R. K. HUGHES, dec'd.
ELLEN E HUGHES, Adm'x

# PAPER-BAG MACHINE.

No. 180,589. Patented Aug. 1, 1876.

FIG. 1

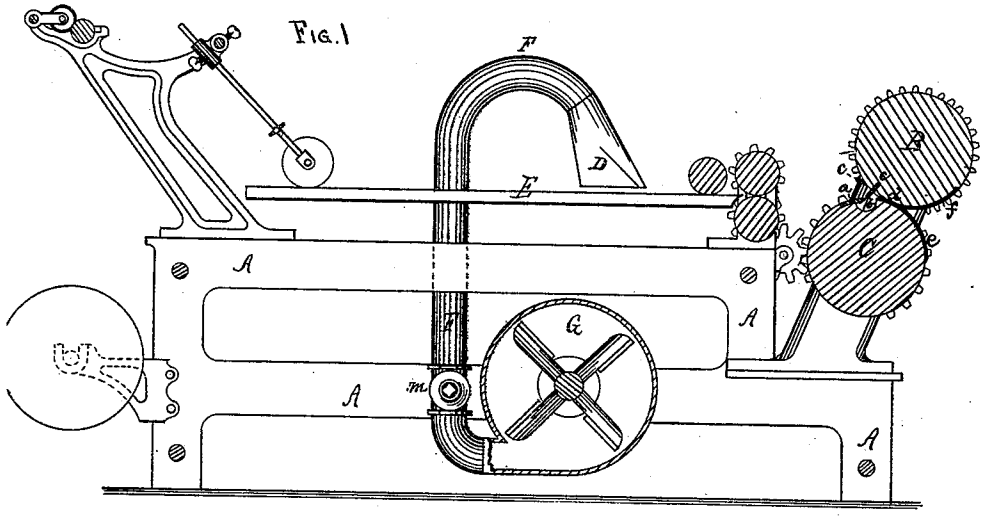
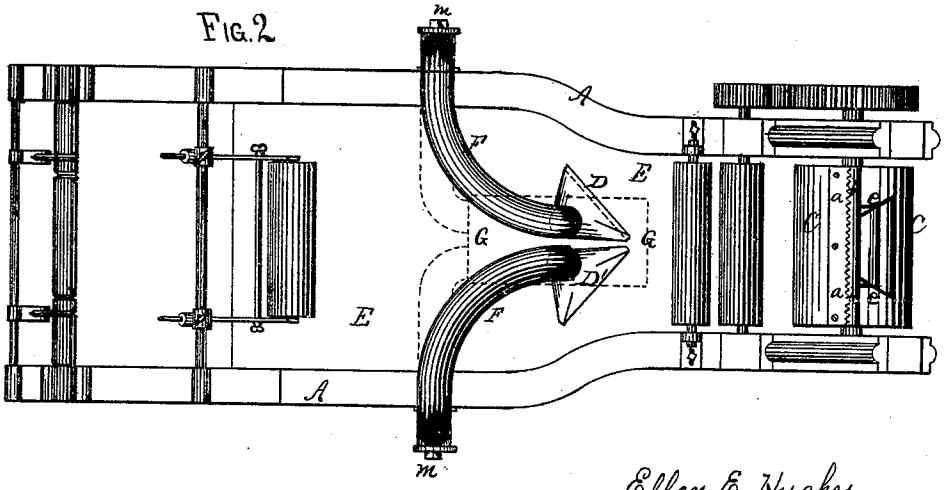



FIG. 2

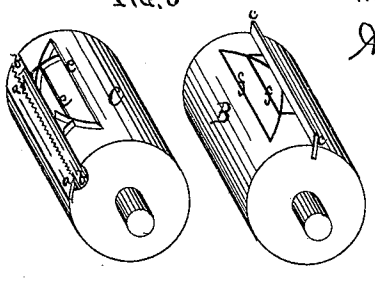



Ellen E. Hughes,
Administratrix of Estate of
Robert K. Hughes,

INVENTOR, By
Alexander Mason
Attorneys.

WITNESSES.
C. F. Evert,
G. M. Bart.

FIG. 3

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# UNITED STATES PATENT OFFICE.

ELLEN E. HUGHES, OF ERIE, PENNSYLVANIA, ADMINISTRATRIX OF ROBERT K. HUGHES, DECEASED.

## IMPROVEMENT IN PAPER-BAG MACHINES.

Specification forming part of Letters Patent No. **180,589**, dated August 1, 1876; application filed January 29, 1875.

*To all whom it may concern:*

Be it known that ROBERT K. HUGHES, late of Buffalo, in the county of Erie and State of New York, did invent certain new and useful Improvements in Flat-Bottom Paper-Bag Machines, of which the following is a specification:

This invention relates to machines for making flat-bottomed paper bags or flour-sacks; and consists in a frame, carrying two drums or rollers, in either of which a cutting-blade or knife is set in such a manner that, acting in conjunction with each other, they serve to cut the tube of paper into bag-lengths, as hereinafter described.

The invention further consists in the application of a blast of air to hold the paper in the right position to be carried between the pressing-rollers, as hereinafter set forth.

In the drawings, Figure 1 is a sectional elevation. Fig. 2 is a plan view; Fig. 3, a perspective view of the drums.

A is the frame, carrying two drums, B C, set one above the other in suitable boxes, and operated by gearing, &c. *a* is a serrated blade or knife set flat into the lower drum C, as shown, so that its upper surface will come flush with periphery of the drum. *b* is a cavity cut in the drum C, immediately in front of the blade *a*, to receive another blade, *c*, set at right angles to, and secured in, the upper drum B, with its edge projecting a short distance therefrom. This projecting knife is so set that when the drums are revolved it will cut down close to the serrated blade *a* in the other drum, and thus sever the tube of paper as it is passed between them, the serrations appearing upon the ends of the bags in the usual manner. The cavity *b* is so formed that the blade *c* will not strike either side when entering or leaving it as the drums revolve.

By this simple arrangement the bag-lengths may be cut off as fast as the tube can be formed, in the most accurate and easy manner.

By enlarging the drums, and multiplying the number of knives, two or more bags may be formed by one pair of drums, and by varying the distances between the blades bags of different sizes may be made on the same machine. The upper drum will be placed a short distance in advance of the lower one, to clamp the bag, and hold it stretched while being cut off, as hereinafter explained.

D D′ are two funnel-shaped nozzles, suspended above the table E, as shown, and connected by tubes F to a fan or blower, G, beneath the machine. These nozzles are so placed that a blast of air from the fan or blower will be thrown down upon the tube of paper at a short distance back of the pressing-rollers, and thus hold it in the right position.

This is a novel and important feature of the invention, as by its use the necessity is avoided of using the metal-holding strips or gages, which are very inconvenient to use, and require very delicate adjustment, and exert a large amount of friction upon the tube; but by using the air-blast it can be adjusted very delicately, with very little trouble, by the use of cocks *m m′* in the pipes F, and the friction against the paper is so small as to be scarcely perceptible, as the pressure may be so gaged as to act upon the tube just sufficient to hold the paper down without pressing it against the table. In the metal gages one of them is required to be of a peculiar shape to hold the pasted side of the paper above the other one; but in this device all that is required to do is to let the blast from the nozzle D, on the pasted side, run a trifle lighter than on the other, so as to let the tube rise up of its own elasticity above the pasted portion, which it will do, as has been demonstrated frequently. It is not known that an air-blast has ever before been used for this purpose.

The form and position of the nozzles may be varied as circumstances and experiments may show to be necessary.

A great advantage is gained by setting the drums at an angle, as shown, as the tube of paper is held at *d* by the drums, and kept stretched until they are cut off. Without something of this kind the bags would "buckle" or "double," or have a tendency, if the teeth in the serrated blade *a* became dulled, to bend down into the cavity *b*, and not cut off. It also dispenses with the use of a pair of extra pressing-rollers forward of the drums.

In the lower drum, just forward of the cavity *b*, is arranged a series of knives, *e*, which are

made to conform to the folds of the bottom of the bag, which, acting in conjunction with grooves *f f* in the upper drum B, form creases in the bags to aid in folding the bottoms. This feature is not entirely new; but it is believed it has never been used to crease a bag after it has been formed, in which connection it is claimed.

What is claimed is—

1. The combination of the drum C, having serrated blade *a*, cavity *b*, and knives *e*, with the drum B, having projecting knife *c* and grooves *f*, all substantially as and for the purposes set forth.

2. The combination, in a paper-bag machine, of the fan G and the pipes F F, extending upward, and bent forward over the table of the machine, and having the funnel D D′ at their ends, and provided with stop-cocks *m m*, all substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ELLEN E. HUGHES, *Admx.*

Witnesses:

FRANK GUNNISON,

O. C. THAYER.