

No. 896,015.

PATENTED AUG. 11, 1908.

U. HEBERT.
WEFT REPLENISHING LOOM.

APPLICATION FILED OCT. 25, 1907.

4 SHEETS—SHEET 1.

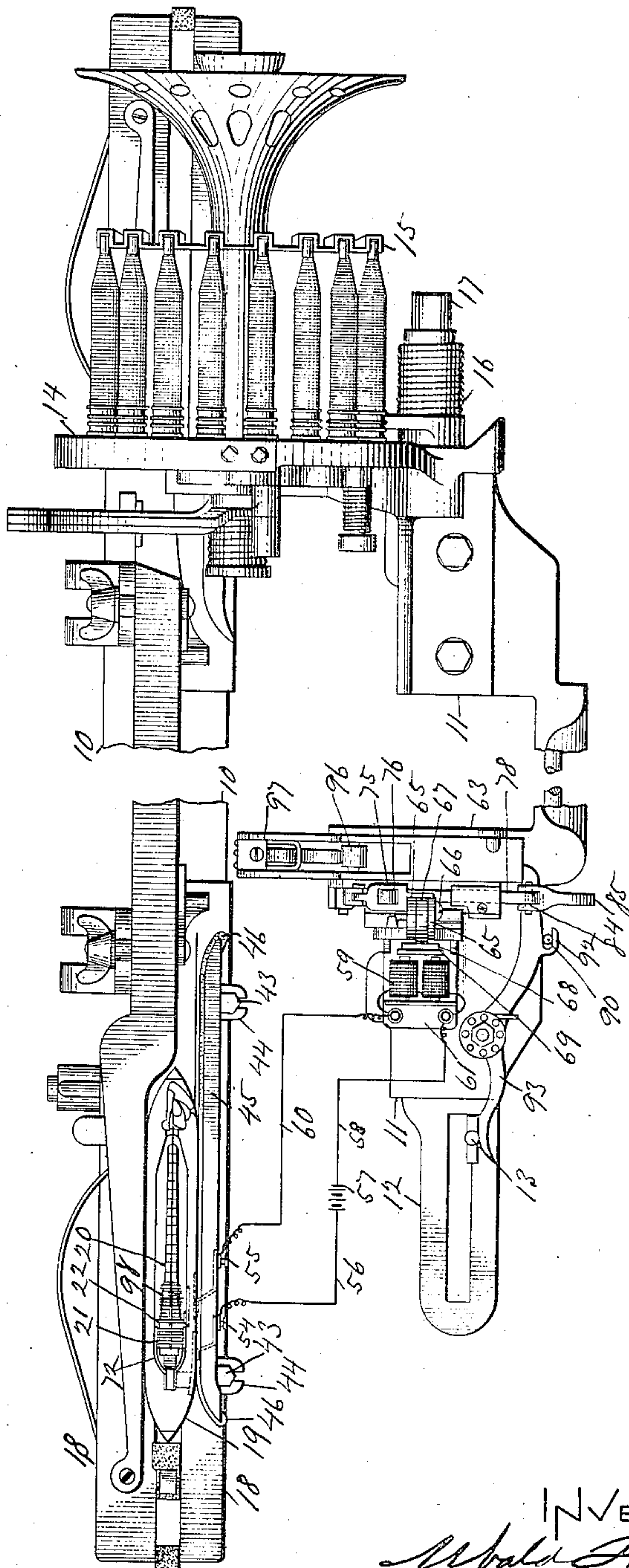


FIG-1-

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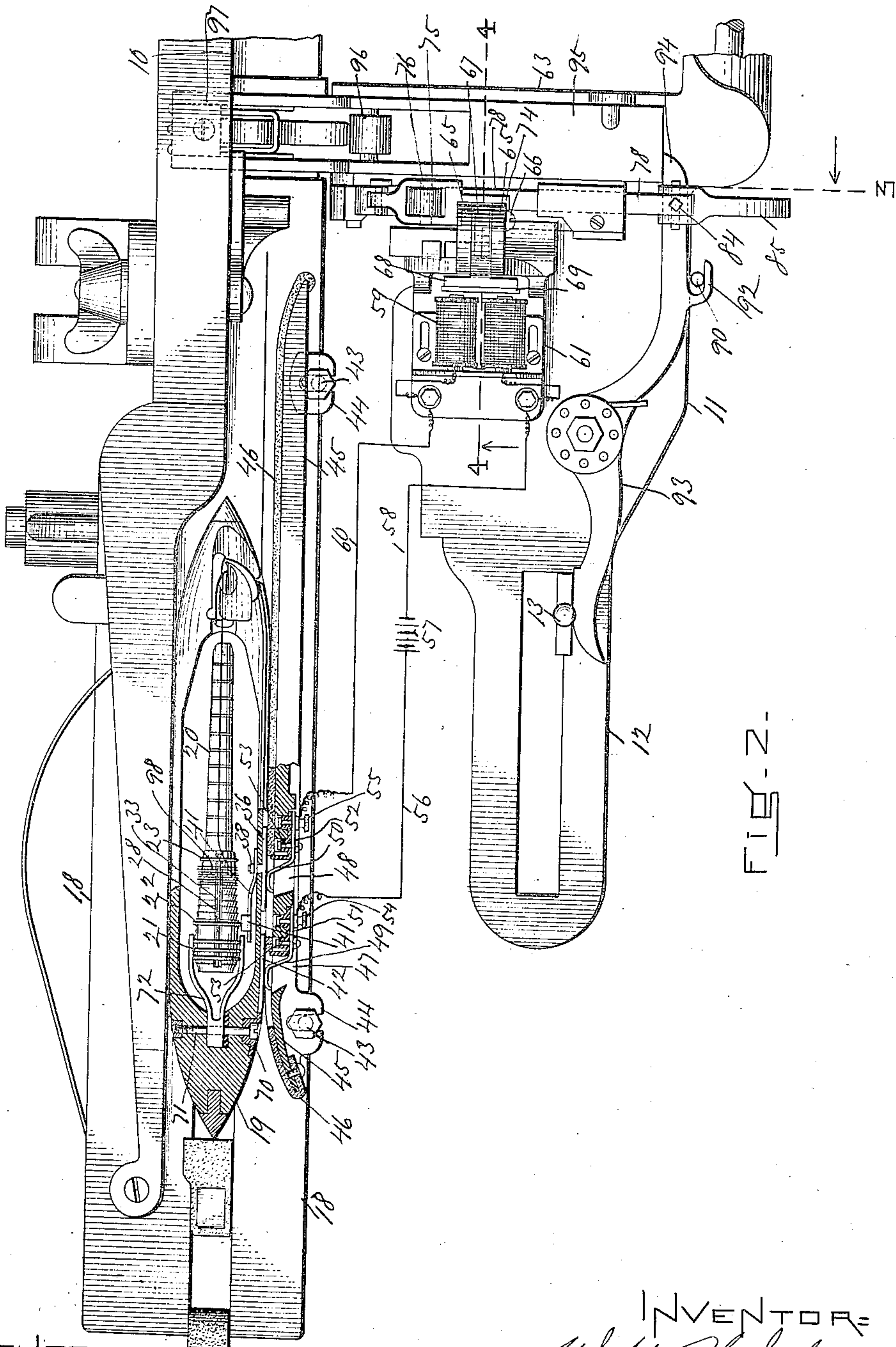


FIG. 2.

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4 SHEETS—SHEET 3.

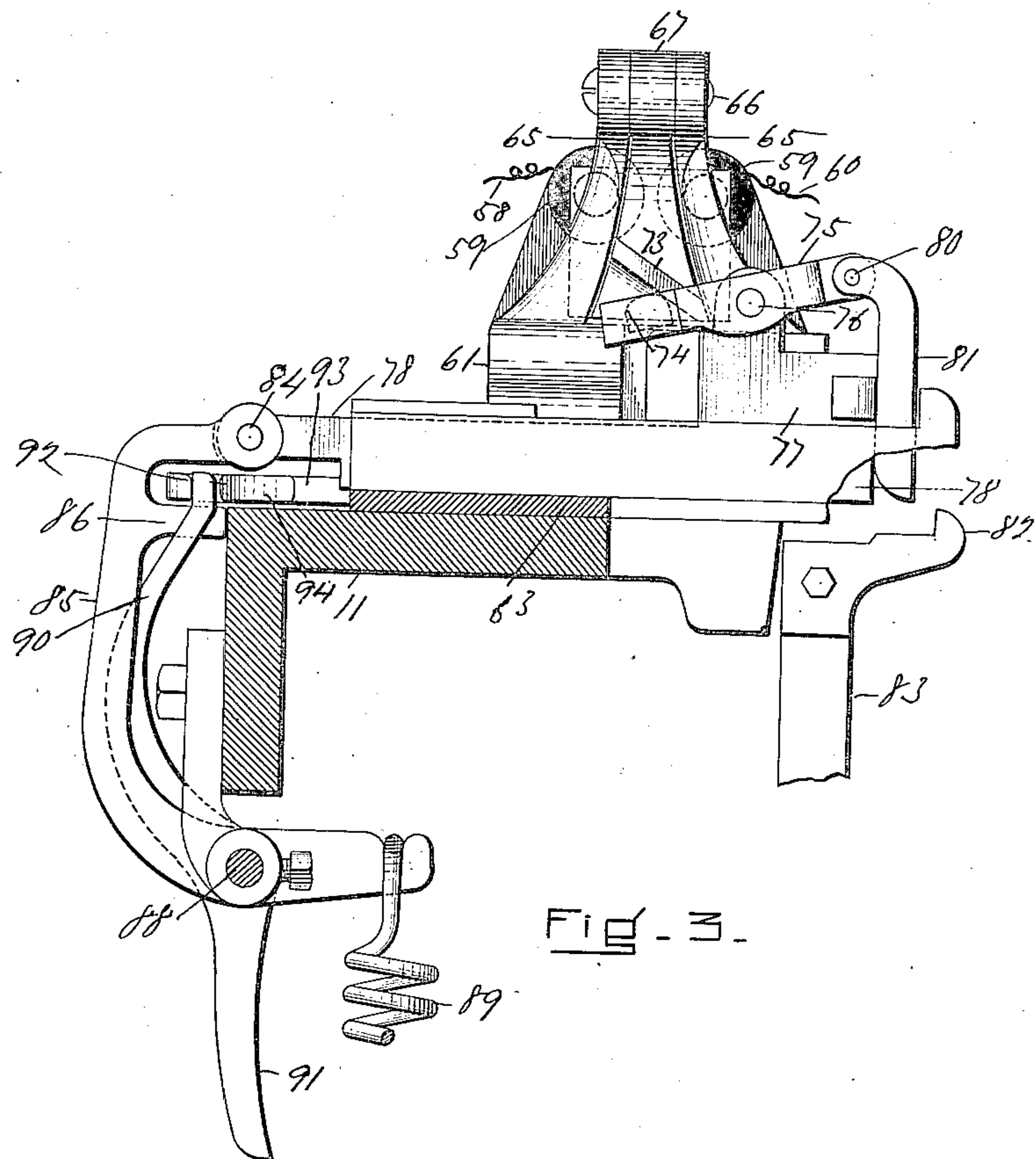


FIG. 3.

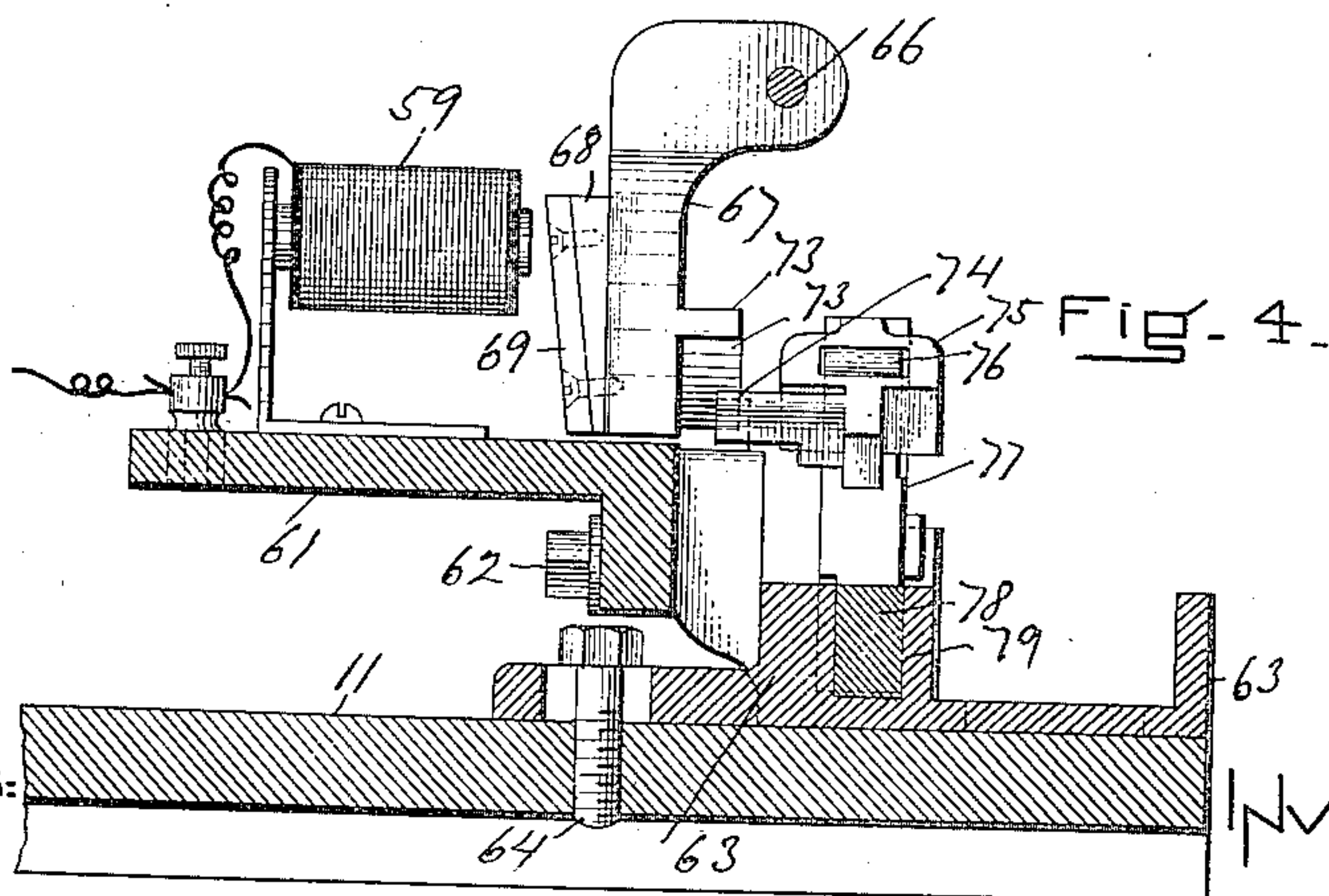


FIG. 4.

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4 SHEETS—SHEET 4.

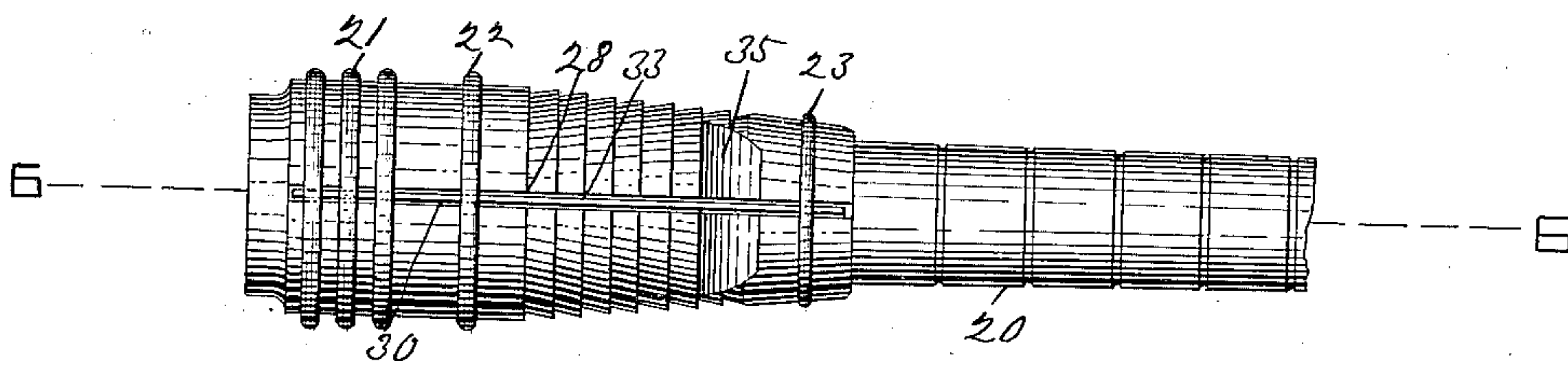


Fig. 5.

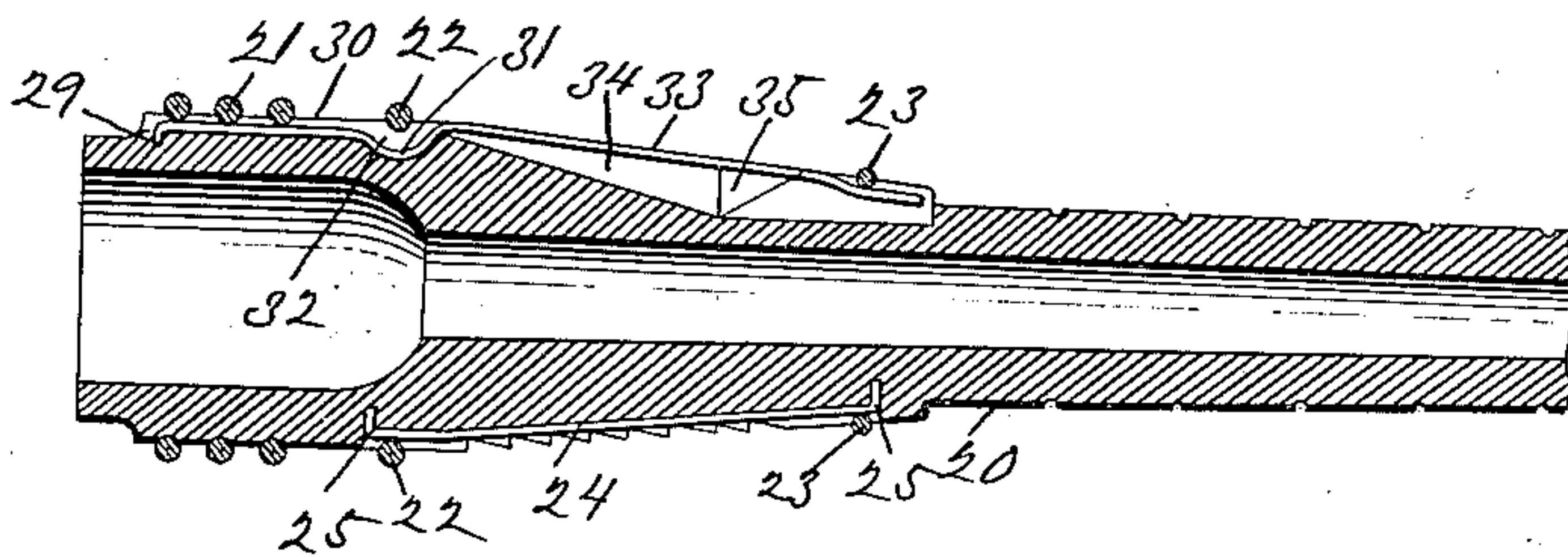


Fig. 6.

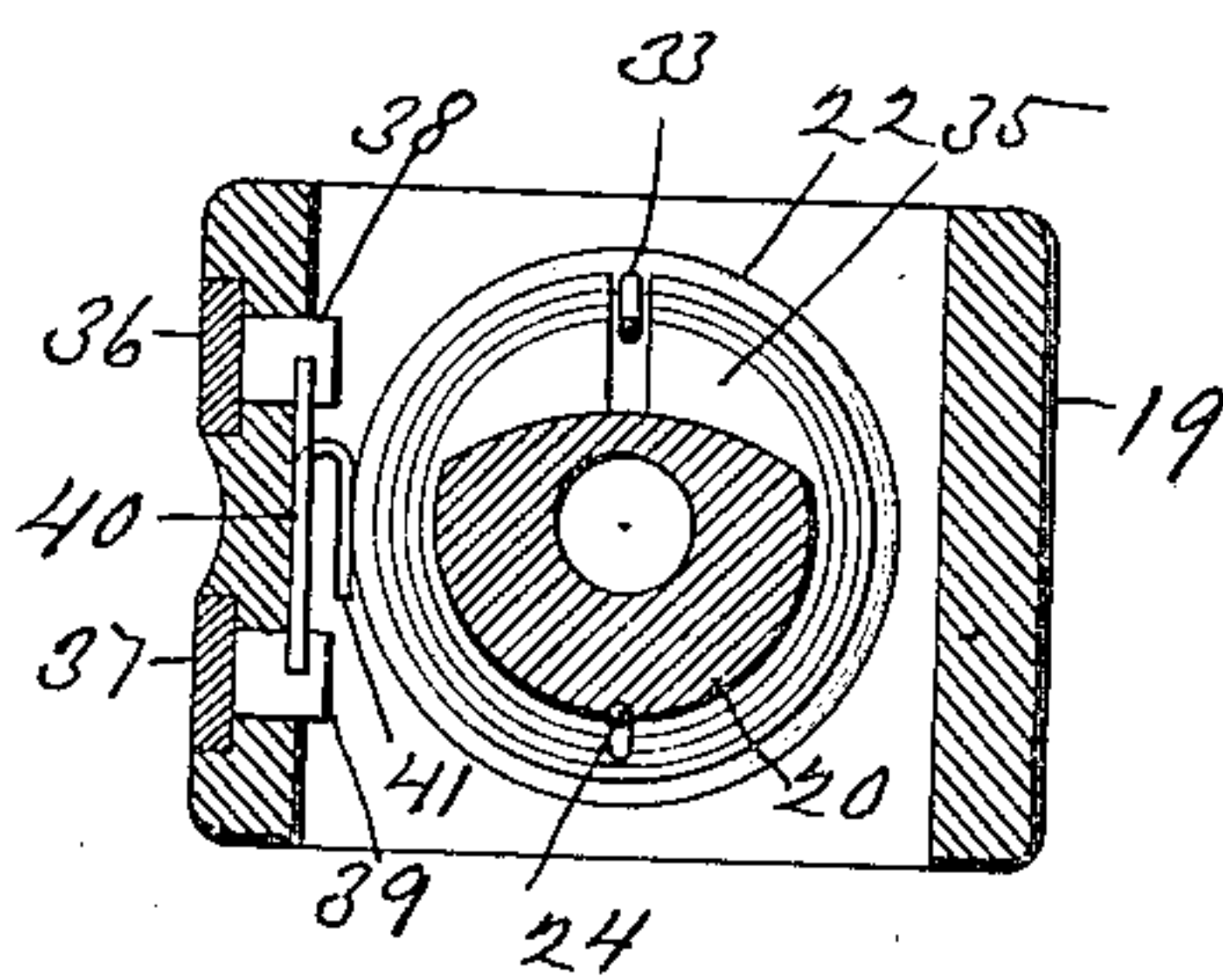


Fig. 7.

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UNITED STATES PATENT OFFICE.

UBALD HEBERT, OF MANCHESTER, NEW HAMPSHIRE.

WEFT-REPLENISHING LOOM.

No. 896,015.

Specification of Letters Patent.

Patented Aug. 11, 1908.

Application filed October 25, 1907. Serial No. 399,129.

To all whom it may concern:

Be it known that I, UBALD HEBERT, a citizen of the United States, residing in Manchester, in the county of Hillsboro and State of New Hampshire, have invented new and useful Improvements in Weft-Replenishing Looms, of which the following is a specification.

This invention relates to that class of looms in which a fresh supply of filling is provided at the proper time by means of an automatic filling-supplying mechanism; and the present invention relates to certain novel mechanism and arrangements of parts whereby when the filling has been nearly exhausted, an electrical circuit is established containing a battery and an electromagnet whereby the filling-supplying mechanism is actuated and controlled.

The nature of the invention is fully described in detail below, and illustrated in the accompanying drawings, in which:—

Figure 1 is a plan view of a portion of a loom embodying my invention, the central portion of the loom being broken out. Fig. 2 is an enlarged plan showing one end of the loom, the end illustrated being that to which my invention is applied, and a portion of the shuttle and portions of parts mounted on the shuttle-box next the path of the shuttle being represented in horizontal section. Fig. 3 is a section taken on line 3—3, Fig. 2, looking toward the left. Fig. 4 is a section taken on line 4—4, Fig. 2, looking toward the rear. Fig. 5 is a plan of a portion of the bobbin removed. Fig. 6 is a section taken on line 6—6, Fig. 5. Fig. 7 is a cross section of the shuttle removed with the bobbin left in position, looking toward the left.

Similar numerals of reference indicate corresponding parts.

Reference numeral 10 represents the lay, 11 is the breast-beam, 12 is the notched holding-plate (Figs. 1 and 2) attached to the breast-beam and provided with the ordinary shipper-lever 13, 14 is the filling-feeder constructed to receive the ends of the filling-carriers 15, and 16 is a transferrer mounted on the stud 17—all the above parts being operated in the manner well known in the art, and none of them being new in this invention.

18 represents the shuttle-box, and 19 the shuttle contained therein, said shuttle being provided with the bobbin 20. The bobbin in addition to the usual rings 21, is provided

with two rings 22 and 23, the former being nearer the head of the bobbin than the latter. See Figs 5 and 6. Embedded in a horizontal groove on the under side of the bobbin is a wire 24 which is secured in position by its ends 25, said wire being in permanent contact with the wire rings 22 and 23. See Figs. 6 and 7. On the upper side of the bobbin there is a longitudinal groove 28, and in the outer end of this groove there is secured by means of its bent portion 29 a spring-wire, the portion 30 of which is straight, the portion 31 of which is curved downward into a correspondingly shaped recess 32 in the bobbin whereby it is out of contact with the ring 22, and the portion 33 of said wire extends downward on an incline under and in normal contact with the ring 23, said portion lying in the deep groove 34, and being normally held up into said contact by its springing quality. A deep notch 35 is provided on the upper side of the bobbin and beneath and on opposite sides of the portion 33 of the spring-wire in the groove 34, whereby the pressure of the filling on the bobbin above that portion of the spring-wire 33 which is next said notch will force the spring-wire down into the deep groove 34 until the amount of said filling becomes so slight as not to overcome the upward pressure of the spring-wire—as below described.

The shuttle 19 is provided on the outer surface of its front side with two sets of horizontally disposed metallic plates, each set consisting of an upper and a lower plate separated from each other, and the pairs of plates being separated from and in line with each other. See Figs. 2 and 7. The right hand pair of plates consists of an upper horizontal plate 36 and a lower horizontal plate 37 flush with the surface of the shuttle. The plates 36 and 37 are provided with horizontal extensions 38 and 39 respectively which project through the wall of the shuttle and said extensions are connected on the inner side of the shuttle wall by a vertical metallic bar 40, said bar having secured to its inner surface a downwardly extending spring 41 which bears against the metallic ring 22. The other pair of plates, which are located at a short distance to the left of the plates 36 and 37, are in line therewith and are designated as 42 (Fig. 2), and are exactly like the plates 36 and 37, but have no connections similar to the horizontal connections 38 and 39.

Mounted on the lay next and in front of the path of the shuttle, and secured thereto by suitable bolts 43 and ears 44 is a horizontal metallic frame 45, preferably a casting, and this frame has secured to its opposite ends a leather covering 46 made sufficiently smooth to avoid unnecessary friction and to prevent wear of the side of the shuttle. This leather covering which, with the frame 45, is well illustrated in Fig. 2, is provided with two openings or horizontal slots 47 and 48. Within these openings are located springs 49 and 50 which are so bent as to bear normally and brush against the upper contact-plates 42 and 36 respectively (or the lower contact-plates if the shuttle should jump or rise). These springs are provided respectively with shanks 51 and 52 which are secured by suitable bolts 53 to the casting 45, being insulated therefrom in the ordinary manner as illustrated. The two shanks 51 and 52 of the springs 47 and 48 are secured respectively by binding-posts 54 and 55 to the frame 45 within the slots 47 and 48. The binding-post 54 is connected by a wire 56 with a battery 57 which is connected by a wire 58 with a suitable electro-magnet 59, said magnet being connected by a wire 60 with the binding-post 55. The magnet is mounted on a frame 61 which is bolted at 62 to the stop-motion slide 63 bolted at 64 to the breast-beam—said slide not being new in this invention. Extending upward from and integral with the frame 61 are a pair of ears 65, and pivoted at 66 to and between said ears is a swinging arm 67 which is curved downward as illustrated in Fig. 4 and has secured to its broadened lower end 68 an armature 69 which hangs normally down in the position indicated near the magnet 59.

Integral with the left hand pair of plates 42 on the shuttle is a metallic extension or bar 70 (Fig. 2) from which a bolt 71 extends horizontally through the head of the shuttle, and connected with this bolt in the ordinary manner is the usual metallic filling-carrier or bobbin-carrier 72, the jaws of which are in contact with the rings 21. As the rings 21 are in contact with the wire 30, 33, and as the rings 22 and 23 are in contact with the wire 24, it is evident that if the shuttle were in its box and the spring-wire 30, 33 were allowed to spring up into contact with the ring 23, as in Figs. 5, 6 and 7, the electrical circuit would include the wire 60, the binding-post 55, the shank 52 and spring 50, the upper right hand plate 36, and extension 38 (or the lower right hand plate 37 and extension 39 in case the shuttle should be raised), the vertical bar 40, the spring 41, the metallic ring 22, the wire 24, the metallic ring 23, the spring-wire 30, 31, 33, the rings 21, the filling or bobbin-carrier 72, the bolt 71, the bar or extension 70, the upper of the left

hand pair of bars or plates 42 (or the lower should the shuttle happen to be raised) the spring 49 and its shank 51, the binding-post 54, the wire 56, battery 57 and wire 58 connecting with the magnet. When, therefore the bobbin is empty, as in Figs. 5, 6 and 7, there is nothing to prevent the spring-wire 30, 33 from lying up in contact with the ring 23, and the above described circuit is established, energizing the magnet 59 and causing the armature 69 to be drawn against it; but when there is enough filling left on the bobbin to press and hold down the spring-wire 30, 33 as the filling winds around the bobbin and into the notch 35, as is the case in Figs. 1 and 2, the circuit is kept open, and the armature is out of contact with the magnet, as indicated in Figs. 1 to 4 inclusive.

Integral with and extending horizontally rearward or toward the right from the swing-arm 67 is an inclined projection or cam 73 which when the armature is out of contact with the magnet hangs by gravity over and in the path of the lug or projection 74 which extends horizontally toward the left from the outer end of the rocking-frame 75 pivotally mounted at 76 on the supporting block 77 which is mounted on and rigid with the horizontally sliding bar 78 which slides in a way 79 making a part of the stop-motion slide-way. The rear end of the rocking-frame 75 has pivoted to it at 80 the upper end of a latch 81 which is adapted to be engaged in the ordinary manner by the upper end 82 of the stop-motion lever 83. The front end of the bar 80 is pivotally connected at 84 with the downwardly extending U-shaped arm 85 provided with the horizontal projection 86 which bears against the breast-beam 11. The lower portion of this arm 85 is rigid with the rock-shaft 88, and its extreme lower end is connected with the spring 89 which extends to the frame. Loosely mounted on the rock-shaft 88 is the arm 90 whose lower depending end 91 is adapted to throw out the take-up mechanism in the ordinary manner, its upper end being in engagement with the notched portion 92 of the knock-off lever 93 which bears against the shipper-lever 13. None of the above described parts numbered from 75 to 93 inclusive are new in this invention, but operate in a manner well known to the art, the extreme end 94 of the knock-off lever being adapted to be engaged by the slide 95 when a weft-thread breaks—all as usual; the drawings showing the weft-hammer at 96 and the weft or filling-fork at 97.

In the first four figures in the drawings the circuit is open and hence the armature 68 is out of contact with the electro-magnet, because there is still a sufficient amount of filling 98 on the bobbin and in the notch 35 to press down the spring 30, 33 out of contact with the ring 23, breaking the circuit. As soon as the filling has been removed, or is so

nearly exhausted as not to overcome the power of this spring, said spring rises into contact with the ring 23 and closes the circuit (as above mentioned), the position of the spring being indicated in Figs. 5 to 7 inclusive. As soon as this circuit is thus closed the armature immediately swings into contact with the magnet, drawing the projection or cam 73 out of the path of the lug 74 which extends from the rocking-frame 75, and said rocking-frame together with the slide 78 whose forward movements, produced by the beating up of the lay, have been limited by said cam or projection, is free to be operated by the latch 81 and the upper end 82 of the stop-motion lever 83, rotating the shaft 88 by means of the arm 85 and thus operating the filling-mechanism. The operation of this rocking-frame, latch, slide, arm, shaft, and filling-mechanism are not new in this invention, but are known in the art, and a description of said operation may be found in United States Letters Patent numbered 859,208, in which the operation is actuated by a feeler, while in my present invention it is actuated or allowed to operate by the swinging of the armature out of engagement with the magnet. After this operation has been completed, it being so timed as to take effect immediately on the drop of the armature, the circuit still remains open while the shuttle is returning to the position indicated in the drawings, and continuously until the filling is so nearly exhausted as to allow the spring 30, 33 to rise into contact with the ring 23.

As above indicated, the object of providing parallel lower plates as well as the upper plates 36 and 42 on the shuttle, is to allow for the fact that the shuttle sometimes jumps or rises from its ordinary position in the box.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent is:—

1. In a loom of the character described provided with a shuttle filling-supplying mechanism, the lay, the shuttle, separated horizontal metallic contact-plates arranged in line on the outer wall of the shuttle, a horizontal frame supported by the lay next and parallel with the shuttle, separated contact-springs arranged in line and adapted to con-

tact with the contact-plates when the shuttle is in its box, an electro-magnet, electrical connections on the inner side of the shuttle, the bobbin, electrical connections on said bobbin adapted with the electrical connections on the shuttle, the contact-springs the contact-plates and magnet to complete an electrical circuit, and mechanism supported by the bobbin for normally closing the circuit but adapted to yield to the pressure of the filling and open and hold open the circuit until the filling is nearly or quite exhausted.

2. In a loom of the character described provided with a shuttle filling-supplying mechanism, the lay, the shuttle, separated horizontal metallic contact-plates arranged in line on the outer wall of the shuttle, a horizontal frame supported by the lay next and parallel with the shuttle, separated contact springs arranged in line and adapted to contact with the contact-plates when the shuttle is in its box, an electro-magnet, a bobbin provided with the usual metallic rings near its head and with two additional metallic rings connected by a metallic wire, said bobbin being formed with a notch or recess on the opposite side of said metallic wire and with a horizontal groove intersecting said recess, a spring-wire in said groove and connecting at one end with the said usual metallic rings and extending longitudinally with the bobbin across said recess and normally in contact with the ring on the bobbin beyond the recess, a suitable metallic bobbin-holder in the shuttle, a bolt in the shuttle in contact with the bobbin-holder, and connected with one of the said contact-plates, and a spring connected with the other contact-plate and extending from the shuttle against the ring which lies between the usual rings and the ring contacting with the spring-wire, said spring-wire being adapted to yield to the pressure of the filling next the recess and open and hold open the circuit until the filling is nearly or quite exhausted.

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

UBALD HEBERT.

Witnesses:

HENRY W. WILLIAMS,
M. A. ATWOOD.