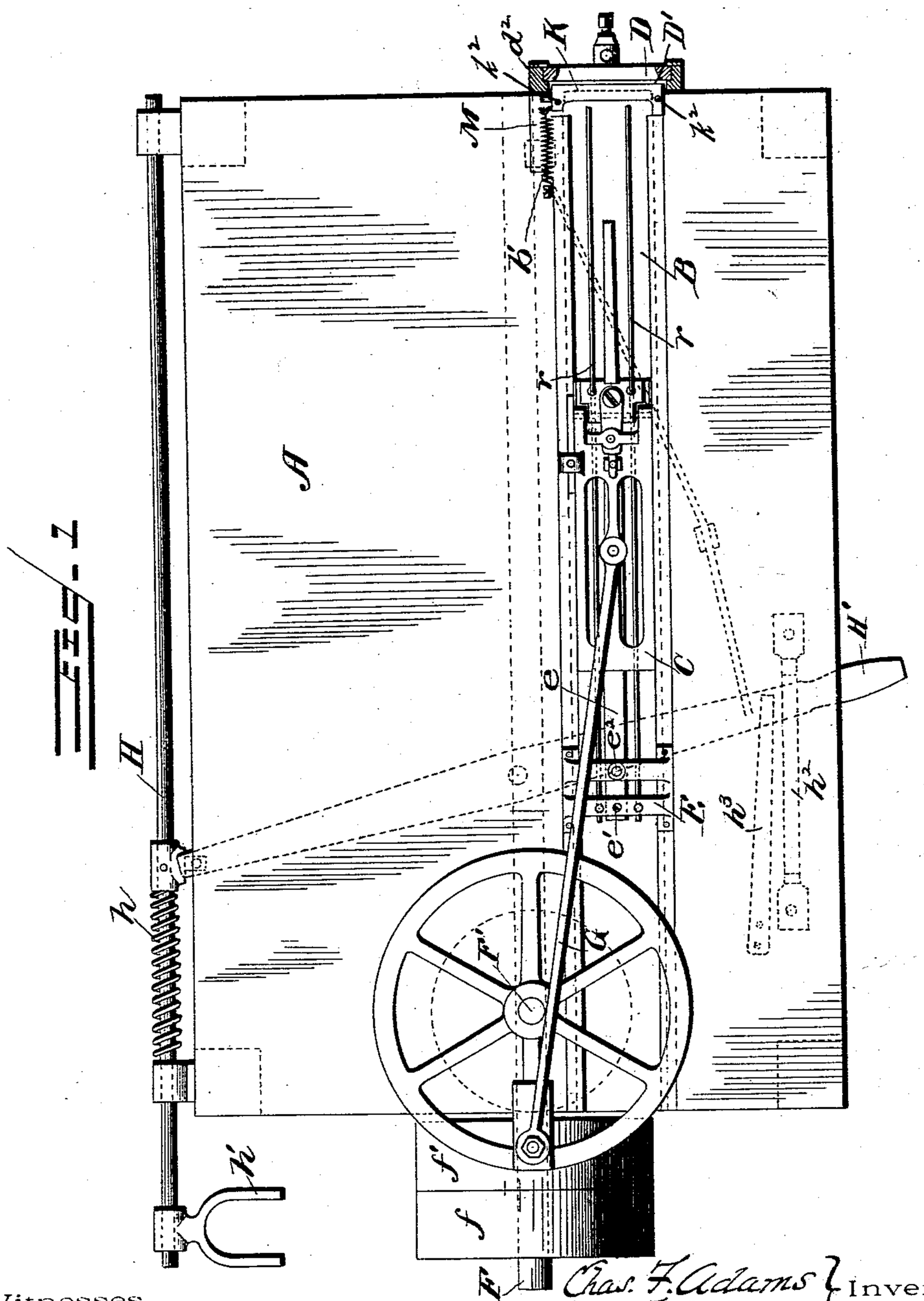
(No Model.) 3 Sheets—Sheet 1.

C. F. & H. F. ADAMS.

MACHINE FOR CUTTING RIBBED FABRICS.

No. 572,094. Patented Dec. 1, 1896.



Witnesses.
Allen Bucks
A. B. Degger

Chas. F. Adams } Inventors.
Henry F. Adams }
by
Attorney.

(No Model.) 3 Sheets—Sheet 2.

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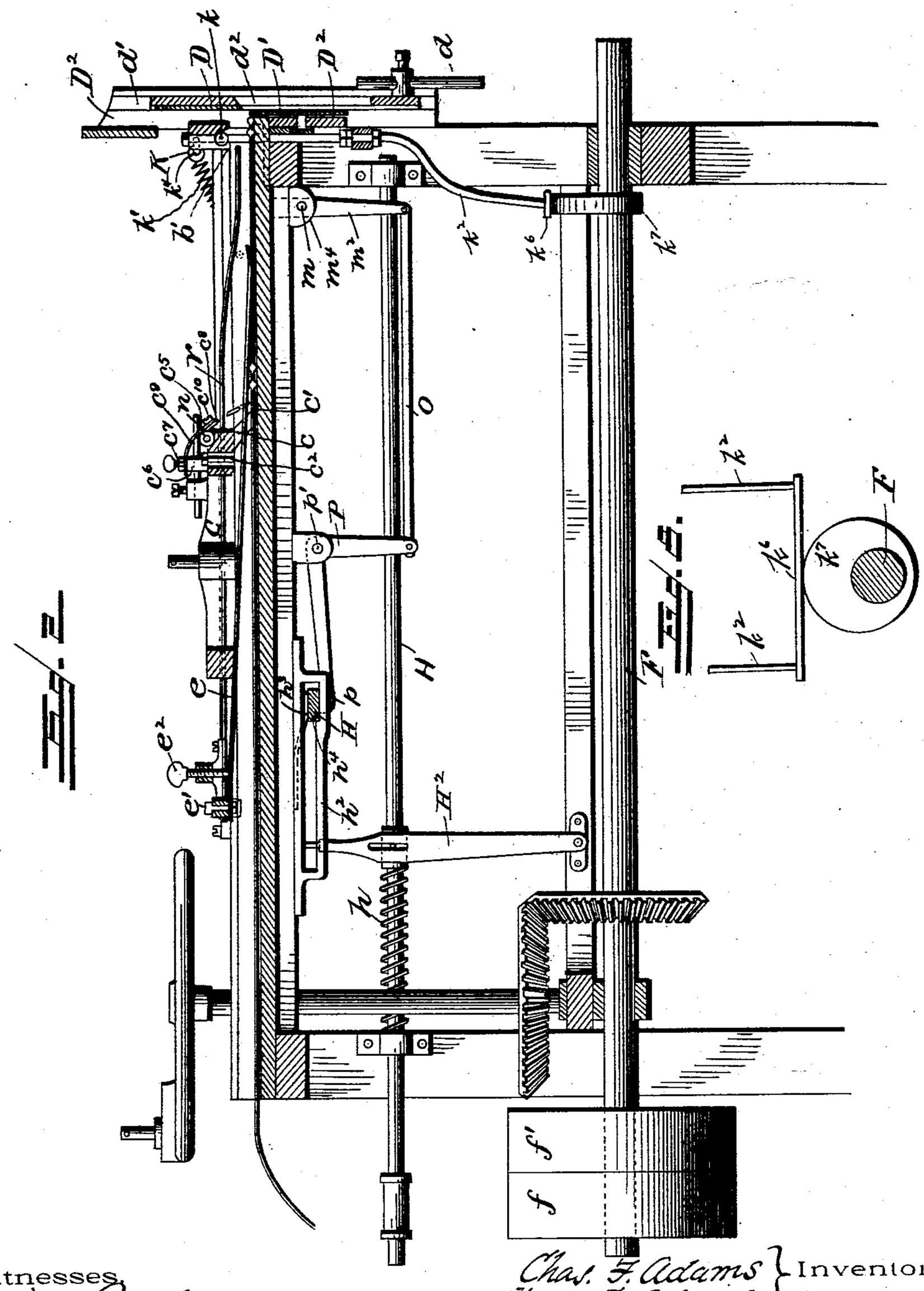

Witnesses,
Allen Bucks.
A. B. Dregee

Chas. F. Adams } Inventors
Henry F. Adams }
by
J. H. Hunt
Attorney.

(No Model.) 3 Sheets—Sheet 3.

C. F. & H. F. ADAMS.

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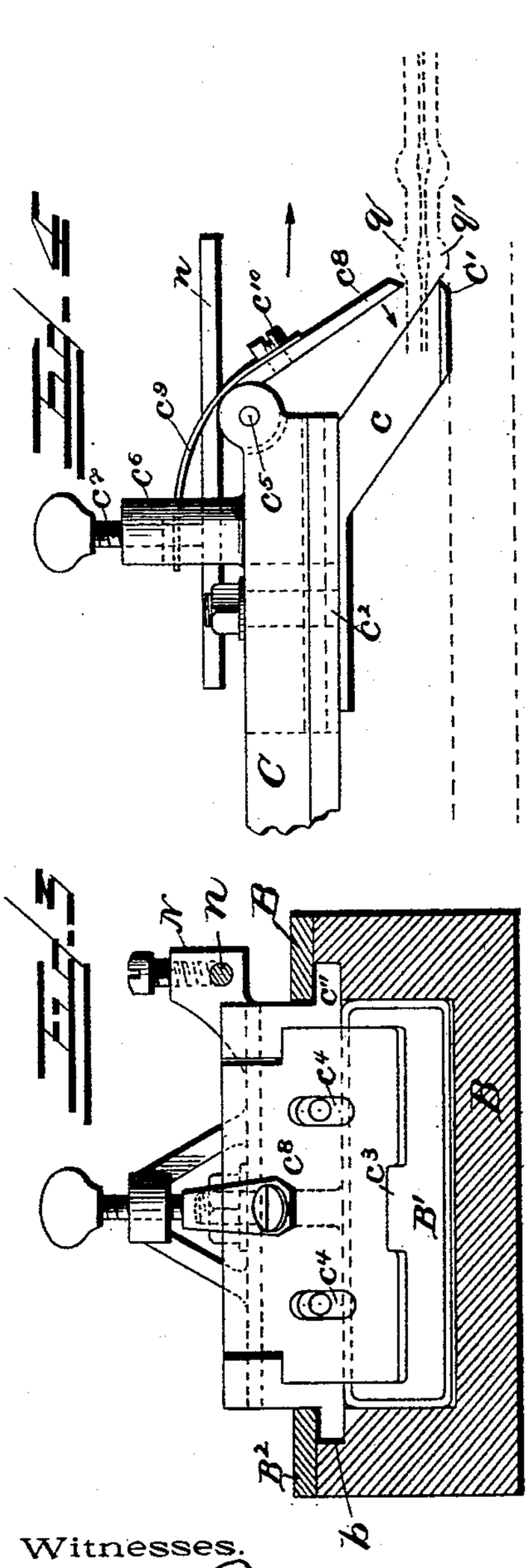

Fig. 2.

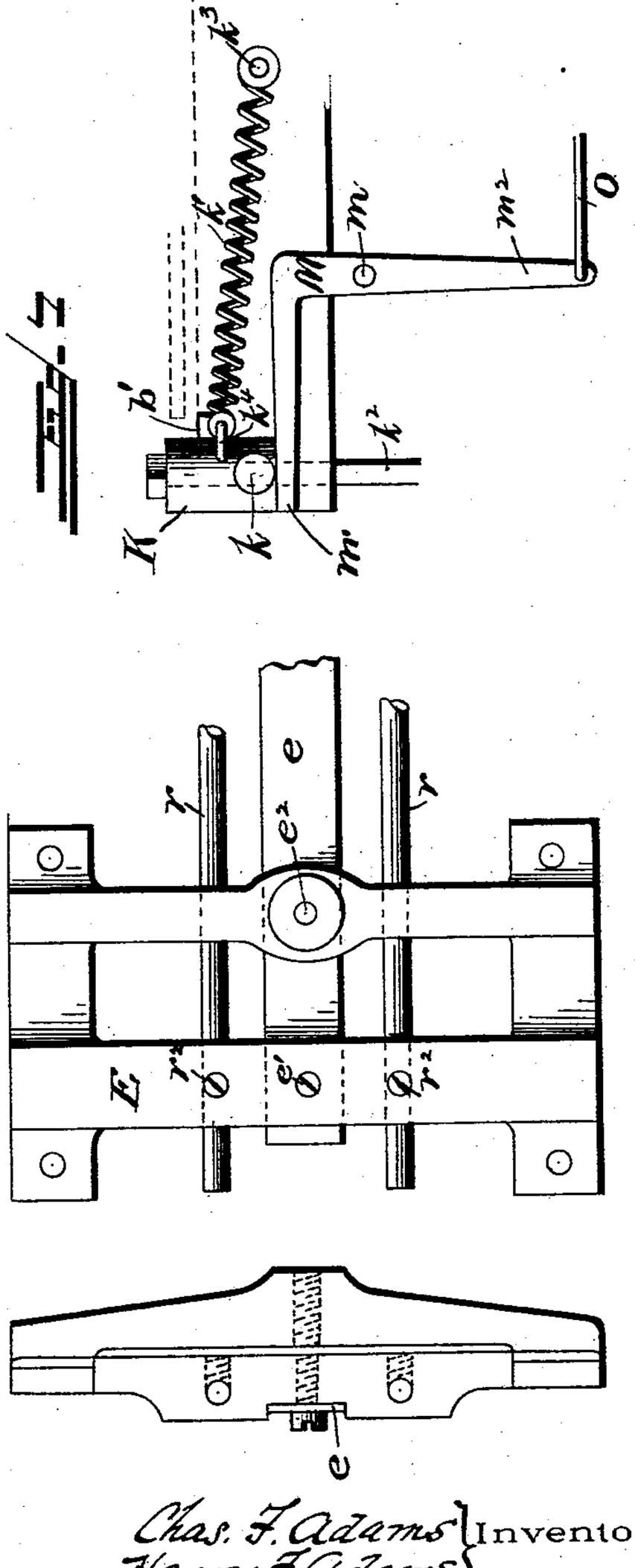

Fig. 4.

Fig. 3.

Fig. 5.

Fig. 6.

Witnesses.
Allen Bucks
A. B. Degger

Chas. F. Adams } Inventors.
Henry F. Adams }
by
J. H. Blount
Attorney.

UNITED STATES PATENT OFFICE.

CHARLES F. ADAMS AND HENRY F. ADAMS, OF READING, PENNSYLVANIA.

MACHINE FOR CUTTING RIBBED FABRICS.

SPECIFICATION forming part of Letters Patent No. 572,094, dated December 1, 1896.

Application filed March 23, 1896. Serial No. 584,471. (No model.)

To all whom it may concern:

Be it known that we, CHARLES F. ADAMS and HENRY F. ADAMS, citizens of the United States, residing at Reading, county of Berks, State of Pennsylvania, have invented certain Improvements in Machines for Cutting Ribbed Fabrics, of which the following is a specification.

Our invention relates to an improved form of machine for cutting ribbed fabrics, and adapted especially for operating upon stocking tops or legs to separate each top successively from the connected series in which they are commonly delivered from the knitting-machines, the foot portion being thereafter attached to each top or leg portion to complete the stocking. This class of stocking-tops is commonly formed with one or more welts near the upper end, and our machine is particularly arranged to operate upon such tops, an automatic feeding mechanism being provided to engage these welts in such a manner as to insure the regular and uniform delivery of each top successively to the cutting mechanism, the object and effect of the improved construction being to save labor, insure regular work, and avoid all waste of material.

The invention is fully described in connection with the accompanying drawings, and the novel features are particularly pointed out in the claims.

Figure 1 is a plan view of a machine embodying our improvements. Fig. 2 is a longitudinal sectional elevation of the same. Figs. 3 and 4 are enlarged end and side views, respectively, of the forward portion of the feed-carriage. Figs. 5 and 6 are enlarged plan and end views, respectively, of the spring-carrying head. Fig. 7 is an enlarged side view of the clamp and belt-shifting lever. Fig. 8 is an elevation, partly in section, showing the devices to elevate the clamp.

A represents the table of the machine, which is supported upon a suitable stand.

B is a feed-trough or guideway secured to the table and adapted to receive and guide the stocking-tops, which enter at one end and are fed onward automatically by the feed-carriage C to knife D at the opposite end. The feed-carriage C travels in the upper part of the guideway upon flanges c'', which ride in side grooves b, having removable cover-strips B^2. The forward end of the carriage is provided with the feeding devices, which are most clearly shown in Figs. 3 and 4 and are especially adapted to operate upon stocking-tops having welts q q', as indicated in dotted lines, Fig. 4. These comprise an upper feeder c^8 and a lower feeder c c', between which the stocking-tops pass, as shown. The lower feeder has the portion c', which contacts with the lower face of the stockings operated upon, brought down close to the bottom of the guideway by means of side plates c, and it is attached to the carriage C, as indicated, by means of a bolt or bolts c^2, which allows the feeder to be properly adjusted longitudinally upon the carriage before being rigidly secured thereto, for a purpose hereinafter described.

The upper feeder c^8 is pivoted to the carriage at c^5, and is provided with a spring c^9, secured to the feeder by a screw c^{10}, and having its free upper end engaged by a set-screw c^7, passing through a bearing c^6 on the top of carriage, whereby the feeder c^8 is supported with its lower edge at any desired distance, normally, above the lower feeder c', to suit the thickness of the stockings operated upon, this distance being arranged always to permit the carriage to move forward freely above the stockings without catching upon the upper surface of the latter, so as to be closed, until its edge strikes against the welt q, when it is positively moved in the direction of the small arrow, Fig. 4, against the increasing tension of spring c^9, thus clamping the stocking between the upper and lower feeders and pushing it on ahead of the carriage during the further forward movement of the latter. Before this clamping action takes place, however, the upper and lower welts q and q' are pushed into line, one directly above the other and both at right angles to the movement of the carriage, by the edges of the top and bottom feeders, the latter having been properly adjusted longitudinally by means of the bolt c^2, extending through to the top face of the carriage, and the former by varying the tension of the spring c^9, as before stated, to suit the work. In this manner we insure the cutting off of each top from the string of connected tops at exactly the same distance from

the adjacent welt at all points, thus securing such a uniformly good quality of work as it is not practicable to secure even by the most careful hand-feeding.

It may be stated here that a reciprocating motion of the feed-carriage C is obtained, as shown, through a pitman G, which is adjustably connected to a crank-wheel on a shaft F. The travel of the carriage is made to exceed the length of the longest top operated upon, but need not be adjusted with any accuracy, as it will be understood from the preceding description that the feed is independent of the length of stroke and is regulated entirely by the welts on the stocking, so as to insure the cutting off of each top at a fixed distance from the welt. It will thus be seen that a lengthening or shortening of the stocking need not affect the character of the work done by the machine. It is, however, important that the stockings operated on should be pushed forward evenly and regularly at all times, and we therefore provide a spring-finger *e*, one end of which bears upon the stocking lightly in front of the carriage. This spring, as shown, is adjustably fixed at its opposite end to a head E, secured to the table of the machine at each edge of the guideway beyond the extreme rearward movement of the carriage, by means of a clamping-screw at e' and a set-screw at e^2, the latter serving to vary the tension of the spring, which extends forward under the carriage toward the knife D. We also sometimes provide, especially where stocking-tops of considerable length are operated upon, supplemental holding devices, these consisting, as shown, of wires *r r*, arranged on either side of the spring *e* and secured to the same head E, these wires extending through or under the carriage to and beyond the forward end of the spring *e* and bending down sufficiently close to the bottom of the guideway B to prevent any buckling or folding of stocking-tops as they are pushed ahead in said way.

The cutting mechanism at the forward end of the guideway consists, essentially, of a fixed blade D′ and a movable blade D, the former being indicated most clearly in Fig. 1 as connected to a guide-frame d^2, fixed to the machine, and the latter being moved up and down in a slideway d' in said frame through the medium of a rod *d*, which is operated by any suitable mechanism (not shown) on the shaft F, so as to raise and lower said blade D at proper times. As each stocking-top is pushed forward between the open cutting-blades by the forward movement of the feed-carriage C a clamp K is brought into action immediately before the cutting off is effected. This clamp is carried by the rods k^2, which have a vertical movement in suitable bearings on the machine, and the lower ends of these rods are connected by a plate k^6, which latter is intermittently engaged by an eccentric k^7 on the shaft F, whereby the clamp K is automatically raised to the position indicated in Fig. 1 prior to the beginning of the forward movement of the feed-carriage. It is supported in the elevated position upon a shoulder b', Figs. 1, 2, and 7, being drawn thereon by a connected spring k'. As the feed-carriage reaches the end of its forward movement this clamp is pushed off from the shoulder b' by contact with a projecting rod or finger *n*, which is adjustably secured to a bracket N on the carriage, so as to thus release the clamp at the proper moment. When released, it is drawn down tightly against the stocking-top by the downward pull of the spring k' or of a specially-provided spring. (Not shown.)

In order to make our machine as completely automatic as possible, we provide for stopping the machine when desired through the action of this clamp upon a belt-shifting mechanism. This mechanism comprises, as shown, the usual shifting-arm H, levers H^2 and H′ for operating it, a spring *h* on said arm, and a support h^2 for the lever H′, having a recessed seat h^4 at one end, into which the lever is normally pressed by a spring h^3. To provide for automatically operating this mechanism, we employ a lever M, pivoted intermediately at *m* to the bracket or ear m^4 on the machine, (see Fig. 2,) and having one end, m', located immediately below a projection *k* on the clamp K and the other, m^2, connected by a rod O to one end of a bell-crank P, the other end, *p*, of which extends beneath the lever H′. When the machine is in normal operation, the projection *k* on the clamp K does not touch the lever M, because the thickness of the stocking-top which is clamped between it and the bottom of the guideway does not allow it to descend far enough to do so; but when a connected series of tops has been completed by the machine this clamp descends far enough to move the lever M sufficiently to raise the lever H′ out of the recess h^4, thus permitting the spring *h* to automatically shift the belt to the loose pulley f' and stopping the machine until an additional supply of material to operate upon has been furnished.

Our machine is especially adapted to operate to the best advantage upon the class of work described, the feed mechanism being conveniently and accurately adjustable and when properly set providing, in connection with the supplemental mechanism described, a thoroughly reliable automatic machine capable of doing superior work with a great saving in cost of attendance and waste of material.

The machine may of course be modified without departing from the spirit of our invention, and we do not desire to limit ourselves to the exact construction shown.

What we claim is—

1. In a machine for cutting ribbed fabrics, the reciprocating feed-carriage having an adjustably-fixed lower feeder c' and a pivoted upper feeder c^8 provided with a spring adjust-

ment for varying the normal position of the same with relation to said lower feeder, substantially as set forth.

2. In a machine for cutting ribbed fabrics the combination with the table having a guideway, the cutting mechanism at one end thereof, and the reciprocating feed-carriage, of the vertically-moving clamp, the spring connected thereto, a support for retaining said clamp in elevated position, and a projection on the carriage for releasing the same, substantially as set forth.

3. In a machine for cutting ribbed fabrics the combination with the table having a guideway, the cutting mechanism at one end thereof, and the reciprocating feed-carriage, of the vertically-moving clamp, a projection *k* on the clamp and a pivoted lever M having one end arranged to be depressed by the said projection when the movement of said clamp is below its normal clamping position, and at the other end operatively connected to a belt-shifting mechanism, substantially as set forth.

4. In a machine for cutting ribbed fabrics, the combination of a table having a guideway, a reciprocating feed-carriage traveling in said way, an adjustably-fixed lower feeder on said carriage, a spring-adjusted upper feeder pivoted on said carriage, a vertically-movable clamp, mechanisms to intermittently raise and lower the clamp, and a cutting mechanism, substantially as described.

5. In a machine for cutting ribbed fabrics, the combination of a table having a guideway, a reciprocating carriage traveling in said way, an adjustably-fixed lower feeder on the carriage, a spring-adjusted upper feeder pivoted on said carriage, a spring-finger connected at one end to the table beyond the extreme rearward movement of the carriage, its other end extending forward in the guideway under the carriage to press on the fabric, and clamping and cutting mechanisms, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES F. ADAMS.
HENRY F. ADAMS.

Witnesses:
SAMUEL F. SAYLOR,
MORRIS L. SLOUGH.