3 Sheets—Sheet 1.

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PAPER BAG MACHINE.

No. 188,378. Patented March 13, 1877.

Fig. 1.

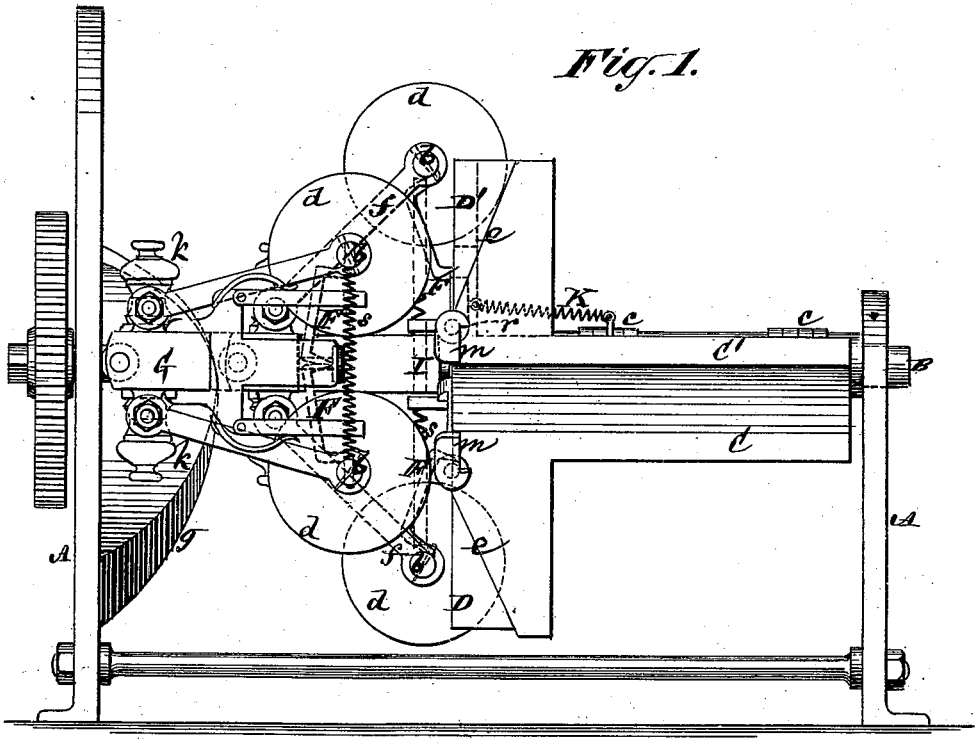
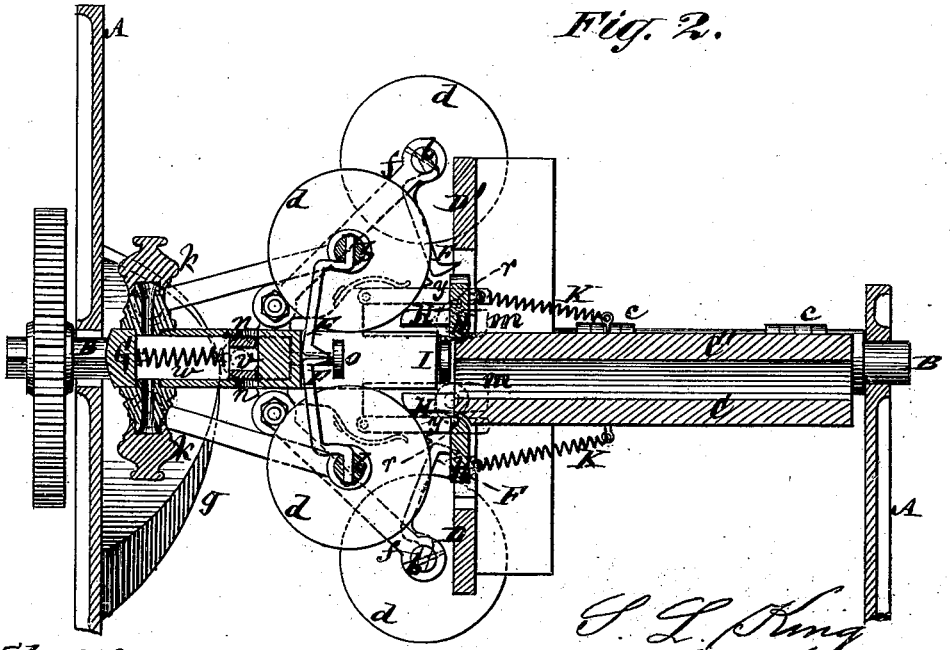


Fig. 2.



Witnesses
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Fred. Haynes

S. L. King
by his Attorneys
Brown & Allen

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Fig. 3.

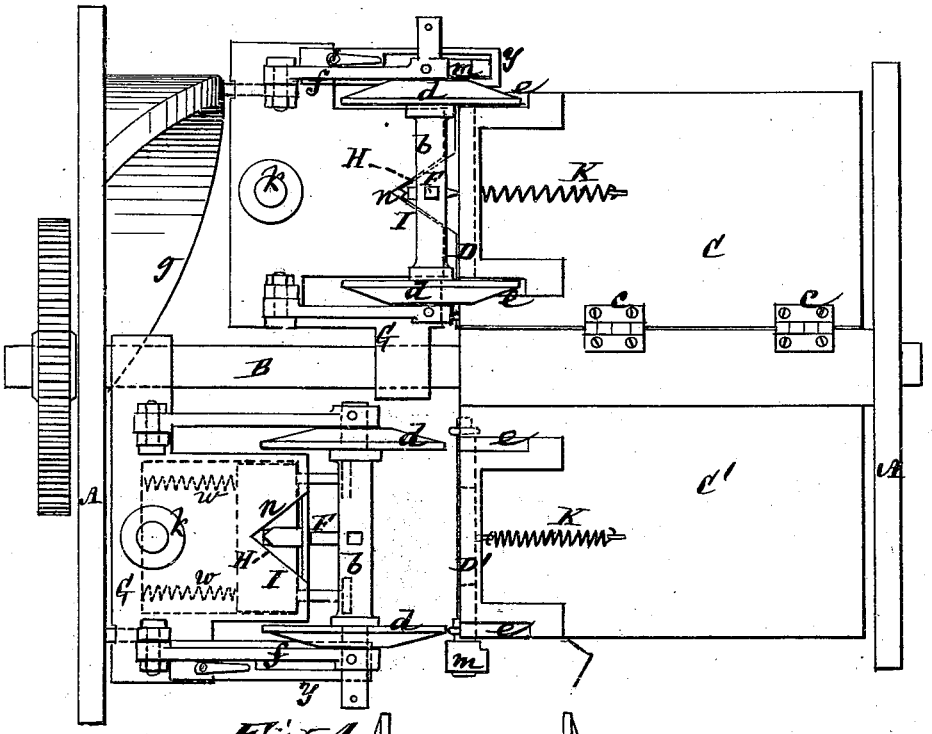

Fig. 4.

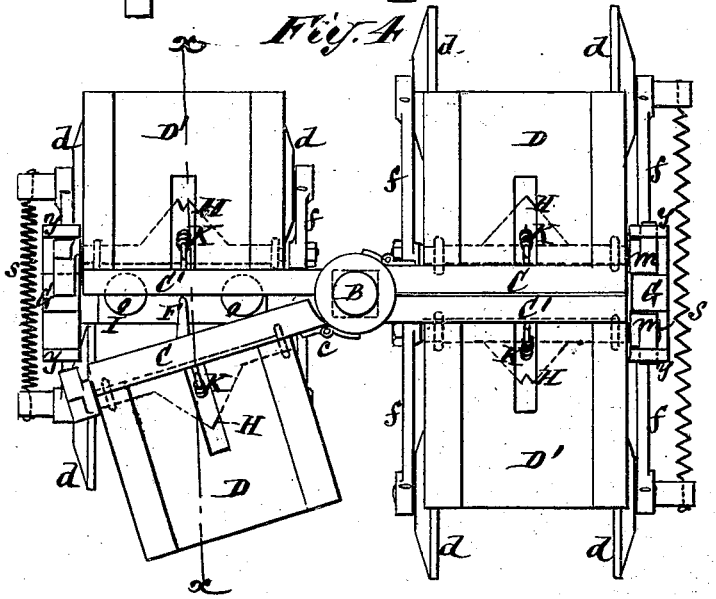

Fig. 5.

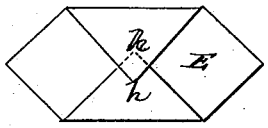

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Fig. 6.

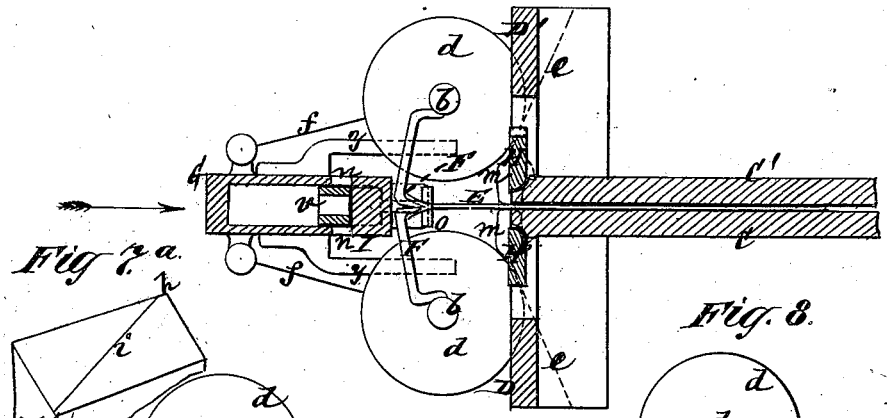

Fig. 6.a

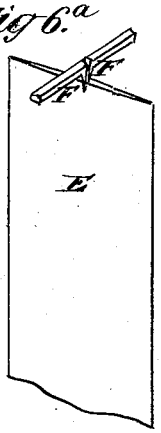

Fig. 7.a.

Fig. 8.

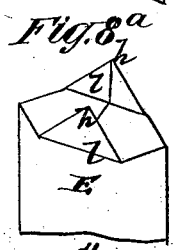

Fig. 7.

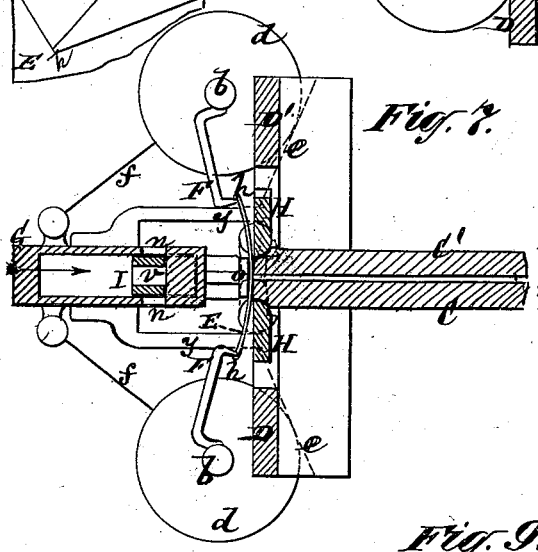

Fig. 8.

Fig. 8.a

Fig. 9.

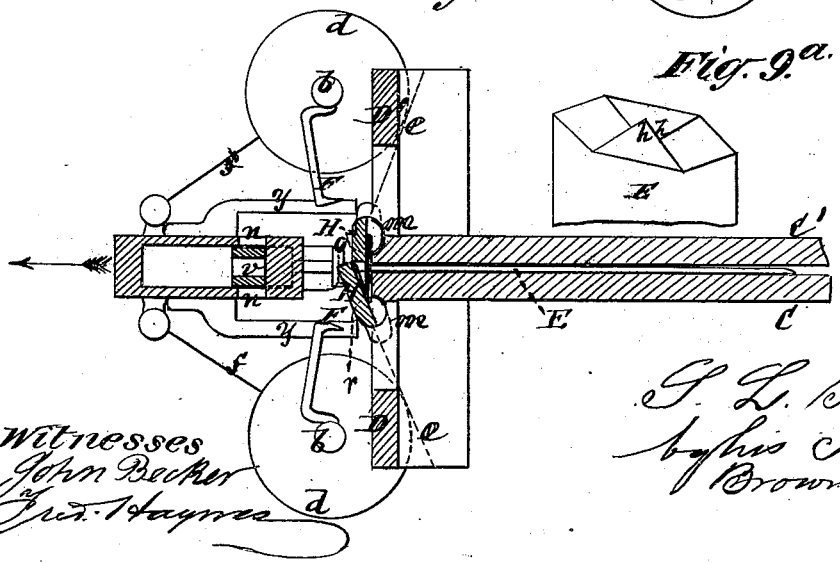

Fig. 9.a.

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UNITED STATES PATENT OFFICE.

SYLVESTER L. KING, OF BROOKLYN, NEW YORK, ASSIGNOR OF PART OF HIS RIGHT TO JOSEPH R. GILBERT, OF JERSEY CITY HEIGHTS, AND LEFEBRA D. GORDON, OF JERSEY CITY, NEW JERSEY.

IMPROVEMENT IN PAPER-BAG MACHINES.

Specification forming part of Letters Patent No. **188,378**, dated March 13, 1877; application filed September 22, 1876.

To all whom it may concern:

Be it known that I, SYLVESTER L. KING, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machinery for Forming and Pasting Satchel-Bottoms of Paper Bags; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

This invention relates to machines for forming and pasting or securing what are known as "satchel-bottoms" on paper bags from flat paper tubes after the latter (of or from which both the bottoms and bodies of the bags are made) have been closed by a longitudinally-pasted joint or seam.

The invention consists in certain novel constructions and combinations of parts or devices in machines of said description for opening, folding, and pasting or securing one end of such paper tubes to produce the required satchel-bottoms on the bags made of or from said tubes.

Figure 1 represents a side elevation of a machine constructed in accordance with my invention. Fig. 2 is a vertical longitudinal section of the same, mainly on the line *x x*. Fig. 3 is a plan thereof, and Fig. 4 an end view of the same. Fig. 5 is an under view of a satchel-bottom from the exterior of a paper tube as produced by the machine. Figs. 6, 7, 8, and 9 are sectional views of the opening, folding, and pasting devices in different working positions; and Figs. 6^a, 7^a, 8^a, and 9^a are perspective views of a paper bag in part, with its satchel-bottom as in the act of being formed when the opening, folding, and pasting devices are in the positions represented for them by Figs. 6, 7, 8, and 9, respectively.

The machine consists, generally, in a combination of opening and closing flaps within which the paper tube is received and held, hooks for spreading the ends of the tubes, and formers or folders and pasters for making the satchel-bottoms on the one end of each tube, the whole rotating on or around a central axis.

A A are opposite end frames, between which the machine rotates on or by a shaft, B, motion being communicated to the latter by means of gearing or otherwise. This shaft B forms the central axis, on opposite sides of which the paper-tube-folding and satchel-bottom-forming devices are duplicated or arranged. Thus the machine, for one-half or thereabout of its length, is composed of a frame made up of hinged and fixed wings or flaps C C′ on opposite sides of the shaft or axis B, and table-sections D D′, fast on the inner ends of said flaps, and projecting at right angles from the outer faces of the latter. C C are the hinged or opening and closing flaps, with their attached table-sections D D; and C′ C′ are the fixed flaps with their attached table-sections D′ D′.

The opening and closing flaps C C, with their attached table-sections D D, are reversely hung by means of their hinges *c c*, so that when by the rotation of the machine the fixed flaps C′ C′ are in a horizontal position one of the hinged flaps C is open by action of its weight in relation with its fixed flap C′, while the other hinged flap C is closed by action of its weight in relation with its corresponding fixed flap C′. This provides for the introduction of the longitudinally-seamed paper tubes E between each pair successively of hinged and fixed flaps C C′, and in due course for the delivery of the same after the satchel-bottoms have been formed and pasted or secured on one end of said tubes.

The machine for the other half or portion of its length is made up of the devices which spread the end of the tube corresponding with the bottom of the bag, and which form or fold and paste said bottom. These devices are duplicated for each pair of hinged and fixed flaps C C′, and operate alternately in reverse relation with each other, so that the description of one set of said devices applies equally to the other set thereof. Thus, in explanation of either one set of such devices, the paper tube E is introduced between either one pair of hinged and fixed flaps C C′ when the hinged flap C is open, and said tube placed or adjusted so that its end to be closed is made to re-

ceive within it hooks F F, as shown in Figs. 6 and 6ª. These hooks project from axles *b b*, arranged in parallel transverse relation with the table-sections D D′, and drawn toward each other by a spring, *s*, to place the hooks F F in entering position within the paper tube. The axles *b b* carry on their ends wheels *d d*, which are arranged to travel on or along inclines *e e* on opposite sides of the table-sections D D′, and which are connected, by rods *f f*, with a frame, G, fitted to slide on or along the shaft B by means of fixed cams, one of which, *g*, only is shown.

As said frame G, during the rotation of the machine, is forced inward along the shaft B, the wheels *d d* travel outwardly along the inclines *e e*, and draw the hooks F F away from each other, as shown in Fig. 7, and cause said hooks to spread or open the end of the paper tube E from points *h h* on its opposite sides, and ultimately to cause said sides to overlap one another transversely, as shown at *i*, Fig. 7ª. This gives a flattened-out four-cornered closed construction to the end of the paper tube E, projecting beyond the table-sections D D′ of the closed flaps C C′, which hold the body of the tube within them, the hooks F F releasing hold on the points *h h* as the closed end of the tube E is laid on or over rocking formers or folders H H, near the adjacent edges of the table-sections D D′, and a paste-reservoir, I, approaches the intermediate portion of the closed end of the tube. This paste-reservoir I, which may be supplied and kept filled from opposite sides by receivers *k k*, forms a part of the frame G, or is carried thereby.

The rocking transverse formers and holders H H are of an angular construction intermediately of their length, corresponding with the triangular construction of the sides *l l*, Fig. 8ª, of the closed tube end, and made male and female at their points, so that when the frame G, as in Fig. 8, is worked inward it bears upon toes *m m*, to turn the formers or folders H H, causing the latter to bend or turn up the pointed portions *h h* of the paper tube against the sides of the paste-reservoir I, (see Figs. 8 and 8ª,) or rather opposite angular pasting-outlets *n*, corresponding with the acting portions of the formers or folders H H. As this action takes place, plungers *o*, coming down or against the closed partially-folded end of the paper tube, act upon slides *v*, to deliver the paste against the inner faces of the pointed portions *h h* of the partially-folded end of the tube, said slides being returned or closed by means of springs *w w*. During or by this action the toes *m m*, which are formed with hooks or noses *r r*, are caught by, or made to enter, slots in elastic arms *y y*, attached to the sliding frame G, so that when said frame recedes from the table-sections D D′ it acts first upon one, and then upon the other, of the hooked portions of the toes *m m*, to cause the formers or folders H H to turn over the pasted inner faces of the pointed or angular portions *h h* of the closed end of the tube upon said closed end and each other, as represented in Figs. 9 and 9ª of the drawing.

The further or continued retrocession of the frame G from the table-sections D D′ causes springs K to return the formers or folders H H to their normal positions, as the hooks F F again approach each other to, in due course, repeat their operation. The machine continuing to revolve, allows the bag thus formed with a satchel-bottom to fall out from between the hinged and fixed flaps C C′, when the hinged flap comes undermost and opens by its weight. The like action takes place alternately or successively on opposite sides of the machine.

I claim—

1. The combination, with the hinged flaps C C and fixed flaps D D on reverse sides of the central shaft B, with which they revolve, of the hooks F F, arranged to work inward and outward in oblique directions relatively to said shaft, essentially as and for the purpose herein set forth.

2. The combination of the table-sections D D′, having inclined planes or surfaces *e e*, the sliding frame G, the rods *f*, the axles or shafts *b*, the wheels *d*, and the hooks F, substantially as specified.

3. The rocking folders and formers H H, provided with toes *m m*, in combination with the sliding frame G, the elastic slotted arms *y y*, and the paster or paste-tank I, essentially as described.

Signed this 6th day of September.

S. L. KING.

In the presence of—

HENRY T. BROWN,

BENJAMIN W. HOFFMAN.