

(No Model.)

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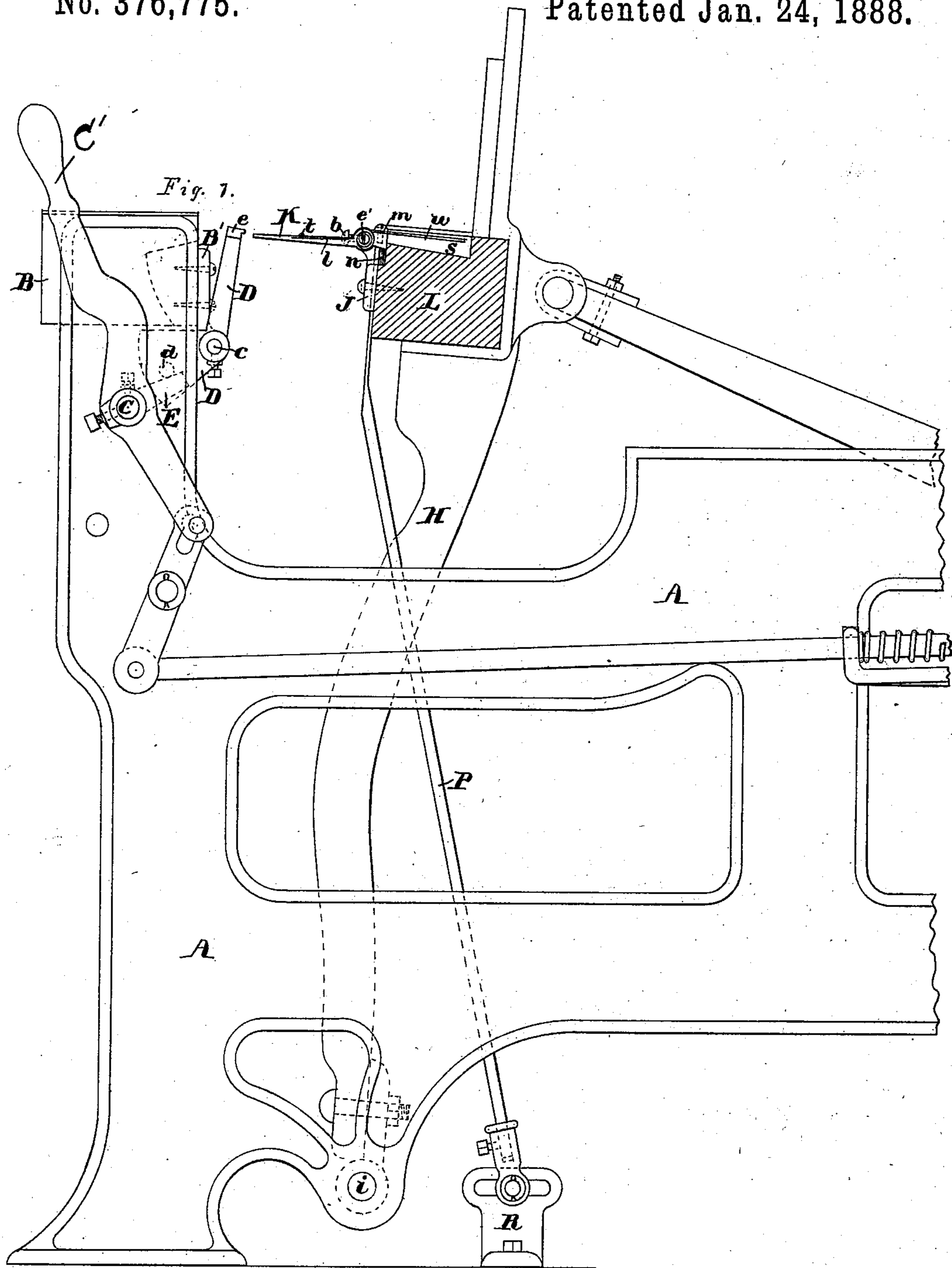
L. J. KNOWLES, Dec'd.

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

WEFT STOP MOTION FOR LOOMS.

No. 376,775.

Patented Jan. 24, 1888.



WITNESSES

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Lucius J. Knowles [INVENTOR]

by H. W. Swan
his atty.

(No Model.)

2 Sheets—Sheet 2.

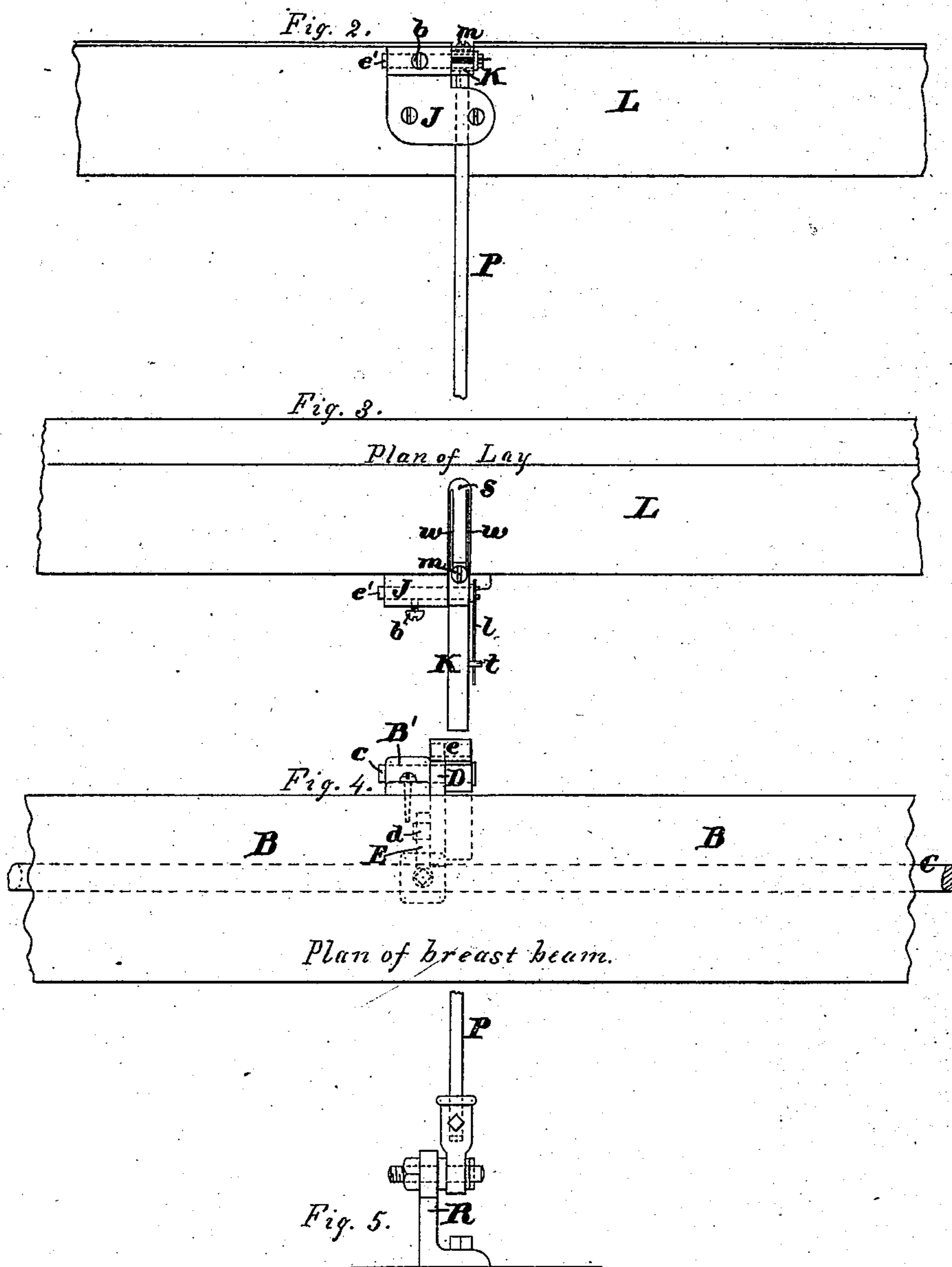
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J. M. Rose
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UNITED STATES PATENT OFFICE.

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. 376,775, dated January 24, 1888.

Application filed April 20, 1882. Serial No. 58,947. (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 Improvement in Weft Stop-Motions 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, like several others intimately related to this and to each other that form the subjects-matter of several other applications filed simultaneously herewith, 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, as distinguished from stop-motions employing pivoted weft-feelers that can only be used outside of the warp at the end of the lay; and the main feature of the present invention consists in placing the dagger and feeler-wires upon a single pivot.

Other features of the invention relate to details of construction; and of these the most important are combinations in which, while the dagger and feeler-wires are pivoted together upon the front of the lay, with the feeler-wire within the warp, as above mentioned, they are controlled in their normal vibrations by a device which I term the "governing-rod." This device is fully described in my application Serial No. 58,946, originally filed simultaneously herewith, and subsequently renewed June 27, 1885, Serial No. 170,015. It is a substantially perpendicular rod, whose upper and free end passes through a hole in a rigid attachment to the lay, while its lower end is so pivoted that the rod will vibrate with the lay, but upon a different center. When the lay moves backward, the said rod not only swings back with it, but has at its upper end a longitudinal motion upward through the hole, and in course of its double motion strikes and lifts a horizontal lever which is pivoted to the lay. When the lay moves forward, the upper part of the governing-rod recedes through the hole and the horizontal lever follows it down, either from its own weight or by force of a spring.

In the stop-motion of said application No. 170,015 the said horizontal lever serves as the dagger of the weft stop-motion and is connected by a connecting-rod and crank-disk with the feeler-shaft. Consequently, when the governing-rod lifts the rear end of the dagger, to which the connecting-rod is attached, it raises the feeler-wires also, and when the dagger follows the receding governing-rod down it pulls down the feeler-wires.

In the present invention in operative mechanism I make use of substantially the same governing-rod, and the horizontal lever which is lifted by it and follows it down performs the office of a dagger, substantially as in the mechanism of my said application No. 170,015; but in the present mechanism, instead of there being separate shafts or pivots for the dagger and feeler-wires, they have one and the same pivot and vibrate or tilt together in opposite directions as one piece, the actual construction being that the dagger is hung upon a stationary pivot in front of the feeler-slot in the lay and that the feeler-wires project from the rear end of the dagger back to the pivot in substantially the same plane with the dagger.

In the drawings, Figure 1 is a side elevation, partially in section, of so much of a loom as is necessary to illustrate the invention herein claimed. Fig. 2 is a partial front elevation of the lay and parts of the stop-motion thereupon. Fig. 3 is a plan of the same. Fig. 4 is a partial plan of the breast-beam and mechanism supported thereby belonging to the belt-shifting mechanism operated by the dagger. Fig. 5 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, C', for operating said mechanism by hand.

D is the knock-off lever, the same being a weighted bent lever rocking upon a pin, c, in a bracket, B', that is bolted to the back of the breast-beam. The upper arm of the knock-off lever is nearly perpendicular in its normal

position and has a horizontal projection, *e*, to receive the thrust of the dagger, as hereinafter described. The lower arm is weighted and carries a pin, *d*, which is in constant contact
5 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
10 belt-shifting mechanism.

L is the lay, provided with a slot, *s*, at its upper front corner within the warp, as shown.

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

J is a bracket secured to the lay in front of the said slot *s* by screws, as shown. Near the upper edge of the lay the bracket *J* has a projection, from a hole in which projects a pin, *e'*, which serves as a pivot for the dagger *K*. This pin *e'* is held in any required position in said hole by a screw, *b*, and since the feeler-wires and dagger are in one piece, as will hereinafter appear, the adjustment of both feeler-wires and dagger is regulated by this single screw.
25 The dagger vibrates freely upon this fixed pin and is held thereon by a washer and screw, as shown. The rear end of the dagger may be so heavy relatively to the forward end that the rear end will tend to fall of itself and keep the point of the dagger up; but in the mechanism shown a spring, *l*, one end of which passes through the pin *e'*, while the other bears upon
30 a pin, *t*, in the dagger, tends to keep the rear end and the point of the dagger in these positions.

The feeler-wires *w* are secured to the rear end of the dagger by a screw, *m*, as shown.
40 A stop, *n*, limits the downward vibration of the rear end of the dagger, and consequently the downward vibration of the feeler-wires when they go below the place of the weft-thread. In the position shown in the drawings the feeler-wires have passed below the place of the weft-thread and the rear end of the dagger rests on the stop *n*, the point of the dagger being in position to strike the horizontal arm *e* of the knock-off lever before the
45 finish of the forward movement of the lay. This horizontal arm *e* has a flange, as shown, to prevent the dagger from slipping over the arm.

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 or bracket *J* in the vertical plane of the dagger, and has a vertical play in this slot, as hereinafter described.

The adjustment is such that when the lay reaches a proper place in its backward movement the upper end of the governing-rod
65

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 feeler-wires. As the lay comes forward, the governing-rod recedes through
70 the slot in the back of the plate *J* and is followed down by the rear end of the dagger, which brings with it the feeler-wires, until, in the normal operation of the loom, they rest upon the weft-thread. If the weft-thread has
75 been well thrown, the feeler-wires resting upon it hold up the dagger for a portion of the remainder 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-
80 thread has not been well thrown and the feeler-wires fail to find it, they fall immediately into the slot *s* in the lay, and the point of the dagger rises, so as to strike the said projection *e* and operate the belt-shifting mechanism. 85

In the normal operation of the loom, after the point of the dagger has passed under the arm *e*, the feeler-wires draw off from the weft-thread and fall into the slot *s*, in order that they may not interfere with the beating up of
90 the weft. 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*. It is of such shape as to permit the vibration of the dagger and feeler-wires to
95 begin at any required time.

I do not claim herein the combination, with a lay and feeler-wires pivoted to the front thereof, a feeler-operating lever, and a connection between said lever and said wires, of the
100 vibrating rod *P* and bearing-point therefor outside and independent of the lay, the said pivot being provided with means of adjustment to and from the center of vibration of the lay, and the said vibrating rod being pro-
105 vided with a telescopic adjustment, as the same forms the subject-matter claimed in my application No. 170,015.

The before-mentioned governing-rod is shown in the drawings adjustable as to length,
110 and also as to the position of its pivot; but these adjustments are not herein claimed, since they form the subject-matter of claims in my said application No. 170,015.

I here claim—

1. In a weft stop-motion, the combination, with a lay provided with a slot at its upper front corner within the warp, of a dagger and feeler-wires provided with a single pivot, from
120 which they project in opposite directions, the said pivot being in front of said slot, and means for vibrating the combined feeler and dagger to feel for the weft, substantially as described.

2. The combination, with the lay *L*, provided with the slot *s* at its upper front corner, of the feeler-wires *w*, dagger *K*, and pivot *e'*, and the pivoted governing-rod *P*, substantially as described.

3. The combination, with the lay *L*, pro-
130

vided with slot *s*, of the feeler-wires *w*, dagger
K, and pivot *e'*, and the screw *b*, substantially
as described.

4. The combination, with the lay, dagger,
5 and weft-feeling devices, and the breast-beam,
shipper-lever shaft, and shipper-lever handle,
of the arm E and the weighted elbow-lever

D, provided with pin *d* and projection *e*, sub-
stantially as described, for the purpose speci-
fied.

LUCIUS J. KNOWLES.

Witnesses:

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H. H. MERRIAM.