

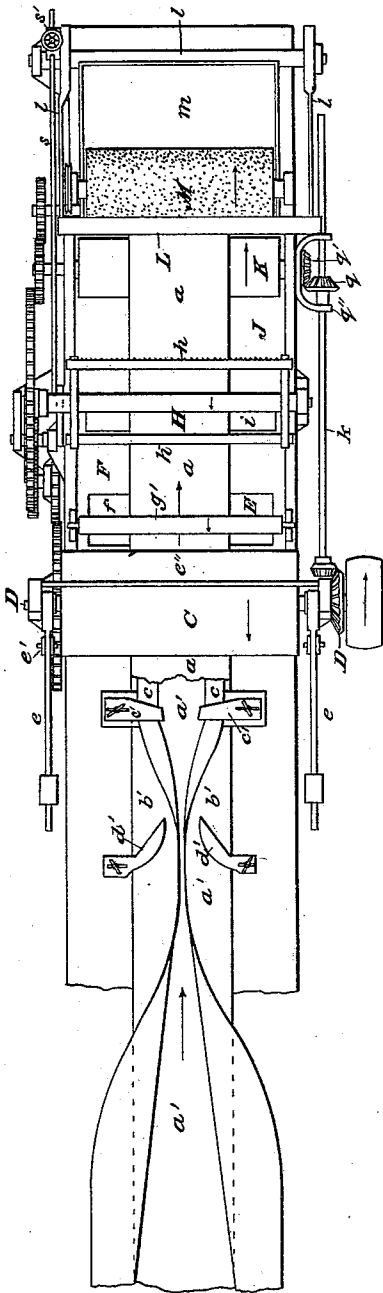
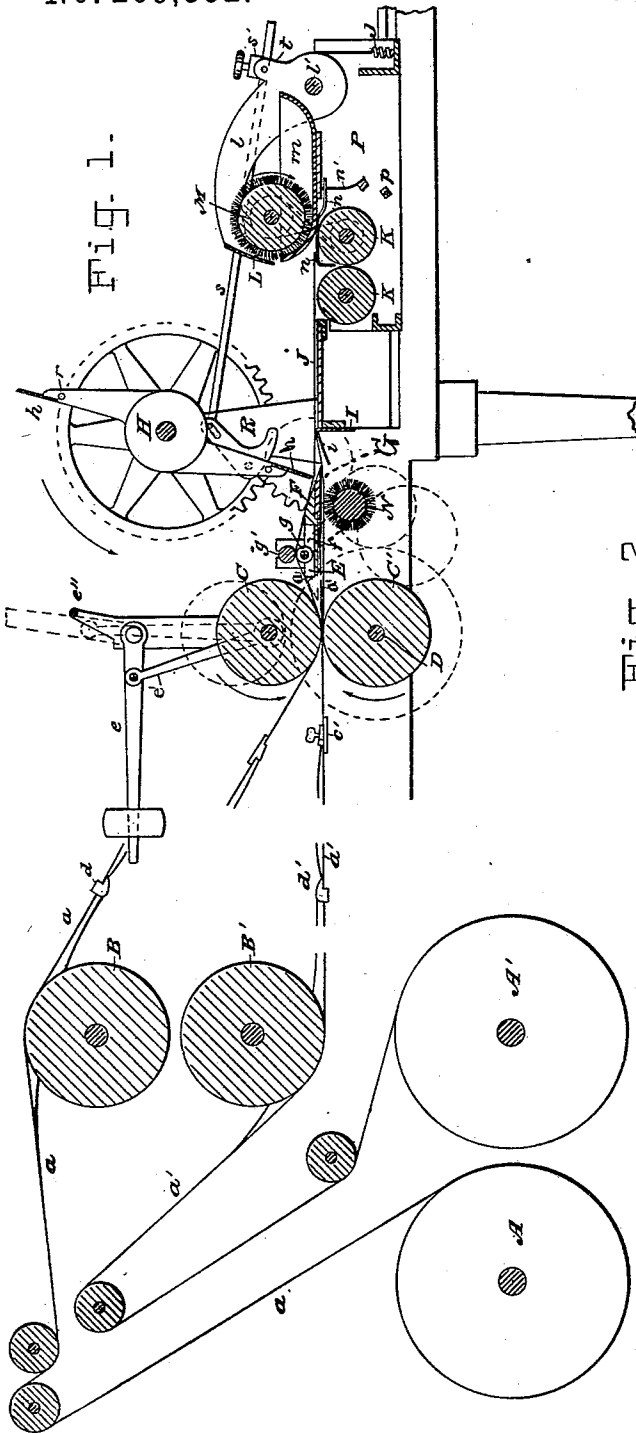
(No Model.)

2 Sheets—Sheet 1.

C. VAN HOESEN.  
PAPER BAG MACHINE.

No. 269,352.

Patented Dec. 19, 1882.



WITNESSES:

*E. B. Cotton*  
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INVENTOR

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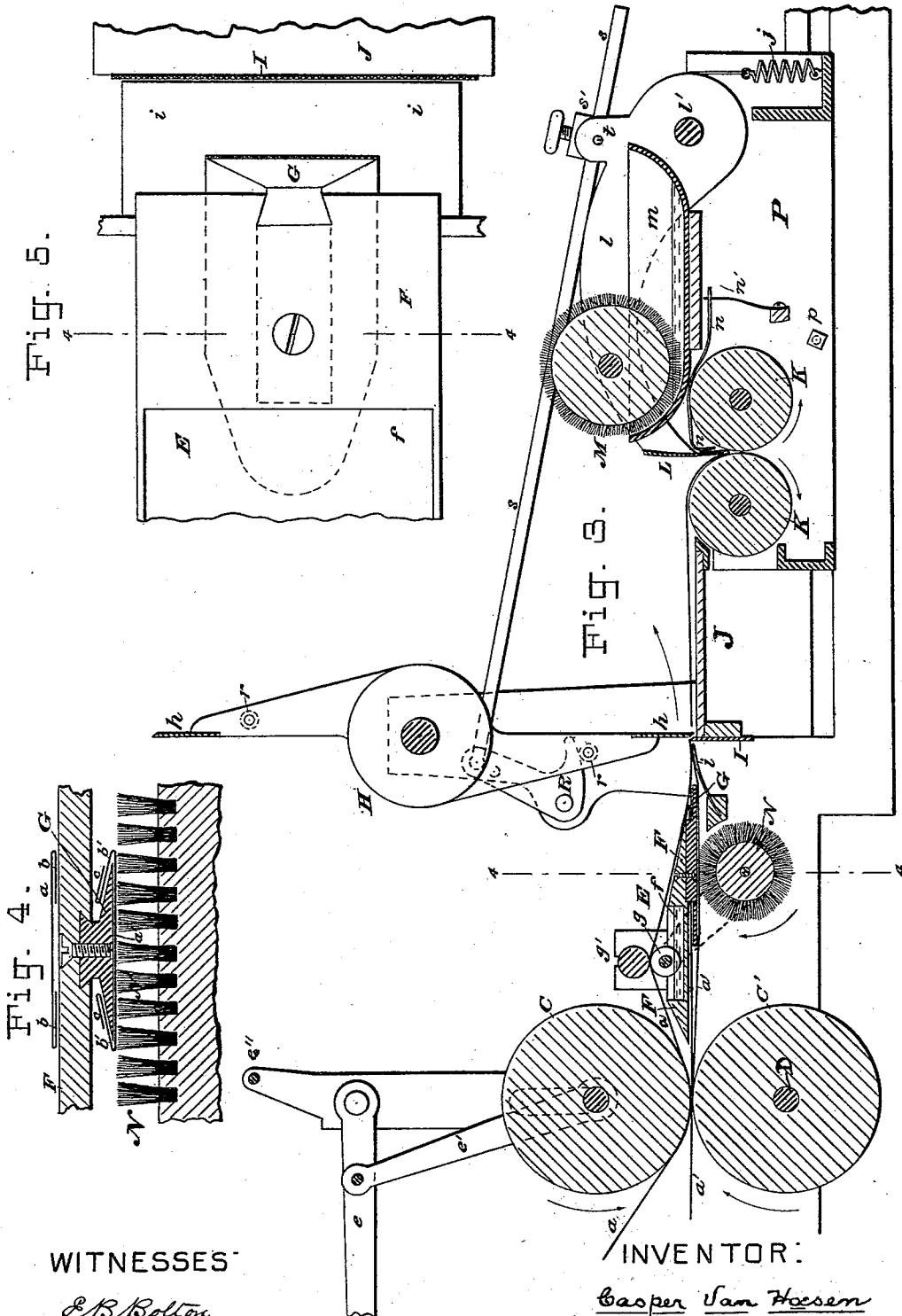


Fig. 4.

Fig. 5.

Fig. 6.

WITNESSES

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# UNITED STATES PATENT OFFICE.

CASPER VAN HOESEN, OF NEW YORK, N. Y.

## PAPER-BAG MACHINE.

SPECIFICATION forming part of Letters Patent No. 269,352, dated December 19, 1882.

Application filed September 7, 1881. (No model.)

To all whom it may concern:

Be it known that I, CASPER VAN HOESEN, a citizen of the United States, residing in the city, county, and State of New York, have invented certain Improvements in Paper-Bag Machines, of which the following is a specification.

My machine is designed to make paper bags of the kind shown in my Patent No. 256,177, dated April 11, 1882. This bag is made from two continuous strips of paper, and has a seam down each side in the side fold and one across the bottom.

In the accompanying drawings, Figure 1 is a vertical longitudinal mid-section of the operative parts of my machine, a portion of the frame-work being omitted. Fig. 2 is a plan of a portion of the machine. Fig. 3 is an enlarged vertical longitudinal mid-section of a portion of the machine, showing the moving parts in a different position. Fig. 4 is a fragmentary vertical transverse section, on a still larger scale, taken in the plane of the lines 4 4 in Figs. 3 and 5; and Fig. 5 is a fragmentary plan on the same scale as Fig. 4.

Like letters of reference designate like parts in all in the figures.

Referring, first, to Fig. 1, A and A' are the rolls of paper, from which are fed the strips *a* and *a'*, respectively, the former being, with the arrangement of parts shown, the upper strip and the latter the lower strip. The strips *a* and *a'* are carried over opposite rollers, B and B', and are thence brought together between drawing-rolls C C'. While passing from B B' to C C' the strips are folded, the strip *a* having both edges turned under, as shown in Fig. 4, forming laps or folds *b b*, and the strip *a'* having both edges turned over upon it, forming laps or folds *b' b'*, and then a portion thereof turned back outwardly again, forming laps or folds *c c*, as shown in Figs. 2 and 4. The strip *a* is folded by folders *d d*, which turn in the laps *b b*. This strip should be narrower than the strip *a'* by the sum of the width of the laps *c c* of the latter. The strip *a'* is folded by folders *d' d'*, which turn in the laps *b' b'*, and by folders *e' e'*, which form the laps *c c*. As the two strips enter between the rolls C C' they are folded to the same width and lie one exactly on top of the other. Guides may be applied to insure their coming together accu-

ately. The drawing-rolls C C' are pressed together by weighted levers *e e*, acting through links *e' e'* on the journals of the roll C, which journals work in vertically-slotted bearings. In case it becomes necessary to separate the rolls C C', as when first inserting the paper strips between them before starting the machine, this may be done by throwing up the levers *e e* until they pass beyond the center and rest against a rod, *e''*, or any suitable stop, thereby lifting and sustaining the roll C, as shown by dotted lines in Fig. 1. The roll C' is the driving-roll, it being fixed on the power-shaft D of the machine. The two rolls may be geared together, if desired. After passing through the drawing-rolls the two strips are separated by a pasting apparatus, E, the strip *a* passing over it and receiving paste and the strip *a'* passing under it, as best shown in Fig. 3. This pasting apparatus consists of a shallow tray, *f*, containing the paste or mucilage, a rotating pasting roll or brush, *g*, dipping therein, and a pressure-roll, *g'*, between which and the roll *g* the strip *a* passes, and the weight of which holds the strip down in contact with the roll *g*. The strip *a* receives two rows or stripes of paste, one on each lap *b*, and of a width no greater than that of the lap *c* of the strip *a'*, the roll *g* being elsewhere of so small diameter as to convey no paste to the paper.

Each side of the tray *f* is a bar, F, which is beveled off in both directions from the tray. The bar serves to guide the paper to and from the tray. To its under side is fixed a blade or plate, G, (best shown in Figs. 3, 4, and 5), the side edges of which enter under the laps *b' b'* of the strip *a'*, and which serve to guide the said strip. The front or entering end of this plate is narrowed or rounded to cause the paper to move onto it smoothly and without catching, and its rear end is square and preferably serrated to form a cutting-edge.

Above this end of the plate G is journaled a revolving cutter, H, which turns in the direction of the arrow, and whose blade or blades *h* (of which it may have one or more) are preferably serrated on the edge to correspond with the serrated edge of the plate G, and in revolving impinge upon that edge, thereby cutting, somewhat in the manner of shears, the intervening thicknesses of paper, which thicknesses are the entire upper strip, *a*, and the

laps  $b' b'$  and  $c c$  of the strip  $a'$ , leaving only the unfolded portion of the latter strip uncut.

Shortly beyond the plate  $G$  is fixed another cutting-plate,  $I$ , which I have shown as arranged in a vertical plane, but which may be inclined instead, and the upper edge of which is preferably serrated. As the blade  $h$  of the cutter  $H$  passes this edge it impinges upon it, and thereby cuts the remaining thickness of paper before left uncut. By this means I secure that the unfolded portion of the strip  $a'$  shall, after cutting, project beyond the thicknesses of paper above it. The cutter  $H$  is so speeded as to cut the strips into lengths sufficient to form bags of the desired length.

Just before or in front of the plate  $I$  is a leaf-spring,  $i$ , arranged beneath the paper strips, and its extremity reaching almost to the plate  $I$  and projecting normally slightly above the upper edge of the latter. This is to lift the advancing edge of the following strip over the edge of the plate  $I$  and prevent its catching against the same and becoming impeded thereby, and perhaps buckled and directed downward, as might frequently be the case if the spring  $i$  were omitted. The spring is depressed by the blade  $h$  as it approaches the plate  $I$ ; but as soon as the blade passes the plate it springs up and lifts the cut edge of the paper.

The spring  $i$  may be a series of elastic fingers or an elastic plate; or, in its stead, a pivoted plate whose rear edge is elevated by a weight applied to its front portion may be used.

To the rear of the plate  $I$  extends a table,  $J$ , on which the strips slide along until the mechanism for folding the bottom of the bag is reached.

It will be understood that the rolls  $C C'$  draw the paper until it reaches them and push it after it passes them. After the strips have passed the pasting apparatus  $E$  and come together again they lie loosely together, only lightly touching one another, and in this condition they are cut off. The cutter presses their pasted portions together only at the cut edges; but elsewhere they are not united by pressure, nor are they in any sense pasted together, except as the pasted laps may have come spontaneously in contact with the opposite laps.

The bottom-folding apparatus consists of a pair of drawing and pressure rolls,  $K K$ , revolving in such direction as to carry downward anything fed between them, and preferably geared together, a folding-blade,  $L$ , standing normally above them, and means for applying paste to the rear side of said blade. The blade  $L$  may be mounted and operated in any known way consistent with its approximately vertical intermittent motion; but I prefer that it be fixed on the ends of radial arms or levers  $l l$ , projecting from a rock-shaft,  $V$ . Just as the end of the compound strip comes over the rolls  $K K$  this blade is caused to descend, thereby breaking down the paper and carrying the fold thereof in between the rolls  $K K$  until it is nipped by

the latter. The strips are cut by the cutter  $H$  just as the folder descends, so that the pull on the strips, caused by the folder drawing them down toward the rolls  $K K$ , strains them and facilitates the cutting, and it also jerks the advance strip away from the blade the instant it is fully severed, so that the blade, in advancing past the plate  $I$ , will not overtake the severed strips and disarrange or wrinkle them. As soon as the severed strips are nipped by the rolls  $K K$  they are drawn rapidly there-through, (the rolls  $K K$  being driven somewhat faster than the rolls  $C C'$ ), and in passing through them they are pressed together, and their pasted bottom and side seams are caused to unite, so that as they emerge below the rolls they are finished bags, requiring only drying to fit them for use.

The pasting of the bottom flap or seam is accomplished by means of the folder  $L$ , which receives paste on one side, and in descending transfers that paste to the bottom flap, so that in passing between the rollers this flap is pressed and thoroughly united. A revolving paste-brush,  $M$ , which dips into paste in a tray or vessel,  $m$ , brushes against the rear surface of the folding-blade  $L$ , when that blade is elevated, as shown in Fig. 1, thereby applying paste thereto. When the blade  $L$  descends it is necessary to provide some means of insuring that its pasted side shall come into contact with all of the bottom flap of the bag. For this purpose I have devised the plate  $n$ , which presents an edge or corner to the blade  $L$ , and the bottom flap is carried down between the two, being pressed by the plate  $n$  against the blade. This plate  $n$  is capable of a slight forward and backward movement, being pressed forward by a spring,  $n'$ .

It will be observed that I have provided for the application of the paste to the side of the blade  $L$  nearest the fulcrum on which it turns. By this means I avoid throwing off the paste by centrifugal force, as would be the case, to some extent, were the paste applied to the opposite side.

Owing to the frictional resistance opposed by the plate  $G$  to the advance of the lower strip,  $a'$ , I have found that the latter was apt to lag behind and buckle at times, thus becoming torn, or at least wrinkled, and in some cases rendering the machine inoperative. To obviate this I have provided a revolving cylindrical brush,  $N$ , which I arrange just beneath the plate  $G$ , and adjust it to such height that its bristles will lightly brush the strip  $a'$ , and thereby urge it along, as best seen in Figs. 3 and 4. This brush is geared to the driving-shaft  $D$ , and its peripheral velocity is somewhat greater than that of the rolls  $C C'$ .

The pasting-roll  $g$  may be revolved by a belt from the brush  $N$ , as shown, and should also have a peripheral speed greater than the speed of the paper, in order to wipe across the same, thereby thoroughly applying the paste, and to urge it forward.

The cutter H may be rotated from the shaft D through gears, as shown, two idlers being interposed in order that the gears may be changed to alter the relative speed of the rolls C C' and the cutter H, by which the length of the bags is determined.

The rolls K K, folder L, paste-tray *m*, and brush M are all borne by a carriage or movable frame, P, which may be slid forward or backward in guides on the main frame of the machine and fastened by a set-screw, *p*, Fig. 3. The object of adjusting this frame is to accommodate it to different lengths of bags, in order that the bottom flap may be folded to the correct depth. The table J is a removable board, a wider or narrower one being inserted, according to the position of the frame P. This means of adjusting the bottom-folding mechanism to accommodate different lengths of bags bears some resemblance to that shown in my Patent No. 165,390, granted July 6, 1875; but I make no claim to anything shown in that patent.

The rolls K K are driven from the shaft D through a counter-shaft, *k*, Fig. 2, arranged along one side of the machine, which receives motion from a bevel-gear on the shaft D, and communicates it by bevel-pinions *q q'* to the shaft of one of the rolls K, the two rolls being geared together at their opposite ends. The pinion *q* is mounted on a spline on the shaft *k*, so that as the frame P is moved toward or from the shaft D this pinion may slide thereon, being retained in mesh with the pinion *q'* by a frame, *q''*, mounted on the shaft of the latter pinion, and forming bearings for the shaft *k*. The other end of this shaft *k* is journaled in a collar on the shaft D, so that the shaft *k* is enabled to assume all the different angles necessary with different positions of the frame P by reason of the different elevations of the shafts D and *k*. The brush M is driven from one of the rolls K.

The folder L is normally sustained by the action of a spring, *j*, and it is caused to descend at intervals by a cam movement, consisting of an elbow trip-lever, R, arranged to be tilted by pins *r r* on the arms carrying the cutting-knives *h h*, and connected by a rod, *s*, to an arm, *t*, projecting from the lever *l*. As the pin *r* tilts the lever R the blade L descends. The rod *s* is connected to the arm *t* through a block, *s'*, which is pivoted to the arm *t*, and through which the rod *s* may slide, being fastened by a set-screw, in order to admit of the adjustment of the frame P.

I do not wish to confine myself to the use of the precise construction shown in all respects, as my invention is capable of numerous modifications without departing from its essential features. Among other possible modifications I may mention forming the cutter H with but one blade *h* and giving it a vibratory reciprocating motion from its shaft; also applying paste to the lower strip of paper instead of to the upper one; also transposing the position

of the strips *a* and *a'*, making the former the lower and the latter the upper strip, and also employing different gearing and other mechanical connections from those shown to give motion to the several devices for acting on the paper. My bottom folding and pasting device may be readily applied to the well-known machines which make bags from a continuous tube of paper having one seam.

I claim as my invention—

1. In a paper-bag machine designed to operate upon two continuous folded strips of paper, the combination of drawing-rollers between which the folded strips pass, a pasting mechanism, substantially as set forth, arranged between the two strips for pasting the folded laps of one of said strips, a cutting mechanism, substantially as set forth, for severing said strips, and pressure-rollers for uniting the pasted seams thereof, substantially as set forth.

2. In a paper-bag machine designed to operate on two continuous folded strips of paper, the combination of drawing-rolls for propelling said strips, a pasting apparatus, substantially as described, arranged between the two strips and adapted to paste the laps of one strip, a cutter adapted to cut said strips into lengths suitable for forming bags, a pasting mechanism, substantially as described, adapted to paste the end of each such length, a folding device adapted to turn up each such end to form the bottom flap of the bag, and pressing-rollers adapted to press together the pasted seams thereof, substantially as set forth.

3. In a paper-bag machine designed to operate on two continuous folded strips of paper, the combination of drawing-rolls between which both strips pass, means, substantially as described, for separating said strips after they leave said rolls, a pasting mechanism, substantially as described, arranged between the two strips and adapted to paste the laps of one strip, a fixed plate entering the folds of one of said strips, a cutting-blade working from the opposite side of the other strip and impinging upon the edge of said plate at intervals, whereby all the thicknesses of paper between the two are severed, and means, substantially as described, for cutting the remaining thickness beyond the others, substantially as set forth.

4. A cutting mechanism for a paper-bag machine, consisting of the combination of a fixed plate adapted to enter the folds of paper, a second fixed plate arranged beneath the paper, and edgewise thereto, and a moving cutting-knife arranged above the paper and caused to move in the direction in which the paper is propelled, and arranged, in moving, to impinge on the edge of the first-named plate and cut the intervening thicknesses of paper, and thereafter to encounter the last-named plate and impinge upon the edge thereof, thereby cutting the remaining portion of paper, substantially as set forth.

5. In a paper-bag machine designed to op-

erate on two continuous folded strips of paper, the combination of transverse bar F, arranged between the strips, plate G, fixed thereto and entering the folds of the lower strip, plate I, arranged behind the plate G, under the paper strips, and edgewise thereto, and cutting-blade *h*, arranged to move above and in the same direction as the paper strips, and adapted to impinge successively on the edges of plates G and I, thereby cutting the intervening thicknesses of paper, substantially as set forth.

6. In a paper-bag machine, the combination of means for propelling two folded strips of paper, one on top of the other, paste-vessel *f*, adapted to stand between the two strips, revolving pasting brush or roll *g*, dipping therein, and pressure-roll *g'*, arranged to press one strip of paper against the paste-roll, substantially as set forth.

7. A bottom folding and pasting mechanism for a paper-bag machine, consisting of the combination of drawing and pressure rolls K K, folding-blade L, moving at intervals toward and between said rolls and back therefrom, and means, substantially as described, for applying paste to one side of said blade, pressing-plate *n*, arranged adjacent to said rolls, where the said blade will move against it as it approaches the rolls, and spring *n'*, adapted to press said plate against the blade and admit of the plate being pressed back by the blade in its descent, substantially as set forth.

8. In a paper-bag machine, the combination of rolls K K, folding-blade L, levers *ll*, bearing the same, arm *t*, in connection with said levers, spring *j*, connecting-rod *s*, trip-lever R, cutting-blade *h*, and projection *r*, in connection with said blade, substantially as set forth.

9. In a paper-bag machine designed to operate on two continuous folded strips of paper, the combination of drawing-rolls for propelling said strips, a pasting mechanism, substan-

tially as described, arranged between the two strips and adapted to paste the laps of one strip, a cutting mechanism, substantially as described, adapted to cut said pasted strips into lengths suitable for making bags, and means, substantially as described, for changing the relative speed of said drawing-rolls and cutting mechanism, all mounted on and having bearings in a fixed frame, with another frame adjustable backward and forward relatively to said fixed frame, and fixed thereto during the operation of the machine, and the bottom folding and pasting mechanism, and pressure-rolls for uniting the bottom and side seams, mounted on said adjustable frame, substantially as set forth.

10. In a paper-bag machine, the combination of power-shaft D, roll C', fixed thereon, roll C, arranged above the roll C' in vertically-slotted bearings, weighted levers *e e*, fulcrumed directly above the bearing of the roll C, links *e' e'*, connecting said levers with the journals of the roll C, and stop *e''*, substantially as set forth.

11. In a paper-bag machine, the combination, with rolls C C', arranged to draw the folded paper until it reaches them, and to push the same after it passes them, and with plate G, of a cylindrical brush, N, arranged beneath the portion of the paper that has passed said rolls, with its bristles in light contact therewith, and with means for revolving it at a peripheral speed greater than that of the rolls C C', substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

CASPER VAN HOESEN.

Witnesses:

ARTHUR C. FRASER,  
HENRY CONNETT.