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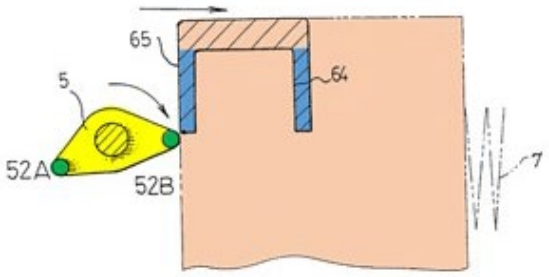


Fig. 4C.

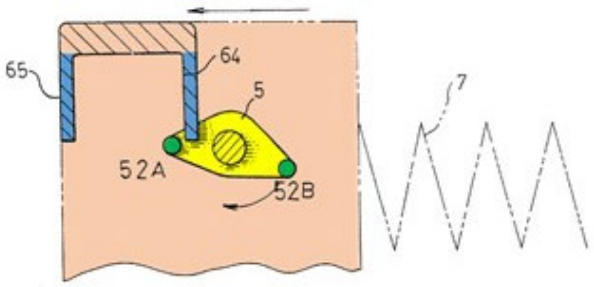


Fig. 4D.

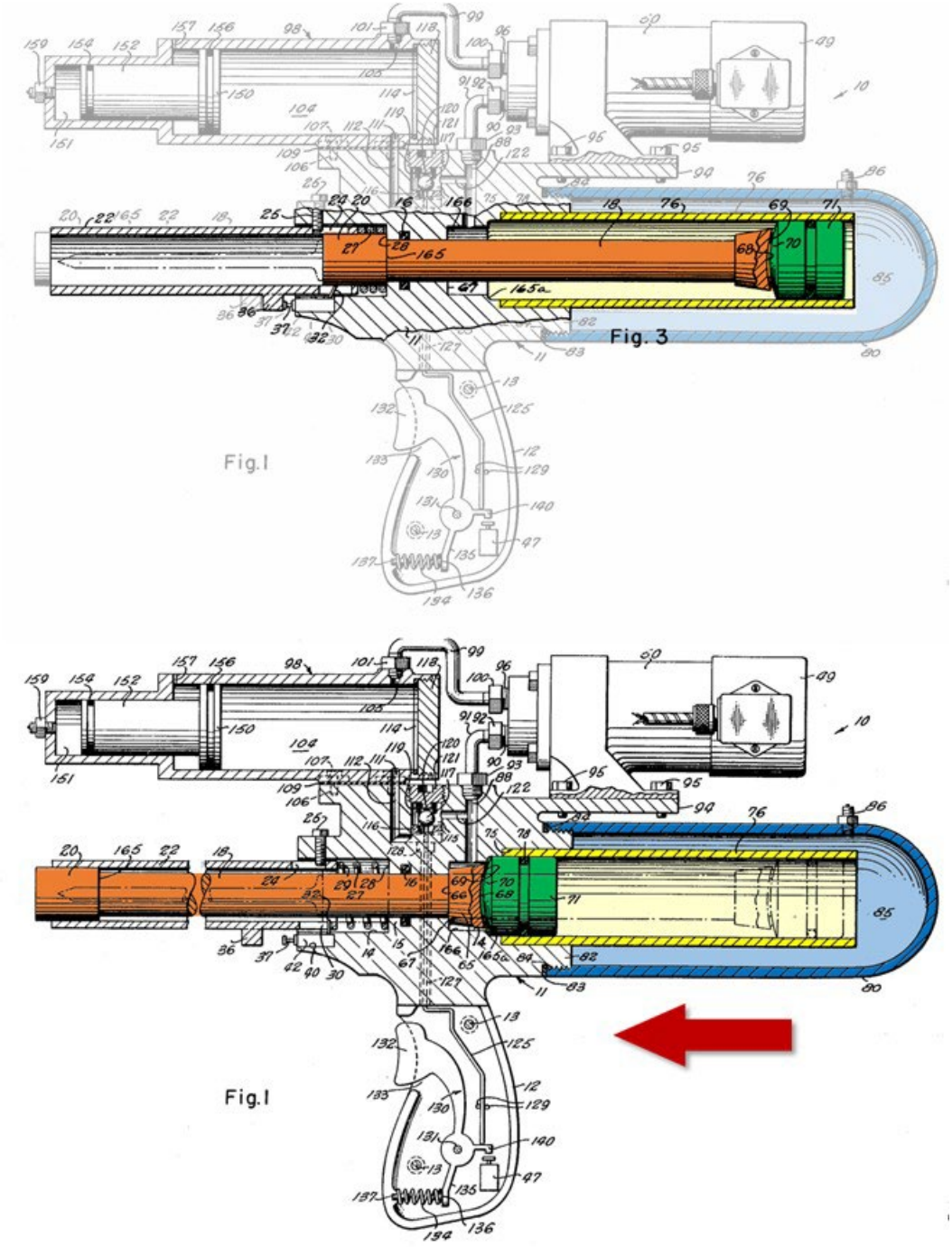
D. Claim 4

78. The combination of Haley and Lai discloses "wherein: said cylinder and piston act as a gas spring during said drive stroke, and said lifter does not mechanically engage said driver during said drive stroke."

79. In Haley, the pressurized gas of the storage chamber ("chamber 85") and the cylinder ("extension cylinder 76") act on the piston ("accumulator piston 71") to form a gas spring for driving a nail during a drive stroke. Haley, Fig. 1; 5:74–6:26; 6:48–7:13. When the accumulator piston 71 is moved upward in the cylinder extension 76, the compressed gas in the chamber increases from 1,000 psi to 2,000 psi—because the pressurized gas from the displacement volume of the cylinder (yellow) is pushed by the piston upward into in the cylinder and into the

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main storage chamber (blue)—and that further compressed gas "is employed to operate the drive piston which may perform such functions as the driving of a nail." Haley, 7:1–13, Figs. 1 and 3 (overlaid below).



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80. In Lai, the lifter (cam 5) does not mechanically engage ("is separated from") the driver (with "U-shaped member 61" as its protrusions) during the drive stroke, which will then "move the hammer 6 towards the left 25 (see FIG. 4D)." Lai, 2:22–25, Figs. 4C–D.

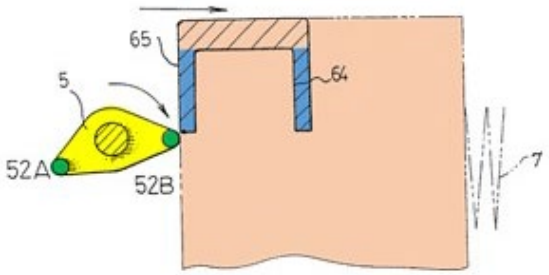


Fig. 4C.

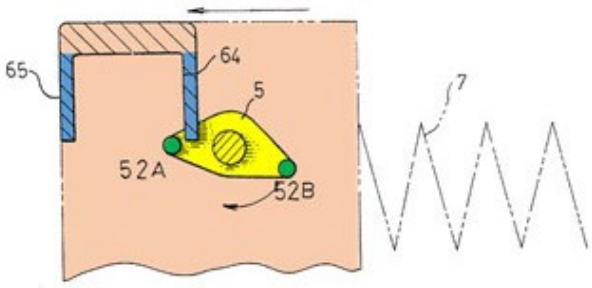


Fig. 4D.

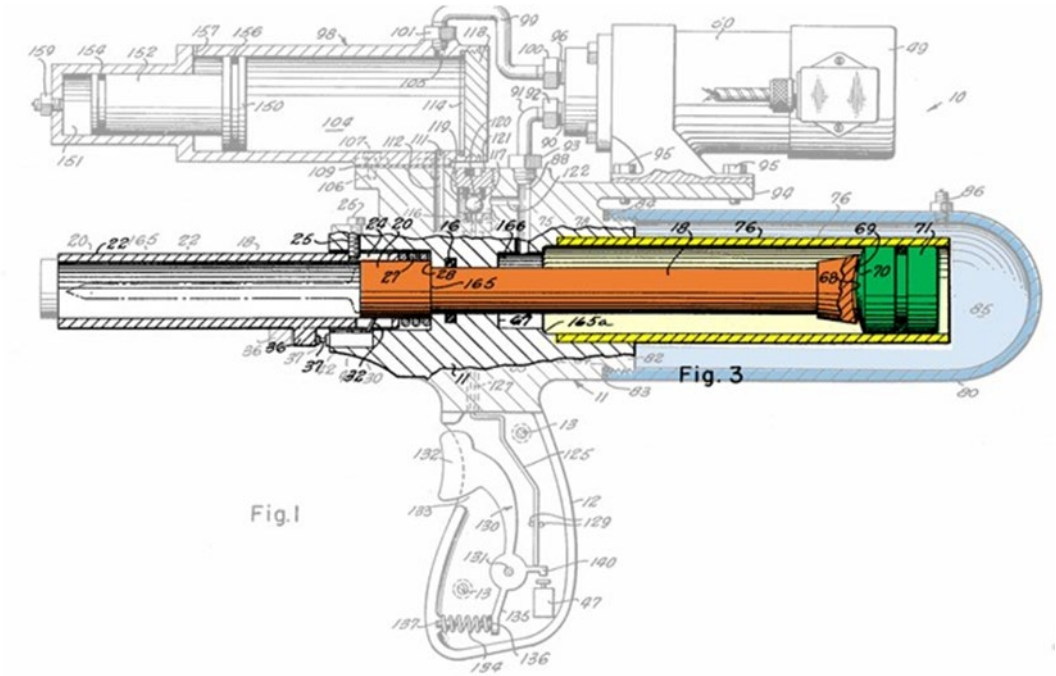
E. Claim 5

81. Haley discloses "wherein the piston is positioned inside the top cover when the piston is at or near the first end of the hollow cylinder." In Haley, the piston ("accumulator piston 71," green) is positioned inside the top cover/cap[1] ("chamber

[1] The "top cover" lacks an antecedent but is assumed to refer to the "top cap."

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85") when it is near the first end (right) of the cylinder ("extension cylinder 76," yellow). Haley, Figs. 1, 3.



F. Claim 6

82. ***Elements [6.P]–[6.7]***: Elements [6.P]–[6.7] are substantially identical to Elements [1.P], [1.1]–[1.2], [1.7], [1.10], [1.3]–[1.4], and [3.1], respectively, and are met as described above.

83. ***Element [6.8]***: Haley discloses "a handle portion." Haley discloses a "hollow handle 12" (green). Haley, 4:29–37, Fig. 1.

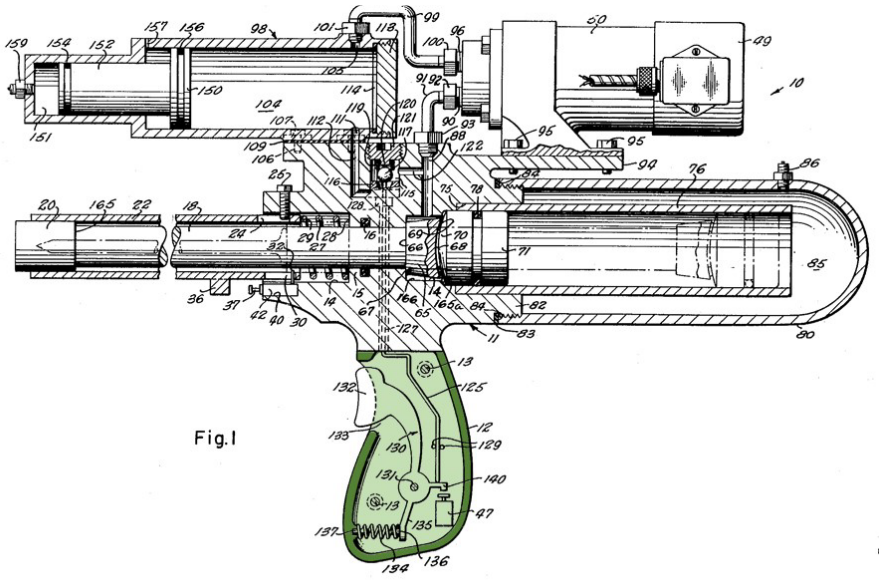


Fig.1

84. ***Element [6.9]***: Element [6.9] recites "a motor that provides motive power for said lifter" and is met for the reasons described above for Element [1.5], which recites "a prime mover."

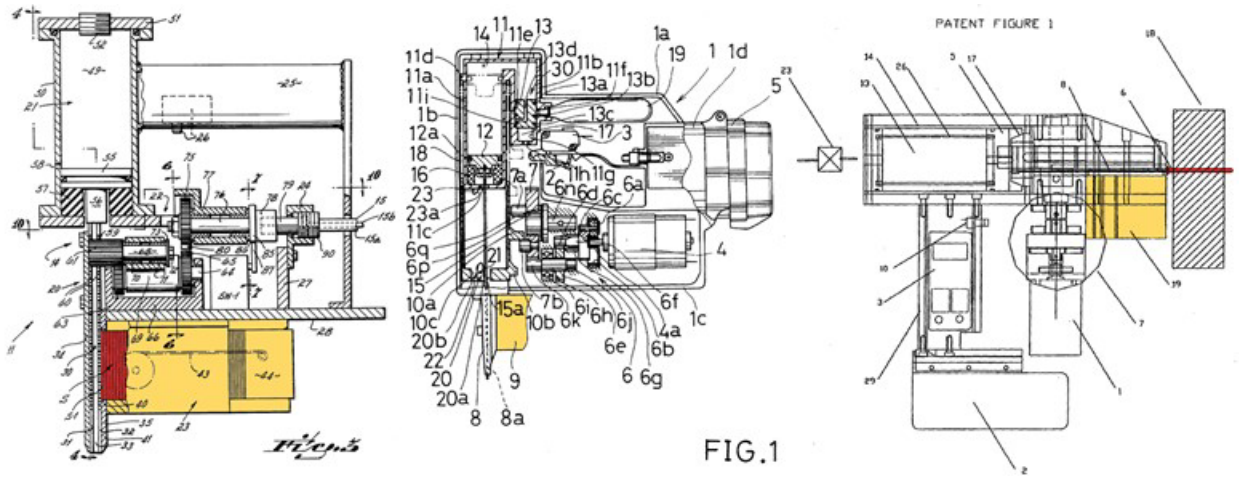
85. ***Element [6.10]***: Element [6.10] recites "a removable battery pack that provides energy for said motor" and is met for the reasons described above for Element [1.6], which recites "a source of electrical energy that is removably attached to said housing."

86. ***Element [6.11]***: Haley does not explicitly disclose "a removable magazine that holds a plurality of fasteners," but it would have been obvious at the filing of the '167 patent to include a magazine that provides nails below the driver such that they are pushed out the exit of the driver track during a drive stroke.

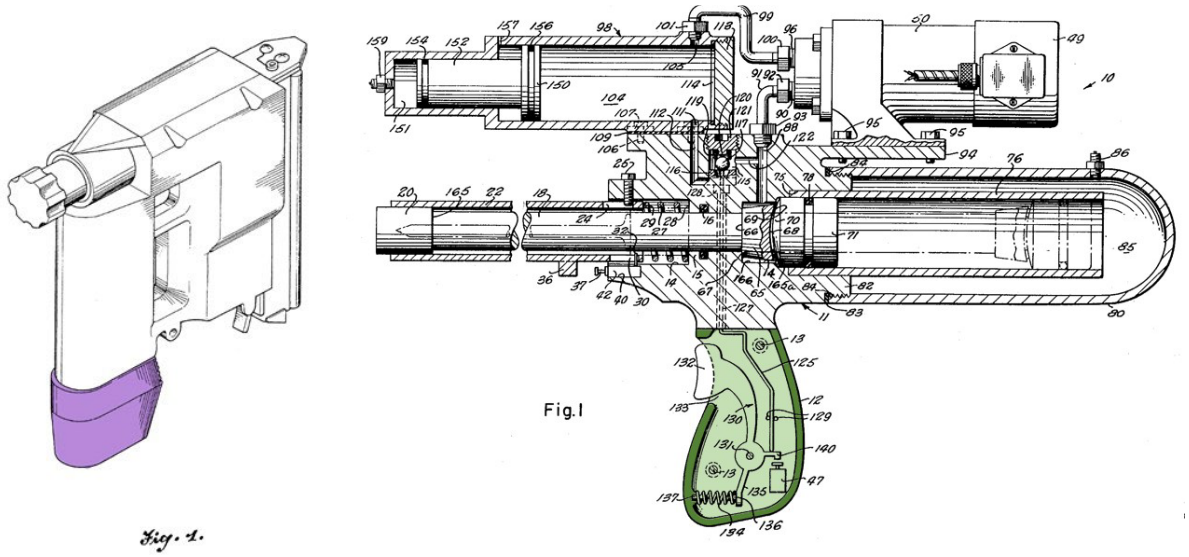
87. Removable magazines that feed fasteners (such as nails) below the driver to be pushed out the exit during a drive stroke had become a ubiquitous

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component of powered nailers by the time of the '167 patent, which customers would have expected and required to be included. This is reflected by the fact that all three prior art references expressly discussed in the specification of the '167 patent (1:58–2:9) included such a magazine. *See* U.S. Patent No. 4,215,808 ("Sollberger"), Fig. 3 ("magazine 23," below left), 5:65–6:5; Kondo, Fig. 1 ("nail magazine 9," below middle), 5:15–23; Pedicini, Fig. 1 ("fastener feeder (19)," below right), ¶[0077]. It was therefore obvious for a POSITA to include such a magazine due to market forces and design incentives.



88. ***Element [6.12]***: The combination of Haley and Lai discloses "wherein: said removable battery pack is attached proximal to said handle portion." Lai's removable battery 2 (purple) is attached at the bottom of the tool, which when combined with Haley would be proximal to Haley's handle 12 (green). Lai, Fig. 1 (below left); Haley, Fig. 1 (below right).



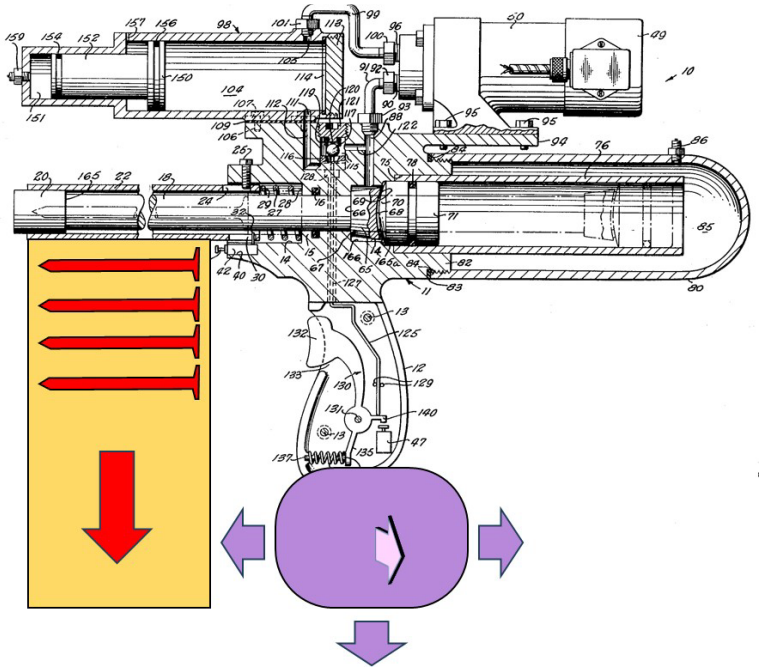
89. ***Element [6.13]***: Haley discloses "said removable magazine is attached proximal to an exit end of said guide body, wherein said magazine extends past said removable battery pack."

90. The removable magazine added by the POSITA would need to be attached proximal to an exit end of said guide body in order to feed fasteners below the driver. The magazine would obviously extend below the removable battery pack in designs with high capacity magazines, since increasing the magazine size will extend it outward from the tool at a greater pace than increasing the battery.

91. As illustrated below, the magazine (orange) holds nails (red) linearly and thus can only expand by extending further downward below the tool, whereas the battery (purple) holds charge based on volume and can expand by being extended in any direction. Thus, while both the magazine and battery will expand in a high

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capacity design, the magazine will predictably extend down further below the battery for certain obvious designs.



G. Claim 7

92. Elements [7.1]–[7.2] are substantially identical to Claim 2 and Element [3.2], respectively, and are met as described above.

H. Claim 8

93. Claim 8 is substantially identical to Claim 4 and is met as described above.

I. Claim 9

94. Haley discloses "wherein: a bottommost surface of said magazine is farther from a centerline of said exit end of the guide body than is a bottommost surface of said battery pack." As I explained above for Element [6.13], designs with

high capacity magazines will obviously have a magazine that extends further downward below the tool than the battery pack, and thus the magazine's bottommost surface will be farther away from the centerline than the battery's bottommost surface.

95. I note that a POSITA would interpret the term "bottommost surface" in claim 9 as referring to the side of the magazine furthest away from the guide body (the bottom of the figure above), which differs from the use of the term "bottom-most travel position" when it is applied to the piston and refers to the side of the tool closest to the workpiece (the left side of the figure above). This latter meaning would make no sense as applied to the magazine in the context of claim 9 where the relevant surface is considered based on its distance from the centerline of the guide body.

J. Claim 10

96. ***Elements [10.P]–[10.4]***: Elements [10.P]–[10.4] are substantially identical to Elements [6.P], [6.1], [6.2]–[6.3], [6.5], and [6.6], respectively, and are met as described above.

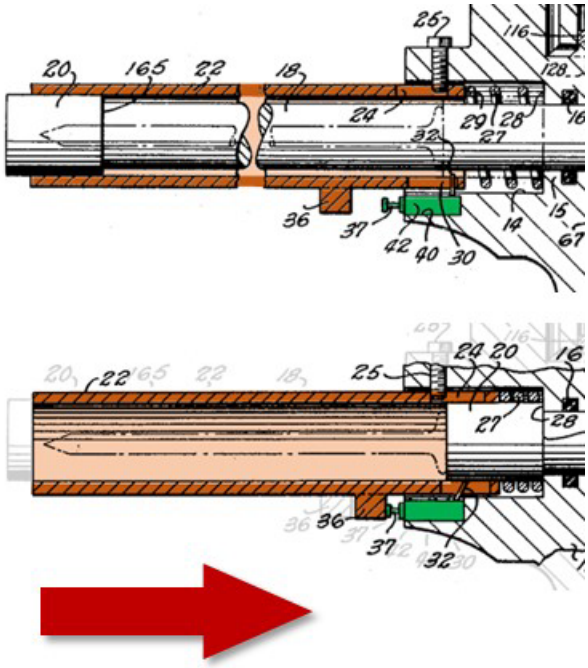
97. ***Element [10.5]***: Element [10.5] recites "a guide body . . . having a linear passageway for said driver," which is substantially identical to Element [6.7], and further recites that the guide body is "located proximal to said hollow cylinder" and "having an exit end that is located distal from said hollow cylinder." Element [10.5] is met for the reasons discussed above for Element [6.7].

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98. ***Element [10.6]***: Element [10.6] recites "a removable battery pack," which is identical to Element [6.10], and further recites that it "is located at a rear portion of said tool." Element [10.6] is met for the reasons discussed above for Element [6.10].

99. ***Element [10.7]***: Haley discloses "a safety contact element proximal to said exit end, said safety contact element being disposed at a front portion of the tool."

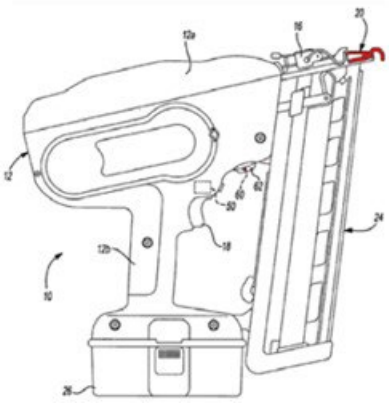
100. Haley discloses a "guide barrel 22" with a "lug 36" that engages "operator arm 37" to allow operation of the tool. Haley, Figs. 1–4 and 5:74–6:12.

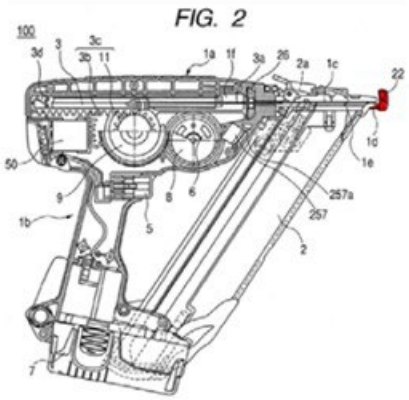


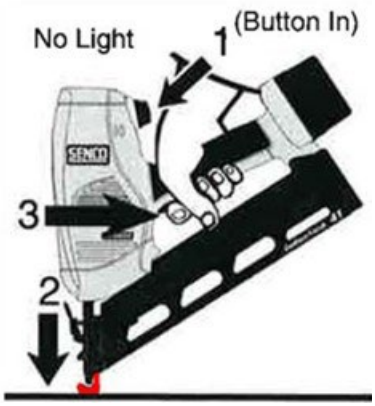
101. Haley does not explicitly disclose its safety contact being "above said guide body," but this would have been obvious at the filing of the '167 patent. Haley's safety contact is at a front portion of the tool but is integrated into the guide

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body. This is a mere matter of design choice, and it would have been obvious to have the safety contact be a separate element above the guide body, particularly in the combination in Lai, which eliminates Haley's bulky lifting mechanism taking up space above the guide body. A POSITA would be motivated to incorporate such a safety contact element into Haley based on design choice and market forces, because that was the conventional design taught by numerous prior art references, including U.S. Pub. No. 2005/0217875 (Ex. 1015, "Forster"), U.S. Pub. No. 2008/0067213 (Ex. 1016, "Shima"), and the Senco 41 Nailer Operating Instructions (Ex. 1017, "Senco"). Forster, ¶[0024], ¶[0028] ("contract trip 20"), Fig. 1 (below left); Shima, ¶[0054] ("push lever switch 22"), Fig. 2 (below middle); Senco, 13–14 ("workpiece contact element," below right).





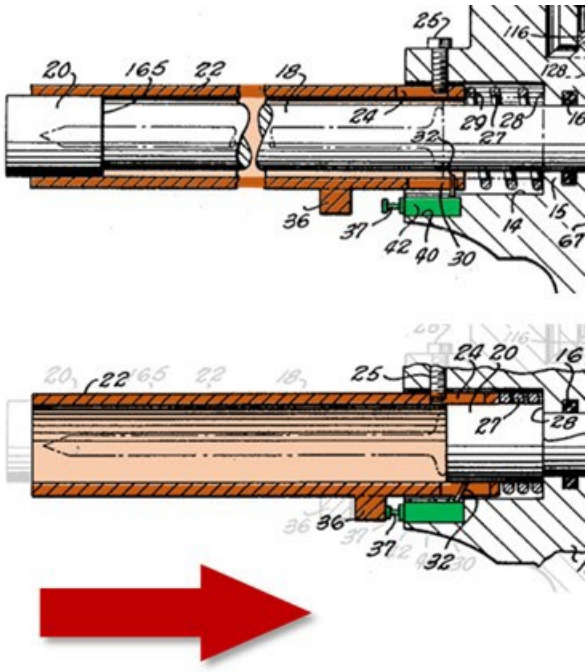


K. Claim 11

102. Claim 11 recites "an electric motor that derives energy from said battery pack, which provides motive power for said lifter" and is met for the reasons discussed above for Element [6.9].

L. Claim 12

103. Haley discloses "wherein: said safety contact element prevents said drive stroke from occurring unless said safety contact element is pressed against a solid surface." Haley states that "[w]hen the forward end of the guide barrel is then pressed against the work piece . . . the lug 36 engages the operating rod 37 of the normally open switch 38 and closes the switch so that the motor 49 is once again connected to the input circuit 52." Haley, 5:74–6:7. This action is shown by Figures 1 and 3, below. Haley's safety contact element thus prevents the drive stroke from occurring by not closing the circuit that powers the motor until the safety is pressed against the workpiece.



M. Claim 13–14

104. Claims 13–14 are identical to Claims 7–8, respectively, and are met as described above.

N. Claim 15

105. Haley discloses "wherein: said safety contact element is located directly above said guide body and extends from said front portion of the tool toward a rear portion of the tool, extending along at least a surface of the guide body that is on the opposite side of the tool from where said battery pack is located."

106. As I explained above for Element [10.7], it would have been an obvious design choice to have the safety contact be a separate element above the guide body, particularly in the combination in Lai, which eliminates Haley's bulky lifting mechanism taking up space above the guide body. In this obvious design, the safety contact element would be located directly above the guide body, extend from the front of the tool toward the rear of the tool along the top surface of the guide body, and be on the opposite side of the tool from the battery pack located on the bottom.

VI. CLAIMS 1–15 ARE OBVIOUS BASED ON SAARI/ENSTROM IN VIEW OF LAI

107. Saari and Enstrom are closely related patents that were filed on the same day and given sequential application numbers, assigned to the same company, have identical titles and terminology, and contain overlapping specifications and figures. Exs. 1006 [Saari], 1007 [Enstrom]. Given the close relationship between

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Saari and Enstrom, a POSITA would look to their collective teachings together and would have combined them as a matter of course.

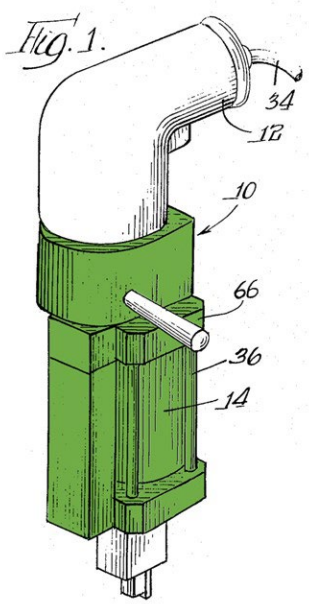
108. To the extent there are aspects described in only one of Enstrom or Saari, a POSITA would understand that is simply due to their separate focuses on different inventive aspects of the tool (warranting the separate patents for different inventors). For example, Saari describes the switching means for controlling the fastener driving tool (Saari, 1:48–57, 3:19–68, Figs. 7–9), whereas Enstrom describes the lifting mechanism and compressed gas chamber for that tool (Enstrom, 2:35–3:19, Figs. 6–7). Accordingly, a POSITA would combine the two teachings to achieve the complete tool worked on by Enstrom and Saari. As a result, I believe a POSITA would have treated Saari and Enstrom together, which is how I treat them below.

A. Claim 1

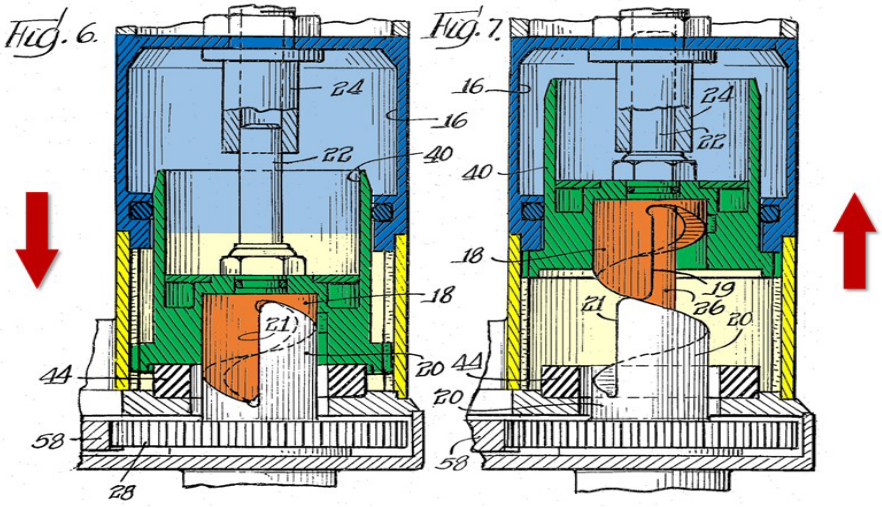
109. ***Element [1.P]***: Saari/Enstrom discloses "[a] portable fastener driving tool." Saari/Enstrom disclose a "driving tool" with a spring (including a compressed gas spring) to "provide the actual driving force to seat the fastener." Saari, 1:27–33; Enstrom, 1:27–32.

110. ***Element [1.1]***: Saari/Enstrom discloses "a housing with a storage chamber that contains a pressurized gas that is always above atmospheric pressure."

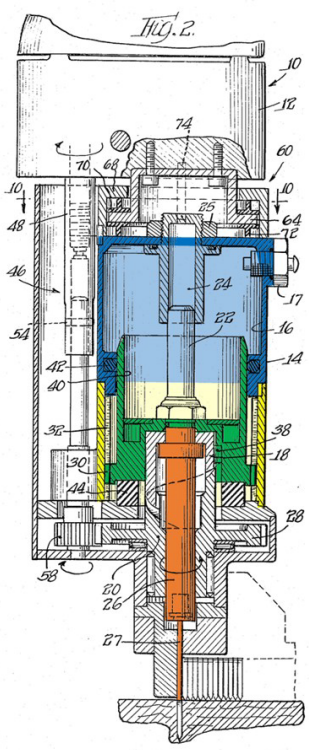
Saari/Enstrom's housing is shown below in green. Enstrom, Fig. 1; *see also* Saari, Fig. 1.



111. Saari/Enstrom's storage chamber ("chamber 16," blue) is distinct from the cylinder (yellow). Enstrom, 2:35–39, Figs. 2 and 6–7; *see also* Saari, 4:1–9, Fig. 10.



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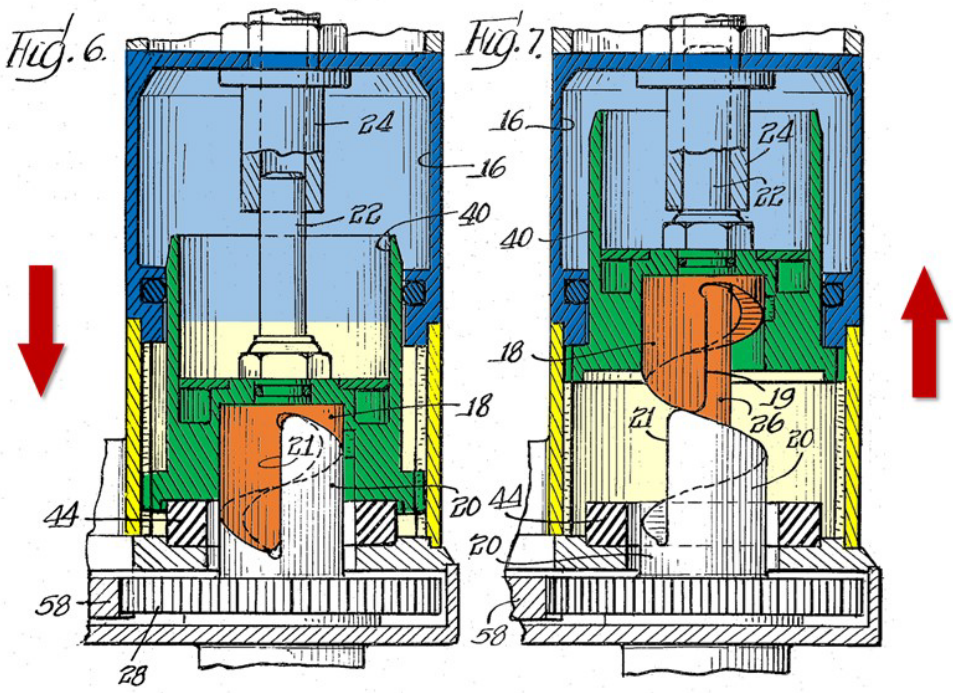


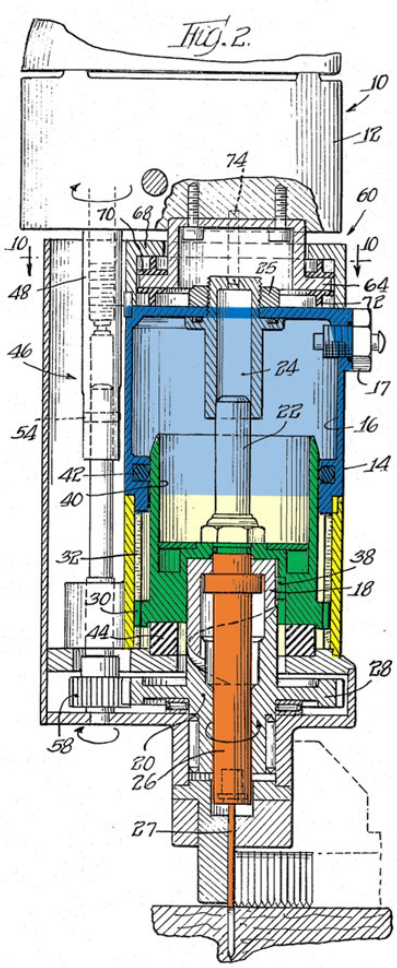
112. Saari/Enstrom's storage chamber contains a pressurized gas that is always above atmospheric pressure. Saari states that "valve 86 is provided for selectively charging the chamber with the appropriate compressible gas," which "will thus allow the compressibility of the spring to be conveniently varied." Saari, 4:11–14, Fig. 10; *see also* Enstrom, Fig. 2. Saari also states that "[t]he gas chamber is sealed by suitable seal means 84 between the inner walls of the housing 14a and the outer side walls of the piston 80." Saari 4:6–9, Fig. 10; *see also* Enstrom, 2:52–55, Figs. 1 and 6–7. A POSITA would understand the disclosure of a sealed storage chamber and a valve for "selectively charging the chamber" means that the chamber is always above atmospheric pressure, since a charging valve would have no use if the chamber were allowed to reach atmospheric pressure. Nor would a POSITA

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misinterpret the valve in Saari/Enstrom as a connection point for a pneumatic hose to attached and supply gas throughout operation (as opposed to only an initial charge), since Saari/Enstrom explicitly denigrate pneumatic devices that "require[] convenient sources of compressors and air hoses which makes a tool undesirable for the various remote locations required on a construction site." Saari, 1:9–15; Enstrom, 1:7–13.

113. ***Element [1.2]***: Saari/Enstrom discloses "a hollow cylinder that includes a movable piston." Saari/Enstrom's hollow cylinder (yellow) contains a piston ("cup-like piston 40") movable within the cylinder along "key and spline devices 30 and 32." Enstrom, 2:52–60, Figs. 2, 6–7; Saari, 4:1–9, Fig. 10.





114. ***Element [1.3]***: Saari/Enstrom discloses "a movable driver that is in communication with said piston at least during a drive stroke." Saari/Enstrom's movable driver ("upper cam 18 and associated ram 26," orange) is in communication with its piston ("cup-like piston 40," green) during the drive stroke. Enstrom, 2:55–59, Figs. 2, 6–7; *see also* Saari, 2:51–54, Figs. 1–2.

115. ***Element [1.4]***: Saari/Enstrom in combination with Lai discloses "a lifter that is in communication with said driver at least during a return stroke."

116. Saari/Entrom discloses a lifting mechanism with "a pair of coacting helicoidal cams 18 and 20," where the "[t]he lower cam 20 will be rotatably mounted within the housing and serves as the driving cam. Enstrom, 2:32–39, Figs. 1 and 6–7. Saari/Entrom's lifting structure ("cam 20") moves the driver member ("upper cam 19 and associated ram 26") away from an exit end of the fastener driving mechanism ("a purely axial rearwardly motion"). Enstrom, 2:55–59, Figs. 6–7; *see also* Saari, 2:51–54, Figs. 1–2.

117. In my opinion, it was obvious—at the filing of the '167 patent—to replace Saari/Enstrom's helicoidal lifting mechanism with the claimed "lifter," which is disclosed by Lai as explained above in relation to the combination of Haley with Lai. A POSITA at the filing of the '167 patent would have been motivated to replace Saari/Enstrom's helicoidal lifting mechanism with Lai's lifter member. Specifically, Saari/Entrom's lifting mechanism had a known problem in that it was designed to be used in a corded tool with access to AC power from an electrical outlet. Enstrom, Fig. 1 (power cord 34). As explained above in relation the combination of Haley with Lai, at the filing of the '167 patent, market forces and design needs favored a portable, battery-powered nailer. Artisans had repeatedly noted over the years that corded power nailers (with a pneumatic air hose, an electrical power cable, or both) were not ideal because of their lack of portability. Lin, 1:21–26; Kondo, 1:9–29; Pedicini, ¶[0005].

118. As described above, Lai discloses a battery-powered nailer and expressly touts one of its benefits as being electrical efficiency. Specifically, Lai identifies an "ideal" electric stapling gun as being "energy saving" and explains that its disclosed lifter member can "provide the same hitting effect with less power consumption." Lai, 1:9–10. 2:34–42. Accordingly, it is my opinion that at the filing of the '167 patent, a POSITA would have replaced Saari/Enstrom's helicoidal lifting mechanism with Lai's lifter member in order to eliminate the electrical power cable and achieve a portable, battery-powered nailer.

119. For example, the coacting helical cams of Saari/Enstrom could be replaced with a straight member having a rectangular cross section which would allow a straight forward addition of Lai's protrusions to this straight member. The gear drives, already located adjacent to the lifting mechanisms in Sarii/Enstrom, could be replaced with the rotary cam of Lai and actuated using Lai's battery powered motor. This motor could be positioned in a similar orientation (perpendicular to the drive axis) and positioned to improve the balance of the driving tool.

120. ***Element [1.5]***: The combination of Saari/Enstrom and Lai discloses "a prime mover." Lai's lifter is moved by a prime mover ("motor 3"). Lai, 2:14–16, Fig. 2.

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121. ***Element [1.6]***: The combination of Saari/Enstrom and Lai discloses "a source of electrical energy that is removably attached to said housing." Lai's motor is powered by a removable battery (Lai's battery 2, purple). Lai, Figs. 1–2, 1:25–35, 1:44–54, 1:60–62, 2:2.

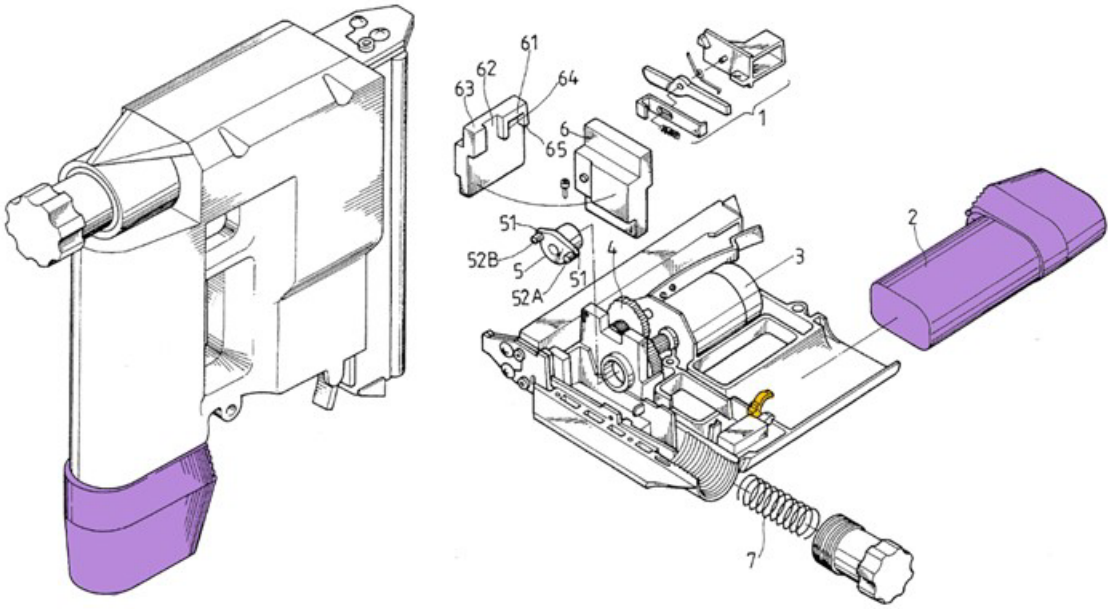
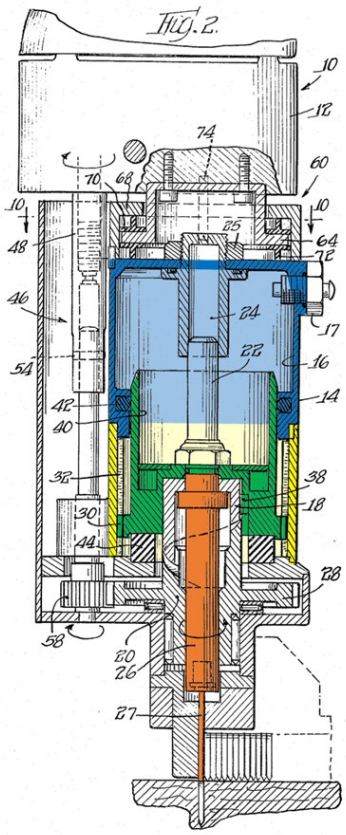


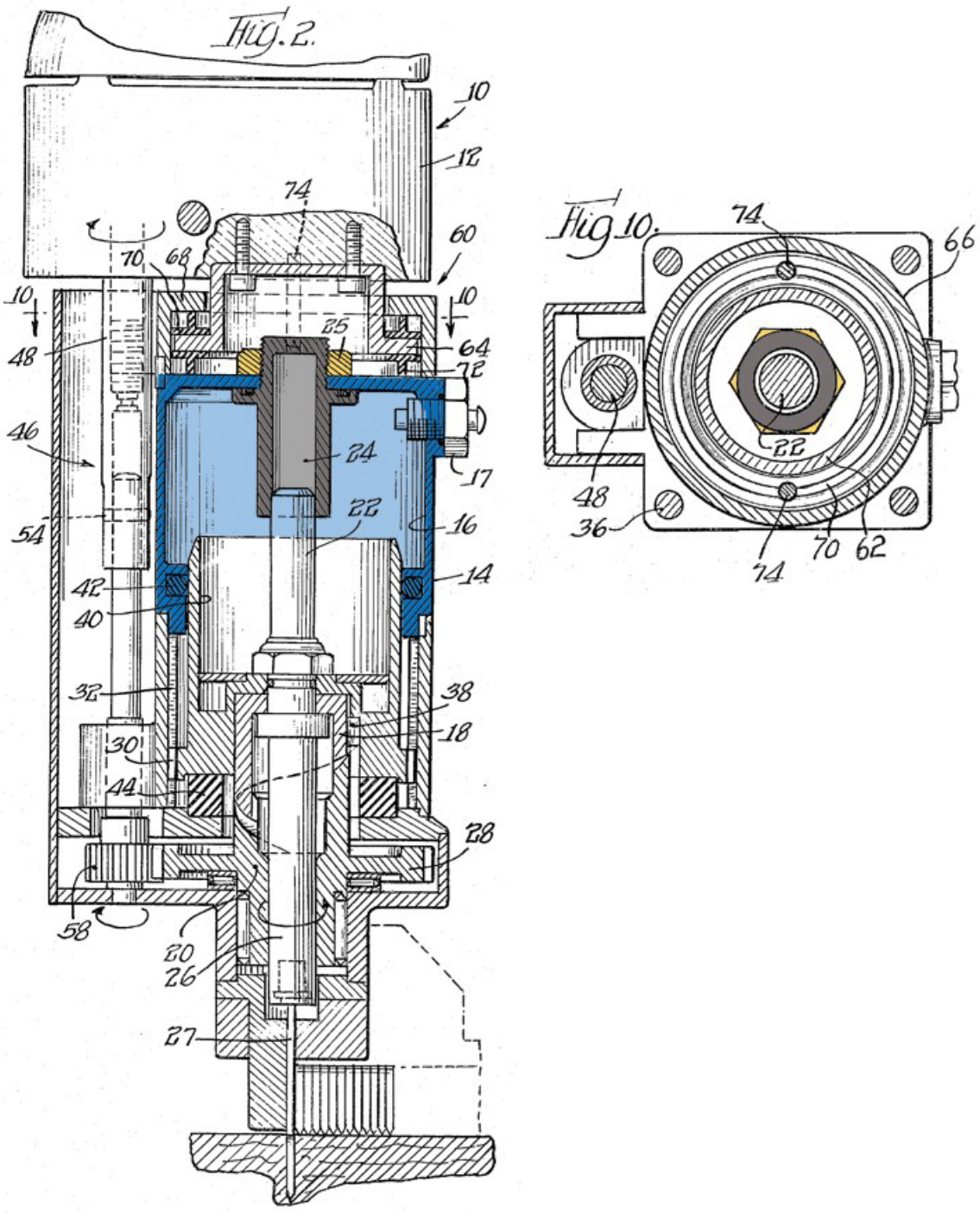
Fig. 1.

FIG. 2

122. ***Element [1.7]***: Saari/Enstrom discloses "said storage chamber being in fluidic communication with a first end of said hollow cylinder." Saari/Enstrom's storage chamber 16 is in fluidic communication with the first end of the hollow cylinder (yellow). Enstrom, 2:35–39, Fig. 2.



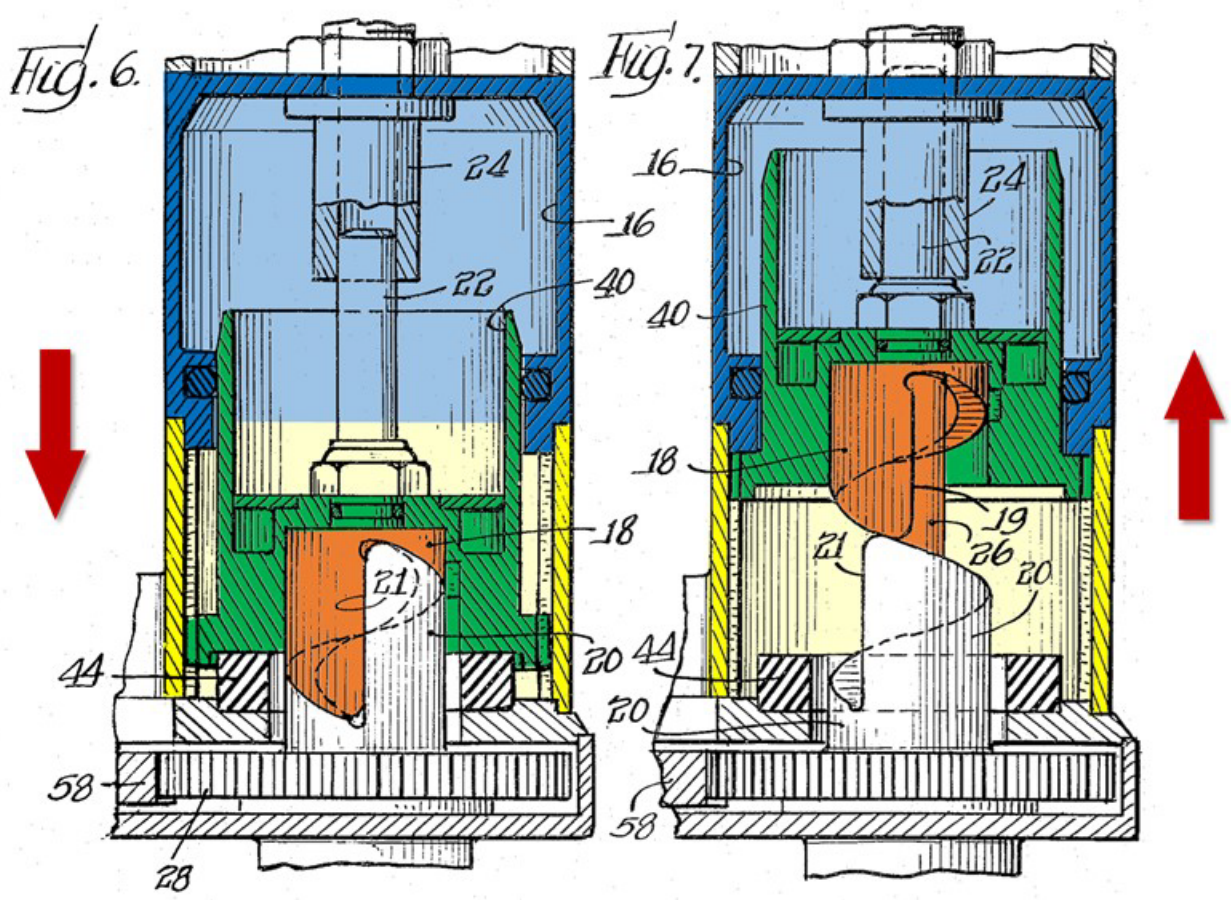
123. ***Element [1.8]***: Saari/Enstrom discloses "said storage chamber including a removable top cap at a location proximal to said first end of said hollow cylinder." Saari/Enstrom's storage chamber (blue) has a top cap (sleeve 24, grey), which is removably attached by a nut 25 (yellow). Enstrom, Figs. 2, 10.



124. ***Element [1.9]***: Saari/Enstrom discloses "wherein: said piston travels through said hollow cylinder between a higher pressure position and a lower pressure position; said piston has a rest position between operational cycles; and a location of

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said rest position is proximal to said higher pressure position." Saari/Enstrom's piston 40 (green) travels through the hollow cylinder (yellow) between a higher pressure position (Fig. 7, right) and a lower pressure position (Fig. 6, left). Enstrom, Figs. 6–7.



125. ***Element [1.10]***: Saari/Enstrom discloses "said pressurized gas is not vented to atmosphere after said drive stroke." A POSITA would understand that the pressurized gas is not vented to atmosphere after the drive stroke, since a charging valve would have no use if the chamber were vented to reach atmospheric pressure.

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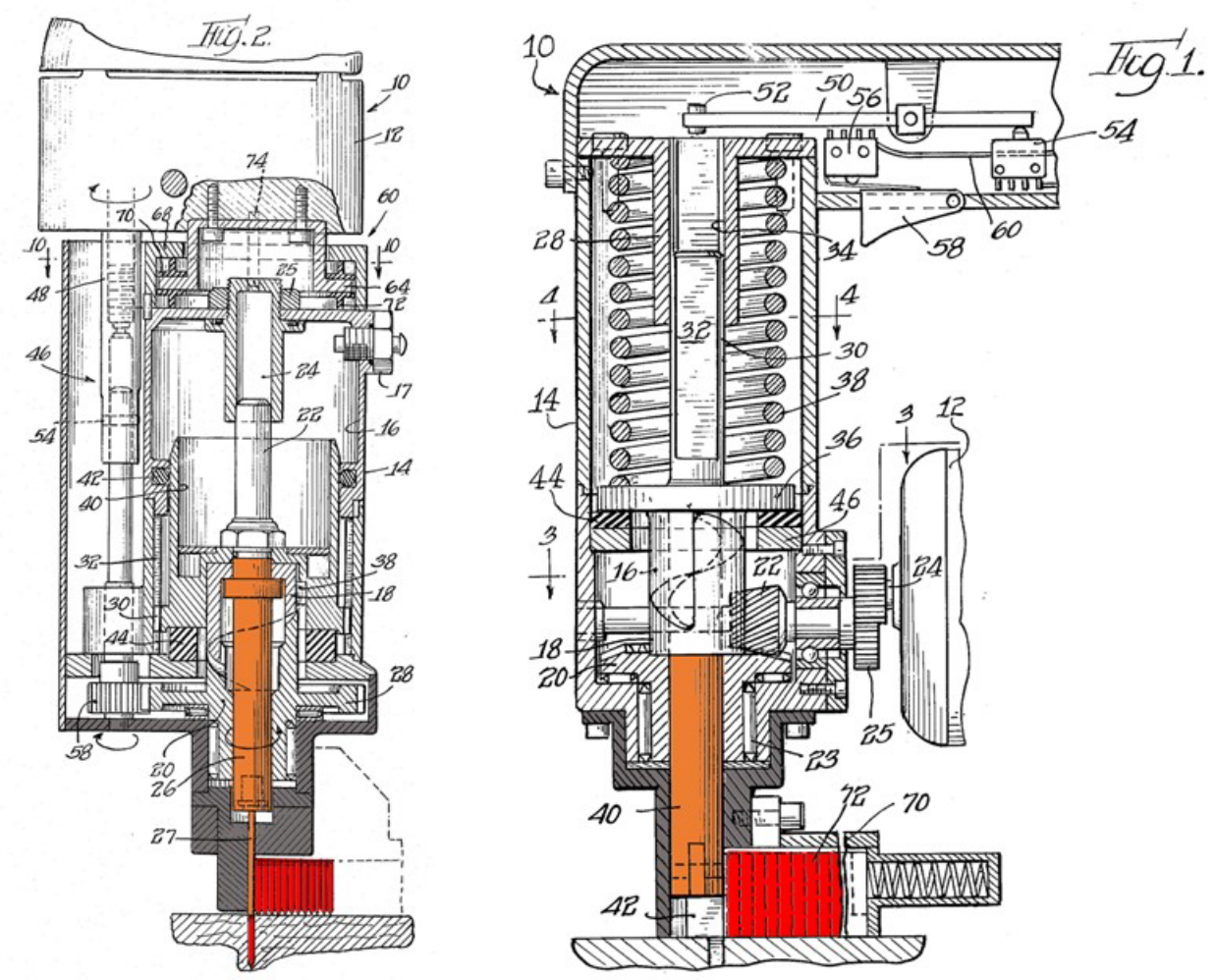
B. Claim 2

126. The combination of Saari/Enstrom and Lai discloses "said movable driver including at least one protrusion; and said lifter including at least one extension; wherein: said at least one extension of the lifter mechanically engages with said at least one protrusion of the driver during said return stroke." Lai teaches adding a "U-shaped member 61" with protrusions to a protrusion-less driver blade so that it can be mechanically engaged by the extensions (pins 52A and 52B) of Lai's lifter member during the return stroke. Lai, 2:4–7. In the same way, POSITA would have understood that by adding protrusions to Saari/Enstrom's driver blade it could be lifted by Lai's lifter member and would have achieved the same results predicted by Lai.

C. Claim 3

127. ***Element [3.1]***: Saari/Enstrom discloses "a guide body with a linear passageway for said driver." Saari/Enstrom's guide body (grey) has a linear passageway for the driver (26/40, orange below). Enstrom, Fig. 2 (below left); Saari, Fig. 1 (below right).

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128. ***Element [3.2]***: The combination of Saari/Enstrom and Lai discloses "wherein: said lifter moves in a rotational motion and causes said driver to move in a linear motion along said linear passageway."

129. In that combination, the lifter taught by Lai is a rotatable cam 5 (yellow) that moves in rotational motion (curved arrows) to cause the driver (light orange) to move in a linear motion (straight arrows) in the linear passageway of the guide body. Lai, Figs. 4A–D, 1:62–63, 2:14–25.

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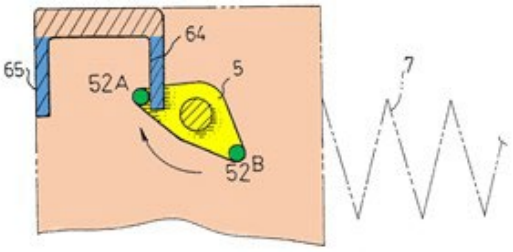


Fig. 4A.

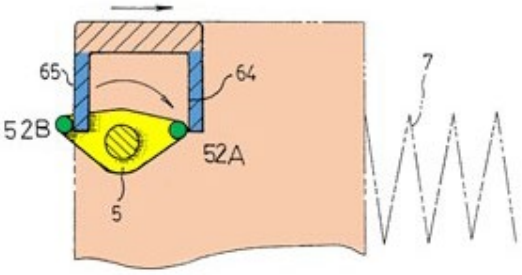


Fig. 4B.

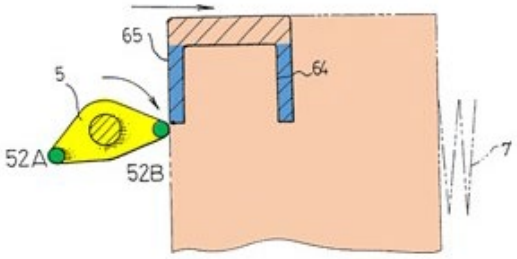


Fig. 4C.

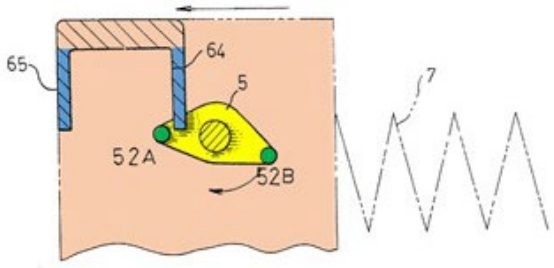
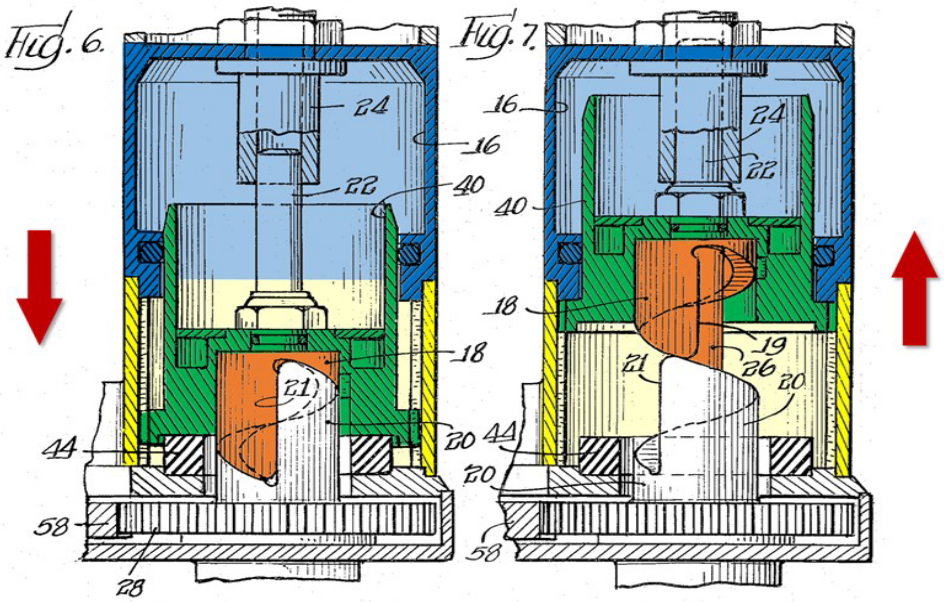


Fig. 4D.

D. Claim 4

130. Saari/Enstrom discloses "wherein: said cylinder and piston act as a gas spring during said drive stroke, and said lifter does not mechanically engage said driver during said drive stroke." In Saari/Enstrom, the cylinder (yellow) and piston ("cup-like piston 40," green) act as a gas spring during the drive stroke. When the cup-like piston 40 is raised, the gas in the displacement volume of the cylinder within the cup of piston (yellow) and the gas in chamber 16 (blue) are compressed, and the lifter then moves out of mechanical engagement with the driver for a drive stroke where the ram is then "driven downwardly under the bias of the compressed gas." Enstrom, 2:45–46, Figs. 6–7; Saari, Fig. 10.

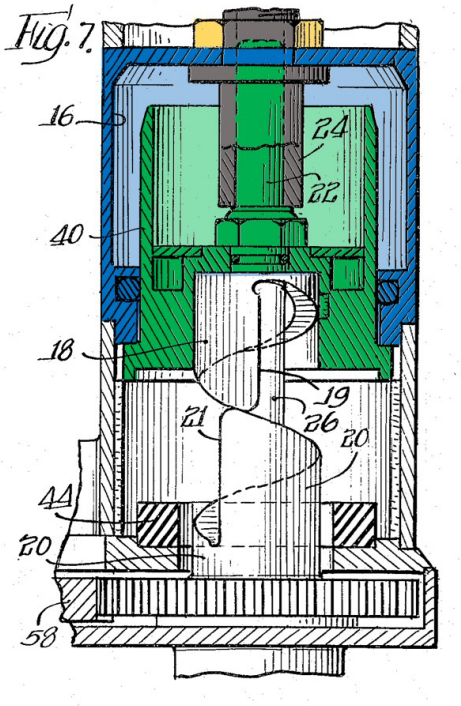


E. Claim 5

131. Saari/Enstrom discloses "wherein the piston is positioned inside the top cover when the piston is at or near the first end of the hollow cylinder."

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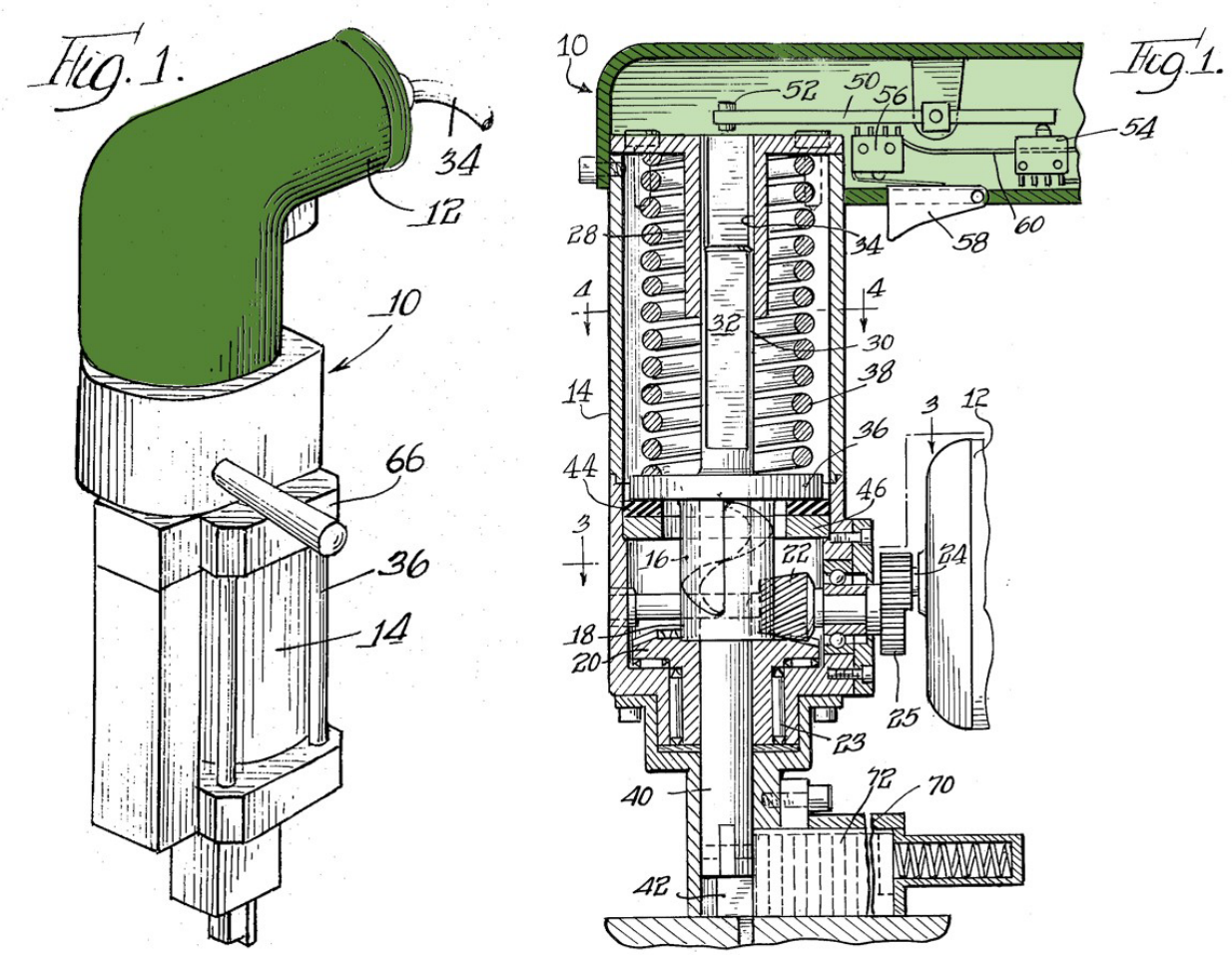
Saari/Enstrom's piston 40 includes a guide shaft 22 (green) positioned inside the top cover (sleeve 24, grey) when the piston is at the first end (top) of hollow cylinder (yellow). Enstrom, 2:48–54, Fig. 7.



F. Claim 6

132. ***Elements [6.P]–[6.7]***: Elements [6.P]–[6.7] are substantially identical to Elements [1.P], [1.1], [1.2], [1.7], [1.10], [1.3], [1.4], and [3.1], respectively, and are met as described above.

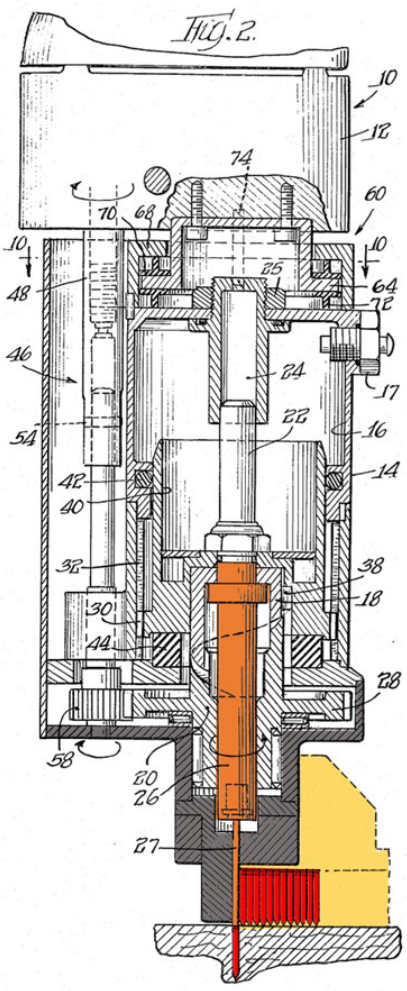
133. ***Element [6.8]***: Saari/Enstrom discloses "a handle portion." Saari/Enstrom's handle portion is part of the electric motor housing 12. Enstrom, Fig. 1; Saari, Fig. 1.

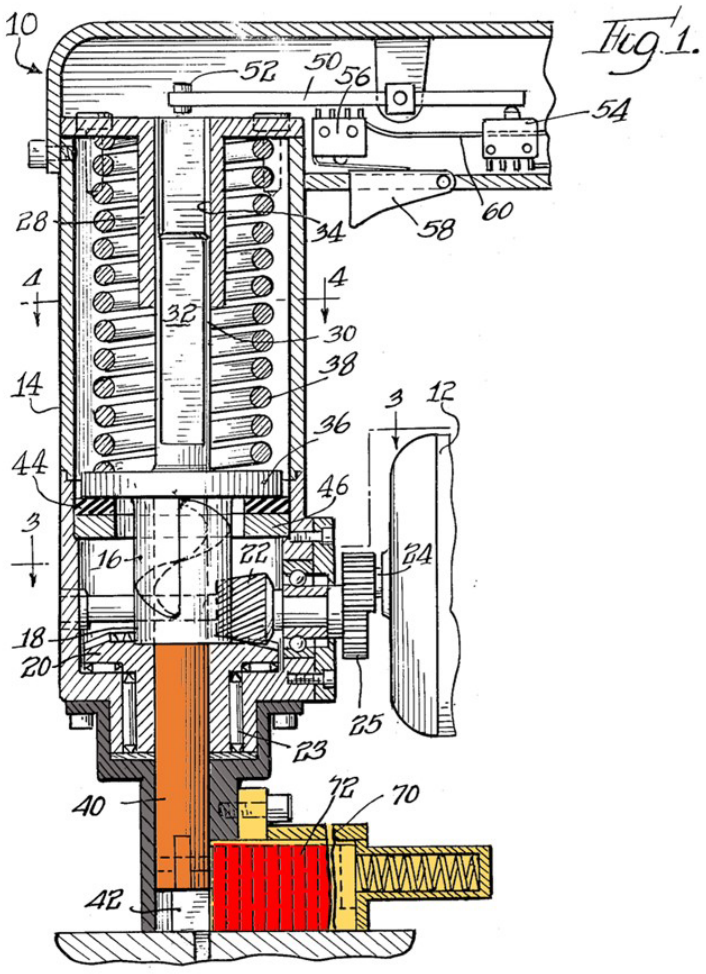


134. ***Element [6.9]***: Element [6.9] recites "a motor that provides motive power for said lifter" and is met for the reasons described above for Element [1.5], which recites "a prime mover."

135. ***Element [6.10]***: Element [6.10] recites "a removable battery pack that provides energy for said motor" and is met for the reasons described above for Element [1.6], which recites "a source of electrical energy that is removably attached to said housing."

136. ***Element [6.11]***: Saari/Enstrom discloses "a removable magazine that holds a plurality of fasteners." Saari/Enstrom's magazine (70, light orange) contains a plurality of fasteners ("fastener member 72," red). Saari, Fig. 1, 2:61–63; Enstrom, Fig. 2; A POSITA would understand Saari/Enstrom's magazine is removable based on their knowledge of nailers, as well as the how the magazine is illustrated in Enstrom (with a dashed-line outline) and Saari (with an unlabeled bolt allowing removal).





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137. ***Element [6.12]***: The combination of Saari/Enstrom and Lai discloses "wherein: said removable battery pack is attached proximal to said handle portion." It would have been obvious to locate Lai's removable battery pack proximal to Saari/Enstrom's handle portion, particularly since that is the location of Saari/Enstrom's power cable (replaced by Lai's battery) and because that location is conventional, as shown by Kondo and Pedicini.

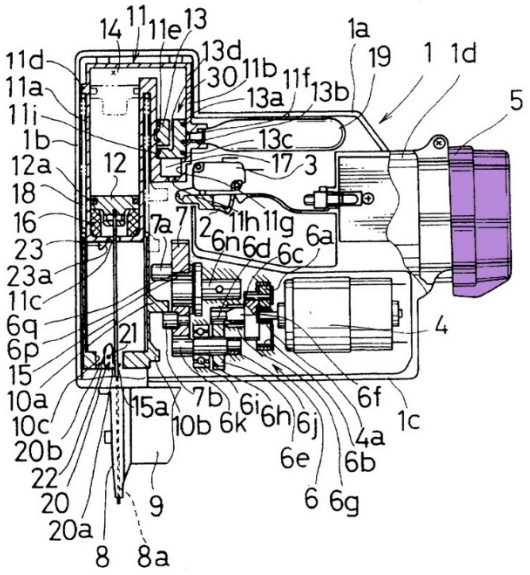
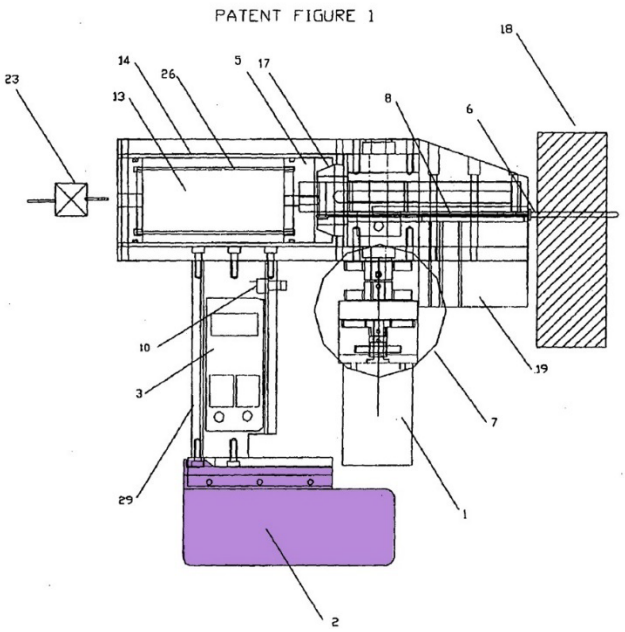


FIG.1



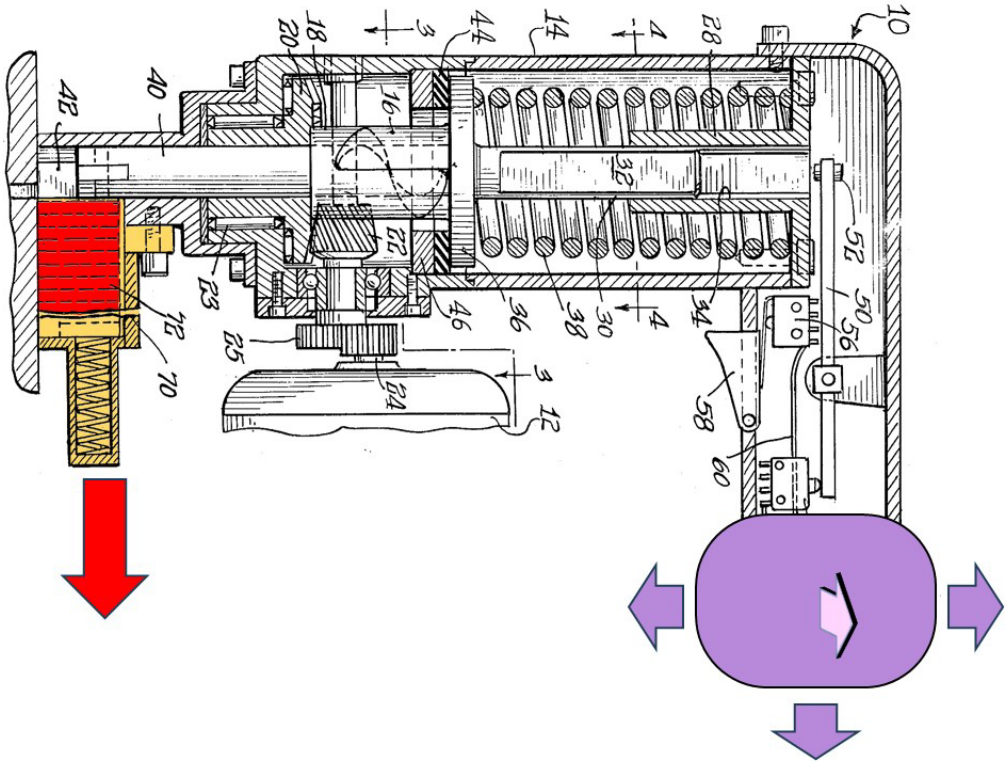
138. ***Element [6.13]***: Saari/Enstrom discloses "said removable magazine is attached proximal to an exit end of said guide body, wherein said magazine extends past said removable battery pack."

139. Saari/Enstrom's magazine (70, light orange) is attached proximal to an exit end of the guide body (grey) as shown above for Element [6.11]. Saari, Fig. 1, 2:61–63; Enstrom, Fig. 2.

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140. Saari/Enstrom's magazine would obviously extend past the removable battery pack in designs with high capacity magazines, since increasing the magazine size will extend it outward from the tool at a greater pace than increasing the battery.

141. As illustrated below, the magazine (orange) holds nails (red) linearly and thus can only expand by extending further downward below the tool, whereas the battery (purple) holds charge based on volume and can expand by being extended in any direction. Thus, while both the magazine and battery will expand in a high capacity design, the magazine will predictably extend down further below the battery for certain obvious designs.



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G. Claim 7

142. Elements [7.1]–[7.2] are substantially identical to Claim 2 and Element [3.2], respectively, and are met as described above.

H. Claim 8

143. Claim 8 is substantially identical to Claim 4 and is met as described above.

I. Claim 9

144. Saari/Enstrom discloses "wherein: a bottommost surface of said magazine is farther from a centerline of said exit end of the guide body than is a bottommost surface of said battery pack." As explained above for Element [6.13], designs with high capacity magazines will obviously have a magazine that extends further outward from the tool than the battery pack, and thus the magazine's bottommost surface will be farther away from the centerline than the battery's bottommost surface.

J. Claim 10

145. ***Elements [10.P]–[10.4]***: Elements [10.P]–[10.4] are substantially identical to Elements [6.P], [6.1], [6.2]–[6.3], [6.5], and [6.6], respectively, and are met as described above.

146. ***Element [10.5]***: Element [10.5] recites "a guide body . . . having a linear passageway for said driver," which is substantially identical to Element [6.7], and further recites that the guide body is "located proximal to said hollow cylinder" and

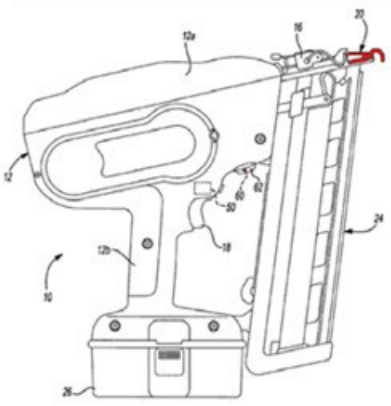
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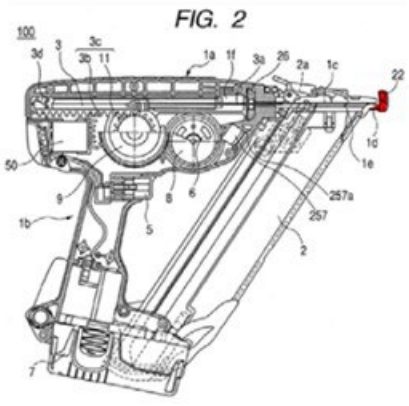
"having an exit end that is located distal from said hollow cylinder." Element [10.5] is met for the reasons discussed above for Element [6.7].

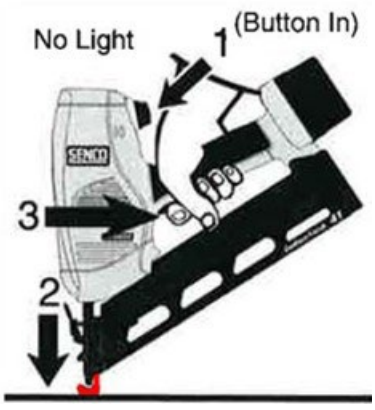
147. ***Element [10.6]***: Element [10.6] recites "a removable battery pack," which is identical to Element [6.10], and further recites that it "is located at a rear portion of said tool." Element [10.6] is met for the reasons discussed above for Element [6.10].

148. ***Element [10.7]***: Saari/Enstrom is silent about a safety contact, but it would have been obvious to a POSITA to have "a safety contact element proximal to said exit end, said safety contact element being disposed at a front portion of the tool, above said guide body."

149. A POSITA would be motivated to incorporate such a safety contact element into Saari/Enstrom based on design choice and market forces, because that was the conventional design taught by numerous prior art references, including Forster, Shima, and Senco. Forster, ¶[0024], ¶[0028], Fig. 1 (below left); Shima, ¶[0054], Fig. 2 (below middle); Senco, 13–14 (below right).







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K. Claim 11

150. Claim 11 recites "an electric motor that derives energy from said battery pack, which provides motive power for said lifter" and is met for the reasons discussed above for Element [6.9].

L. Claim 12

151. Saari/Enstrom discloses "wherein: said safety contact element prevents said drive stroke from occurring unless said safety contact element is pressed against a solid surface." The conventional safety contact element taught by numerous prior art references (Forster, Shima, Senco) prevents said drive stroke from occurring unless said safety contact element is pressed against a solid surface.

M. Claim 13–14

152. Claims 13 and 14 are identical to Claims 7 and 8, respectively, and are met as described above.

N. Claim 15

153. Saari/Enstrom discloses "wherein: said safety contact element is located directly above said guide body and extends from said front portion of the tool toward a rear portion of the tool, extending along at least a surface of the guide body that is on the opposite side of the tool from where said battery pack is located." The conventional safety contact element taught by numerous prior art references (Forster, Shima, Senco) is located directly above the guide body, extends from the

front of the tool toward the rear, and extends along a surface of the guide body opposite the battery.

VII. CLAIMS 1–15 ARE OBVIOUS BASED ON KONDO

A. Claim 1

154. ***Element [1.P]***: Kondo discloses "[a] portable fastener driving tool." Kondo "provide[s] a fastener driving tool which is operable to drive fasteners," Kondo, 1:48–49.

155. ***Element [1.1]***: Kondo discloses "a housing with a storage chamber that contains a pressurized gas that is always above atmospheric pressure." Kondo's housing ("housing 1") is shown below in green. Kondo, 2:50–53, Fig. 1.

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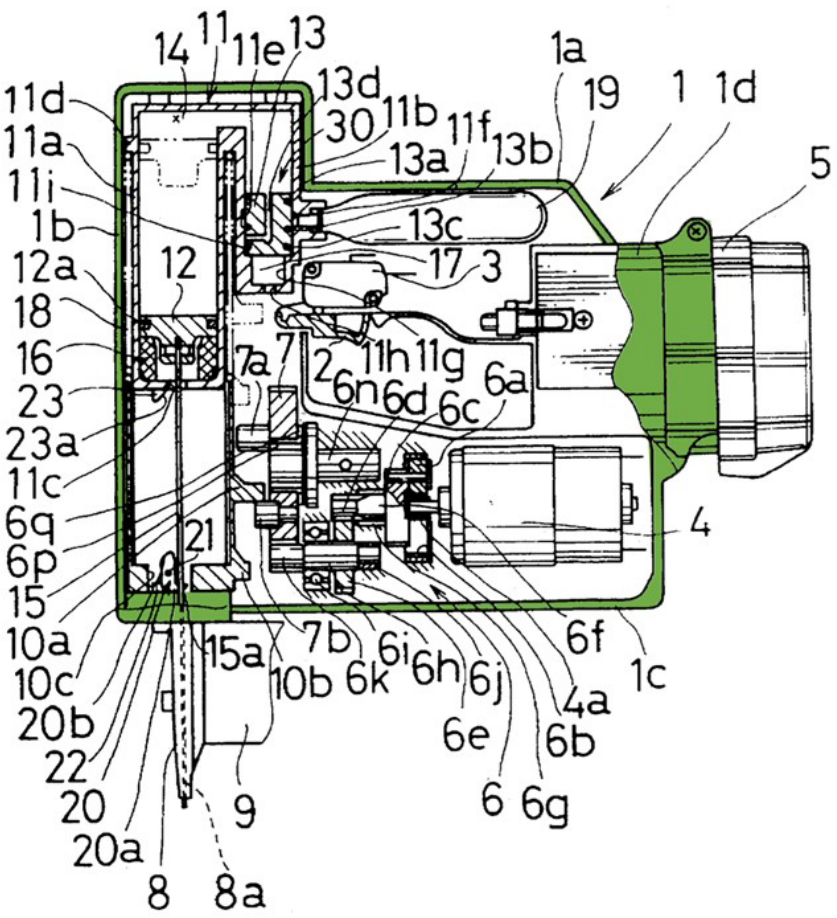


FIG.1

156. Kondo's storage chamber ("air chamber 14" of "auxiliary cylinder portion 11b," blue) is distinct from the cylinder ("cylindrical main body 11a")—while Kondo generally refers to a "cylinder 11," it also distinctly references "cylindrical main body 11a" and "auxiliary cylinder portion 11b" of cylinder 11. Kondo, 4:35–40, Figs. 1 and 2. A POSITA would consider Kondo's cylinder (the "cylindrical main body 11a," yellow above) to be distinct from the portion of the "air chamber 14" above and beside it, because that portion of the chamber is

surrounded by a structure with a different arrangement, radius, and alignment than the "cylindrical main body 11a." Kondo, Figs 1–2.

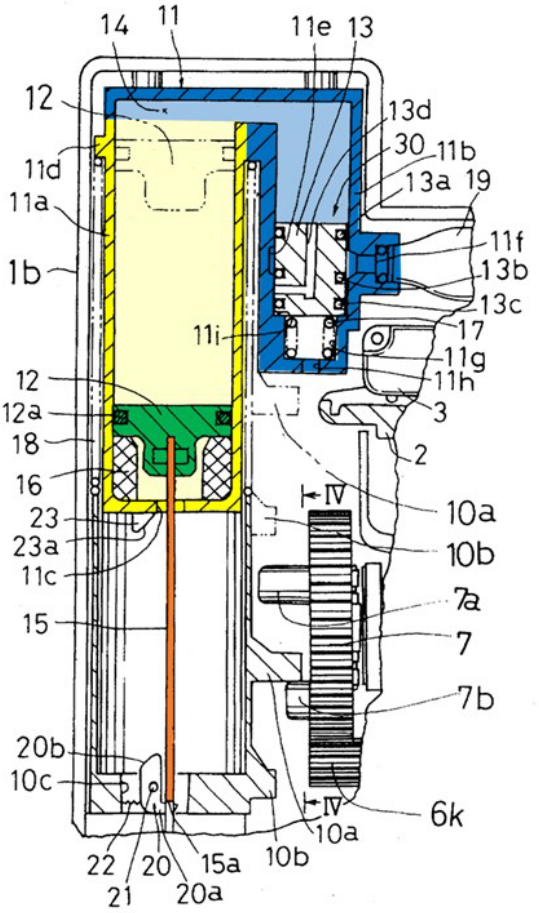


FIG. 2

157. Kondo's storage chamber is charged with a pressurized gas that is always above atmospheric pressure. Here, the design of the "auxiliary piston 13" shows that Kondo's storage chamber is charged with a pressurized gas. Specifically, because the "compression coil spring 17" and atmospheric pressure (through "communication hole 11h) are collectively acting upon the bottom of "auxiliary piston 13" (Kondo, 6:31–39) and because Kondo's "air replenishing tank 19" is

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meant to be used only after "the use of the nailer for a long time" (Kondo, 7:63–67), Kondo's pressure must remain, during all portions of the operating cycle, above the combined pressures of atmospheric pressure plus the pressure of "compression coil spring 17," which by definition will be higher than atmospheric pressure alone.

158. ***Element [1.2]***: Kondo discloses "a hollow cylinder that includes a movable piston." Kondo's hollow cylinder ("cylindrical main body 11a," yellow) contains a movable piston ("drive piston 12," green) that is "disposed within the main body 11a of the cylinder 11," and "is moved vertically within the main body 11a of the cylinder 11." Kondo, 4:45–46, 5:9–11, Figs. 1–2.

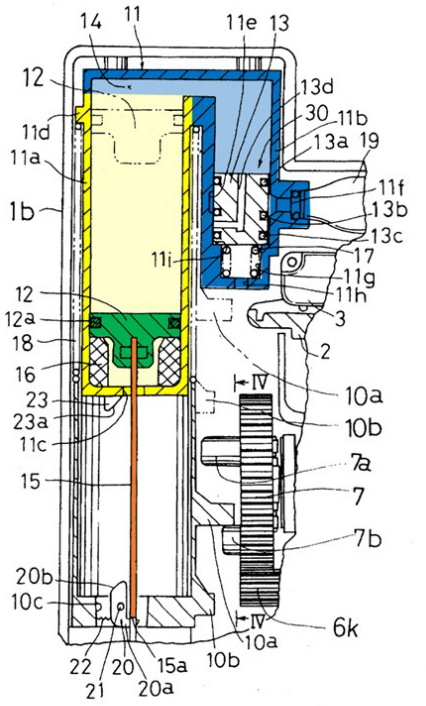


FIG. 2

159. ***Element [1.3]***: Kondo discloses "a movable driver that is in communication with said piston at least during a drive stroke." Kondo's movable

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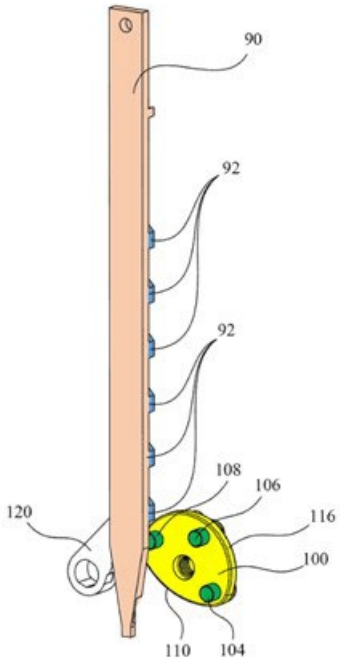
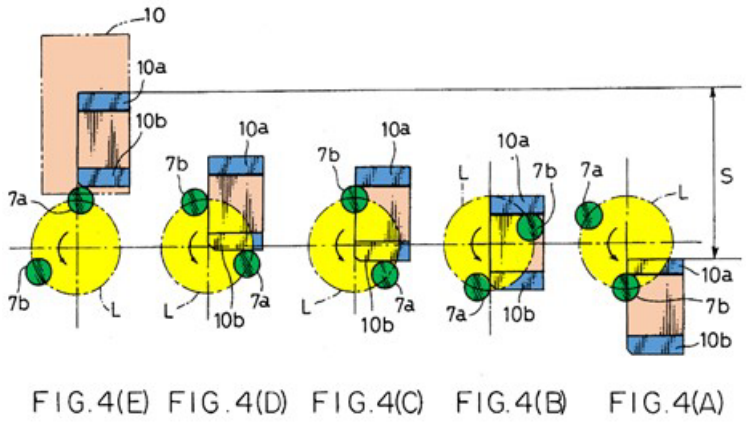
driver ("driver 15," orange) is in communication with its piston ("piston 12," green) during a drive stroke. Kondo, 4:66–67, Figs. 1–2.

160. ***Element [1.4]***: Kondo discloses "a lifter that is in communication with said driver at least during a return stroke."

161. Kondo discloses an electrically-powered, mechanical lifting mechanism with a structure that is nearly identical (with only insignificant differences) to that of the "lifter" disclosed by the '167 patent. *Compare* '167 patent, Fig. 12 with Kondo, Figs. 1–4. The "lifter" of the '167 patent includes a rotatable cam lifter 100 (yellow below left), with pin 104, 106, and 108 (green) on its face surface that engage protrusions 92 (blue) on the driver member 90 (orange). '167 patent, 9:36–52, 16:39–53, Fig. 12. The '167 patent also discloses two-pin variants: lifter members 465 and 480 in Figs. 31 and 33. '167 patent, 32:21–36, 32:54–33:2. Kondo discloses a rotatable drive gear 7 (yellow below right), with crank pins 7a and 7b (green) on its face surface that engage two protrusions 10a and 10b (blue) on an intermediate member 10 (orange) that contains the driver member ("driver 15"). Kondo, 3:1–4:32, Figs. 1–4.[2]

[2] I note that Figs. 4A–E are illustrated in right-to-left order rather than left-to-right.

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’167 Patent Lifter Member	Kondo Lifter Member
 Fig. 12	 FIG.4(E) FIG.4(D) FIG.4(C) FIG.4(B) FIG.4(A)

162. Kondo differs slightly from the ’167 patent in that the pins of the lifter member (crank pins 7a and 7b) engage protrusions on an intermediate member (protrusions 10a and 10b on an intermediate member 10) rather than protrusions on the driver blade itself. A POSITA would consider this difference to be insignificant, because Kondo’s actual lifting structure is still the same as that of the “lifter” in the ’167 patent and the intermediate member simply channels the lifting force from that lifter member to the driver blade 15.

163. ***Element [1.5]***: Kondo discloses “a prime mover.” Kondo’s lifter member is moved by a prime mover (“motor 4”). Kondo, 3:1–10, Fig. 2.

164. ***Element [1.6]***: Kondo discloses "a source of electrical energy that is removably attached to said housing." Kondo discloses a "battery 5 as a power source for driving the motor 4," which "can be removed from the battery housing portion 1d for charging purposes" such that "it is not necessary to be connected to an external power source by means of a cord." Kondo, 2:63–65; 7:51–55, Fig. 1.

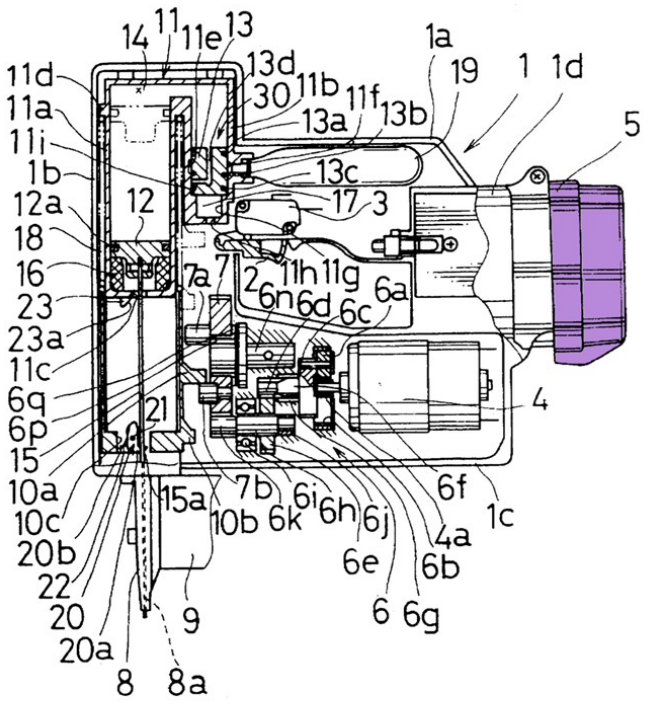


FIG.1

165. ***Element [1.7]***: Kondo discloses "said storage chamber being in fluidic communication with a first end of said hollow cylinder."

166. Kondo's main storage chamber ("air chamber 14" of its "auxiliary cylinder portion 11b," blue) is in fluidic communication with the first end (top) of hollow cylinder ("cylindrical main body 11a," yellow). Kondo, 4:37–40, Figs. 1–2.

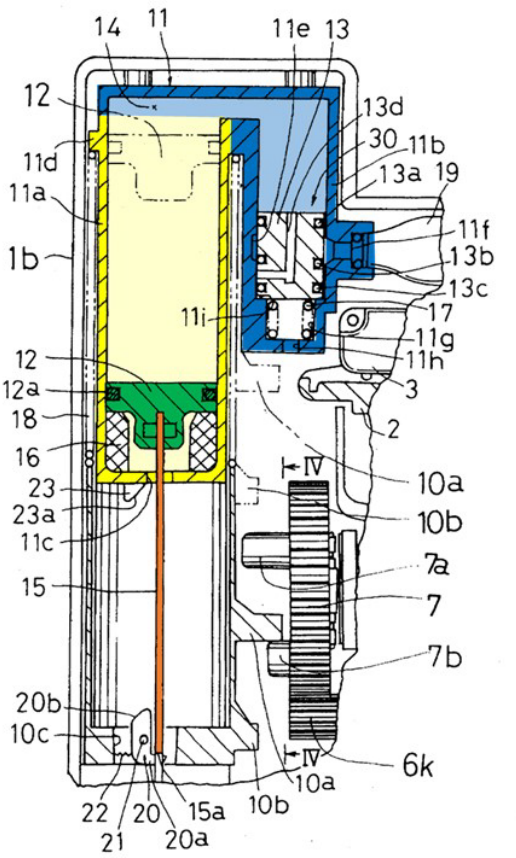


FIG. 2

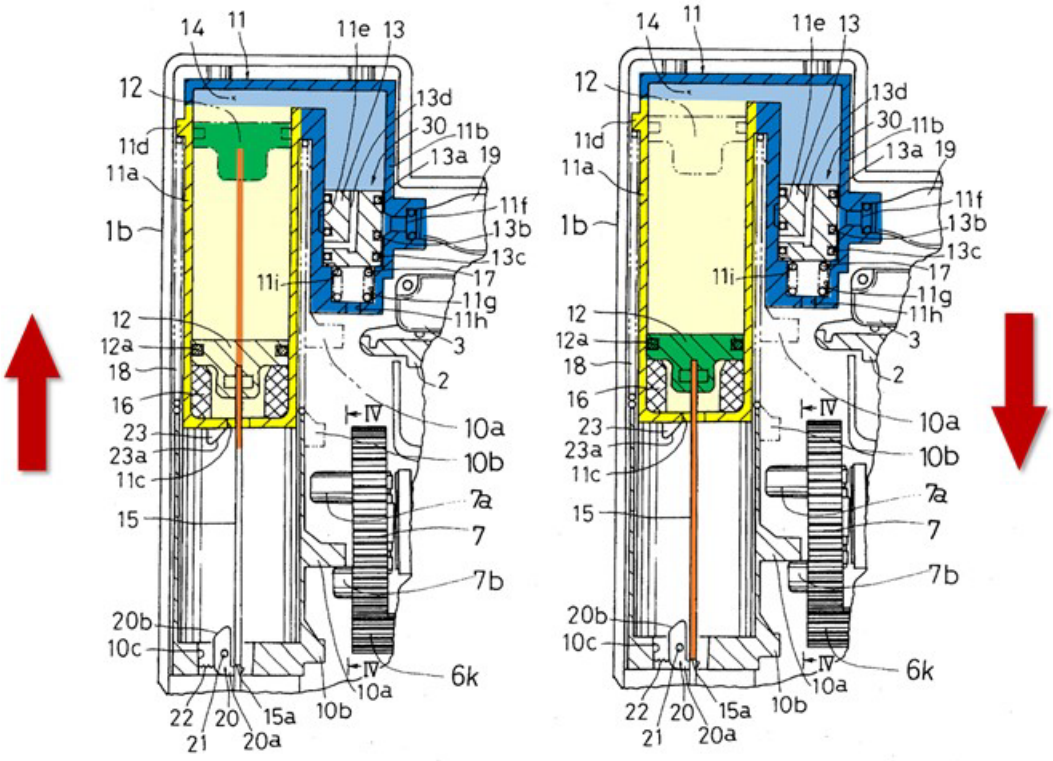
167. Kondo's main storage chamber (the "air chamber 14" of its "auxiliary cylinder portion 11b") is distinct from the cylinder ("cylindrical main body 11a"). While Kondo generally refers to a "cylinder 11," it also distinctly references "cylindrical main body 11a" and "auxiliary cylinder portion 11b" of cylinder 11. Kondo, 4:35–40. A POSITA would consider Kondo's cylinder ("cylindrical main body 11a," yellow) to be distinct from the portion of the "air chamber 14" above and beside it, because that portion of the chamber is surrounded by a structure with a different arrangement, radius, and alignment than the "cylindrical main body 11a." Kondo, Figs 1–2.

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168. ***Element [1.8]***: Kondo does not explicitly disclose a removable top cap, but it was obvious to have "said storage chamber including a removable top cap at a location proximal to said first end of said hollow cylinder." However, a removable top cap was an obvious solution to carry out Kondo's disclosure of two high pressure cylinders ("cylindrical main body 11a" and "auxiliary cylinder portion 11b") in fluidic communication. Kondo, 4:58–62. In my opinion, a POSITA was motivated to use a removable top cap to implement Kondo's teachings, because it would allow for the use of off-the-shelf cylinders and because it would enable tool maintenance inside the cylinders, such as repairing or replacing the piston.

169. ***Element [1.9]***: Kondo discloses "wherein: said piston travels through said hollow cylinder between a higher pressure position and a lower pressure position; said piston has a rest position between operational cycles; and a location of said rest position is proximal to said higher pressure position." Kondo's piston 12 travels through the hollow cylinder 11a between a higher pressure position (below left) and a lower pressure position (below right). Kondo, Fig. 2.

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170. Kondo does not explicitly disclose having the rest position proximal to the higher pressure position, but this would have been obvious at the filing of the '167 patent. A POSITA would understand that there are generally two potential rest positions for the piston between operational cycles—the higher pressure position after the return stroke and the lower pressure position after the drive stroke—both of which were identified and predictable solutions. For example, Haley, Saari/Enstrom, and Pedicini all disclose a higher pressure rest position after the return stroke (with Pedicini teaching both positions). A POSITA would have understood that there was a simple design choice with a well-understood tradeoff, that is, having the rest position at the higher pressure position will achieve "essentially instantaneous

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driving" (Saari, 3:21–24) in exchange for "losing the benefit of the heat of compression of the air thus reducing the overall efficiency" (Pedicini, ¶[0080]). By the time of filing of the '167 patent, advancements in portable battery power lessened the importance of the incremental efficiency gain provided by the lower pressure rest position, such that market forces and design incentives favored the high pressure rest position, *i.e.*, after said return stroke. Accordingly, this claim limitation is rendered obvious by Kondo alone, or in view of Haley, Saari/Enstrom, or Pedicini.

171. ***Element [1.10]***: Kondo discloses "said pressurized gas is not vented to atmosphere after said drive stroke." The design of the "auxiliary piston 13" shows that Kondo's main storage chamber remains above atmospheric pressure during all portions of the operating cycle and that the pressurized gas is therefore not vented to the atmosphere after a drive stroke. While Kondo discloses a gas replenishment system, that system is only meant to be used after "the use of the nailer for a long time" (Kondo, 7:63–67), *i.e.*, after the pressurized gas is re-used for a plurality of operating cycles.

B. Claim 2

172. Kondo discloses "said movable driver including at least one protrusion; and said lifter including at least one extension; wherein: said at least one extension of the lifter mechanically engages with said at least one protrusion of the driver during said return stroke."

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173. As noted above, Kondo's movable driver 15 is lifted via protrusions 10a and 10b (light blue) on intermediate member 10 (light orange), which are mechanically engaged by extensions (crank pins 7a and 7b) of the lifter (rotatable drive gear 7) during a return stroke. Kondo, 3:39–52, Figs. 2, 4A–4E.

174. While protrusions 10a and 10b are not located on driver 15, a POSITA would understand that these protrusions are included as part of the driver because they are what the driver uses to engage with the lifter. To the extent that this claim is interpreted to require the "at least one protrusion" to be physically located on the driver itself, it would have been obvious to a POSITA to modify Kondo to have protrusions 10a and 10b be on the driver 15. In fact, Kondo itself discloses, in its third embodiment, a driver ("driver 52") with a protrusion ("stepped portion 52a") that is directly engaged by the lifter. Kondo, 8:62–67, Fig. 8. It was an simple design choice as to whether or not to have the protrusion on the driver itself (as in Kondo's third embodiment) or on an intermediate member (as in Kondo's first embodiment), and that a POSITA would have been motivated to have the protrusion on the driver for a less complex design when possible, *i.e.*, for nailers designed to drive higher gauge nails and thus requiring a thicker driver that would be strong enough to have protrusions.

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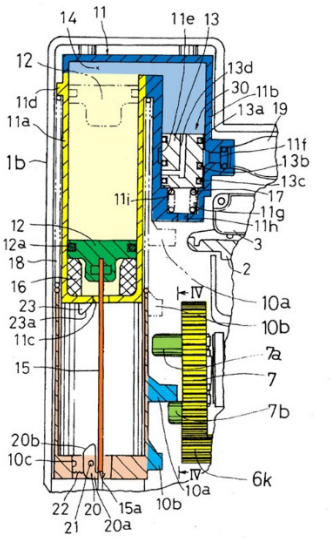


FIG. 2

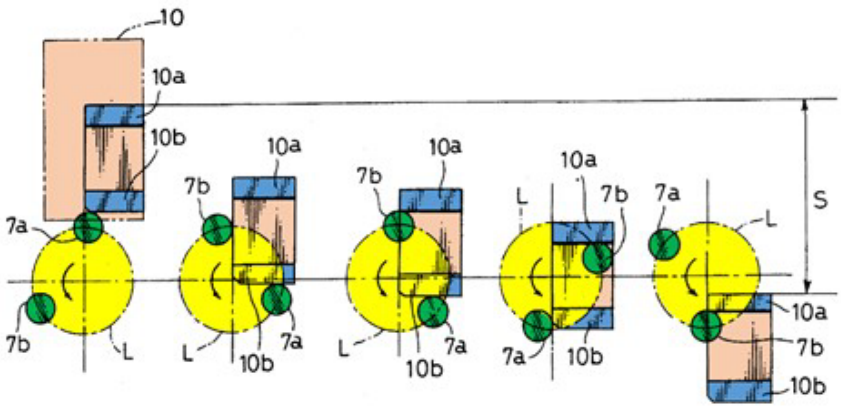
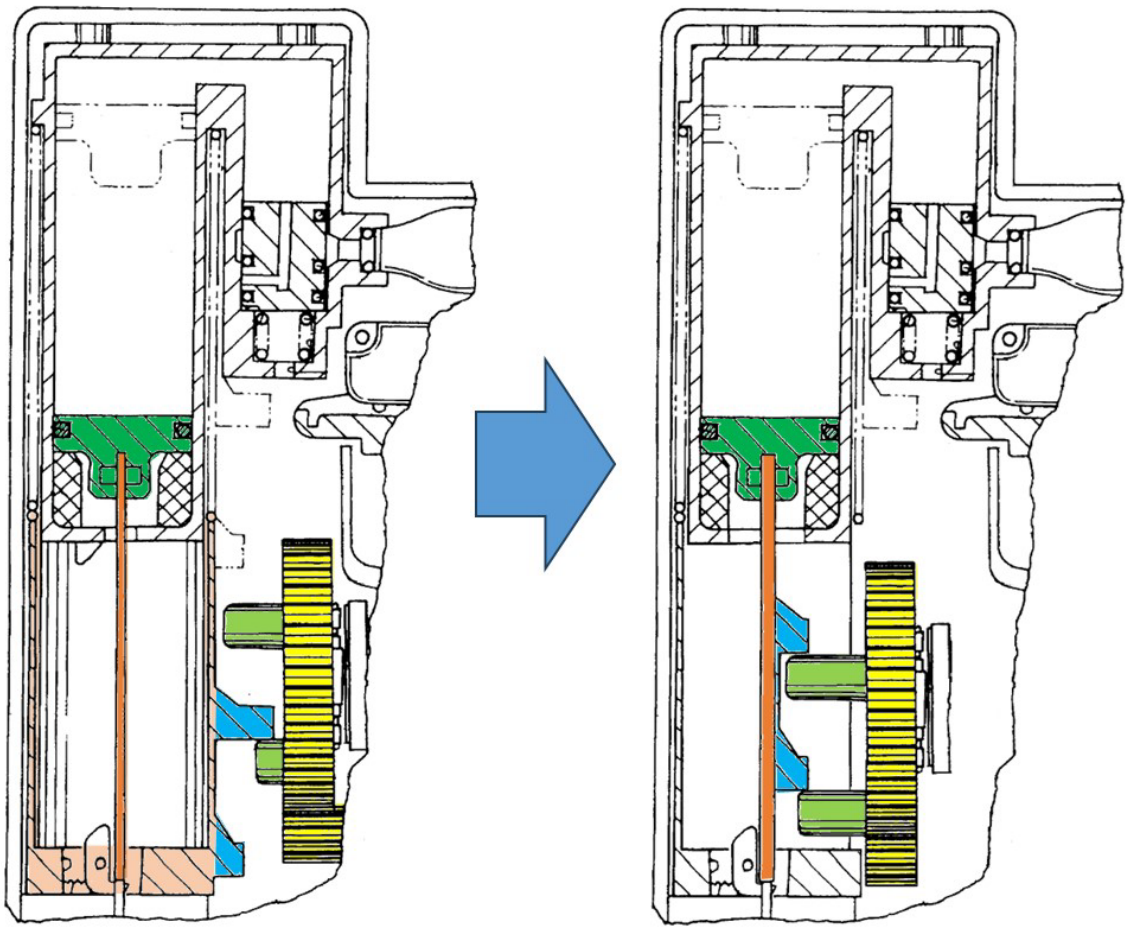


FIG. 4(E) FIG. 4(D) FIG. 4(C) FIG. 4(B) FIG. 4(A)

175. Moving Kondo's protrusions 10a and 10b to be directly on its driver 15 would have been a simple design change. As shown below, the intermediate member 10 (light orange) could be eliminated, either entirely or partially. Its protrusions (blue) could then be moved to the driver (orange), particularly a thicker driver used for higher gauge nails. Kondo's lifter member (yellow cam and green pins) could then be moved closer to the driver 15 to engage those protrusions. This design was very obvious and is actually preferable because it is simpler, due to having fewer parts, and is more compact, due to moving the lifter member closer to the driver. The reason this design was not shown in Kondo itself was likely due to Kondo's very narrow driver designed for small gauge nails, which was a remnant of the lower power provided by the contemporary batteries when Kondo issued. As battery technologies improved, higher powered nailers were made possible, thereby leading to this obvious design.

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C. Claim 3

176. ***Element [3.1]***: Kondo discloses "a guide body with a linear passageway for said driver." Kondo's guide body ("driver guide 8," grey) has a linear passageway ("guide hole 8a") for the driver ("driver 15," orange). Kondo, 5:7–11, Figs. 1–2.

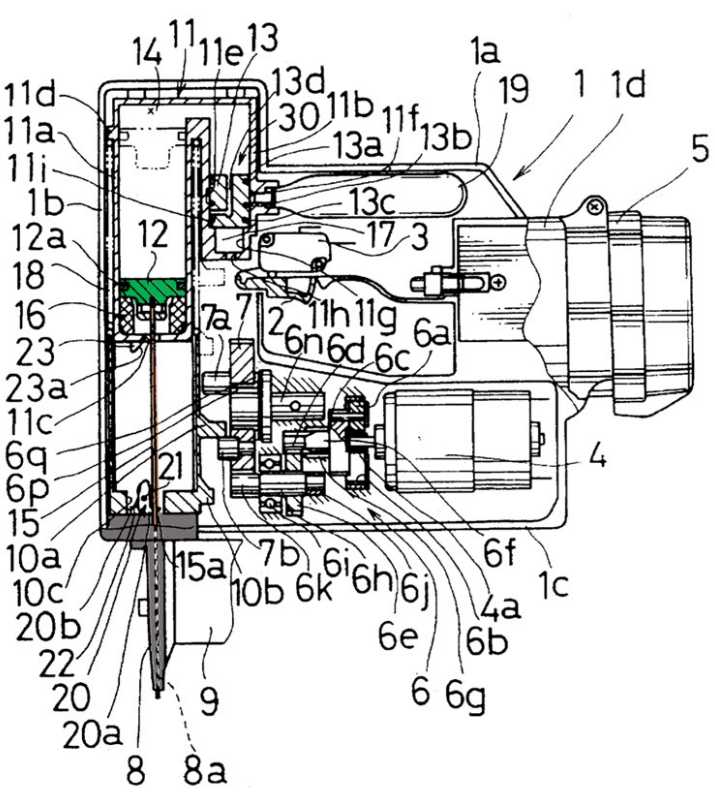


FIG.1

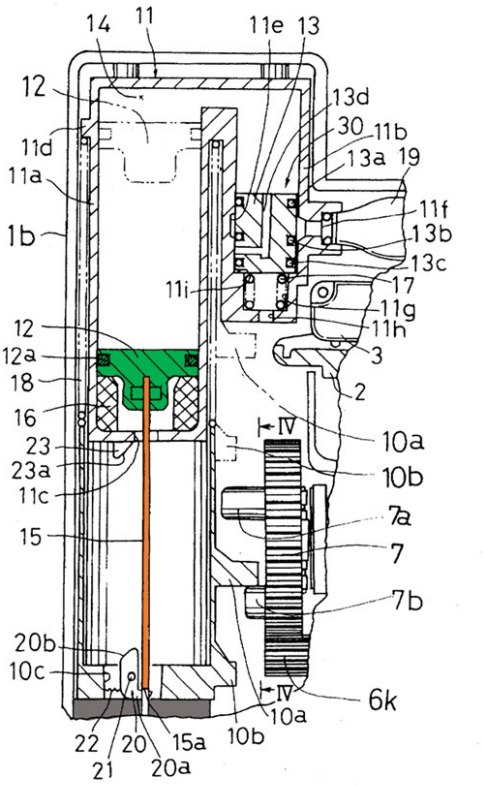


FIG.2

177. ***Element [3.2]***: Kondo discloses "wherein: said lifter moves in a rotational motion and causes said driver to move in a linear motion along said linear passageway." Kondo's lifter is a drive gear (yellow) that moves in rotational motion (curved arrows) to cause the driver (via the intermediate member 10, light orange) to move in a linear motion (upward from right to left in Figs. 4A–4E) along the linear passageway of the guide body. Kondo, Figs. 4A–E, 3:64–4:25.

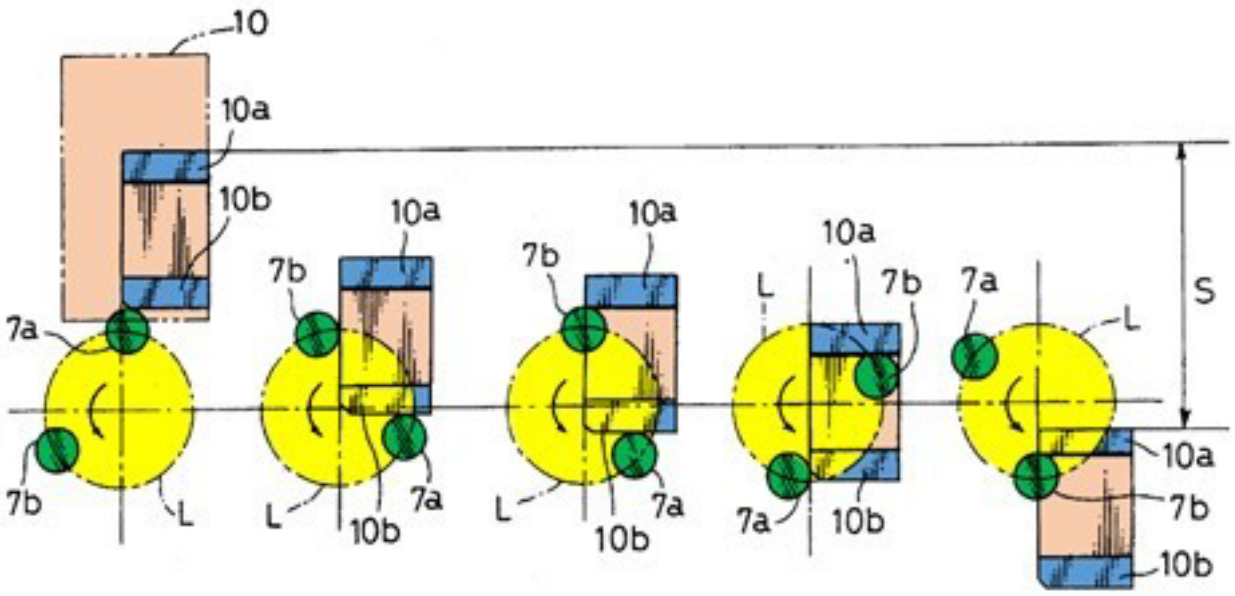


FIG.4(E) FIG.4(D) FIG.4(C) FIG.4(B) FIG.4(A)

D. Claim 4

178. Kondo discloses "wherein: said cylinder and piston act as a gas spring during said drive stroke, and said lifter does not mechanically engage said driver during said drive stroke." In Kondo, the pressurized gas of the storage chamber ("air chamber 14") and the cylinder ("cylinder 11") form a gas spring to propel the piston ("drive piston 12") to drive a nail during a drive stroke. Kondo, Figs. 1–2, 4A–4E, 5:53–55, 6:1–7. When the driver 15 is released from mechanical engagement with the lifter, "the drive piston 12 is forced downwardly by the expanding force of the air compressed within the air chamber 14." Kondo, 6:1–7.

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E. Claim 5

179. Kondo discloses "wherein the piston is positioned inside the top cover when the piston is at or near the first end of the hollow cylinder." When the piston is near the first end (top) of the hollow cylinder (piston 12, green, dashed outline below left), it is positioned at the top of the "cylindrical main body 11a" (yellow) and thus positioned inside the top cover/cap in the obvious implementation where a removable top cap connects Kondo's two high pressure cylinders.

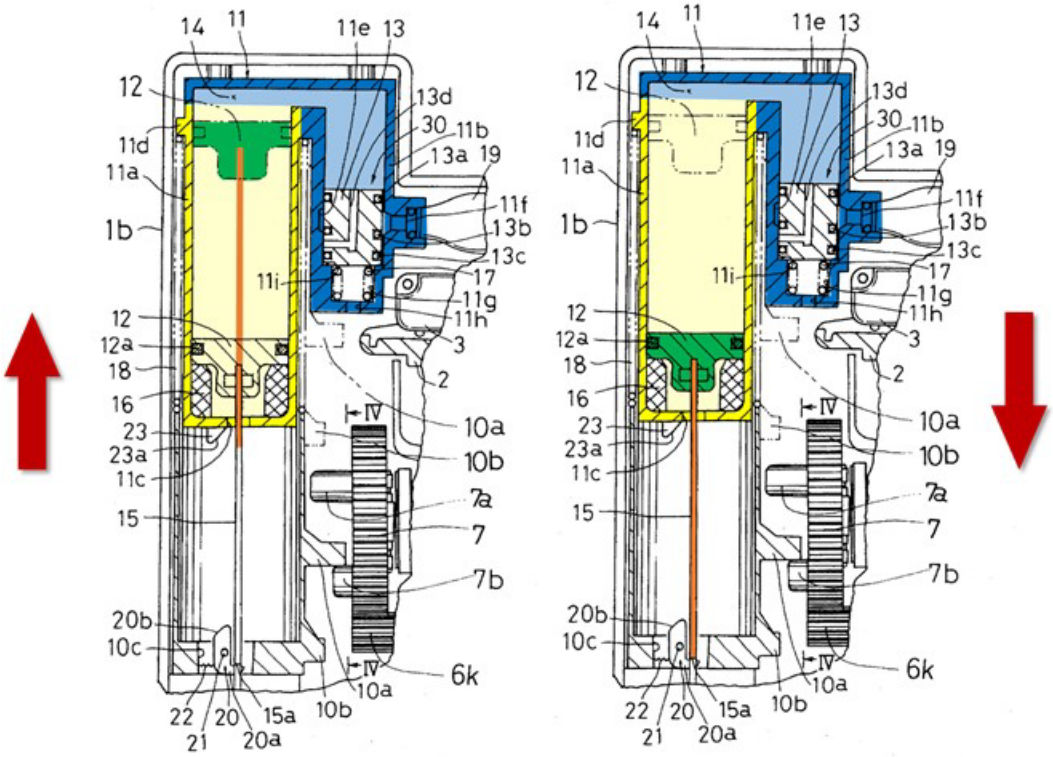


FIG. 2

FIG. 2

F. Claim 6

180. ***Elements [6.P]–[6.7]***: Elements [6.P]–[6.7] are substantially identical to Elements [1.P], [1.1], [1.2], [1.7], [1.10], [1.3], [1.4], and [3.1], respectively, and are met as described above.

181. ***Element [6.8]***: Kondo discloses "a handle portion." Kondo refers to its handle as "grip portion 1a" on the upper side of housing 1 (green). Kondo, 2:54–55, Fig. 1.

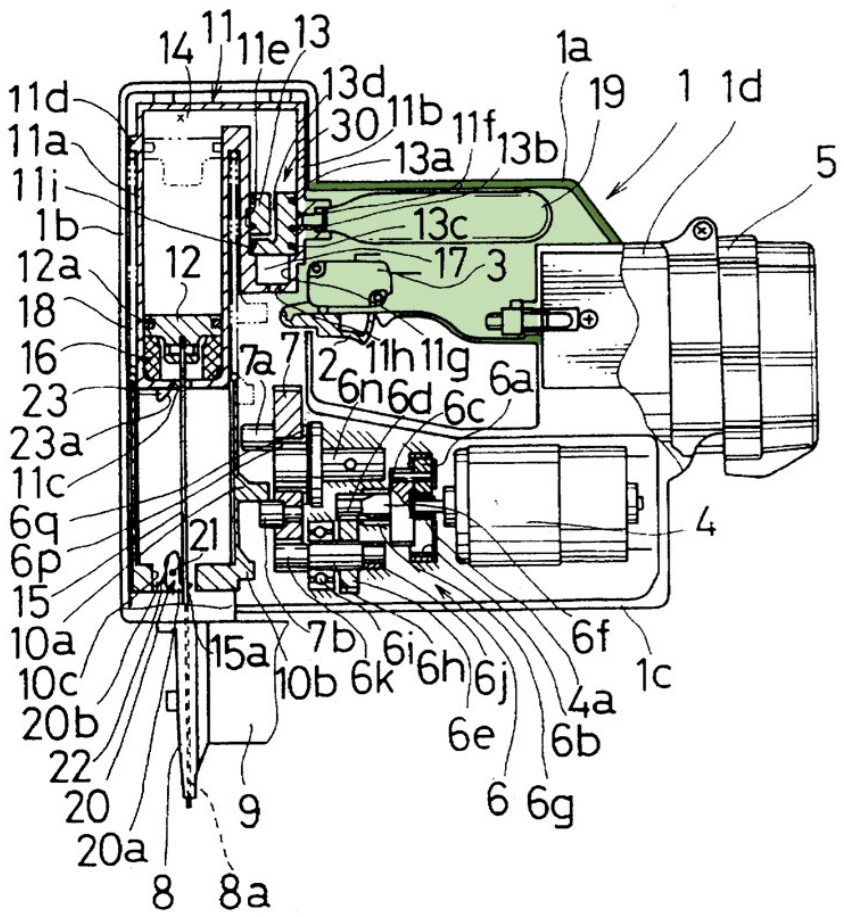


FIG.1

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182. ***Element [6.9]***: Element [6.9] recites "a motor that provides motive power for said lifter" and is met for the reasons described above for Element [1.5], which recites "a prime mover."

183. ***Element [6.10]***: Element [6.10] recites "a removable battery pack that provides energy for said motor" and is met for the reasons described above for Element [1.6], which recites "a source of electrical energy that is removably attached to said housing."

184. ***Element [6.11]***: Kondo discloses "a removable magazine that holds a plurality of fasteners." Kondo's removable magazine ("nail magazine 9" shown "attached to the housing 1," orange) holds a plurality of fasteners ("a nail stick consisting of a series of nails bonded to each other"). Kondo, 5:15–19, Fig. 1.

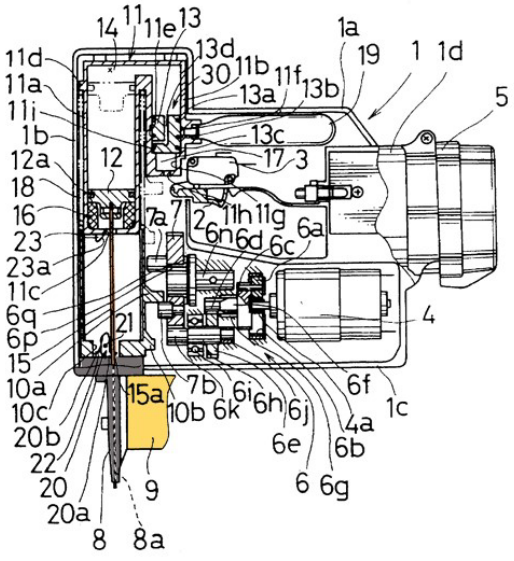


FIG.1

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185. ***Element [6.12]***: Kondo discloses "wherein: said removable battery pack is attached proximal to said handle portion." Kondo's removable battery pack ("battery 5," purple) is attached proximal to the handle portion ("grip portion 1a," green). Kondo, Fig. 1.

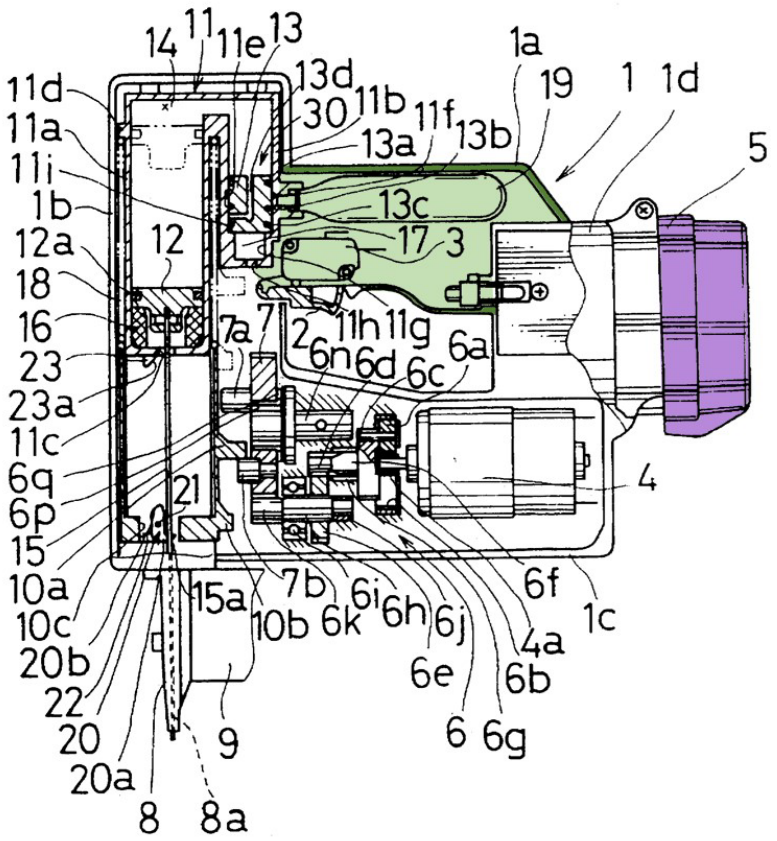


FIG.1

186. ***Element [6.13]***: Kondo discloses "said removable magazine is attached proximal to an exit end of said guide body, wherein said magazine extends past said removable battery pack." Kondo's magazine (orange) is attached proximal to the exit end of the guide body (grey) so that the nails are "supplied to the guide hole 8a of the driver guide 8." Kondo, 5:15–19, Fig. 1.

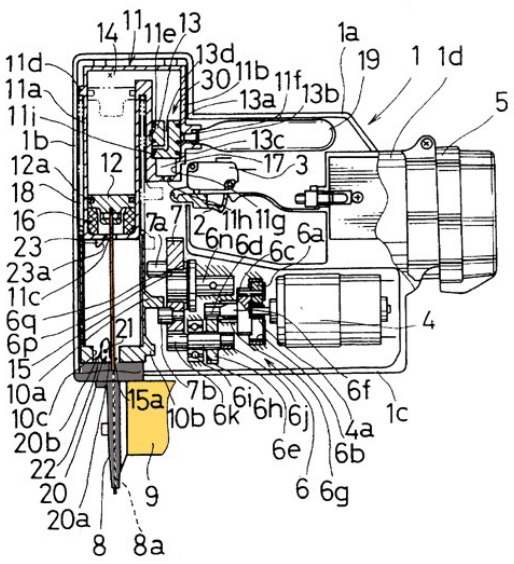
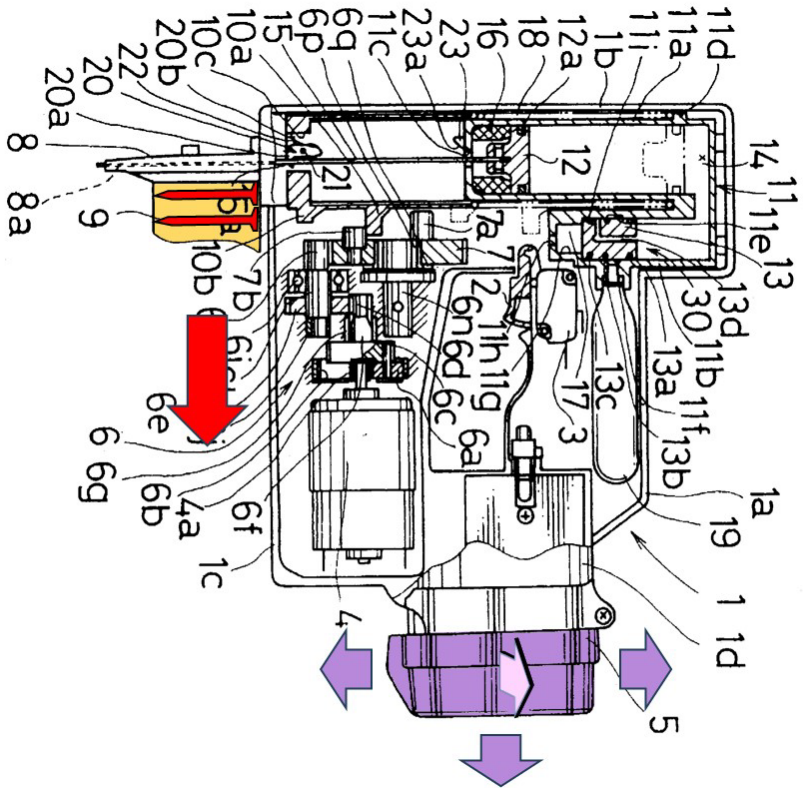


FIG.1

187. Kondo's magazine would obviously extend past the removable battery pack in designs with high capacity magazines, since increasing the magazine size will extend it outward from the tool at a greater pace than increasing the battery.

188. As illustrated below, the magazine (orange) holds nails (red) linearly and thus can only expand by extending further downward below the tool, whereas the battery (purple) holds charge based on volume and can expand by being extended in any direction. Thus, while both the magazine and battery will expand in a high capacity design, the magazine will predictably extend down further below the battery for certain obvious designs.



G. Claim 7

189. Elements [7.1]–[7.2] are substantially identical to Claim 2 and Element [3.2], respectively, and are met as described above.

H. Claim 8

190. Claim 8 is substantially identical to Claim 4 and is met as described above.

I. Claim 9

191. Kondo discloses "wherein: a bottommost surface of said magazine is farther from a centerline of said exit end of the guide body than is a bottommost surface of said battery pack." As I explained above for Element [6.13], designs with high capacity magazines will obviously have a magazine that extends further

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outward from the tool than the battery pack, and thus the magazine's bottommost surface will be farther away from the centerline than the battery's bottommost surface.

J. Claim 10

192. ***Elements [10.P]–[10.4]***: Elements [10.P]–[10.4] are substantially identical to Elements [6.P], [6.1], [6.2]–[6.3], [6.5], and [6.6], respectively, and are met as described above.

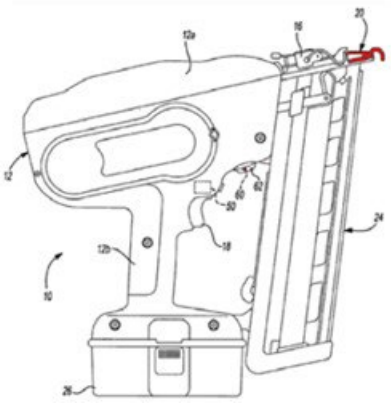
193. ***Element [10.5]***: Element [10.5] recites "a guide body . . . having a linear passageway for said driver," which is substantially identical to Element [6.7], and further recites that the guide body is "located proximal to said hollow cylinder" and "having an exit end that is located distal from said hollow cylinder." Element [10.5] is met for the reasons discussed above for Element [6.7].

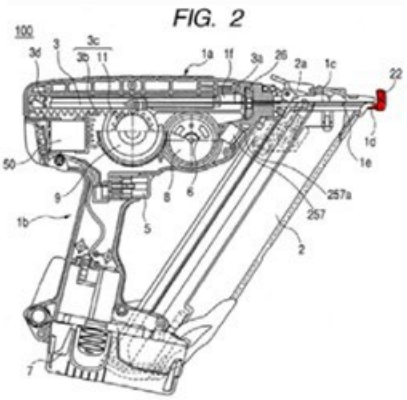
194. ***Element [10.6]***: Element [10.6] recites "a removable battery pack," which is identical to Element [6.10], and further recites that it "is located at a rear portion of said tool." Element [10.6] is met for the reasons discussed above for Element [6.10].

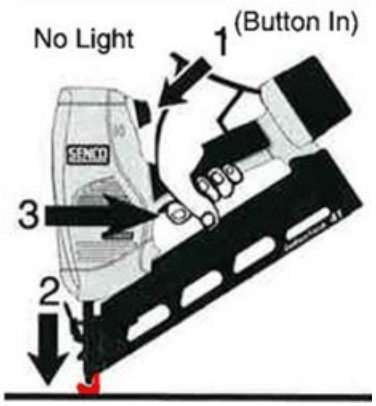
195. ***Element [10.7]***: Kondo is silent about a safety contact, but it would have been obvious to a POSITA to have "a safety contact element proximal to said exit end, said safety contact element being disposed at a front portion of the tool, above said guide body."

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196. A POSITA would be motivated to incorporate such a safety contact element into Kondo based on design choice and market forces, because that was the conventional design taught by numerous prior art references, including Forster, Shima, and Senco. Forster, ¶[0024], ¶[0028], Fig. 1 (below left); Shima, ¶[0054], Fig. 2 (below middle); Senco, 13–14 (below right).







K. Claim 11

197. Claim 11 recites "an electric motor that derives energy from said battery pack, which provides motive power for said lifter" and is met for the reasons discussed above for Element [6.9].

L. Claim 12

198. Kondo discloses "wherein: said safety contact element prevents said drive stroke from occurring unless said safety contact element is pressed against a solid surface." The conventional safety contact element taught by numerous prior art references (Forster, Shima, Senco) prevents said drive stroke from occurring unless said safety contact element is pressed against a solid surface.

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M. Claim 13–14

199. Claims 13 and 14 are identical to Claims 7 and 8, respectively, and are met as described above.

N. Claim 15

200. Kondo discloses "wherein: said safety contact element is located directly above said guide body and extends from said front portion of the tool toward a rear portion of the tool, extending along at least a surface of the guide body that is on the opposite side of the tool from where said battery pack is located." The conventional safety contact element taught by numerous prior art references (Forster, Shima, Senco) is located directly above the guide body, extends from the front of the tool toward the rear, and extends along a surface of the guide body opposite the battery.

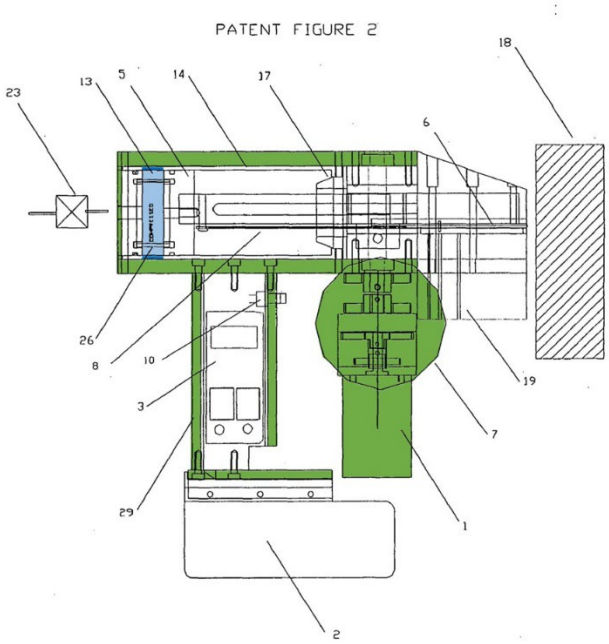
VIII. CLAIMS 1–15 ARE OBVIOUS BASED ON PEDICINI

A. Claim 1

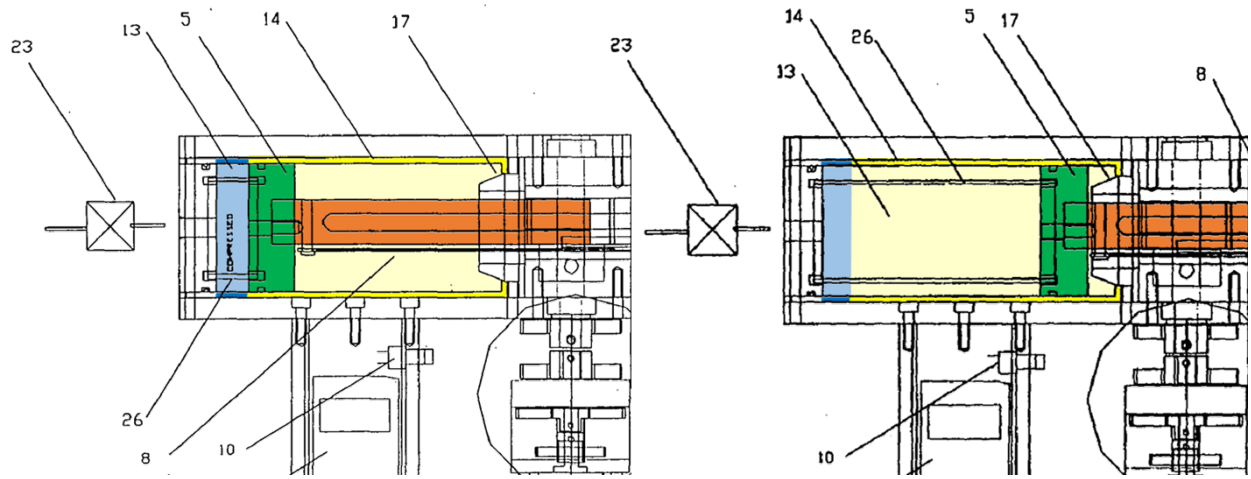
201. ***Element [1.P]***: Pedicini discloses "[a] portable fastener driving tool." Pedicini discloses a fastener driving tool ("fastener device 100"). Pedicini, Figs. 1–4; ¶[0077].

202. ***Element [1.1]***: Pedicini discloses "a housing with a storage chamber that contains a pressurized gas that is always above atmospheric pressure."

203. Pedicini's housing is shown below in green. Pedicini, Figs. 1–2.



204. Pedicini has a storage chamber that contains a pressurized gas, which is the overhead portion of the "chamber (13)" within "cylinder 14," *i.e.*, the volume above the piston (blue). Pedicini, Figs. 1–2.



205. Pedicini's storage chamber (blue) is distinct from the displacement volume (yellow) of cylinder 14, which is shown in Figures 1–2 where the storage chamber is directly adjacent to the displacement volume. I understand the ITC's

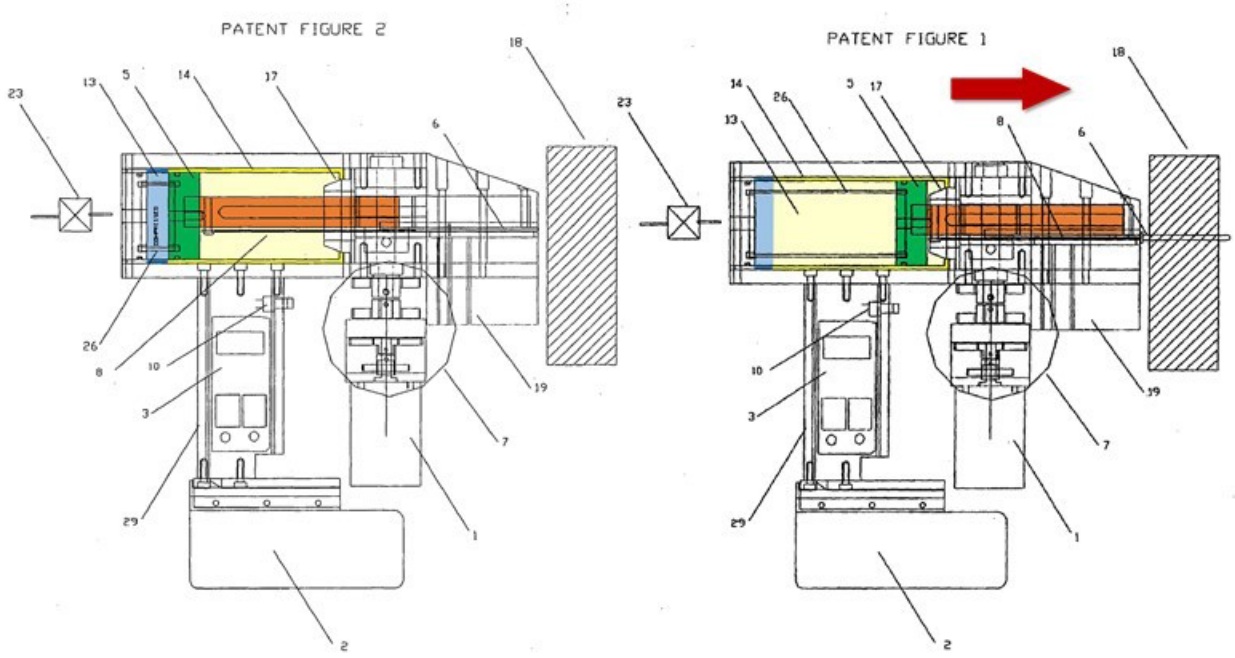
decision regarding "main storage chamber" was based on Patent Owner's post-agreement argument that the agreed construction required the "main storage chamber" to be distinct from *any* region within the "hollow cylinder," and not—as Petitioner understood the agreement—distinct from the "displacement volume" recited in the claims, which is the region "created by a stroke of said piston." '176 patent, 10:22–25. The region annotated above in blue is above the travel path of the piston and thus is not part of the "displacement volume." Accordingly, that blue region is distinct from the claimed "displacement volume" and constitutes a separate volume that should satisfy the "storage chamber" limitation.

206. Pedicini's storage chamber contains a pressurized gas that is always above atmospheric pressure. Pedicini states that "[a] release valve (23) is used to replenish the air which may be lost between nail drives." Pedicini, ¶[0077], Figs. 1–2. Pedicini also states that "it is possible to precharge the air chamber (13) to eliminate the piston return spring (26)"—while Pedicini goes on to say that "this is not preferable since it complicates recovering from fastener jambs," Pedicini includes an embodiment (Figure 4) where the piston return spring 26 is indeed eliminated. Pedicini, ¶[0077], Fig. 4. A POSITA would understand the disclosure of a sealed main storage chamber and a release valve for "replenishing the air" means that the chamber is "charged with a pressurized gas" and that it will remain above atmospheric pressure during all portions of an operating cycle, since a charging

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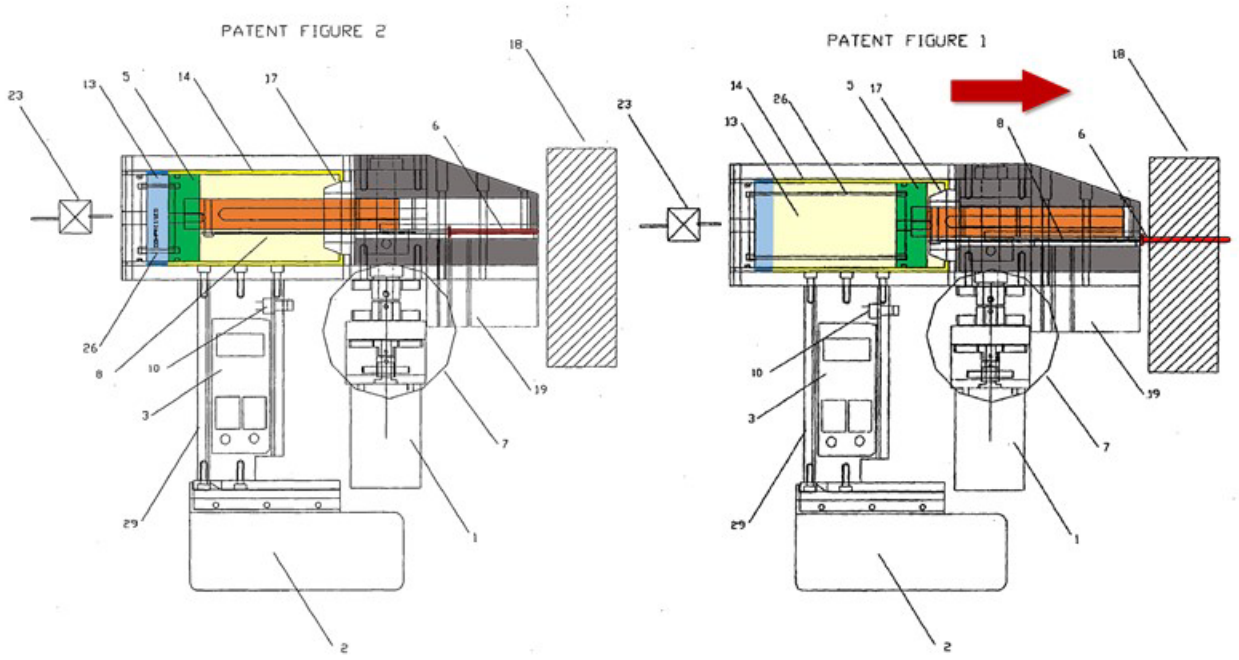
valve would have no use if the chamber is allowed to reach atmospheric pressure. Nor would a POSITA misinterpret the valve in Pedicini as a connection point for a pneumatic hose to attached and supply gas throughout operation (as opposed to only an initial charge), since Pedicini explicitly denigrates the "[n]on-portability" of "[t]raditional nail guns [that] are tethered to a fixed compressor." Pedicini, ¶[0017].

207. ***Element [1.2]***: Pedicini discloses "a hollow cylinder that includes a movable piston." Pedicini's hollow cylinder ("cylinder (14)," yellow) includes a piston ("piston (5)," green) that can "move within the cylinder (14)." Pedicini, ¶¶[0077]–[0078], Figs. 1–4. The hollow cylinder has a displacement volume created by the stroke of the piston (yellow), which is reflected by the piston illustrated at its raised position in Fig. 2 and at its lower position in Fig. 1. Pedicini, Figs. 1–3.



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208. ***Element [1.3]***: Pedicini discloses "a movable driver that is in communication with said piston at least during a drive stroke." Pedicini's movable driver ("rack (4)" orange, which also includes "anvil (8)"), is in communication with the piston ("piston (5)," green) during a drive stroke. Pedicini, Figs. 1–2, ¶¶[0077]–[0078].

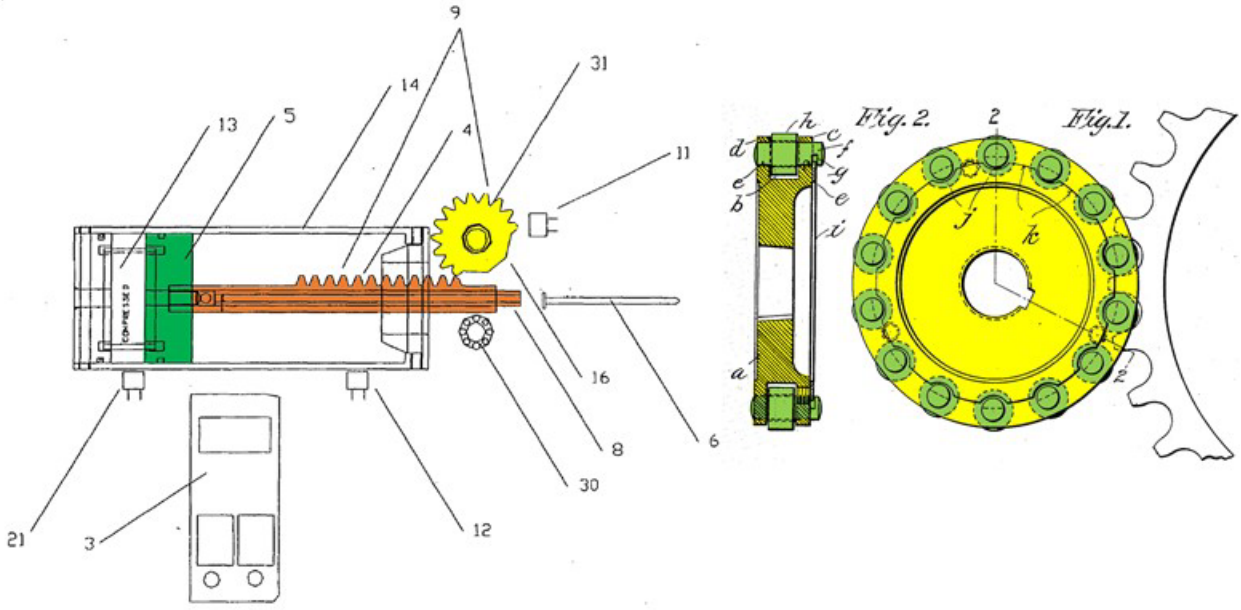


209. ***Element [1.4]***: Pedicini discloses "a lifter that is in communication with said driver at least during a return stroke." Pedicini discloses a rack-and-pinion gear with gear teeth on its outer perimeter ("rack pinion (31)," yellow), which is rotatable and contacts protrusions of the driver member during the return stroke but is not the claimed "lifter." Pedicini, ¶[0078], Figs. 3 (below left), 4.

210. An obvious variant of Pedicini's rack-and-pinion gear would have been to implement the well-known "roller" modification—where the gear teeth are

replaced with rollers along the outer perimeter that can better handle friction and are thus less at risk to wearing down over time—to obtain a "roller pinion," which is disclosed and touted by U.S. Patent No. 860,536 ("Ellingham"). Ex. 1014, Ellingham, 1:8–14, Figs. 1–2 (below right). The Patent Owner has accused such a "roller pinion" lifting mechanism in Petitioner's products as being a "lifter member." If such a lifting mechanism could constitute a "lifter," then it would be rendered obvious by Pedicini in view of the well-known "roller pinion" such as that disclosed by (and whose use is encouraged by) Ellingham, for example. That obvious variant of Pedicini has the claimed "rotatable lifter member."

PATENT FIGURE 3

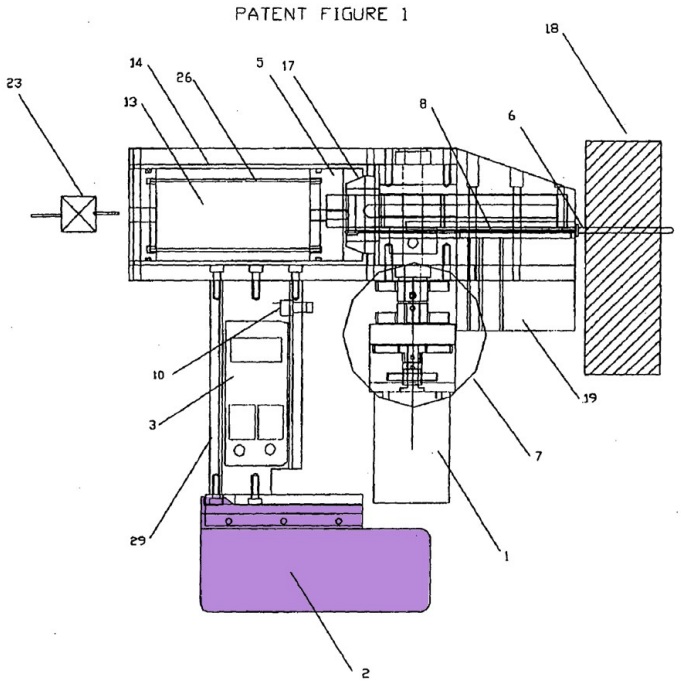


211. ***Element [1.5]***: Pedicini discloses "a prime mover." Pedicini's prime mover ("motor (1)") will drive the lifter member ("rack pinion (31)," in its roller

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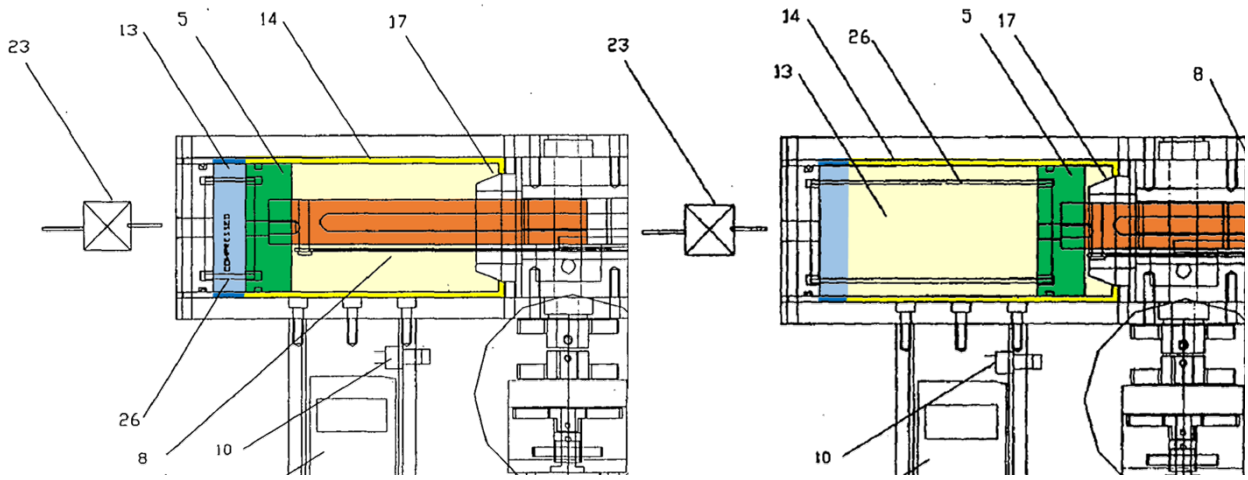
pinion variant as discussed above), by rotating it, thereby causing the driver member ("rack (4)") to be moved toward the ready position. Pedicini, ¶¶[0077], [0080].

212. ***Element [1.6]***: Pedicini discloses "a source of electrical energy that is removably attached to said housing." Pedicini's source of energy is a "rechargeable battery." Pedicini, ¶[0077], Fig. 1. Pedicini also refers to its rechargeable battery as a "battery pack." Pedicini, Abstract. A POSITA would understand based on its shape and appearance in the figures, and Pedicini's characterization of it as a "battery pack," that the rechargeable battery is removably attached to the housing.

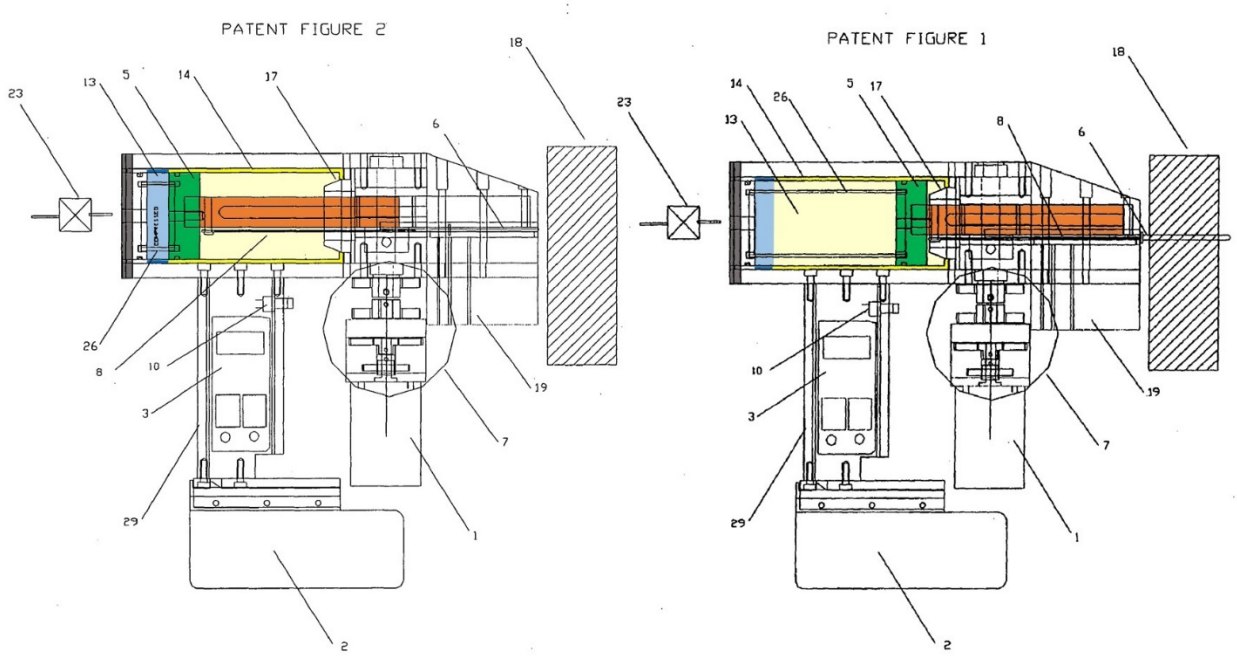


213. ***Element [1.7]***: Pedicini discloses "said storage chamber being in fluidic communication with a first end of said hollow cylinder." Pedicini's storage chamber (blue) remains in fluidic communication at all times with the cylinder 14 (yellow)

and its displacement volume, which is shown in Figures 1–2 where the storage chamber is directly adjacent to the displacement volume. Pedicini, Figs. 1–2.

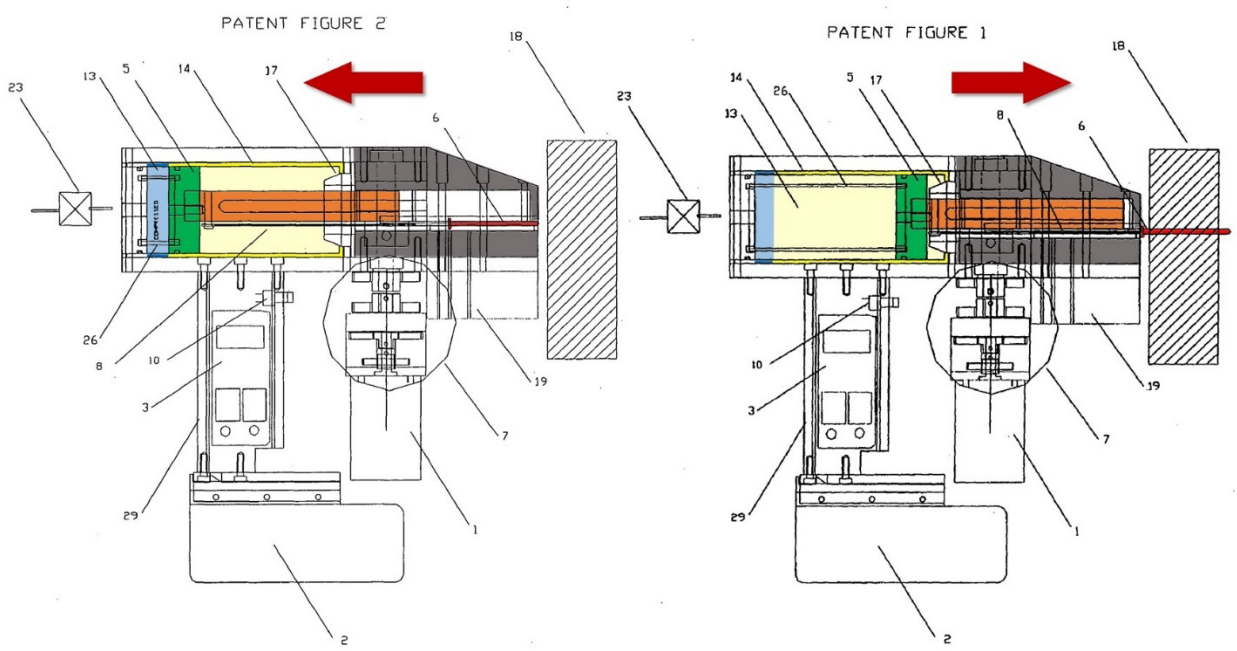


214. ***Element [1.8]***: Pedicini does not explicitly disclose a removable top cap, but it would have been obvious to have "said storage chamber including a removable top cap at a location proximal to said first end of said hollow cylinder." Pedicini's Figs. 1–2 illustrate a top cap (grey) of the storage chamber (blue) that is located proximal to the first end (left) of the hollow cylinder (yellow), and a removable top cap was an obvious way to carry out Pedicini's teaching. Pedicini, Figs. 1–2. A POSITA was motivated to use a removable top cap to implement Pedicini's teaching, because it would allow for the use of an off-the-shelf cylinder and because it would enable tool maintenance inside the cylinder, such as repairing or replacing the piston.



215. ***Element [1.9]***: Pedicini discloses "wherein: said piston travels through said hollow cylinder between a higher pressure position and a lower pressure position; said piston has a rest position between operational cycles; and a location of said rest position is proximal to said higher pressure position."

216. Pedicini's piston (green) travels through the hollow cylinder (yellow) between a higher pressure position (Fig. 2, left) and a lower pressure position (Fig. 1, right). Pedicini, Figs. 1–2.



217. Pedicini's piston has a rest position between operational cycles located proximal to the higher pressure position. Pedicini discloses "a sear pin or lever (28) which maintains the rack (4), piston (5) and anvil (80) in the energized state," that is, the holding position of the lifter member and ready position of the driver member, such that "[u]pon actuation of the trigger (32) of the sear lever, the mechanism is released and energetically pushes the fastener into the substrate." Pedicini, ¶[0080], Fig. 4.

218. ***Element [1.10]***: Pedicini discloses "said pressurized gas is not vented to atmosphere after said drive stroke." In particular, Pedicini states that "[a] release valve (23) is used to replenish the air which may be lost between nail drives." Pedicini, ¶[0077], Figs. 1–2. Pedicini also states that "it is possible to precharge the air chamber (13) to eliminate the piston return spring (26)"—while Pedicini goes on

to say that "this is not preferable since it complicates recovering from fastener jambs," Pedicini includes an embodiment where the piston return spring 26 is indeed eliminated. Pedicini, ¶[0077], Fig. 4.

219. A POSITA would understand the disclosure of a sealed main storage chamber and a release valve for "replenishing the air" means that the pressurized gas is "not vented to atmosphere after said drive stroke," but instead "is re-used for a plurality of said operating cycles," since a charging valve would have no use if the chamber is allowed to reach atmospheric pressure. A POSITA would not misinterpret the valve in Pedicini as a connection point for a pneumatic hose to attached and supply gas throughout operation (as opposed to only an initial charge), since Pedicini explicitly denigrates the "[n]on-portability" of "[t]raditional nail guns [that] are tethered to a fixed compressor." Pedicini, ¶[0017].

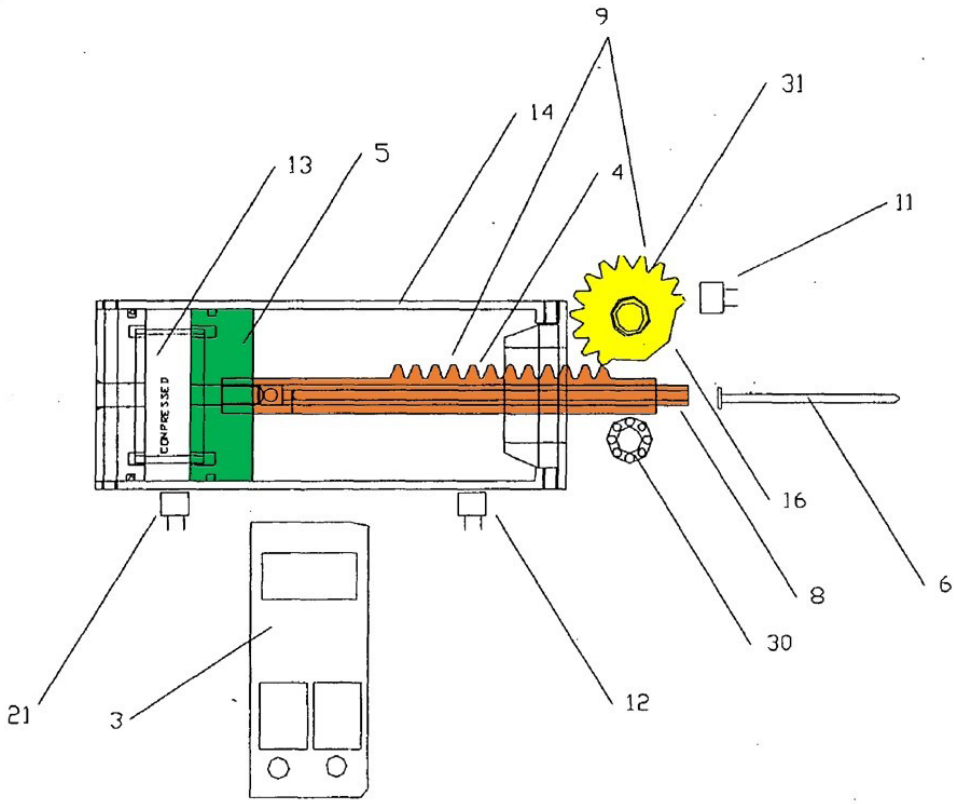
B. Claim 2

220. Pedicini discloses "said movable driver including at least one protrusion; and said lifter including at least one extension; wherein: said at least one extension of the lifter mechanically engages with said at least one protrusion of the driver during said return stroke."

221. Pedicini's movable driver ("rack (4)" and "anvil (8)," orange) has numerous (and thus "at least one") protrusions, which are the gear teeth shown below in Fig. 3. Pedicini, Fig. 3, ¶[0078].

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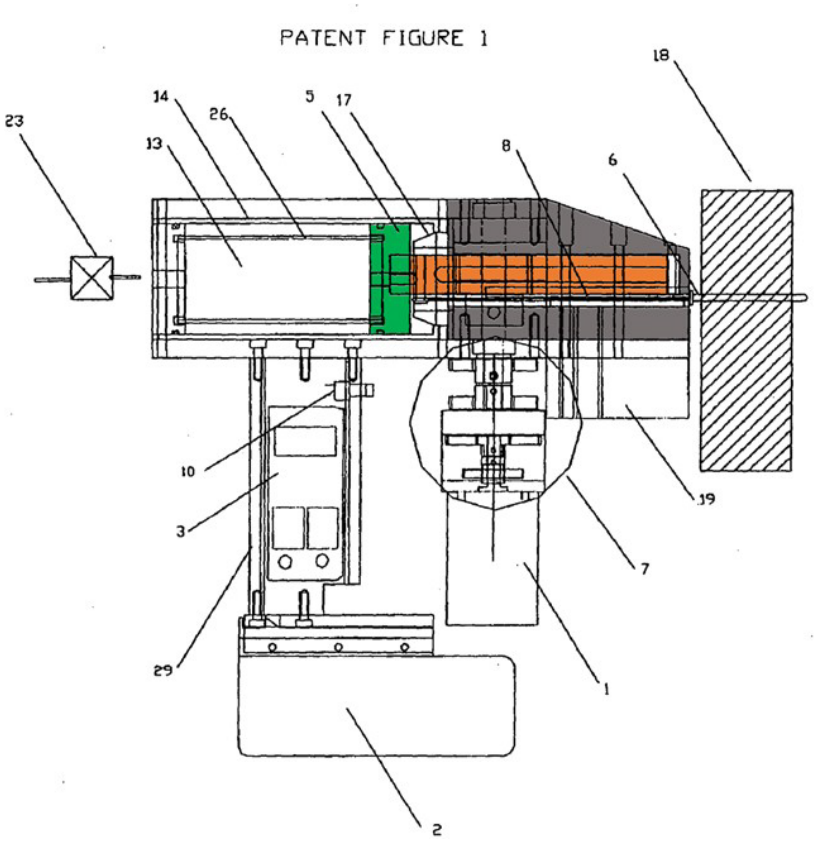
PATENT FIGURE 3



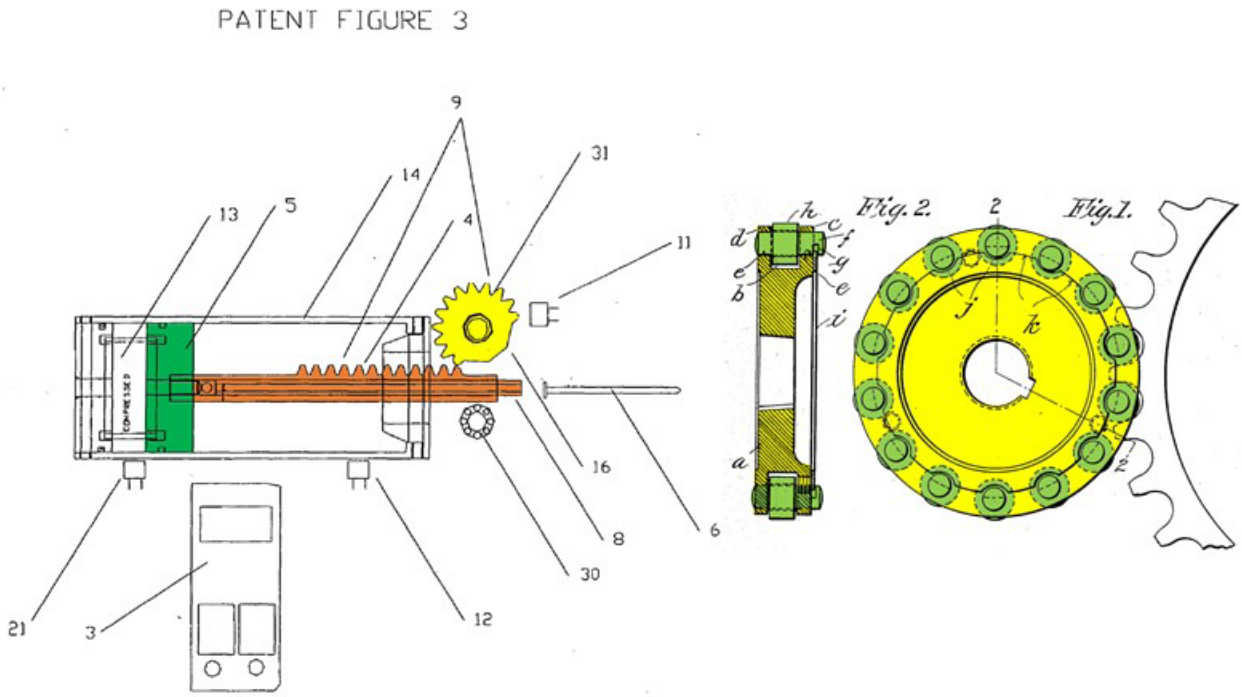
222. Pedicini's modified roller pinion lifter has multiple extensions that mechanically engage with said the protrusions of the driver during said return stroke. Pedicini, ¶[0078], Fig. 3; Ellingham, 1:8–14, Figs. 1–2.

C. Claim 3

223. ***Element [3.1]***: Pedicini discloses "a guide body with a linear passageway for said driver." Pedicini's guide body (grey) has a linear passageway for the driver ("rack (4)," orange). Pedicini, ¶[0078], Fig. 1.

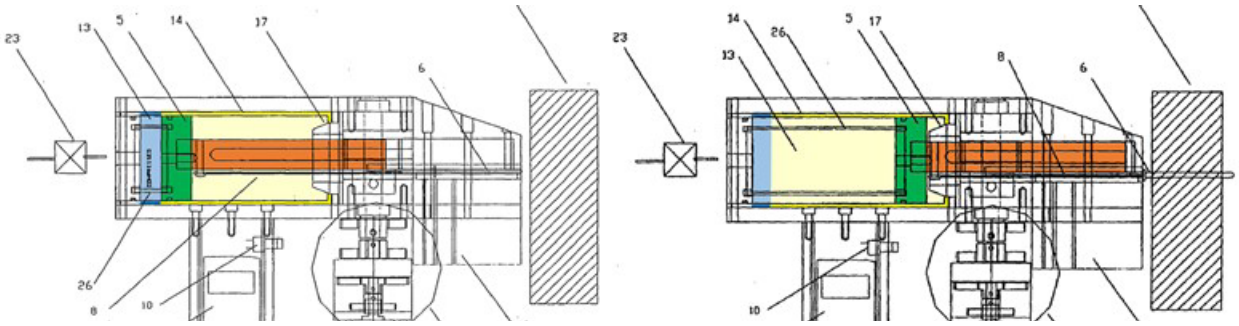


224. ***Element [3.2]***: Pedicini discloses "wherein: said lifter moves in a rotational motion and causes said driver to move in a linear motion along said linear passageway." Pedicini's lifting mechanism is a rotatable pinion ("rack pinion (31)," below left) that moves in rotational motion (clockwise in Fig. 3) to cause the driver (orange) to move in a linear motion (leftward in Fig. 3). Pedicini, Fig. 3, ¶[0078]. This is not altered by the roller pinion modification. Ellingham, Fig. 1 (below right).



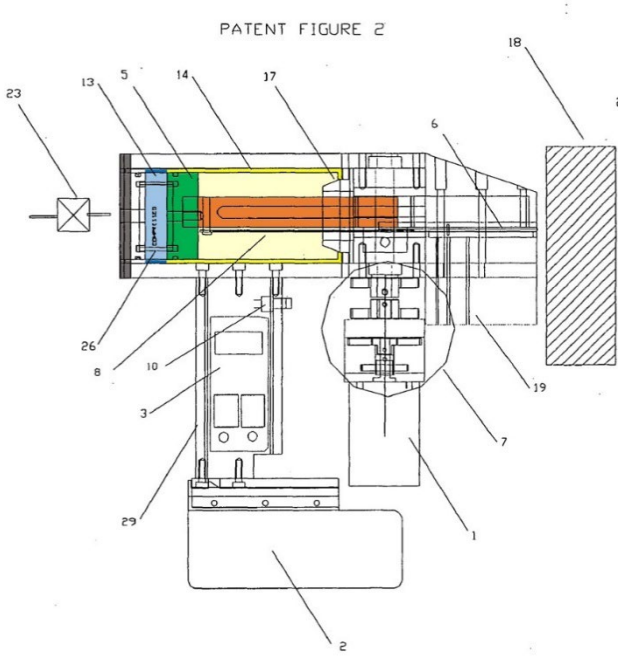
D. Claim 4

225. Pedicini discloses "wherein: said cylinder and piston act as a gas spring during said drive stroke, and said lifter does not mechanically engage said driver during said drive stroke." In Pedicini, the pressurized gas of the storage chamber (blue below, the portion of "chamber (13)" above the piston) and the displacement volume in the cylinder (yellow below, the portion of "chamber (13)" within "cylinder (14)" through which the piston moves) act as a gas spring to drive the piston ("piston (5)"). When the piston is raised, the gas in the main storage chamber and the displacement volume is compressed, and when decoupled from the "rack pinion (31)," the "piston (5)," along with its attached "rack (4)" and "anvil (8)," then "rapidly accelerate under the force of the compressed air." Pedicini, ¶[0078], Figs. 1–2.



E. Claim 5

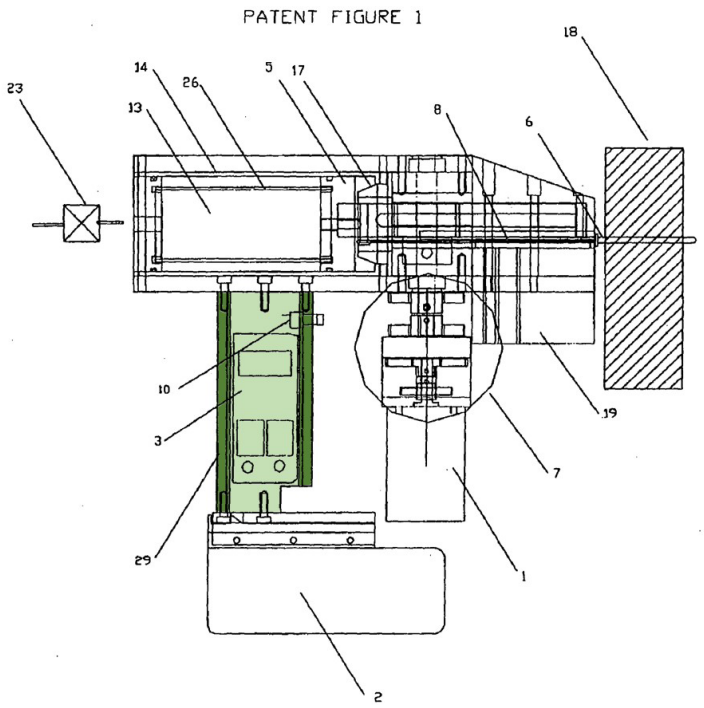
226. Pedicini discloses or at least renders obvious "wherein the piston is positioned inside the top cover when the piston is at or near the first end of the hollow cylinder." Pedicini's piston (green) is positioned at the inside of the top cover/cap (grey) when it is near the first end (left) of the hollow cylinder (yellow). Pedicini, Fig. 2. The '167 patent specification does not explain what is meant by "inside" as used in this limitation. To a POSITA, the word "inside" could be a simple positional relationship, as in "just inside the door," which is literally met bv Pedicini. The word "inside" could also have a narrower meaning, more akin to "enclosed" or "surrounded." Pedicini's top cap/cover does not enclose or surround its piston, but that is purely a matter of design choice. A higher-power version of Pedicini, enabled by better battery technologies, would have a higher internal pressure and thus would need a top cap/cover with a stronger physical connection. This in turn would require a larger connection surface extending along the sides of the cylinder, such that—at a certain pressure value—the top cap/cover would surround the piston, when it is at its top position. Accordingly, this limitation was at least obvious.



F. Claim 6

227. ***Elements [6.P]–[6.7]***: Elements [6.P]–[6.7] are substantially identical to Elements [1.P], [1.1], [1.2], [1.7], [1.10], [1.3], [1.4], and [3.1], respectively, and are met as described above.

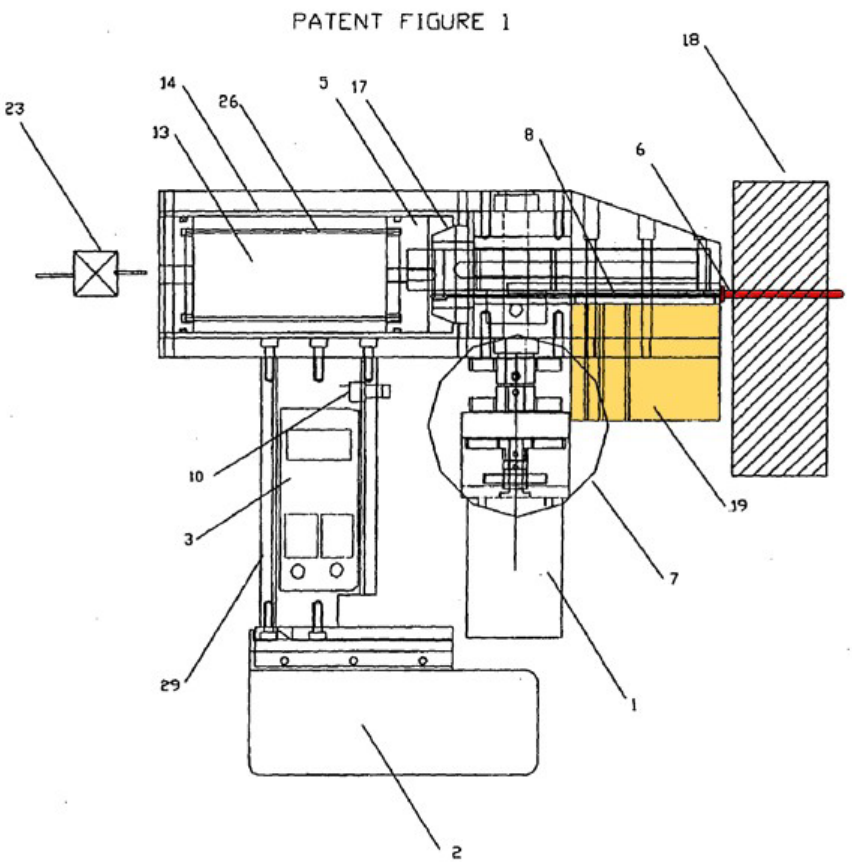
228. ***Element [6.8]***: Pedicini discloses "a handle portion." Pedicini's handle portion is grip 29 (green,). Pedicini, ¶[0067], Fig. 1.



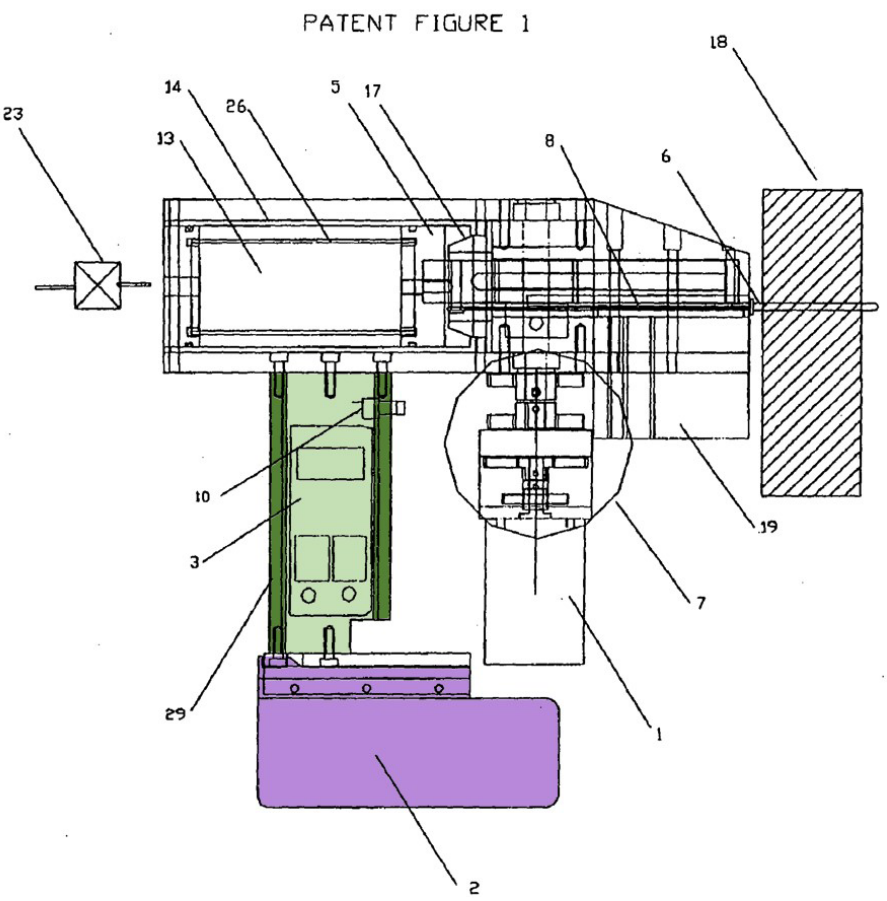
229. ***Element [6.9]***: Element [6.9] recites "a motor that provides motive power for said lifter" and is met for the reasons described above for Element [1.5], which recites "a prime mover."

230. ***Element [6.10]***: Element [6.10] recites "a removable battery pack that provides energy for said motor" and is met for the reasons described above for Element [1.6], which recites "a source of electrical energy that is removably attached to said housing."

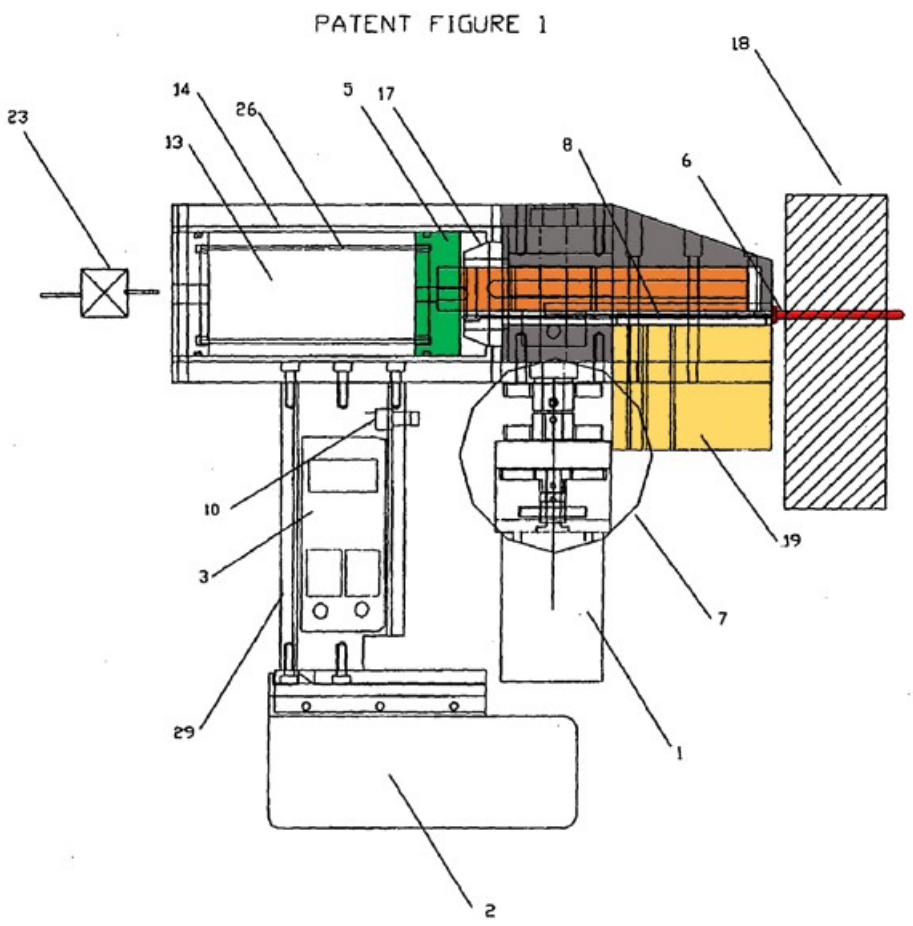
231. ***Element [6.11]***: Pedicini discloses "a removable magazine that holds a plurality of fasteners." Pedicini removable magazine ("fastener feeder (19)," orange) "supplies the fasteners (6) to the fastener driver anvil (8)." Pedicini, ¶¶[0076]–[0077], Fig. 1.



232. ***Element [6.12]***: Pedicini discloses "wherein: said removable battery pack is attached proximal to said handle portion." Pedicini's removable battery ("battery pack," purple) is attached proximal to the handle portion ("grip," green). Pedicini, Fig. 1.

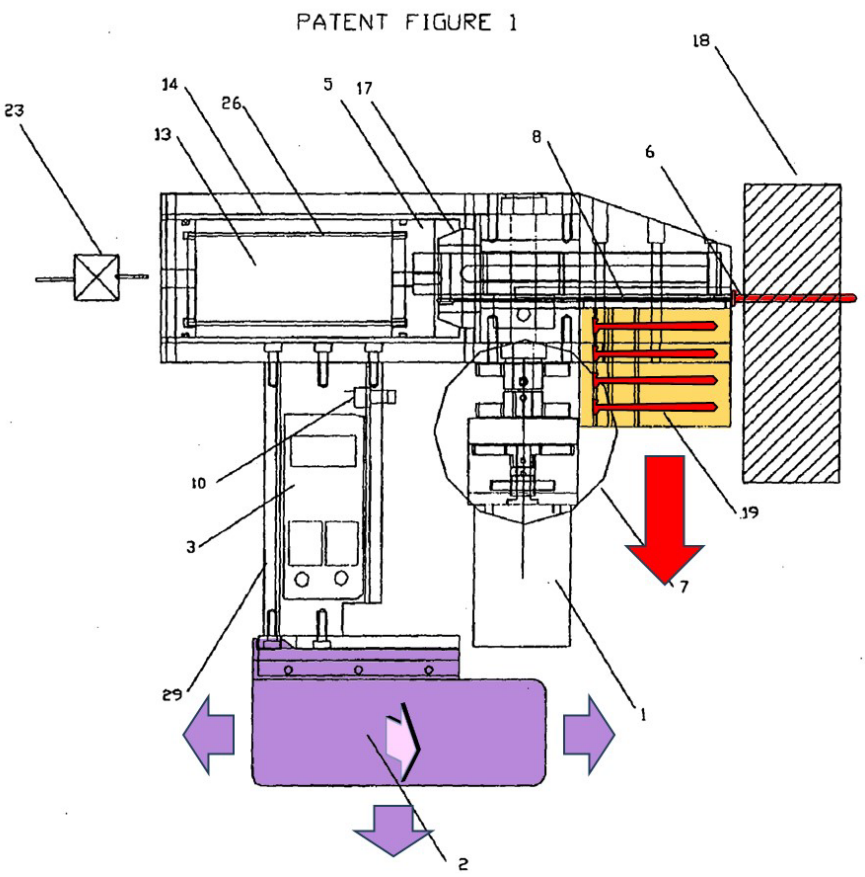


233. ***Element [6.13]***: Pedicini discloses "said removable magazine is attached proximal to an exit end of said guide body, wherein said magazine extends past said removable battery pack." Pedicini's removable magazine ("fastener feeder (19)," orange) is attached proximal to the exit end of the guide body (grey).



234. Pedicini's magazine would obviously extend past the removable battery pack in designs with high capacity magazines, since increasing the magazine size will extend it outward from the tool at a greater pace than increasing the battery.

235. As illustrated below, the magazine (orange) holds nails (red) linearly and thus can only expand by extending further downward below the tool, whereas the battery (purple) holds charge based on volume and can expand by being extended in any direction. Thus, while both the magazine and battery will expand in a high capacity design, the magazine will predictably extend down further below the battery for certain obvious designs.



G. Claim 7

236. Elements [7.1]–[7.2] are substantially identical to Claim 2 and Element [3.2], respectively, and are met as described above.

H. Claim 8

237. Claim 8 is substantially identical to Claim 4 and is met as described above.

I. Claim 9

238. Pedicini discloses "wherein: a bottommost surface of said magazine is farther from a centerline of said exit end of the guide body than is a bottommost surface of said battery pack." As I explained above for Element [6.13], designs with

high capacity magazines will obviously have a magazine that extends further outward from the tool than the battery pack, and thus the magazine's bottommost surface will be farther away from the centerline than the battery's bottommost surface.

J. Claim 10

239. ***Elements [10.P]–[10.4]***: Elements [10.P]–[10.4] are substantially identical to Elements [6.P], [6.1], [6.2]–[6.3], [6.5], and [6.6], respectively, and are met as described above.

240. ***Element [10.5]***: Element [10.5] recites "a guide body . . . having a linear passageway for said driver," which is substantially identical to Element [6.7], and further recites that the guide body is "located proximal to said hollow cylinder" and "having an exit end that is located distal from said hollow cylinder." Element [10.5] is met for the reasons discussed above for Element [6.7].

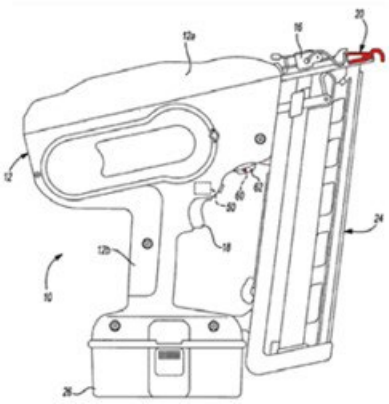
241. ***Element [10.6]***: Element [10.6] recites "a removable battery pack," which is identical to Element [6.10], and further recites that it "is located at a rear portion of said tool." Element [10.6] is met for the reasons discussed above for Element [6.10].

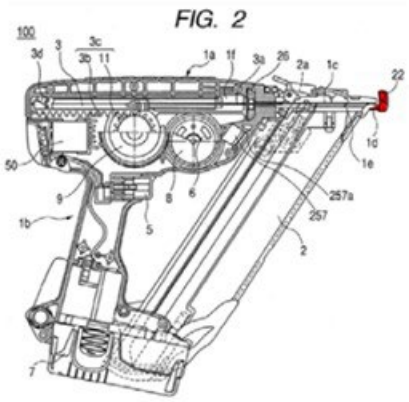
242. ***Element [10.7]***: Pedicini is silent about a safety contact, but it would have been obvious to a POSITA to have "a safety contact element proximal to said

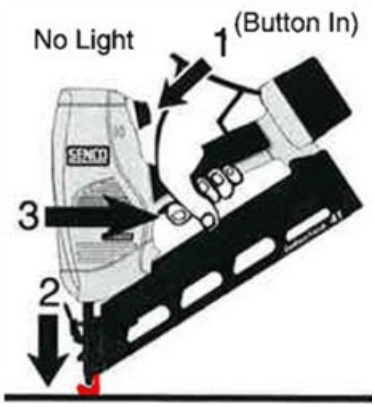
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Ex. 1003

exit end, said safety contact element being disposed at a front portion of the tool, above said guide body."

243. A POSITA would be motivated to incorporate such a safety contact element into Pedicini based on design choice and market forces, because that was the conventional design taught by numerous prior art references, including Forster, Shima, and Senco. Forster, ¶[0024], ¶[0028], Fig. 1 (below left); Shima, ¶[0054], Fig. 2 (below middle); Senco, 13–14 (below right).







K. Claim 11

244. Claim 11 recites "an electric motor that derives energy from said battery pack, which provides motive power for said lifter" and is met for the reasons discussed above for Element [6.9].

L. Claim 12

245. Pedicini discloses "wherein: said safety contact element prevents said drive stroke from occurring unless said safety contact element is pressed against a solid surface." The conventional safety contact element taught by numerous prior art

references (Forster, Shima, Senco) prevents said drive stroke from occurring unless said safety contact element is pressed against a solid surface.

M. Claim 13–14

246. Claims 13–14 are identical to Claims 7–8, respectively, and are met as described above.

N. Claim 15

247. Pedicini discloses "wherein: said safety contact element is located directly above said guide body and extends from said front portion of the tool toward a rear portion of the tool, extending along at least a surface of the guide body that is on the opposite side of the tool from where said battery pack is located." The conventional safety contact element taught by numerous prior art references (Forster, Shima, Senco) is located directly above the guide body, extends from the front of the tool toward the rear, and extends along a surface of the guide body opposite the battery.

IX. CONCLUSION

248. I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on December 13, 2024.

Glenn E. Vallee, Ph.D.

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