

(No Model.)

J. O. HOLTZMAN.

FEED CUTTER.

No. 336,320.

Patented Feb. 16, 1886.

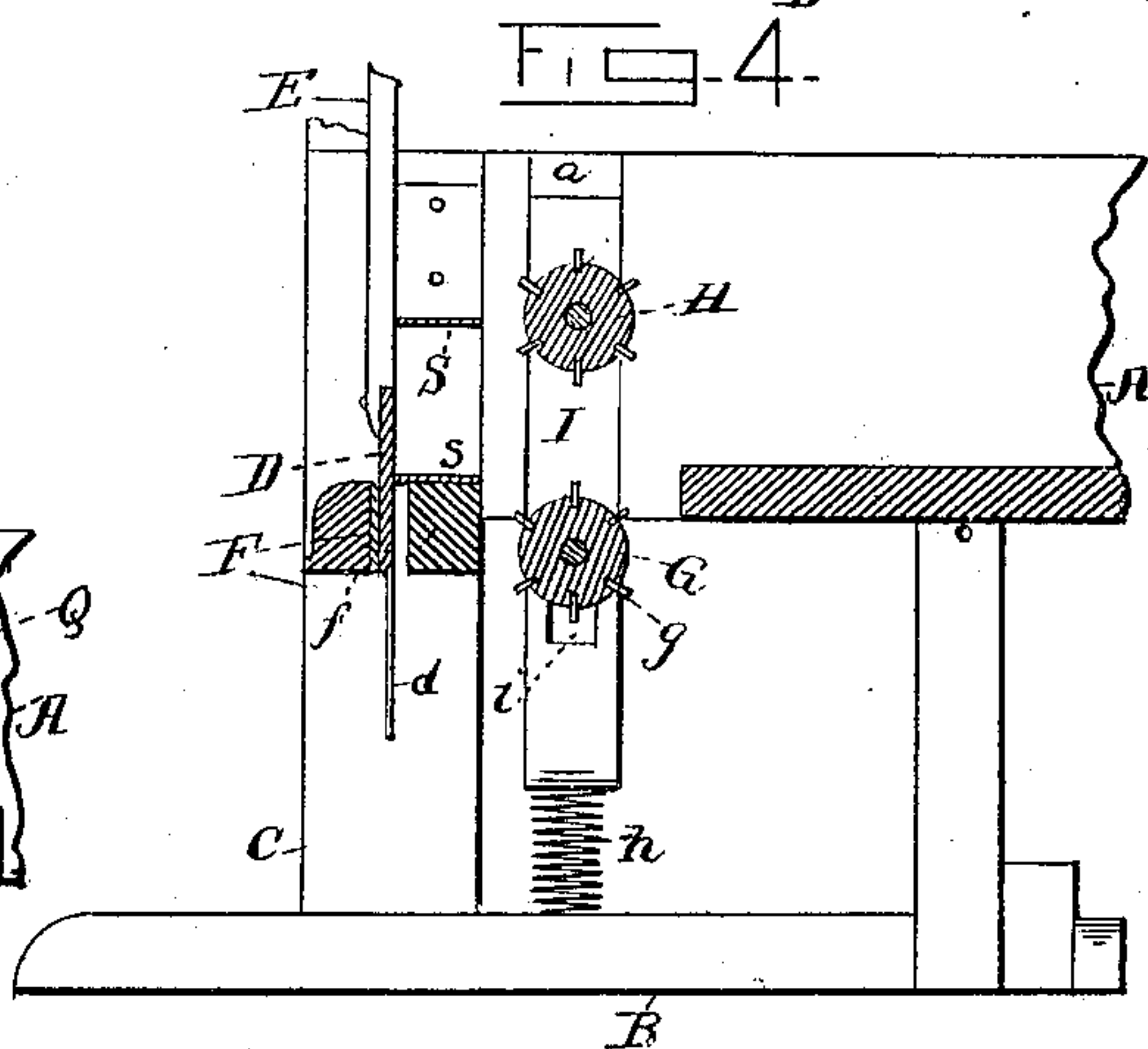
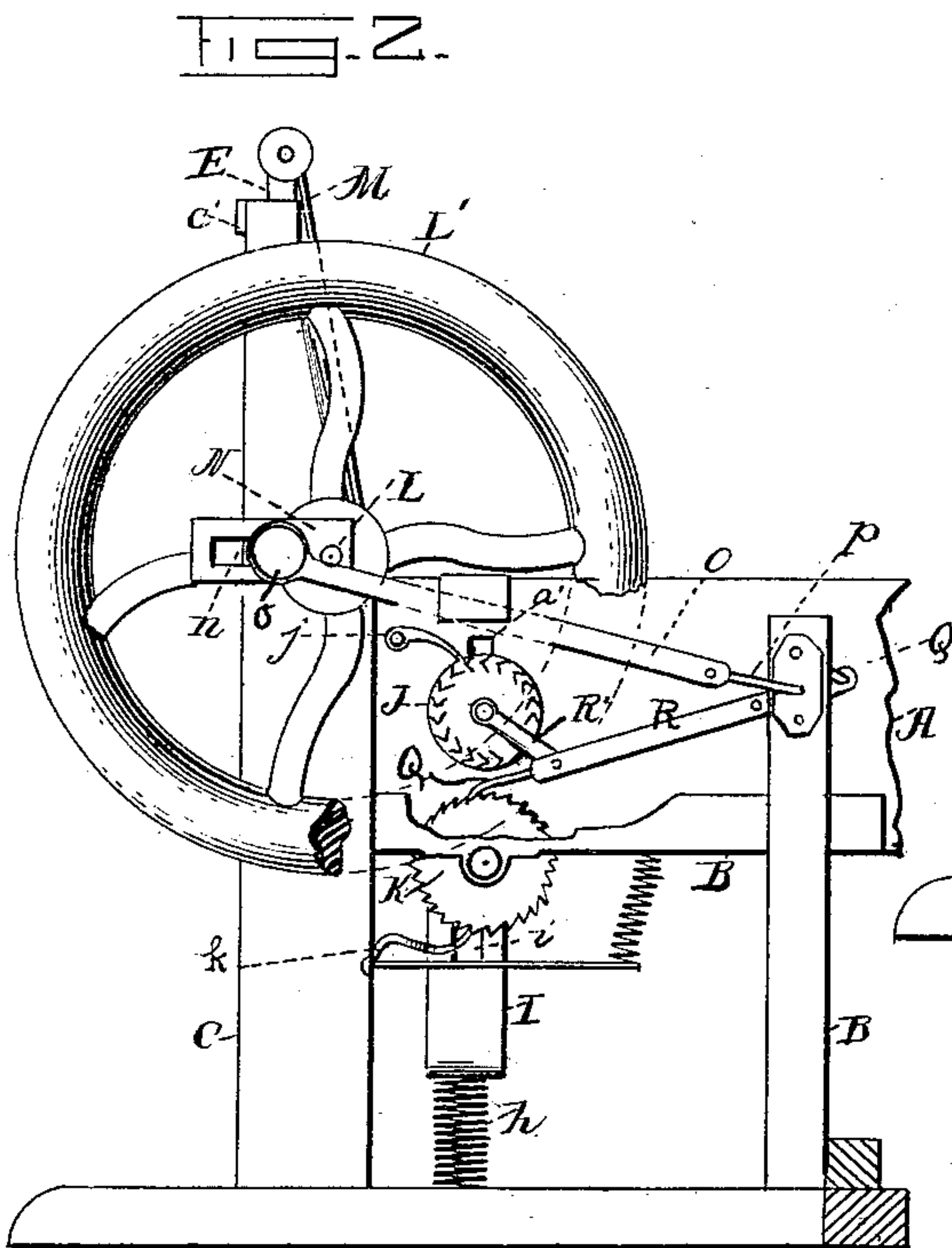
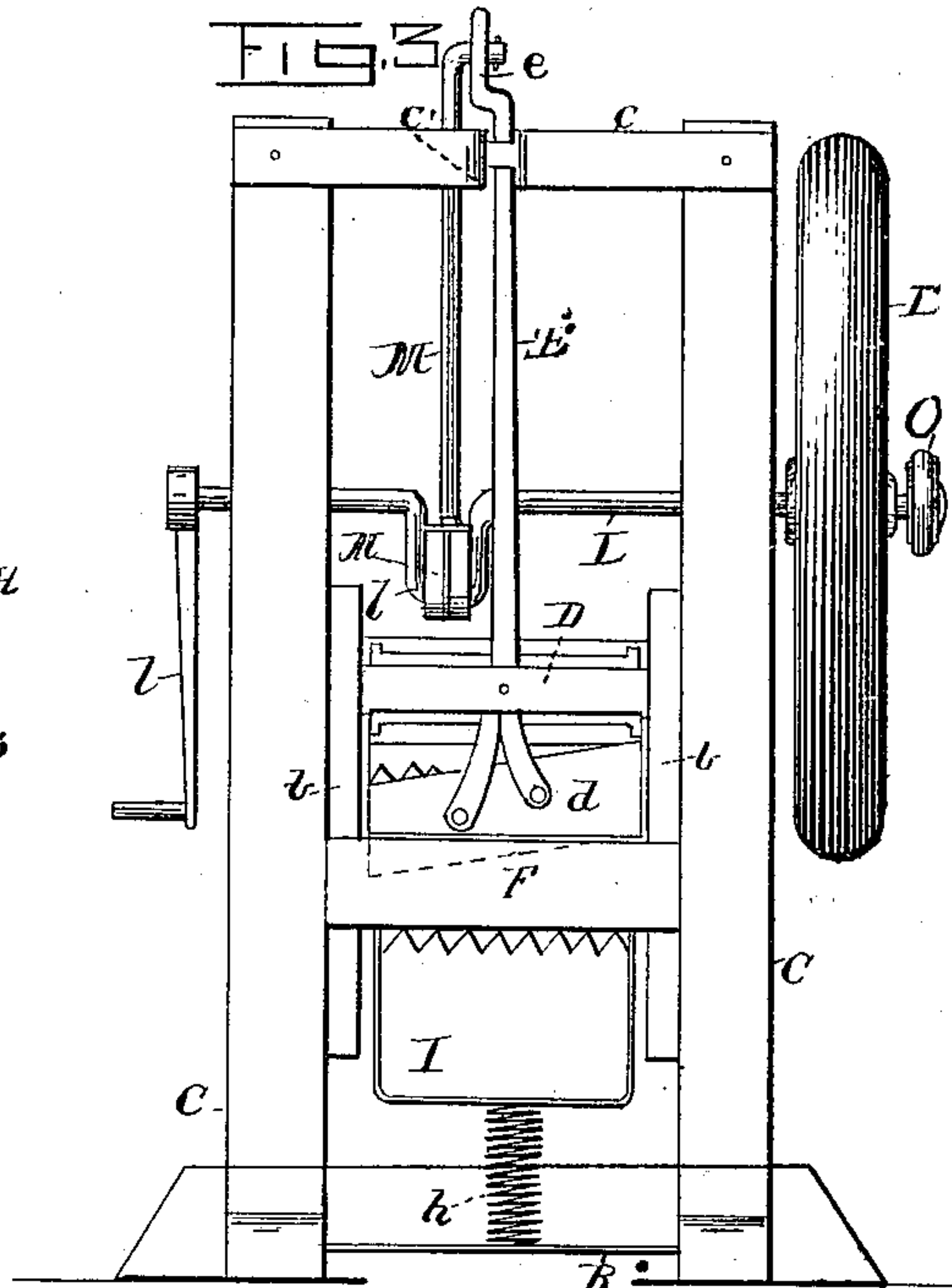
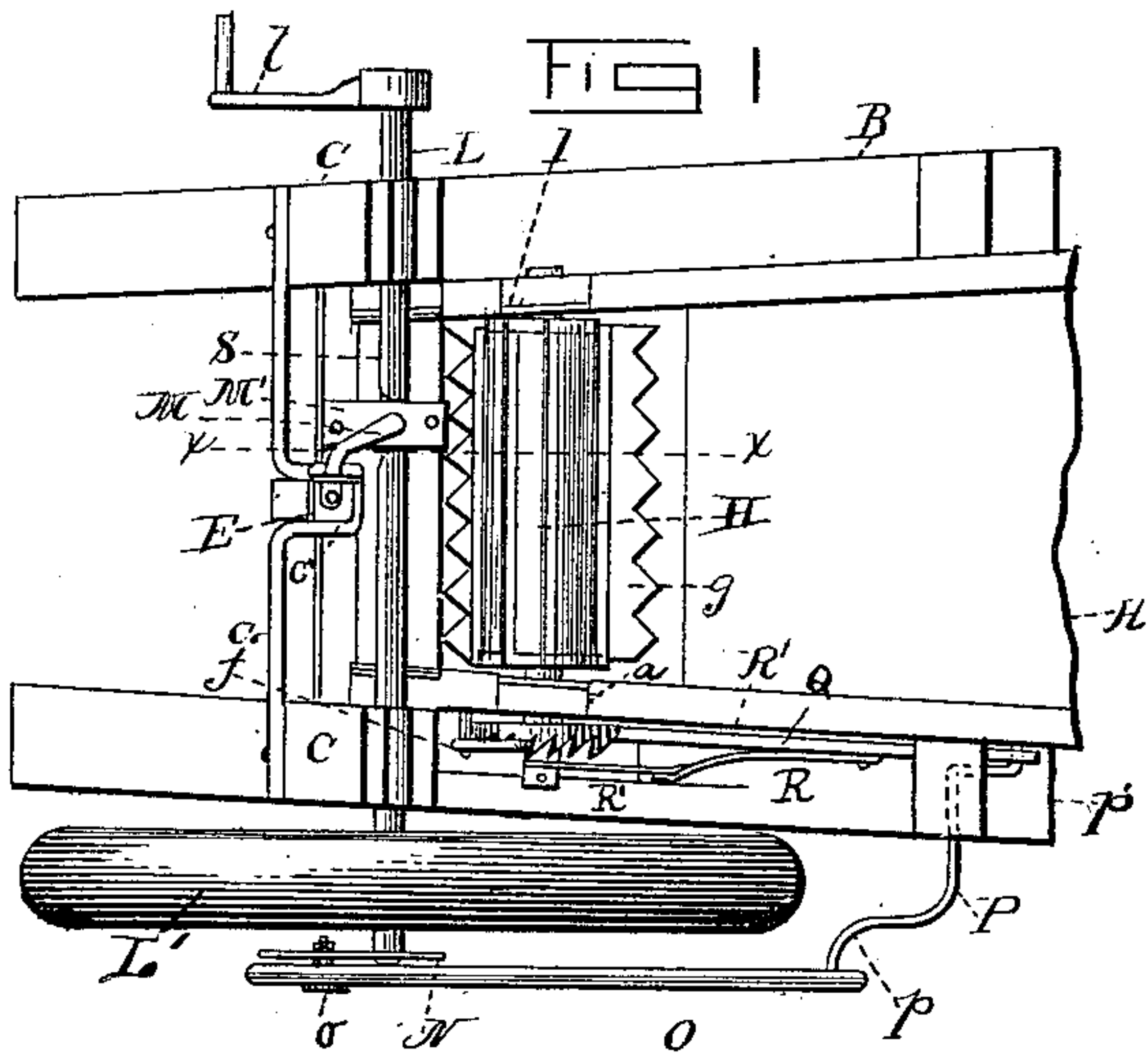


FIG. 8

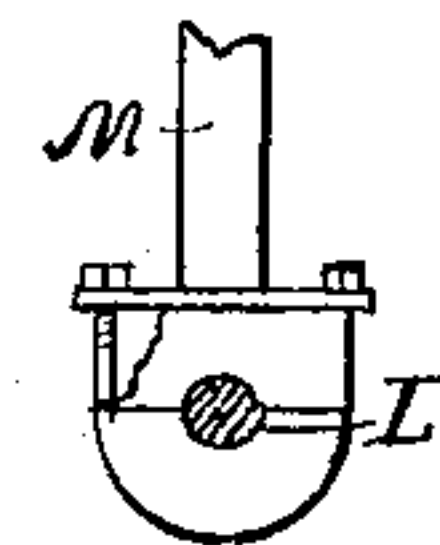


FIG. 5

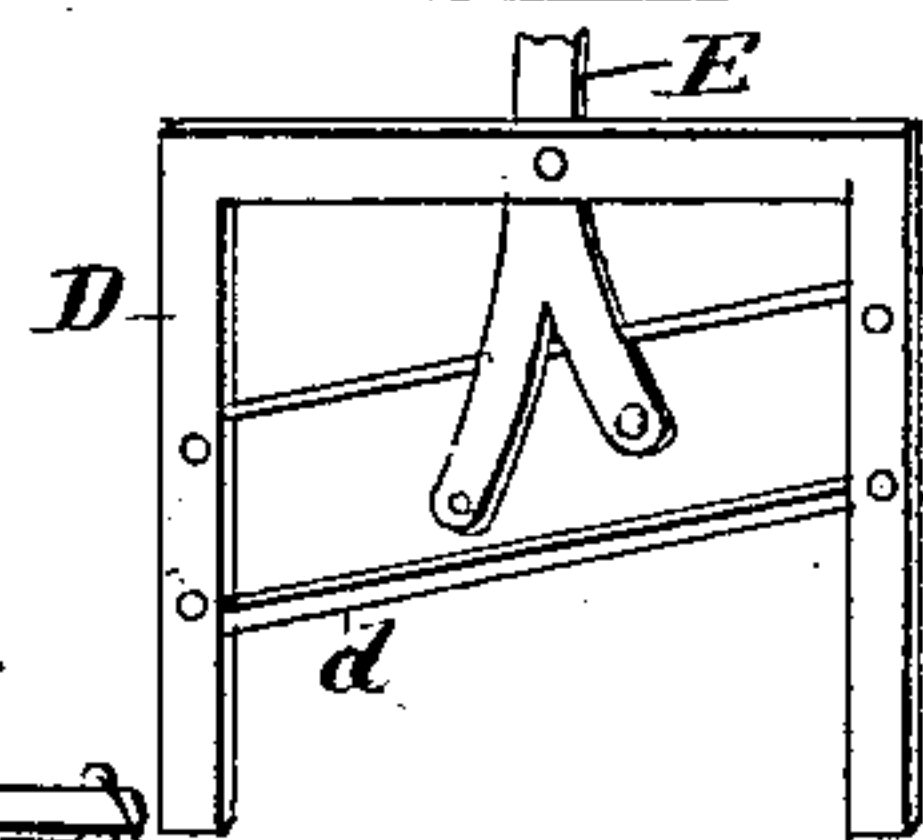


FIG. 6

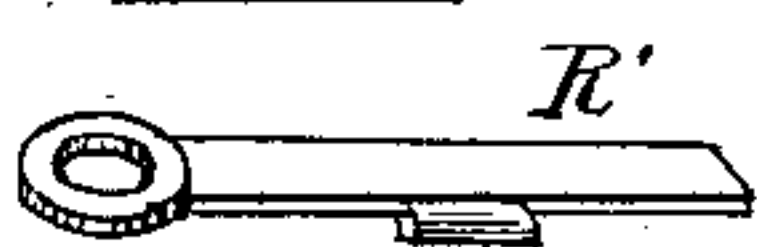
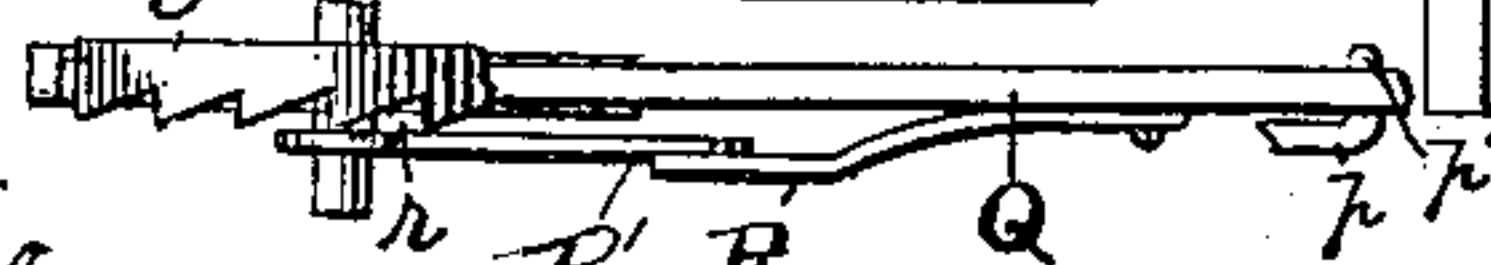


FIG. 7



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## FEED-CUTTER.

SPECIFICATION forming part of Letters Patent No. 336,320, dated February 16, 1886.

Application filed June 12, 1885. Serial No. 168,513. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES O. HOLTZMAN, a citizen of the United States, residing at Beaver Creek, in the county of Washington and State of Maryland, have invented certain new and useful Improvements in Feed-Cutters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to feed-cutters of that class in which a vertically-reciprocating knife and two sets of feed-rollers are actuated from a single crank-shaft, the lower one of such rollers being mounted in fixed bearings, the other in movable bearings; and it consists in the novel features of construction and combination of elements more fully hereinafter set forth and particularly claimed.

Referring to the drawings, Figure 1 is a plan view of a feed-cutter embodying my improvements with a portion of the feed-trough broken away. Fig. 2 is a side view with parts broken away. Fig. 3 is a front elevation. Fig. 4 is a section on the line *x x*, Fig. 1. Figs. 5 and 6 are detail views. Fig. 7 is an enlarged detail view of the pawls for operating the feed-rollers, showing their relative positions to the ratchets of the rollers when viewed from above. Fig. 8 is a detail view showing the manner of attaching the pitman to the crank-shaft.

The feed-trough A may be of any known construction and shape and supported upon a frame, B, the forward posts, C C, of which are extended above the trough and are united by a cross-bar, *c*, in which a guide bearing or opening, *c'*, is formed for the purposes presently referred to.

To the inner side of the posts C C are attached guides *b*, between which reciprocates an inverted-U-shaped frame, D, provided with a knife or cutter blade, *d*, set obliquely to the parallel sides of the frame to give a draw or shearing cut. A pitman, E, having a bifurcated end, is attached to the blade *d* and the frame D, and passes through the guide-opening *c'* in the cross-piece *c*, and is of a length to extend above the cross-piece when

the knife-frame is in its lowest position. A cross-bar, F, extends between the posts C C with its upper side in nearly the same plane as the bottom of the trough, and is longitudinally slotted to permit the passage of the knife-frame, and the slot is provided on one of its walls with a cutting-blade, *f*, to act in conjunction with the blade *d* to cut the material.

Suitably journaled to the frame B is a lower feed-roller, G, having longitudinal serrated blades *g*, set in grooves formed therein and projecting from the surface of the roller, which latter is journaled to have its upper surface nearly on a level with the bottom of the feed-trough and to work in the space between the cross-bar F and the end of the trough-bottom. This roller is mounted preferably in fixed bearings. Above this roller is a similarly-constructed upper feed-roller, H, mounted in a frame, I, which is made U shape, its legs working in guide-grooves cut in the sides of the trough, as indicated at *a*. The upright legs of the frame I are slotted at *i* to permit the passage of the journals of the roller G, thereby permitting the free vertical movement of the frame and the roller H, and allowing the latter to be directly located over the roller G. A spring, *h*, attached to the lower side of the frame I and connected to the frame B, serves to keep the frame I and roller H in a normal position, and permits their yielding to the bulk of the material passing between the two feed-rollers. The journals of the roller H extend through slots *a'* in the sides of the trough, and to one of these journals is keyed a wheel, J, having ratchet-teeth projecting from its outer face. To the journal of the roller G is keyed a ratchet-wheel, K, both ratchet-wheels J and K being on the outside and same side of the trough. A crank-shaft, L, is suitably mounted on the posts C C, and is provided with a crank, *l*, and a balance-wheel, L', preferably located on opposite ends of the shaft, although it is evident that either may be dispensed with, and that both may be located on the same end of the shaft. A link or rod, M, connects this crank-shaft with the upper end of the pitman E. The upper end of the pitman E is bent to one side, as indicated at *e*, to give clearance for the rod M, and prevent its interfering with the guide-bearing *c'*. The



crank-shaft is journaled nearly directly beneath the cross-piece *c*, having the crank *l* to one side of the pitman, so that the one will not obstruct the effectual working of the other.

5 By having the knife-supporting frame working in the guides *b* the pitman, rigidly connected therewith and working in the guide-bearing *c'*, and the crank-shaft in line with the two sets of guides, or nearly so, the knife will work  
10 smoothly without any jarring or rattling, and the friction between the wearing parts is reduced to a minimum. This would not be the case if the pitman were pivotally connected to the knife or knife-carrying frame, as at each  
15 stroke of the knife the inclination of the pitman would be changed, and the knife would be forced hard against one side of the guides during the downstroke, and hard against the other side on the upstroke, thus producing an  
20 uneven wear of the parts and a constant jarring, besides requiring a greater expenditure of power to operate the machine. A plate, *N*, keyed to the extreme end of the crank-shaft, has a longitudinal slot, *n*, in which is  
25 adjustably secured the end of a rod, *O*, by a bolt, *o*. The other end of the rod connects with the crank-arm *p* of the rock-shaft *P*, which latter is journaled in the frame *B*, and is provided with a crank-arm, *p'*, to which a  
30 pawl, *Q*, is attached, the latter engaging the teeth on the ratchet-wheel *K*.

On the outer end of the journal of the roller *H* is sleeved one end of a pawl, *R'*, having a side lug, *r*, to engage the teeth of the ratchet-wheel *J*. A link, *R*, connects the free end of the pawl *R'* with the main pawl *Q*. This link  
35 extends in the same direction and lies within the plane of the main pawl, which acts directly on the ratchet-wheel *K*. By this arrangement the force applied to each feed-roller is nearly equal, and the pawls act positively and with certainty, while at the same  
40 time provision is made for the rising and falling of the movable feed-roller *H*.

45 In practice, motion being imparted to the crank-shaft *L*, the knife is reciprocated vertically by the connections described, and the shaft *P* is rocked to actuate the pawls *Q* and *R* to intermittingly rotate the feed-rollers *H*  
50 and *G*. This movement takes place during the upward stroke of the knife-frame, the pawls riding the ratchet-teeth during the downward movement of the knife-frame, the backward movement of the feed-rollers being  
55 prevented by clicks *j* and *k*. By reason of the pawl *R* being jointed, provision is made

for its accommodating itself to the position of the feed-roll *H*. The pawls are so proportioned and arranged that they rotate the rollers an equal distance during their forward move- 60  
ment, thereby insuring an even feed. As the feed of the rollers depends upon the amount of oscillation of the rock-shaft *P*, the vibratory movement of the latter is regulated by the distance of the pivotal connection of the rod 65  
*O* from the axial line of rotation of the crank-shaft *L*, which point being adjustable it is evident that the movement of the feed-rollers can be regulated at pleasure to produce any  
length of feed desired. The material being 70  
cut is prevented from following the upward movement of the knife by a cross-bar, *S*, extending between the posts *C C*, directly above a wear-plate, *s*, on the upper side of the cross-bar, *F*.

75 I am aware that feed-cutters have been provided with a pair of feed-rollers, the one mounted in fixed the other in movable bearings, and that ratchet-disks have been keyed to such rollers, and pawls provided to engage 80  
said ratchet-disks and give the rollers a positive feed in the operation of the cutter, and do not claim such as my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters 85  
Patent, is—

In a feed-cutter, the combination of a vertically-reciprocating knife, a crank-shaft suitably connected therewith to actuate the same, a pair of feed-rollers, the one mounted in 90  
fixed the other in movable bearings, ratchet-disks keyed to said rollers, the one on the movable roller having the teeth formed on the side thereof, a rock-shaft actuated from the crank-shaft, the pawl *Q*, pivoted to a crank- 95  
arm of the rock-shaft and acting directly on the ratchet-wheel of the fixed roller, the pawl *R'*, having one end sleeved on the journal of the movable roller and provided with a side  
lug, *r*, to engage the teeth on the side of the 100  
ratchet-disk of the movable roller, and the link *R*, pivoted to the free end of the pawl *R'* and to the pawl *Q* and extending in the same direction as the pawl *Q*, whereby the force  
applied to each feed-roller is nearly equal, 105  
substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES OLIVER HOLTZMAN.

Witnesses:

JOHN CLARKE,  
DAVID CLARKE.