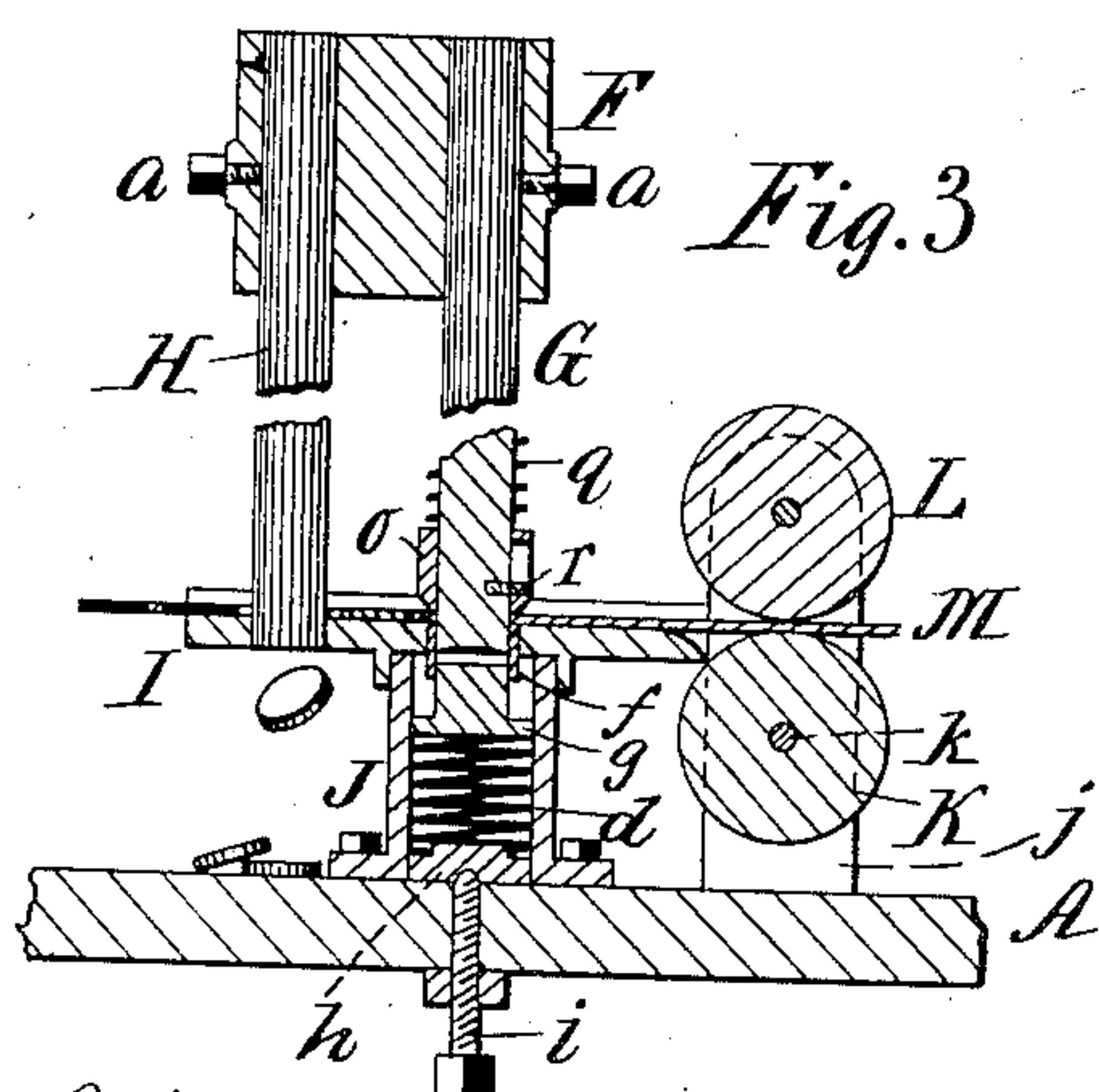
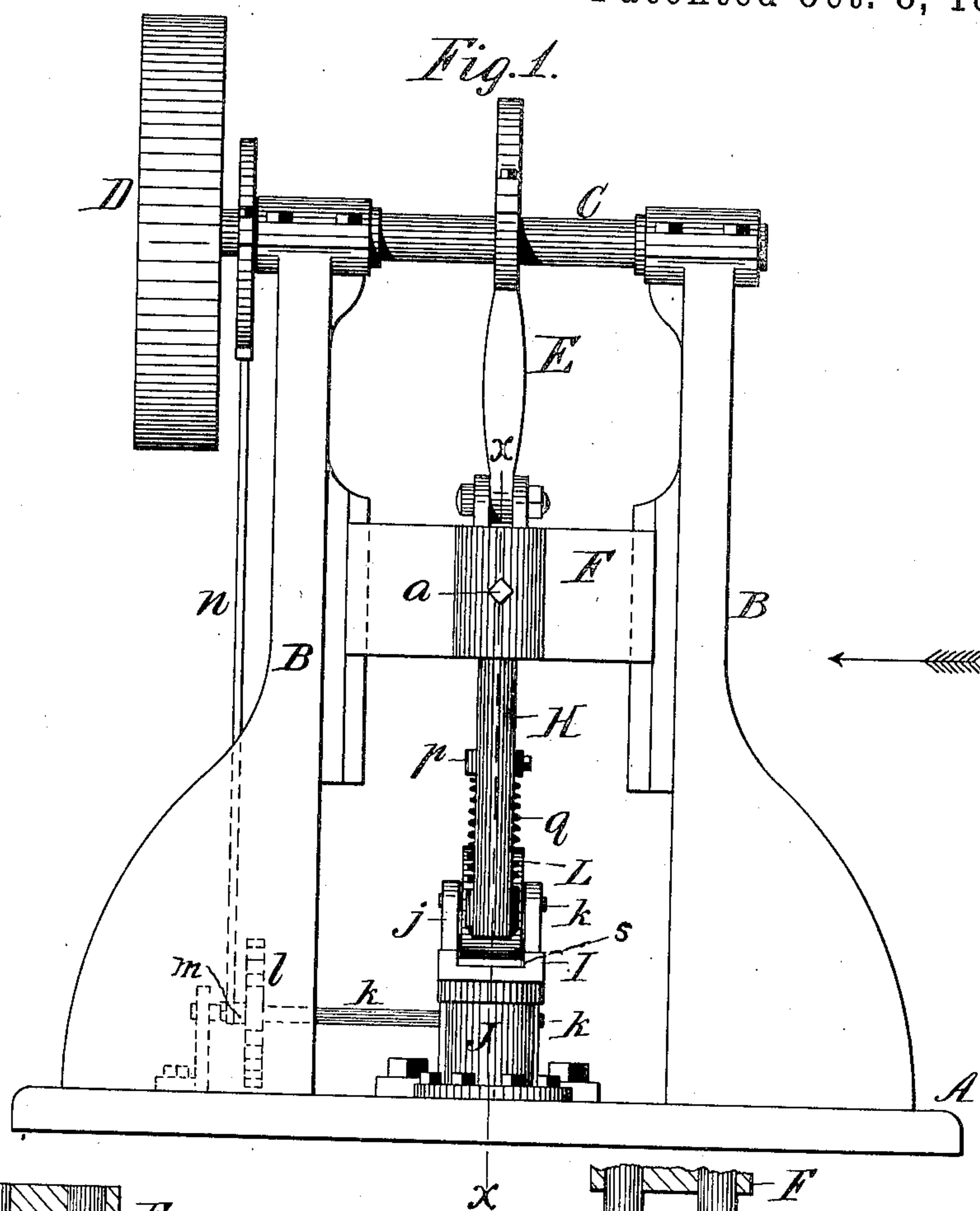


(No Model.)

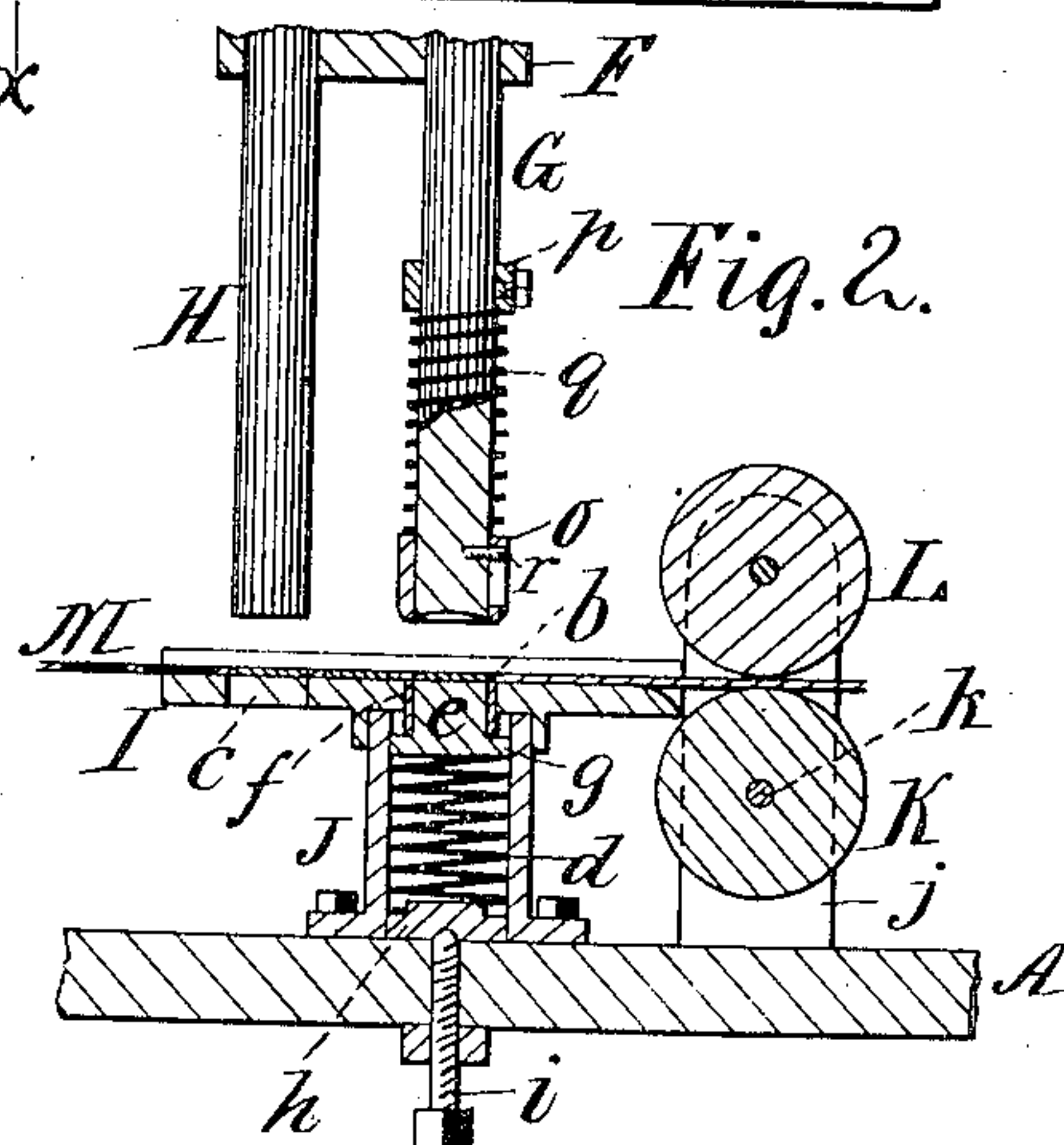
F. HOLZ.

PROCESS OF AND APPARATUS FOR PUNCHING AND FEEDING BLANKS.  
No. 412,618. Patented Oct. 8, 1889.

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Witnesses:  
W. C. Jirdin, Jr.  
Charles Billon



Inventor:  
Frederick Holz  
by Peck & Breton  
his Attorneys.



# UNITED STATES PATENT OFFICE.

FREDERICK HOLZ, OF CINCINNATI, OHIO.

PROCESS OF AND APPARATUS FOR PUNCHING AND FEEDING BLANKS.

SPECIFICATION forming part of Letters Patent No. 412,618, dated October 8, 1889.

Application filed July 22, 1889. Serial No. 318,276. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK HOLZ, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in the Process of and Apparatus for Punching and Feeding Blanks for Wads, Washers, and the Like, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a process of and apparatus for punching out blanks for wads, washers, and the like from a fed-in strip of the material, reinserting such punched-out articles into the strip from which they were punched, and then feeding them on with the strip to the point of delivery or discharge; and its object is to improve the process of and apparatus for punching and feeding blanks for wads, washers, and the like.

The novelty of my invention will be herein set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of a machine embodying my invention and for carrying out my process. Fig. 2 is a sectional side elevation through the dotted line  $x x$  of Fig. 1, looking in the direction of the arrow and with the punch and associated parts up. Fig. 3 is a corresponding view to Fig. 2, with the punch and associated parts down.

The same letters of reference are used to indicate identical parts in all the figures.

Any suitable frame-work—consisting in this instance of a table A and uprights B—has journaled in the top of the uprights a shaft C, provided with a driving-pulley D, and two eccentrics or cranks, from the former of which a pitman E extends down and is connected to a vertically-reciprocating head or plunger F, suitably guided between the uprights B.

Secured to the plunger F, preferably by set-screws  $a$ , so as to be adjustable, is a punch G and a discharger H, pendent therefrom and in line with each other. The punch and discharger are of the same size and shape, usually circular in cross-section, and are arranged directly over a horizontal die-plate I, having two perforations  $b$   $c$  through it, the

former directly beneath the punch G and the latter beneath the discharger H. Directly beneath the perforation  $b$ , and in this instance supporting the plate I, is a tube or hollow frame J, secured to the table A and containing a coiled or other spring  $d$ , upon which is supported a follower  $e$ , whose upper end snugly fits within the perforation  $b$ , or, as in this instance, within a tube  $f$ , secured in the perforation  $b$ , and against whose lower edge a flange  $g$  upon the follower is forced, by the action of the spring  $d$ , to bring the top of the follower flush with the top surface of the plate I. Beneath the spring  $d$  is a washer  $h$ , adjusted by a set-screw  $i$ , passed through the table for regulating the tension of the spring  $d$ .

K L are two feed-rollers suitably journaled between uprights  $j$  upon the table, for feeding the strip of material M, whether paper, felt, leather, or metal, onto the plate I, by successive equal steps of advancement. Any suitable mechanism for actuating these feed-rolls may be employed, and I have illustrated the roll K as secured to a shaft  $k$ , carrying a ratchet  $l$ , which is acted on at each upstroke of the plunger F by a dog pivoted to a carrier  $m$ , hung upon the shaft  $k$  by the side of the ratchet  $l$ , and pivoted to the lower end of a rod  $n$ , whose upper end is connected to an eccentric or crank upon the shaft C by the side of the wheel D.

Upon the lower end of the punch G is fitted a sliding clamping-collar  $o$ , between which and a collar  $p$  upon the punch is a coiled spring  $q$ , surrounding the punch. The collar  $p$  is preferably adjustable by a set-screw to regulate the tension of the spring  $q$ , and the collar  $o$  is held upon the punch by a pin  $r$  in the latter passed through a vertical slot in the former, or vice versa, as will be readily understood. From this construction it will be seen that the strip having been fed in upon the plate I, provided with suitable guides—in this instance ribs  $s$ , Fig. 1—beneath the punch, as the latter descends the collar  $o$  is first arrested upon the strip which it clamps, and then the punch punches out the blank, the follower  $e$  yielding for that purpose, as seen in Fig. 3. Upon the ascent of the punch, as seen in Fig. 2, and before the strip is fed farther in, the follower is forced



up by its spring *d*, thereby reinserting the punched blank into the space it occupied in the strip before punching. After this, upon the further ascent of the plunger, the strip is fed  
5 in one step, so as to bring the punched and inserted blank half-way between the punch and discharger, and then the punch descends and punches another blank which is inserted in the strip, as before described, and the strip  
10 again fed in, so that when the punch comes down the third time the first punched blank is directly over the perforation *c*, and is forced out by the discharger *H* upon the table, or into any suitable receptacle, and so on con-  
15 tinuously, so that at each downstroke a blank is punched and another previously punched discharged, as will be readily understood.

Having thus fully described my invention, I claim—

20 1. The process of punching blanks from a fed-in strip, consisting in first punching out the blank, then reinserting said blank into the strip, and then feeding the strip carrying the punched-out blank to a discharger,  
25 substantially as described.

2. In a blank-punching machine, the com-

bination, with a reciprocating plunger carrying a punch and a discharger, of a die-plate for the fed-in strip provided with perforations beneath said punch and discharger, and a  
30 yielding follower beneath said punch for replacing the punched-out blanks into the strip, substantially as described,

3. In a blank-punching machine, the combination, with a reciprocating plunger carry-  
35 ing a punch and a discharger, of a die-plate for the fed-in strip provided with perforations beneath said punch and discharger, a yielding follower beneath said punch for replacing the punched-out blanks into the strip,  
40 and mechanism for feeding in the strip, substantially as described.

4. The combination and arrangement of the punch *G*, discharger *H*, die-plate *I*, provided with perforations *b c*, and tube *J*, pro-  
45 vided with spring *d* and follower *e*, substantially as and for the purpose described.

FREDERICK HOLZ.

Witnesses:

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CHARLES BILLON.