

G. O. LACKEY.

Bag Machine.

No. 201,425.

Patented March 19, 1878.

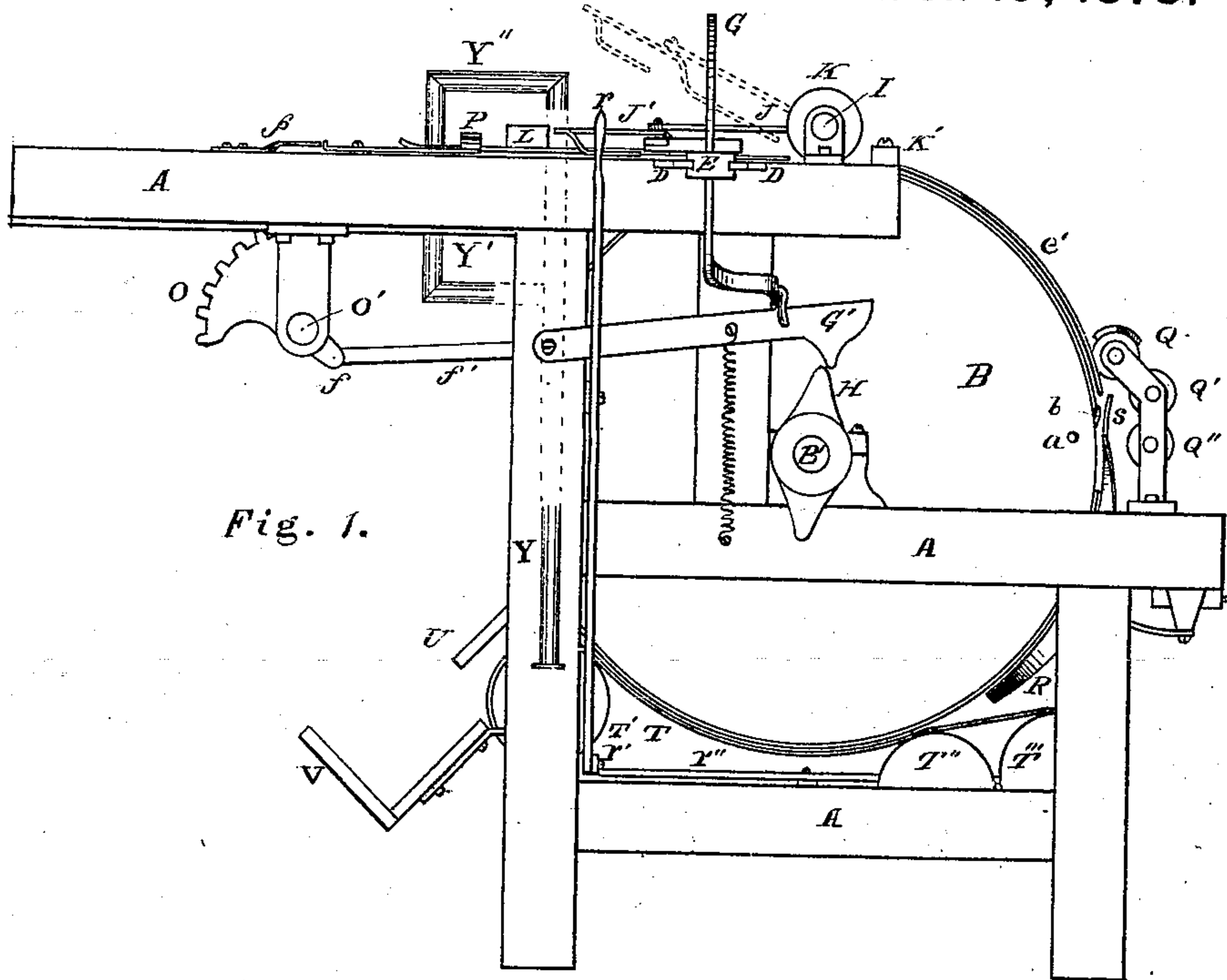


Fig. 1.

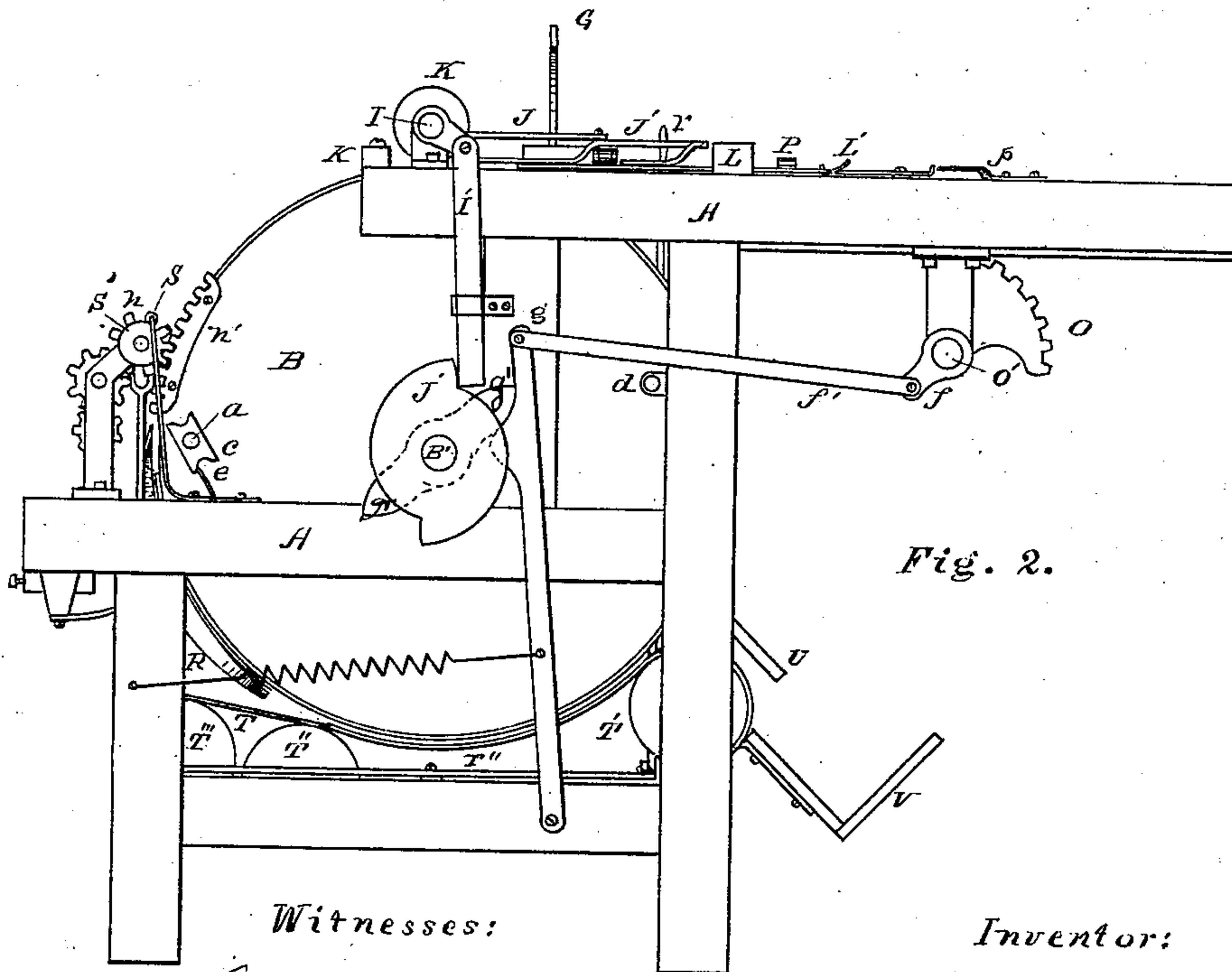


Fig. 2.

Witnesses:

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Inventor:

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by Humphrey and Stuart  
his attys.

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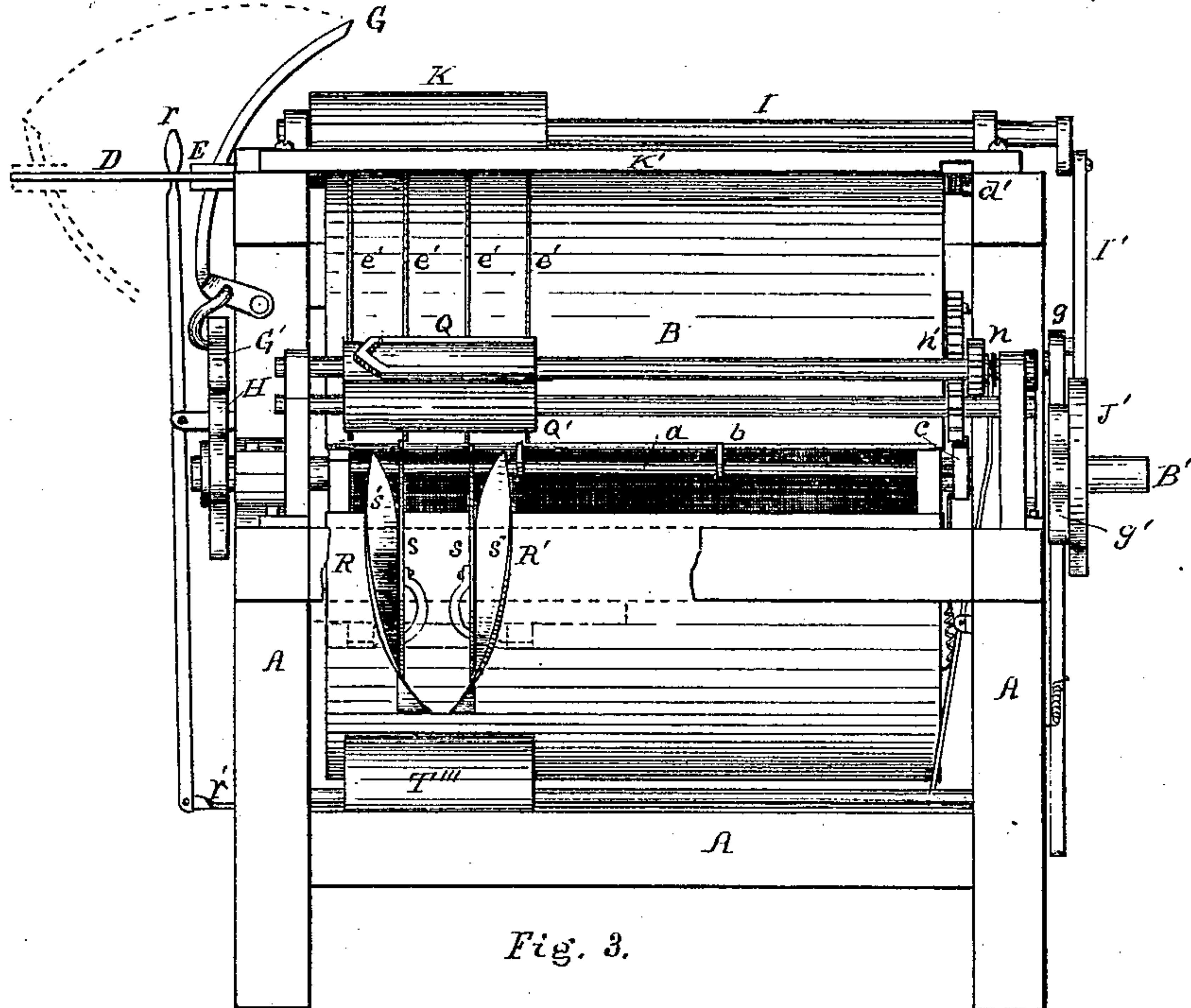


Fig. 3.

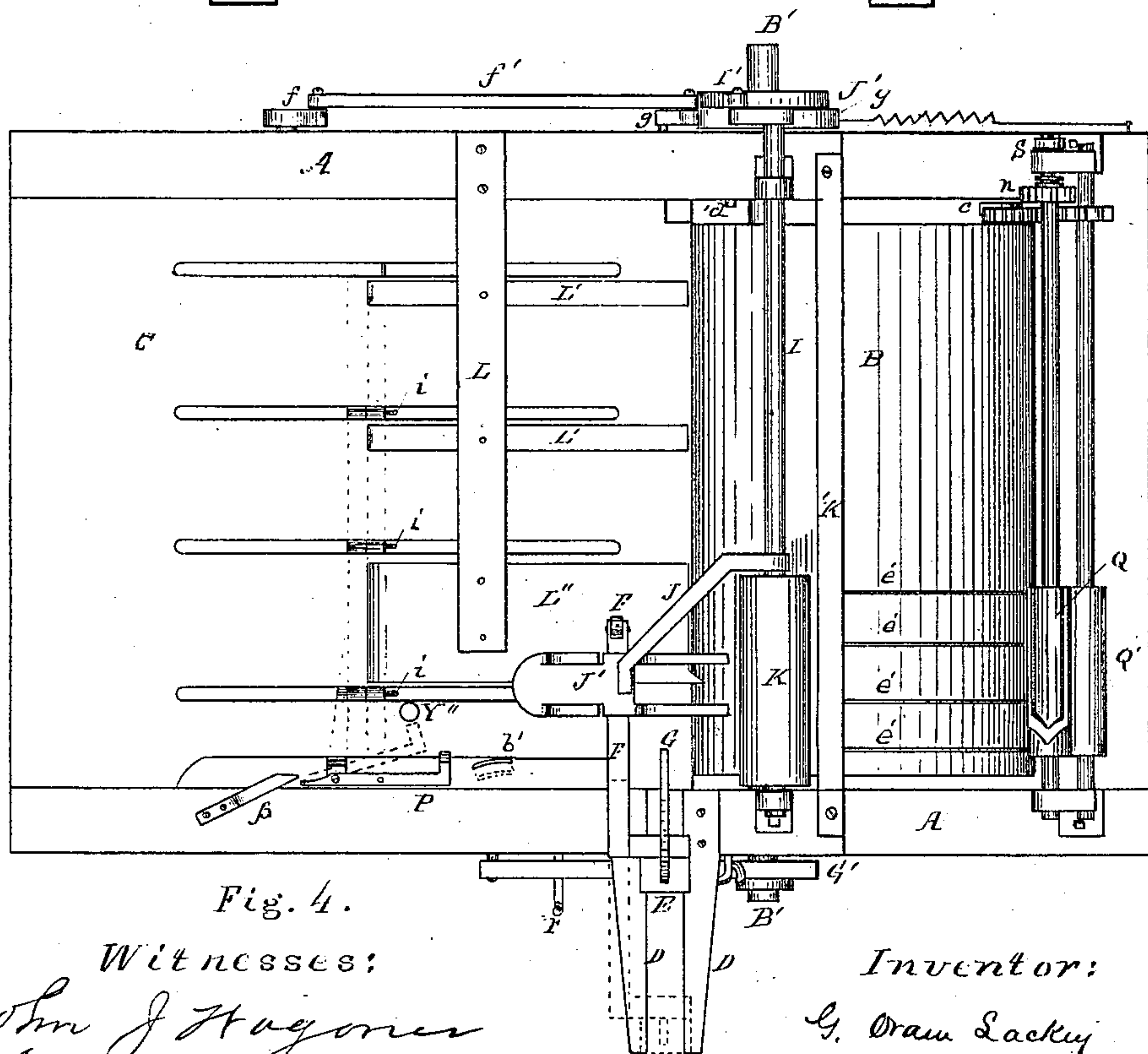


Fig. 4.

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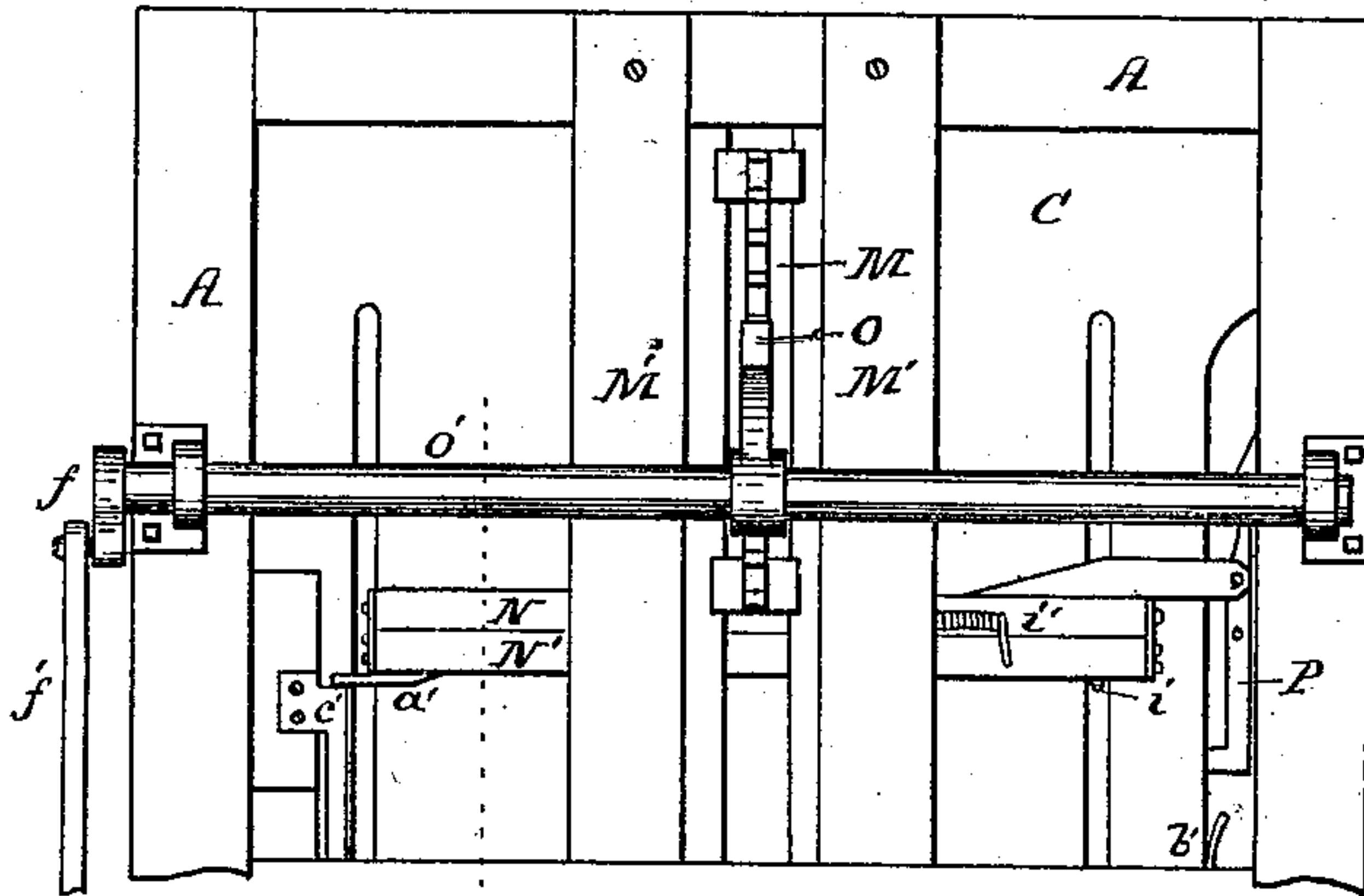


Fig. 5.

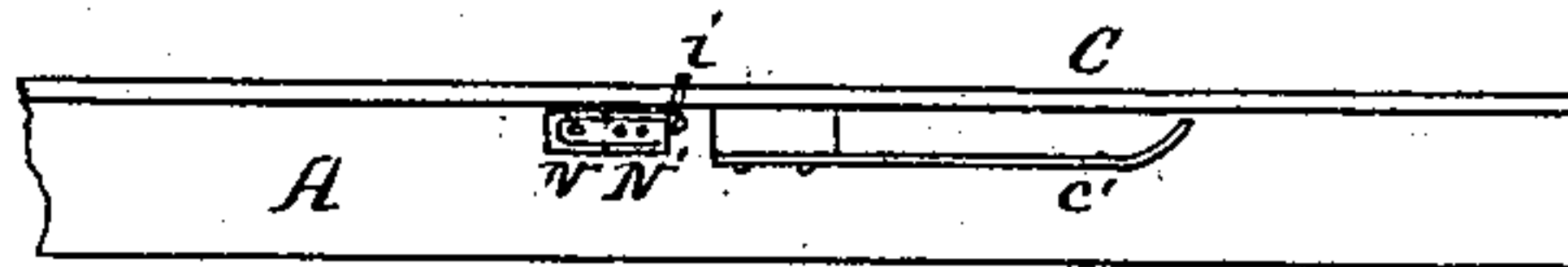


Fig. 6.

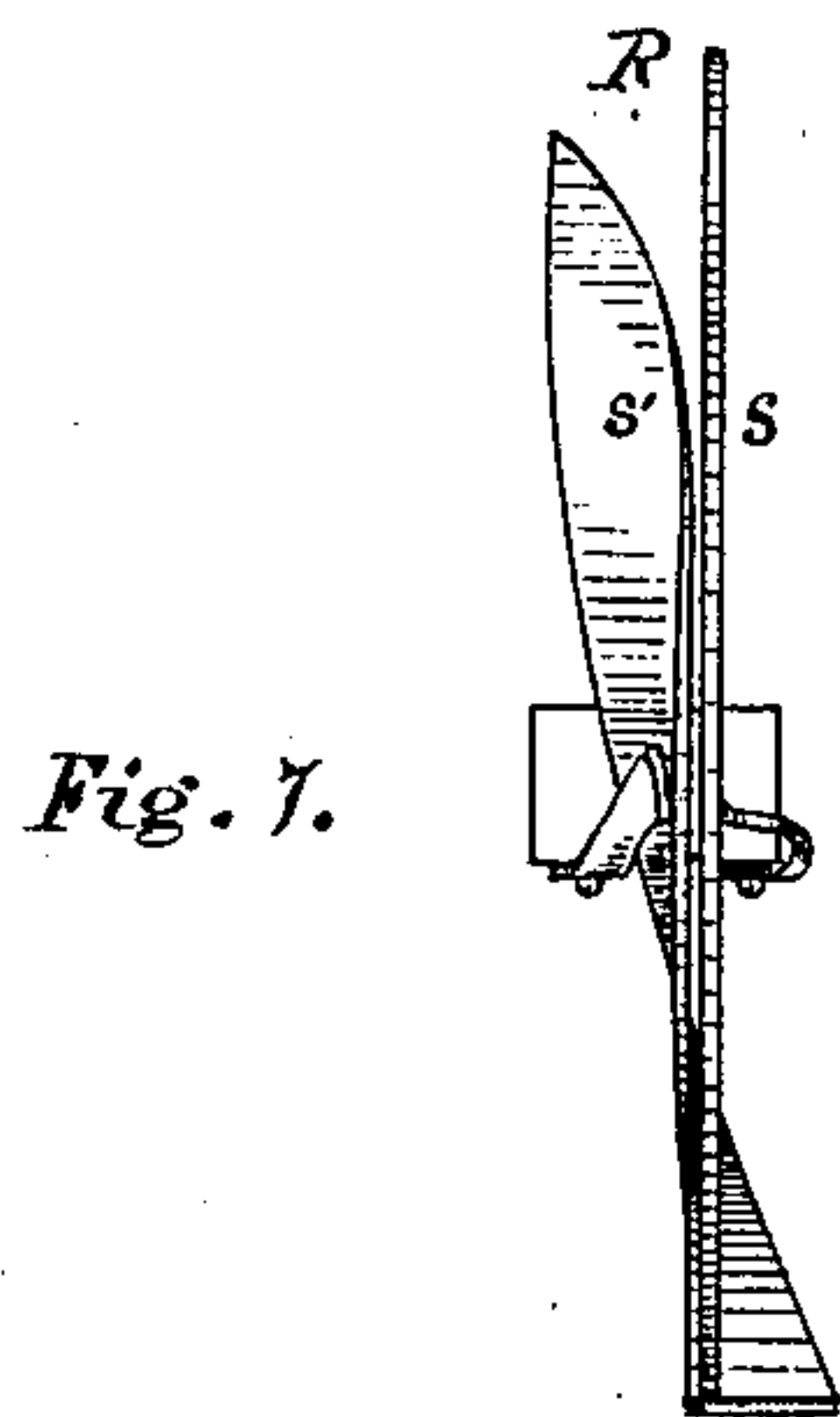


Fig. 7.

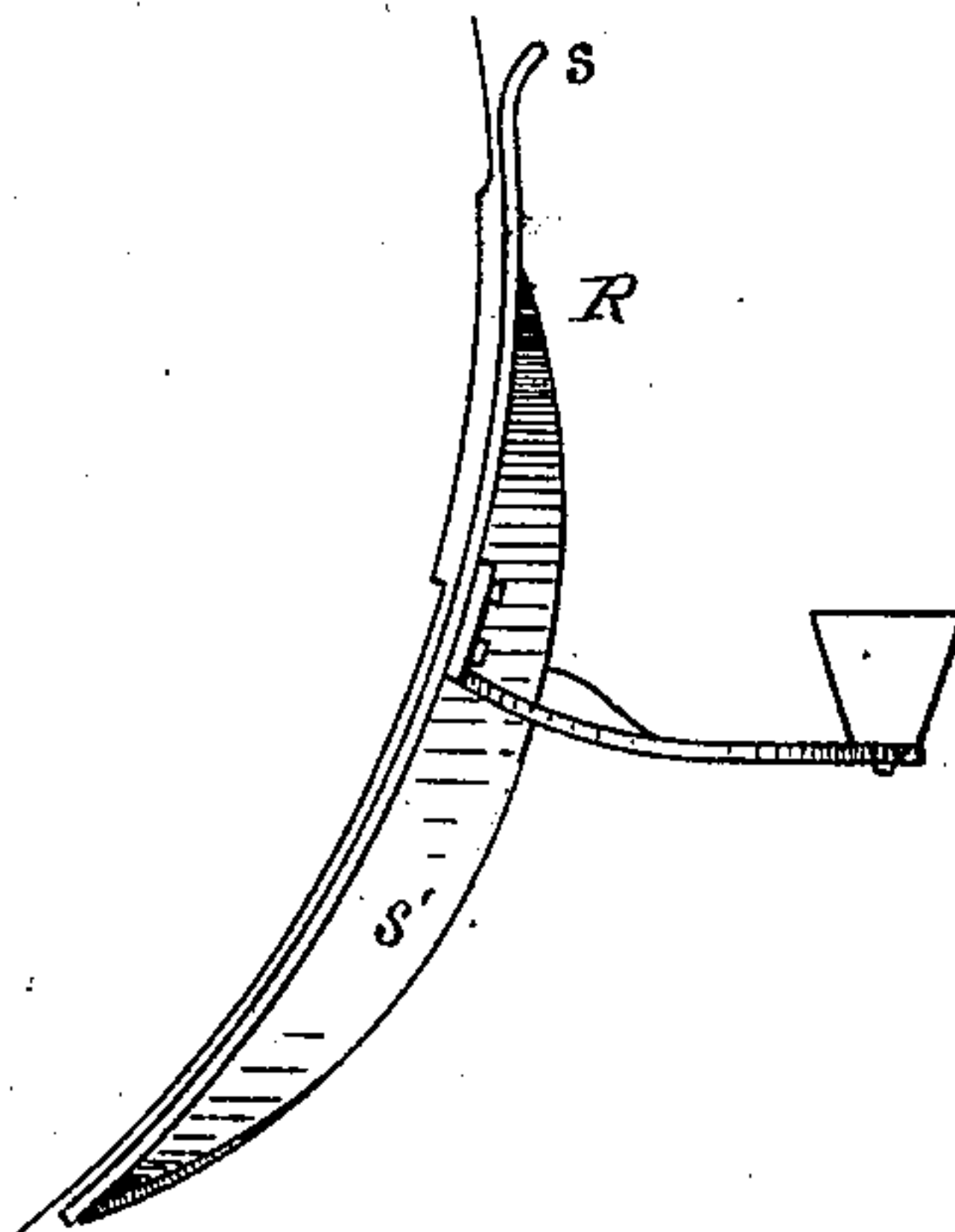


Fig. 8.

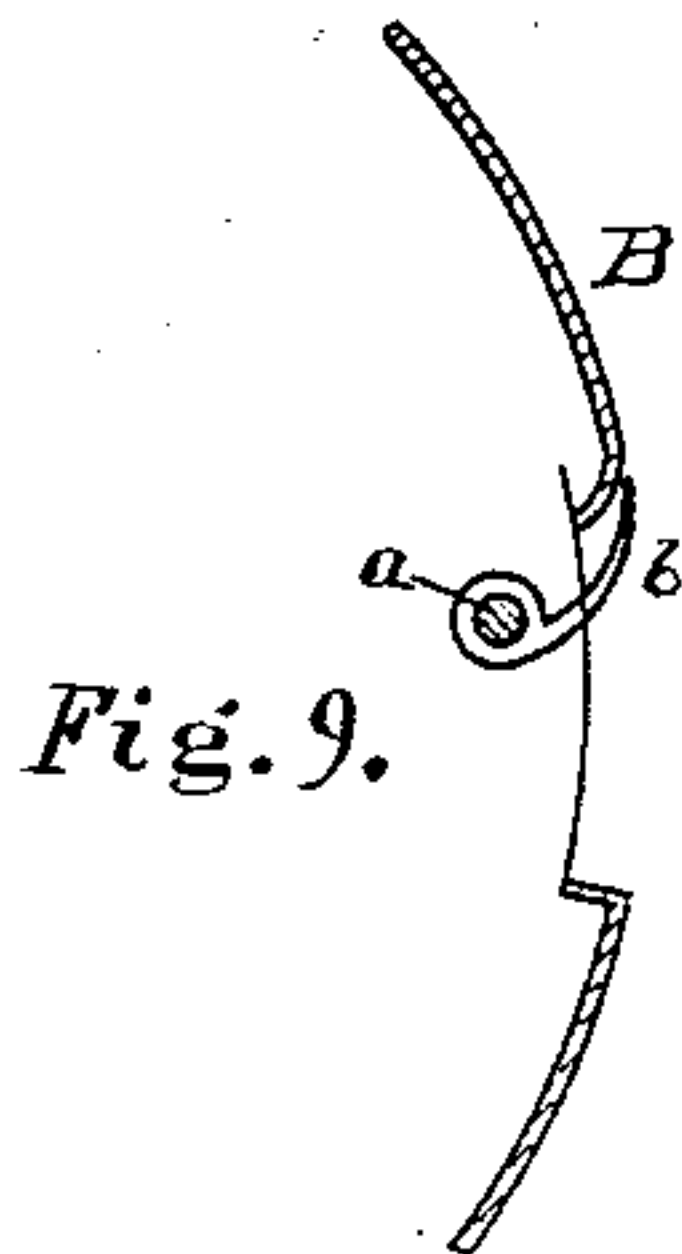


Fig. 9.

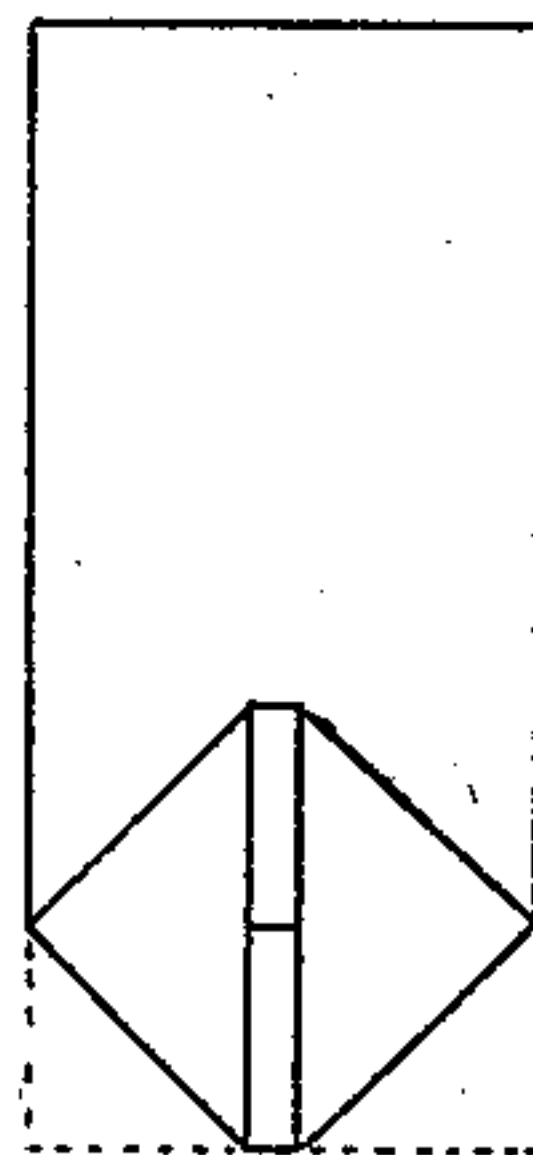


Fig. 10.

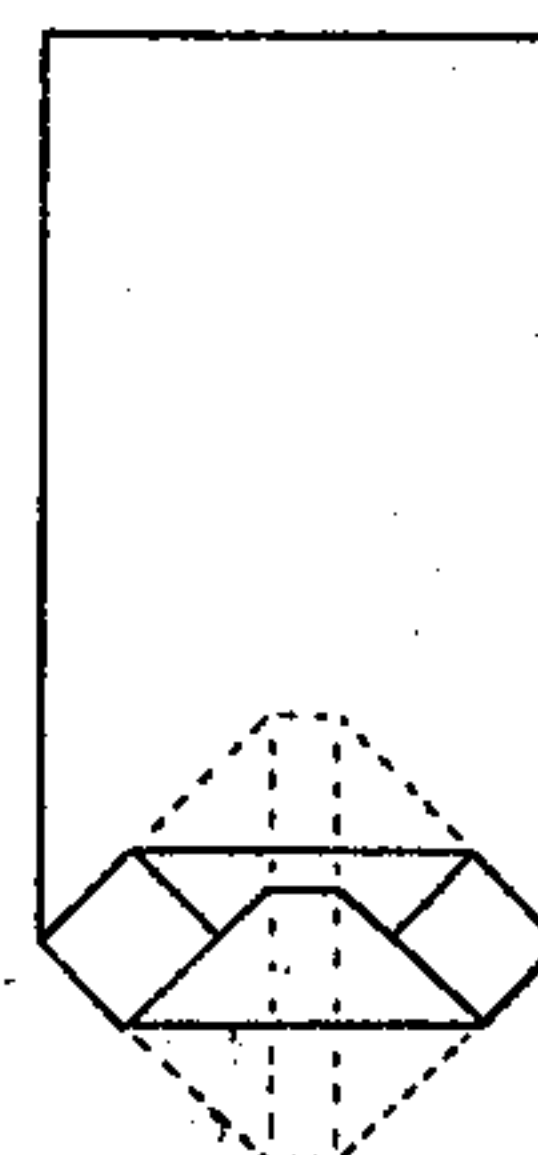


Fig. 11.

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# UNITED STATES PATENT OFFICE.

G. ORAM LACKEY, OF AKRON, OHIO.

## IMPROVEMENT IN BAG-MACHINES.

Specification forming part of Letters Patent No. **201,425**, dated March 19, 1878; application filed May 4, 1877.

*To all whom it may concern:*

Be it known that I, G. ORAM LACKEY, of the city of Akron, in the county of Summit and State of Ohio, have invented an Improved Paper-Bag-Bottoming Machine, of which the following is a specification:

The object of my invention is to construct a satchel-bottom upon paper bags after the body of the bag has been formed and the side seam pasted; and it consists of a combination and arrangement of parts, of which, as they will be hereinafter fully described and specifically pointed out in the claims, a preliminary explanation is deemed unnecessary.

In the accompanying drawings, the following figures represent, respectively, views of my machine, as follows: Figure 1, Sheet 1, a left-side elevation; Fig. 2, Sheet 1, a right-side elevation; Fig. 3, Sheet 2, a front elevation; Fig. 4, Sheet 2, a plan.

Reference being had to these drawings, my machine is described as follows: The entire machine is supported upon a frame, A, of substantially the form shown. B is a hollow cylinder, attached to and revolving with the shaft B', in suitable boxes in the frame A, and its motion is from the top forward. The periphery of this cylinder consists of two sheets of metal, suitably supported from within, of such length as to leave between the edges thereof longitudinal spaces on opposite sides of the cylinder. Within each of said spaces is a device for seizing the edge of the bag; and it consists of a shaft, *a*, journaled in the ends of the cylinder, and provided with fingers *b b*. This shaft *a* projects through the right end of the cylinder, and has attached thereto a button, *c*, which, by alternately encountering the pins *d d'*, turns the shaft so as to withdraw the fingers *b b* from or press them against the edge of one of the plates which form the periphery of the cylinder B, and a spring, *e*, holds the shaft in either position after it has been so turned.

The edge of the plate pressed upon by the fingers *b b* is rounded inward, as shown in enlarged section in Fig. 9, for a purpose hereinafter specified.

Upon the top of the frame A, and flush with the same, is a platform, C, the front edge of which, being beveled from beneath, ex-

tends so close to the periphery of the cylinder B that bags extending slightly over said edge may be grasped by the fingers *b b*. To the extent described, the machine resembles a single-cylinder printing-press.

From the left top of the frame A extend guides D D, in which slides a cross-head, E, carrying a shaft, F. This shaft F terminates in a small wheel, and has a transverse motion across the machine, as indicated by dotted lines in Figs. 3 and 4, and is moved by means of the curved arm G, sliding in a slot in the cross-head E, and operated by the cam H, sway-bar G', and connecting parts.

Above the center of the cylinder B is a shaft, I, journaled in suitable boxes, and having attached thereto an arm, J, bearing at its other extremity a metallic holder, J', of the form shown. This holder is raised and lowered, as indicated by dotted lines in Fig. 1, by means of a crank on the end of the shaft I, connecting-rod I', and cam J', attached to the shaft B'.

K is a compressing-roller, which revolves freely on the shaft I. From the cross-bar K' extend rods *e' e' e' e'*, bent to conform to the curve of the cylinder B, and which serve to hold the bag against the cylinder as it revolves.

Across the platform C is a bar, L, to the under side of which are attached the metallic plates L' L' and L'', the front ends of which extend to the edge of the platform. These plates serve to hold the bag close upon the platform as it is fed forward, the back ends of said plates being slightly curved upward to enable the bag to more readily slide under them. The plate L'' forms also a folding-rule, over the left edge of which the bag is folded by the forward thrust, hereinafter described, of the shaft F.

The feeding device (shown in Figs. 5 and 6, which represent, respectively, the under side of the platform C, and a cross-section of a part of the same) consists of the bar N, attached to and moved by the rack M. This rack slides in suitable guides M' M', and is moved by means of the toothed segment O, shaft O', crank *f*, pitman *f'*, sway-bar *g*, and cam *g'*. To the front of the bar N is hinged a bar, N', from the front of which pins *i i* pro-



ject upward through slots in the platform C. This bar N' is held upward by a spring, *i'*, and from one end projects a pin, *a'*. As the rack slides forward the pins *i* project above the surface of the platform C, and carry the bag forward under the plates L' L' L'', Fig. 4, while the pin *a'* slides above the spring *c'* until it passes the end thereof. In returning, this pin *a'* is turned by the spring *c'* and travels below it, turning the bar N' downward, and thus drawing the pins *i* below the surface of the platform C.

Upon a projection at the left end of the feeding device is pivoted a bar, P, of the shape shown, the longer end of which is bent upward sufficiently to hold the edges of the bag apart, so that the shaft F may enter between them.

This bar P occupies, in moving forward, the position indicated by dotted lines in Fig. 4 until it passes a spring-latch, *b'*, which opens, as indicated by dotted lines in Fig. 4, to permit a pin on the under side of the bar P to pass. In returning, the bar, turned by this latch, assumes the position indicated in the drawing until it encounters the fixed bar *p* and is again turned to assume its former position.

In operation, a bag, cut of the required length, and with the side seam pasted, is placed upon the platform C, slipped forward under the plates L' L' L'', the edges of one end separated, and the bent end of the bar P between them and holding them apart. The bag is then carried forward by the pins *i* until the forward edge thereof projects slightly over the edge of the platform C, the holder J' being raised. The bar F is then thrust forward and enters between the edges of the end of the bag, and at the same time the end of the bar P is withdrawn from the bag by the retrograde motion of the feeding device. When the shaft F in its forward motion reaches the line of the left edge of the plate L'', the sides of the bag, being held together by said plate, cannot be separated farther; but from that line the shaft F passes above said plate, pushing the upper side of the bag with it, and folding it over the edge of said plate until the bag assumes the form shown in Fig. 10.

At the moment the bar F completes the opening of the bag, the holder J' descends upon it, and holds it in position while the shaft F is withdrawn. As the cylinder revolves, the button *c* encounters the pin *d'*, causing the fingers *b b* to grasp the projecting edge of the bag, and carry it onto and along with the cylinder and under the roller K, which firmly presses the folds therein.

Q is a pasting-roller, which, by means of raised surfaces, applies paste to proper parts of the bag. This roller is connected with distributing-rollers Q' Q'', and is moved by gear-wheel *n* and the segment *n'* on the cylinder B.

The gear-wheel *n* fits upon a feathered shaft of the paste-roller, and, by means of the lever *r* and connections *r' r''*, can be thrown out of

gear at will, either to prevent paste being applied to the surface of the roller B, or for other reasons.

Except when turned by the segment *n'*, the paste-roller is held with the raised parts away from the cylinder by the spring S pressing against a cam, S', on the end of the roller-shaft.

After leaving the pasting-roller the bag encounters the folders R R'. These folders (one whereof is shown in detail, enlarged, in Figs. 7 and 8) consist of two parts—a bar, *s*, which affords an edge over which the bag is folded, and a molded blade, *s'*, which turns the fold, both shaped to conform to the periphery of the cylinder B. These folders are supported by arms from the frame A, and are made adjustable, so as to be adapted to any desired size of bag.

The upper end of the bar *s* is preferably higher than the blade *s'* and bent outward, while the upper end of the blade *s'* terminates in a point which lies close to the periphery of the cylinder B.

As the bag is carried forward the upper ends of the bars *s s* pass over it. The edge of the bag being slightly bent inward over the curved edge of the orifice in the cylinder B, hereinbefore referred to, the points of the blades *s' s'* pass over it, but under the points of the fold made by the bar or shaft F; and as the cylinder revolves, these points are, by the form of the blades *s' s'*, folded over the bars *s s* until the bag leaves the folders in the form shown in Fig. 11.

It will be readily understood that one blade must fold more rapidly than the other, in order that one point of the fold may lie under the other.

After leaving the folders the bag passes between the cylinder and the wide endless belt T, by which the folded parts are firmly pressed together. This belt runs upon the rollers T' T'' T'''. Motion is communicated to it by friction of the cylinder with the rollers T' T'', two friction-rollers being used to prevent a possible slipping of the belt as one of the spaces in the cylinder passes a friction-roller, while the roller T''' is made adjustable and serves to act as a tightener, to compensate for inequality in the pressure of the belt arising from the thickness of the bag, or the passage of the spaces in the cylinder B. After the bag leaves the belt T the button *c* encounters the pin *d*, Fig. 2, by which the bag is released, and falls completed over the inclined board U into the rack V.

The entire machine is operated by motion communicated to the shaft B' by means of a pulley or other equivalent device.

In feeding bags upon the platform, the edges of the end upon which the bottom is to be formed must be separated to permit the bent end of the bar P to enter therein. This labor is performed by hand when large bags are used; but with small bags it is found to be laborious and tedious; and to obviate this



difficulty, I adopt an opening device shown in Fig. 1.

This device consists of a pipe, Y, having two branches, Y' Y'', the first whereof passes under and upward through the platform C, terminating flush with the surface of the platform, and at a point a short distance to the right of the curved end of the bar P, as indicated in Fig. 4.

The branch Y'' passes above and descends toward the platform C, terminating one-half to one inch above the surface, and coincident with the end of the branch Y'.

By suitable machinery the air is continually drawn into the ends of these pipes. When a bag is placed upon the platform C in position to be fed forward, the end whereon the bottom is to be formed lies between the ends of the pipes Y' Y''. By the suction of these pipes the lower side of the bag is held down upon the platform, and the upper side is drawn upward against the end of the pipe Y'', thereby opening the end of the bag, so that the bar P may enter therein.

To avoid confusion, these pipes are shown only in Fig. 1, and the location of the ends in Fig. 4; and it has not been deemed necessary to show the exhausting machinery, as any suitable device may be adopted for that purpose.

Having thus described my invention, I claim—

1. In a paper-bag machine, the combination of devices, such substantially as described, for opening the end of the paper tube, a longitudinally-moving bar adapted to enter the open end of said paper tube and fold over the same, a revolving cylinder, having gripping devices for carrying the bag along sidewise, and folding devices, arranged adjacent to the cylinder, for folding over the two corners of the paper tube formed by the longitudinally-moving bar, the whole being organized to operate as herein set forth.

2. In a paper-bag machine, a shaft provided with a wheel in its forward end, and having a longitudinal reciprocating movement parallel with the bag, and operated by mechanism, such substantially as described, for causing the bar with its wheel to enter the end of the bag, in combination with a plate arranged across the bag at the line of the bottom fold, as set forth, separating the sides of the bag, and folding the upper side of the same over the edge of the before-mentioned plate, substantially as described.

3. In a paper-bag machine, the combination of the molded blades *s'* with the rigid and inflexible bars *s*, substantially as shown, whereby the molded blades shall pass under the point of the first folds of the bag as it is carried forward, and the rigid bars rigidly ride over the same and form lines, over which the pa-

per is folded by the molded blades, as set forth.

4. In a paper-bag machine, the bar P, adapted to engage the end of the bag and hold the same open, in combination with mechanism, substantially as described, for carrying said bar, with the bag, forward for the action of the longitudinally-reciprocating bar F to make the first fold, as set forth.

5. The pipe Y and branches Y' Y'', in combination with the traveling bar P, substantially as described, whereby the suction through the pipes will open the end of the bag, and permit the entrance of the bar P, for carrying the bag to the action of the longitudinally-moving bar F to form the first fold, as set forth.

6. In combination with the bar F, cross-head E, and guides D D, the curved arm G, operated by devices, substantially as shown, for the purpose of moving the bar F, substantially as described.

7. In combination with the bar F, cross-head E, and guides D D, the cam H and sway-bar G', for the purpose, by means of intermediate connections, substantially as shown, of moving the bar F, substantially as herein described.

8. The combination, with the revolving cylinder, of the folders R R', consisting of the bars *s* and molded blades *s'*, shaped to conform to the cylinder, and adapted to be adjusted substantially as and for the purpose described.

9. In a cylindrical paper-bag-bottoming machine, the revolving cylinder, having the rounded-edge orifice, upon which the side of the bag is held by the fingers *b b*, for the purpose of curving inward the edge of the bag, and preventing the point of the folder-blade passing between the bag and the periphery of the cylinder, substantially as herein described.

10. The combination, with the bar P, attached to and moving with the feeding device, of the latch *b'* and fixed bar *p*, substantially as and for the purpose described.

11. The combination, with the hinged bar N', moving beneath the platform C, and having pins *i i* projecting through slots in the latter, of the devices, such substantially as described, for moving the hinged bar, and the pin *a'* and spring *c'*, for governing the said bar, as and for the purpose set forth.

12. In a cylindrical paper-bag-bottoming machine, the combination of the bar P and shaft F, substantially as and for the purpose hereinbefore set forth.

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Witnesses:

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