L. HACKETT.

LAST JACK.

APPLICATION FILED OCT. 28, 1909.

963,140.

Patented July 5, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

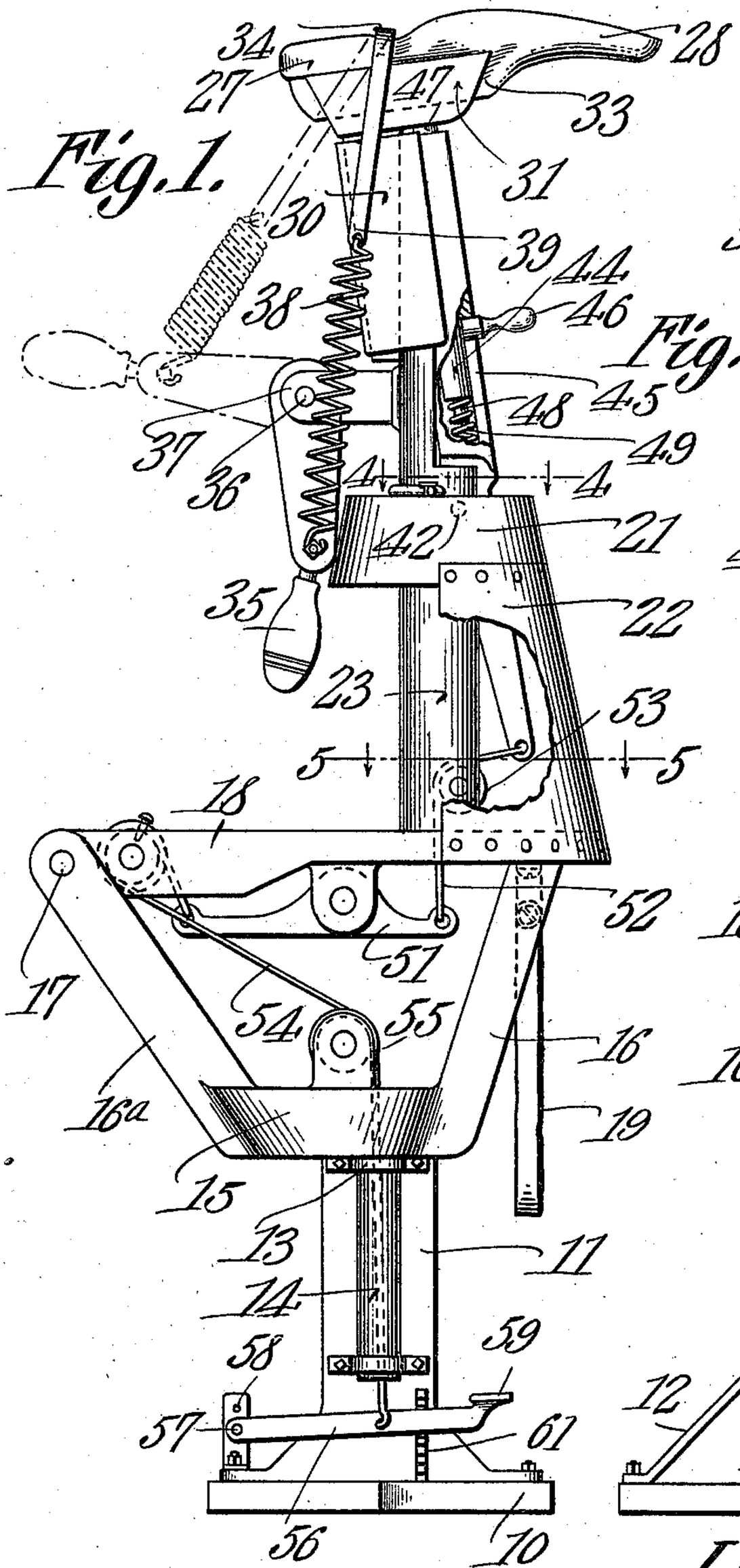
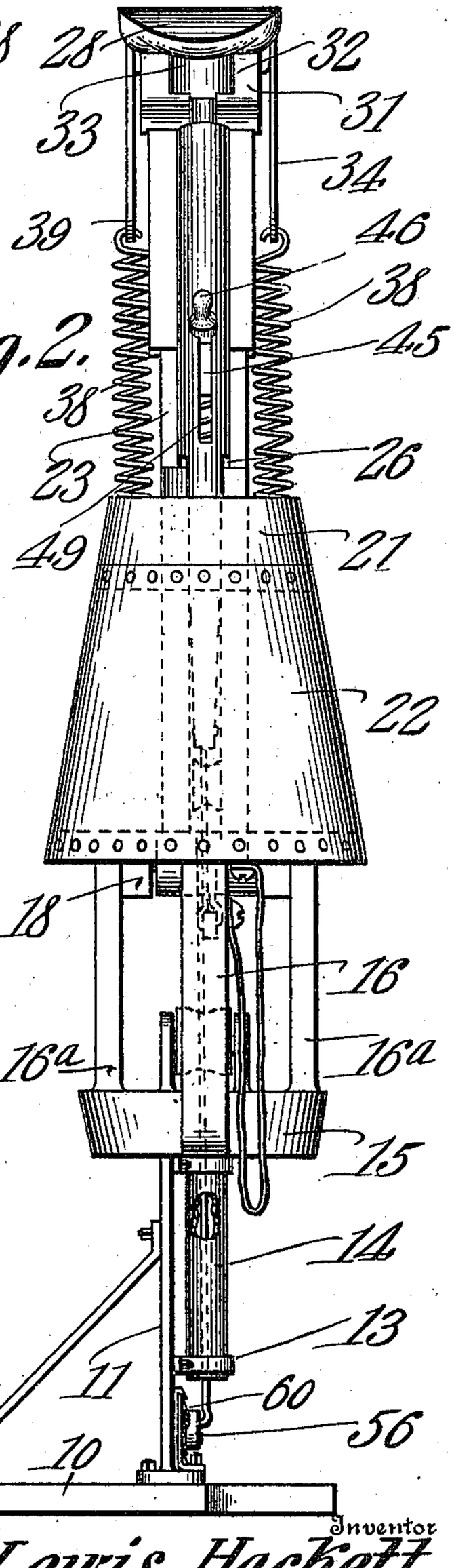


Fig. 2.



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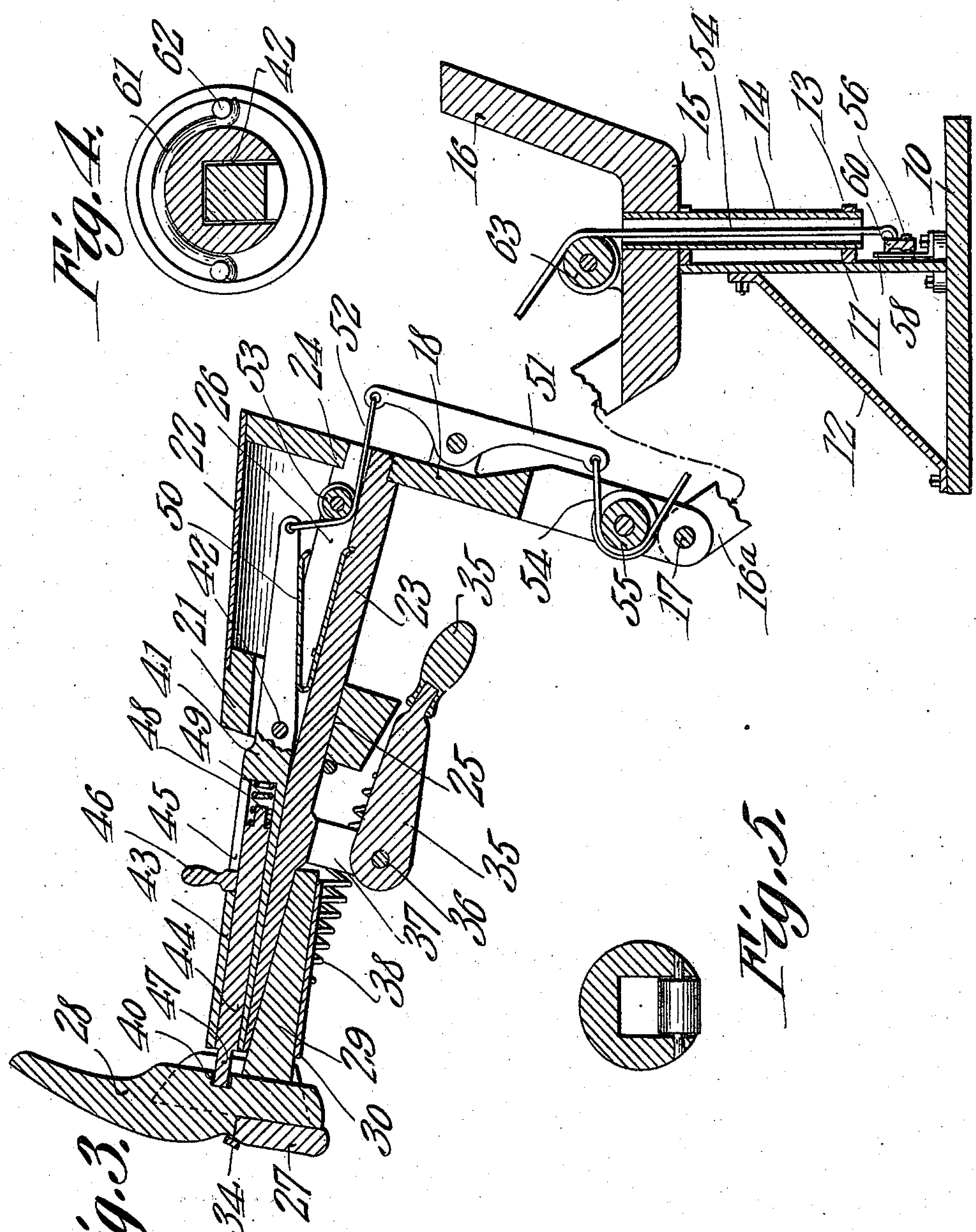
2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

LEWIS HACKETT, OF NORTH YAKIMA, WASHINGTON.

LAST-JACK.

963,140. Specification of Letters Patent. Patented July 5, 1910.

Application filed October 28, 1909. Serial No. 525,162.

To all whom it may concern:

Be it known that I, LEWIS HACKETT, a citizen of the United States, residing at North Yakima, in the county of Yakima and State of Washington, have invented a new and useful Last-Jack, of which the following is a specification.

It is the object of the present invention to provide an improved construction of last jack and the invention aims among other things to provide a last jack of such construction that the last may be brought to practically any desired position.

More specifically speaking the invention aims to provide a device of this class including a last supporting standard which may be positioned at various angles, and further to provide means for extending or expanding the last upon the standard regardless of the position of the standard with respect to its support.

It is a further object of the invention to provide, in a device of this class, a last standard mounted upon a support so that it may be turned to extend at practically any desired angle and may be rotated relatively with respect to the support, and to provide upon the last standard, a last comprising a fixed and a movable section, and to provide means upon the support for the standard which will have operative connection with the movable section of the last whereby the same may be moved relatively with respect to the fixed section thereof to expand the last within a shoe being worked.

The invention further aims to provide, in a device of this class, a rotatable support carrying a last carrying standard the last upon the standard comprising a fixed and a movable section and to provide means upon the support having operative connection with the movable section of the last whereby the same may be moved regardless of the position assumed by the support for the last standard.

Further, the invention aims to provide in a device of this class, a support which is mounted to rotate about a center, a last standard which is mounted upon the support in such manner as to permit of its being swung to extend at an angle with respect to the support or to extend directly vertically thereabove, and a last mounted at the upper end of the standard and comprising a fixed and a movable section and further to provide means upon the support having operative connection with the movable section of the last whereby the same may be moved regardless of the position assumed by the support or by the standard with respect to the support.

The invention further aims to provide, in a device of this class, a support, which is arranged to turn about an axis, a base which is hinged upon the support to be swung to extend at an angle therefrom or to lie thereon, a standard which is mounted to turn upon the base, a last at the upper end of the standard comprising a fixed and a movable section, and means which is mounted upon the movable support and which has operative connection with the movable section of the last whereby the same may be moved regardless of the position of the standard with respect to the base upon which it is mounted to turn and also regardless of the position of the base with respect to the support upon which it is hinged.

With the above and other objects in view, the invention consists in the construction and arrangement of parts shown in the accompanying drawings, in which,

Figure 1 is a view in side elevation of the device embodying the present invention. Fig. 2 is a front elevation thereof. Fig. 3 is a vertical sectional view therethrough taken from front to rear and showing the last standard swung at an angle with respect to the support upon which it is mounted. Fig. 4 is a horizontal sectional view on the line 4—4 of Fig. 1, and Fig. 5 is a similar view on the line 5—5 of Fig. 1.

As illustrated in the drawings, the device embodying the present invention is mounted upon a base which is indicated by the numeral 10 and this base is to be bolted or otherwise securely fastened upon a floor or other suitable base structure, and may be of any desired form. Upon this base 10 there is mounted an upright which is indicated by the numeral 11, and is braced in upright position upon the base through the medium of a suitable brace indicated by the numeral 12. This upright 11 has secured upon it collars which are indicated by the numeral 13 and mounted to turn in these collars is a cylindrical sleeve 14 which depends from a head 15, the said sleeve projecting at its upper end through the said head. Arms 16 project upwardly angularly from the head 15 and to one of the arms indicated more specifically by the numeral 16ª is hinged

as at 17 a base which supports the last standard of the device. This base is indicated by the numeral 18 and may be of any desired form and when swung upon its hinges to assume the position illustrated in Fig. 1 of the drawings, rests upon the upper end of the other arm 16. It may however be swung to assume a position substantially as illustrated in Fig. 3 of the drawing for a purpose to be presently described. In order to support it in this latter position, a strap 19 is secured to the last mentioned arm 16 and to that end or side of the base 18 which rests upon its upper end.

As stated, there is mounted upon the base 18 a last standard, and in order that this standard may be firmly supported upon the base, there is provided an additional support in the nature of a head 21 which is held fixedly above the base 18 by a web which is indicated by the numeral 22 this web serving also as a shield or protector for certain mechanism which is housed therewithin.

The last standard is indicated in general by the reference numeral 23 and is fitted at its lower end in an opening 24 formed in the base 18 and is further fitted through an opening 25 formed axially through the head 21, it being understood that when the base 18 is in the position illustrated in Figs. 1 and 2 of the drawings, the last standard will be positioned substantially vertical whereas when the base 18 is in the position illustrated in Fig. 3 of the drawing, the last standard will extend at an angle with respect to the support previously described, it being however capable of rotation in its bearings in the base 18 and head 21 regardless of the position assumed by the said base 18. The last standard 23 is illustrated in Fig. 1 as cylindrical in form and is formed in one side with a groove which is indicated by the numeral 26 and extends from end to end of the same.

The last which is supported upon the upper end of the standard 23 is composed of a fixed heel section which is indicated by the numeral 27 and a relatively movable toe section indicated by the numeral 28. Of these two sections, the heel section is formed or provided with a tang 29 which is removably fitted in a socket 30 formed or secured upon the standard 23 it being understood that by so mounting the last upon the standard lasts of various sizes may be mounted upon the same standard without any adjustment being required. The fixed heel section 27 of the last is provided with integral cheek portions which are indicated by the numeral 31 and which are located beneath the working surface or upper portion of the said section and are spaced and are rabbeted as indicated by the numeral 32 to receive a rib 33 formed upon the under side of the toe section of the last, the reception of the rib 33 between the cheek pieces 31 and in the rabbets of the same being such as to permit of sliding adjustment of the toe section relatively with respect to the heel section. It will be observed that the fixed heel section embodies only the heel portion of the last whereas the so-called toe section embodies not only the toe portion of the last but also that portion of the last corresponding to the ball of the foot and to the instep. It will further be observed that the rib 33 is of less width than the under side of the toe section of the last so that the side portions of the said section of the last will project beyond the planes of the side of the rib 33 and will rest at their under sides upon the upper edges of the cheek pieces 31 of the fixed heel section of the last whereby the toe section will be firmly supported upon the heel section when its rib 33 is inserted between the cheek pieces and in the rabbets formed therein.

Before proceeding to a specific description of the mechanism provided, as hereinbefore stated, for relatively moving the toe section of the last with respect to the heel section, it will be well to describe at this point a means which is provided for firmly holding a shoe upon the last. The means just mentioned is embodied in a strap 34 which is adapted for disposal over the instep portion of the last with its end portions depending at opposite sides of the said last and last standard.

A hand lever indicated by the numeral 35 is pivoted as at 36 between ears 37 which are formed upon the rear side of the last standard 23 and this lever has connected to it, adjacent its handle or free end, the lower ends of springs which are indicated by the numeral 38 and which at their upper ends connect permanently with the extremities of the strap 34 as indicated by the numeral 39, it being understood that these springs at all times exert a tension upon the strap when the strap is engaged over the instep portion of the last upon the last standard. When the shoe is disposed upon the last, the hand lever 35 is in the dotted line position illustrated in Fig. 1 of the drawing, and the strap 34 will then be under less tension than at other times, and it is disposed over the instep of the shoe sole upon the last. After this has been done, the hand lever is swung downwardly to the position illustrated in full lines in the several figures of the drawing so as to exert further tension upon the strap 34 and firmly bind the same against the instep portion of the shoe sole and hold the shoe firmly upon the last. In order that the hand lever may remain in this latter position when so moved, the pivot 36 for the lever is so located that when the lever is in dotted line position illustrated in Fig. 1 of the drawings, the springs 38 will

be located rearwardly of or to one side of the said pivot, whereas when the lever is swung to the full line position illustrated in the several figures of the drawing, the springs will move past the said pivot and to position forwardly of the same the relative location of the springs and the pivot being such, then, as to hold the lever in full line position.

As heretofore stated, the toe section 28 of the last is adapted to be slidably extensible in its seat in the heel section of the last and in order that this may be accomplished, means is provided which may be actuated by the foot of the operator of the device and such means will now be specifically described. The toe section of the last is formed in its under side or more specifically in the under side of its rib 33 with a socket which is indicated by the numeral 40. Within the groove 26 in the last standard 23 there is mounted to rock an arm which is composed of two sections one of these sections being relatively fixed and indicated by the numeral 41. This section 41 of the rocking arm is the section which is pivoted within the groove 26 to rock and is formed, to one side of its pivot, which pivot is indicated by the numeral 42, with a bore which is indicated by the numeral 43 and mounted to slide in this bore is the other section of the arm which is indicated by the numeral 44. The section 41 of the arm is further formed with a slot 45 which opens into the bore in the said section of the arm and through this slot projects a handle 46 which is fixedly carried upon the section 44 of the arm.

The upper end of the section 44 of the arm is formed with a reduced portion or stud 47 which fits removably in the socket 40 in the under side of the toe section 28 of the last standard, and it will be readily understood that upon rocking the arm 41, the said toe standard will be slid along in its seat in the fixed heel section 27 of the last. The lower end of the section 44 is also reduced as indicated by the numeral 48 and a spring 49 is fitted upon this reduced end of the said section 44 of the rocking arm and bears at its lower end against the lower end of the bore or socket 43 in the section 41 of the arm, it being understood that this spring 49 serves to hold the section 44 of the arm at the upward limit of its movement and with its upper end projecting into the socket 40 in the under side of the toe section of the last, this upward movement of the section 44 being limited by the engagement of the handle 46 with the upper end of the slot 45 in which it works. It will be of course understood that by grasping the handle 46 the section 44 of the arm may be slid downwardly against the tension of the spring 49 whereby to withdraw its reduced or studded upper end from the socket 40 in the said toe section of the last thereby to release the said section and permit of its withdrawal from the fixed or heel section 27 of the last. It is of course intended that the toe section 28 of the last standard shall be normally held in the position in which it is illustrated in Figs. 1 and 3 of the drawings and that the means provided for moving this section of the last shall be adapted to shift it outwardly as if away from the heel section of the last and in order that the toe section may be normally held in the position illustrated in the drawings, a leaf spring 50 is disposed between the bottom wall of the groove 26 in the last standard and the inner side of that portion of the section 41 of the rocking arm which lies to the opposite side of the pivot to that at which the bore 43 is formed. The means provided for rocking this arm against the tension of the spring 50 whereby to move the toe section of the last forwardly, or in other words to advance the same will now be described. A rocker 51 is mounted beneath the base 18 and to one end of this rocker is connected a strap or other flexible connection indicated by the numeral 52 the said strap being trained about a roller 53 journaled in the lower end of the groove in the last standard and being connected at its other end to the lower end of the last mentioned portion of the rocking arm. To the other end of the rocker 51, there is connected one end of a strap or other flexible connection indicated by the numeral 54 and this latter connection is passed about a pulley 55 which is journaled for rotation in the base 18 and the other end of the said connection is attached permanently to a lever 56. The lever 56 is pivoted as at 57 to an upstanding bracket 58 upon the base 10 of the device and in order that the flexible connection 54 may be attached to this lever, it is passed downwardly through the sleeve 14 as is clearly illustrated in Fig. 3 of the drawing. This lever 56 is provided at its free end with a foot piece indicated by the numeral 59 and between this foot piece and the point of connection of the strap 54 with the lever it is formed with a laterally directed tooth or flange indicated by the numeral 60. This tooth is designed to engage interchangeably with the teeth 61 of a rack which is arranged in vertical position upon the upright 11 whereby the lever 56 may be held at any desired adjustment.

As heretofore stated, the last standard 23 is mounted to turn in its bearings in the head 21 and the base 18 and in order that it will hold its position when turned to the desired adjustment, there is provided a means which will now be described. A bowed resilient length of wire indicated by the numeral 61′ is engaged at its intermediate portion about the standard 23 and rests upon the head 21

and at its extremities this length of wire engages behind studs which are indicated by the numeral 62 and are secured on the opposite face of the said head 21. The frictional bearings had by the intermediate portion of the wire against the last standard will serve, as will be readily understood, to hold the said standard at any desired adjustment to which it may be turned.

From the foregoing description of the invention it will be readily understood that while the base 18 may be swung upon its hinges 17 so as to assume a position substantially as shown in Fig. 1 of the drawings, or the position shown in Fig. 3 of the drawings, there will be but slight change in the location of the roll 55 with relation to the roller 63, which is mounted upon the head 15 and over which the flexible connection 54 is passed, so that whether the base 18 be in one position or the other, the toe section of the last may be advanced and be allowed to be retracted by actuating the lever 56. It will further be understood that not only may the base 18 be swung upon its hinges 17 to assume either of the positions described and illustrated without affecting the means provided for advancing and retracting the toe section of the last, but also, the last standard 23 may be rotated or turned to any desired position regardless of the position assumed by the base 18 and without affecting the said mechanism. Further, all of these several adjustments may be had and the head 15 may be turned about the axis of the sleeve 14 so as to position the last standard 23 at any desired angle, this latter adjustment being also had without affecting the mechanism for advancing the toe section of the last.

What I claim is:

1. In a device of the class described, a support, a base hinged to the support, a standard upon the base, the base being adapted to be swung to have the standard extend above the support or at an angle thereto, a last at the upper end of the support comprising a fixed and a movable section and means mounted upon the support and having connection with the movable member of the last whereby the same may be moved regardless of the position of the standard with respect to the support.

2. In a device of the class described, a support, a base hinged to the support, a standard upon the base, the base being adapted to be swung to have the standard extend above the support or at an angle thereto, a last at the upper end of the support comprising a fixed and a movable section, a rocking arm mounted upon the standard, said arm having connection with the movable section of the last whereby to move the same when rocked, and means mounted upon the support and having connection with the rocking arm whereby the same may be actuated regardless of the position of the standard with respect to the support.

3. In a device of the class described, a base hinged to the support, a standard upon the base, the base being adapted to be swung and have the standard extend above the support or at an angle thereto, a last at the upper end of the support comprising a fixed and a movable section, a rocking arm mounted upon the standard and having engagement with the movable member of the last whereby to move the same when rocked, a means normally holding the arm in one position, and means mounted upon the support and having connection with the arm for rocking the same against the tendency of the said means regardless of the position of the standard with respect to the support.

4. In a device of the class described, a support, a base hinged to the support, a standard upon the base, the base being adapted to be swung or have the standard extend above the support or at an angle thereto, a last at the upper end of the support comprising a fixed and a movable section, a rocking arm mounted upon the standard, said arm having engagement with the movable member of the last whereby to move the same when rocked, a spring normally holding the arm in one position, and means mounted upon the support and having connection with the arm whereby to rock the same against the tension of said spring to shift the movable member of the last regardless of the position of the standard with respect to the support.

5. In a device of the class described, a support, a base hinged to the support, a standard upon the base, the base being adapted to be swung or have the standard extend above the support or at an angle thereto, a last at the upper end of the support comprising a fixed and a movable section, a rocking arm mounted upon the standard and removably engaged with the movable member of the last whereby to shift the same when rocked, and means upon the support having connection with the rocking arm whereby to rock the same to shift the movable member of the last regardless of the position of the standard with respect to the support.

6. In a device of the class described, a support, a base hinged to the support, a standard upon the base, the base being adapted to be swung to have the standard extend above the support or at an angle thereto, a last at the upper end of the support comprising a fixed and a movable section, a rocking arm mounted upon the support, said arm comprising a relatively fixed section and a section mounted to slide upon the relatively fixed section and to engage

with the movable section of the last, and means mounted upon the support and having connection with the rocking arm whereby the same may be rocked regardless of the position of the standard with respect to the support.

7. In a device of the class described, a support, a base hinged to the support, a standard upon the base, the base being adapted to be swung, to have the standard extend above the support or at an angle thereto, a last at the upper end of the support comprising a fixed and a movable section, a rocking arm mounted upon the standard, and comprising a relatively fixed section and a section mounted to slide thereon, a spring normally holding the last mentioned section in engagement with the movable section of the last, and means mounted upon the support and having connection with the rocking arm whereby the same may be rocked regardless of the position of the standard with respect to the support.

8. In a device of the class described, a support, a base hinged to the support, a standard upon the base, the base being adapted to be swung, to have the standard extend above the support, or at an angle thereto, a last at the upper end of the support comprising a fixed and a movable section, a rocking arm mounted upon the support and comprising a relatively fixed section, and a section mounted to slide thereon, the last mentioned section being arranged for engagement with the movable section of the last, a spring normally holding the last mentioned section of the rocking arm in engagement with the said movable section of the last, a spring normally holding the rocking arm in position to hold the movable section of the last in one position with respect to the fixed section thereof, and means upon the support having connection with the rocking arm whereby the same may be rocked regardless of the position of the standard with respect to the support.

9. In a device of the class described, a support, a base hinged to the support, a standard upon the base, the base being adapted to be swung to have the standard extend above the base or at an angle thereto, a last at the upper end of the standard comprising a fixed and a movable section, a rocking arm mounted upon the standard and comprising a relatively fixed section mounted to rock and formed with a bore, a section mounted to slide in said bore, a spring in the bore back of said section whereby to hold the same in extended relation, the said section when in extended relation having engagement with the movable section of the last, a spring normally holding the rocking arm in such position as to hold the movable section of the last in one position with respect to the fixed section of the last and means mounted upon the support and having connection with the rocking arm whereby the same may be rocked regardless of the position of the standard with respect to the support.

10. In a device of the class described, a support, a base hinged to the support, a standard upon the base, the base being adapted to be swung to have the standard extend above the support or at an angle thereto, a last at the upper end of the support comprising a fixed section removably mounted upon the standard and a movable section mounted to slide thereon, and means mounted upon the support and having connection with the movable section of the last whereby the same may be moved regardless of the position of the standard with respect to the support.

11. In a device of the class described, a support, a base hinged to the support, a standard upon the base, the base being adapted to be swung to have the standard extend above the support, or at an angle thereto, a last at the upper end of the support comprising a fixed and a movable section, said fixed section being removably supported upon the standard and the movable section being mounted to slide upon the fixed section, a rocking arm mounted upon the standard and having engagement removably with the removable section of the last and means mounted upon the support and having connection with the rocking arm whereby the same may be rocked regardless of the position of the standard with respect to the support.

12. In a device of the class described, a support, a base hinged to the support, a standard upon the base, the base being adapted to be swung to have the standard extend above the support or at an angle thereto, a last at the upper end of the support comprising a fixed and a movable section, the fixed section being removably supported upon the standard, and the movable section being mounted to slide upon the fixed section, an arm comprising a relatively fixed section mounted to rock upon the standard and a section mounted to slide upon the relatively fixed section, means normally holding the last mentioned section of the arm in engagement with the movable section of the last and means mounted upon the support and having connection with the rocking arm whereby the same may be rocked regardless of the position of the standard with respect to the support.

13. In a device of the class described, a support, a base hinged to the support, a standard upon the base, the base being adapted to be swung to have the standard extend above the support or at an angle

thereto, the support being arranged for rotative movement, a last at the upper end of the support comprising a fixed and a movable section, and means mounted upon the support and having connection with the movable member of the last whereby the same may be moved regardless of the position of the standard with respect to the support.

14. In a device of the class described, a support, a base hinged upon the support, a standard mounted to turn upon the base, the base being movable to have the standard extend above or at an angle to the said support, a last at the upper end of the support comprising a fixed and a movable section, and means mounted upon the support and having connection with the movable member of the last whereby the same may be moved regardless of the position of the standard with respect to the support.

15. In a device of the class described, a support, a base hinged to the support, a standard mounted to turn upon the base, the base being movable to have the standard extend above or at an angle to the said support, a rocking arm mounted upon the standard, a last at the upper end of the standard comprising a fixed and a movable section, said rocking arm having operative engagement with the movable section of the last, and means mounted upon the support and having connection with the movable member of the last whereby the same may be moved regardless of the position of the standard with respect to the support.

16. In a device of the class described, a support, a base hinged upon the support, a standard mounted to turn upon the base, the base being movable to have the standard extend above or at an angle to said support, a last at the upper end of the support comprising a fixed and a movable section, the said support being mounted to turn, a rocking arm mounted upon the standard and having operative engagement with the movable section of the last, and means mounted upon the support and having operative connection with the said arm whereby the same may be rocked regardless of the position of the standard with respect to the support.

17. In a device of the class described, a base, an upright upon the base, a head, a sleeve carried by the head and mounted to turn upon the upright, a base hinged upon the head, a standard mounted upon the last mentioned base, a last mounted at the upper end of the standard and comprising a fixed and a movable section, and means mounted upon the first mentioned base and having operative connection with the movable section of the last whereby the same may be moved regardless of the position of the standard with respect to the head.

18. In a device of the class described, a base, an upright upon the base, a head, a sleeve carried by the head and mounted to turn upon the upright, a base hinged upon the head, a standard carried by the last mentioned base and mounted to turn thereon, a last at the upper end of the standard comprising a fixed and a movable section, and means mounted upon the first mentioned base and having operative connection with the movable section of the last whereby the same may be moved regardless of the position of the standard with respect to the section of the standard with respect to the second mentioned base or with respect to the head.

19. In a device of the class described, a base, an upright upon the base, a head, a sleeve carried by the head and mounted to turn upon the upright, a base hinged to the head, a standard mounted to turn upon the last mentioned base, a last at the upper end of the said standard comprising a fixed and a movable section, an arm mounted to rock upon the standard and having operative engagement with the movable section of the last, and means upon the first mentioned base having operative connection with the rocking arm whereby the same may be rocked regardless of the position of the the standard and having engagement removtioned base and with respect to the said head.

20. In a device of the class described, an upright, a head, a sleeve carried by the head, and mounted to turn upon the upright, a base hinged upon the head, a standard mounted to turn upon the base, a last mounted at the upper end of the standard and comprising a fixed and a movable section, a rocking arm mounted upon the standard and having operative engagement with the movable section of the last whereby the same may be shifted upon the fixed section thereof, a spring normally holding the arms in position to hold the movable section of the last in one position with respect to the fixed section thereof, a rocker mounted upon the base, connection between one end of the rocker and the rocking arm, a lever mounted upon the upright, and connection between the lever and the other end of the rocker whereby the same may be actuated to rock the rocking arm and shift the movable section of the last.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

LEWIS HACKETT.

Witnesses:
H. J. DOOLITTLE,
M. W. LINDERMAN.