P. R. GLASS.

SLUGGING MACHINE FOR BOOTS AND SHOES.

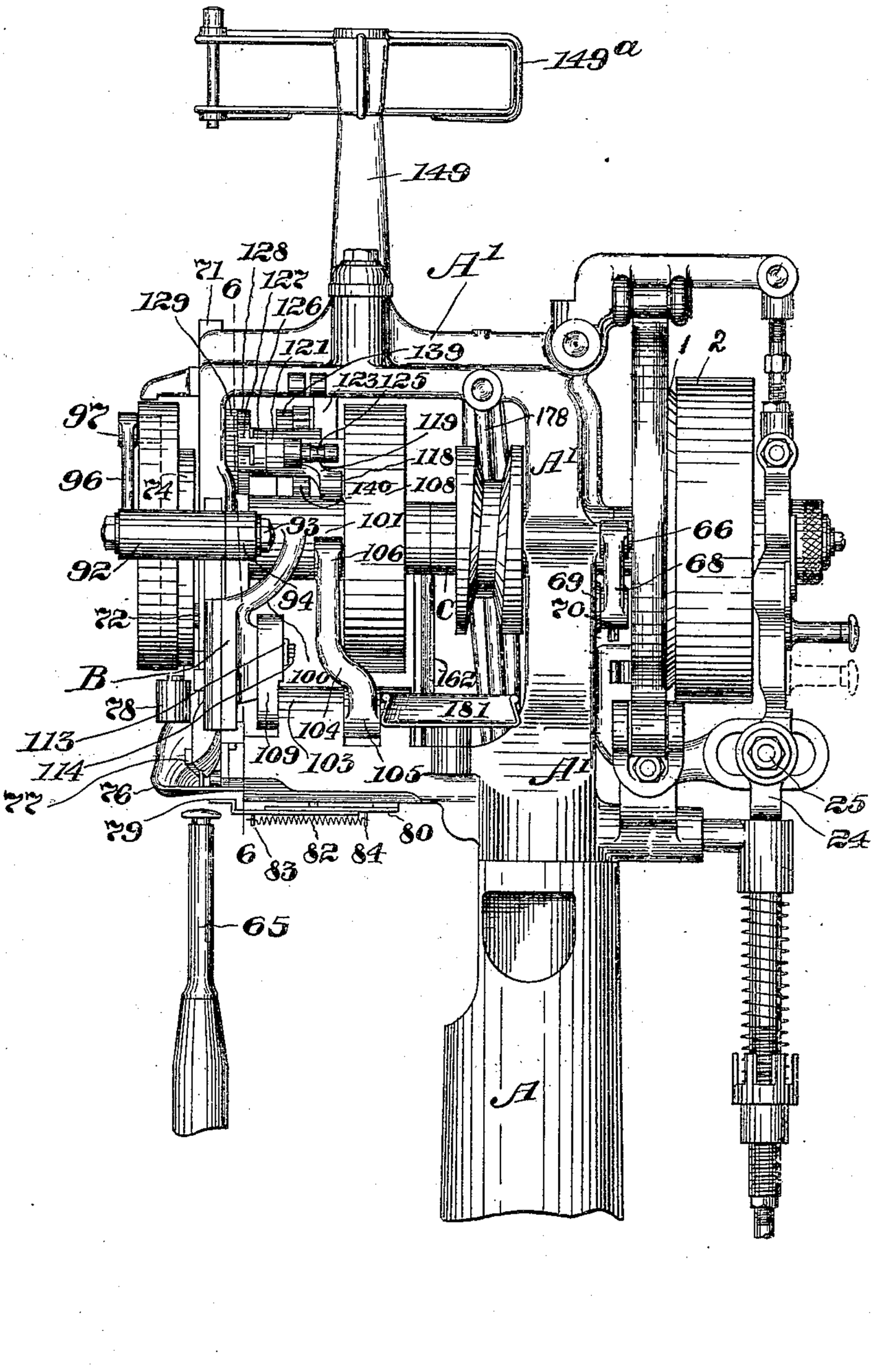
APPLICATION FILED DEC. 16, 1905.

935,492.

Patented Sept. 28, 1909.

4 SHEETS—SHEET 1.

Fig. 1



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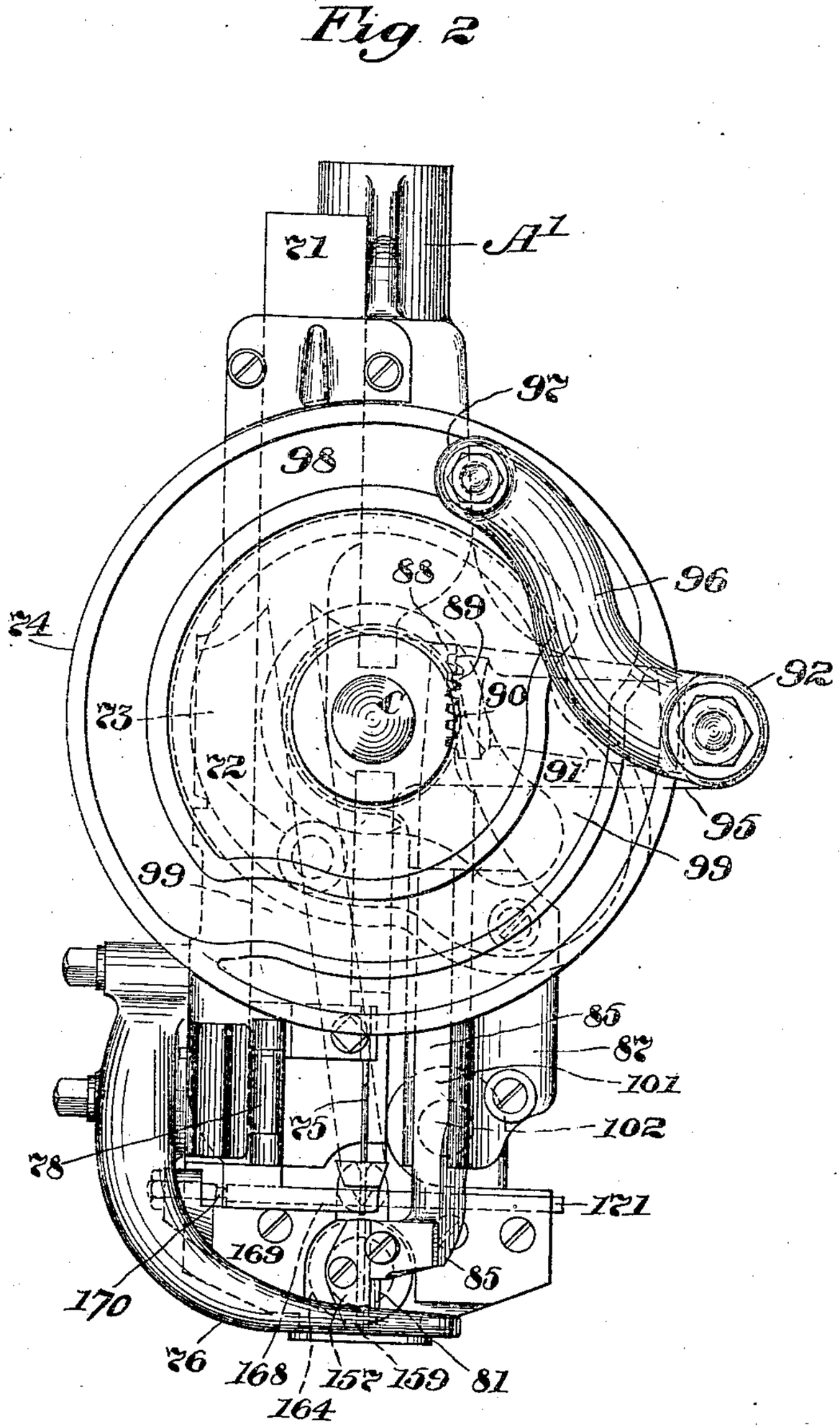
4 SHEETS—SHEET 2.

Fig 2



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4 SHEETS—SHEET 3.

Fig. 7.

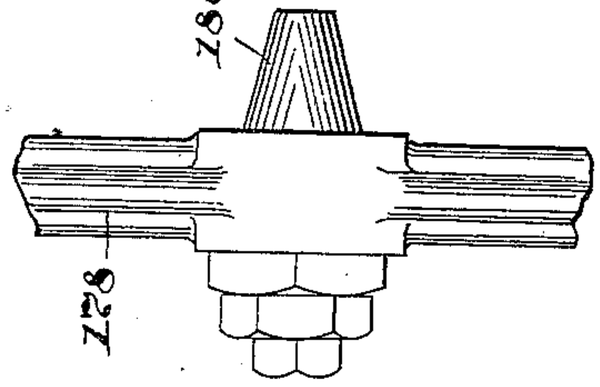


Fig. 3

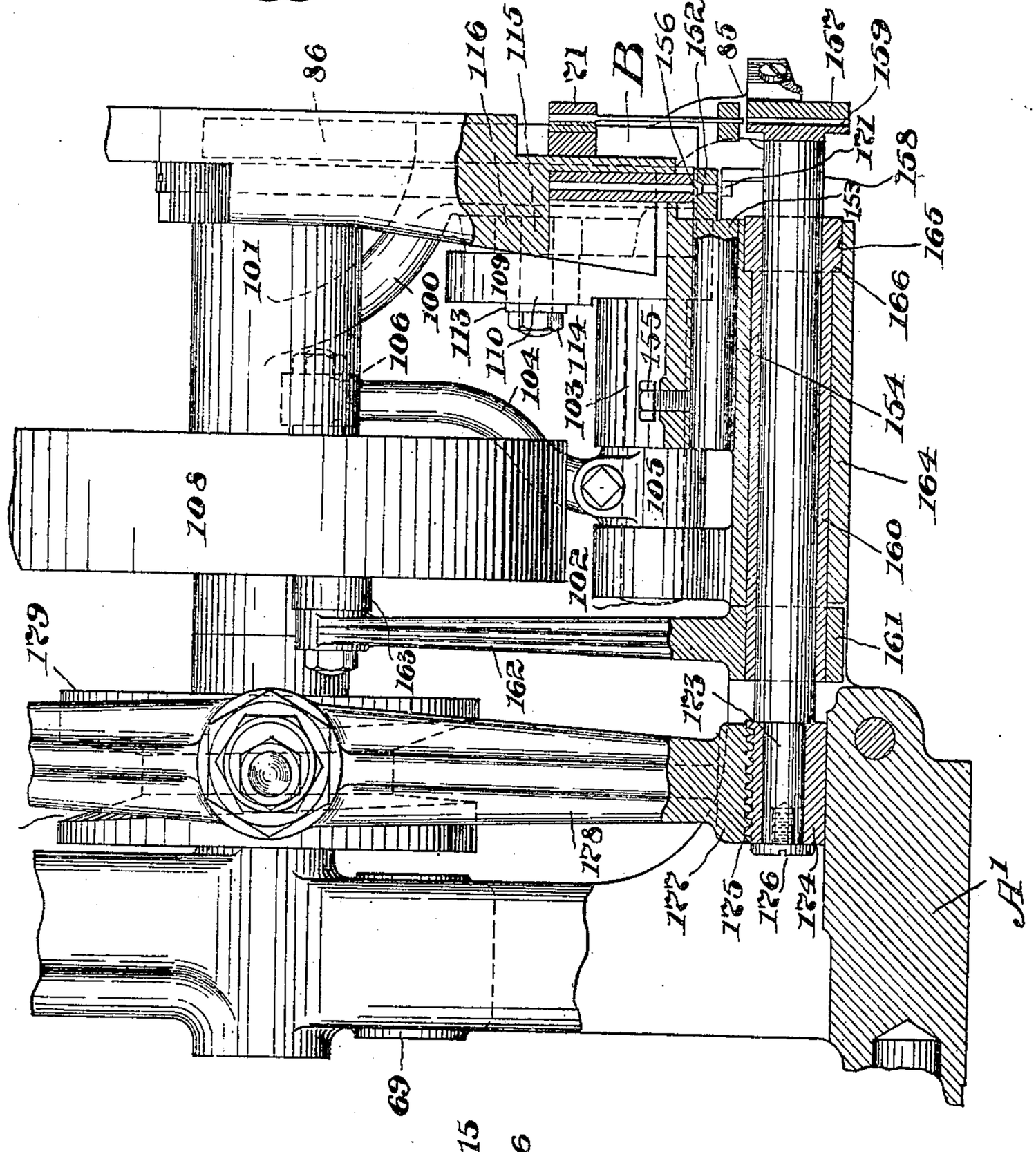
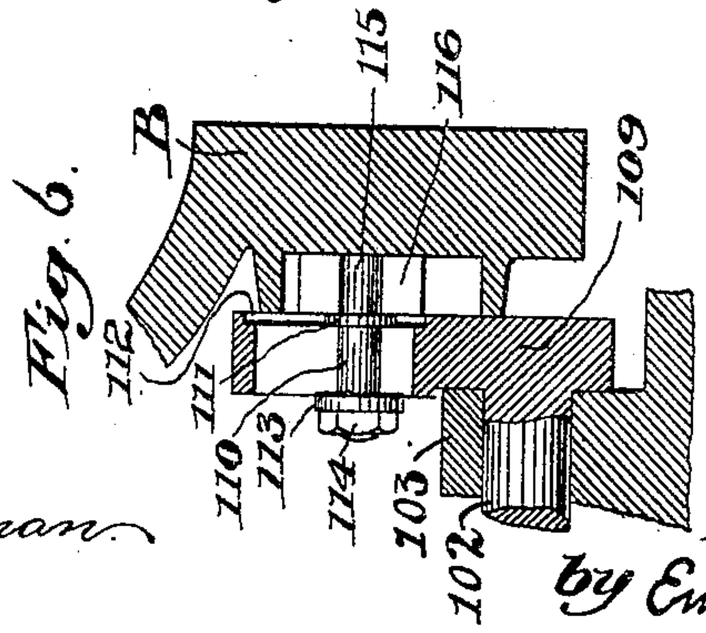


Fig. 6.



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4 SHEETS—SHEET 4.

Fig. 4.

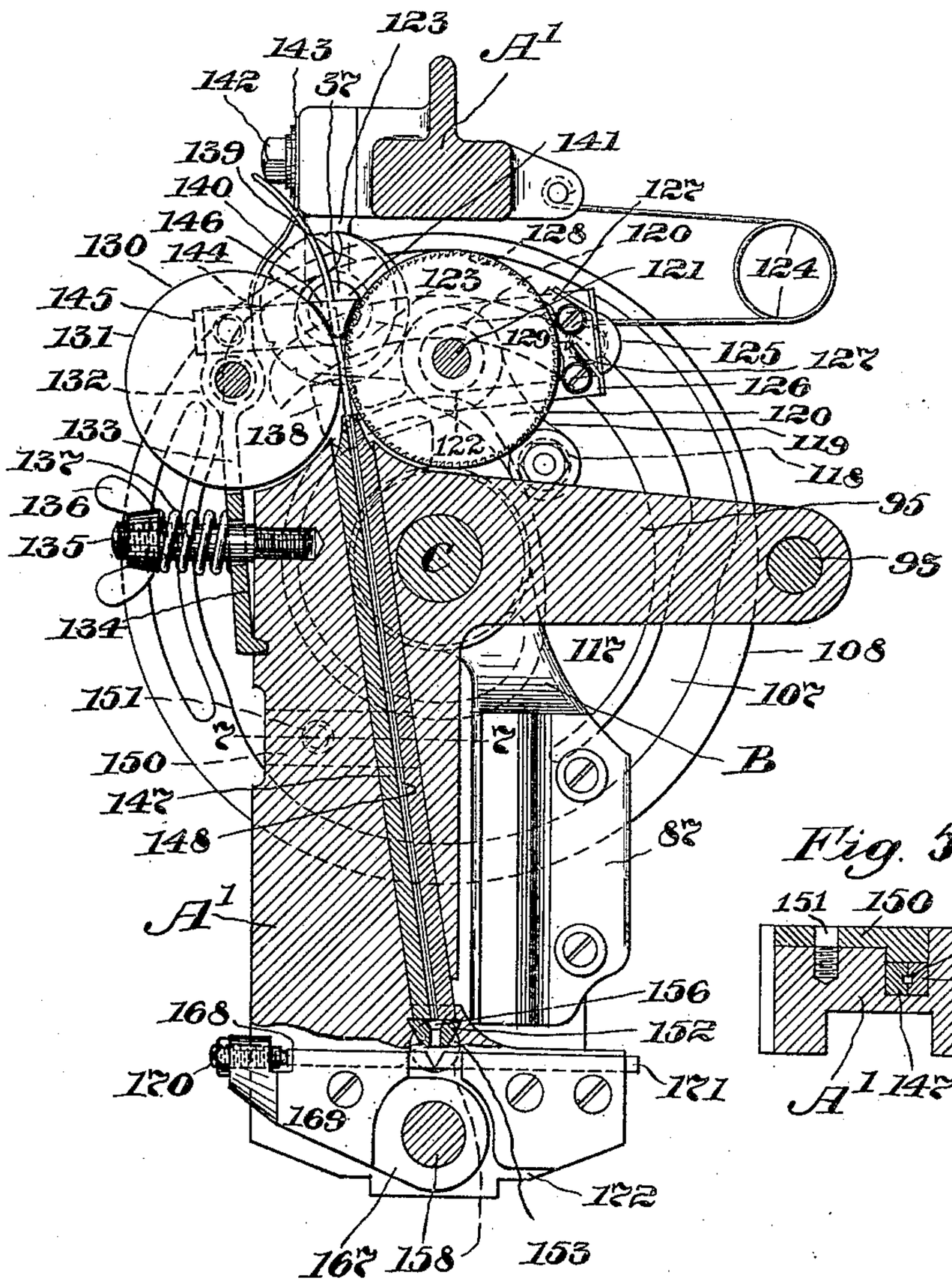

Fig. 5.

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UNITED STATES PATENT OFFICE.

PERLEY R. GLASS, OF QUINCY, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO MANUFACTURERS MACHINE COMPANY, OF MONTCLAIR, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SLUGGING-MACHINE FOR BOOTS AND SHOES.

935,492. Specification of Letters Patent. Patented Sept. 28, 1909.

Application filed December 16, 1905. Serial No. 292,009.

To all whom it may concern:

Be it known that I, PERLEY R. GLASS, a citizen of the United States, residing at Quincy, in the county of Norfolk, State of Massachusetts, have invented an Improvement in Slugging-Machines for Boots and Shoes, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

My invention relates to boot and shoe machines for driving fastenings into leather, of the type known to the trade as "sluggers", and particularly to those wherein wire of desired section or form is automatically fed into the machine and cut into slugs, which are driven either singly or in rapid succession into the stock placed upon the work support or horn.

My invention will be better understood and appreciated from the following description, when taken in connection with the accompanying drawings, of a machine illustrating one embodiment of my invention, while its scope will be more particularly pointed out in the appended claims.

Referring to the drawings,—Figure 1 is an elevation of the right side of a machine selected for illustration, the base of the column or horn being omitted; Fig. 2 is a front elevation of the head of the machine, showing the slugging mechanism; Fig. 3, an enlarged partially sectional detail, showing, in connection with adjacent parts, the slug-carrier, its shaft, and the means for operating them; Fig. 4 is an enlarged vertical section taken on line 6—6, Fig. 1; Fig. 5 is a cross sectional detail on the dotted line 7—7, Fig. 4, showing the channeled guide-tube and the manner of securing it within the frame; Fig. 6, a detail of the adjusting mechanism for varying the swing of the oscillating head; and, Fig. 7, a detail to show the conical roller carried by the swinging arm, 178, for reciprocating the carrier shaft.

As herein shown, the framework comprises a standard or column A (Fig. 1), supporting a head or frame, A′, suitably formed to provide supports or bearings for a drive-shaft C, and other operative parts subsequently to be described.

In the embodiment of the invention herein selected for illustration, the drive shaft,—see Fig. 1,—is provided adjacent its rear end with a suitable clutch, comprising fixed and movable members, 1 and 2, the fixed member 1 having a rearwardly projecting conical face, adapted to be engaged by the conical face or surface of a recess formed in the front face of the movable member or pulley 2. Radial springs are interposed between the rear face of said fixed member and a ring or collar, secured to the inner hub, of said movable member to hold the movable member normally outward or disengaged from said fixed member.

The clutch and its operating means may be of any usual or desired character as indicated, for instance, in the patent to Goddu 383,455 of May 29, 1888, and as the details of said clutch mechanism form no part of the present invention, and it is well known in the art, further description is unnecessary.

The vertically depressible work supporting horn, 65,—see Fig. 1,—is actuated from a roller, 66, running in an inner cam-groove of the fixed clutch member 1, said roller being carried at the end of a lever, 68, pivotally mounted in bearings, 69, of the frame, its opposite end being pivotally connected with the horn-actuating rod, 70. Said horn is elevated at the proper times to hold the shoe or stock mounted thereon against the foot-plate, 76, while a slug is being inserted by the driving mechanism. To provide for such mechanism the front portion of the frame A′, is vertically channeled to receive and guide the driver-bar, 71, (Fig. 2) carrying the driver, 75, said driver bar having a forwardly projecting roller, 72, running within a groove, 73, on the rear face of a cam, 74, fast upon the front end of the drive-shaft, which, in the operation of the machine causes a positive vertical reciprocation of the bar and driver. The head A′ is also provided with the usual slotted foot-plate, 76, driver-guide or nose, 77, and a spring-controlled cover or hinge-plate, 78. For gaging the work, the head carries an edge-gage (see Fig. 1), 79, on a forwardly projecting support, 80, pivoted on the front of the head or frame, A′, and adapted to be swung out of the way when not desired. This support is adjustably mounted for reciprocation, in a manner common to such machines. The gage plate is pivoted for lateral or oscillatory movement with the awl, 81, hereinafter described, and is held in nor-

mal position by a spring, 82, interposed between pins, 83, 84, respectively mounted on the gage-plate and its support.

For feeding the work or to secure proper spacing of the slugs or the fastenings, I provide an oscillatory or swinging-head B, (Figs. 1, 3 and 6) carrying an awl-bar, 85, in a vertical groove, 86 (see Fig. 3) and prevented from lateral movement therein by a face-plate, 87. This bar is provided with suitable teeth, 88 (see Fig. 2), meshing with teeth, 89, of a segmental rack, 90, formed on the end of an arm, 91, of a tubular sleeve, 92 (see Fig. 1), which is mounted upon a stud, 93, carried by a bearing, 94, formed at the end of a horizontally projecting arm, 95, of the head, A′ (see Figs. 1, 2 and 4). The outer or front end of this sleeve has an arm, 96, carrying a roller, 97, at its end to run within a groove, 98, in the front face of the cam, 74. The rotation of said cam oscillates the segmental rack to cause a reciprocation of the awl-bar in the swinging-head B. The cam-groove in which the roller moves, is provided with one portion, 99, of less diameter, into which the roller moves periodically to force the awl into the shoe or stock, clamped against the foot-plate, and cause it to remain or dwell therein sufficiently long to feed the work along by the oscillation of the awl carrying head B (by means presently to be described). This, however, cannot occur until the horn is depressed to release the shoe. The grooves of the cams 1 and 74, are so shaped or the cams so positioned or timed on the shaft, that the horn is depressed immediately after the descent of the driver and its subsequent elevation, the awl still being retained or dwelling in the work to move or feed it along as the head B swings toward the left, neither the driver nor horn then being in a position to interfere (see Figs. 1 and 2).

The swinging-head B is provided with an upwardly and rearwardly curved arm, 100, carrying a tubular bearing or sleeve, 101, by which it is loosely mounted on the drive shaft. To oscillate this head, a rock-shaft, 102 (Fig. 3), is mounted in tubular bearings, 103, of the head A′, and an arm, 104, having a divided hub, 105, is clamped thereon, its outer end carrying a roller, 106, running in an outer groove, 107 (see Figs. 1 and 4), of the front face of a cam, 108, fast upon the drive shaft. The front end of the rock-shaft (Figs. 1 and 3) has an arm, 109, extending upwardly and slotted to receive the shank of a stud, 110 (Figs. 1, 3, and 6), adapted to slide in said slot, and having an enlarged head, 111, to be received in a rabbet, 112, formed around the inner front edge of said slot. This stud receives a plate, 113, overlying the rear face of the arm, and a clamping nut, 114, is threaded upon the shank to hold it and the plate in any desired position in said slot. The face of the stud head has a projecting pin, 115, carrying pivoted blocks, 116, slidable in a vertical groove formed in the rear face of the head B. By adjusting said stud into a position in said slot of the arm 109 farther away from the rock-shaft, the blocks carried thereby are moved nearer to the pivoted sleeve of the head B and the oscillations of the rock-shaft will then cause the swinging head B to move through a longer arc, thereby producing longer feed by the awl, and vice versa.

The cam, 108 (see Fig. 4), already referred to as provided with an outer groove, 107, has also an inner groove, 117, to receive a roller, 118, carried by arm, 119, of a sleeve, 120, loosely mounted on a rock-shaft, 121. This rock-shaft is mounted at its front end in the head A′ (Fig. 1) and is supported at its rear end by a bearing, formed in a depending arm or hanger, 123, from the frame, A′. A spring, 124, secured to said frame, is interposed to bear upon a projection, 125, of the sleeve, 120, to hold the roller against the cam. This sleeve is also provided with an arm, 126, carrying a pair of spring-pressed pawls, 127, adapted, on the oscillation of the rock-shaft, to partially rotate a ratchet-wheel, 128, formed upon or connected with a wire-feeding-wheel, 129, loosely mounted on the said shaft. The edge of this feeding-wheel is milled or serrated (see Fig. 1), and bears against the milled edge, 130, of a presser or feeding-wheel, 131, mounted in bearings, 132, formed upon the arms, 133, of a yoke having its lower end 134, notched into the head A′, and adjustably and yieldingly secured thereon by the screw, 135, butter-fly nut, 136, and interposed spring, 137. By this means the pressure between the milled or serrated edges of the feeding-wheels may be adjusted for any kind, form, or cross-section of wire desired to be used and fed between them.

To vary the amount of wire feed, the pawl-carrying sleeve is provided on its opposite side with an arm, 138 (see Fig. 4), the end of which bears against the edge of a spiral or eccentric cam, 139, carried on the front face of a notched wheel, 140, which is mounted upon a horizontal stud, 141, of the hanger or depending arm, 123, already referred to. This hanger or arm is L-shaped,—see dotted lines, Fig. 4,—the angle supporting said stud and the outer end 122 of the horizontal portion of the L is so shaped as to form a rear bearing for said rock-shaft, 121. A bolt, 142, securing said hanger to the head A′, also secures thereon a spring-plate, 143, having an inwardly projecting edge, 144, to fit the notches of the wheel, 140, to hold it in any adjusted position. By this arrangement, the upward swing of the arm, 138, may be limited by striking any desired position of the eccentric

surface of the cam, so as to cause the pawls to swing through a greater or less arc while engaged with the teeth of the ratchet-wheel, which necessarily varies the amount of rotation produced in the feed-wheels by each oscillation of the rock-shaft and hence the length of wire fed down by the feeding wheels. A plate, 145, having a forked end or guide, 146, is adjustably secured to the yoke-arm, 133, to direct wire carried upon the reel, 149[a], between the feeding wheels, said reel being suitably mounted on and above the frame A′ (see Fig. 1) on a standard, 149, secured thereto.

Immediately below the feeding wheels, the head A′ is channeled obliquely to receive guiding-plates or bars, 147, each of which is rabbeted longitudinally to present between them a rectangular groove or guide, 148 (see Fig. 4) for the wire, which is fed down by the feeding-wheels, 129 and 131 (see Fig. 1). Said plates or bars, 147, are removably held in position by a face-plate, 150, recessed into the head A′ and secured thereon by a bolt, 151.

Immediately below the guiding plates is an adjustable guide, 152, projecting from the outer end of a short shaft, 153, recessed into a cylindrical bearing, 154, formed in the frame. This shaft may be turned in said bearing and secured in any desired position by means of a set screw, 155 (Fig. 3). This lower guide is also provided with a channel to receive the wire from the guide-plates and the upper end of said channel has a flaring mouth, 156, to facilitate guiding the wire therein. By this arrangement the feed of the wire is changed from an oblique to a vertical direction.

A slug carrier, 157, is secured upon the front end of a reciprocatory shaft, 158, and is provided with a vertical groove or channel, 159, to receive the wire from said adjustable guide, 152. This shaft is embraced by a loose sleeve, 160, extending longitudinally nearly the length of the shaft and the sleeve is provided upon its rear end with the divided clamping hub, 161, of an arm, 162, carrying at its outer or free end a roller, 163, mounted to run in a groove formed in the rear face of the cam, 108. This sleeve is journaled in a cylindrical recess or bearing, 164, formed in the head A′, and its outer or front end has a shoulder, 165, bearing against a shoulder, 166, formed in said bearing, the hub, 161, and the said shoulders thus preventing the longitudinal movement of the sleeve while permitting it to rock freely. An arm, 167 (see Figs. 2 and 4), on the front end of this sleeve, is longitudinally grooved to receive a cutter, 168, which is held thereon by a guide or face-plate, 169, secured to the front face of said arm. The outer end of this arm carries an adjusting screw, 170, for moving the cutter bar to compensate for wear or to adapt it to various thicknesses of wire. The cutting edge of this cutter, 168, is opposed to that of a similar fixed cutter, 171, carried in a similar, faced block, 172, formed upon the head A′. The wire moved by the feeding wheels, passes between the cutters, normally separated, into the carrier; and when the required length has been fed down, as described, the rocking of the sleeve moves the edge of the cutter carried by its arm against the wire interposed between it and the stationary cutter, to cut off a slug of desired length, which is dropped into the vertical channel of the carrier. The reciprocatory shaft is provided with a turned down or reduced end, 173 (Fig. 3), receiving therein a collar, 174, having a rack-face, 175. The collar is secured in position by a screw, 176, tapped into the end of the shaft, and is reciprocated by a segmental rack, 177, formed on the lower end of a lever, 178, pivoted at the upper end to the head A′, above the drive shaft. This lever is oscillated by a cam, 179, having a peripheral groove, 178[a], receiving a conical roller or the like, 180 (Fig. 7), projecting inwardly from the lever intermediate its ends. At the proper time, after the slug has been cut, the rotation of the cam moves the lever to slide the carrier and its contained slug, forward into the path of the driver, without rocking the carrier shaft, the motion of said shaft and its sleeve being entirely independent.

The clamping shelf, 181, shown on the right of the machine, is to hold the oil can.

In the operation of the machine, the operator suitably positions a shoe on the horn, to begin the slugging at any desired point. The operator then depresses the starting treadle (not shown) to lift the wedge-bar and start the machine, when the release of the brake, and the clutching of the pulleys, causes a rotation of the drive-shaft. The cams cause the wire to be fed down from the reel by the feeding wheels, through the guides, into the slug carrier, where it is cut off by the oscillating cutter. The slug, so formed, is immediately and without oscillation moved forward by reciprocation of its carrier to stop with its vertical channel directly in the path of the descending driver and over the nail orifice or perforation in the foot-plate, and at the same time the horn is elevated to clamp the shoe to the foot-plate. Simultaneously, the awl punches a hole in the shoe sole or other stock for the next nail. The nail being driven, the driver is immediately elevated, and the horn depressed, while the awl still remains or dwells in the sole or stock. The immediate oscillation of the swinging head causes the awl carried thereby, to move or feed the stock or the shoe along so that the awl-hole just punched in the stock, is positioned in aline-

ment with the driver. On reaching this position, as the awl is withdrawn, the recess in the cam of the fixed clutch member reaches a position opposite the roller on the bell-crank lever and permits the roller to run into it, stopping the machine, as has been described. Should the operator, however, maintain the treadle depressed, slugs will continue to be cut and driven until he releases the treadle, when the machine will stop after the last slug has been driven, leaving the horn down and the driver and awl elevated, as described.

Claim.

1. In a wire nailing machine a drive shaft and means for operating it, a driver operatively connected therewith, wire feeding wheels operatively connected with said drive shaft, a wire guide adjacent said wheels comprising a pair of bars each having a longitudinal groove therein, together constituting a channel to receive the wire, a reciprocatory shaft below said guide, a slug receiver and carrier mounted on said reciprocatory shaft, a sleeve mounted to turn freely on said shaft, an arm at the end thereof carrying a cutter, a fixed cutter mounted to coöperate with said movable cutter, means for oscillating said sleeve to operate the cutter, and means for reciprocating the carrier shaft to move the carrier into and out of the path of the driver.

2. In a nailing machine a reciprocatory shaft carrying a fastener-presenter, a loose sleeve thereon having a cutter carrying arm, means for oscillating the sleeve on the shaft, and means for reciprocating the shaft in said sleeve.

3. In a wire nailing machine, a slug carrier movably mounted on a reciprocatory shaft, a loose sleeve mounted on said shaft provided with a cutter carrying arm sustaining a cutter, a stationary cutter mounted to coöperate with said movable cutter, means for oscillating the sleeve on said shaft, and means for reciprocating the shaft in said sleeve.

4. In a wire nailing machine, a pivoted wire guide having a vertical slug receiving channel with a flaring mouth, and means permitting adjustment of said guide around an axis at right angles to the axis of the wire passing through said guide.

5. In a wire nailing machine, a wire guide having a stem extending at right angles to the axis of the wire passing through the guide, bearing means therefor to enable said stem to be turned therein to adjust said guide about said stem as an axis, and clamping means for holding the latter in adjusted position.

6. In a nailing machine, a feed wheel, a support therefor, and a wire guide mounted in said support for adjustment transversely of the axis of the wire passing through said guide.

7. In a nailing machine, wire feeding means, a device to direct the wire to said feeding means, and means permitting said device to be adjusted relatively to the acting portion of the feeding means and transversely of the axis of the wire.

8. In a nailing machine, a reciprocatory shaft carrying a fastener-presenter, a loose sleeve thereon having a cutter carrying arm, a second arm on said sleeve, a cam to engage said second arm and oscillate the sleeve on the shaft, a lever, a cam to move said lever about its fulcrum, and a connection between said lever and shaft whereby the shaft is reciprocated in the sleeve.

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

PERLEY R. GLASS.

Witnesses:

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SIDNEY F. SMITH.