4 SHEETS.

SHEET 1.

[60.]

ISAAC LINDSLEY'S
Serving Mechanism.

No. 119,278. Patented Sep. 26, 1871.

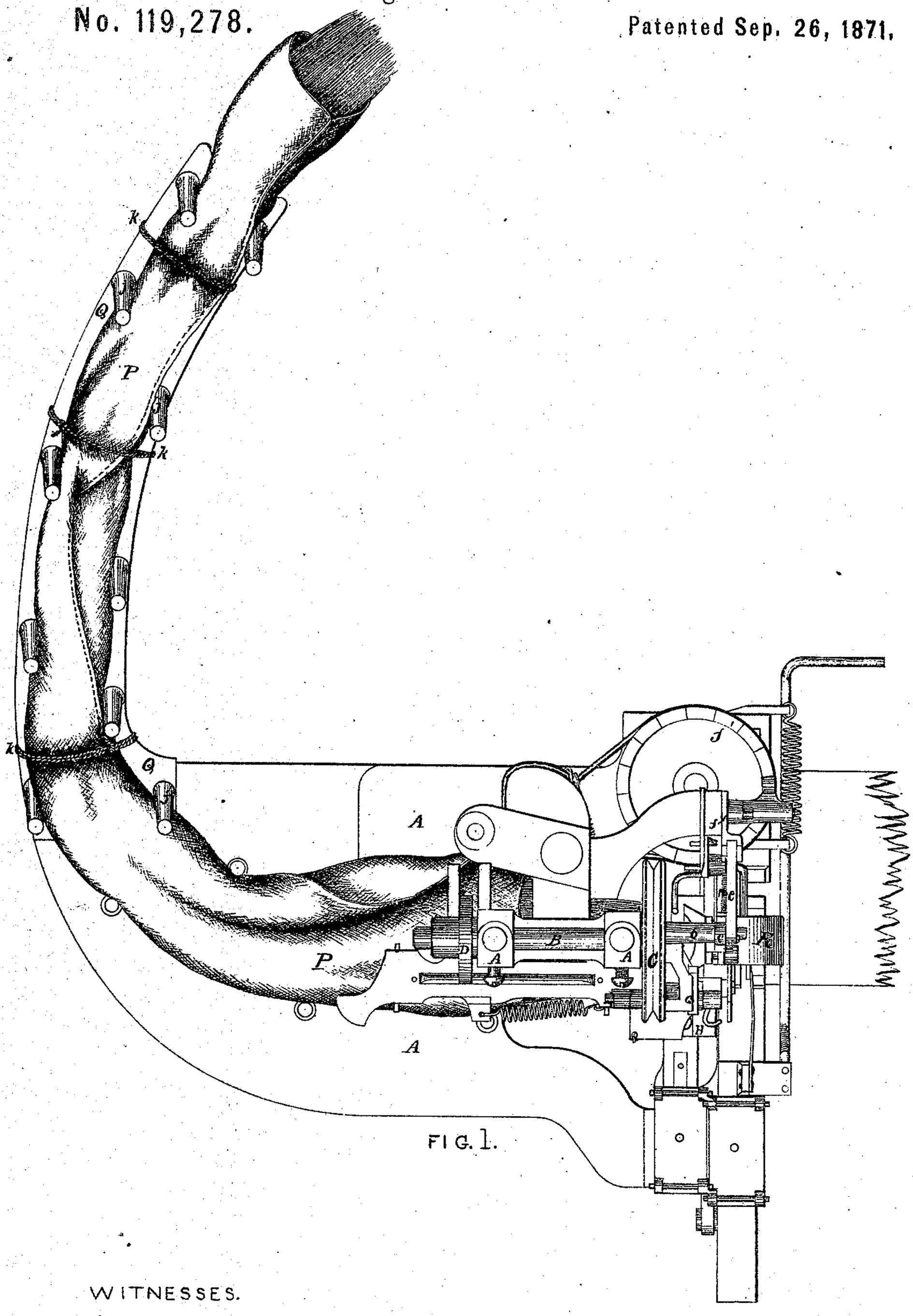

FIG. 1.

WITNESSES.

Frank H. Rogers

Ambrose Lowe

INVENTOR.

Isaac Lindsley

4 SHEETS.
[60.]

SHEET 2.

ISAAC LINDSLEYS

Serving Mechanism.

No. 119.278. Patented Sep. 26, 1871.

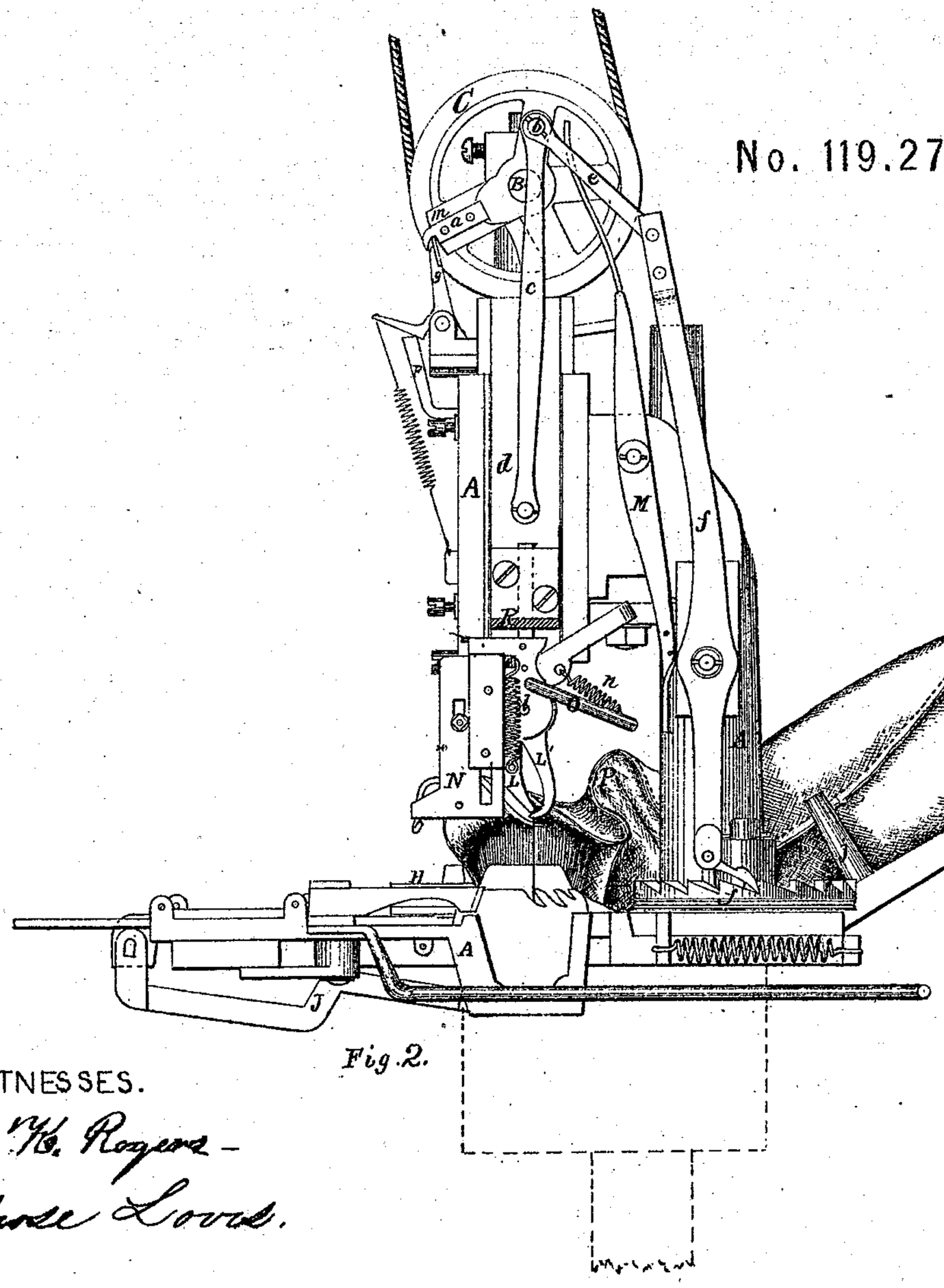

Fig. 2.

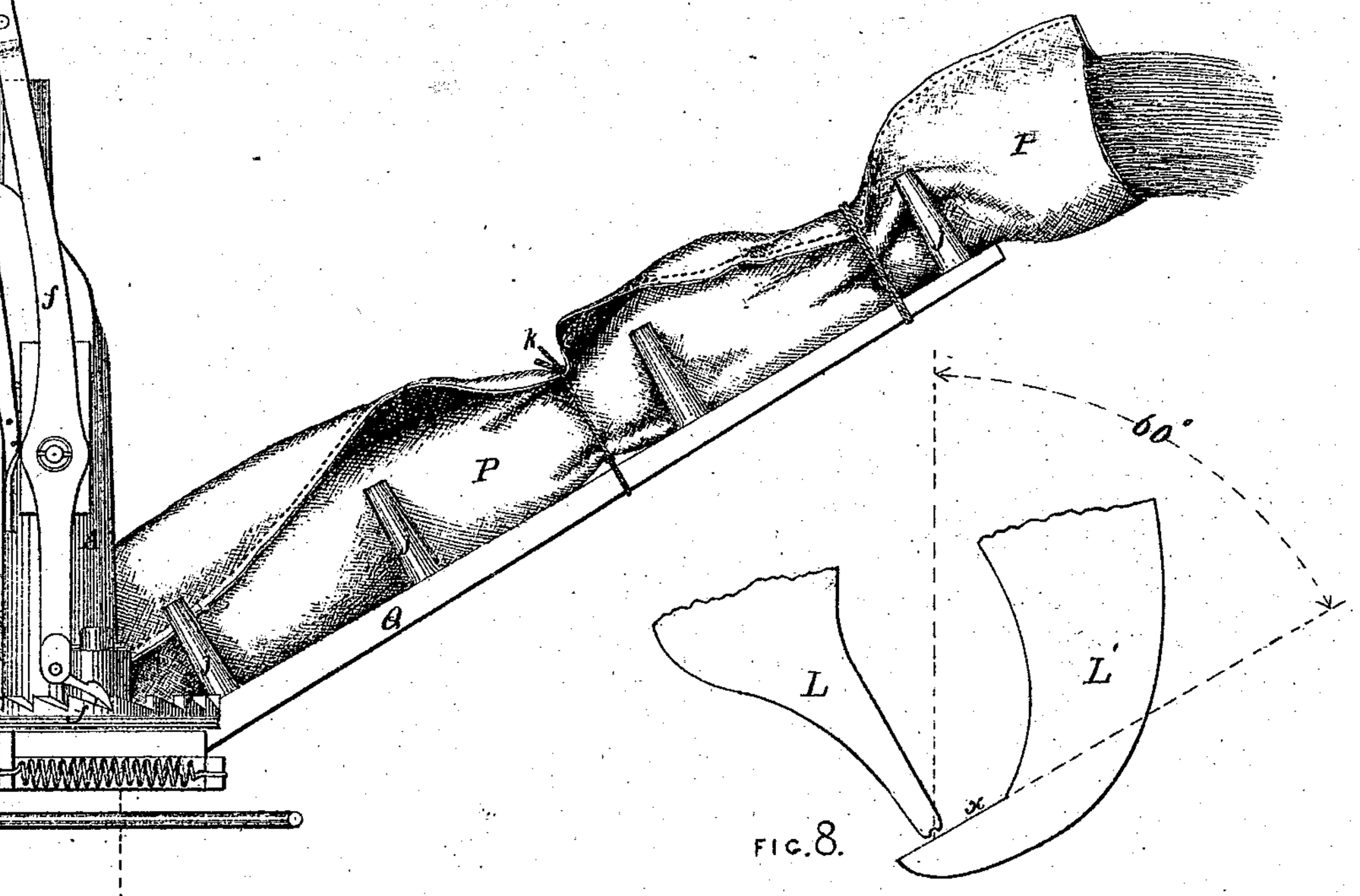

FIG. 8.

WITNESSES.

Frank W. Rogers -
Cushman Lord.

INVENTOR.

Isaac Lindsley

4 SHEETS.
[60.]

SHEET 3.

ISAAC LINDSLEY'S
Serving Mechanism.

No. 119,278. Patented Sep. 26, 1871.

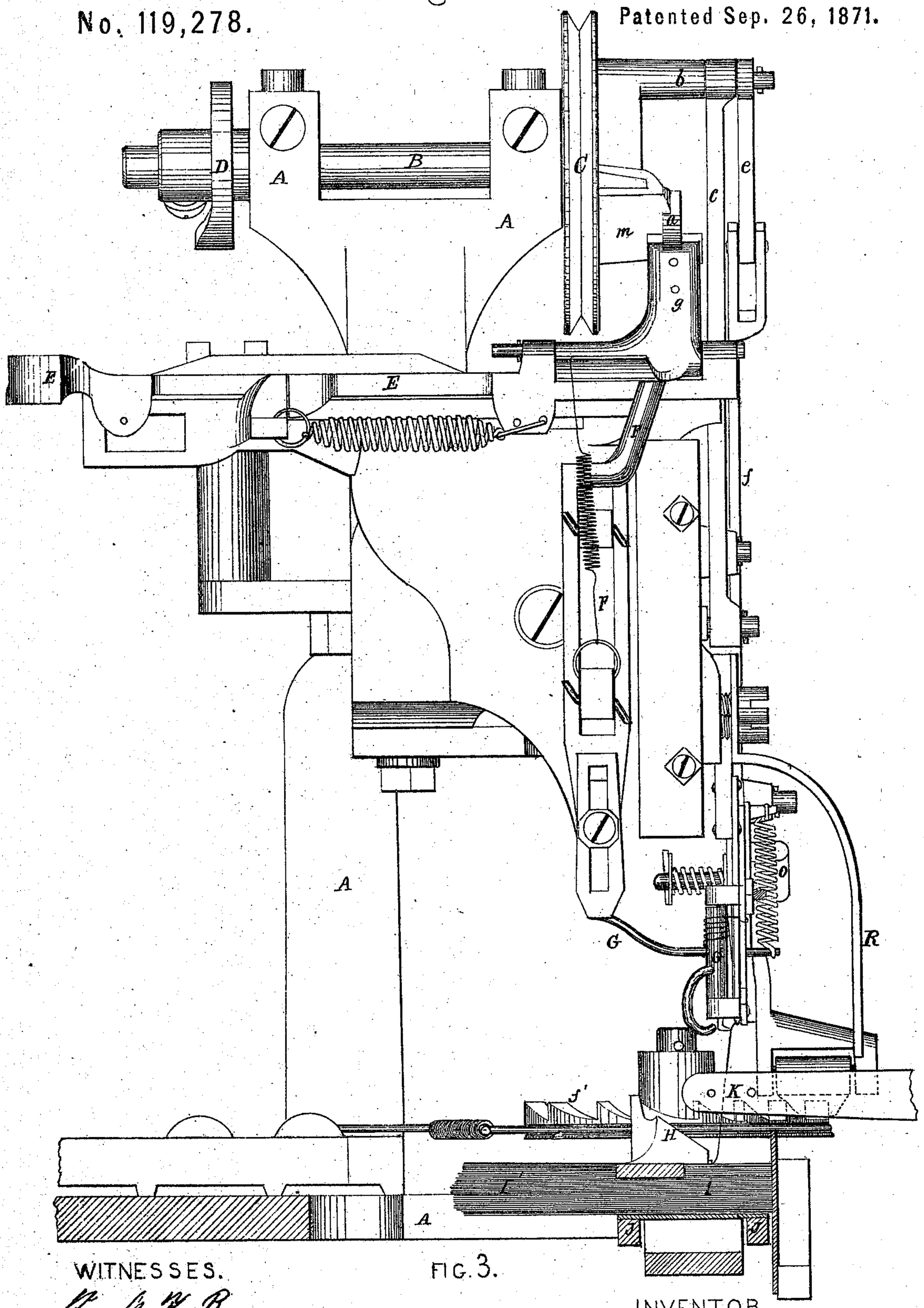

FIG. 3.

WITNESSES.

Frank H. Rogers.

Ambrose Lowe.

INVENTOR.

Isaac Lindsley

4 SHEETS.
[50.]

SHEET 4.

ISAAC LINDSLEY'S
Serving Mechanism.

No. 119,278. Patented Sep. 26, 1871.

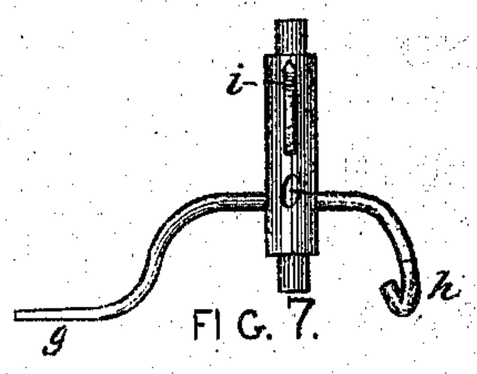

FIG. 7.

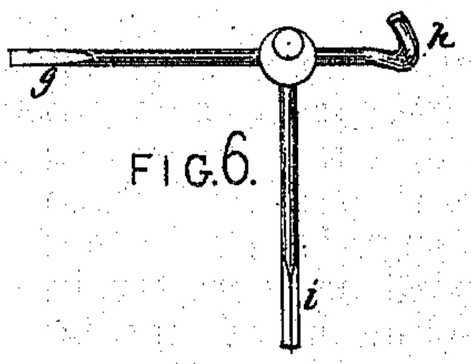

FIG. 6.

FIG. 5.

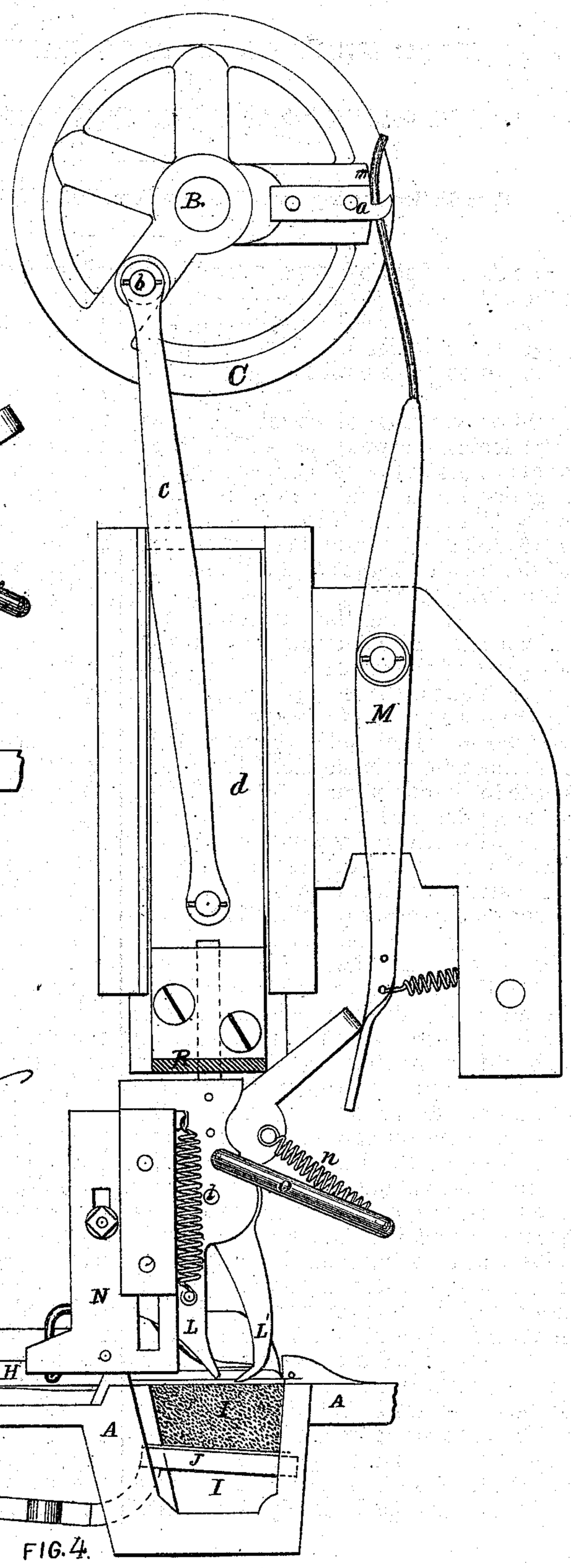

FIG. 4.

INVENTOR.

Isaac Lindsley

WITNESSES.

Frank H. Rogers

Ambrose Lord

UNITED STATES PATENT OFFICE.

ISAAC LINDSLEY, OF PAWTUCKET, RHODE ISLAND.

IMPROVEMENT IN LOOMS FOR WEAVING HAIR-CLOTH.

Specification forming part of Letters Patent No. 119,278, dated September 26, 1871.

Be it known that I, ISAAC LINDSLEY, of Pawtucket, in the county of Providence and State of Rhode Island, have invented certain Improvement in Looms for Weaving Hair-Cloth and other similar fabrics, of which the following is a specification:

This invention consists of certain improvements in the looms for weaving hair-cloth for which several Letters Patent of the United States have been granted to me, which are respectively dated June 25, 1861, and October 25, 1864, and November 15, 1864. The first improvement in this application relates to the construction of the serving mechanism, so called, and especially to the manner of constructing the selecting-instrument; and consists in so forming and arranging the two parts of the instrument, that is, the notched part or blade that receives and separates a single hair from the bunch of hairs, and the pad, so called, or the part that holds the hair in the notch of the other part, that they shall be opened and thrust into the bunch of hairs, and while within it closed, to confine the hair selected before the instrument is withdrawn; by which means the hair is selected and held with greater certainty than by the instrument that I have before used; and it also consists in other peculiarities of construction pertaining to the selecting-instrument, that will be described. The second improvement relates to the method of holding the free part of the bunch of hairs from which the wefts are selected in the loom, so that the hairs shall be free to be withdrawn singly, and at the same time shall not disarrange those remaining in the bunch, until all are drawn out. In serving the weft-hairs to the loom automatically, as is shown and described in my patents before mentioned, the bunch of hairs is held at one end with a yielding pressure, in a recess or space, in which part the selecting-instrument acts, while the rest of the bunch is left free; also, in preparing the hair for weaving, it is moistened, and it is desirable to retain it in that condition until it is woven; and further, as the serving mechanism and bunch of hairs from which the weft is supplied are both carried upon and moved with the lay it is necessary that the hair should be so confined that it shall not be disarranged by the motion of the lay. To meet all these conditions is the purpose of this improvement, which consists in carrying the free part of the bunch, wrapped loosely in a sheath of woolen or other cloth, and laying it in or upon a proper support attached to the lay, in a curved position and inclined upward in a manner that will be described, by which arrangement all these conditions are fulfilled. The third improvement consists in the use of a guard or protector, in combination with the selecting-instrument, by which the instrument is protected from the nipper when it approaches to seize the hair, in case of accident, as will be described.

In the drawing, Figure 1 is a plan of the main parts of the serving mechanism, so called. Fig. 2 is an elevation. Fig. 3 is a sectional elevation looking toward the back of the loom. Figs. 4, 5, 6, 7, and 8 are detached views of parts which will be referred to in the description.

Many of the details of the mechanism are omitted in the drawing, as they have been already shown and described in the previous patents mentioned; and so much of the mechanism only is therefore shown as serves to show the nature of the improvements which form the subject of this application.

A represents the frame or bed-plate upon which the operative parts are arranged, and which is attached to the left-hand end of the race-beam, which is shown by the dotted lines. B is the crank-shaft which operates the selecting-instrument, which is revolved by a round band working upon the grooved pulley C. Upon the outside of this pulley are carried the catch *a* and the crank-pin *b*, which, by the connecting-rod *c*, imparts a reciprocating motion to the slide *d*, and also, by the connecting-rod *e*, works the pawl-lever *f*, that, by the ratchet-wheel *f'*, works the mechanism that moves the bunch of hair back and forth under the selecting-instrument, as is described in my previous patents. D is a catch-plate upon the opposite end of the shaft B, with which the detent works, which is brought into engagement by the movement of the lay, the mechanism of which is not shown. E is the slide-rod which carries the detents and releases them. F is a vertically-sliding rod, by which the detent *g* is brought into engagement with the catch *a*, and which is worked by the detecter G. H is the incline for oscillating the detecter G. I is the recess in which the forward end of the bunch of hair I' is held. J is the clamp or presser, which is pressed upward for holding the end of the bunch of hair by a spring, not shown.

K is the forward part of the nipper-jaws in the position in which they seize the hair, as seen in Fig. 3. All the parts before enumerated, and some others, are, in construction and operation, substantially like those shown and more particularly described in my previous patents. L is the selecting-instrument, which is attached to and carried by the lower end of the slide *d*, as shown, and is composed of two parts, L and L′, of the form shown more particularly in Figs. 2, 4, and 8. The part or blade L has at its lower end a narrow rounded point, with a minute notch in it a little less in depth than the diameter of the hair, as seen in Fig. 8, which is a magnified view of the points of the two blades of the instrument. The manner of forming the points of the two parts of the instrument, and the position in which the inclined surface on one part stands in relation to the other notched part, is of great importance to its proper working; and in practice I have found that the straight surface at *x*, Fig. 8, should stand at an angle of about sixty degrees with the radius drawn from the point of contact of the two blades to the center of the joint *l*, upon which the blade L′ oscillates. The upper end of the blade L′ projects to one side so as to co-operate with the lower end of the lever M, by which the lower ends of the blades are separated. The upper end of the lever M is forced outward at each revolution of the pulley C by the cam *m* upon it, which presses the lower end of the lever against the upper end of the blade L′ and opens the points, as is seen in Fig. 4. This is done just before the points of the instrument are thrust into the hair. The blades are closed while in the hair by the spring *n*, which is attached to the blade L′ and to the stirrup O, which is fixed in the blade L, as is shown. N is a plate that slides up and down upon the blade L, being guided thereon as is shown, upon the back side of which the detecter G is carried, the axis of which oscillates in bearings attached to the plate N. The construction and operation of the detecter in controlling the operation of the selecting-instrument is substantially the same as is described in my patent No. 44,808, differing only in the form of some of the parts. It is shown detached in Figs. 6 and 7, in which *g* is the arm that swings across the space below the selecting-instrument. *h* is the arm that co-operates with the cam or incline H to oscillate the detecter; and *i* is the arm for raising the rod F, which works the detent *g′*, which engages with the catch *a*. P is a sheath or wrapper, of woolen or other cloth, in which the moistened bunch of hair is loosely enveloped, while the end of the bunch is held in the recess I, as is seen in Figs. 3, 4, and 5. The part of the bunch that is enveloped in the cloth P rests upon a curved support, Q, attached to the bed-plate A, as is seen in Fig. 1, and is loosely confined thereon by the pins *j* and the seizings *k*. This mode of holding the bunch prevents it from drying before it is used up, and, by its curved form, imposes a slight resistance to the hairs, which prevents the drawing out of one hair from drawing forward those in contact with it; and as the bunch diminishes in size the sheath collapses and rests upon the hair, so as to continue the slight resistance upon the hairs until they are entirely exhausted. The curved position of the bunch also materially aids the holding the hairs in place in the bunch while one is drawn out, and it also diminishes the space in the direction of the breadth of the loom, which it would otherwise occupy, and would be a serious inconvenience to the operator by projecting so far beyond the rest of the loom. The inclined position of the bunch prevents the hairs from working back when the lay swings back, which would tend to draw the hairs together too compactly round the curve and thereby produce too great a resistance to the drawing out of the hair by the nipper. R is a guard, which is attached to the lower end of the slide *d*, and is curved outward and projects downward so far that, when the slide is in its lowest position and the points of the selecting-instrument are in the bunch, the guard will be in the wake of the nipper; and its purpose is to protect the serving-instrument from being broken in case it should not be up out of the way when the nipper comes into the position to receive the hair, as in that case the nipper would strike the guard and be arrested, causing the strap that drives the nipper to give way, which can be restored with little trouble. The construction of the selecting-instrument with two blades or parts, as described, and the insertion of both opened into the bunch of hairs, and the closing of them while in the bunch, to select and withdraw the hair, I deem of much practical importance, and I have tried several forms of constructing the holding-member or pad, all working on the same principle, with success; but the one shown I deem the best; and I have therefore represented it as an embodiment of this part of my invention.

What I claim is—

1. The selecting-instrument, formed with two blades or parts, constructed and operating substantially as described.

2. The sheath or wrapper for enveloping and holding the bunch of hair so that the hairs may be drawn singly therefrom and preserved in a moist condition, substantially as described.

3. The combination of the sheath or wrapper with the selecting mechanism and the recess for holding the end of the bunch of hairs, substantially as described.

4. The arrangement of the sheath or wrapper in a curved position, in combination with the lay and selecting apparatus, substantially as described.

5. The guard R, in combination with the selecting-instrument, substantially as described.

Executed March 31, 1871.

ISAAC LINDSLEY.

Witnesses:

FRANK K. ROGERS,

AMBROSE LOVIS.

(60)