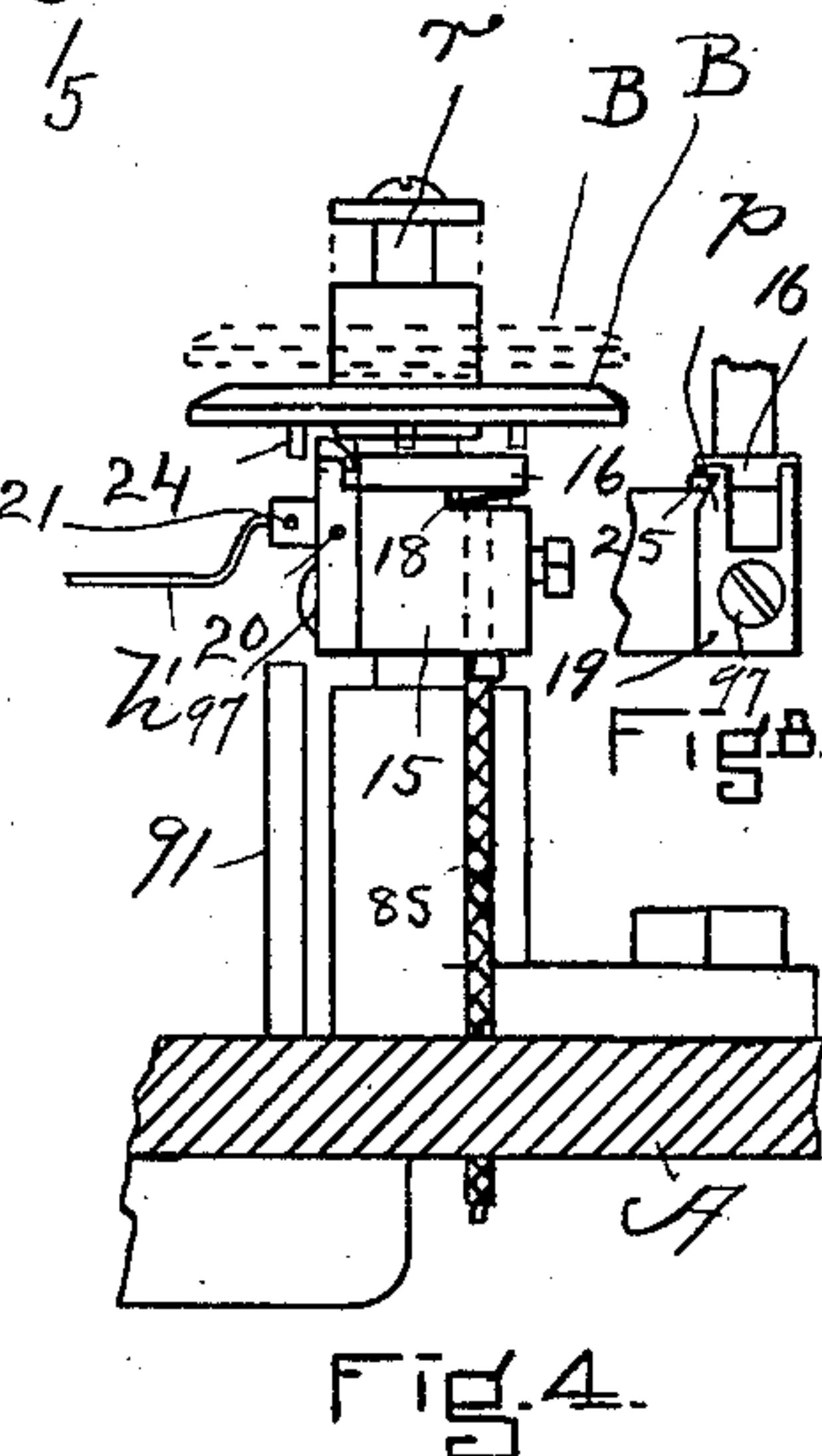
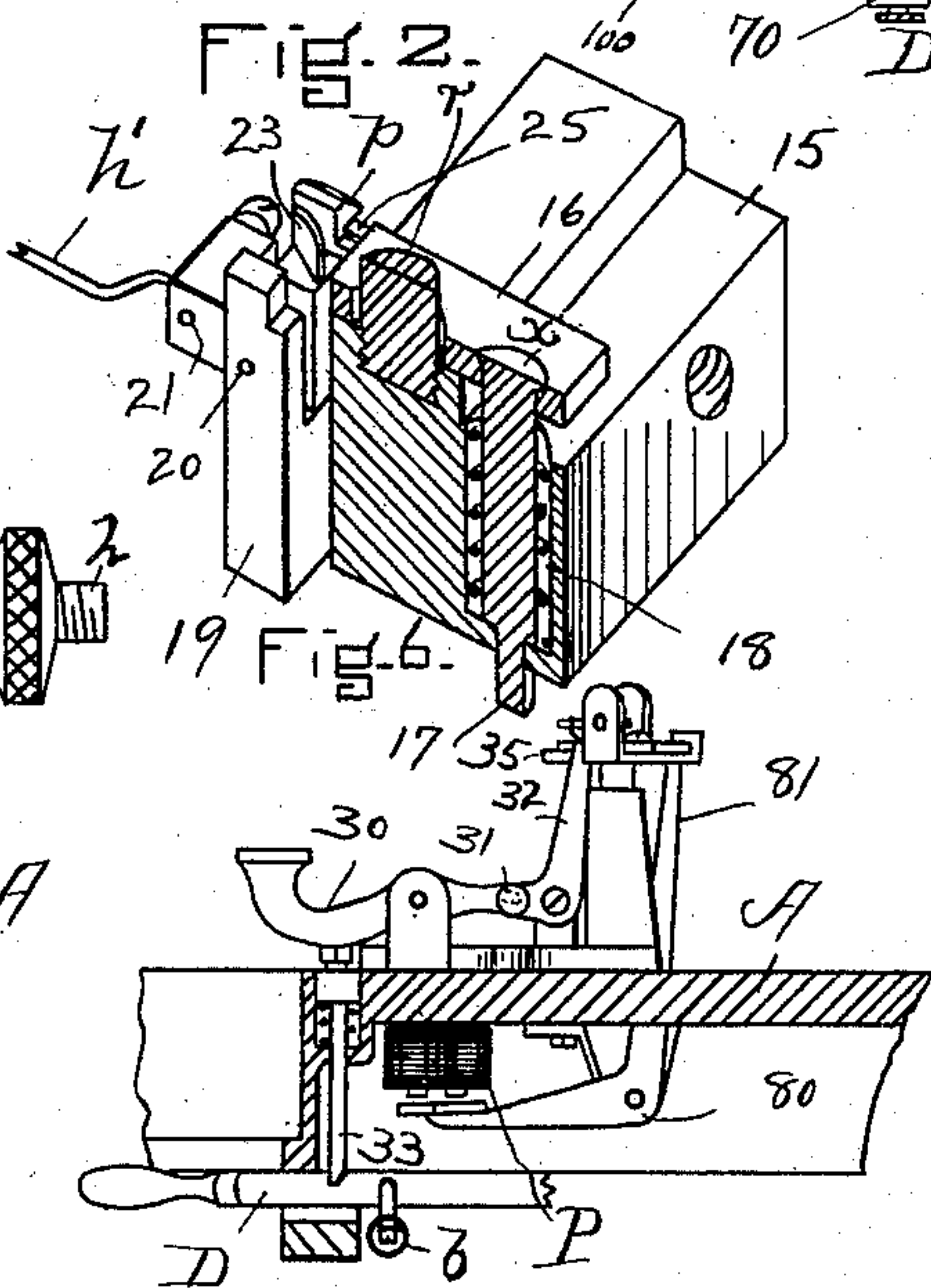
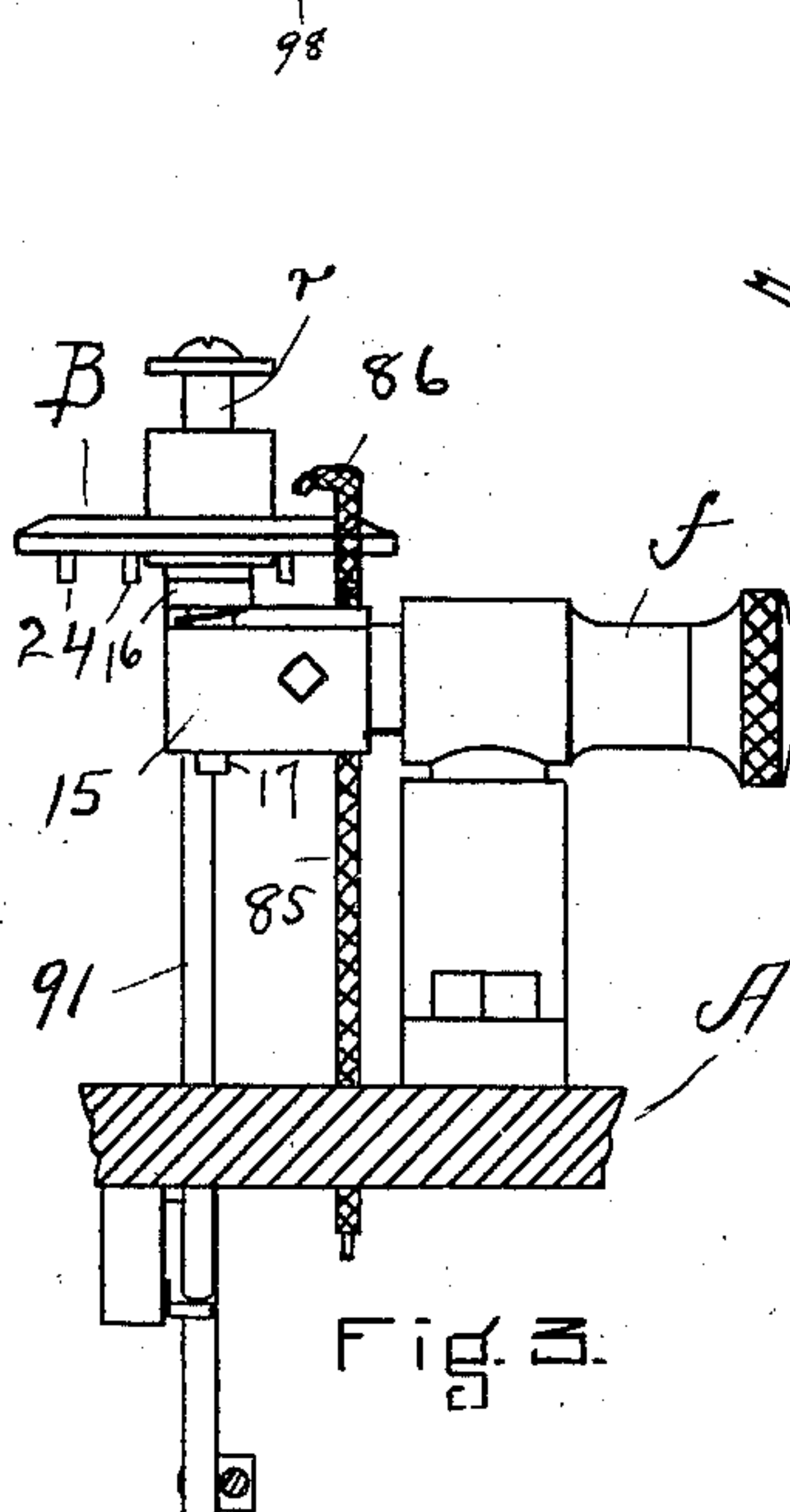
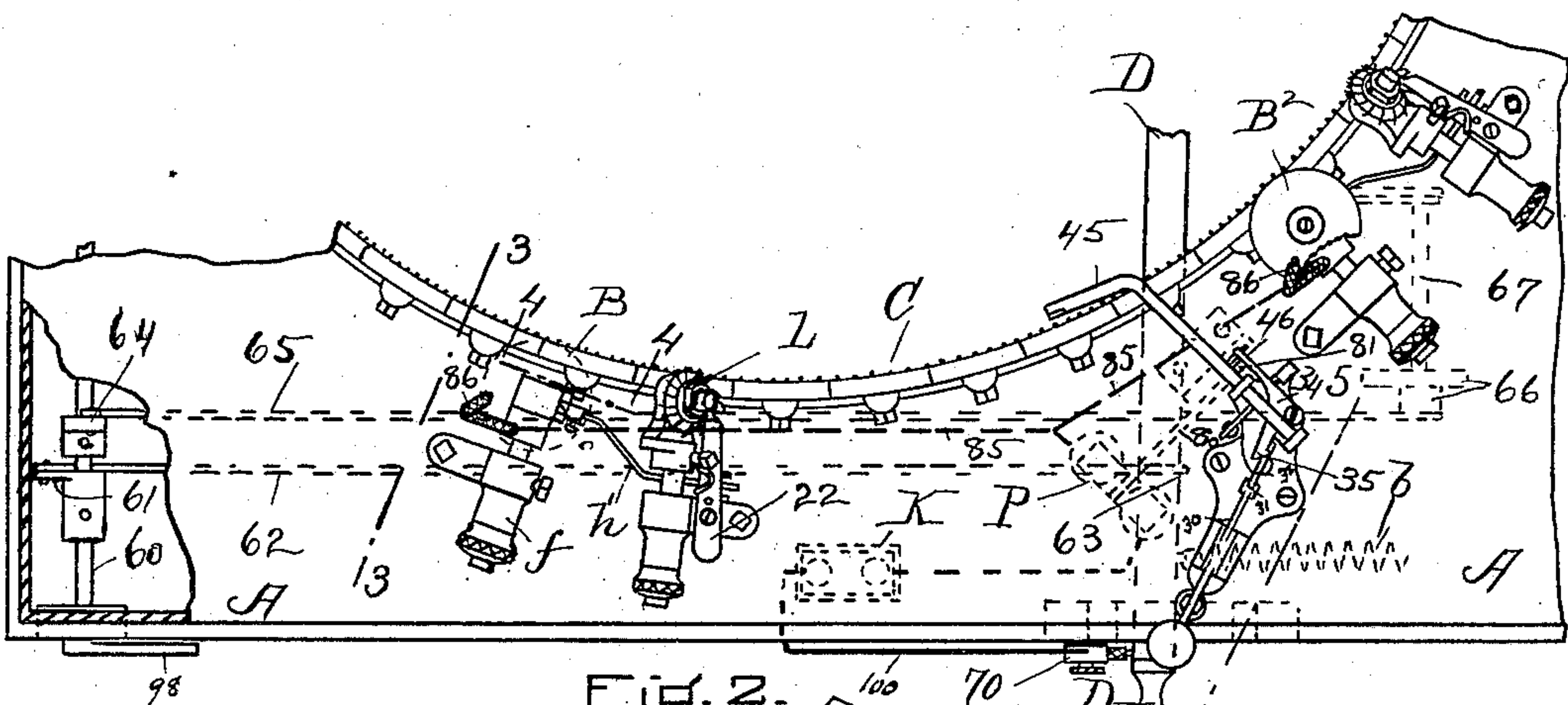
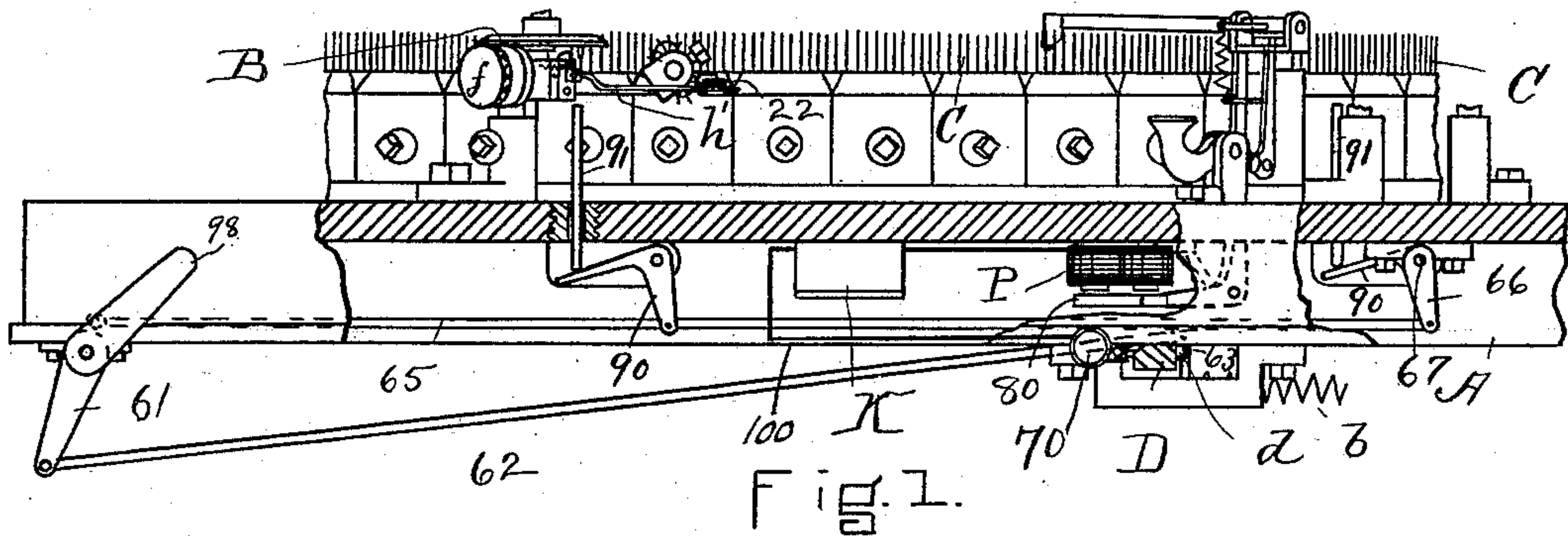


(No Model.)

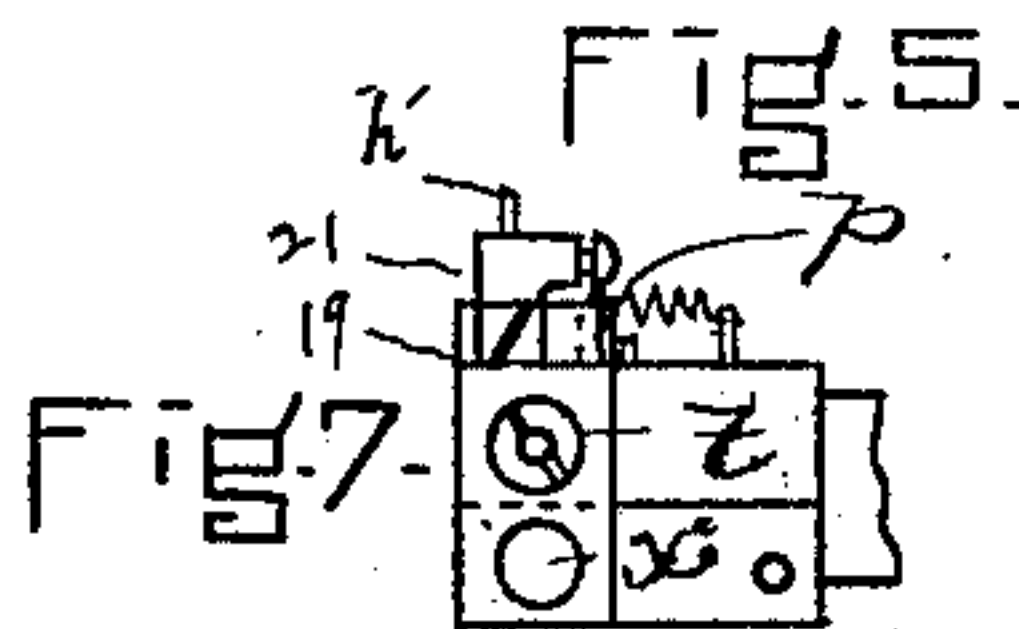
A. WHITE & D. F. SULLIVAN.
STOP MOTION FOR CIRCULAR KNITTING MACHINES.

No. 604,344.

Patented May 17, 1898.



WITNESSES.
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UNITED STATES PATENT OFFICE.

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SAID SULLIVAN ASSIGNOR TO MARY SULLIVAN, OF SAME PLACE.

STOP-MOTION FOR CIRCULAR-KNITTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 604,344, dated May 17, 1898.

Application filed December 11, 1896. Serial No. 615,294. (No model.)

To all whom it may concern:

Be it known that we, ALBERT WHITE and DANIEL F. SULLIVAN, of Lowell, county of Middlesex, State of Massachusetts, have made
5 certain new and useful Improvements in Stop-Motions for Circular-Knitting Machines, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which
10 said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation, partly in section, of a circular-knitting machine provided with our improvement; Fig. 2, a top plan view of the same; Fig. 3, an elevation of the presser-wheel and support, looking from the left of line 3 3 in Fig. 2; Fig. 4, a front elevation of the same; Fig. 5, a sectional elevation illustrating the application of the electromagnet to the ordinary form of imperfection or "hole" stop mechanism; Fig. 6, a sectional perspective showing the presser-wheel support and
25 drop-wire-releasing mechanism; Fig. 7, a plan view illustrating details, and Fig. 8 an elevation looking from the top in Fig. 7.

Like letters and numerals of reference indicate corresponding parts in the different figures of the drawings.

Our invention relates especially to an improvement on stop-motion mechanism shown and described in our application for Letters Patent filed September 17, 1896, Serial No. 606,121, the special object of this improvement being to adapt an electrically-actuated mechanism and a vertically-moving presser-wheel to devices for supporting the drop-wire of this class of stop-motions.

40 In the drawings, A represents the bed of the machine, C the needle-cylinder, and D the hand-shipper, these parts being all of the ordinary form and arrangement, said shipper being pulled by a spring *b* and stopped by a pin 33, hereinafter described.

50 The rotary presser-wheel B is mounted on a stud *r* loosely, said stud being turned into a block 15, mounted on a horizontal spindle *h* and adjustable in relation to the cylinder by means of a star-box *f*. On this block and in position to engage the wheel and raise the same to the position shown by dotted lines in

Fig. 4 there is a bar 16, in which a pin 17, (see Fig. 6,) playing in a socket of the block 15, is fast. Around this pin is disposed a push-spring 18, tending to force the presser-wheel B upward on stud *r*, as indicated by dotted lines in Fig. 4. A block 19 is pivoted on the block 15 at 97 to swing toward the needles, and at 20 in said block 19, to swing at right angles thereto, is pivoted a support 21, carrying the drop-wire *h'*, which projects under the looper-support L and rests on the thread passing through the thread-guide 22 in the same manner as described in the application referred to. This support 21 carries also a blade 23, which is projected when the drop-wire falls into the path of fingers or projections 24 on the presser-wheel B. Such contact will rock the block 19 inward. This block 19 has a hook *p*, (see Fig. 6,) which overlaps a projection 25 on the bar 16 and holds said bar against the pressure of the spring 18.

At the right in Fig. 2 we show a releasing mechanism in ordinary use. This comprises a vertically-swinging lever 30 on the bed, toggled at 31 to a bell-crank-lever 32, pivoted to swing vertically on the bed. The outer or free end of the lever 30 depresses normally a spring-pushed pin 33, (see Fig. 5,) which resists the pull of the spring *b* on the hand-shipper. A horizontally-swinging bell-crank lever 34 has a hook-arm 35, (see Fig. 2,) which latches the upper end of the lever 32 and normally resists the pressure on the pin 33. There is a rocking right-angle lever 45, mounted in suitable bearings and having one edge in rubbing contact with the web in the usual manner. A finger 46 on this lever is in position to engage with the bell-crank 34 and unlatch it from the lever 32, allowing the free end of the rocking lever to be pushed up by pin 33, thereby permitting a hand-shipper D to operate in the usual manner.

95 Journaled transversely of the bed there is a rock-shaft 60, having a crank-arm 61, to which is pivoted a rod 62, hooked at its free end 63 to overlap the shipper D, so that as said shipper is moved said shaft may be rocked. The shaft is also provided with a handle 98 for resetting the parts or engaging by hand the drop-wires with supports. A pivoted rod 65 connects the crank-arm 64 on the shaft 60

with a similar crank-arm 66 on a shaft 67, (indicated by dotted lines in Fig. 2,) parallel with said first shaft. This shaft 67 leads to a succeeding feed on the machine.

5 For the purposes of this invention it is essential to describe only one feed mechanism on the machine, of which there may be several, so we have designated the parts of the second or next succeeding feed mechanism collectively by the reference character B² in 10 Fig. 2; but it will be understood that the stop mechanism operates simultaneously all of the feeds.

Under the bed there is a storage battery K, 15 connected to a wire 100, and insulated binding-post 70 on the machine-body. The end of this wire is normally in electric contact with the shipper D when the machine is in motion. An electromagnet P connects with 20 one pole of the battery, and one arm of a bell-crank lever 80 (see Fig. 5) forms the armature of this magnet. The opposite arm 81 projects upwardly behind the inner end of the bell-crank 34, so that when said armature is attracted by the magnet said bell-crank 80 will operate to unlatch the lever 32 25 and release the hand-shipper. A wire 85 branches from the opposite pole of the battery to each presser-mounting and is insulated from the machine-frame, a tip of said wire (see Fig. 3) being exposed at 86 to engage the presser-wheel B and close the circuit of the battery when said wheel shall be elevated, as hereinafter specified. The rod 65 is connected 30 with one arm of the bell-crank 90, and on the opposite arm of said bell-crank a rod 91 rests and projects through the bed A in position for its upper end to be engaged with the support 21 of the drop-wire h'. It will be understood that this rod operates by means of 40 connecting-shafts, as 67, a similarly vertically moving support for the drop-wire at each of the feeds on the machine, and this action is simultaneous.

45 In the use of our invention when the shipper D is released by hand from the pin 33 it pulls the rod 62, rocking the shaft 60 and causing the rod 65 to operate bell-crank 90 and throw stop pin or support 91 under the drop-wire, sustaining said wire while the machine is at rest. Should a thread break and permit the wire h' to drop, the blade 23 will be thrown into the path of the fingers 24 on the rotating presser-wheel B, rocking the 55 block 19 inward and releasing the bar 16. The spring 18 will now at once act to throw said bar upward, and with it the presser-wheel B, which slides on its journal. This upward movement of the presser engages it with the exposed end 86 of the insulated wire 85 and closes the electric circuit through the frame. The magnet P is thereby charged, attracting the armature-arm of the bell-crank 80. This operates to throw out the latch 35, releasing 65 the lever 32 and permitting the spring-pushed pin 33 to throw upward, thereby freeing the hand-shipper D. The spring b immediately

acts to operate said lever and rock-shaft 60, with resultant placing of the supports 91 under the drop-wires by the upward movement 70 of the horizontal arm of bell-crank 90 in the same manner as was described for the hand movement of said shipper. It will be understood that any rocking of the right-angle lever 35 when encountering an imperfection in the web will result in a like supporting of the 75 drop-wires. It will be understood that as soon as the shipper is moved out of contact with end of wire 100 by this operation the circuit is broken and the batteries thus prevented 80 from running down.

Having thus described our invention, what we claim is—

1. In a knitting-machine stop-motion, a drop-wire and a support therefor, in combination with mechanism for automatically engaging the support with said wire and mechanism for disengaging the drop-wire support from said drop-wire by hand substantially as 85 described. 90

2. In a stop-motion for a circular-knitting machine a vertically-movable rotary presser-wheel and mechanism for moving the same vertically in combination with a locking mechanism therefor and releasing devices comprising 95 a drop-wire; and mechanism comprising an electrical circuit closed by the movement of said wheel for projecting a support under said wire. 100

3. In a stop-motion for circular-knitting machines a rotary presser-wheel mounted on a support 16 in combination with a locking mechanism therefor and releasing mechanism comprising a drop-wire and mechanism for projecting a support under said drop-wire, 105 comprising an electrical circuit closed by the movement of the presser.

4. In a stop-motion for circular-knitting machines a presser mounted on a support 16 in combination with a locking mechanism 110 therefor and releasing mechanism comprising a drop-wire; a shipper; electrically-actuated mechanism started by a movement of said presser for releasing said shipper; and mechanism operated by the movement of said shipper for projecting a support under said drop-wire. 115

5. In a stop-motion for circular-knitting machines a vertically-movable rotary-presser and mechanism for moving the same vertically; an electric circuit; a magnet in said circuit; a presser locking mechanism and releasing devices therefor comprising a drop-wire; a hand-shipper; locking mechanism therefor released by said magnet; and a mechanism for projecting a support under said drop-wire, all being combined and arranged 120 to operate substantially as specified. 125

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Witnesses:

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