

No. 719,491.

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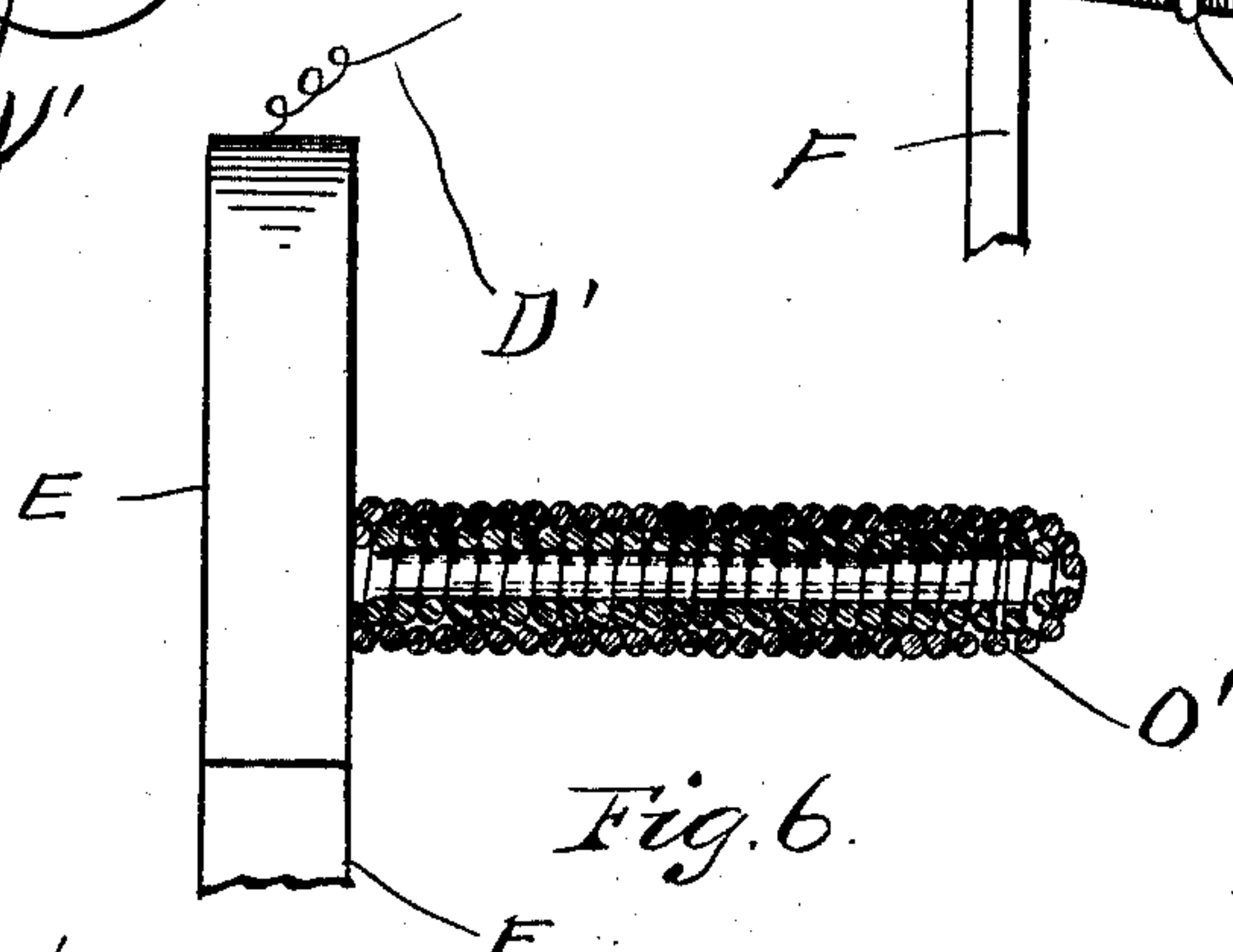
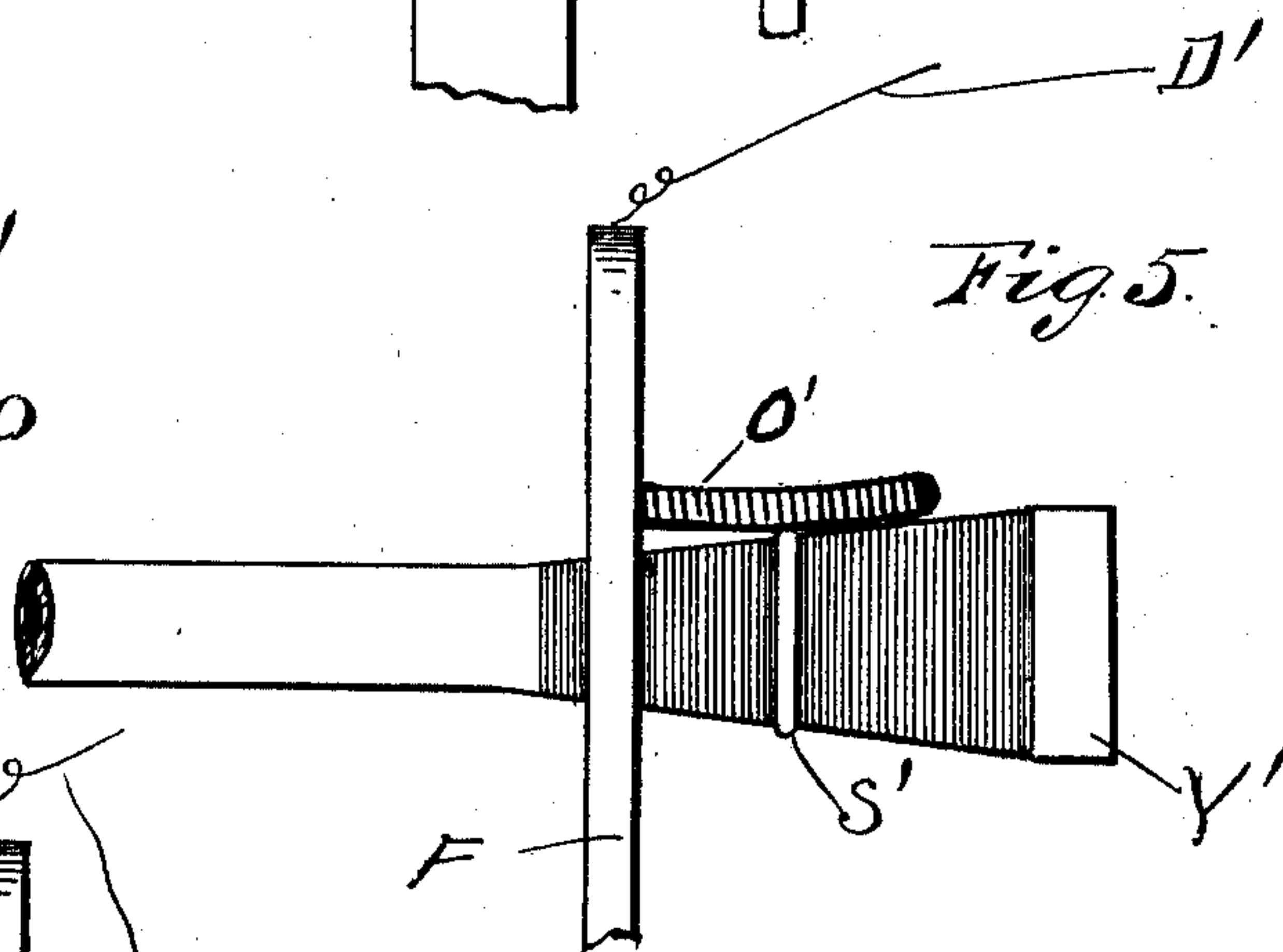
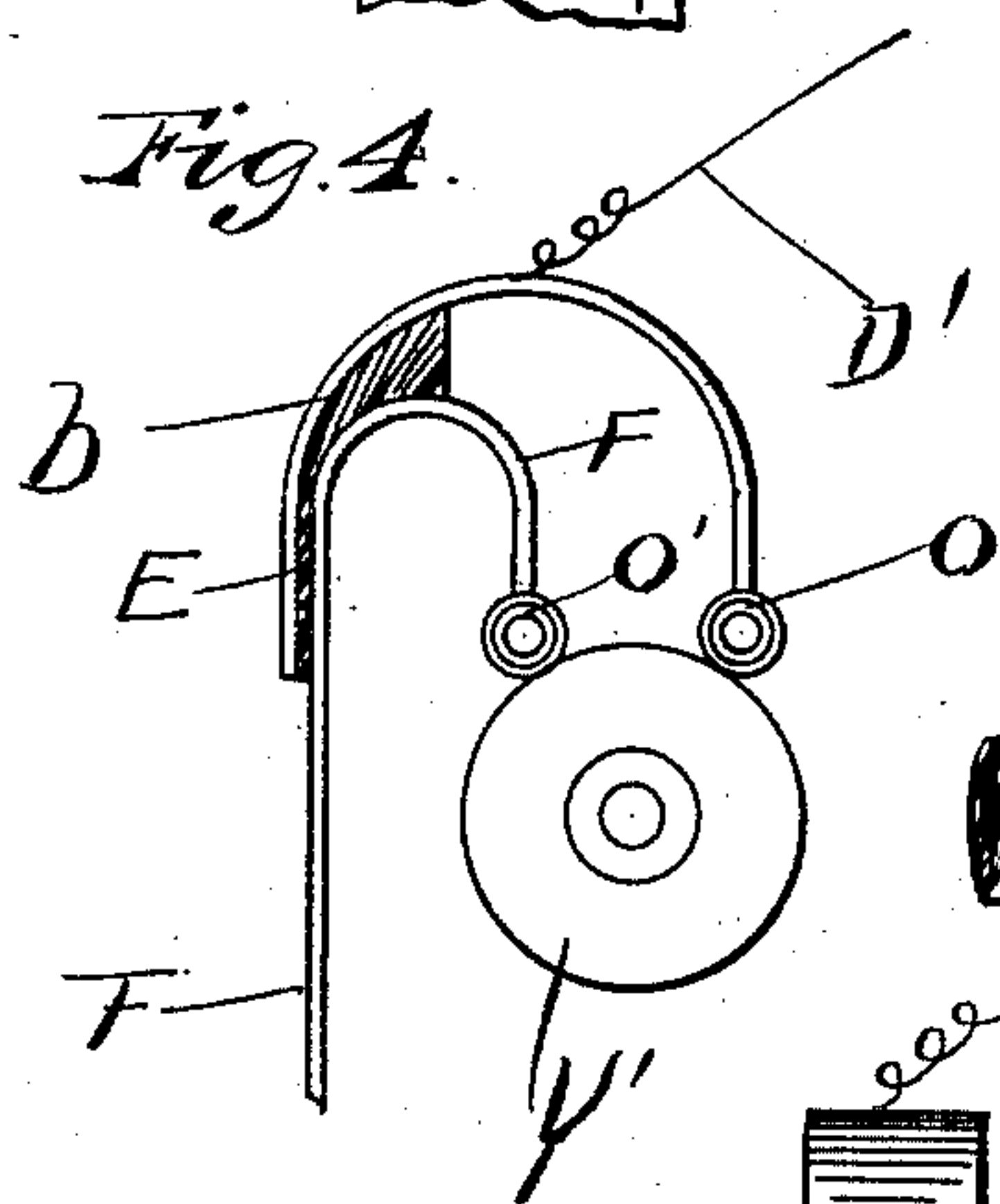
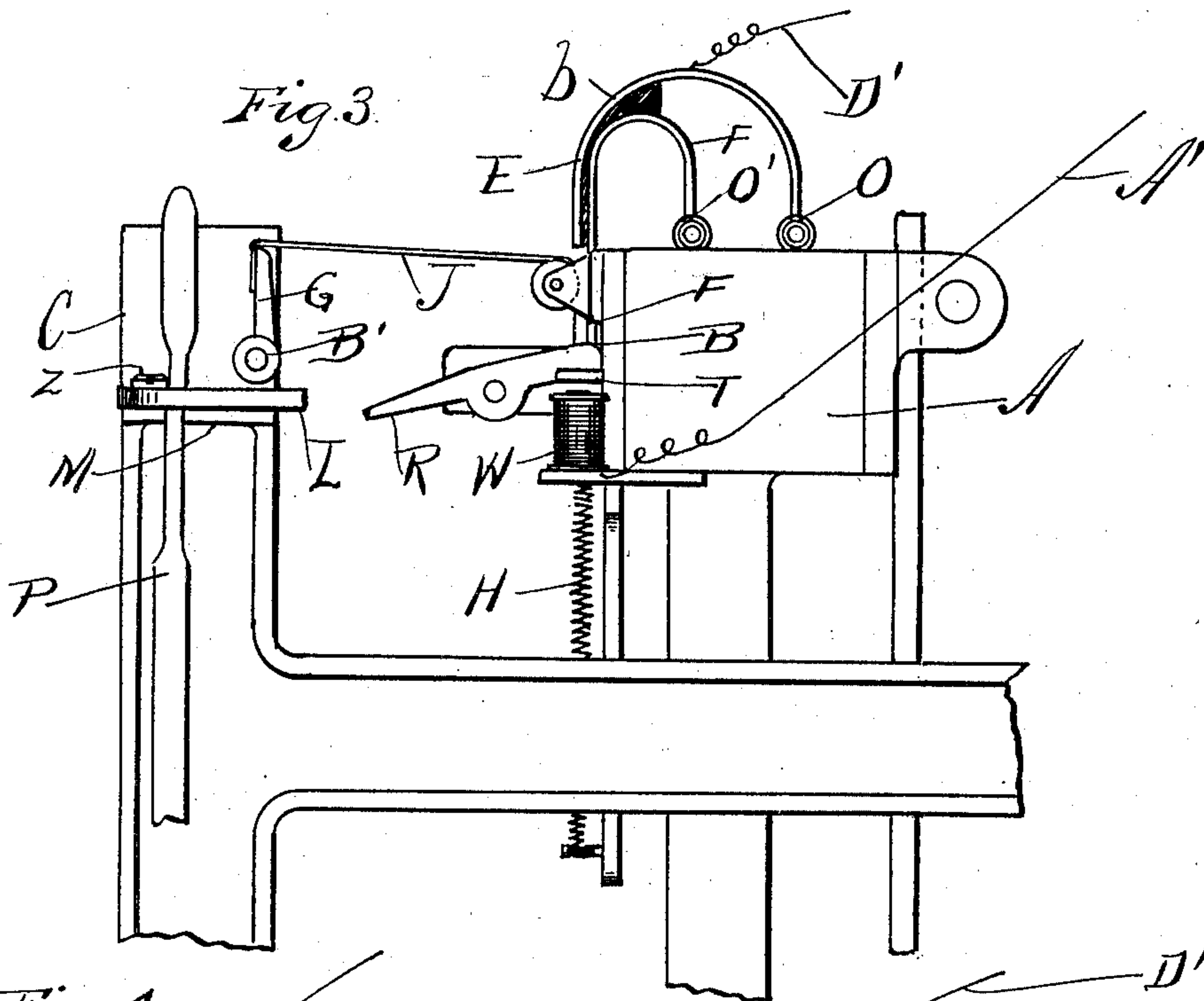
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LOOM WEFT FEELER.

APPLICATION FILED FEB. 11, 1902.

NO MODEL.

2 SHEETS--SHEET 2.



Witnesses.

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THOMAS MCAULIFFE AND JOHN T. BOLTON, OF FALL RIVER,
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LOOM WEFT-FEELER.

SPECIFICATION forming part of Letters Patent No. 719,491, dated February 3, 1903.

Application filed February 11, 1902. Serial No. 93,556. (No model.)

To all whom it may concern:

Be it known that we, THOMAS MCAULIFFE and JOHN T. BOLTON, residents of Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Loom Weft-Feelers; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to the class of weft-feelers for looms used for weaving. It has for its object to produce an attachment for the lay of a loom that shall by a harmless contact with the bobbin of filling in the shuttle find out when the filling has nearly run out and stop the loom or cause a change of the bobbin before it has quite run out, so as to prevent broken picks or shots of filling that in figured work require a stoppage of the loom and a picking back to remedy the defect. It is fully explained and illustrated in this specification and the annexed drawings.

Figure 1 represents a top view of a portion of the lay and breast-beam and a part of the cast-off mechanism of the loom and its connection with the feeler. Fig. 2 is a perspective view of a part of the lay and breast-beam with the feeler device and its connections with the electric circuit and the cast-off mechanism. Fig. 3 shows an end view of the loom-lay and breast-beam. Fig. 4 is a front elevation of the weft-feeler. Fig. 5 shows a side view of the feeler as seen from the end of the loom. Fig. 6 represents a vertical section of one of the fingers of the feeler, taken lengthwise through the center, enlarged.

The construction and mode of operation of this invention are as follows:

A represents the shuttle-box portion of the lay of the loom, and C is a part of the breast-beam. A plate B, attached to the front of the lay, has ways formed on each side to hold and guide a plate F, that slides up and down on the plate B. The plate F extends up and is curved over the edge of the shuttle-box A and has one of the feeler-fingers O' attached to it. (See Fig. 4.) A strip of metal E is made fast to the plate F, but is insulated from it by a

strip of paper *b* or other suitable material, and is curved farther over than the plate F and has the other feeler-finger O attached to it in a position parallel to the finger O'.

The feeler-fingers O and O' are perfect coils of wire (see Fig. 6) wound in a spiral form to give the finger sufficient flexibility to accommodate itself to the possible changes in the position of the shuttle at the time of contact and to give the fingers the stability necessary to preserve its shape and still be very flexible. It may be made of a double coil, one inside of the other, as seen in section in Fig. 6.

An electric wire D' is attached to the top of the plate E to connect it with a wire G', running along over the loom. (See Fig. 2.) The plate F is connected by a strap J to an arm G, held to turn on a stud B', fast in the end of the breast-beam C.

The strap J has one end made fast to the end of the arm G, and the other end, after passing over a roller *a*, held in ears on the plate B, passes down and is made fast to the sliding plate F. (See Fig. 2.)

A torsion-spring K, held on the stud B', has its inner end made fast to the stud or beam C and its outer end secured to the arm G, and the tendency of the spring K is to throw the arm G over toward the front of the loom and draw the plate F up by the strap J, and a light closed spiral spring H has its upper end attached to the sliding plate F and its lower end attached to a pin in the lower end of the plate B. The tendency of this spring H is to draw the plate F down, and the effect of the two springs K and H on the plate F is this: The spring K being much stronger than the spring H will draw on the strap J and hold the plate F and the feeler-fingers O O' up clear of the bobbin Y' all the time, excepting when the lay A is approaching the end of its motion toward the breast-beam C in beating up, when the motion of the arm G, that draws on the strap J, will be stopped by a pin N in its hub coming in contact with a pin N' in the stationary collar J'. Then the further movement of the lay toward the breast-beam will cause the strap J to become loose and allow the light spring H to draw down the plate F, so that the fingers O O' will rest on the bobbin Y' (see Fig. 1) until the lay begins its

movement away from the breast-beam, when the strap J becomes tight and draws the plate F up again and the fingers O O', so as to be clear of the shuttle as it moves out of the box.

5 By means of this arrangement a light quick contact of the feeler-fingers with the bobbin in the shuttle can be obtained however fast the loom may run. The mechanism that gives effect to the result of the feeler-contact consists of a stand S, attached to the front of the lay, that has a lever R pivoted to it with one end projecting out toward the breast-beam and an armature T on its inner end held in position over an electromagnet W, placed on a ledge of the stand S. (See Fig. 2.) M is the usual belt-shipper plate attached to the end of the breast-beam C, and P is the shipper-bar working in a slot in plate M. A lever L is held on a stud Z in the end of the plate M, with its outer end in position to be struck by the outer end of the lever R when that lever is raised by the armature T being drawn down by the electromagnets W, and when the lever L is struck the inner end of it will throw the belt-shipper P out of its notch and stop the loom.

The current of electricity that energizes the electromagnets W is brought down from the continuous current maintained in the wires H' G', suspended over the looms (see Fig. 2) by a wire A', connected to the wire H' at its upper end and to one end of the magnet-wire at its lower end.

A wire F' connects one end of the magnet-wire with the plate B, which is in contact with the sliding plate F, that carries the feeler-finger O'. Now as the plates F and strip E, that carries the feeler-finger O, are insulated from each other all that is necessary to complete the circuit from the wire G' to H' is to form a connection between the two fingers O and O'. This connection between the two fingers O and O' is made by means of a metal ring S', held on the bobbin Y', (see Fig. 5,) which becomes bare when the thread is almost all run off of the bobbin, and when the fingers drop and rest on this ring S' the circuit is closed, the magnet energized, the armature drawn down, and the outer end of the lever R raised, so as to strike the lever L as the lay beats in and casts off the belt-shipper P, which stops the loom, or, if it is a self-filling loom, the lever L will operate a rod to cause a new bobbin to be put in the shuttle.

55 By the use of the flexible fingers to feel of the bobbin it will make no difference if the shuttle goes farther into the box at one time than it does at another time, which is often the case, as the length of the finger will cover about all of the incline of the heel of the bobbin, and by bending in a curve, as in Fig. 5, will not fail to find the ring and make the required connection even if the shuttle varies a half an inch or more from its usual position and the yielding nature of the fingers makes a quick contact possible without any danger of injuring the filling-thread.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a device of the character described, a flexible finger made of coiled wire arranged longitudinally of a bobbin and adapted to yieldingly accommodate itself longitudinally to the surface of the bobbin when it comes in contact with it, in combination with means separate from the bobbin for holding said finger and raising it at intervals, substantially as described. 70 75

2. An elongated elastic finger for a loom weft-feeler made of an electrical conducting material in a flexible form, arranged longitudinally of, beside and adapted to lay on the bobbin and conform to its surface, in combination with means for holding said finger and bringing it in contact with a bobbin in a shuttle, and a shuttle separate from said means and adapted to receive a bobbin, substantially as described. 80 85

3. In a loom weft-feeler a pair of flexible coiled-wire fingers arranged to longitudinally engage and laterally accommodate themselves to the form of the bobbin when they come in contact with it, said fingers being electrically insulated from each other, mechanism to lower and raise said fingers in and out of the shuttle at predetermined intervals, in combination with a conducting-ring held on a bobbin and wires connecting said fingers with an electromagnet and an electric circuit, substantially as described. 90 95 100

4. In combination, in a loom-weft-controlling mechanism, a shuttle open at the top and adapted to receive a bobbin, a vertically-reciprocating frame extended laterally above said shuttle-opening and carrying the two approximately parallel laterally-yielding fingers arranged longitudinally of the bobbin and adapted to longitudinally engage the same and conform laterally and yieldingly to the longitudinal contour of the bobbin, means for raising and lowering said frame to bring said fingers into and out of the path of the shuttle, and electrical connections and actuating mechanism, substantially as described. 105 110 115

5. A weft-controlling mechanism for looms comprising an elongated flexible finger formed of coiled wire and arranged longitudinally of and adapted to yieldingly and laterally engage the bobbin, and means carrying said finger and arranged to move the same into and out of the path of the shuttle carrying the bobbin, substantially as described. 120

6. A loom weft-feeler comprising a finger composed of the double-coiled spring-wire, substantially as described. 125

In testimony whereof we have hereunto set our hands this 5th day of February, A. D. 1902.

THOMAS MCAULIFFE.
JOHN T. BOLTON.

In presence of—

BENJ. ARNOLD,
MAY L. HAZARD.