2 Sheets—Sheet 1.

# F. ANDERSON.

## PAPER-BAG MACHINE.

No. 182,341. Patented Sept. 19, 1876.

Fig. 1.

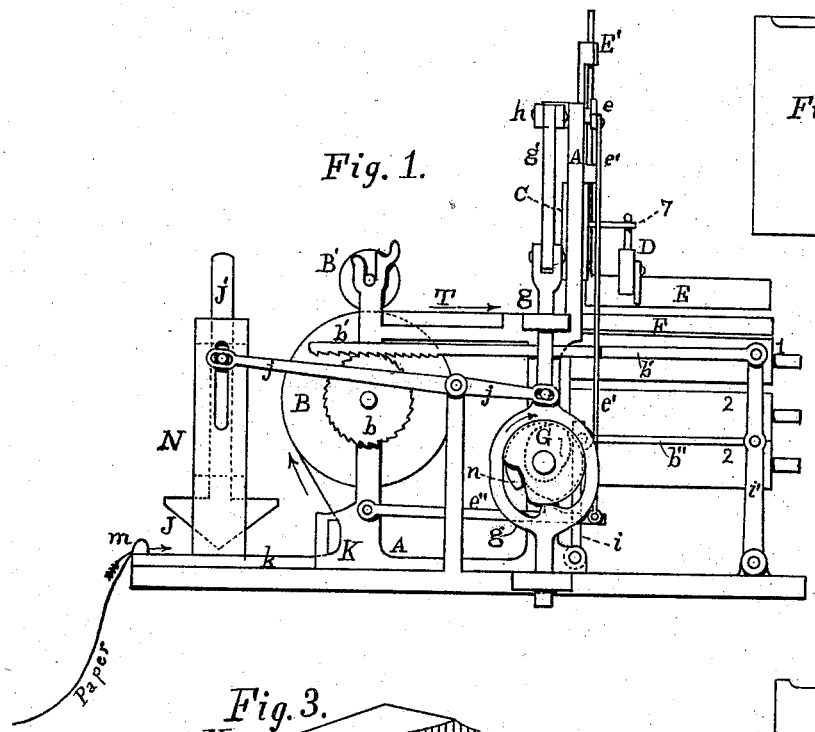



Fig. 6.

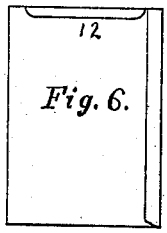



Fig. 3.

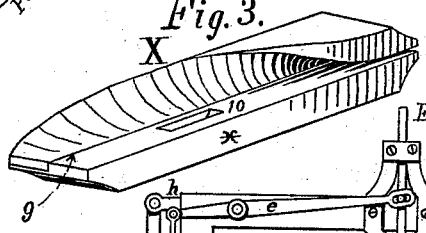



Fig. 2.




Fig. 5

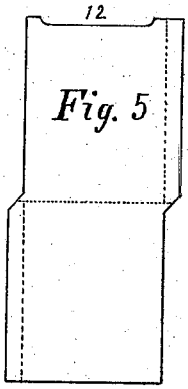
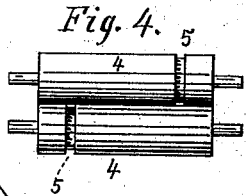



Fig. 4.




Witnesses:
Franklin Couch.
J. Franklin Barker

Inventor:
Frank Anderson

2 Sheets—Sheet 2.

# F. ANDERSON.

## PAPER-BAG MACHINE.

No. 182,341. Patented Sept. 19, 1876.

Fig. 7.

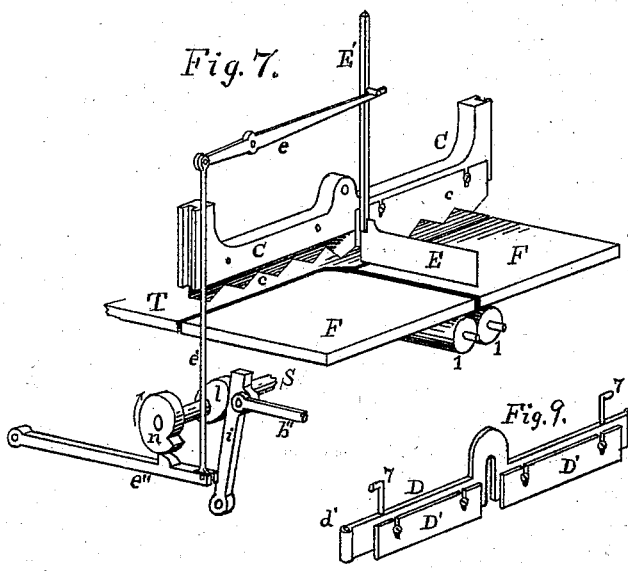



Fig. 8.

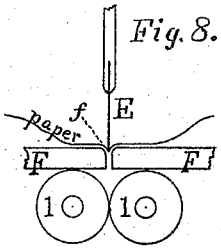



Fig. 9.




Fig. 10.

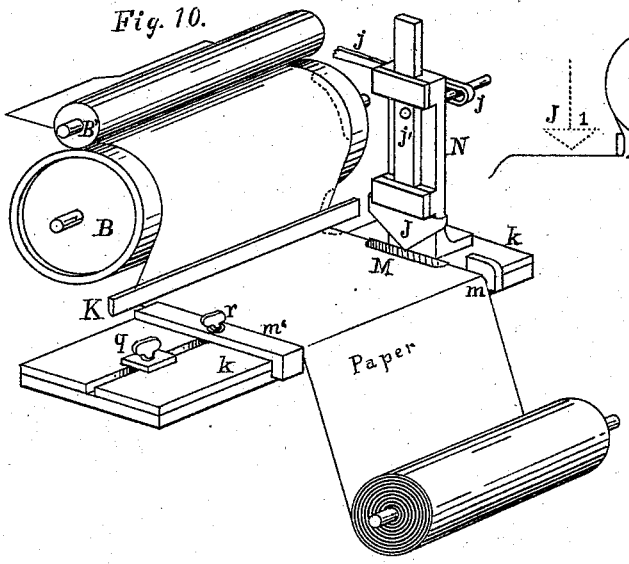
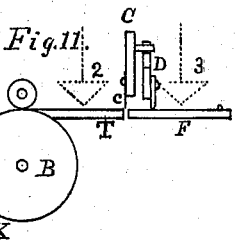



Fig. 11.




Witnesses.

Franklin Conch,

J. Franklin Baker

Inventor.

Frank Anderson,

# UNITED STATES PATENT OFFICE.

FRANK ANDERSON, OF PEEKSKILL, NEW YORK.

## IMPROVEMENT IN PAPER-BAG MACHINES.

Specification forming part of Letters Patent No. **182,341**, dated September 19, 1876; application filed February 7, 1876.

*To all whom it may concern:*

Be it known that I, FRANK ANDERSON, of Peekskill, New York, have invented certain Improvements in Paper-Bag Machines, of which the following is a specification:

My invention relates to an attachment to and improvements in the machine or invention for which Patent No. 151,258 was granted May 26, 1874, to W. F. West.

The objects of my invention are, first, to provide a means for cutting out a piece from one of the top edges of the bag, so that the latter may be conveniently opened, and thereby dispense with the necessity heretofore existing for accomplishing the latter object, of causing one top edge to extend beyond the other, by making the bottom fold not quite in the middle of the blank, which method is objectionable on account of the top corners becoming pasted together; second, to secure more accuracy in the folding of the transverse fold that forms the bottom, thereby insuring uniformity and neatness in the shape of the bag; third, to produce a more efficient and durable arrangement for cutting the blanks; fourth, to operate knife and folding-blade by more effectual devices than the crank and means heretofore used; fifth, to provide a better and more easily adjustable movement for actuating the feed-roll; sixth, to facilitate cleaning and construction of folding-tubes; seventh, to prevent the paste being forced out from side seams.

To accomplish the object first mentioned—that of cutting a piece out of top of bag—I attach a cutter or punch, formed in accordance with the desired shape of the notch, to that part of the machine between the roll or supply of paper and the knife that severs the blank.

The situation and operation of the cutter may be seen in Figures 1 and 10 of the drawings, in which J is the cutter, made of thin sheet-steel, and preferably of the shape shown—that is, with the cutting-edge starting from a point in the middle lower than the extremities, so that the punch enters the die M with a shearing action, and, of course, the more acute the angle formed by the edges of the punch the easier the action and cleaner the cut.

The punch J is attached to the plunger *j'*, which has bearings in N, that allow of a free vertical movement of the plunger. The whole is mounted on the board *k*, which is supported by the frame of the machine. The lever *j*, engaging at one end with the mechanism that moves the knife, gives motion to the punch.

Paper from the roll is caused to pass over the surface of the board *k*, with one edge under the cutter J; it then passes under the bar K, and then to the feeding-rolls B B'. The distance of the punch J from the knives *c c* is so proportioned that the cuts in the edge of the paper will occur in their proper place in the blanks, as shown at 12 in Fig. 5. The result, when the bag is completed, is shown in Fig. 6.

The paper on the board *k* is kept in position with relation to the punch by the stationary guide *m* and the adjustable guide *m'*. As several widths of paper are used on a machine, the board *k k* is made adjustable in the direction of its length, and is held in position by the screw *q*. To accommodate the varying position of the board and punch, the pin in which the lever *j* engages is made long, as shown.

While I prefer the position of the punch shown, it will work nearly as well if placed between the feed-roll B and knife *c;* or it may be placed outside on the folding-bed, as shown at 1, 2, and 3, Fig. 11; or the die M may be placed on the surface of the drum or roll B.

In order to secure the advantages of this cut-out, it is necessary that the bottom fold be exactly in the middle of the blank; but with the method heretofore used, namely, having the folding-bed even with the upper surface of the rollers, and forcing the paper between them by the folding-blade, the periphery of the rollers only guiding the paper, it was impossible to obtain any sufficient degree of accuracy.

I obtain the desired result by using a very thin folding-blade, and then bringing the edges of the table or folding-bed above the rollers and quite close together, as shown in Figs. 2, 7, and 8, but most clearly in Fig. 8, in which 1 1 are the folding-rollers, and E the folding-blade, which is best made of a thin strip of sheet-steel, as shown. *f* is the narrow opening or

slit formed by bringing the edges of the bed F F nearly together, having said edges slightly rounded, as shown. With this arrangement the thin edge of the blade E and the narrowness of the slit *f* causes the paper to take such an acute angle about the lower edge of the blade, that it is almost impossible for the paper to slip under said blade and make an imperfect fold if the paper is delivered in proper position on the bed.

The cutting of the blank from the web has heretofore been done by using two notched or saw-toothed knives, between which the paper was passed, and by the action of the knives when passing each other the blank was separated or torn off. This arrangement was very difficult to keep in order, and if it was not in perfect order, or if it failed to completely separate the blank, it gave trouble in the folding.

I substitute for the notched horizontal knives vertical knives or strips of thin sheet-steel (that may be carried on the same knife-gate, though requiring a different movement of the latter) that cut or part the paper on their passage into the narrow opening that is formed by the plate T, Figs. 7 and 11, on one side, and the edges of the folding-bed F F on the other, as shown.

C is the knife-gate, and *c c* the knives. These knives are formed with several deep notches, as shown, which leave mere points to first pierce the paper, the rest of the cut being a shearing action.

To prevent the paper being drawn into the slit instead of being cut, the bar D, shown in Figs. 1, 2, 7, 9, 11, especially in Figs. 2 and 9, is attached or hung in front of the knife in such a way that its lower edge may rest on the paper which is upon the folding-bed while it is being cut, and thereby prevent the paper from following the knife from one side, and the feed-rollers B B′ hold it on the other.

The bar D is made to straddle the folding-blade, as shown in Figs. 2 and 9, and is provided at the ends with holes *d′ d′*, that allow of its sliding up and down on the rods *d d* attached to the frame A of the machine, though it may be suspended or hinged in different ways.

Pins in the gate C engage with the hooks 7 7 near the ends of the bar, and serve to lift it up and let it down at the proper time. This bar also serves to hold the severed blank in place while the knife *c c* is ascending, preventing the disarrangement of the blank on the folding-bed, and is not lifted off the paper till the moment the folding-blade E falls. D′ D′ are pieces that may be attached to the bar D, having rubber strips on their lower edges that they may "bite" the paper more effectually. These pieces also add to the convenience of adjustment of the bar's contact with the folding-bed.

The knife, in this arrangement, requires a different movement from the crank movement that has been in use, and such movement is provided by means of the cam G on shaft S, and yoke *g*, Figs. 1 and 2, which actuate the knife through connections *g′ h*. The lever *j*, Fig. 1, engages also with the yoke *g*, and by it motion is transmitted to the punch J.

In large machines the weight of knife, gate, &c., is sufficient to cause the stroke of the knife, but in small machines a spring or additional weight may be necessary, or the cam may be arranged to give a positive movement both ways.

Immediately behind the cam *g* is another cam, *n*, (shown clearly in Fig. 7,) for operating the folding blade E, which it does through the lever *e″*, connection *e′*, and lever *e*, which engages with a pin on the rod E′, that carries the folder. *l*, Figs. 1 and 7, is a cam on the shaft S, for operating the rack-bar *b′* and ratchet-wheel *b*, which is attached to the shaft of and rotates the drum B. This rack-bar is pivoted to the lever *i′*, which is connected by *b″* with *i*, which is caused to vibrate by the cam *l*.

Fig. 2 shows one of the folders for turning the side seams in position. Fig. 3 is an enlarged perspective view of one of the folding-tubes. These folding-tubes have heretofore been made in a single piece, and of sheet metal set up, and were expensive and difficult to construct, and as they have to be cleaned frequently they are objectionable on account of the time it takes to do it. I overcome these objections by casting the folder in two pieces, of such a shape that when rabbeted together, as shown in Fig. 3, they form a complete folder, and as they are held together only by dowel-pins they can easily be taken apart for cleaning.

In Fig. 3, 9 is the rabbeted joint of the two pieces X and *x*. 10 is a recess in *x* that comes immediately under the pasting-roller, so that paste will be taken off only when the paper is passing. The position of the folding-tubes is the same as in the old machine, and is shown in Fig. 2 at X, 3 3 being the paste-rollers. The folders are supported by the bars *y y* resting on the frame of the machine.

After the bag is pasted and turned over at the sides by the folders X, it is pressed and delivered by the rolls 4 4, Fig. 2. These pressing-rollers have heretofore been plain cylinders, and were very apt to force the paste out from under the seam, thereby causing the bags to stick together when laid in piles. They also spread the stream of paste so much as to interfere with its adhesiveness. To overcome these objections I make grooves in the rollers at the part that passes over the stream of paste, so that the latter is relieved of pressure. These grooves are shown at 5 5, Fig. 4. They are made wide enough to bridge over the paste, but not so wide but that the seam may be pressed down on each side of the paste. As the bags are generally made with one seam turned up and the other down, I make only one groove in each roller, but at opposite ends of the same, as shown.

I claim—

1. In combination with the feeding, cutting, and folding mechanism of a paper-bag machine, that cuts the blanks transversely from the web, folds them in their middle to form the bottom, and turns over the projecting edges to form the side seams, the cutter J for cutting out a portion of one end of the blanks, substantially as and for the purposes set forth.

2. In a machine, as above described, the combination of the knife *c c*, holding-bar D, folding-blade E, and folding-bed F F *f*, substantially as and for the purposes set forth.

3. In a machine as above described, the cutter J, feeding-roll B, cutter *c*, and folder E, in combination with their actuating mechanism, consisting of the shaft S, cams G, *l*, and *n*, and their connections, substantially as shown and described.

4. The folding-tube X, made of the two pieces X *x*, with rabbeted joint 9, substantially as and for the purposes specified.

5. In combination with the cutter J, the sliding base *k k*, stationary guide *m*, and adjustable gage or guide *m'*, substantially as and for the purposes set forth.

6. In a paper-bag machine, as above described, the combination of a punch, J, feed-roll B, knife *c*, pressure-bar D, folding-blade E, pasting-rolls 3 3, folding-tubes X, and grooved delivery or pressing rolls 4 4, all operating together as described, and for the purposes set forth.

FRANK ANDERSON.

Witnesses:

FRANKLIN COUCH,

J. FRANKLIN BARKER.