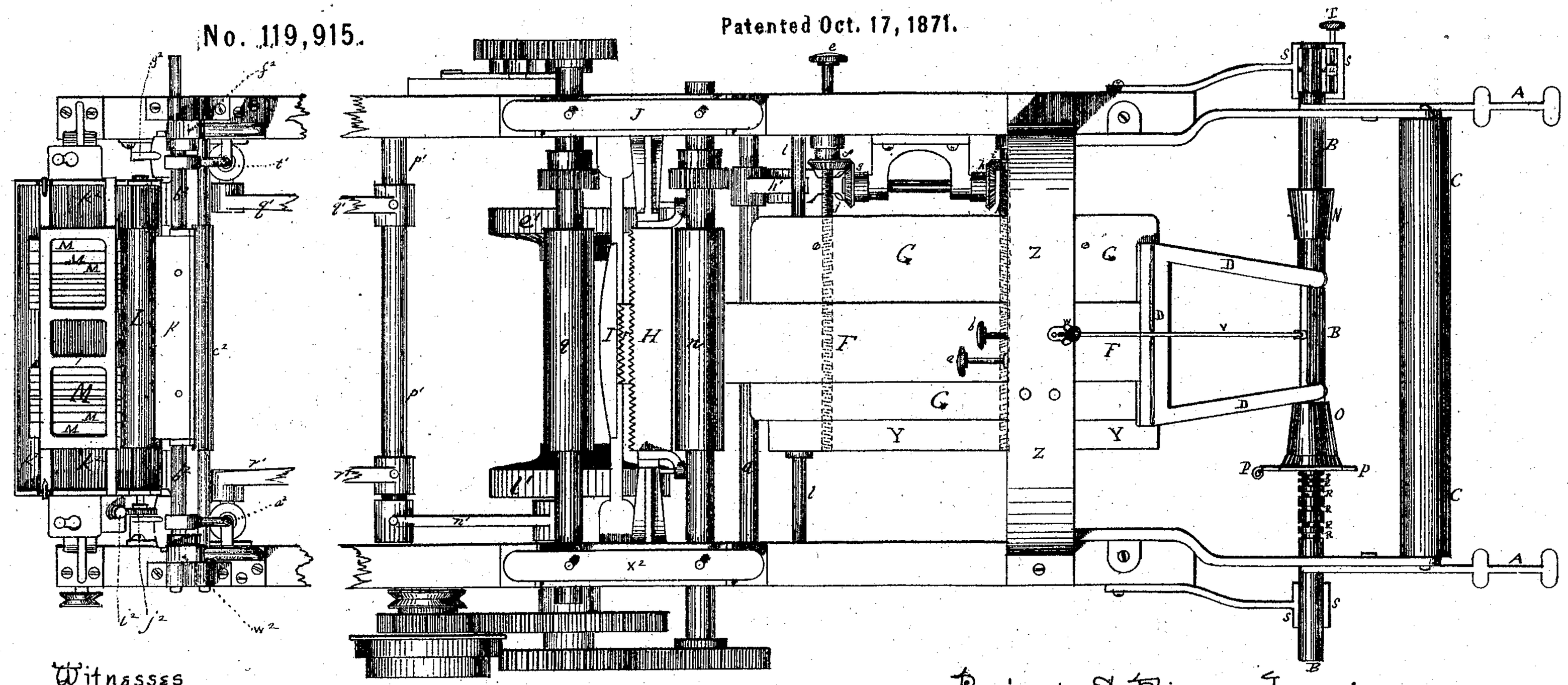
Benjamin S. Binnsy

Improved Paper Bag Machine

2 Sheets--Sheet 1.

No. 119,915.

Patented Oct. 17, 1871.



Witnesses

James A. Roberts
Williams. J. Morley

Fig. 1

Benjamin S Binnsy Inventor

By B. C. Williams & Son, Attys.

2 Sheets--Sheet 2.

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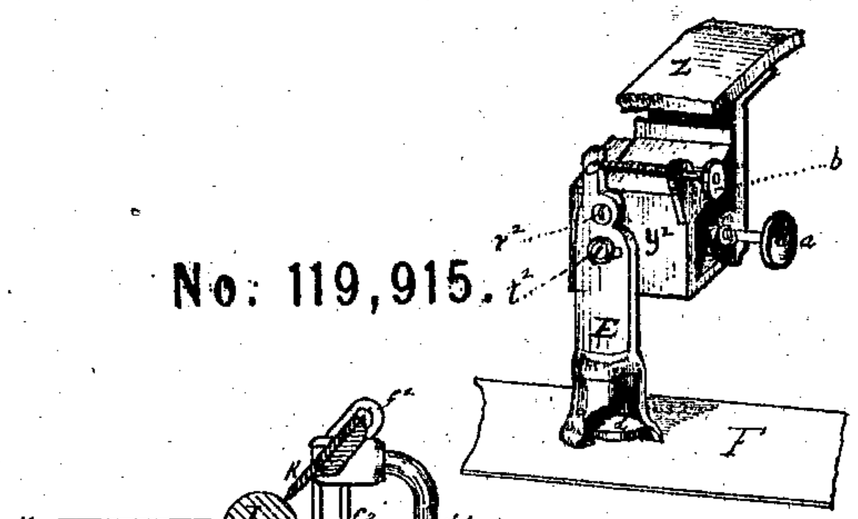

Fig. 7.

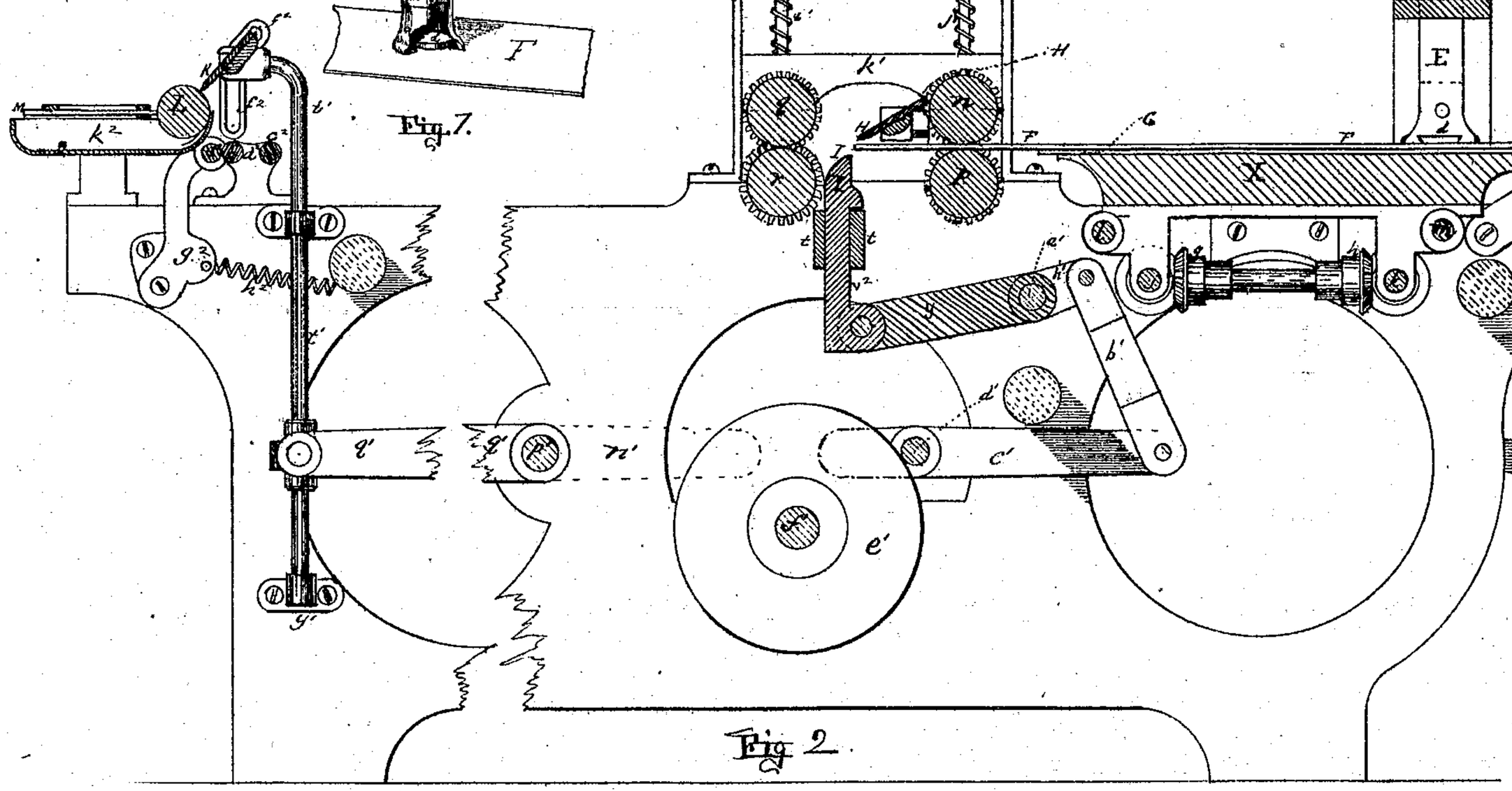

Fig 2

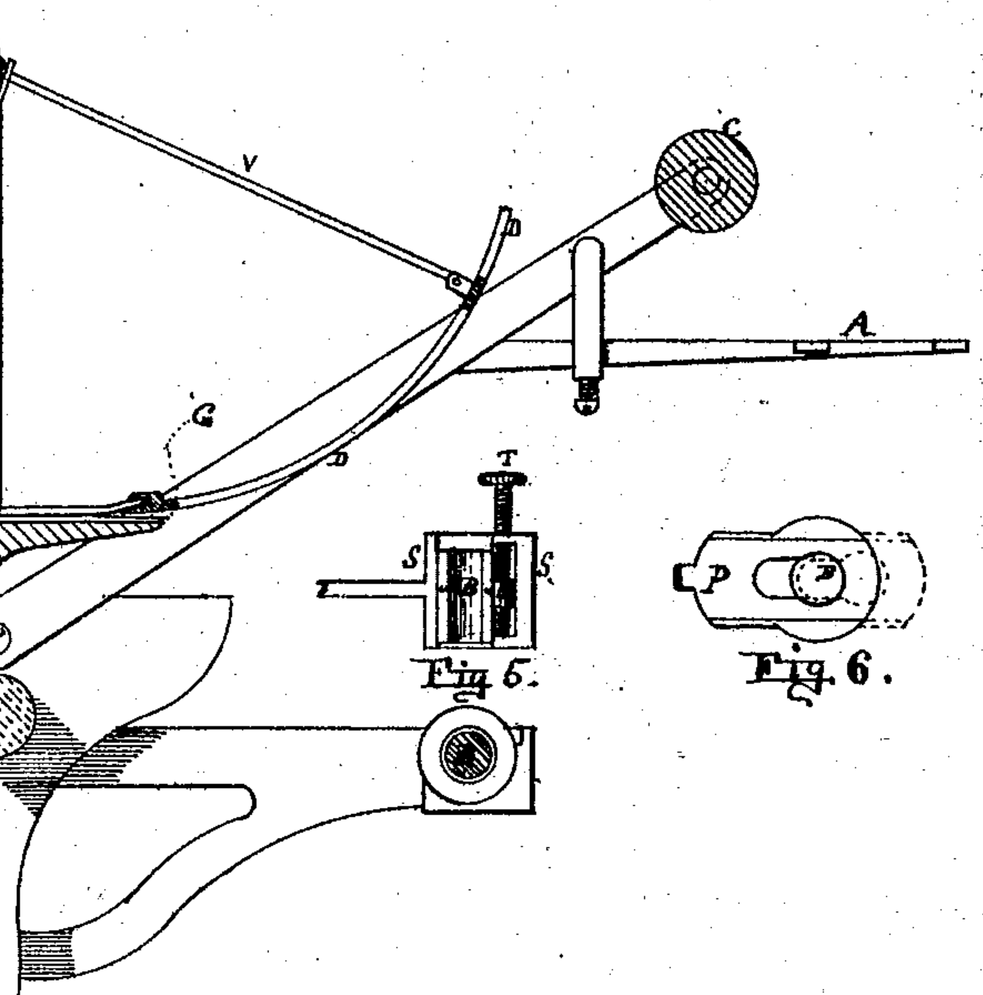

Fig 5.

Fig. 6.

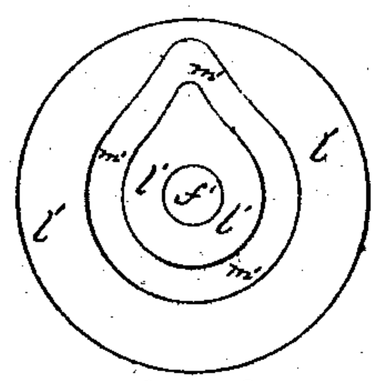

Fig 3.

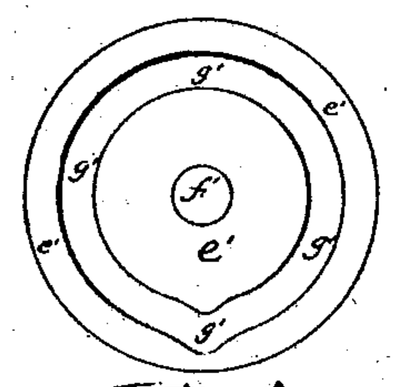

Fig 4.

Witnesses - James H. Roberts
William T. Morley

Benjamin S. Binney Inventor -
by- B. C. Williams & Son, Attys.

UNITED STATES PATENT OFFICE.

BENJAMIN S. BINNEY, OF SOMERVILLE, MASSACHUSETTS.

IMPROVEMENT IN PAPER-BAG MACHINES.

Specification forming part of Letters Patent No. 119,915, dated October 17, 1871.

To all whom it may concern:

Be it known that I, BENJAMIN S. BINNEY, of Somerville, in the county of Middlesex and State of Massachusetts, have invented a new and Improved Machine for the Manufacture of Paper Bags, of which the following, when taken in connection with the accompanying drawing, is a full and exact specification:

My invention relates to an adjustable machine for making paper bags, and especially to a method of guiding and adjusting the bag by means of a "supporter," &c., and to the arrangement of "doctors," for the purpose of regulating the amount of paste upon the paste-roll, as fully described below.

In the accompanying drawing, Figure 1 is a plan of a machine embodying my invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a representation of the cam, which, by means of levers, &c., operates upon the knife or cutter near the end of the machine. Fig. 4 is a view of the cam, which acts indirectly upon the cutting-bar at the center of the machine. Fig. 5 is a view of the device for regulating the paper-shaft. Fig. 6 is a view of the slide which regulates the roll of paper upon the paper-shaft. Fig. 7 shows the construction, position, and method of operation of the supporter which regulates and adjusts the former.

A A are the arms which support the vessel holding the paste, which is spread upon one edge of the roll of paper, thus pasting the side of the bag. It is not represented in the drawing, as I claim nothing new concerning it. B is the paper-shaft. N O are cones sliding upon the shaft B. Attached to the cone O is a slide, P, intended to fit into any of the slots R R R, (see Fig. 6.) To place the roll of paper upon the paper-shaft B, I take off the cone N, insert the shaft in the center of the roll, and push the roll against and upon the cone O. I then place the cone N upon the shaft and push it firmly against and into the roll of paper. The paper is then fast and firm upon the shaft. If it requires moving upon the shaft in either direction it is easily done by moving the cones, placing the slide P in any of the slots R R R. In case it should be desirable to move the shaft B in either direction, provision is found in the device S T U, (see Fig. 5.) The bearing of the shaft B rests in the inner box *u*, which is moved in either direction in the outer box S by the screw T. The paper, after leaving the shaft B, passes over the roller C, and, having received its line of paste upon one edge, passes under the shoes D, and thence under the former F. The bottom of the shoes D rests against the end of the former F, while the upper portion is held in place by the rod V, which may be lengthened or shortened by means of the screw W. The object of the shoes D is to prepare the paper for the former. The paper bends tightly over the sides of the shoes D, and is thus prepared to conform itself to the former. The former F extends from the bottom of the shoes D along the surface of the plate G, between the rollers *n p*, and is cut into a comb at the end. As the paper arrives upon the former it bends over the sides, and is held down upon the upper sides by short arms (about which I claim nothing new) until it reaches the rollers *n p*. Of course, different widths of formers are used, according to the desired size of the bag. An important part of my bag-machine is the supporter E, which serves to keep in place, adjust, and move the former F. This supporter E (see Fig. 7) is formed in two pieces, and is firmly attached to the former by means of a dovetail plate, *d*, which is riveted to the former. The supporter is operated by means of the two screws *a* and *b*. The screw r^2 fastens the box y^2 to the supporter. The screw t^2 passes through an opening in the supporter large enough to allow the supporter to swing slightly and fasten into the box y^2. The screw r^2 is thus made the fulcrum of a lever. When it is desirable to draw the former longitudinally in either direction the screw *a* is used, it passing through the box y^2 a trifle below the screw r^2. When the former requires to be raised or depressed the screw *b* is used, as it operates upon the finger *c* of the supporter, thus pushing the foot in either direction. The right side of the box (as seen in Fig. 7) is fastened to the brace or frame *z*. The dovetail plate *d*, which fits into the supporter E, is made perfectly round, so that, when the paper is first placed around the former the supporter is but loosely placed around this dovetail plate, the two pieces of the supporter being loosely put together. The machine is then started and the passing paper adjusts the former and places it in its proper position. When the former has been adjusted by the paper the supporter is screwed tightly against the

dovetail-plate *d*. G is a plate resting upon the tables X and Y, and fastened to the table X. As formers of different widths are used, various gauges, placed upon the plate and tables, require to be conformed to the different formers. To do this it is necessary that the tables X and Y should be moved simultaneously apart or nearer together, the table X carrying with it, of course, the plate G. This is accomplished by means of the bevel-gears *f g* and *h i*, connected by a shaft; the bevel gears acting upon the right-and-left screws *j* and *k*, thus bringing the tables X and Y nearer together or further apart at will, the table X carrying with it the plate G. *n p q r* are rollers revolved by ordinary spur-gearing. The rollers *n* and *p* press upon the upper and lower sides of the former F and by their revolutions draw the paper which is on both sides of the former toward the cutting-bar I. The roller *r* is geared to a shaft, f^1, upon which are fixed two cams, e^1 and l^1. Figs. 3 and 4 show their relative positions with special reference to the grooves. The cam e^1, represented in Fig. 4, acts indirectly upon the cutting-bar I. *g* is the groove of the cam. As the cam revolves it operates upon the oscillating lever c^1, (of which d^1 is the fulcrum,) which, by means of the vibrating lever b^1, acts upon the short lever h' which is fixed to the rock-shaft a^1. The motion is communicated to the cutting-bar I by means of a lever, *y*, which is fixed to the rock-shaft a^1. The rod V^2 runs through the beam *t*, and is kept from dropping by means of a projection, which serves as a stop. As the stud in the groove g^1 passes the sharpest point, the cutting-bar I rises and pushes the paper quickly against the knife-plate H and the end of the former F, tearing the paper in the usual comb-shape. When the paper has been taken off by the cutting-bar I it passes between the rollers *q r*, and is then conducted, by means of elastic cord or its equivalent (stretching from the roller *r* to the small roller c^2) to the rear portion of the machine, there to be finished into a complete bag. As soon as the partly-formed bag is carried far enough to lap over the rollers c^2 and d^2 the knife K descends, pastes the bag, pushes it between the rollers e^2 and d^2 bending over the end, and allowing it to descend into a receptacle beneath by running down between the two said rollers. This knife K is operated indirectly by means of the cam l^1, (see Fig. 3.) m' is the groove. This cam is, like the cam e^1, fixed upon the shaft f^1, and moves the lever n', which is fixed to the rock-shaft p'. Fixed to the shaft p' are also the two levers q' and r', which, by means of the rods t^1 and a^2, lift and depress the knife K by means of its bars b^2, which move in the slotted bent arms f^2 and w^2. As the stud reaches its sharpest point in the groove m' the knife K drops. The knife K receives its paste from the paste-roll L, which revolves in the paste-box k^2. The paste-roll L is revolved by means of the worm-screw and wheel i^2 and j^2, motion being communicated to them by bevel-gears. Before the knife drops it scrapes off the paste upon the roller L and carries it to the bag when it descends. The amount of paste given to the knife by the paste-roll is regulated by means of the sliding doctors M M. These doctors slide in a frame, and are of various widths. They serve to scrape the paste from the paste-roll L. Enough of them are placed in the frame to scrape all the paste from the roller except just enough to spread the end of the bag. A larger bag requires less doctors, while a smaller bag, of course, requires more. The folding-roller e^2 is kept close to the roller d^2 by means of the spring h^2 and the lever g^2. A spring and lever is placed at each end of the folding-roller e^2. It is highly necessary that there should be a device to furnish elasticity at this point, as two or more thicknesses of paper are obliged to pass between the two rollers e^2 and d^2. There is another point in my machine where elasticity is required; in fact, there are two points, viz., at the rollers *n p* and at the rollers *q r*. This is secured by means of saddles J x^2 at each end of the shafts of the rollers *q n*. One of these saddles is represented in Fig. 2. The piece k' is pressed upon the rollers by means of the springs i' and j'. Any inequality in the paper will pass easily between the rollers without any difficulty. Thus perfect elasticity is secured both at the cutting-bar I and at the cutter K.

My machine is easily kept in repair, as every part of it is accessible. That it will make perfect bags has been proved by actual test, and the good work which it performs is accompanied by great speed.

I have not thought it necessary to describe all the methods of communicating power to different parts of my machine, as they are the usual means, and not a part of my invention.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent, is the application to a machine for making paper bags of the following combinations and devices:

1. The combination of the dovetail plate *d* and supporter E with the adjusting-screws *a b*, box y^2, and screws r^2 t^2, the whole being combined, arranged, and constructed as and for the purposes hereinbefore set forth.

2. The sliding doctors M M, arranged as and for the purpose above set forth.

BENJAMIN S. BINNEY.

Witnesses:

HENRY W. WILLIANS,
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