

H. G. ARMSTRONG.  
Paper-Bag Machines.

No. 139,104.

Patented May 20, 1873.

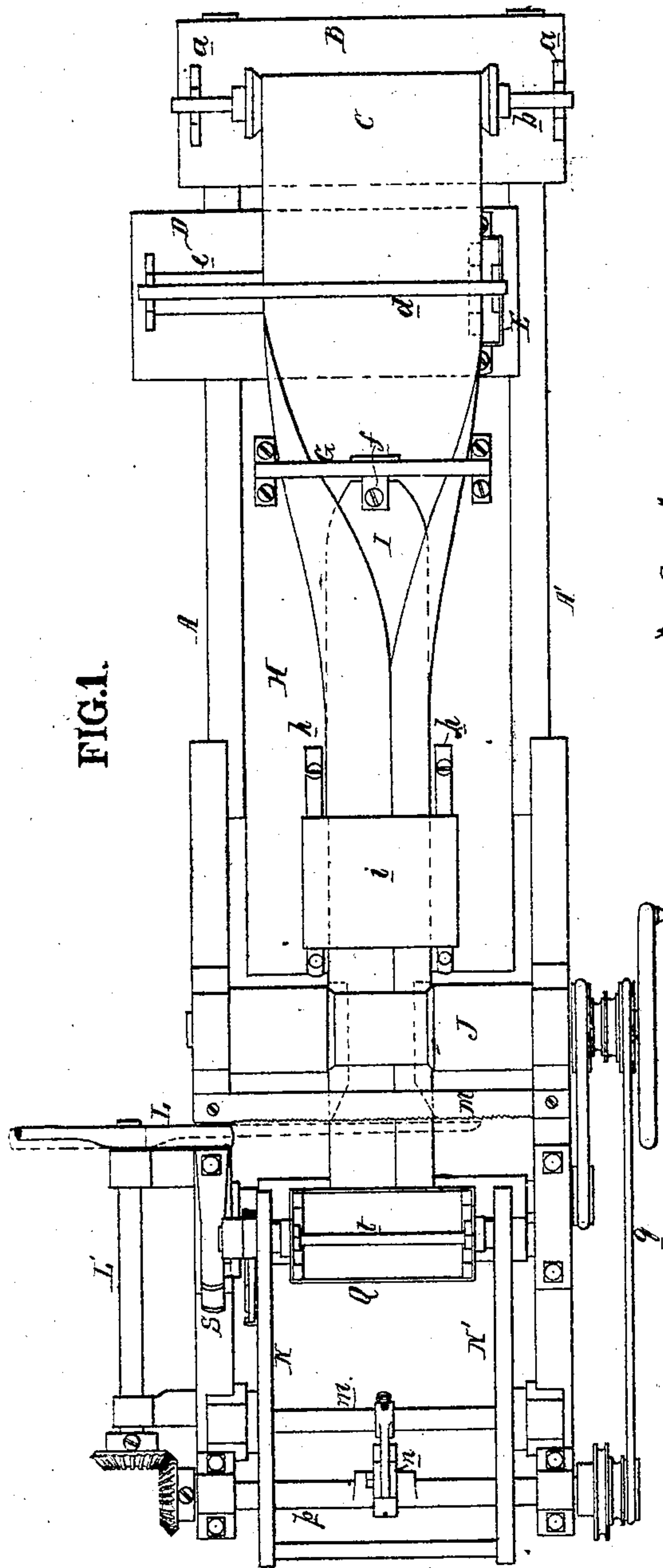


FIG. 1.

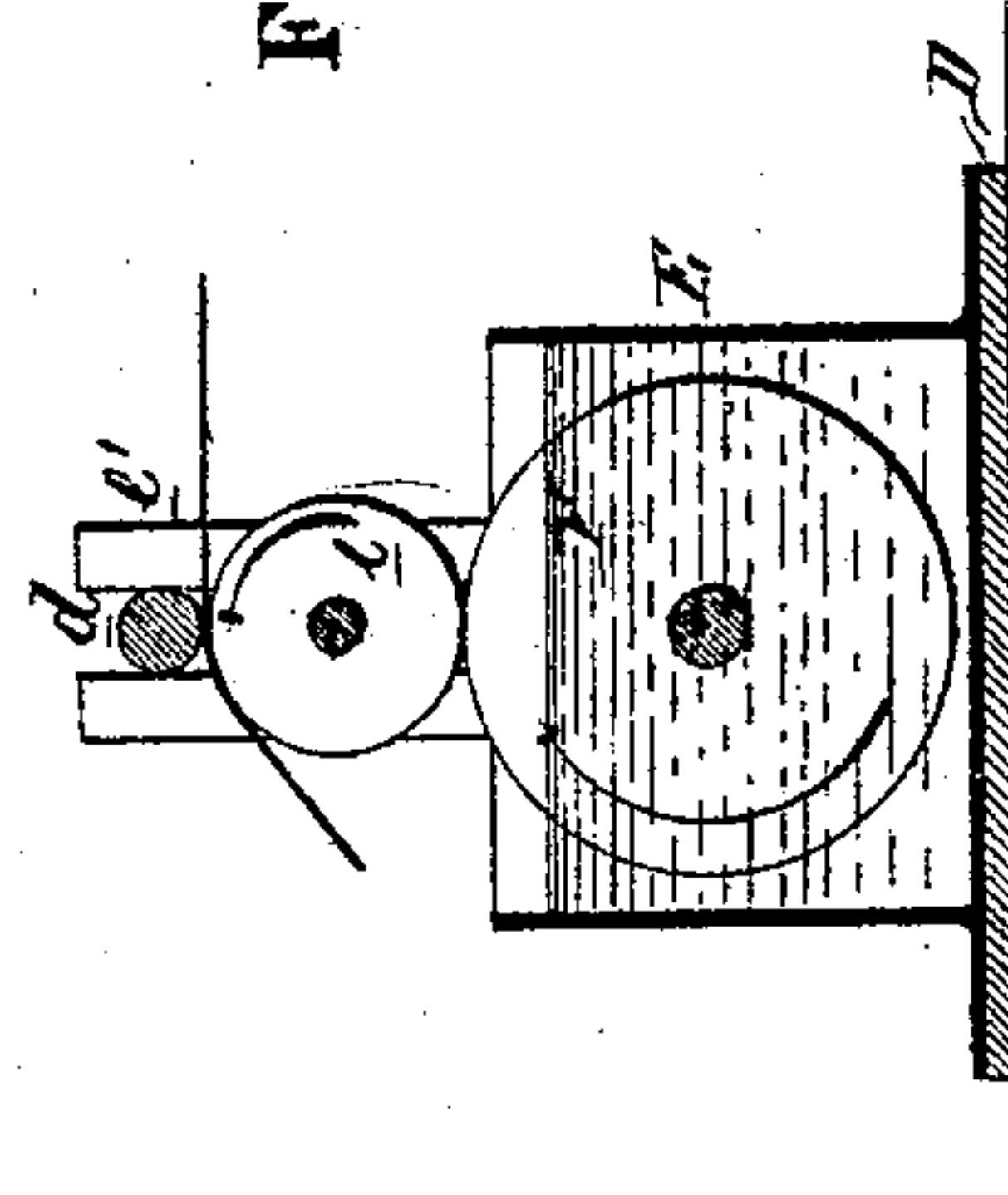


FIG. 2.

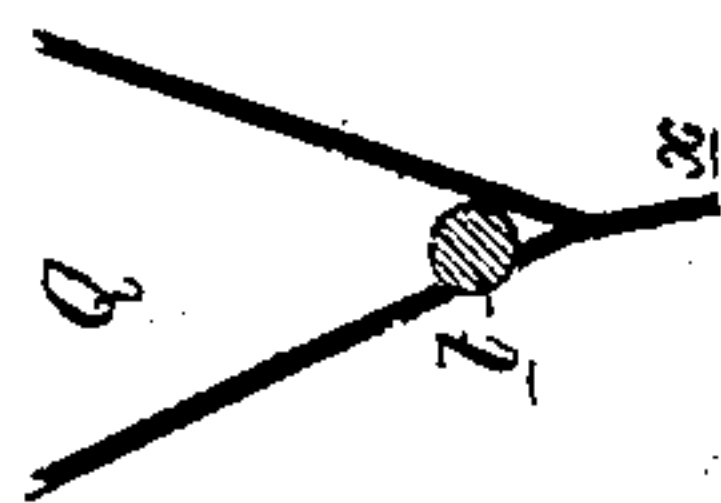


FIG. 4.

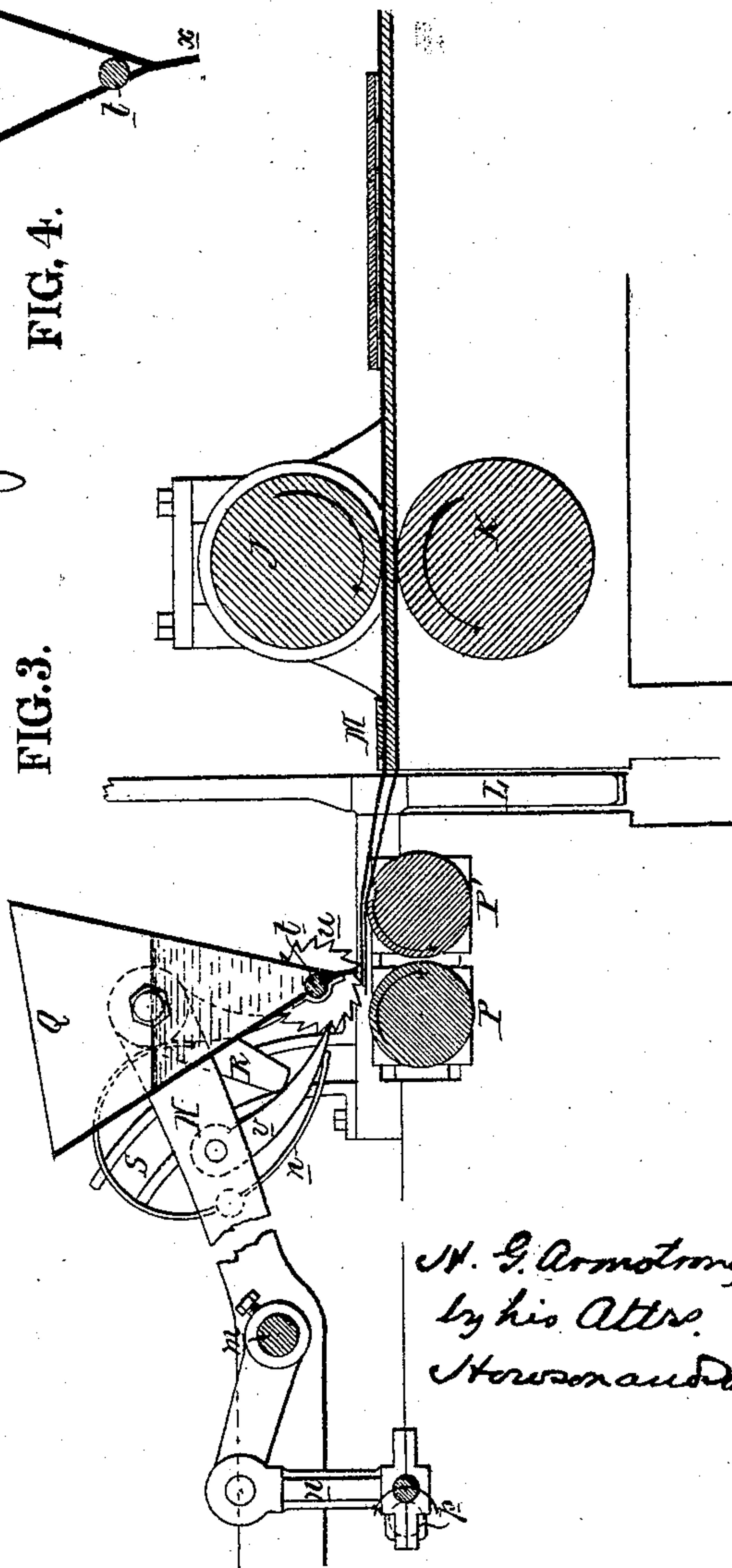


FIG. 3.

WITNESSES. *Harry Smith*  
*Thomas McIlwain*

*H. G. Armstrong*  
*by his Attor.*  
*Horrold and Son*



# UNITED STATES PATENT OFFICE.

HORATIO G. ARMSTRONG, OF TRENTON, NEW JERSEY.

## IMPROVEMENT IN PAPER-BAG MACHINES.

Specification forming part of Letters Patent No. **139,104**, dated May 20, 1873; application filed October 9, 1872.

*To all whom it may concern:*

Be it known that I, HORATIO G. ARMSTRONG, of Trenton, Mercer county, New Jersey, have invented Improvements in Paper-Bag Machines, of which the following is a specification:

My invention has for its main objects, first, the distribution of a uniform layer of paste on the continuous strip of paper preparatory to the same being folded into a tube; second, to make bags of different lengths without any other alteration of the machine than that of simply changing the speed of the device for pasting the bottom of each bag and the striker for severing the tube; and, third, to paste and fold the bottom of the bag by the aid of very simple and effective mechanism.

I attain the first object by causing the paper C to pass between the rollers *d* and *e*, the latter receiving and transferring to the paper a supply of paste derived from the circumference of a disk, F, which revolves in paste contained in a trough, all as best observed in the sectional view, Figure 2, of the accompanying drawing. The second object I attain by causing the device which pastes and folds the bottom of the bag to operate in unison with the device for severing the paper tube, and by so connecting both devices to the machine that their speed in relation to that of the paper tube can be altered in accordance with the desired length of the bag. I attain the third object of my invention by causing a vibrating reservoir, Q, to paste the end of the paper tube and thrust it between the folding-rolls P P', as best observed in Fig. 3.

The frame of the machine consists, in the present instance, of the opposite castings A and A', (see plan view, Fig. 1,) connected together by cross-stays at suitable points, and on the front end of this frame rests an adjustable plate or board, B, having standards *a a*, in which revolves a spindle, *b*, carrying the roll of paper C to be converted into bags. The paper, drawn rearward in the manner described hereafter, passes between the rollers *d* and *e*, both of which turn in slots in standards *e'*, secured to a plate, D, which rests and can be adjusted on the frame of the machine. To this board is secured a trough, E, containing paste, in which part of the disk F revolv-

ing in the trough is immersed, the roller *e* bearing on the periphery of the disk, all as best observed in the vertical section, Fig. 2. The movement of the paper causes the three rollers *d*, *e*, and F to turn, and the consequence of this is the carrying of a supply of paste by the disk F to the roller *e*, which transfers the paste to the under side of the paper at one edge of the same. This pasting apparatus is a special feature of my invention, as it insures the spreading of the paste in a proper quantity and in a layer of uniform width, determined by that of the disk F. The paper passes from this pasting device beneath a bridge, G, secured to a platform, H, situated between the frames A and A' and beneath a blade, I, the front end of which is so attached to a leg, *f*, on the bridge that it shall be elevated a short distance above the platform H, between which and the said blade the paper can consequently pass freely. In passing through the bridge the opposite edges of the paper are gradually turned upward and folded, the unpasted edge over that to which a uniform layer of paste has been imparted in the manner described above, and a tube of paper is thus formed round the blade I, the tube passing between two adjustable guides, *h h*, and beneath a plate, *i*, the weight of which aids in securing the unpasted to the pasted edge of the tube. Immediately at the rear of these guides *h h* are the drawing-rollers J and K, all driven in the direction of the arrows, the lower roller, in the present instance, forming or being secured to the driving-shaft of the machine, and the upper roller being recessed to receive the blade, which is made narrow at this point, so that the paper only is seized by the rollers, and is drawn rearward by the same over the stationary blade in the direction of the arrow. The blade terminates immediately in front of the revolving bar L, and at this point is a blade, M, best observed in the vertical section, Fig. 3, this blade being above but in contact, or nearly so, with the tube of paper, so that the revolving bar will strike the under side of the tube and sever the same by tearing it against the end of the blade I and edge of the blade M, and these blades are so arranged that one-half of the end of the severed tube shall project beyond



so as to be pasted over the end of the other half in forming the bottom of the bag.

The above-described devices for forming and drawing the tube of paper over a blade and severing the tube are to be found in my patent of October 2, 1860, No. 30,191.

At the rear of the striking-bar two folding-rolls, P P', are caused to revolve in the direction of the arrows, and above these rollers is a vibrating paste-reservoir, terminating at the lower end in a comparatively sharp-edged blade, *x*. (See diagram, Fig. 4.) The duty of this reservoir is twofold; it transmits a supply of paste to the end of the paper tube, creases the same and depresses it between the folding-rolls.

It should be understood that the tube is seized by these folding-rolls before the bar L strikes and tears it against the blades I and M. Trunnions on the trough Q are hung to the ends of the two arms N and N' secured to a rock-shaft, *m*, an arm on which is connected by a rod, *n*, to a crank on the shaft *p*, the latter deriving its motion from the shaft of the lower drawing-roller K.

In the present instance a band, *q*, is used for transmitting this motion, and may be adjusted to wheels of different diameters, so as to change the speed of the shaft *p* in respect to that of the drawing-rollers; positive gearing may, however, be used for the same purpose, providing it be such that the relative speed of the driving and driven shafts can be changed at pleasure. On one of the trunnions of the trough Q is secured an arm, R, a pin on which is adapted to the segmental guides S as the trough vibrates. Near the lower end of the trough, and extending from end to end of the same, is an opening for the admission of a roller, *t*, which is arranged to fit into and close, or nearly close, the said opening, and is furnished with a ratchet-wheel, *u*, to the teeth of which a spring-pawl, *v*, hung to one of the arms N, is adapted, another pawl, shown in dotted lines, Fig. 3, being hung to the trunnion of the trough, and serving as a retaining-pawl.

Owing to the segmental guide S a slight oscillating motion on its trunnion is imparted to the trough Q while it vibrates vertically; hence the ratchet-wheel, and with it the roller

*t*, is turned at intervals, and this turning of the roller controls the flow of paste from the reservoir Q and induces a proper supply of the same to pass to the lip or blade *x*, which forms the lower termination of the reservoir, and by which, in conjunction with the rollers P P', the end of the tube is creased and folded, a supply of paste from the reservoir being contained within each fold. The striking-arm L is attached to a shaft, L', which derives its motion through the medium of miter-wheels from the shaft *p*, so that the striker and paster must invariably operate in unison.

Presuming the drawing-rollers J and K to invariably revolve, and the tube of paper to consequently traverse at a uniform speed, the length of the bag will depend upon the rate of speed with which the paster and striker operate in respect to the speed with which the tube traverses; the faster the paster and striker operate the shorter will be the bags, and the slower they operate the longer will be the bags; hence, to change the length of the bags made by the machine, all that is necessary is to change the speed of the paster and striker.

The folding-rolls are driven in the direction pointed out by the arrows, in the present instance by a band from the driving-shaft.

I claim as my invention—

1. In a paper-bag machine, the combination of drawing-rolls with a device for pasting and folding the bottom of the bag, and a striker for severing the tubes, and the appliances described, or their equivalents, for changing the speed of said paster in respect to that at which the tube traverses, for the purpose specified.

2. The vertically-vibrating paste-reservoir Q, having near its lower end a roller, *t*, actuated by the mechanism described, or its equivalent, for inducing the paste to pass to the creaser at the lower end of the reservoir, as specified.

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

HORATIO G. ARMSTRONG.

Witnesses:

WM. A. STEEL,

JOHN K. RUPERTUS.