No. 658,237. Patented Sept. 18, 1900.

# J. COLDWELL & C. G. GILDARD.

## ELECTRICAL WARP STOP MOTION FOR LOOMS.

(Application filed Jan. 11, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

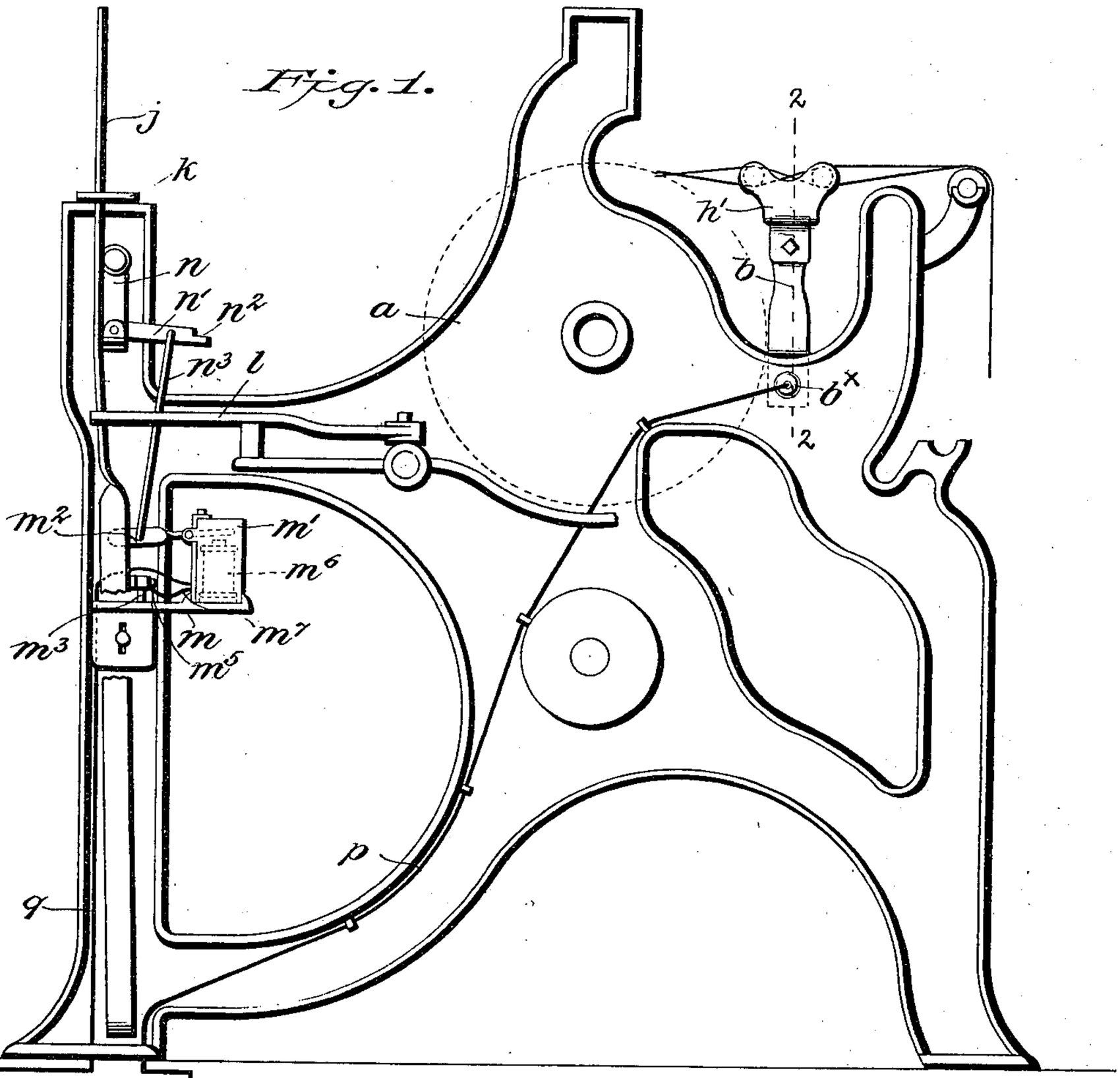
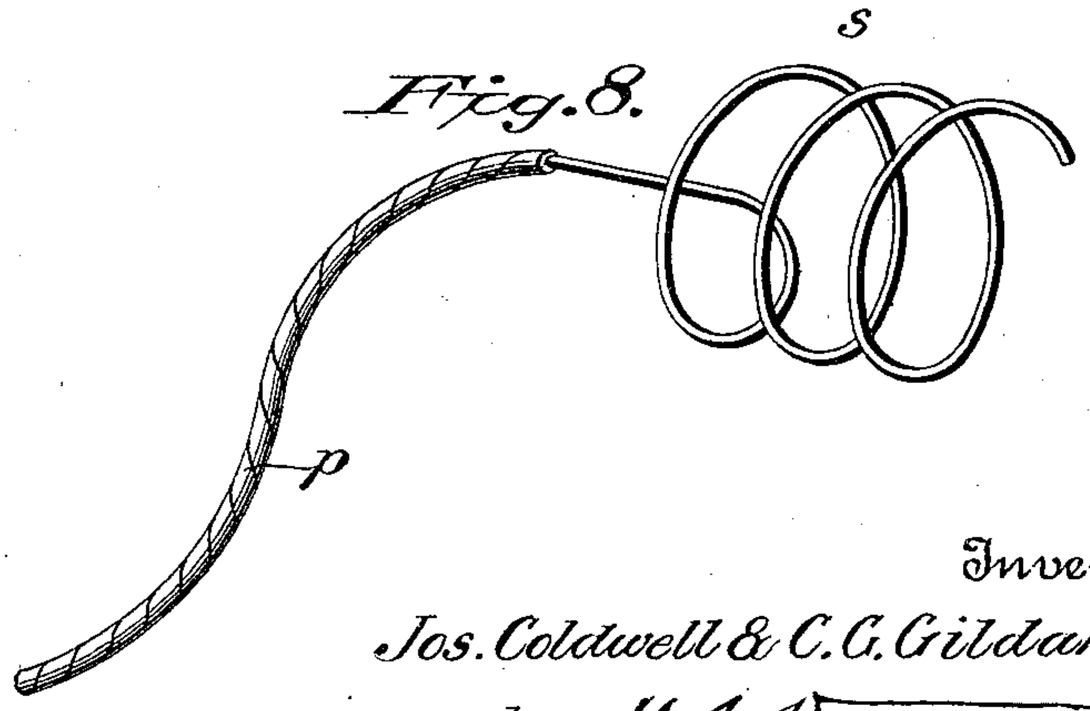



Fig. 8.




Witnesses
A. E. Muzzy.
L. B. Muzzy.

Inventors
Jos. Coldwell & C. G. Gildard,
by H. J. Duvall.
Attorney.

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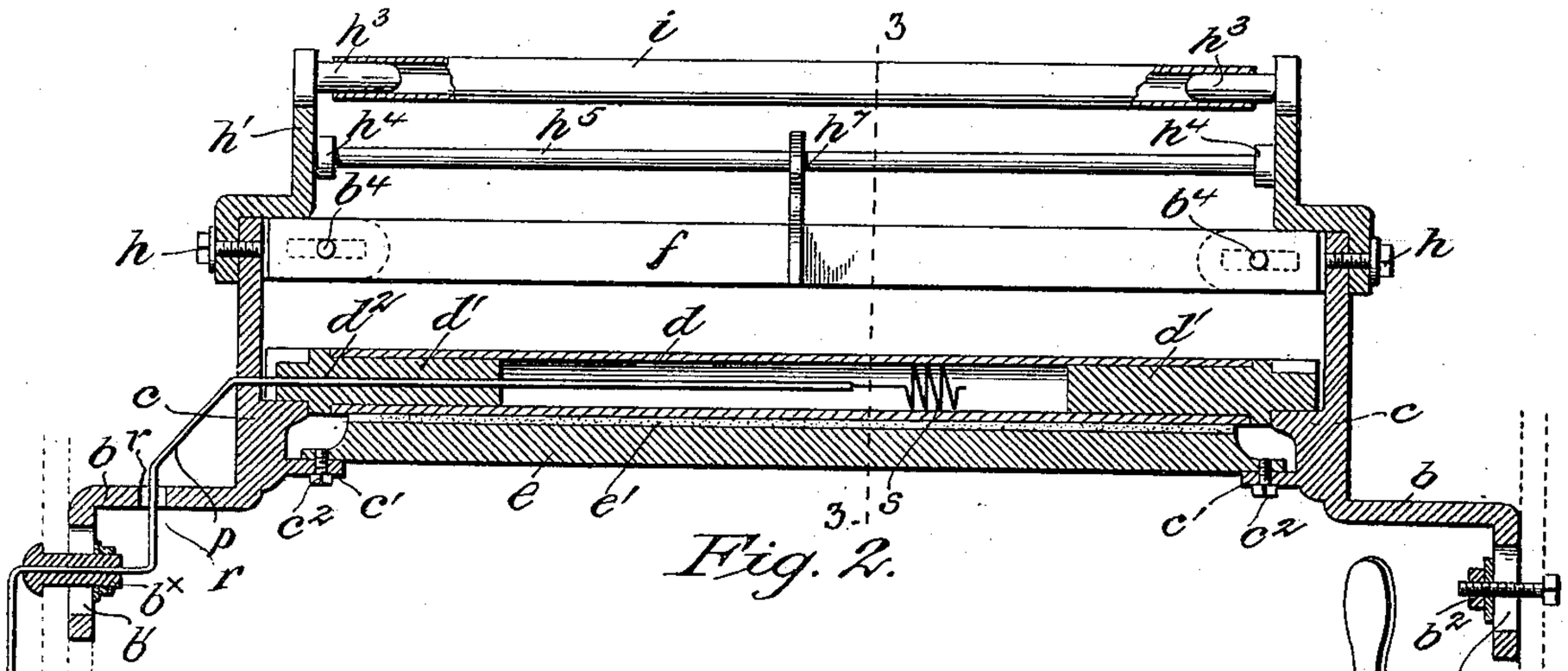


Fig. 2.

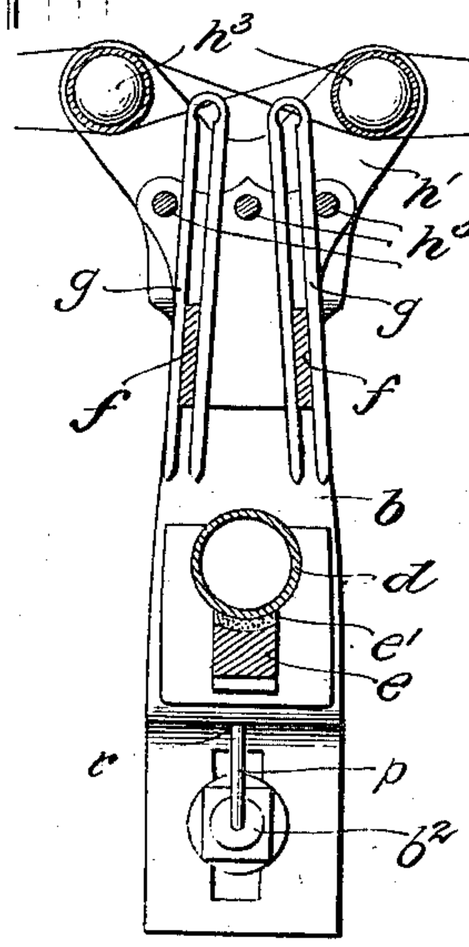


Fig. 3.

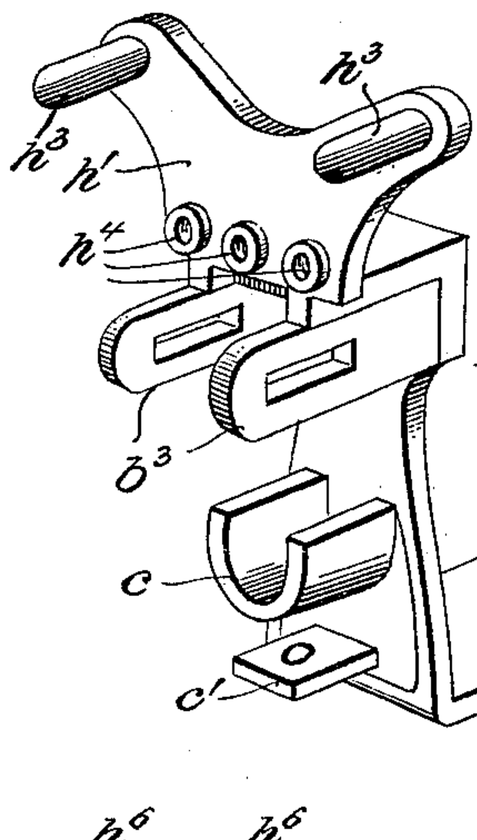


Fig. 4.

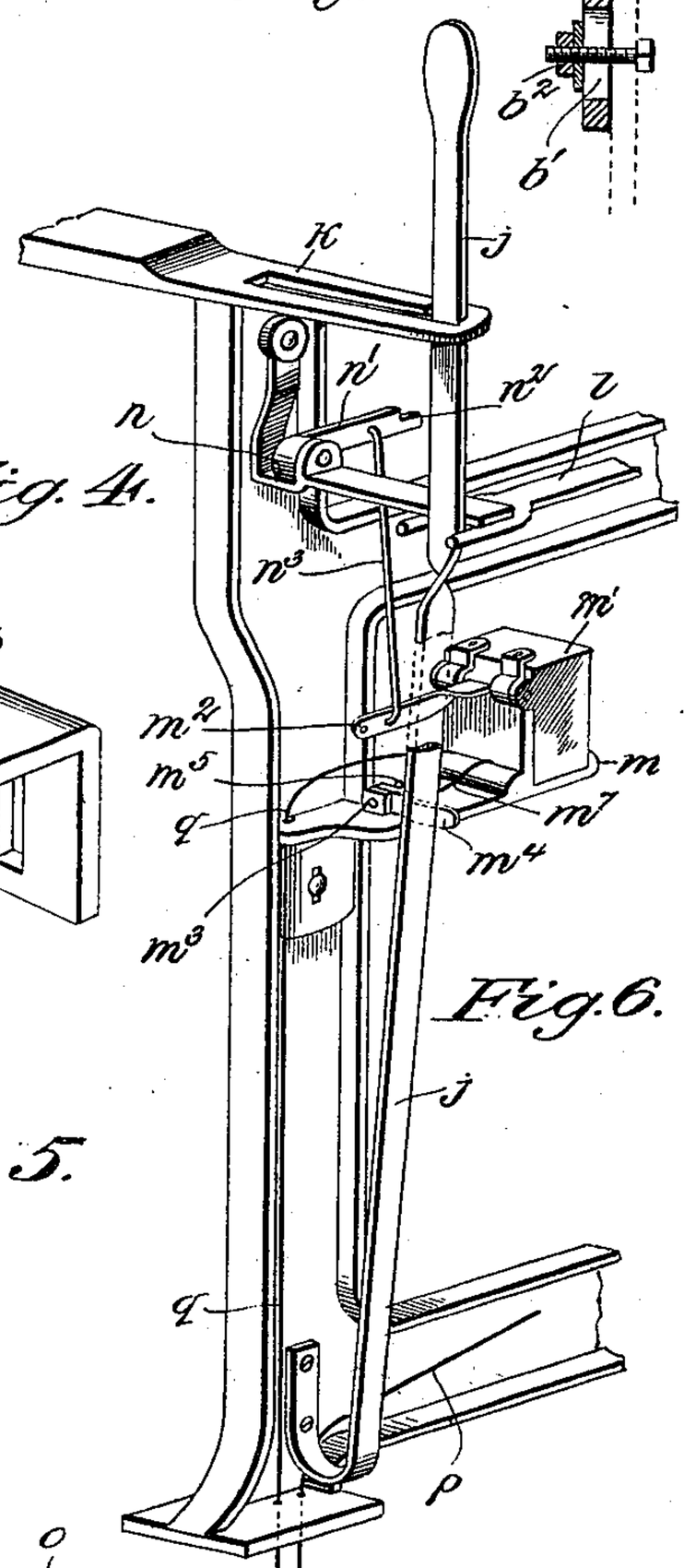


Fig. 6.

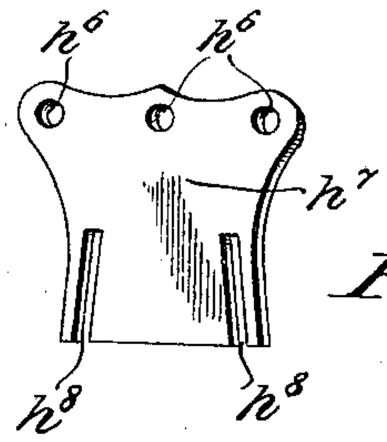


Fig. 5.

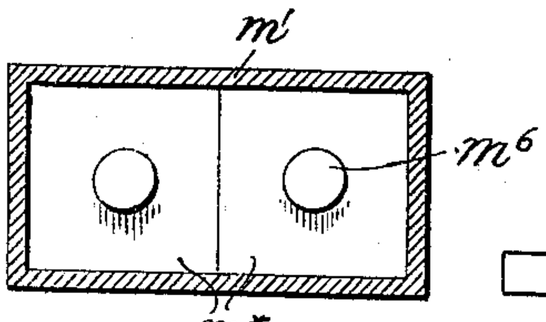


Fig. 7.


Witnesses:

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R. E. Mowry.

Inventors:

Jos. Coldwell & C. G. Gildard.

by W. S. Duvall.

Atty.

# UNITED STATES PATENT OFFICE.

JOSEPH COLDWELL AND CHRISTOPHER GILES GILDARD, OF FALL RIVER, MASSACHUSETTS.

## ELECTRICAL WARP STOP-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 658,237, dated September 18, 1900.

Application filed January 11, 1900. Serial No. 1,139. (No model.)

*To all whom it may concern:*

Be it known that we, JOSEPH COLDWELL and CHRISTOPHER GILES GILDARD, citizens of the United States, residing at Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Electrical Warp Stop-Motions for Looms; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in the construction described and illustrated in United States Letters Patent granted us November 21, 1899, and numbered 637,234 and 637,235, for improvements in electrically-operated stop-motions for looms.

Our present invention has for its objects (*a*) to simplify the construction of the loom mechanism and to avoid liability of accidental misadjustment of the parts composing the same, all of which we accomplish by casting integral certain parts composing the same and heretofore separately constructed, and (*b*) to reduce the vibrations of the electrical conducting guide-rods and strongly brace the same between their points of support.

With these specified and well-defined objects in view our invention consists in certain features of construction hereinafter pointed out, and particularized in the claims.

Referring to the drawings, Figure 1 is a side elevation of so much of an ordinary loom-frame as is necessary in order to show the application of our invention. Fig. 2 is a longitudinal sectional view on the line 2 2, Fig. 1, looking in the direction indicated by the arrow. Fig. 3 is a transverse vertical sectional view on line 3 3, Fig. 2. Fig. 4 is a detail in perspective of one of the head-castings. Fig. 5 is a detail in elevation of the bridge-piece. Fig. 6 is a detail in perspective of one corner of the loom-frame, hereinafter referred to. Fig. 7 is a horizontal sectional view through the magnet box or case. Fig. 8 is a detail of the contact employed and hereinafter referred to.

Similar letters of reference indicate similar parts in all the figures of the drawings.

Between the side frames *a* of the loom we locate a pair of angular brackets *b*, which have slots *b'* near their lower ends to receive adjusting-bolts $b^2$ $b^\times$, whereby the said brackets *b* are adjustably supported between the side frames. At the inner angles of the brackets *b* are formed integral therewith a pair of U-shaped or other bearings *c*, and below the same and extending inwardly a pair of horizontal lugs *c'*, perforated for the reception of adjusting-screws $c^2$. The bearings *c* receive the axial ends or trunnions of a loose tubular contact-roll *d*, preferably formed of copper. The trunnions *d'* are fitted in the ends of the said contact-roll, may be formed of wood or other electrical non-conducting material, and one of them may have an axial bore or perforation $d^2$.

Upon the adjusting-screws $c^2$, heretofore referred to, are supported the opposite ends of a wiper-bar *e*, the same having its upper side preferably concaved to agree with the contact-roll against which it rests and also faced with some textile material, as *e'*, to which lint, &c., will adhere when the contact-roll is rotated for the purpose of cleaning the same.

Each of the two brackets *b* terminate above the contact-roll in a pair of inwardly-disposed horizontal attaching-lugs $b^3$, the same being slotted longitudinally to receive adjusting-bolts $b^4$, by means of which a pair of horizontally-disposed parallel circuit-rods *f* are adjustably supported.

To the upper ends of the brackets *b* is non-adjustably secured by bolts *h* a pair of angular brackets *h'*, the upper ends of which may be T-shaped and each of which may have formed on its inner face a pair of round-ended studs $h^3$, which may be removably fitted into the ends of a pair of horizontally-disposed tubular lease-rods *i*, preferably formed of enameled bicycle-tubing. Each of the angular or inverted-L-shaped brackets *h'* is further provided on its inner face and below the round-ended studs $h^3$ with a series of three horizontal tubular bosses $h^4$, into which are secured the opposite ends of a series of three metallic tie-rods $h^5$, the ends of said rods being preferably loose or removable from the said teats. The tie-rods $h^5$ pass through and accurately fit perforations $h^6$, formed near the upper ends of a metallic bridge-piece $h^7$, the lower edge of which is provided with a pair of

converging slots or kerfs $h^8$, that receive and securely hold against vibration the circuit-rods $f$. These rods $f$ form guides for and support when not otherwise supported a series of drop-bars $g$ of any desired design in proper relative position with the contact-roll $d$. The drop-bars $g$ are normally supported by the warp-threads of the loom, and when so supported out of contact with the contact-roll, as shown in Fig. 3, their upper portions lie between the tie-rods $h^5$.

$j$ designates the shipper, $k$ the notched plate by which it is locked and guided, and $l$ the operating-lever to be moved by the shipper.

A bracket $m$ supports a magnet box or case $m'$, which latter is of rectangular shape in cross-section and has fulcrumed in its front upper corner an armature-lever $m^2$. The induction-coils of the magnets are formed on square-ended spools $m^\times$, so that they may be forced within the box or case, as a driving fit, and hence incapable of being jarred out of place.

The remainder of our invention may be the same as described in the former patents herein referred to and to which we will now briefly refer.

Rising from bracket $m$ is a stud $m^3$, having a contact-spring $m^4$ in electrical contact with the shipper $j$ when in engagement with the aforesaid notch of the plate $k$. When in this position, it will be possible for the drop-bar or detector $g$ to complete the circuit by contacting with the metallic contact-roll $d$; but when the shipper is at the inner end of the slot in plate $k$ such contact is broken by the shipper moving away from spring $m^4$, and it is impossible to effect the circuit.

On the stud $m^3$ is a binding-post $m^5$, and from it leads to the pole of the magnet $m^6$ a circuit-wire $m^7$.

$n$ designates the knockoff, $n'$ the gravity-latch, and $n^2$ the notch or shoulder formed therein.

$n^3$ is a wire rod connecting the latch to the armature-lever $m^2$, so that there is a unity of motion between the two. It will be obvious that if the magnet attracts the armature, as when the circuit is completed through one of the drop-bars, the armature-lever will rise at its outer end and will elevate the latch $n'$ into the path of the lay, by which latter it is struck, and together with the knockoff is forced forward, the latter striking the shipper $j$ and disengaging the same from the notch in the guide-plate $k$, permitting the shipper to spring inward and operate the belt-shifter to stop the loom, all as is usual, and to break contact with the contact-spring $m^4$.

The battery $o$ or other source of electrical supply may be located below the floor, and from one of its poles leads the insulated circuit-wire $q$ and from the other the insulated circuit-wire $p$. The wire $q$ passes to the magnet and the wire $p$ passes through the tubular bolt $b^\times$. From the inner end of the bolt the wire $p$ passes upwardly through a perforation $r$ in the bracket $b$ and from thence through the longitudinal bore $d^2$, formed in the axial plug or journal $d'$ of the contact-roll $d$ and into the latter, where it may terminate in any form of contact—as, for instance, a coil $s$, mounted loosely and slidably in said roll. From thence the circuit is completed through the loom-frame.

We found by experience that where the parts $c'$ and $c$ were made adjustable and therefore separate from the bracket $b$ operators were apt to get an improper adjustment of these parts, and, moreover, even when properly adjusted the constant vibrations of the loom exerted a tendency to loosen the bolts. To avoid this trouble, we therefore have improved our former construction by casting these parts integral, as hereinbefore described. We also found it desirable to provide some means of rendering more rigid the circuit-rods and avoiding in them so far as possible the vibrations to which they are subjected by the operation of the loom. These vibrations were objectionable in that they were conveyed to the drop-bars or detectors, and they being supported by the warp-threads interfered with their free movements. By the arrangement described the circuit-bars are now practically rigid and do not, therefore, have any effect upon the drop-bars, which latter are always free to instantly drop upon the occasion of the breaking of a warp-thread, and thus close the circuit.

Having thus fully described our invention, what we claim is—

1. An electrically-operated stop-motion for looms comprising longitudinally-arranged circuit-rods, and a lower intermediate electrical conductor, opposite series of drop-bars loosely embracing said circuit-rods and normally supported out of contact with the aforesaid electrical conductor by the warp-threads of the loom, said circuit-rods serving to guide said drop-bars in their movements toward the conductor, tie-rods located above the circuit-rods, and a bridge-piece carried thereby and having lower slotted portions embracing said circuit-rods.

2. An electrically-operated stop-motion for looms comprising longitudinally-arranged circuit-rods and an intermediate electrical conductor, drop-bars loosely embracing said circuit-rods and adapted to be normally supported out of contact with the aforesaid electrical conductor by the warp-threads of the loom, said circuit-rods serving to guide said drop-bars in their movements toward the conductor, and a bridge-piece having converging slots arranged to embrace said circuit-rods, whereby their vibrations are arrested.

3. An electrically-operated stop-motion for looms, comprising the brackets $b$, having the integral bearings $c$ and lugs $c'$, the contact-roll $d$ and wiper-bar $e$, the upper brackets $h'$ secured to the brackets $b$, the lugs $h^3$ $h^4$, the

lease-rods *i*, tie-rods $h^5$, circuit-bars *f*, and the bridge-piece $h^7$ perforated to receive the tie-rods and slotted at its lower end as at $h^8$ to receive the circuit-bars.

4. An electrically-operated stop-motion for looms comprising supporting-brackets, a contact-roll mounted therebetween, circuit-bars also mounted between said brackets, supplemental brackets supported by said former brackets and provided with a series of tubular bosses, tie-rods loosely mounted in said bosses, and a bridge-piece carried by said tie-rods and engaging said circuit-rods.

5. An electrically-operated stop-motion for looms, comprising supporting-brackets, a contact-roll mounted therebetween, circuit-bars also mounted between said brackets, supplemental brackets supported by said former brackets and provided with a series of tubular bosses, studs formed on said latter brackets, tubular lease-rods mounted thereon, tie-rods loosely mounted in said bosses, and a bridge-piece carried by said tie-rods and engaging said circuit-rods.

In testimony whereof we affix our signatures in the presence of two witnesses.

JOSEPH COLDWELL.
CHRISTOPHER GILES GILDARD.

Witnesses:
W. A. RAMSBOTTOM,
JAMES A. MACOMBER.