

(No Model.)

L. J. KNOWLES, Dec'd.

2 Sheets—Sheet 1.

F. B. KNOWLES & H. A. MARSH, Surviving Executors.

WEFT STOP MOTION FOR LOOMS.

No. 376,777.

Patented Jan. 24, 1888.

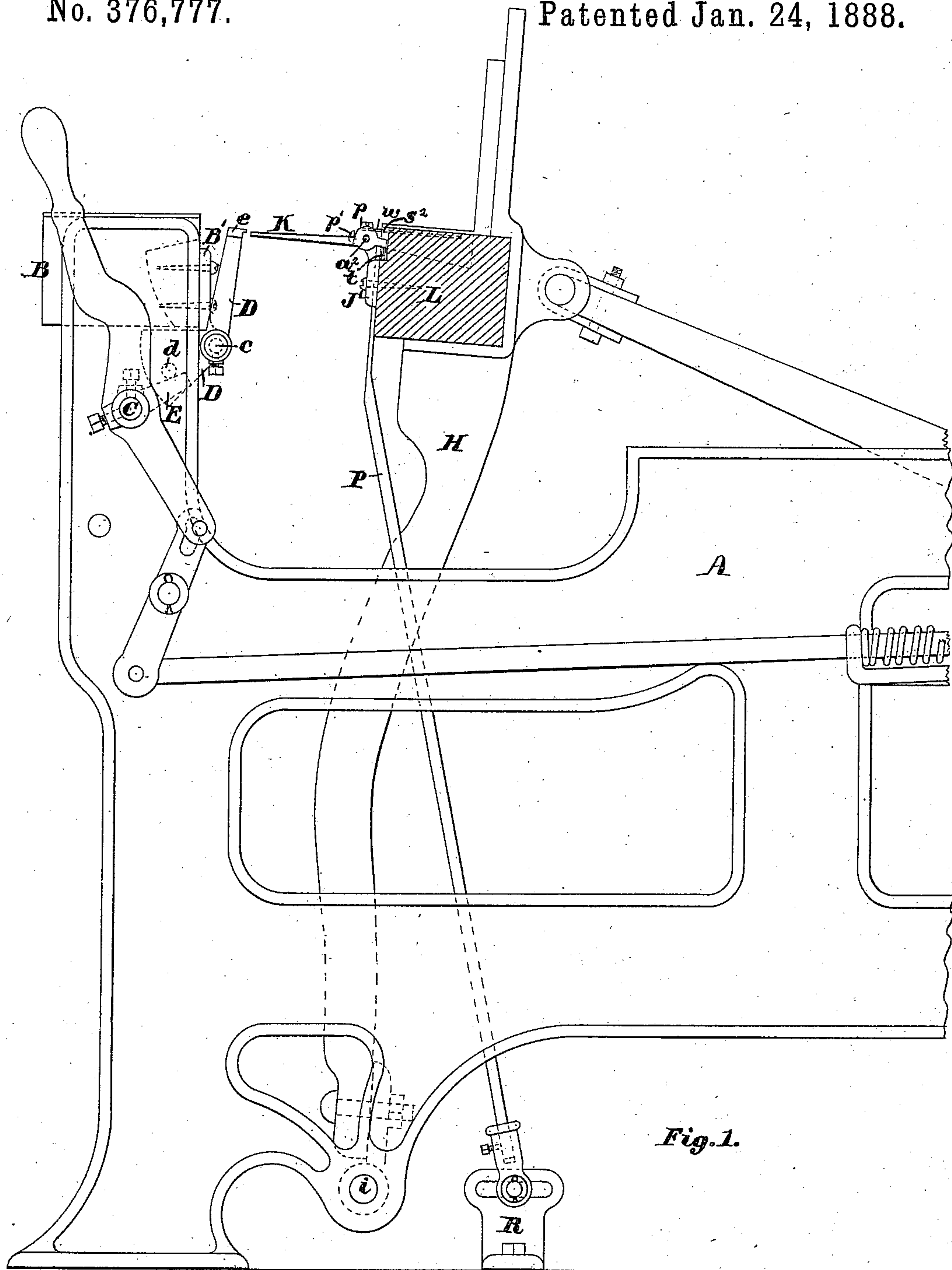


Fig. 1.

WITNESSES

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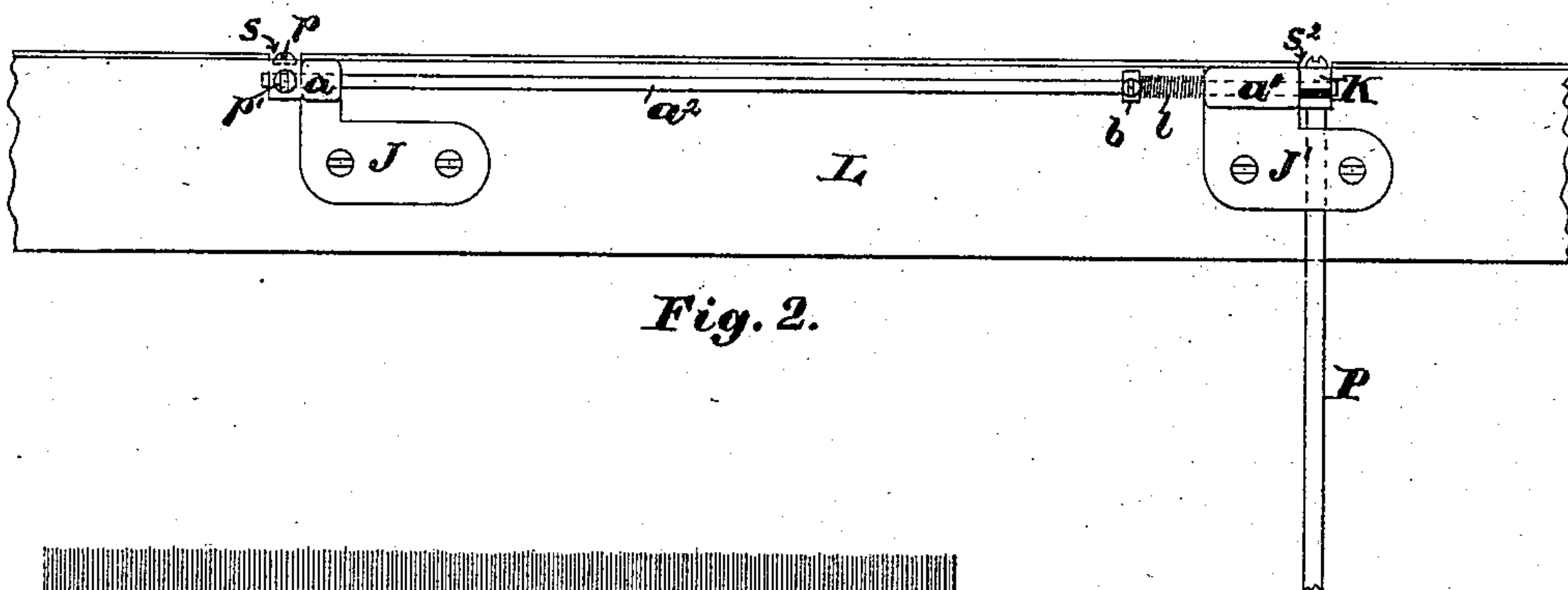


Fig. 2.

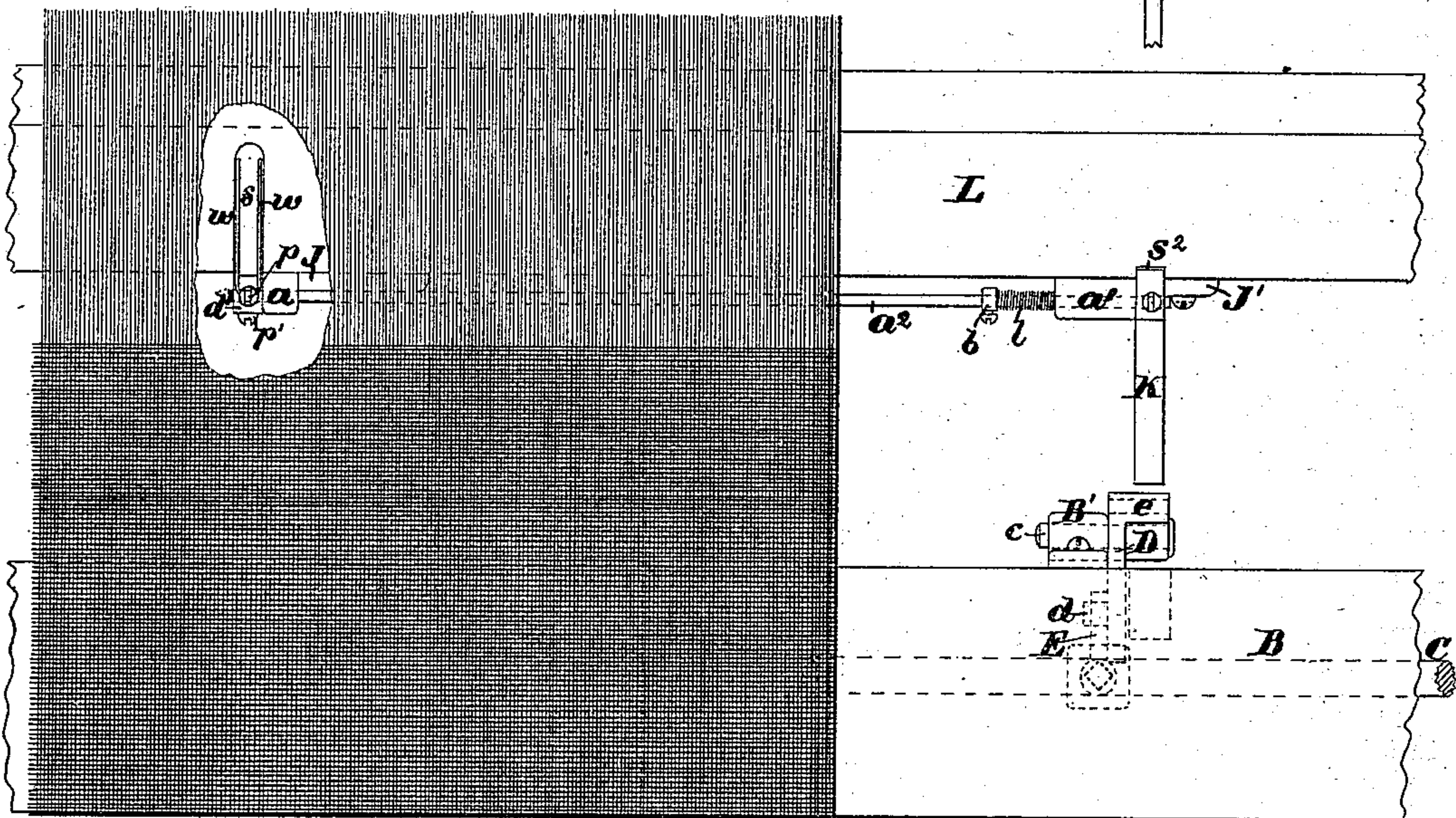


Fig. 5.

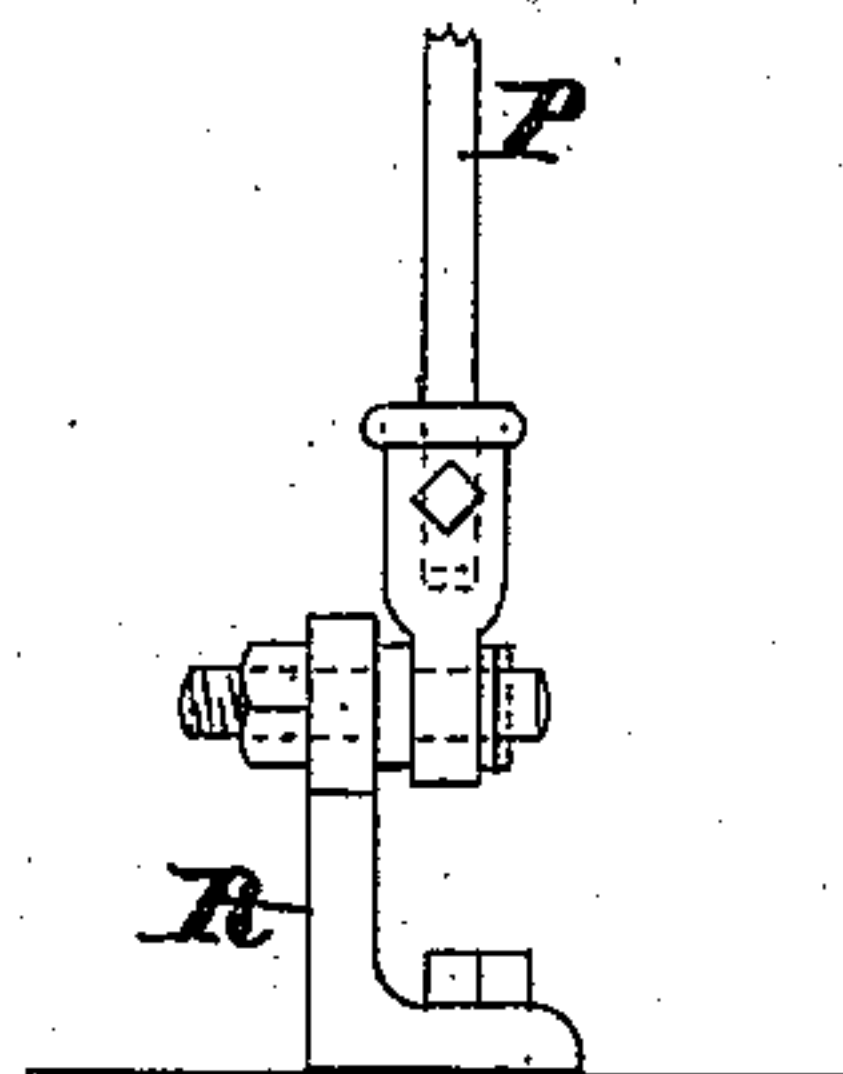


Fig. 4.

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UNITED STATES PATENT OFFICE.

LUCIUS J. KNOWLES, OF WORCESTER, MASSACHUSETTS; FRANCIS B. KNOWLES
AND HENRY A. MARSH SURVIVING EXECUTORS OF SAID LUCIUS J.
KNOWLES, DECEASED.

WEFT STOP-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 376,777, dated January 24, 1888.

Application filed April 20, 1882. Serial No. 58,949. (No model.) Patented in England July 31, 1882, No. 3,629.

To all whom it may concern:

Be it known that I, LUCIUS J. KNOWLES, of Worcester, in the State of Massachusetts, have invented a new and useful Weft Stop-Motion for Looms, (for which British Letters Patent have already been granted to me under date of July 31, 1882, and numbered 3,629,) of which the following is a specification.

The present invention has reference to that class of stop-motions in which the weft feeler-wires are pivoted to the front of the lay within the warp. It embodies inventions described and claimed in my applications Nos. 58,947 and 58,948, filed herewith, and is an improvement thereon.

It consists in a specific form of construction employing, in connection with a slotted lay, a long feeler-shaft, one end of which within the warp carries the feeler-wires, while the other end without the warp carries the dagger, the said feeler-shaft and its feelers and dagger, besides partaking of the motion of the lay in its beats, being rocked by the contact, with the dagger or other rigid projection from the feeler-shaft outside of the warp, of the upper end of a substantially-vertical governing-rod, which is so pivoted at its lower end that it will vibrate with the lay, but upon a different center.

In the drawings, Figure 1 is a side elevation, partially in section, of so much of a loom and attachments thereto as is sufficient to illustrate the construction and mode of operation of my said improved stop-motion. Fig. 2 is a partial front elevation of the lay and parts of the stop-motion thereupon. Fig. 3 is a partial plan of the lay and mechanism attached thereto, and also of the breast-beam and mechanism supported thereby, together with a portion of the warp and woven cloth. Fig. 4 is a detail of construction.

A is the loom-frame.

B is the breast-beam.

C is the shipper-lever shaft, being a rock-shaft in suitable bearings beneath the breast-beam. It has connected with it any ordinary belt-shifting mechanism and a shipper-lever for operating said mechanism by hand.

D is the knock-off lever, being a weighted

elbow-lever pivoted at *c* to a bracket, B', bolted to the back of the breast-beam at a portion thereof lying outside of the warp. The knock-off lever is so weighted that its upper arm in its normal position is nearly perpendicular. This arm has a horizontal projection, *e*, to receive the thrust of the dagger, as hereinafter described. The lower arm carries a pin, *d*, which is in constant contact with an arm or lever, E, rigidly secured to the shipper-lever shaft C, so that when the dagger strikes the projection *e* of the knock-off lever the said pin *d* bears upon the arm E to rock the shipper-lever shaft and operate the belt-shifting mechanism. The projection *e* has a flange, as shown, to prevent the point of the dagger from slipping over it.

L is the lay.

H is one of the lay-swords, pivoted to a pin, *i*, at the bottom of the loom-frame, the said pin being the center of vibration of the lay and parts attached to the lay.

J and J' are two plates, secured to the front face of the lay by screws, as shown, one within the warp and the other outside of it. Each plate has at the top a lug, *a* and *a'*, in which are bearings for the long feeler-shaft *a*², as shown. The feeler-wires *w* are secured to the inner end of the feeler-shaft, in front of the feeler-slot *s*, by means of an adjustable sleeve, *d'*, as shown. A screw, *p*, secures the wires to the said sleeve, and a screw, *p'*, secures the sleeve to the shaft.

To the outer end of the feeler-shaft *a*², outside of the lug *a'*, is rigidly secured the dagger K, as shown. Its rear end extends into a small slot, *s*², in the lay. A stop, *t*, in said slot *s*² limits the downward movement of the rear end of the dagger, and consequently of the feeler-wires, since the feeler-wires and dagger are rigidly secured to the same shaft. A spring, *l*, wound around the feeler-shaft *a*², and having one end secured to the lug *a'*, while the other is secured to a sleeve, *h*, held upon said feeler-shaft in any required position by a screw, as shown, tends to throw the rear end of the dagger down upon the stop *t*.

The dagger K and the knock-off lever D are located relatively to each other, one upon the

lay and the other upon the breast-beam, and both outside of the warp, as shown.

P is the before-mentioned governing-rod, pivoted to a stand, R, upon the floor beneath the loom, as shown. Near its upper end it is bent, as shown, so that its upper portion is parallel with the front face of the lay. This upper portion enters a slot cut in the rear of the plate J' in the vertical plane of the dagger and has a vertical play in this slot, as herein-
after described.

The adjustment is such that when the lay reaches a proper place in its backward movement the upper end of the governing-rod strikes the rear end of the dagger, and through the remainder of the backward movement of the lay overcomes the force of the spring *l* and raises the rear end of the dagger, and consequently rocks the feeler-shaft *a*² and raises the feeler-wires. As the lay comes forward the governing-rod recedes through the slot in the back of the plate J' and is followed down by the rear end of the dagger under the force of the spring *l*. The feeler-wires fall with the rear end of the dagger until in the normal operation of the loom they rest upon the weft-thread. If the weft-thread has been well thrown, the feeler-wires resting upon it hold up the dagger against the force of the spring *l* for a portion of the forward movement of the lay, so that its point passes under the projection *e* of the knock-off lever; but if the weft-thread has not been well thrown and the feeler-wires fail to find it they fall immediately into the slots *s* in the lay, and accordingly the rear end of the dagger descends in the slots *s* until it rests upon the stop *t*, the point of the dagger in the meantime rising so as to strike the projection *e* of the knock-off lever and operate the belt-shifting mechanism.

A slot is cut in the breast-beam, as shown in

dotted lines, to receive the point of the dagger when it passes under the projection *e*, and is of such shape as to permit the vibration of the dagger and feeler-wires to begin at any required time.

In the normal operation of the loom, after the point of the dagger has passed under the knock-off lever, the feeler-wires draw off from the weft-thread and fall into the slots *s*, in order that they may not interfere with the beating up of the weft.

The shipper-shaft-operating devices shown herein are shown, described, and made the subject of claims in my application No. 58,947, filed simultaneously herewith, and therefore are not claimed herein; nor do I claim herein pivoting both feeler-wires and dagger to a single shaft or pivot upon the front face of the lay, having made substantially such claim in my said application No. 58,947; nor do I claim, broadly, herein the use of a long feeler-shaft upon the front face of the lay carrying the feelers within the warp, while the rocking mechanism is without the warp, such being the substance of claims in my said application No. 58,948.

I do claim herein—

The combination, with the slotted lay and bearings upon the front face thereof, of the long feeler-shaft *a*², one end of which lies within the warp and is provided with feeler-wires *w* opposite the slot in said lay, while the other end extends without the warp, the dagger K, rigidly attached to said feeler-shaft without the warp, and the pivoted governing-rod P, also without the warp, substantially as described.

LUCIUS J. KNOWLES.

Witnesses:

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H. H. MERRIAM.