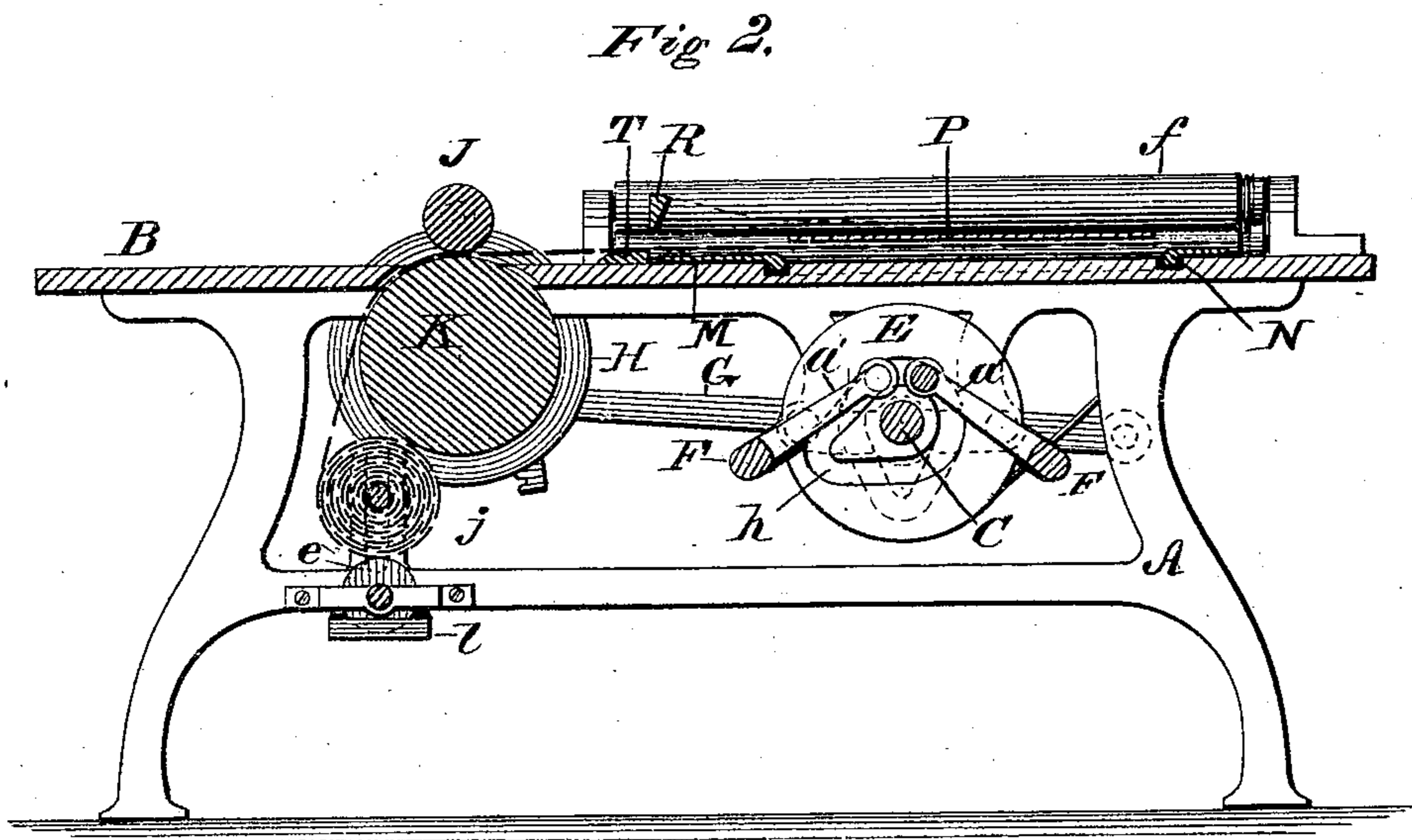
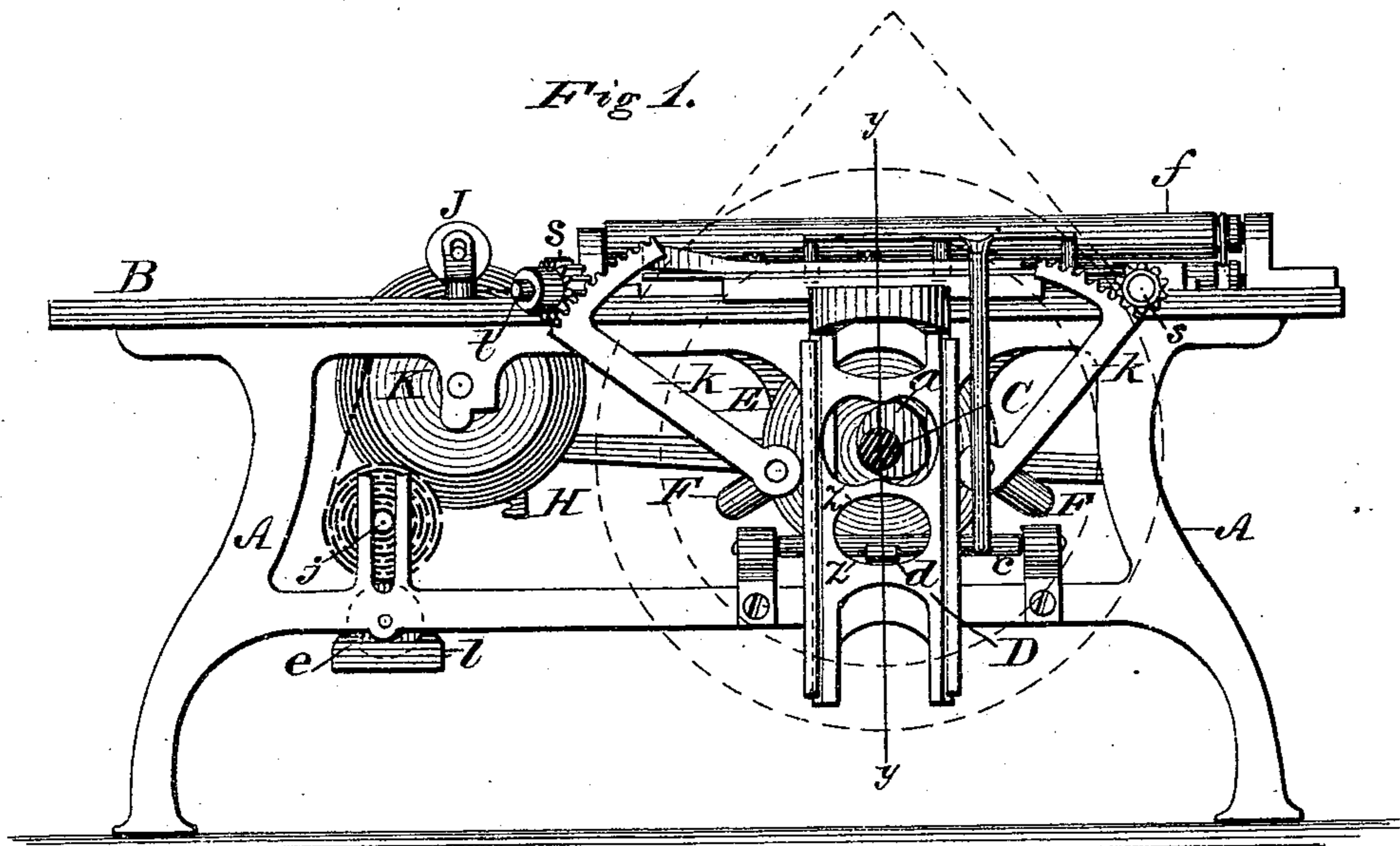


**A. MÜLLER.**  
**Paper-Bag Machines.**

No. 153,596.

Patented July 28, 1874.



*Witnesses.*

*Harry King.*  
*H. H. Dodge.*

*Inventor.*

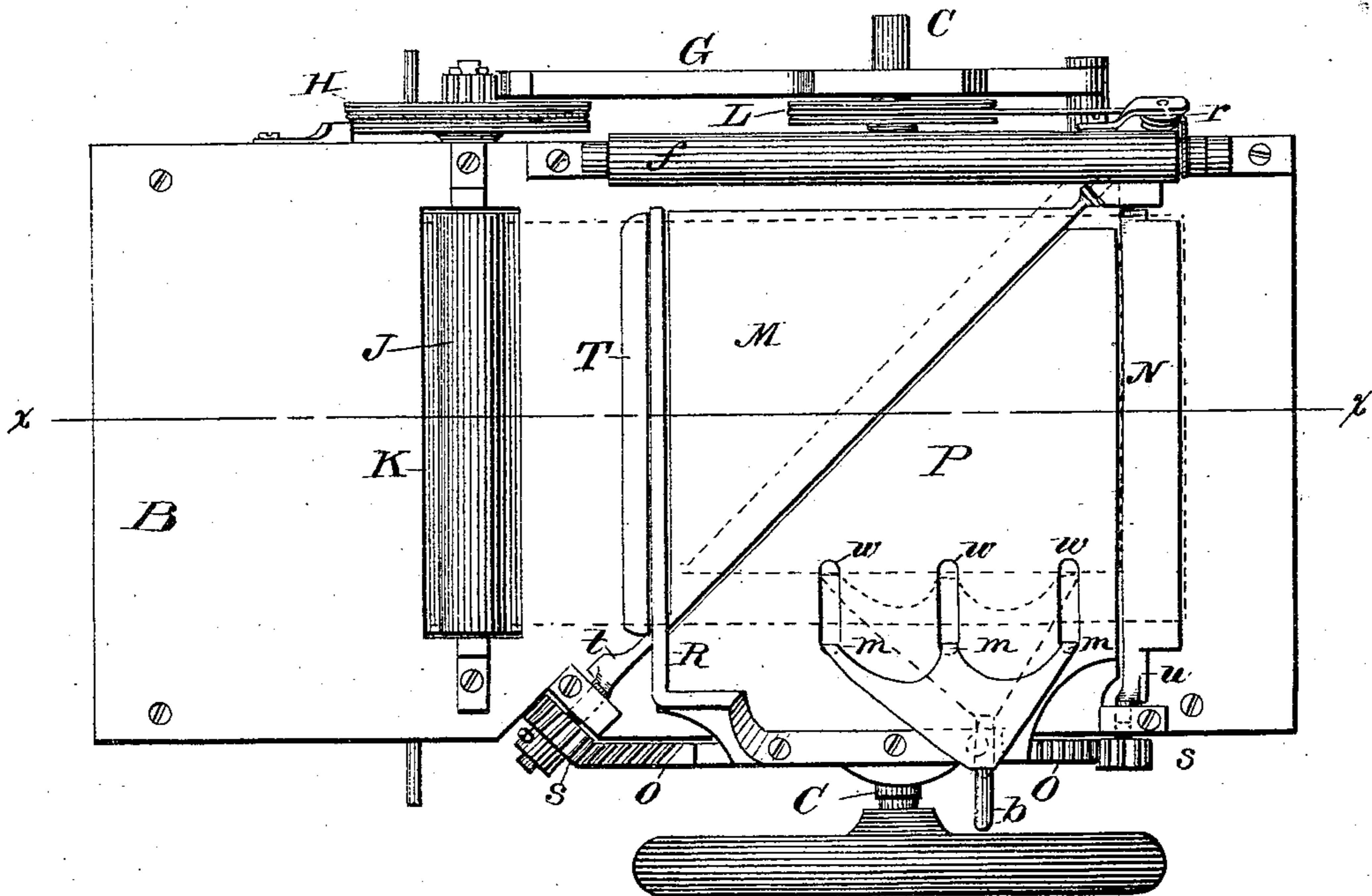
*Anton Müller.*  
*by Dodge & Son*  
*Attys.*

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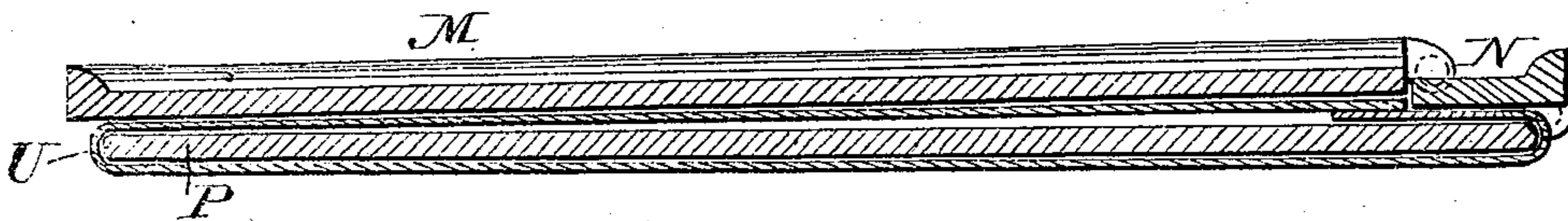
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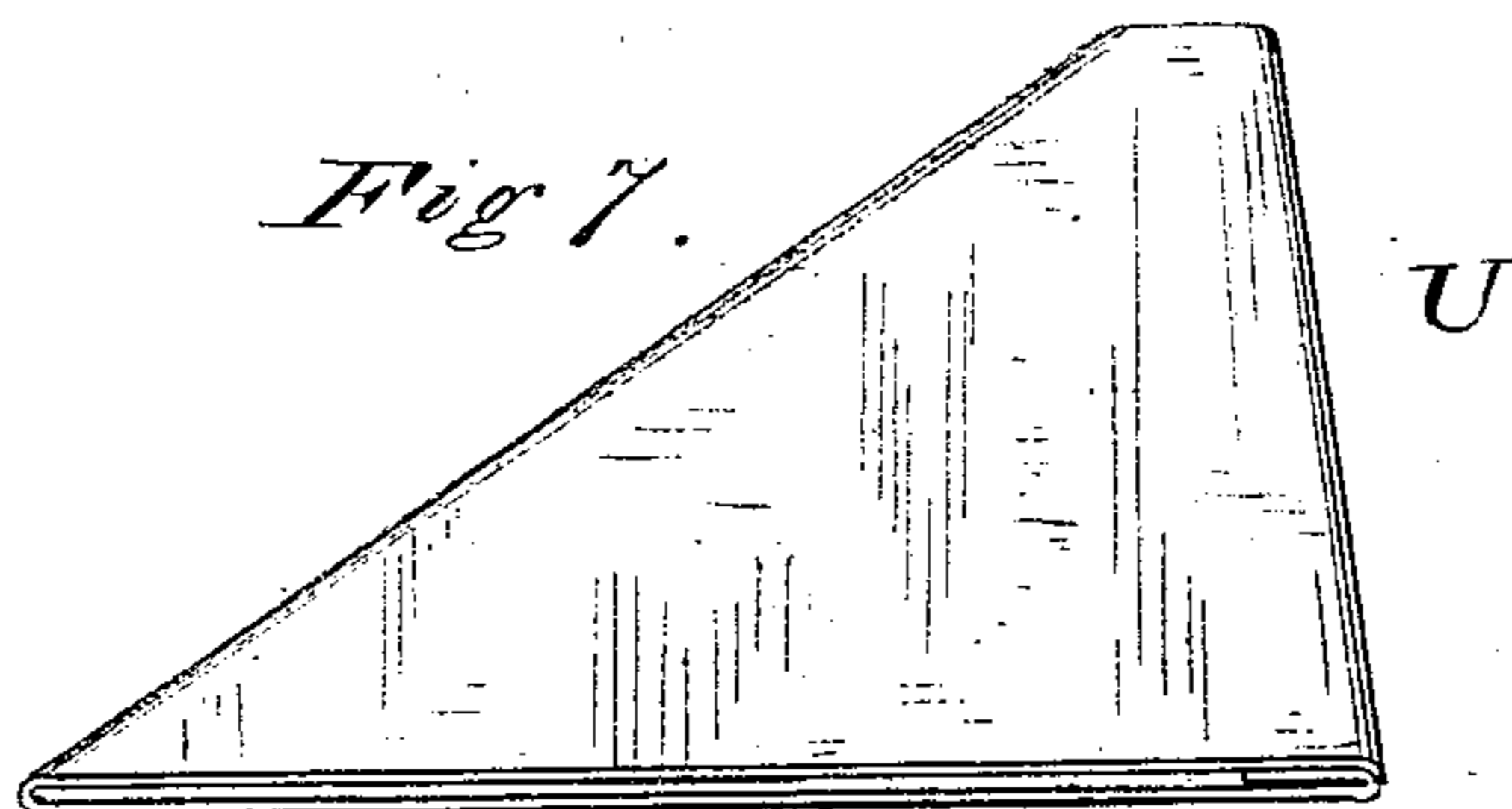
*Fig 3.*



*Fig 6.*



*Fig 7.*



Witnesses.

*Harry King*  
*H. H. Dodge*

Inventor,

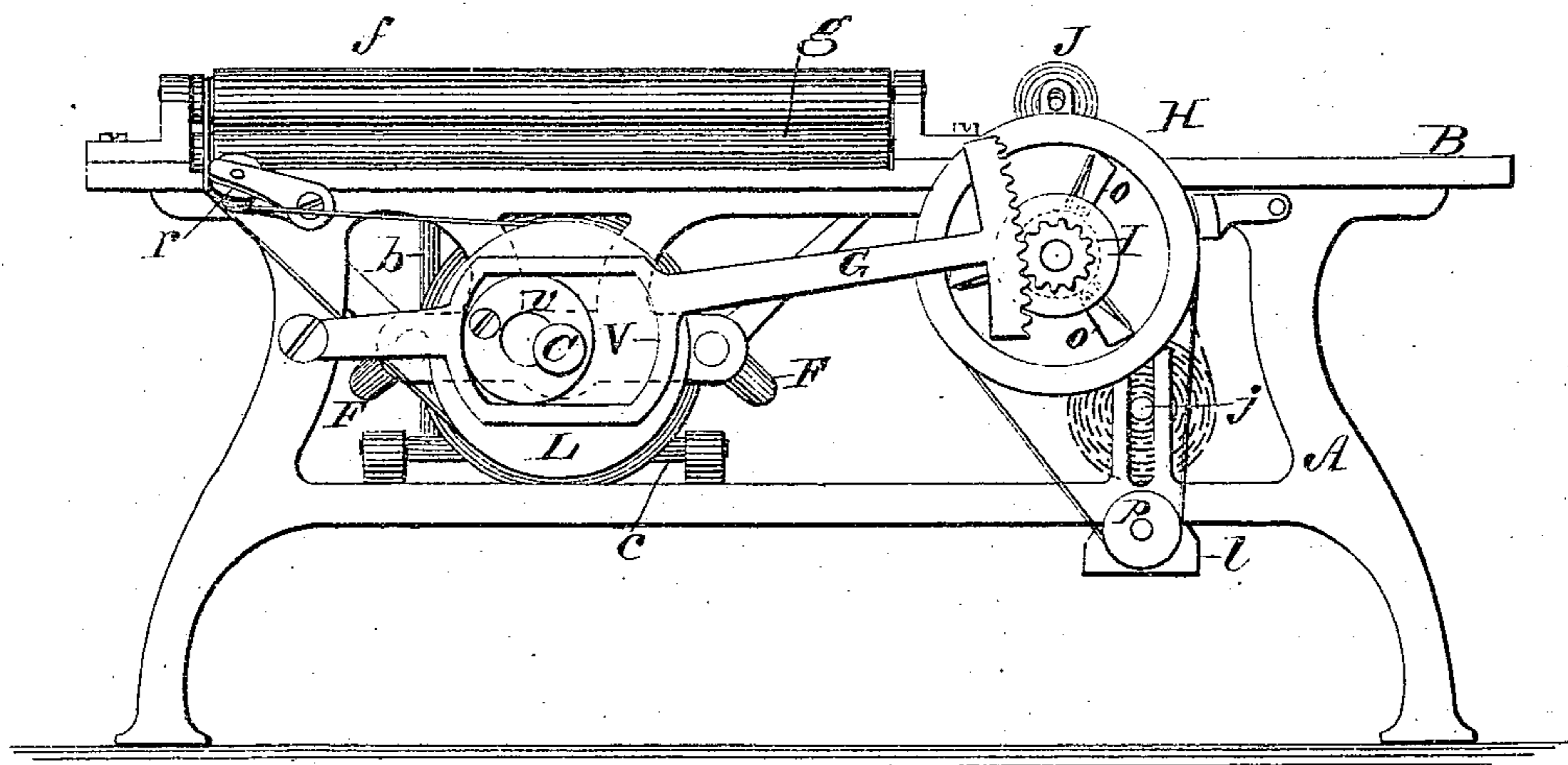
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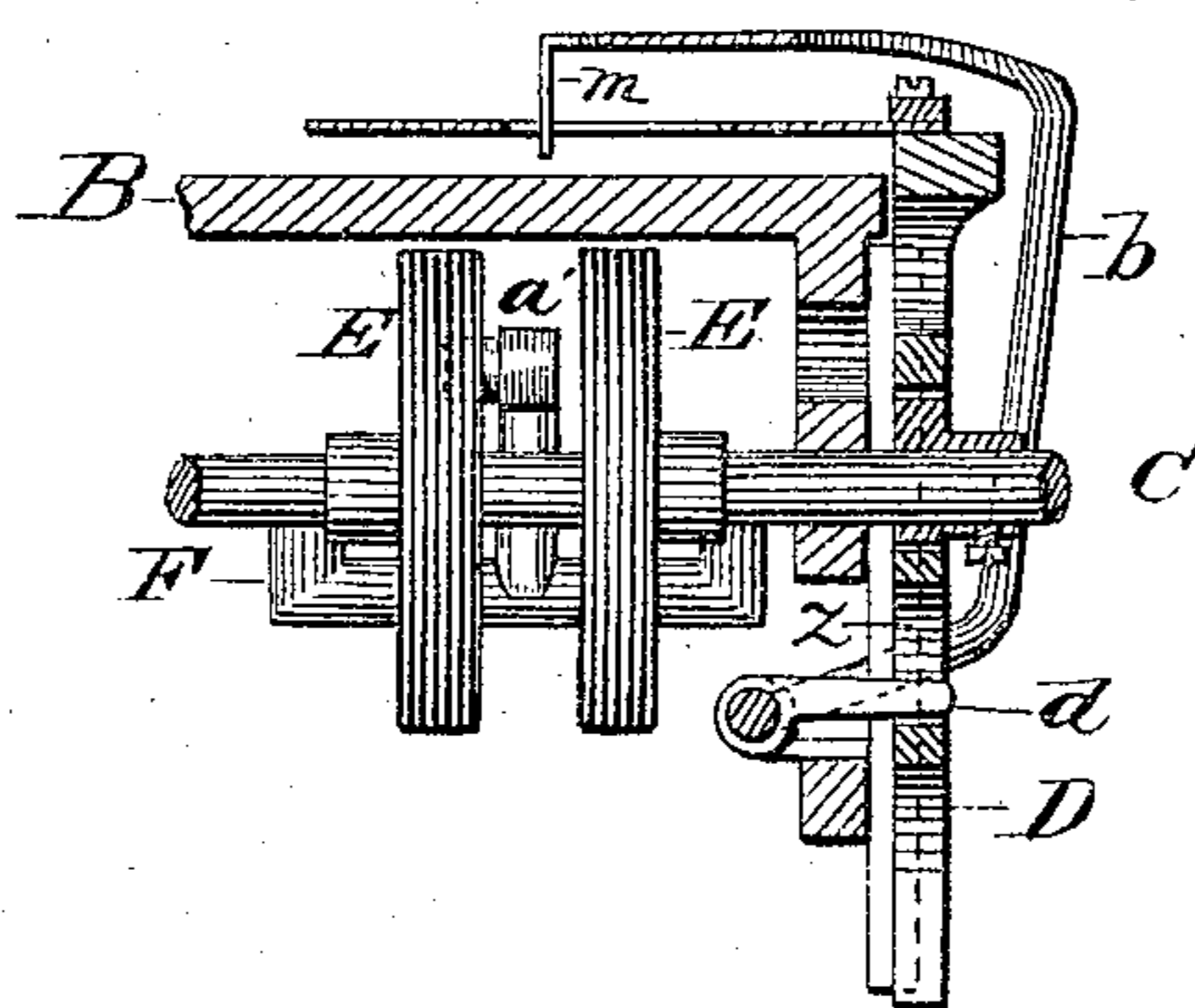
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*Fig 4.*



*Fig 5.*



Witnesses.

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# UNITED STATES PATENT OFFICE.

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PLACE.

## IMPROVEMENT IN PAPER-BAG MACHINES.

Specification forming part of Letters Patent No. **153,596**, dated July 28, 1874; application filed  
August 8, 1872.

*To all whom it may concern:*

Be it known that I, ANTON MÜLLER, of the city of Cincinnati, in the county of Hamilton, in the State of Ohio, have invented a new and useful Improvement in Machines for Making Paper Bags; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification.

My invention relates to machines for making paper bags; and the invention consists in a novel construction and combination of devices, whereby the paper is fed from a roll, pasted, cut off, and folded into a triangular bag, and then automatically delivered from the machine, as hereinafter more fully described.

Figure 1 is a side elevation of the machine. Fig. 2 is a longitudinal vertical section on the line *xx* of Fig. 3. Fig. 3 is a top plan view. Fig. 4 is a side elevation, looking at the side opposite to that shown in Fig. 1. Fig. 5 is an end view of a portion shown detached. Fig. 6 is an enlarged view, being a longitudinal vertical section of the bag and the folding devices at the instant that the folding is completed; and Fig. 7 is a view of the bag as delivered from the machine.

In the drawings, A represents the frame of the machine, upon which is secured a top or bed, B; and C is the driving or main shaft, extending transversely across the frame, underneath the bed. Transversely of the frame, near one end, I mount two feed-rolls, J and K, the lower one projecting up through an opening in the bed B, so that its periphery at the top comes flush with the top of the bed B, as shown in Figs. 1 and 2, the other feed-roll, J, being located directly over it.

The roll of paper is shown in Figs. 1, 2, and 4, wound upon a shaft, *j*, held loosely in slotted bearings below the roller K, and under this roll, at one end, I locate the pasting device, which consists of a dish, *l*, in which the paste is held, and a small wheel, *e*, which is mounted so as to revolve in the dish, so that its periphery shall dip in the paste, and revolve in contact with the roll of paper, and

thus smear it with paste along one edge as it is unwound. The shaft, being held loosely in its slotted bearings, permits the roll of paper to rest upon or come in contact with the paste-wheel *e*, whatever may be the size of the roll, and thus the paper is always supplied with paste along one edge.

It is obvious, however, that if preferred, the roll of paper with the pasting device may be located at the end of the bed B, instead of under it.

Upon the bed, a short distance from the feed-rolls, I secure a stationary knife or blade, T, Figs. 2 and 3, over which the paper passes as it is fed forward to the folding plates; and in connection with this fixed blade T, I arrange a vertically-reciprocating blade or cutter, R, which is rigidly attached to a slide, D, which works in vertical guides at the side of the frame, as shown in Fig. 1, this slide D being operated by an eccentric or cam, *a*, secured to the main shaft C, this eccentric and its bearings or points of contact in the slide being so constructed and arranged as to raise the blade R and hold it up while the paper is being fed forward, and force it down so as to sever the paper at the instant it has ceased to move forward.

In order to impart to the feed-rolls an intermittent motion, I mount on one end of the roll K or its shaft a clutch-wheel, H, as shown in Fig. 4. This form of wheel, being a well-known device, need not be specially described, further than to say that there is mounted loosely upon the same shaft a pinion, I, which has pivoted to it, and projecting radially therefrom, three arms, O, the outer ends of which are made to engage with the rim of the wheel H when moving in one direction, and thus carry the wheel with them, but which, when moved in the reverse direction, do not engage with the wheel, and therefore leave it stationary at such times. This pinion I is operated in reverse directions alternately by means of a segmental rack on the end of a lever, G, which is pivoted at its opposite end to the frame A, and has a yoke, V, which embraces a cam or eccentric, *v*, on the shaft C, as shown in Fig. 4, so that as the shaft rotates, the le-

ver G with its rack is caused to oscillate, and thus operate the pinion I first in one and then in the opposite direction. Upon the same end of the shaft C I secure a pulley, L, from which a cord passes over a guide-pulley, *r*, and from thence around a roller *f*, arranged at the side of the machine, directly opposite the point where the folding operations are performed, as shown in Fig. 4, there being also, directly under this roll *f*, another roll, *g*, these two rolls being operated by the same cord from pulley L, and being located, as described, for the purpose of receiving and carrying and feeding the folded bag out of the machine from the folding plates or wings, as will be hereinafter more fully described.

The folding devices consist of two plates or wings, M and N, both of which are located upon the bed B, in the positions shown in Fig. 3. The wing M is triangular in shape, and is secured to a shaft, *t*, arranged diagonally across the bed, as shown in Fig. 3, there being a recess in the bed for the shaft *t*, and the wing M being secured to the shaft, which is cut away or flattened on one side in such a manner that when the wing M is turned back upon the bed, as represented in Fig. 3, it will lie close down upon the bed, so as to permit the paper as it is fed forward to pass over it, the stationary blade T projecting above the bed sufficient to raise the paper enough to cause it to pass over the outer edge of the wing M when thus turned down upon the bed. The other wing, N, is a narrow plate, arranged straight across the bed B, as also shown in Fig. 1, and it is secured to a shaft, *u*, the same as wing M, the shaft of each having on end a pinion, *s*, as shown in Figs. 1 and 3.

The manner in which I operate these folding plates or wings is as follows: At each side of shaft C I mount a rock-shaft, F, as shown in Figs. 1, 2, and 4, these shafts F each having secured to one end an arm, *k*, carrying on its outer end a segmental rack, as shown in Fig. 1, these racks being arranged to engage with the respective pinions *s* on the shafts *t* and *u* of the wings M and N. To impart motion to these rock-shafts F, I secure upon the main shaft C, as shown more clearly in Fig. 5, two disks, E, each having in its side a cam-groove, *h*, (see Fig. 2,) in which the wrist of an arm, *a'*, that projects at right angles from shaft E engages, as shown in Figs. 2 and 5, so that, as the shaft C rotates and carries with it the disks E, the rock-shafts F are caused to move, and by means of their arms *k* with the racks thereon, impart motion to the pinions *s* and their shafts *t* and *u*, with their folding plates or wings M and N, thereby causing the latter to make a half-revolution and back at each revolution of the disk E.

In order to hold the piece of paper upon the bed while being folded, I arrange over the bed a triangular plate, P, as shown in Fig. 3, this plate, like knife R, being secured to the vertical slide D, and so arranged in relation thereto that, when the slide is elevated by the

eccentric *a* on shaft C, as hereinbefore described, the plate P will be raised clear of the bed B, so as to permit the paper to be pushed under it, and then, as the slide descends, the plate P is brought down upon the paper, thus holding it secure while the wings operate to fold it. The holding-plate P and the knife R, both being connected to the slide D, are both raised and lowered together, so that the moment the paper is clamped by plate P it is also cut from the strip or roll by the knife, when it is free to be folded by the wings M and N.

In order to get the folded bag out of the way of the succeeding piece of paper, I arrange at the side of the frame where the slide D is, a rock-shaft, *c*, as shown in Fig. 1, it being arranged at right angles to the main shaft *c*, and having a rigid arm, *d*, Figs. 1 and 5, which projects through an opening, Z, in slide D, by which means there is imparted to the rock-shaft *c*, at intervals, a motion alternately in opposite directions, the opening Z being of such size or shape that the rock-shaft *c* remains stationary until the slide D has nearly completed its ascent, when the arm *d* of the shaft is raised, and immediately drops again as the slide descends. To this rock-shaft *c* I secure a vertical arm, *b*, as shown in Figs. 1 and 5, which, at a point just above the edge of the plate P, is bent so as to project a short distance inward over the plate, and at its inner end is provided with two or more vertical points or fingers, *m*, arranged to pass down through slots *w* in plate P as the latter rises, and thus be in front of the open end of the folded bag; and then, as the rock-shaft *c* is operated by the slide D, as before described, the fingers *m* are moved along in the slots *w*, thereby shoving the folded bag over toward the rollers *f* *g*, between which it is caught and thrown out at one side of the machine.

The foregoing comprises all the necessary or fundamental parts of my machine; and the manner in which it operates is as follows: The parts being properly constructed and adjusted, so as to give the required motion of the parts at the proper time, motion is given by any suitable means to the main shaft C. The paper is fed by the rollers J K over the stationary blade T, and over the wing M, under the plate P, and out at the opposite end over the wing N, beyond which it projects a short distance. The instant the paper has arrived at this point the feed-roller stops, the knife R and plate P descend, by which the piece is severed from the strip or roll, and is clamped on the bed. Instantly after this the wing N swings over and folds the end of the strip down on plate P, and is instantly followed by the wing M, which, in like manner, swings over and folds the paper diagonally across and down on plate P, thereby bringing the pasted edge down upon the end previously folded over by the wing N. These parts then occupy the position shown in Fig. 6. The instant this is done the fingers *m*, entering the slots *w* as the plate P rises, shove the bag

over to the rollers *f g*, which, seizing it, feed it out at the side of the machine, at the same time pressing the pasted seam firmly together, the bag *U* then being in the form represented in Fig. 7. As there shown, the bag is represented with its apex not entirely closed; but by slightly modifying the parts this may be avoided, though for ordinary purposes it is not considered important, and the point is closed by simply doubling it over when the bag is used.

It will be seen that by this construction I am enabled to produce a machine that will form bags automatically from a continuous strip or roll of paper in a very rapid manner.

Having thus described my invention, what I claim is—

1. The fingers *m*, in combination with the former *P*, provided with the slots *w*, con-

structed and operating as described, for starting the bag from the former, as set forth.

2. The combination of the former *P*, fingers *m*, and rolls *f g*, whereby the bag is stripped, pressed, and delivered.

3. The rock-shaft *c*, provided with the arms *b* and *d*, in combination with the slide *D* and the eccentric *a*, as a means of operating the fingers *m*, as described.

4. The combination of the rock-shafts *F F*, provided with the arms *a' a'* and levers *k k*, having rack-bars at their outer ends, with the cam-grooved wheels *E E*, all constructed to operate as described, as a means of imparting motion to the folding-wings, as set forth.

ANTON MÜLLER.

Witnesses:

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LOUIS STEGNER.