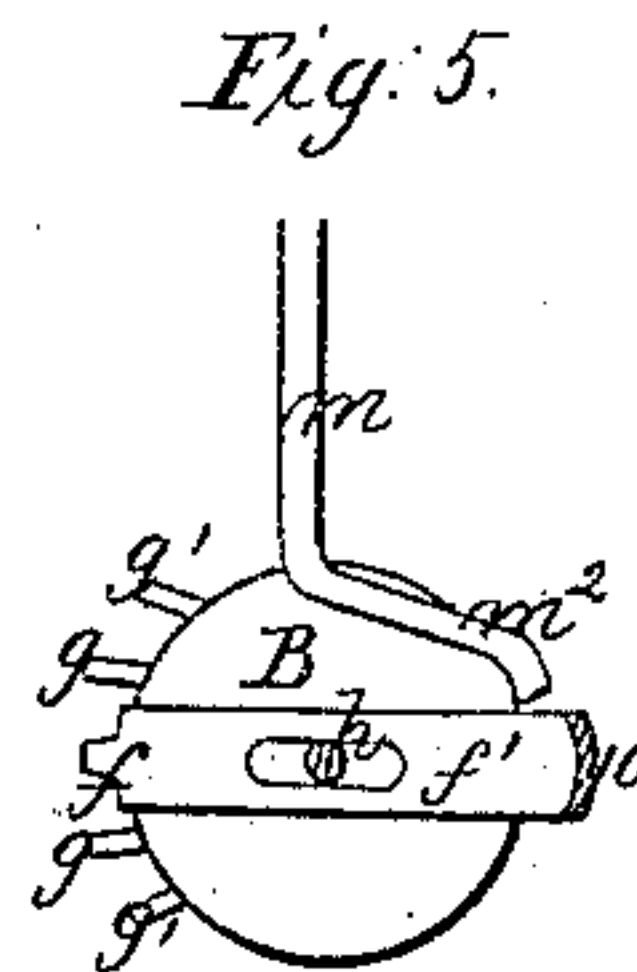
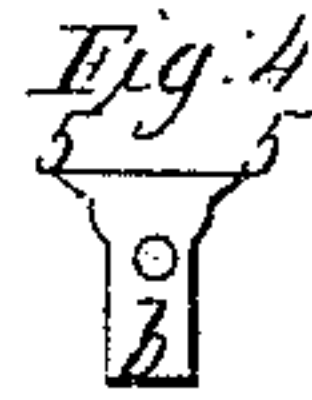
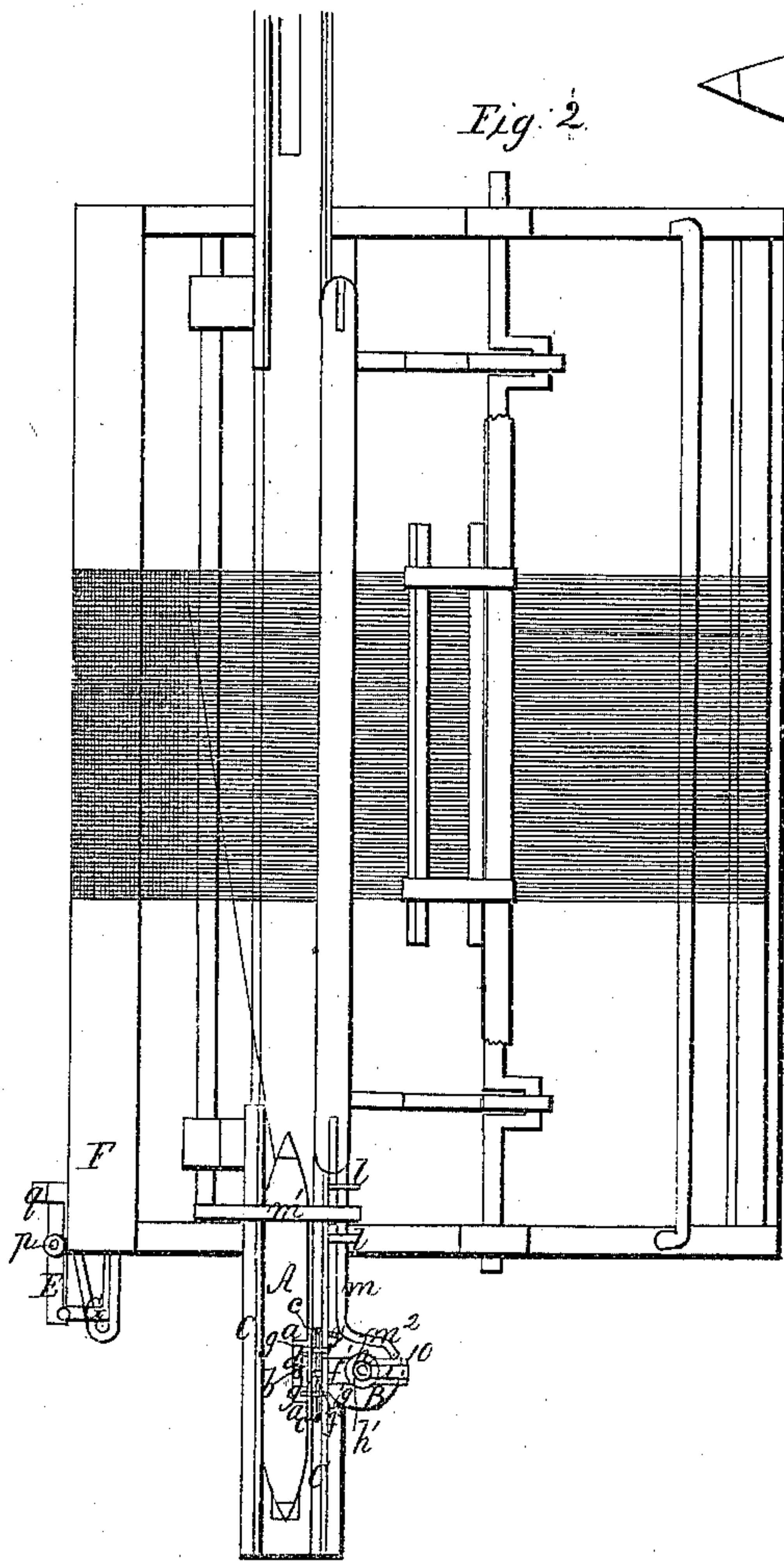
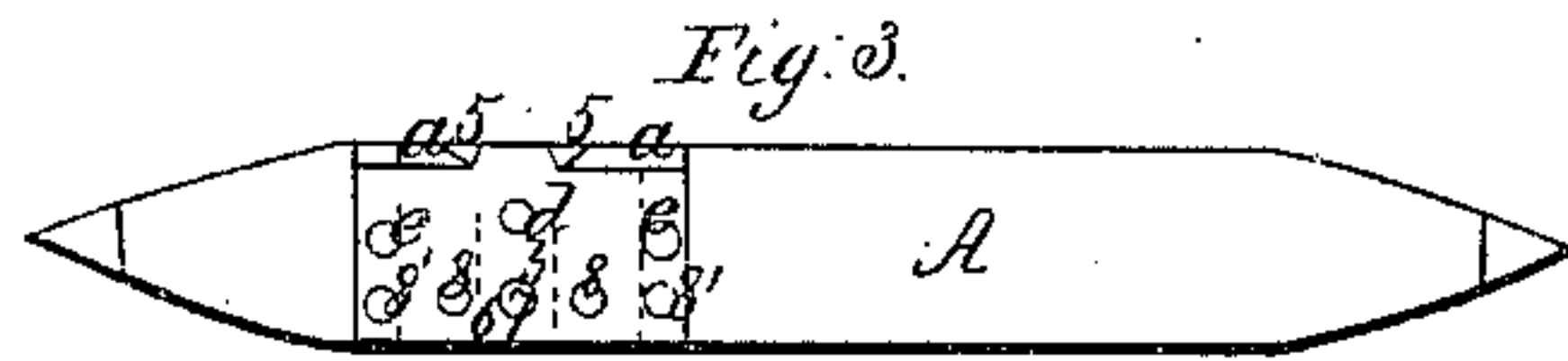
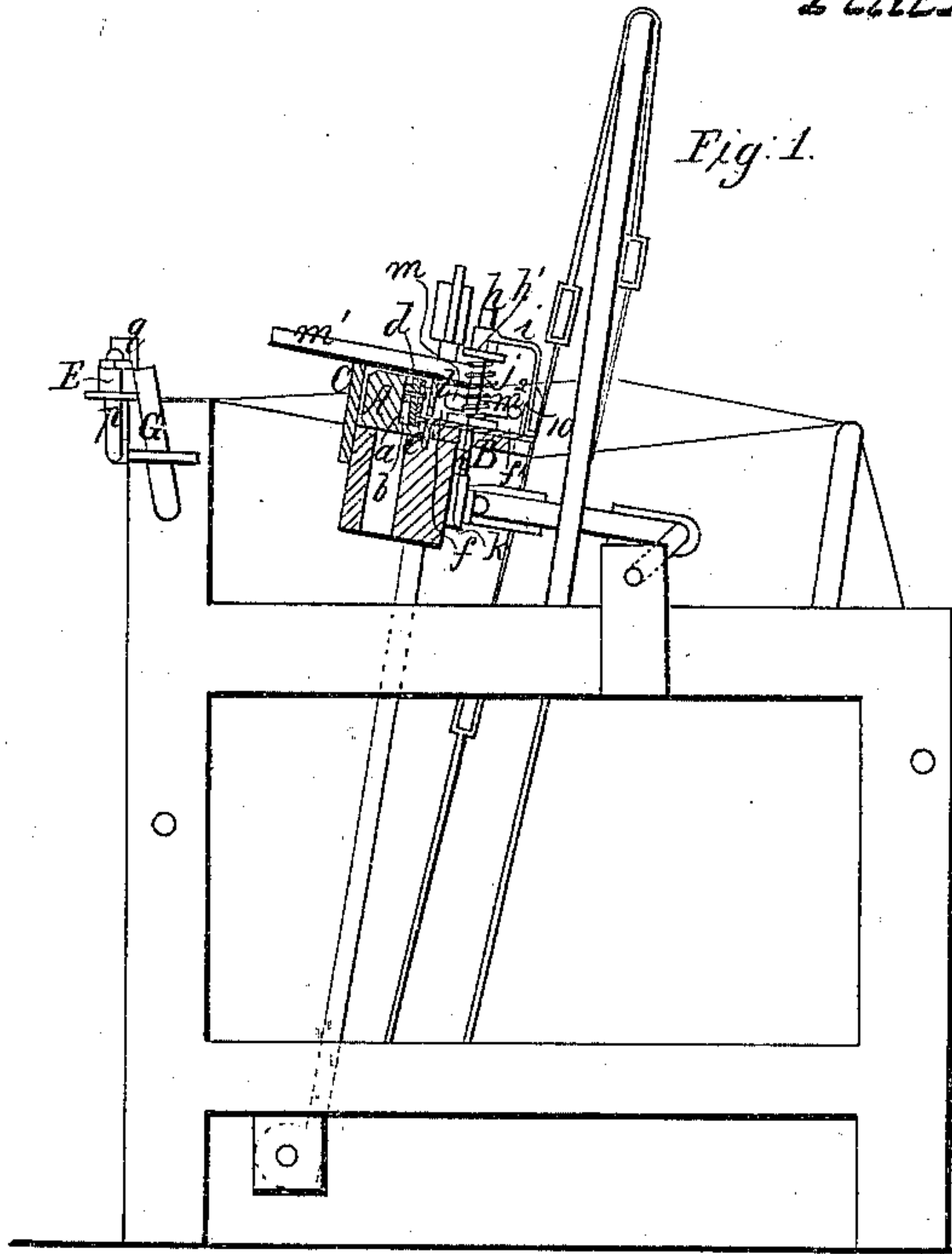


*T. Foden.*  
*Stop for Loorn.*

N<sup>o</sup> 2,379.  
33,383.

*Patented Oct. 1, 1861.*



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# UNITED STATES PATENT OFFICE.

THOMAS FODEN, OF HOLYOKE, MASSACHUSETTS.

## IMPROVEMENT IN STOP-MOTIONS FOR POWER-LOOMS.

Specification forming part of Letters Patent No. 33,353, dated October 1, 1861.

*To all whom it may concern:*

Be it known that I, THOMAS FODEN, of Holyoke, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Power-Looms; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of a loom with the right-hand shuttle-box in section. Fig. 2 is a plan view of the loom. Fig. 3 is a back view of the shuttle on a larger scale than Figs. 1 and 2. Fig. 4 is a back view of what I call the "tumbler" of the shuttle on a scale corresponding with Fig. 3. Fig. 5 is a plan of some of the attachments of the shuttle-box on a scale corresponding with Figs. 3 and 4.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improved stop-motion for stopping the loom whenever the warp, owing to the knots in the yarn or the breakage and entanglement of threads or from any other cause, becomes in such a condition that what weavers call "bad places" are likely to be produced in the woven fabric, such stop-motion consisting in part of certain devices attached to the shuttle, in part of devices attached to the lay, and in part of devices attached to the breast-beam or front part of the loom-framing.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation, omitting as much as possible the description of those parts of the loom which require no alteration to admit the application of the invention.

A is the shuttle, having in its back side near the right end, which is toward the right side of the loom—viz., the end toward the left of the back view, Fig. 3 a shallow cavity *a*—for the reception of the tumbler *b*, which is composed of a piece of sufficiently stiff sheet metal, and which is confined in the said cavity by means of a plate *c* and a pin *d*, the said plate being secured to the body of the shuttle by means of screws *e e* and covering all but a small portion of the upper part of the cavity *a*, and the said pin passing easily

through a hole provided for it in the tumbler and being supported partly in the plate *c* and partly in the body of the shuttle. The tumbler *b* is made with two points or horns 5 5 at opposite ends of its upper edge and with a tail-piece 6, which hangs below the pin *d* and covers a hole 7 in the plate *c* when the upper edge of the tumbler is flush with the top of the shuttle, as shown in Fig. 4, which represents the position of the tumbler when the loom is working well, the two points 5 5 being then above the upper edge of the plate *c*. The hole 7 in the plate *c* is directly under the pin *d*, and there are other holes 8 8 8' 8' in the said plate and body of the shuttle at equal distances from each other and from opposite sides of the hole 7, said holes being for the reception of the teeth *f g g* of the wheel B, which is attached to the lay D at the back of the right-hand shuttle-box C. The tumbler is intended to be balanced on the pin *d* in such a manner that it will remain in any position to which it may be brought by turning it on the said pin; but it should be prevented from swinging too freely by means of a leather or other washer fitted to the pin *d* between the tumbler and the adjacent face of the cavity *a*.

The wheel B, before mentioned, is fitted to turn loosely on an upright spindle *h*, which is secured rigidly to and stands up above the back of the lay behind the shuttle-box C. The said wheel is close above the sole of the lay, and its teeth *f g g g' g'* work through a slot in the back of the shuttle-box. The middle tooth *f* of the said wheel, which works in the hole 7 of the plate *c* of the shuttle, is attached to a slide *f'*, fitted to a groove provided for it all across the wheel; but the other teeth *g g g' g'*, which work into the holes 8 8 8' 8', are rigidly attached to the wheel. The slide *f'* is slotted to pass the spindle *h*, and is attached to the upper part of the spindle by a spring or elastic arm *i*, which is arranged to turn on the spindle and so permit the slide to turn with the wheel B, and the elasticity of the said arm acts upon the slide to face the tooth *f* outward from the wheel toward the shuttle-box. The spindle *h* is furnished with a fast collar *h'*, between which and a loose collar *k*, resting on the wheel B, there is coiled upon the spindle a spring *j*, which presses upon the collar *k*, and so causes it to produce



the necessary friction upon the wheel B to prevent it from turning too easily on the spindle *h*. Between the wheel B and the reed there is attached to the back of the shuttle-box C by guides *l l* a horizontally-sliding rod *m*, which carries an arm *m'*, projecting forward over some distance in front of and resting on the top of the shuttle-box C, and the end of the said rod next the wheel B is curved, as shown at *m<sup>2</sup>* in the plans Figs. 2 and 5, that it may be acted upon with a cam-like action by means of the turned-up rear portion 10 of the slide *f'* to move the rod *m* longitudinally toward the center of the loom.

E is a lever working horizontally, or nearly so, above the breast-beam F of the loom on a fulcrum-pin *p*, secured to the breast-beam near the right side of the loom. One arm of this lever, which may be straight, occupies a position in front of the shipper G, which may be of any kind heretofore used or suitable for power-looms. The other arm of the said lever has an upward projection *q* at its extremity, which, according to the position of the sliding rod *m*, may either be struck or missed by the end of the arm *m'*, before mentioned, as the lay swings forward, the other part of the lever being low enough for the said arm to pass over it.

When the arm *m'* strikes the projection *q* of the lever E, it drives forward the inner arm of the said lever and causes the outer arm to be thrown back against the shipper and the loom to be stopped; but when the loom is set in operation the bar *m* is adjusted to such a position that the said arm *m'* will pass over the lower portion of the lever between the said projection and its fulcrum-pin *p*. The shuttle before being placed in the loom or before starting the loom has its tumbler *b* adjusted in the position represented in Fig. 3 and before referred to—that is to say, with its tail-piece 6 hanging down and covering the hole 7 in the plate *c* of the shuttle and the points of its horns 5 5 flush with or not standing above the top of its body. While the warp remains in good condition the shuttle continues to pass back and forth through the sheds with its tumbler undisturbed, and every

time the shuttle enters and leaves the right-hand shuttle-box C its holes 8' 8 7 8 8' act upon their respective teeth *g' g f g g'* and turn the wheel B back and forth upon the shaft *h*; but, owing to the inside of the hole 7 being covered by the tail 6 of the tumbler, the tooth *f'* is prevented from passing entirely through the said hole and caused to slide back by the pressure of the tumbler against its point to such a position that its turned-up rear portion 10 will pass outside of the curved portion *m<sup>2</sup>* of the sliding rod *m* and leave the said rod undisturbed; but when the warp gets in a bad condition, owing to the breakage or twisting of any of its threads or to knots therein, one or more of the threads will catch one of the horns 5 5 of the tumbler and cause it to be drawn up by the continued movement of the shuttle in such a manner as to remove the tail 6 from the hole 7, so that the next time the shuttle enters the box C the tooth *f* will be allowed to enter into the hole 7, and the slide *f'* consequently allowed to be forced by the spring *i* to a position in which its turned-up portion 10 will pass inside of the curve *m<sup>2</sup>* of the sliding rod *m* and act thereon like a cam to move the said rod toward the center of the loom and bring the arm *m'* opposite to the projection *q* on the lever, and as the lay advances the said arm *m'* will strike the said projection *q* and cause the lever E to be so moved as to make it act upon the shipper to throw the loom out of gear.

What I claim as my invention, and desire to secure by Letters Patent, is—

A stop-motion, for the purpose described, having for its principal elements a hole 7 and a tumbler *b* in the shuttle, a wheel B, having a sliding tooth *f f'*, attached to one of the shuttle-boxes or to the lay, and a sliding rod *m* and arm *m'*, or their equivalent, attached to the shuttle-box or to the lay, the whole operating together and in combination with the shipper substantially as herein specified.

THOMAS FODEN.

Witnesses:

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