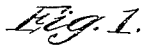


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2 SHEETS--SHEET 1.



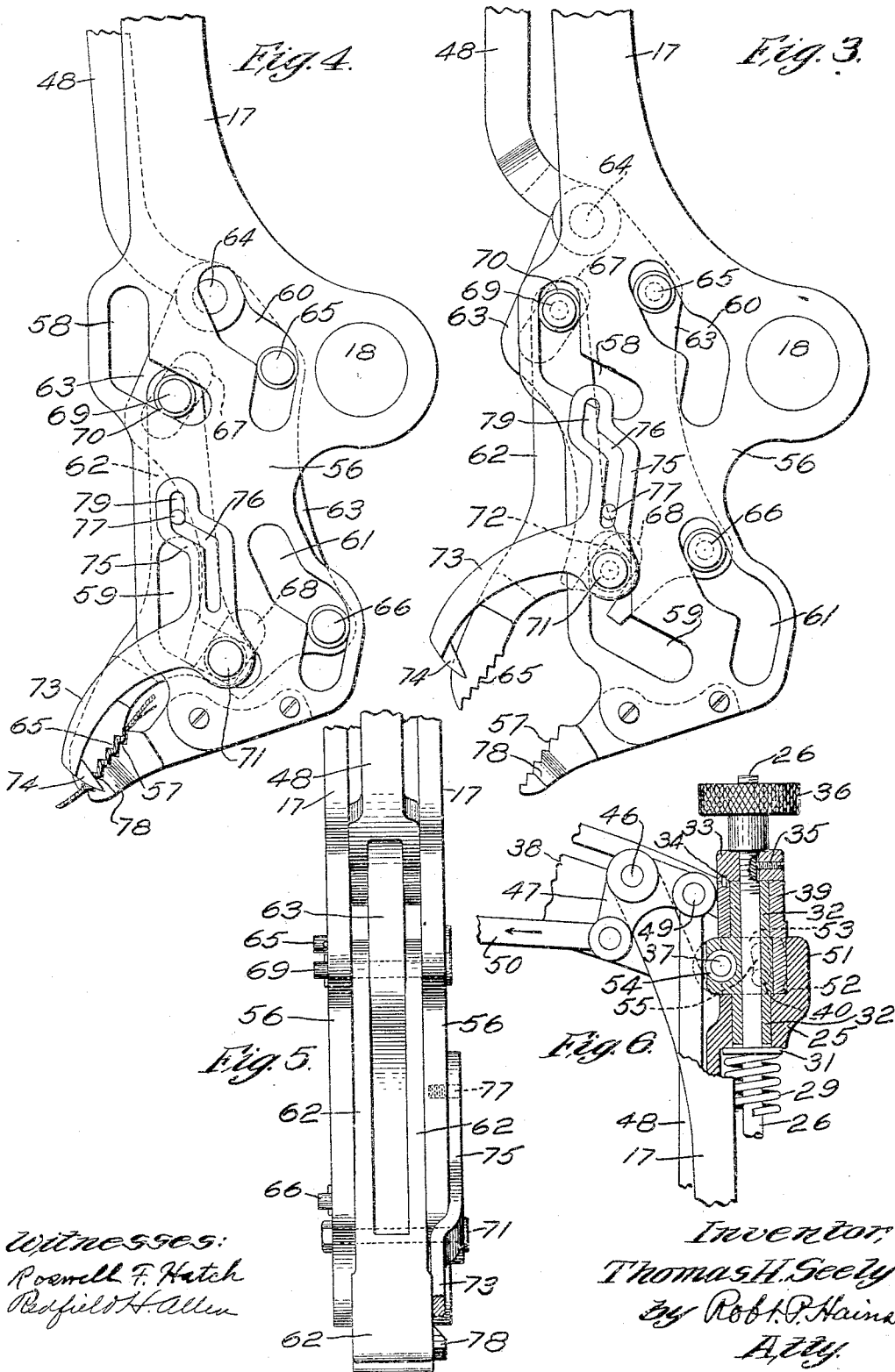
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T. H. SEELY.
 PINGER MECHANISM FOR LASTING MACHINES.
 APPLICATION FILED JAN. 20, 1909.

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

THOMAS H. SEELY, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THOMAS G. PLANT, OF BOSTON, MASSACHUSETTS.

PINCER MECHANISM FOR LASTING-MACHINES.

958,017.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed January 20, 1909. Serial No. 473,314.

To all whom it may concern:

Be it known that I, THOMAS H. SEELY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Pincer Mechanism for Lasting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like figures on the drawings representing like parts.

The invention to be hereinafter described relates to lasting machines for boots and shoes and more particularly to the pincer or gripper mechanism for seizing the upper and lining portion of the shoe and drawing it over the last into position for attachment to the insole.

The aims and objects of the present invention will be best made clear from the following description and accompanying drawings of one form or embodiment of means for carrying the invention into practical effect, the true scope of the invention being definitely pointed out in the claims.

Figure 1 shows in side elevation sufficient portion of a lasting machine having the present invention associated therewith to indicate the general connection and relation of parts; Fig. 2 is a section of Fig. 1 on the line 2-2; Fig. 3 is a side elevation of the pincer or gripper jaws in open position; Fig. 4 is a view similar to Fig. 3 showing the jaws closed upon the work; Fig. 5 is a front elevation of the parts shown in Fig. 4; Fig. 6 is a partial side and sectional elevation showing the means for operating the lower jaw carrier and the yielding mount of the upper jaw.

In the form or embodiment of the invention herein illustrated, the lasting pincers depend from an overhead up-draw lever fulcrumed upon the machine frame and suitably actuated to cause said lever to have an up and down movement, thereby to lift the upper. After the upper has been thus lifted the pincers are given a forward or over-draw movement to lay the materials onto the insole upon which they are to be secured, and means are provided to cause the upper to be slit or cut all in a manner to be now explained.

Referring to Fig. 1, the main shaft 1 suitably mounted in a supporting framework, the cam 2 thereon, the roll 3 co-acting with said cam and carried by the link 4, the arm

5 pivotally mounted at 6, connected to the link 4 at 7, and the spring 8 normally tending to hold the roll 3 against the cam 2, the lever 9 fulcrumed at 11 and connected to the link 4 at 10, the rod 12 connected to the lever 9 at 13, the co-acting stops 14 and 15, the actuator 16 connected to the pincer carrier 17 at 18 and fulcrumed at 19 upon the yoke 20 and having the upwardly extended arm 21 connected to the rod 12 at 22 and their general mode of operation, whereby the pincers are given the overdraw movement under spring tension, are or may be all as pointed out in my prior Patent No. 945,291, dated January 4, 1910, with the exception that the rod 12, as shown in Fig. 1, is adjustably connected to the arm 21, adjustment being effected by the hand piece 23 through the screw thread connection 24 with the arm 21, as will be readily understood by those skilled in the art.

Extending through the upper portion or head 25 of the pincer carrier 17 is the lift-rod 26, the lower edge of which has a guide 27 movable in a socket 28 in the carrier. Said rod is surrounded by a spring 29 the lower end of which is seated on the collar 30 carried by the rod and the upper end of which rests against a washer 31, Fig. 6, bearing against the underside of the head 25. Surrounding the rod 26 and disposed within the head 25 of the carrier is a lift sleeve 32, the upper end of which bears on the under side of a collar 33 held from rotation by a pin 34 and splined to the lift rod 26 at 35. The upper end of the lift rod 26 is screw-threaded and provided with an adjusting nut 36, whereby the tension of the lift spring 29 may be regulated.

The sleeve 32 has a side projection, Fig. 6, through which passes a pin 37 connecting said sleeve to the up-draw lever 38, whereby upon upward movement of the up-draw lever 38, the sleeve 32, rod 26, and, perforce, the pincer carrier 17 will be raised, movement of the latter being due to the lifting action of the parts transmitted through the spring 29.

It is sometimes desirable to give an extra spring lifting action to the pincer carrier or, in other words, to increase the action of the spring beyond that secured by the updraw lever, and to this end there is disposed below the collar 33 a lift block 39, Figs. 2 and 6, provided with trunnions which are received

by the enlarged slots 41 in lifting levers 42 pivotally mounted on the pin 37 and connected at 43 to extra lift levers 44 which may be actuated in any suitable manner, the construction being such that after the up-
 5 draw lever 38 has raised the pincer jaws and the stock held by them in a manner to be more fully explained and has transmitted its pulling effect through the spring 29, the
 10 extra lift lever 44 may be operated to give an extra upward pull on the rod 26, thereby increasing the action of the spring upon the pincer carrier.

The means hereinbefore described give to
 15 the pincer jaws their updraw movement after the jaws have been closed upon the work, and to effect this closing movement of the jaws the carrier 17 has an upwardly projecting portion 45, Fig. 1, to which is pivotally connected at 46 the bell crank lever
 20 47, one arm of which is jointed to the jaw actuating rod 48 at 49, and the other arm to a rod 50 to which movement in the direction of the arrow, Fig. 1, is given by suitable
 25 actuating devices to cause the jaws to close upon the work. Application of force to the bell crank 47 by the rod 50, as stated, tends to move the upper end of the carrier 17 to the left in Fig. 1 and, in the absence of
 30 counter-acting means, cause the carrier to bind upon its lifting sleeve. To overcome this tendency and enable the carrier to respond to the spring lifting force during the overdraw movement, the head 25 of the
 35 carrier has an upwardly extended portion 51, the inner face of which rests against the curved surfaces 52 of thrust blocks 53, the opposite end portions of said blocks partially embracing and resting against the
 40 lift pin 37, it being understood, however, that a washer or sleeve 54 may preferably surround the lift pin 37, Fig. 2.

The blocks 53 have curved slots 55 through which the pins 40 extend, so that the thrust
 45 blocks do not interfere with the proper lifting of the pincer carriers by the extra lift-lever 44.

From the above construction it will be apparent that the thrust blocks act as rolling
 50 surfaces to permit the pincer carrier to move properly and without binding in response to its actuating means even though the jaws of the pincers be closed with considerable force.

Referring more particularly to Figs. 3, 4 and 5, the pincer jaws comprise two members suitably connected together, to the end
 55 that one may have a bodily movement toward and from the other in the closing and opening of the jaws, a suitable actuator being disposed intermediate the jaws, whereby
 60 acceleration of the opening and closing movements and a firm grip of the jaws may be secured.

65 One of the jaws, which for identification

may be referred to as the lower jaw 56, is mounted on the pincer carrier 17 and is provided with a gripping face 57. The lower
 jaw 56 is bifurcated above the gripping face 57, Fig. 5, and its opposite walls are provided with slots 58, 59, the general direction
 70 of which defines the path of bodily movements of the upper jaw, as will presently appear. The side walls of the lower jaw 56 are also provided with slots 60, 61 differing
 75 somewhat from the directional character of the slots 58 and 59, and said slots determine the directional movement of the actuator for the lower jaw, as will appear hereinafter.

In the bifurcation of the lower jaw member or between its side walls are disposed
 80 the upper jaw 62 and the upper jaw actuator or accelerator 63, the latter being connected at its upper portion at 64 to the actuating rod 48, and preferably disposed in a bifur-
 85 cated portion of the upper jaw above its gripping face, as indicated in Fig. 5.

Secured to the actuator 63 are the pins 65, 66, preferably carrying suitable rolls and traveling in the slots 60, 61 respectively of
 90 the lower jaw. Said actuator 63 is likewise provided with the slots 67 and 68 arranged at an angle to the slots 58 and 59 formed in the lower jaw member. Passing through
 95 the upper portion of the upper jaw member 62 and engaging the slot 67 in the actuator 63 and also the slot 58 in the lower jaw member is the pin 69 preferably carrying a roll or rolls 70. Similarly the upper jaw carries
 100 a pin 71 near its lower portion which passes into and engages the slots 68 and 59 in the actuator and lower jaw respectively, said pin 71 preferably carrying anti-friction
 rolls 72.

From the construction described, it will
 105 be noted that upon downward movement of the actuating rod 48, the actuator 63 will be moved downward relatively to the lower jaw, the pins 65 and 66 moving down in their
 110 slots 60 and 61 respectively. Simultaneously, the pins 69 and 70 will move downward in the slots 58 and 59, respectively, thereby carrying the lower jaw bodily downward in a straight or substantially straight
 115 path. Since the pins 69 and 71 or their rolls are engaged by the slots 67 and 68, respectively, in the actuator arranged at an angle to the upper part of the slots 58 and 59 of
 120 the lower jaw, it follows that the upper jaw member carrying the said pins 69 and 71 will be moved downward at an accelerated speed due to the angular relation of the slots 67
 125 and 68 with respect to the upper portion of the slots 58 and 59 in the lower jaw member, such movement of the upper jaw being a bodily advance of the entire upper jaw
 member. When the pins 65 and 66, and the pins 69 and 71 have reached the angular
 bend in their respective slots by movement
 130 in the manner stated, the relative inclina-

tion of the slots 58, 59, and 67, 68 change as does the direction of the lower part of the slots 60 and 61 which define the direction of movement of the actuator, with the result that the rapidity of closing movement of the upper jaw becomes less with a corresponding increase of power or wedging action causing the upper jaw to firmly grip the material between itself and the lower jaw. It will be noted that the movement of the upper jaw member is a bodily movement which, during a part of its closing action, is accelerated to quickly bring the gripping faces of the jaw members toward the stock between them, and that the final closing action is a relatively slower movement but with increase of power due to the changing in relative directions of the slots in the lower jaw and actuator, the relative direction of movement of the two jaws being in substantially a straight line.

Obviously, the pins which engage the slots in the lower jaw and actuator may be provided with anti-friction rolls or other anti-friction devices, but this is not essential. It will be obvious, also, to those skilled in the art that upon upward movement of the actuating rod 48 the jaws will gradually and slowly release the material and then quickly separate.

It is desirable that the upper and lining be notched or slitted between the portion thereof engaged by the jaws and that portion already tacked or secured to the insole, and the present invention in addition to the matters hereinbefore set forth provides means whereby as the pincer jaws grasp the stock, a cutter or slitting knife will pierce the upper and lining adjacent one side of the jaws and when the jaws start to release the upper and lining and are moved inward of the shoe by reason of the spring actuating means which cause the overdraw movement, as hereinbefore described, the jaws will pull away from the upper and lining dragging the knife through the materials before said jaws have become entirely separated.

As one means of securing the above results, there is mounted upon the pin 71, Figs. 3 and 4, a knife carrier 73 having at its end portion a knife or slitter 74 projecting toward the lower jaw; in other words, the knife carrier 73 is pivotally supported by one jaw member and movable therewith. Extending upwardly from the pivotal support of the knife carrier 73 is an arm 75 having a cam slot 76 which is engaged by a pin 77 projecting from the side wall of the fixed jaw 56, the construction being such that when the jaw members are separated, as indicated in Fig. 3, the pin 77 will occupy the lower portion of the slot 76, as indicated in Fig. 3, thereby raising the knife carrier 73 and maintaining the knife or slitter 74 in position not to obstruct the free entrance

of the upper and lining between the gripping faces of the upper and lower jaw members. When, however, the upper jaw is moved bodily downward, as hereinbefore pointed out, the slotted arm 75 will move downward relative to the pin 77 and cause the knife carrier 73 to swing upon its pivotal support 71, thereby causing the knife or slitter 74 to penetrate the upper and lining, as indicated in Fig. 4, as the gripping faces of the jaws come together. In order that the knife or slitter 74 may act upon the stock while the latter is properly supported for the penetration of said knife or slitter, the lower jaw is provided with a projection 78 at its side upon which the upper and lining of the shoe may rest and be supported as the slitter or knife 74 engages therewith.

Assuming that the two jaws have been moved, as hereinbefore described, from the position indicated by Fig. 3 to that indicated by Fig. 4, wherein they grip between themselves the upper and lining, and wherein the knife or slitter 74 has penetrated the work, and that the said jaws while gripping the stock, as indicated in Fig. 4, have been given their overdraw movement and are ready to release the stock, it will be apparent that the first upward movement of the actuating rod 48 will give a slight separation to the jaws without, however, withdrawing the knife or slitter 74 from the stock by reason of the straight portion 79 at the upper end of the slot 76 in the arm 75, and that at this time, owing to the action of the spring 8, which normally tends to move the jaws inward over the shoe sole, said jaws will respond to this inward moving tendency of the spring 8 and carry with them the knife or slitter 74, thus slitting or cutting the upper and lining toward and through the edge thereof, said jaws then opening into the position indicated in Fig. 3 ready for the next operation.

What is claimed is:

1. In a pincer mechanism for lasting machines, the combination of two jaws movable relative to each other to grip and release the work, means for yieldingly lifting said jaws while they grip the work, a lifting lever for transmitting extra movement to said means, and an extra lift lever for giving an additional updraw lifting action to the lifting lever and said jaws.

2. In a pincer mechanism for lasting machines, the combination of two jaws movable relative to each other to grip and release the work, means for yieldingly lifting said jaws while they grip the work, and auxiliary means operating at the conclusion of the updraw movement to increase the lifting tension of the said yielding means, said auxiliary means including a lifting lever.

3. In a pincer mechanism for lasting ma-

chines, the combination of two jaws movable relatively to grip and release the work, an updraw lever, yielding connections between the updraw lever and said jaws, and an extra lift lever and connected block for giving an additional updraw lifting action to the said yielding connections.

4. In a pincer mechanism for lasting machines, the combination of two jaws movable relative to each other to grip and release the work, a jaw carrier, means for raising the jaw carrier to give an updraw movement to the jaws, means for closing and opening the jaws, and means to take up thrust of the jaw carrier due to jaw closing movement to prevent the jaw carrier binding upon adjacent parts under the action of the jaw closing movement.

5. In a pincer mechanism for lasting machines, the combination of two jaws, a jaw carrier, an updraw lever connected to said jaw carrier, means connected to the jaw carrier for closing said jaws, and rolling surfaces interposed between the jaw carrier and updraw lever connection therewith to prevent binding of the jaw carrier under the action of the jaw closing movement.

6. In a pincer mechanism for lasting machines, the combination of two jaws, a jaw carrier, an updraw lever, yielding connections between the updraw lever and jaw carrier, means connected to the jaw carrier for closing the jaws, a thrust block interposed between the jaw carrier and updraw lever to support the jaw carrier against side movement under the closing action of the jaws.

7. In a pincer mechanism for lasting machines, the combination of two jaws, a jaw carrier, an updraw lever, a lifting block to which said updraw lever is pivoted, yielding connections between the lifting block and jaw carrier, jaw closing means connected to said jaw carrier, and a thrust block interposed between the jaw carrier and pivotal connection of the updraw lever and said lifting block.

8. In a pincer mechanism for lasting machines, the combination of pincer jaws, means for sliding one of said jaws relative to the other in closing and opening said jaws, and means for accelerating the relative movement of said jaws to cause them to initially close toward the stock between them and then to give a final gripping action to the jaws.

9. In a pincer mechanism for lasting machines, the combination of pincer jaws, means for sliding one of said jaws bodily with relation to the other jaw, means to accelerate the initial closing movement of the jaws and to thereafter impart to the jaws a slower and more powerful closing action.

10. In a pincer mechanism for lasting ma-

chines, the combination of two jaws, an actuator for moving one of said jaws bodily with respect to the other, and connections between the actuator and said jaws to cause one of said jaws to move bodily in a straight path to position the jaws opposite each other and to thereafter move said jaw in a straight path at an angle to the first path to close the jaws with a gripping action upon the stock.

11. In a pincer mechanism for lasting machines, the combination of two jaws, an actuator, slot and pin connections between the jaws and actuator to cause one of said jaws to move bodily in a straight path to position opposite the other jaw and thereafter to move bodily in a straight path at an angle to the first into gripping relation with the other jaw.

12. In a pincer mechanism for lasting machines, the combination of a lower pincer jaw and an upper pincer jaw, an actuator for one of said jaws, slot and pin connections between the actuator and said jaws for causing one of said jaws to move bodily in a straight path into position opposite the other jaw and then to move bodily in a straight path into gripping relation with said other jaw.

13. In a pincer mechanism for lasting machines, the combination of a lower jaw member, an upper jaw member, angular slot and pin connections between said jaw members, and means for moving one of said jaw members relative to the other jaw member to cause the angular slot and pin connection between the jaw members to direct the movable jaw member in straight paths at an angle to each other.

14. In a pincer mechanism for lasting machines, the combination of two jaws, means for relatively moving said jaws to open and close them, a slitting knife connected to one jaw, means for causing the knife to penetrate the stock back of the edge as the jaws are closed, and means for pulling the knife toward the edge of the stock to slit the same to the edge as the jaws release the stock.

15. In a pincer mechanism for lasting machines, the combination of pincer jaws, means to open and close said jaws, a knife carrier connected to one of said jaws and having a slitting knife, means for causing the slitting knife to penetrate the stock at a point remote from the edge as the pincer jaws are closed upon the material, and means to move the knife toward the edge of the stock to slit the same through the edge as the jaws release the material.

16. In a pincer mechanism for lasting machines, the combination of pincer jaws, means to open and close said jaws, a knife carrier pivotally mounted on one jaw and having a pointed slitting knife, means on the other jaw to cause the pointed slitting

knife to penetrate the upper and lining back
of the edge as the jaws are closed, and
means to cause the knife to slit the upper
and lining toward and through the edge as
5 the jaws release their grip on the upper and
lining.

17. In a pincer mechanism for lasting ma-
chines, the combination of pincer jaws,
means to open and close said jaws, yielding
10 means for giving the jaws the overdraw
movement, and a slitter adapted to pene-
trate the upper and lining at a point remote
from the edge portion thereof as the jaws

are closed, said yielding means acting to
move the knife toward the edge of the upper 15
and lining to slit the same as the jaws re-
lease the stock at the conclusion of the over-
draw movement.

In testimony whereof, I have signed my
name to this specification, in the presence of 20
two subscribing witnesses.

THOMAS H. SEELY.

Witnesses:

LILLIAN M. WALDEN,
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