

E. NUGENT & J. BURNS.
Triangular Paper-Bag Machine.

No. 213,060.

Patented Mar. 11, 1879.

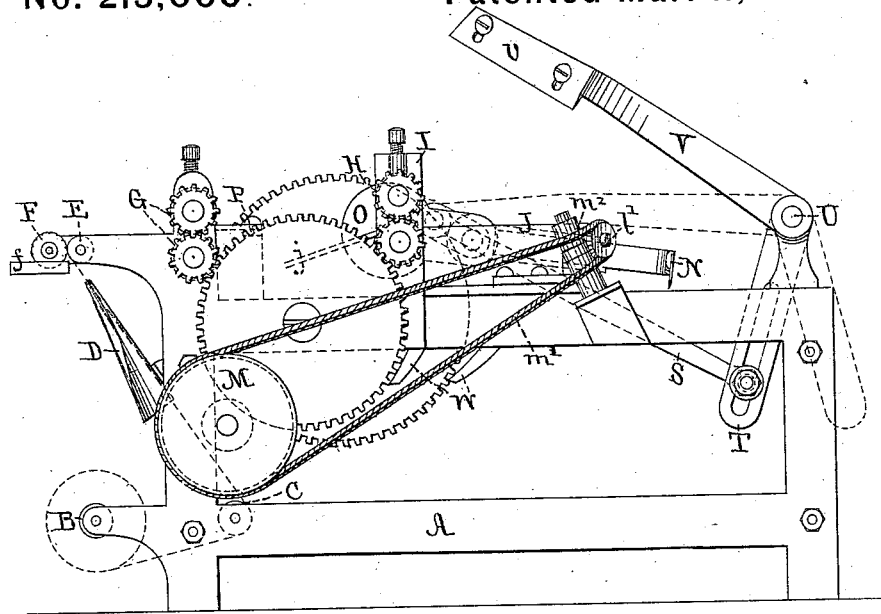


FIG. 1.

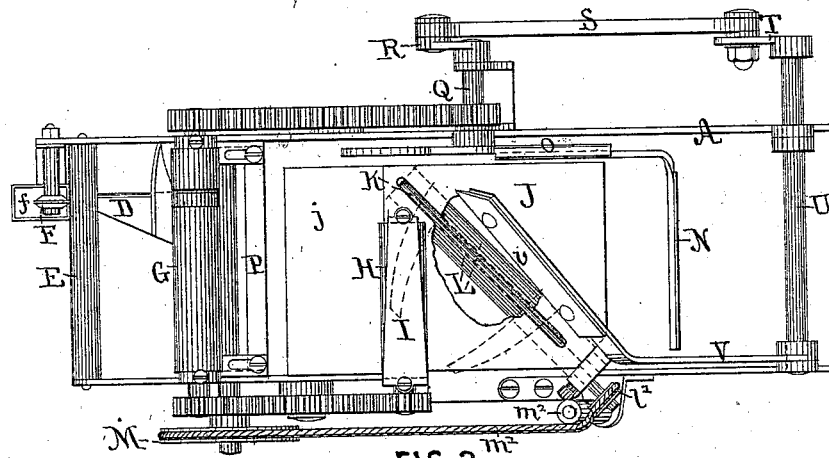


FIG. 2.

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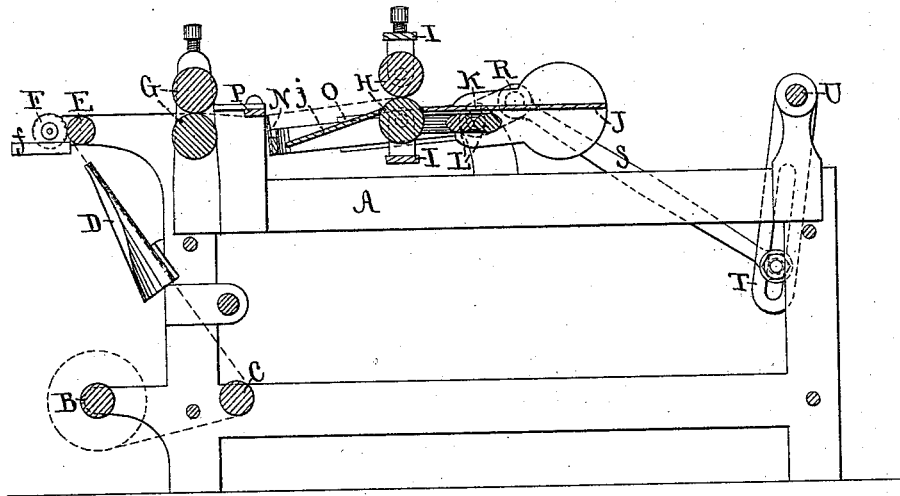


FIG. 3.



FIG. 4.

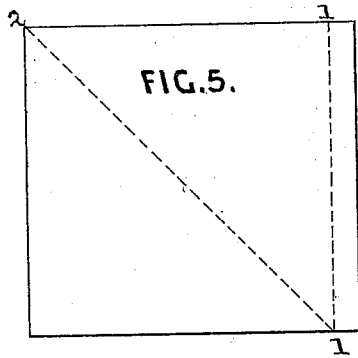


FIG. 5.

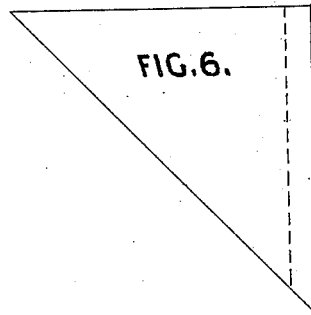


FIG. 6.

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UNITED STATES PATENT OFFICE.

EDWARD NUGENT AND JAMES BURNS, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN TRIANGULAR-PAPER-BAG MACHINES.

Specification forming part of Letters Patent No. **213,060**, dated March 11, 1879; application filed July 30, 1878.

To all whom it may concern:

Be it known that we, EDWARD NUGENT and JAMES BURNS, both of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in the Manufacture of Triangular Paper Bags, of which the following is a full and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of our machine for making said bags; Fig. 2, a plan view of same; Fig. 3, a longitudinal section of same; Fig. 4, a front view of the first guide-roller; Fig. 5, plan view of an unfolded blank, showing the lines at which the folds are made for forming the bag; and Fig. 6, the form of the bag when folded.

Our invention consists in the machine herein described and claimed for automatically making, forming, and perfecting such bags from a continuous web or roll of paper.

As shown in the drawings, A is the framework of the machine, made in suitable form to receive its several operative parts; B, a roller fixed at the forward end of the machine for carrying the roll of paper; C, the first guide-roller for guiding the paper in its course from the roll into the machine. It is provided with a rounded shoulder, *c*, (shown in Fig. 4,) for giving to one edge of the paper a preparatory bend before it enters the stationary folder D, by which the edge of the paper is continuously folded over to form a flap for receiving the paste for attaching the two sides of the bag together. This folder consists of a gradually-contracted roll of sheet metal terminating at its upper end in a triple fold of the metal adapted to the width of the fold of the paper, and having sufficient spaces between the folds of the metal to permit the paper to pass freely through.

E is a guide-roller for the paper, arranged above the folder D and in front of the feeding-rollers; F, a pasting-wheel having a serrated face bearing against the fold of the paper as it passes over the roller E, for the purpose of applying the paste to the folded edge before it enters the feeding and folding mechanisms of the machine. The pasting-wheel is supplied with paste from the box *f*, in which it revolves.

G are the primary feed-rollers for feeding the

web of paper into the machine. The upper one of these rollers is provided with a groove running around it to permit the pasted face of the flap to pass between the rollers without smearing the upper roller; H, the secondary feed-rollers for feeding the cut blanks of paper to the folding mechanism. These rollers are arranged to revolve in the brackets I, so as to leave an unobstructed passage for the paper extending beyond the inner end of the rollers.

J is the table of machine, attached to one side of the frame-work only, so as to leave a free space between the table and frame-work at one side and both ends of the table, for the purpose hereinafter set forth. Its forward end, *j*, is depressed to form an inclined plane to receive and guide the end of the paper into the secondary feed-rollers.

K is a diagonal opening in the table, so arranged in relation to the rollers H that its center line will intersect an extension of the axial line of said rollers at a point corresponding with the folded edge of the paper. By this arrangement the lines of the diagonal and longitudinal folds are made to intersect each other, so that the finished bag will have a sharp point at the bottom.

L are finishing-rollers, placed beneath the table J, and so arranged that their line of contact will coincide with the center line of the opening K. One of these rollers is provided with a grooved pulley, *l'*, to which motion is imparted by the grooved driving-pulley M, through the driving-band *m*¹, which is carried over the guide-rollers *m*², to compensate for the angle formed by the axes of the finishing-rollers and driving-pulley.

N is a knife provided with a series of pointed teeth, each of which is reduced to a cutting-edge, so as to pierce and cut the paper at a number of points at the same moment. This knife is carried by an arm, O, revolving in the free space at the side of the table J. It (the knife) is attached perpendicularly to the face of the arm O, so as to make a transverse cut through the paper. Each revolution of the arm causes the knife to pass in a complete circuit around the table J, its downward movement occurring at the rear end of the table, and its upward movement at the front end, at which point it encounters the web of paper,

which, by being carried beneath the longitudinally-adjustable bar P, is prevented from yielding before the impact of the knife.

By making the cut during the rising movement of the knife, the free end of the web is carried upward by the knife. At the same time the paper is continuously fed into the machine by the rollers G, so that when the end of it falls from its contact with the knife it will reach the inclined plane *j* of the table, by which it will be guided into the rollers H. By continuing the motion of the knife in the same direction instead of reversing its motion after the cut is made, we avoid the trouble which would result from the end of the paper being forced downward below the edge of the table by the return movement of the knife.

The knife is made adjustable to a less or greater distance from the axis of the arm O by means of slotted holes through which its securing-bolts pass.

The shaft Q (to which the arm O is secured) is provided at its outer end with a crank, R, which is connected by the rod S to the arm T of the rock-shaft U, to which shaft is secured the arm V, provided with a blade or folder, *v*, so arranged that when the arm has reached the lowest point of its vibration the folder will pass through the opening K and enter the space between the finishing-rollers L. W are spurs arranged beneath the finishing-rollers for discharging the bags at the side of the machine.

The operation of the machine is as follows: The roll of paper (indicated by the dotted circle in Figs. 1 and 3) is placed on the roller B, and its end, after passing under the roller C, through the stationary folder D, and thence between the roller E and pasting-wheel F, is inserted between the feed-rollers G. The direction followed by the web of paper from the roll until it reaches the secondary feed-rollers, H, is indicated by the dotted lines in Fig. 3. The machine being set in motion, the paper is fed into it by the feed-rollers G until the end of the paper passes between the secondary feed-rollers, H, and until a sufficient length is obtained for forming a bag. When this point is attained, the knife (whose movement is properly timed for the purpose) severs the web while it is yet held by both pairs of the feed-rollers. The separated piece or blank, whose folded and pasted edge extends beyond the end of the secondary feed-rollers, so that they will not bear upon the pasted surface, is fed by these rollers until its rear end is nearly in line with the axial line of said rollers. At this juncture, and while the blank is still fairly held by these rollers, the descending folder *v* commences to force the blank through the diagonal slot K in the table. By this operation the blank first receives its diagonal fold. By the continued descent of the folder *v*, the blank, which is now clear of the feed-rollers, is forced between the finishing-rollers L, and by these rollers the blank is caught,

and, while passing between them, the two sides are pressed closely together, so as to perfect the diagonal fold of the bag, causing the pasted flap to adhere to the corresponding edge of the other side of the bag, and completing the bag in a very perfect and rapid manner. After passing through the finishing-rollers the bag falls upon the spurs W, and is deflected by them, so as to pass out of the machine at its side.

It will readily be seen that the blank is fed to the folding mechanism by the secondary feeding-rollers, H, from the time of its separation from the web, and that after such separation the entire operation of completing the bag is effected by the co-operation of said rollers, the folder *v*, diagonal opening K, and the finishing-rollers L.

It will also be readily seen that the bag made in the manner herein described has but one open side or end, and that it is produced by giving to a rectangular blank a single longitudinal fold, (indicated by the dotted line 1 1 in Fig. 5,) produced by the stationary folder D, and a single diagonal fold, (indicated by the dotted line 1 2 in Fig. 5,) produced and completed by the folder *v*, diagonal slot K, and finishing-rollers L, so that the bag when delivered from the machine will have a perfect triangular form with a sharp-pointed bottom, and that when filled the bag will consume a conical or cornucopia form.

We are aware that a revolving knife has heretofore been used in combination with feeding-rollers, a horizontal table, a cross-bar, and an internal former for supporting a tube of paper in paper-bag machinery, and we make no claim to such a combination.

We claim as our invention—

1. The combination of the roller C, provided with a shoulder, *c*, stationary folder D, primary feed-rollers, G, and revolving knife N with the secondary feed-rollers, H, diagonally-slotted table J, vibrating folder *v*, and finishing-rollers L, as and for the purpose specified.

2. The secondary feed-rollers, H, arranged in relation to the knife N and primary feed-rollers, G, in the manner and for the purpose herein described, in combination with the diagonally-slotted table J, provided with an inclined plane, *j*, vibratory folder *v*, and finishing-rollers L, essentially as specified.

3. The revolving knife N, arranged to sever the paper during the rising portion of its revolution, in combination with the primary feed-rollers, G, adjustable bar P, and inclined plane *j*, whereby the end of the web of paper, while being fed into the machine, is sustained, so that it can reach the said inclined plane in the manner and for the purpose herein specified.

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