

(No Model.)

2 Sheets—Sheet 1.

L. J. KNOWLES, Dec'd.

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

WEFT STOP MOTION FOR LOOMS.

No. 376,776.

Patented Jan. 24, 1888.

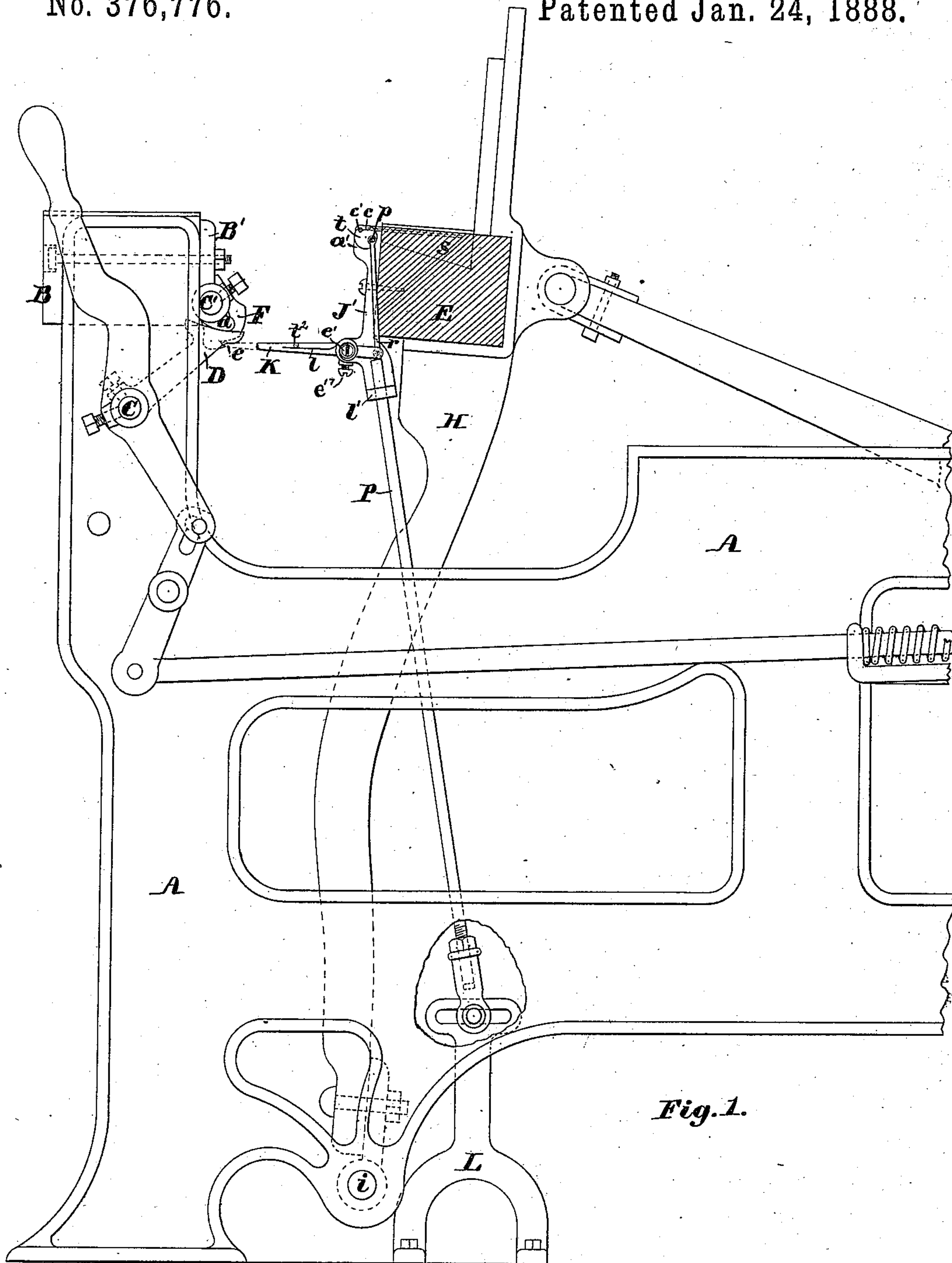


Fig. 1.

WITNESSES:

J. M. Rose
W. P. Peble Jr.

Lucius J. Knowles [INVENTOR]
by W. W. Swan
his atty

(No Model.)

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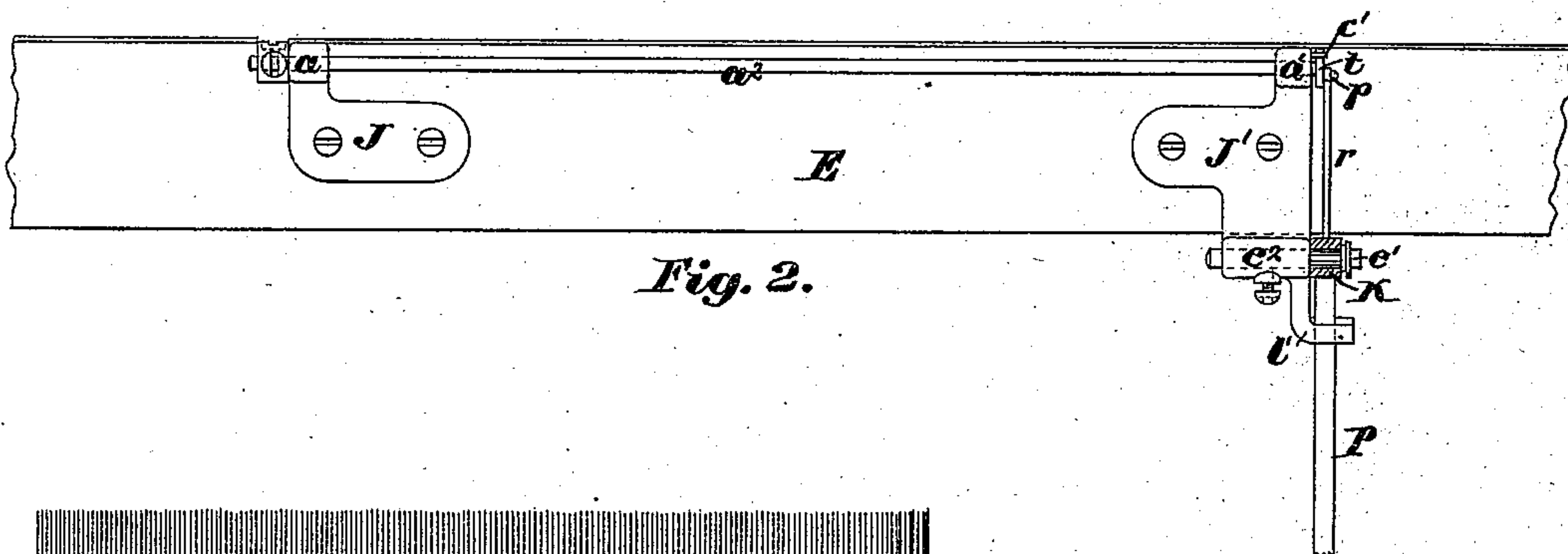


Fig. 2.

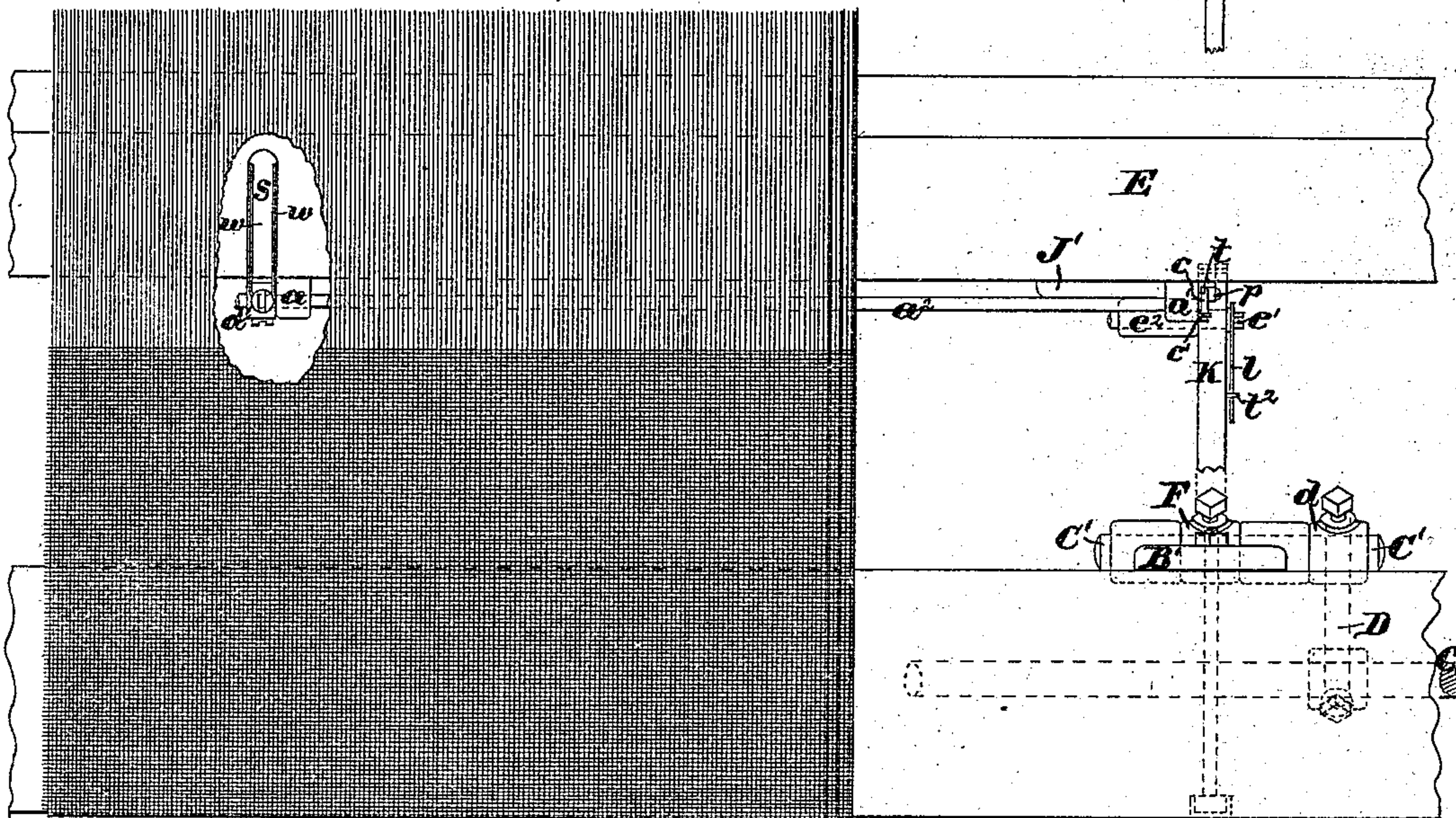


Fig. 3.

WITNESSES:

J. M. Ross
W. P. Preble Jr.

Lucius J. Knowles [INVENTOR]
by H. W. Swan
his atty.

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. 376,776, dated January 24, 1888.

Application filed April 20, 1882. Serial No. 58,948. (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 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 it consists in so pivoting the fingers while the mechanism for vibrating them in the normal operation of the loom, which requires frequent adjustment, is placed at the end of the loom without the warp.

The present invention is an improvement upon the invention set forth in my application No. 58,946, filed herewith, afterward renewed June 27, 1885, Serial No. 170,015.

Details of construction pointed out in the claims form subordinate parts of the invention.

In the drawings, Figure 1 is a side elevation, partially in section, of so much of a loom as is necessary to illustrate my present invention. Fig. 2 is a partial front elevation of the lay and mechanism attached thereto, but with the dagger shown in section. 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.

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 by which said mechanism may be operated by hand.

F is the knock-off lever, rigidly secured to a rock-shaft, c' , which has bearings in a bracket, B' , bolted to the back of the breast-beam outside of the warp, and said lever F has a

notch, e , to receive the thrust of the dagger, as hereinafter described. A cam projection, d , is also rigidly secured to the rock-shaft C' , and bears upon an arm or lever, D, rigidly secured to the shipper-lever shaft C, to rock the said shipper-lever shaft and operate the belt-shifting device when the dagger strikes the said notch e .

E is the lay.

H is one of the lay-swords, pivoted to a pin, i , at the bottom of the loom-frame, this 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. Each plate has at the top a lug, a and a' , in which are bearings for a 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 , which is in the front upper corner of the lay within the warp, by means of an adjustable sleeve, d' , as shown.

K is a lever, serving in the mechanism shown both as a feeler-operating lever and a dagger; but in the present invention its use as a dagger may be disregarded. The feeler-lever K vibrates upon a pin, e' , projecting from a lug, e^2 , at the lower part of the plate J', which extends below the lay, as shown. The said lever K is connected with the outer end of the feeler-shaft a^2 , for the purpose of imparting motions thereto, which shall be communicated to the feeler-wires by means of a connecting-rod, r , a wrist-pin, p , and a crank-disk, t . A spring, l , one end of which passes through the pin e' , while the other bears against a small pin, t^2 , on the dagger K, tends to throw the point of the dagger up and the rear end down. The pin e' is held in any required position in the lug e^2 by a set-screw, e^{17} , as shown, to regulate the tension of the spring.

A slot, c , in the crank-disk t and a pin, c' , in the lug a' limit the extreme movements of the feeler-wires and dagger in their vertical vibrations. Suitable slots are cut in the back of the plate J' and the front of the lay to accommodate the connecting-rod r .

P is a rod which I term the "governing-rod"

or "pusher," the same being a substantially-perpendicular rod whose upper and free end passes through a hole in a lug, l' , at the lower part of the plate J, in the vertical plane of the
 5 feeler-operating lever K, while its lower end is pivoted to a stand, L, beneath the loom. It is the same governing-rod which is described in my applications Nos. 170,015, (originally 58,946,) 58,947, and 58,949, and has the same
 10 adjustments, and since the devices for effecting those adjustments form the subject-matter of claims in application No. 170,015, they are for the purposes of the present application disclaimed; nor is the rod itself claimed herein,
 15 except in combination with other details of construction, the main feature of the present invention being the long feeler-shaft a^2 .

It is not essential that the feeler-operating lever be employed as a dagger. An advantage within the present invention will be
 20 gained if the feeler-operating lever be placed outside of the warp and the feeler-wires within, whether the feeler-wires are employed to operate a dagger directly, as herein described,
 25 or, as in many well-known stop-motions in practical use, to operate a locking mechanism which controls a dagger having normally a vertical vibration independent of the feeler-wires. So, too, without departing from my
 30 present invention, although it is not essential thereto, the feeler-operating lever, when placed outside of the warp, may be attached directly to the feeler-shaft—a construction made clear in my said application No. 58,949.

35 The operation of the mechanism actually shown is the same as that of the stop-motion shown in my application No. 170,015. The adjustment is such that when the lay reaches the proper place in its backward movement
 40 the upper end of the governing-rod strikes the rear end of the feeler-operating lever K, (which, as before stated, serves also as the

dagger,) and through the remainder of the backward movement of the lay overcomes the force of the spring l or the weight of the feeler-
 45 operating lever and raises the feeler-wires.

As the lay returns, the governing-rod recedes through the hole in the lug l' , and the dagger or feeler-operating lever, under the force of the spring l or its own weight, follows the
 50 governing-rod down and pulls down the feeler-wires until, in the ordinary operation of the loom, the feeler-wires find the weft-thread, which, if properly thrown, thereafter supports them until the point of the dagger has passed
 55 under the knock-off lever, when they draw off and fall into the slot s , that they may not interfere with the beating up of the weft; but if the weft-thread has not been well thrown the feeler-wires fall at once with the slot s , and the
 60 rear end of the dagger or feeler-operating lever follows the governing-rod still farther down in the receding movement of the latter, while the point rises to strike the knock-off lever and operate the belt-shifting mechanism.
 65

I claim—

1. The combination, with the lay and bearings upon the face thereof, of the long feeler-shaft a^2 , provided with feeler-wires at one end within the warp, the pivoted governing-rod at
 70 the other end of said shaft without the warp, and actuating-connections intermediate the governing-rod and the warp, substantially as described.

2. The combination, with the lay and bearings therein, of the long feeler-shaft a^2 , the feeler-wires w , connecting-rod r ; wrist-pin, crank-disk t , dagger K, and pivoted governing-rod, substantially as described.
 75

LUCIUS J. KNOWLES.

Witnesses:

J. M. RUSSELL,

H. H. MERRIAM.