

(No Model.)

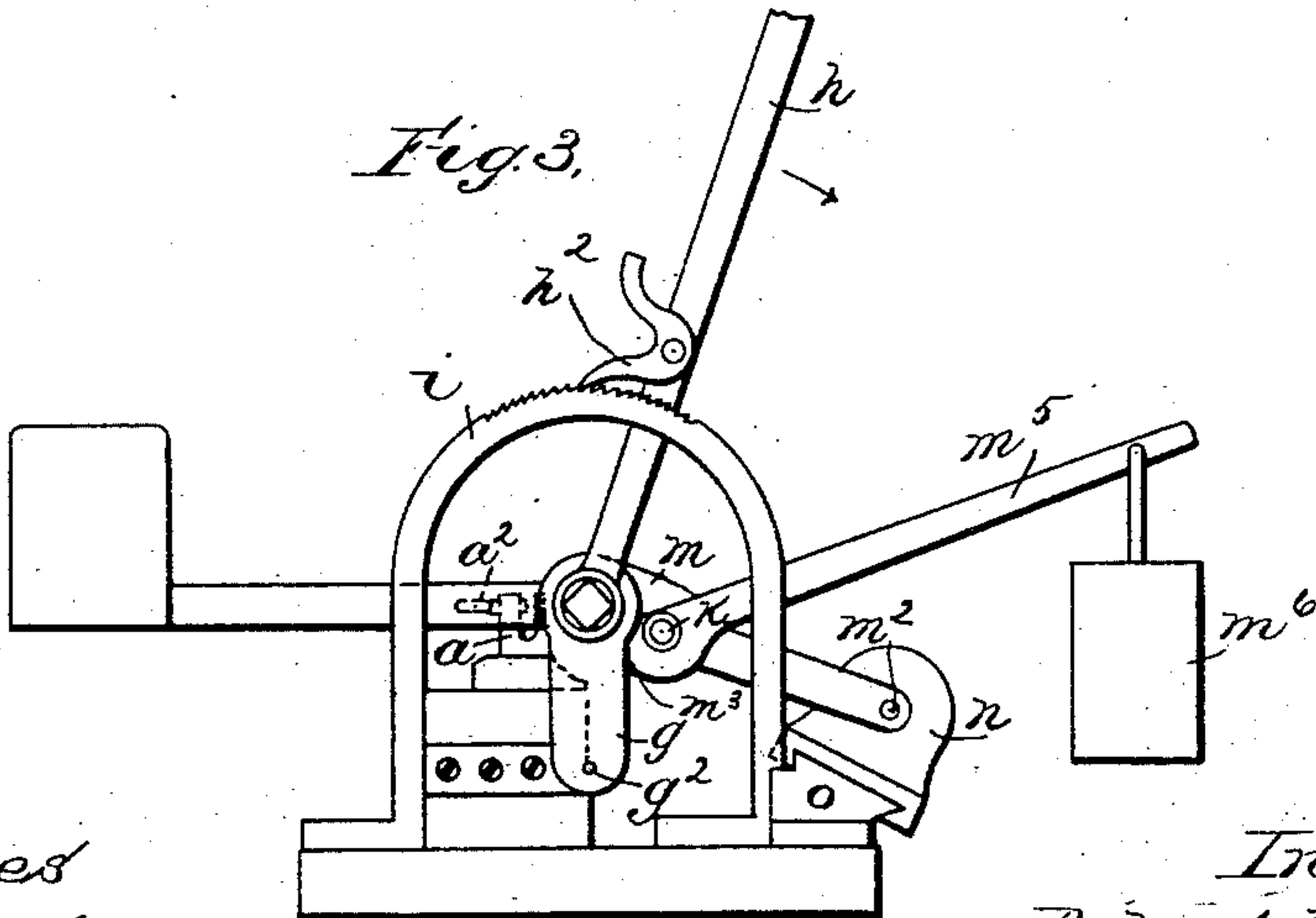
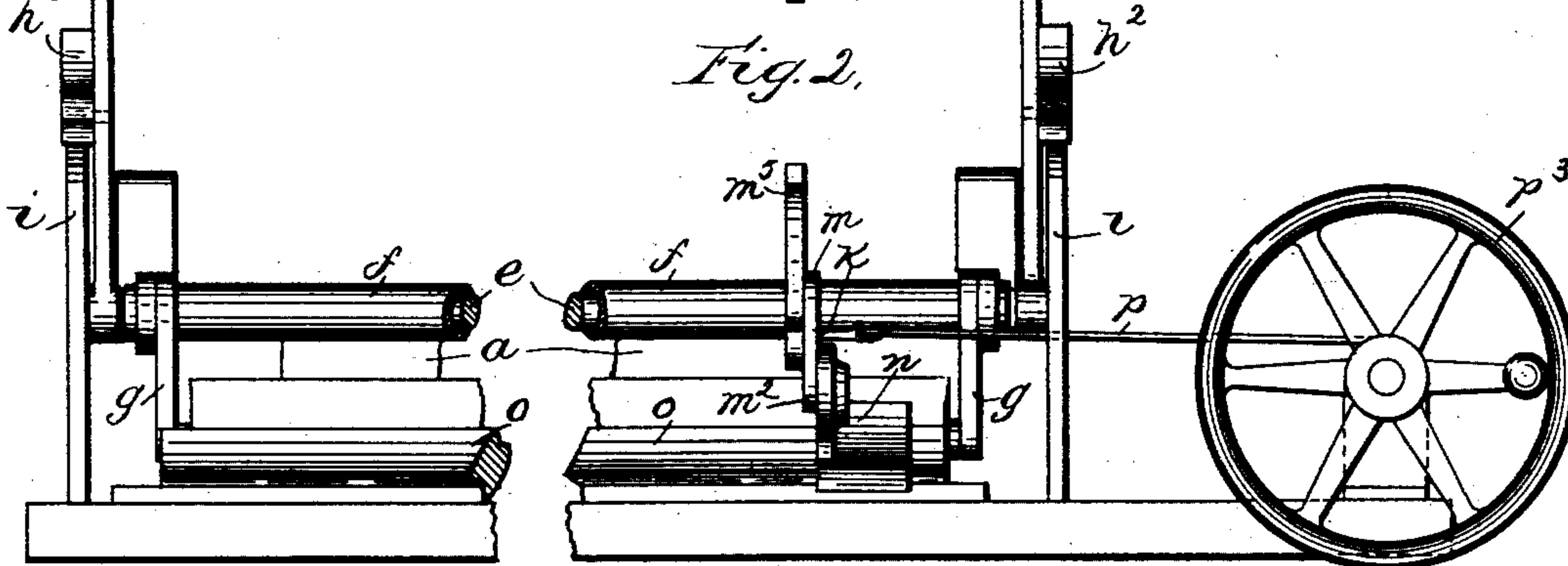
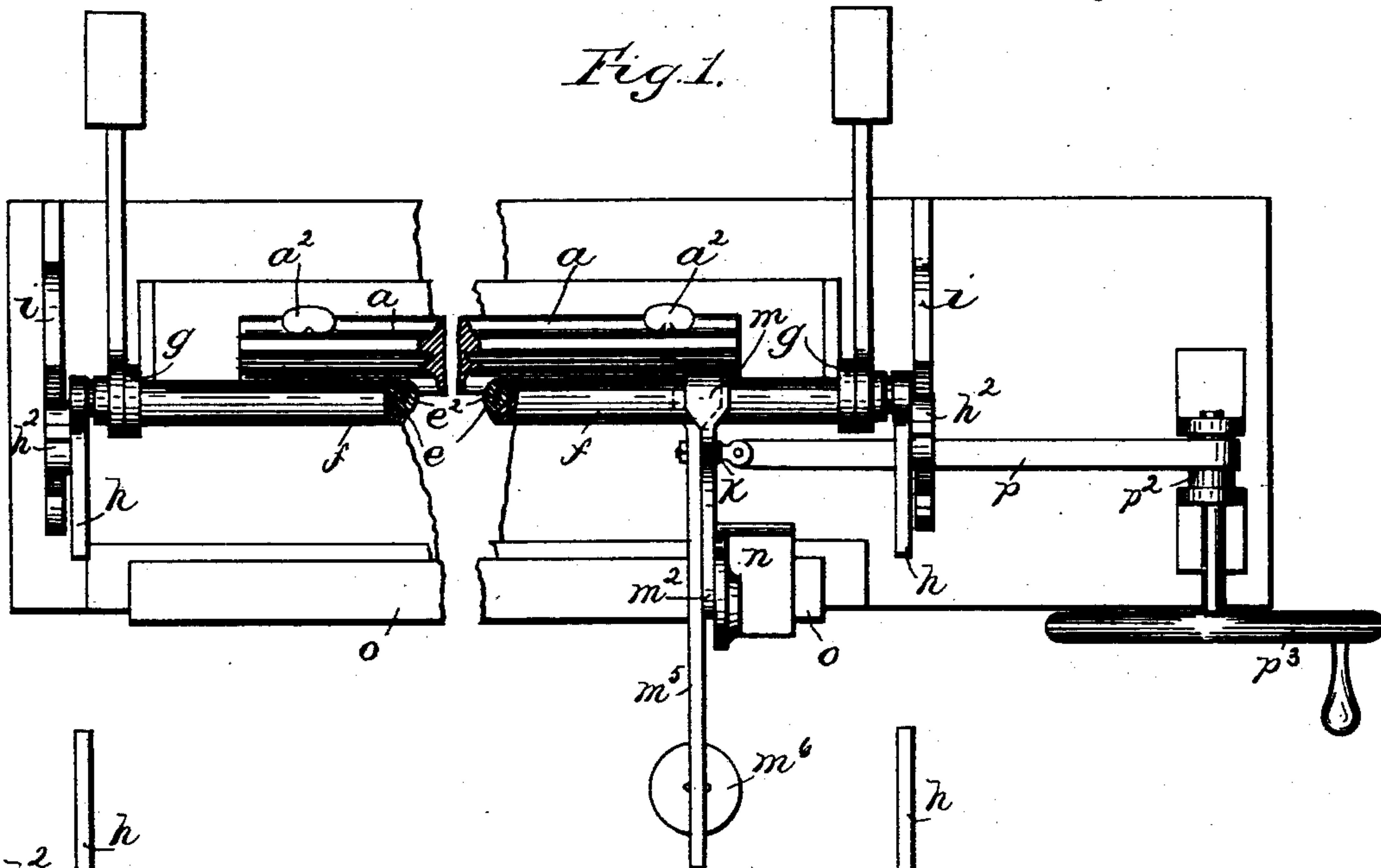
2 Sheets—Sheet 1.

R. W. HUNTON.

MACHINE FOR APPLYING CARD CLOTHING TO FLATS OF CARDING ENGINES.

No. 520,186.

Patented May 22, 1894.



Witnesses  
Jas. J. Maloney.  
M. E. Hill.

Inventor,  
Robert W. Hunton.  
By Jos. P. Linnamou  
Att'y

(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

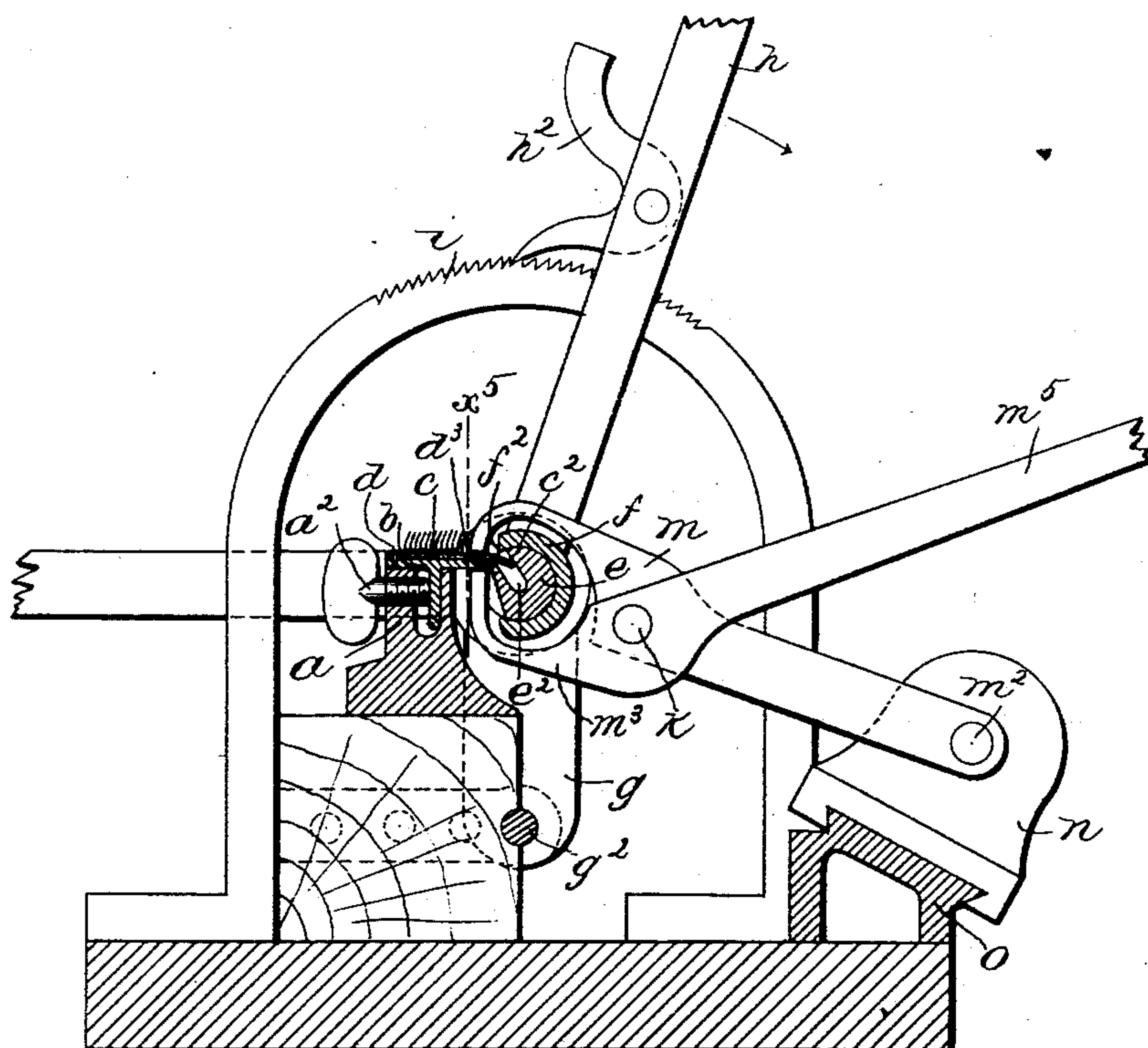


Fig. 5.

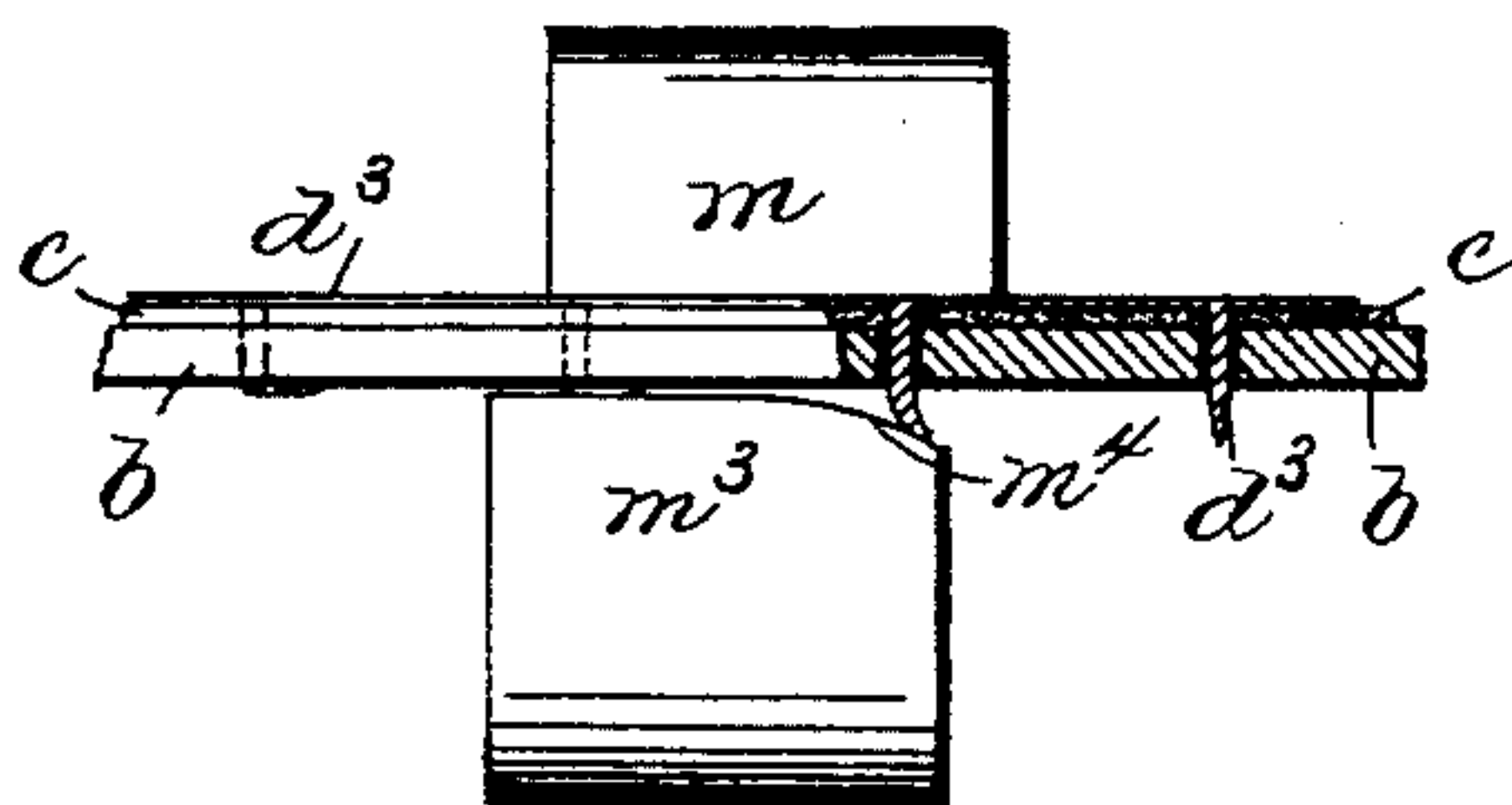
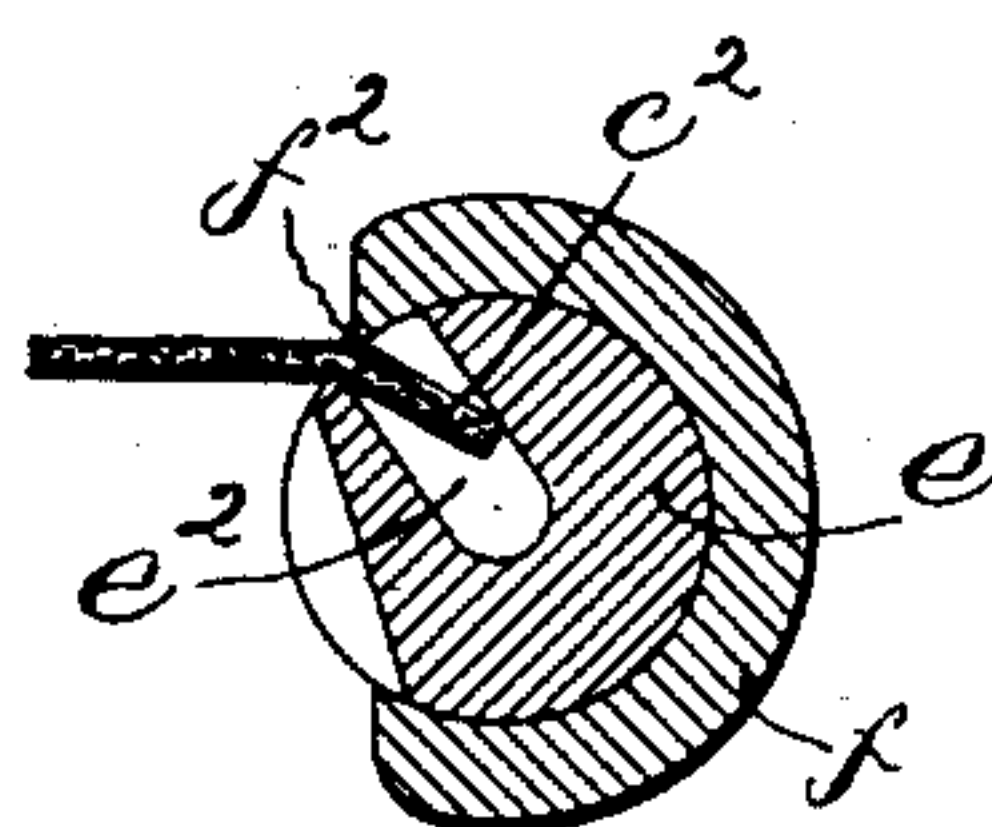


Fig. 6.



Witnesses

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Inventor,  
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# UNITED STATES PATENT OFFICE.

ROBERT W. HUNTON, OF NEWTON, MASSACHUSETTS, ASSIGNOR TO THE  
PETTEE MACHINE WORKS, OF SAME PLACE.

MACHINE FOR APPLYING CARD-CLOTHING TO FLATS OF CARDING-ENGINES.

SPECIFICATION forming part of Letters Patent No. 520,186, dated May 22, 1894.

Application filed June 12, 1893. Serial No. 477,321. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT W. HUNTON, of Newton, county of Middlesex, State of Massachusetts, have invented an Improvement in  
5 Machines for Applying Card-Clothing to Flats of Carding-Engines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 My invention relates to a machine for applying card clothing to the flats used in revolving flat carding engines. The clothing is applied in the form of a long and narrow strip and should be stretched firmly before  
15 the final fastenings by which it is attached to the flat are inserted.

The present invention is embodied in a machine comprising a clamp or holder for the flat which is fastened therein with one  
20 edge of the strip of clothing attached along one side of the said flat, and a straining device having jaws for engaging firmly the other edge of the clothing along the entire length thereof and applying a strain thereto  
25 transversely to the flat so that the clothing is held in stretched condition while the fastenings are being applied to the edge opposite the one that was fastened before the stretching took place. The machine also  
30 comprises a clamping device which can be operated to clinch the points of the fasteners while the flat is still held strained by the straining device.

In the accompanying drawings Figure 1 is  
35 a plan view of a machine for applying clothing to card flats embodying this invention; Fig. 2 a front elevation thereof, a portion of the machine being broken away; Fig. 3 an end elevation; Fig. 4 a transverse section on  
40 a larger scale; Fig. 5 a sectional detail on line  $x^5$ , Fig. 4, illustrating the operation of the clinching device, and Fig. 6 an enlarged section of the jaws or clamping members of the straining device detached.

45 The machine comprises a holder  $a$  for the flat  $b$  which is secured therein as best shown in Fig. 4, the said holder being composed of a bed piece securely fastened upon the base or frame work of the machine and having a  
50 longitudinal groove or recess in which the

shown in Fig. 4, the said flat being securely locked in said groove by clamping screws  $a^2$  or other suitable fastening devices engaging with said rib as shown.

The flat may have one edge of the clothing  $c$  attached thereto by the usual fastenings as shown at  $d$  Fig. 4, either before or after the flat is fastened in the holder  $a$  it being generally most convenient to attach  
55 one edge of the clothing to the flat before the latter is introduced into the machine as no special appliances are required for attaching the first edge of the clothing to the flat. It is necessary, however, for the proper  
60 working of the clothing on the flat that it should be stretched tightly transversely to the flat and fastened in tense condition, and in order to effect this result the strip  $c$  of clothing to be fastened, is made somewhat  
65 wider than the flat so that a portion of the back or cloth of the strip projects beyond one edge of the flat as shown at  $c^2$  Fig. 4. In order to obtain a firm hold upon the projecting edge so that the cloth can be stretched  
70 tightly and uniformly throughout its entire length, the machine is provided with a straining device for clamping firmly the projecting edges  $c^2$  and then applying strain thereto, the said device being composed of two jaws  
80 or clamp members having a proper relative movement to one another to nip the edges of the cloth between them, and then having a bodily movement, without change of relative position, by which the cloth so nipped  
85 is stretched or pulled tightly from the previously fastened edge at  $d$ .

The straining device is composed of two members one of which is the rod  $e$  and the other a partial tube  $f$  inclosing the said rod,  
90 a portion of one side of said tube being cut away for a length slightly greater than that of the strip of clothing to be fastened, so as to afford access to the rod, which has a longitudinal groove  $e^2$  somewhat wider than the  
95 thickness of the cloth  $c^2$  to be gripped and stretched. Thus one edge of the groove  $e^2$  in the rod  $e$  forms a jaw which engages with the under face of the clothing while the edge  $f^2$  of the recessed portion of the tube  $f$  constitutes the opposite jaw, and by a rotary move-  
100 ment of the rod in the tube the said jaw edges



are brought toward one another and come to a firm bearing upon the cloth previously inserted between them while the tubular or outer member embraces the inner member in such manner as to prevent any lateral springing of either so that the engagement of the jaws with the cloth is substantially uniform throughout their entire length. The tubular member  $f$  has its ends supported in arms  $g$  pivoted at  $g^2$  about in line with the edge  $c^2$  of the cloth to be stretched, and at some distance from the plane of said cloth as shown, while the rod  $e$  has its bearings in the tube  $f$  and extends beyond the ends of said tube, where it is provided with handle levers  $h$  by which it may be turned in the tube  $f$ . The said levers  $h$  are provided with pawls  $h^2$  co-operating with fixed toothed holding bars  $i$  in such manner as to resist the movement of the levers  $h$  toward the cloth being operated upon.

In order to properly stretch the cloth after one edge has been fastened as shown at  $d$  and the flat is fastened in the holder  $a$  the pawls  $h^2$  are disengaged from the holding bars  $i$  and the handles  $h$  turned toward the flat until the groove  $e^2$  in the bar  $e$  is sufficiently accessible below the edge  $f^2$  of the tube  $f$  to permit the edge  $c^2$  of the cloth to be inserted therein when the said cloth is laid evenly in the said groove throughout the entire length of the strip. Then the handles  $h^2$  are turned in the direction of the arrows, or away from the flat, and in such movement the rod  $e$  is turned in the tube  $f$  until the lower edge of the groove  $e^2$  brings up on the under surface of the cloth and the upper surface of the latter brings up on the edge  $f^2$  of the tube  $f$  and the further movement of the handle  $h$  tends to tighten the grip or increase the pressure at  $e^2$  and  $f^2$  on the edge of the cloth, and when finally the resistance of the cloth prevents further rotation of the rod  $e$  in the tube  $f$  the further movement of the handles  $h$  will cause both parts  $e$  and  $f$  to swing on their pivoted support about the axis at  $g$  thus producing a relative separation of the straining device thus gripped to one edge of the fabric, and the flat holder and flat held thereon to which the other edge of the fabric is secured by the fastenings  $d$ , and thereby pulling the cloth in tense condition from the fastenings  $d$  across the upper surface of the flat. In this movement the dogs  $h^2$  will engage with the holding bars  $i$  and when the cloth is sufficiently strained will retain it in strained condition while the fastenings are driven in through the cloth and the flat at the point  $d^3$ . The fastenings commonly used have spurs or points which pass wholly through the flat and are to be clinched at the under surface thereof, and in order to provide for such clinching before the strain on the cloth is released the machine is provided with a clinching device resembling in its construction a pair of pinchers, the jaws of which encompass the straining device  $e, f$ , so as to bear one at the upper and the other at the

under surface of the edge of the flat, to which the stretched cloth has just been fastened. The members of the said clinching device are pivoted together at  $k$ , and the upper member  $m$  which bears on the upper surface of the flat and fastenings that have just been driven therein as best shown in Fig. 4, is pivotally connected at  $m^2$  with a carriage  $n$  arranged to travel along a guide  $o$  at the front of the machine and parallel with the flat holder, the said carriage and clinching members being shown as actuated by a strap  $p$  see Figs. 1 and 2, connected at one end with the joint  $k$  of the clinching members and at the other end with a winding reel  $p^2$  arranged to be operated by a windlass or hand wheel  $p^3$ . The other member  $m^3$  bearing at the under side of the flat where the points of the fastenings project through as shown in Fig. 5, is rounded as shown at  $m^4$  on the under surface toward the windlass and the arm  $m^5$  of said jaw is provided with a weight  $m^6$  see Figs. 1 and 3, which presses the said jaw up firmly against the under side of the flat. After the fastening at  $d^3$  is driven into the flat the clinching jaws  $m, m^3$ , are placed around the concentric jaws of the straining device  $e, f$ , and engaged with the flat as shown in Figs. 4 and 5, at the end of the machine remote from the windlass, and are then drawn along to the other end of the flat by the windlass and strap in which operation the rounded edge  $m^4$  of the lower jaw strikes the projecting points of the fasteners and bends them down and clinches them on the under surface of the flat as will be readily understood from Fig. 5. The carriage  $n$  insures the proper line of movement of the clinching jaw along the edge of the flat by having the upper member pivoted to said carriage as shown at  $m^2$  the said clinching jaws can be readily thrown out of the way while the operator is manipulating the straining device.

The herein described apparatus enables a very uniform tension to be applied to the clothing of the flat, the concentric arrangement of the jaws causing the reactionary pressure of the cloth on the jaws to be self-contained within the latter so that there is no lateral springing of either jaw and the holding power is substantially uniform throughout their entire length. The concentric arrangement of the jaws is also very compact so that it can be readily encompassed by the jaws of the clinching device so that the fastenings can be clinched while the cloth is still held under the strain by the straining device thereby insuring the final holding of the cloth in thoroughly stretched condition on the flat. The front of the flat holder is recessed as best shown in Fig. 4, so as to afford room for the clinching pinchers to act and the straining device is so constructed that it can be brought into contact with the edge of the flat so as to nip the cloth immediately over the edge of the flat.

I claim—



1. The combination of the flat holder with a relatively movable clothing straining device, having relatively movable outer and inner jaw members, each provided with a jaw for engaging the clothing, the said outer jaw member extending around and having a portion adapted to bear upon a portion of the inner jaw member to support the same against the reaction of the material gripped between the jaws, substantially as and for the purpose described.

2. The combination with the flat holder, of the relatively movable straining device comprising a longitudinally recessed tube and a longitudinally grooved rod having a working fit and relatively rotatable therein, one edge of the recess in the tube and one edge of the groove in the rod constituting jaws for gripping the clothing interposed between them, means for producing relative rotation of said jaws to grip one edge of the clothing and means for separating the flat holder and the straining device, substantially as and for the purpose described.

3. The combination of the flat holder with a straining device comprising a longitudinally recessed tube and a longitudinally grooved rod having its bearings therein, and a pivoted support for said straining device and one member of said straining device being provided with an operating lever whereby it is rotated relative to the other member to grip the cloth and whereby both members are moved on said pivoted support with relation to the flat holder, substantially as and for the purpose described.

4. The combination of the flat holder and clothing straining device adapted to engage the edge of the clothing from end to end thereof, with a clinching device longitudinally movable with relation to the flat holder and

flat, while the clothing is held by the straining device substantially as and for the purpose described.

5. The combination of the flat holder with the clothing straining device comprising concentric jaws and a clinching device composed of jaws arranged to encompass the straining device and bear one at the upper and the other at the under surface of the flat in the flat holder, and means to move the said clinching jaws, longitudinally along the flat, substantially as described.

6. The combination of the flat holder with the clothing straining device comprising concentric jaws and a clinching device composed of jaws arranged to encompass the straining device and bear one at the upper and the other at the under surface of the flat in the flat holder, a carriage for said clinching jaws and the guide way for said carriage parallel with the flat holder, substantially as described.

7. The combination of the flat holder with the straining device comprising a longitudinally recessed tube and a longitudinally grooved rod having its bearings therein, a pivoted support for said straining device one member of said straining device being provided with an operating lever whereby it is rotated relative to the other member to grip the cloth and whereby both members are moved on said pivoted support with relation to the flat holder, and a holding device for preventing backward movement of the operating lever, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBT. W. HUNTON.

Witnesses:

JOS. P. LIVERMORE,  
M. E. HILL.