3 Sheets—Sheet 1.

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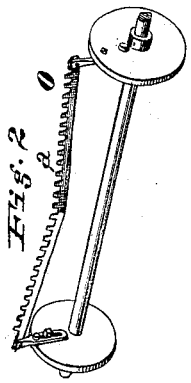
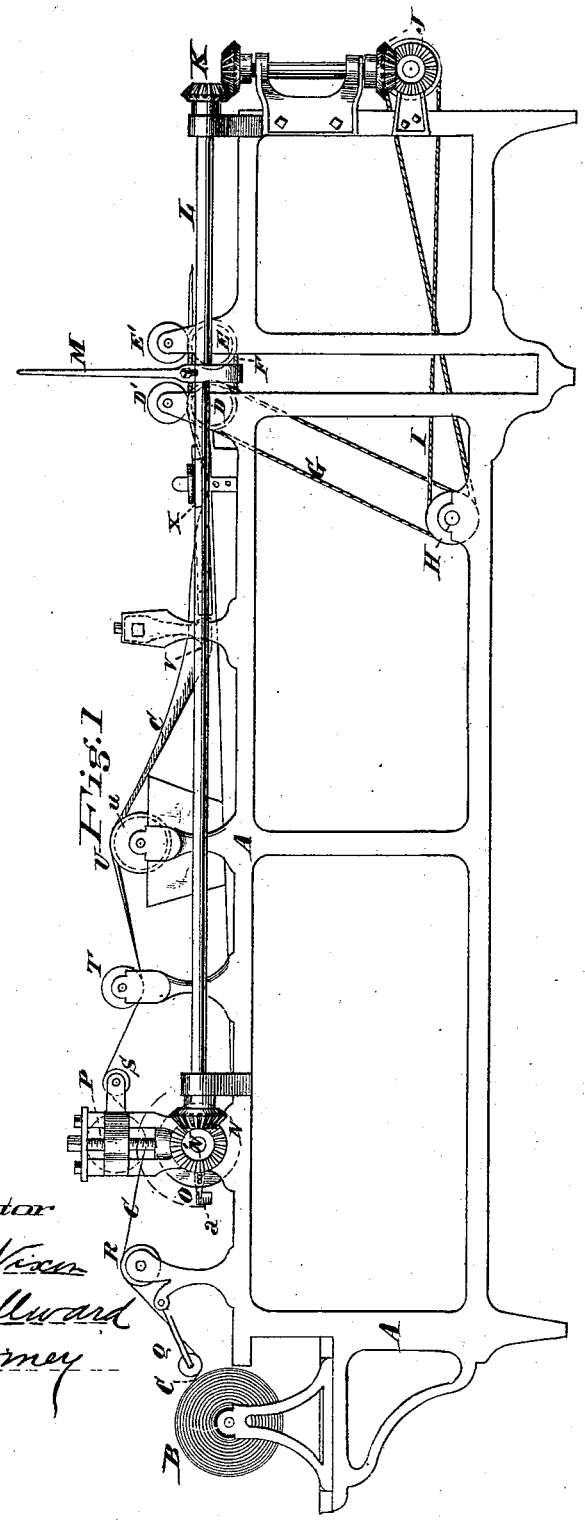
PAPER-BAG MACHINE.

No. 189,056. Patented April 3, 1877.





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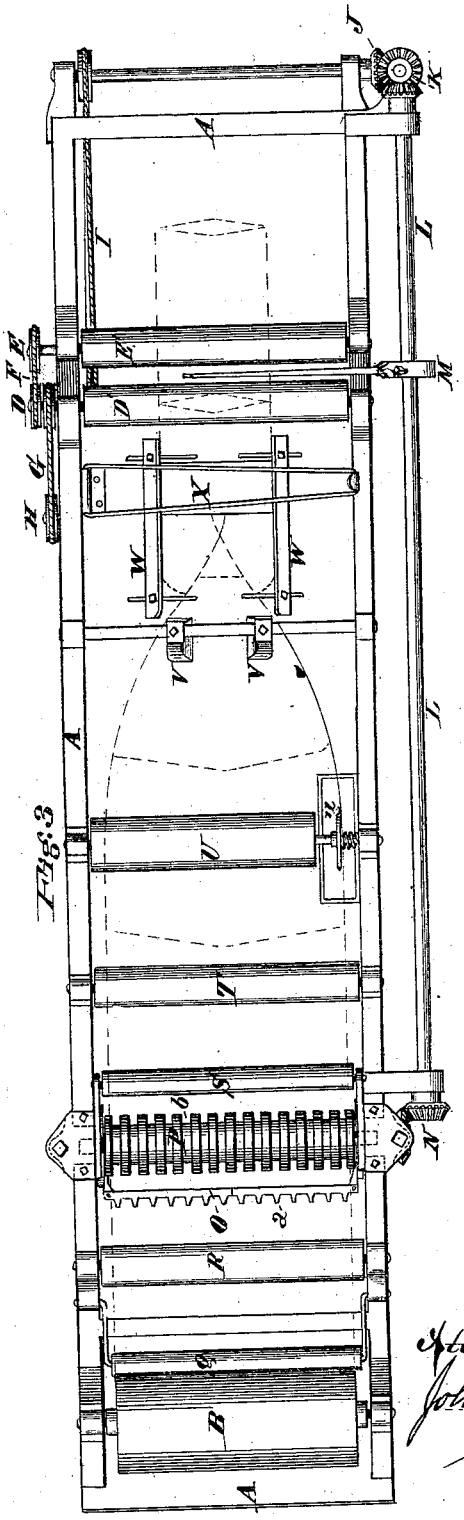

Fig. 3.

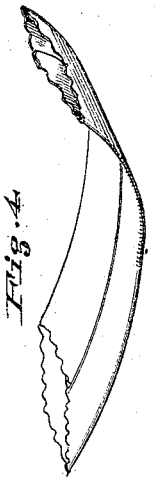

Fig. 4.

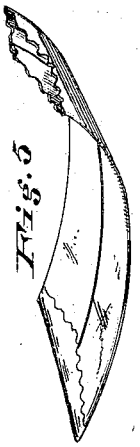

Fig. 5.

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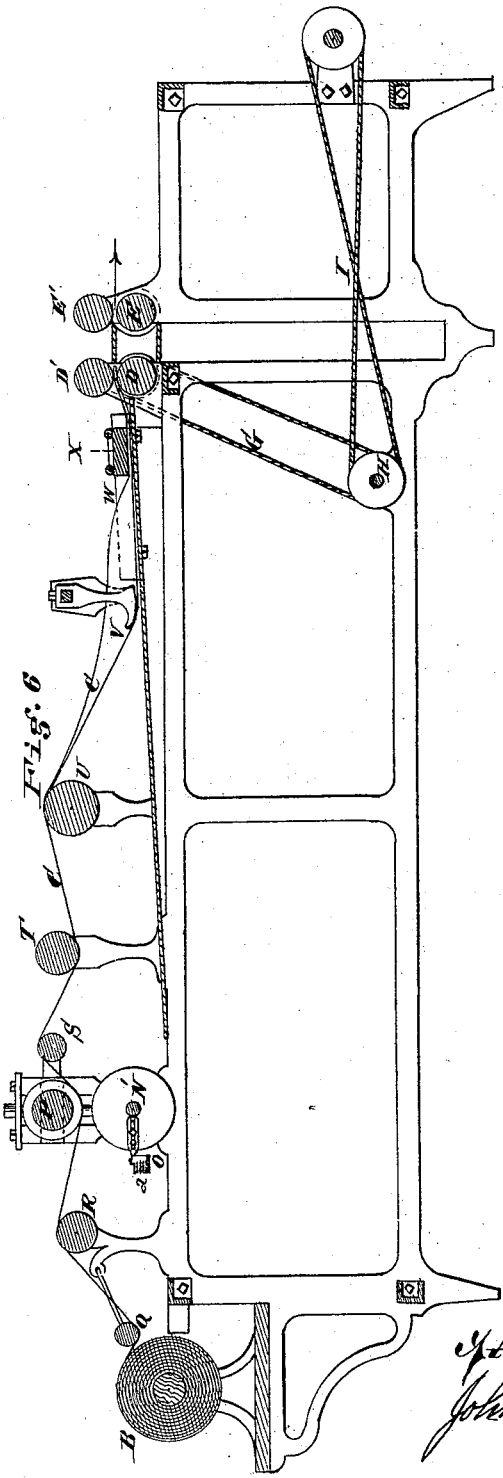

Fig. 3.

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UNITED STATES PATENT OFFICE.

CHARLES A. NIXON, OF DAYTON, OHIO.

IMPROVEMENT IN PAPER-BAG MACHINES.

Specification forming part of Letters Patent No. **189,056**, dated April 3, 1877; application filed February 16, 1877.

To all whom it may concern:

Be it known that I, CHARLES A. NIXON, of Dayton, Montgomery county, State of Ohio, have invented an Improvement in Paper-Bag Machines, of which the following is a specification:

My invention relates to paper-bag machines constructed and operated to make bags from a roll of paper, which is continuously fed to devices by which it is continuously folded at the sides into a tube, pasted, and cut off into lengths for bags; and my invention consists of a peculiar combination of devices by which the paper is severed transversely, the combination embracing the following instrumentalities, to wit: a revolving perforating-blade, having an edge describing an obtuse angle crosswise of the paper, and attached to a shaft at right angles to the line of motion of the paper; a roller having a series of closely connected grooves, into which the projections of the revolving blade fit; and a revolving beaten, whose plane of motion is preferably at right angles to the line of motion of the paper.

The operation of this combination is such that the paper, before it is folded over at the sides into a tube, is perforated like a sheet of postage-stamps, the line of perforations being crosswise of the strip of paper entirely across, and describing an obtuse angle, and afterward fed along to undergo the operations of pasting and folding, and when pasted and folded is severed, the perforations determining the line of severance and not the plane of the beaten which effects the severance.

In the accompanying three sheets of drawings, Figure 1 is a side elevation of a machine embracing my improvement. Fig. 2 is a perspective view of the knife. Fig. 3 is a plan view of the machine. Fig. 4 is a perspective view of the tube to form the bag. Fig. 5 is a perspective view of the finished bag; and Fig. 6 is a longitudinal section of the machine.

A is the frame of the machine, and B the paper-roll. C is the strip of paper as it extends forward along the table of the machine, and enters between the rollers D D′, whose rotation gives a continuously progressive forward motion to it. The strip of paper when between the rollers D D′ is transversely in the form of a flattened tube, and it also passes through a pair of rollers, E E′, which sustain it while being severed by the beaten, and serve to convey the blank tubes to the bottoming mechanism, which is of the ordinary kind, and not shown on the machine. It is sufficient to say that the bottoming is done by pasting and folding over the end of the tube, the end having one side longer than the other, (to avoid double pasting,) as is common in the manufacture of "square bottom bags," as these are called when made either by hand or machinery. The rollers D E are connected by bolt F, the roller D being driven by belt G, whose driving-shaft H also gives motion, through belt I, gearing J K, and shaft L, to the revolving beaten or breaker M, and the same shaft L gives a rotary motion, through gearing N and shaft N′, to the revolving knife O, which makes the successive lines of perforations across the paper, which not only determine the length of the bags, but also absolutely determine the character of the line of severance independent of the breaker M, which simply breaks the tube at the line of perforations, having no power to divide the tube in its own plane of rotation. The breaker M, when but one perforating-knife, O, is used, has the same number of revolutions as said knife, and the circumference of the circle in which the edge of the knife O moves determines the length of the bag. The paper is fed at the same number of feet per minute as the edge of this knife, in order that the points of the knife may enter and leave the paper properly.

To enable the machine to make bags of less length I sometimes attach more than one perforating-knife to the shaft N′, and give a corresponding increase of speed to the breaker M; or I vary the length of bag by adjustably attaching the knife O to its shaft N, as shown in Fig. 2, so that the circumference of the circle of its cutting-edge may be increased or diminished. This latter plan does not require any alteration in speed of the beaten M, but requires an adjustment of the feeding-rollers D D′ E E′ to correspond.

To enable the knife O to perforate properly, I sharpen its projections or perforating-points *a*, and provide a roller, P, with grooves *b*, into which the points enter in the operation of the machine. The roller P thus affords a resisting-surface, against which the paper is

supported against the action of the knife, and the grooves enable the points to pierce the paper without impediment other than that offered by the paper itself. The knife-edge, as shown, is an obtuse angle made up of two right lines, and the line of perforations is, of course, the same. Consequently, when the tube is formed, and the beaten M has broken it, the ends of the tube at the break will, in its flattened state, present a diamond shape, so that the bottom may be made in the well-known way, to wit: by pasting the overlapping side and folding its pasted edge over the short side.

To give a uniform tension to the paper I use a gravitating-roller, Q, as shown, and to preserve the pressure of the paper against the roller P I employ the rollers R S. The paper after it passes roller S passes under roller T, and over roller U, whose edge *u* revolves in paste and pastes the edge of the paper strip as it passes over it. It then passes under the guides or pressure-feet V, and between the side guides W in a tubular form, the upper pad or gravitating hinged block X serving to press the sides of the tube together, and secure the pasted edge. The tube is really formed by hand at the first feeding of the paper to the rollers D D′, and these rollers in feeding it after the machine is started simply preserve the tubular form with the assistance possibly of the pad X, and there is no interior mechanism in the tube whatever, such as has been necessary heretofore to enable the severing devices to cut the tube while it was partly open.

I claim—

1. In a paper-bag machine the combination, substantially as specified, of the perforator and the grooved roller.

2. In a paper-bag machine the combination, substantially as specified, of the perforator, the grooved roller, and the beaten or breaker.

In testimony of which invention I hereunto set my hand.

CHAS. A. NIXON.

Witnesses:
JOHN E. JONES,
J. L. WARTMANN.