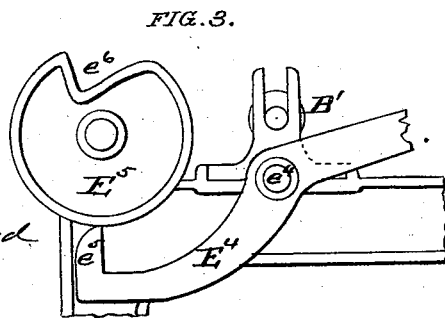
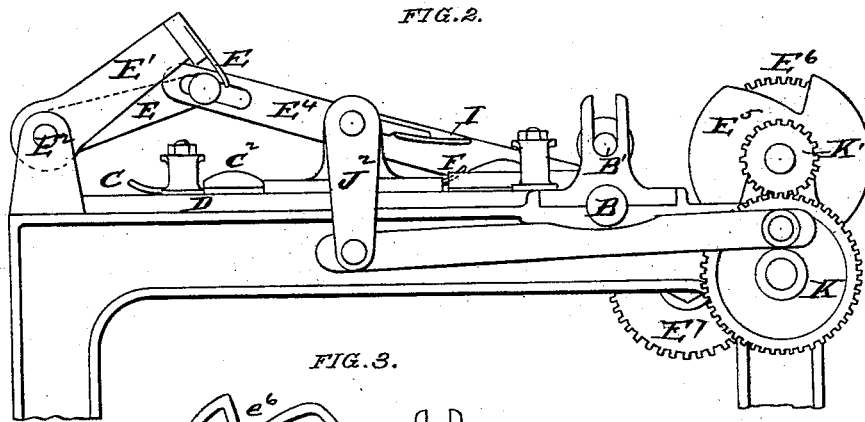
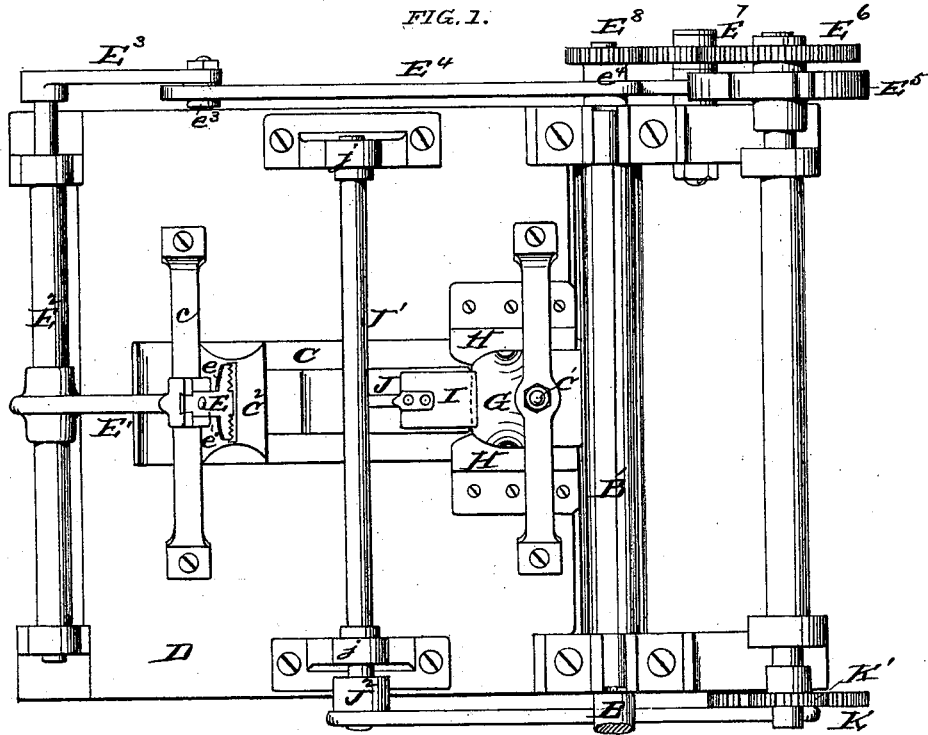


R. W. & M. MURPHY.  
Paper-Bag Machine.

No. 201,277.

Patented March 12, 1878.



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FIG. 4.

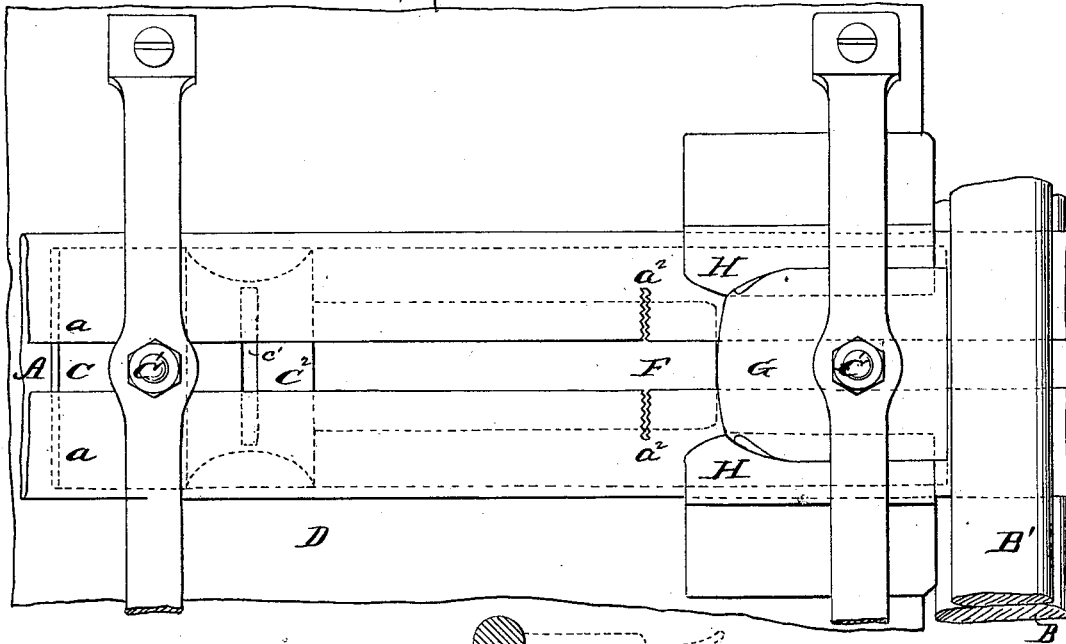


FIG. 5.

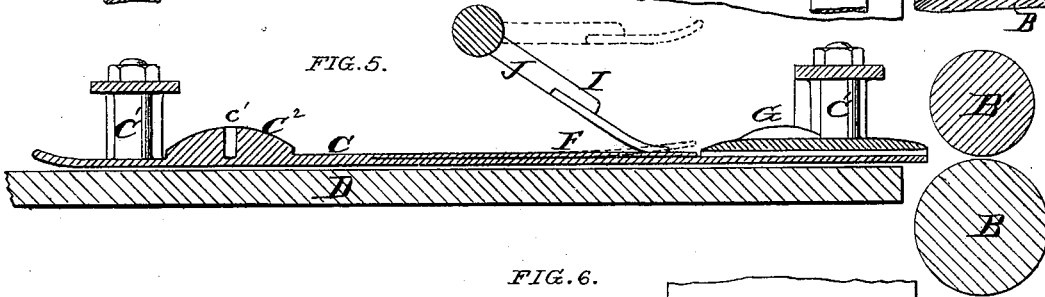


FIG. 7.

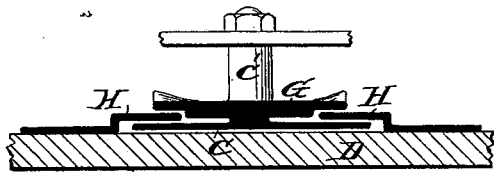


FIG. 6.

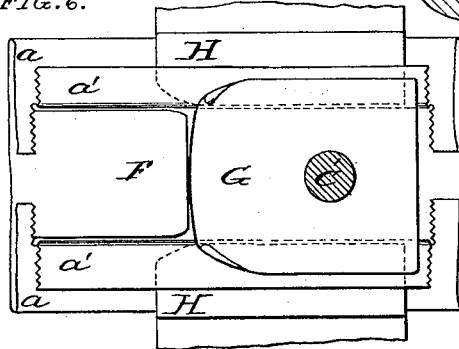
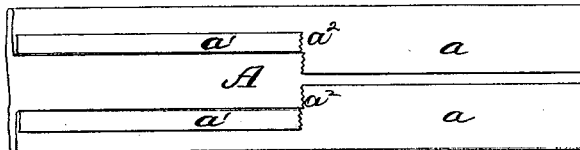


FIG. 8.



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# UNITED STATES PATENT OFFICE.

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RUFUS W. MURPHY ASSIGNOR TO M. F. MURPHY, OF SAME PLACE.

## IMPROVEMENT IN PAPER-BAG MACHINES.

Specification forming part of Letters Patent No. **201,277**, dated March 12, 1878; application filed  
November 26, 1877.

*To all whom it may concern:*

Be it known that we, RUFUS W. MURPHY and MERRICK MURPHY, residents of St. Louis, Missouri, have invented a new and useful Improvement in Paper-Bag Machines, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a plan of a portion of a paper-bag machine containing the invention; Fig. 2, a side elevation of the same; Fig. 3, a detail, being a view of the cam that actuates the mechanism connected with the slitting-knife and the parts immediately associated with the cam; Fig. 4, a top view of a portion of the machine, the presser-plate and slitting-knife being removed and the paper being shown as slitted, but the portions thereof forming the edge folds not turned back upon the side folds; Fig. 5, a longitudinal vertical section of that part of the construction shown in Fig. 4, the paper being omitted and the presser-plate being shown; Fig. 6, a detail showing the edge folds of the blank as turned back on the side-formers; Fig. 7, a detail, being a vertical cross-section taken through the guide and formers; and Fig. 8, a view showing the paper as cut and folded by the present machine.

Similar letters refer to similar parts.

The aim of the present improvement is to provide means whereby a continuous web of paper, as it is fed from a roll, can be folded into the form shown in Fig. 8—that is, having the central portion A, the side folds *a a*, and the edge folds *a' a'*—and for the purpose of forming what may be termed a “seamless-bottom square bag.” The web is drawn into the machine by the drawing-rolls B B'. As it enters, the sides of the web are (and by well-known mechanism, not shown) turned over upon the center A, nearly meeting, and forming the side folds *a a*. The paper thus folded is made to pass onto a former, C, the center A being beneath, and the folds *a a* upon the former. The latter is a thin strip, of suitable length, and in width slightly more than half the width of the web, and, by means of the rods C<sup>1</sup> C<sup>1</sup>, is suspended longitudinally with the machine and just above the bed-plate D. There

is a raised part, C<sup>2</sup>, upon the upper side of the former, having a slot, *c'*, therein. The folds *a a* pass over this raised part and slot *c'*, and, as they move along, a slitting-knife, E, (and at intervals hereinafter described,) strikes down into the slot, cutting the folds *a a* at *a<sup>2</sup> a<sup>2</sup>*. This enables a portion of the side folds to be turned back upon the outer portion, forming what may be termed the “edge folds” *a' a'*. This is effected as follows: As the paper moves along, the inner edges of the folds *a a* pass over a spring-plate, F, that, when left free, stands up from the former, as indicated by the dotted lines in Fig. 5. As soon as the forward ends of what afterward become the edge folds come over the spring-plate they are thereby deflected upward and sufficiently to encounter a guide, G, that is arranged centrally above the former, and be turned thereby, and, respectively, over upon two side-formers, H H. The paper in this shape enters the rolls B B'. This continues until a bag-length of paper has passed along. The spring-plate F is now depressed, so that the folds *a a* on the succeeding bag-length of paper shall be kept beneath the guide. This is effected by the following means: A presser-plate, I, that is attached to the vibrating arm J, is made to press the plate F (and with it the intermediate paper) down below the level of the bottom of the guide, and to hold them at that level until the forward ends of the folds shall have entered beneath the guide. The folds continue beneath the guide until a second bag-length of paper has passed along. The presser-plate meanwhile has been lifted, allowing the spring-plate to act again, when the third bag-length of paper comes along and causes the edge folds *a' a'* to be formed again, as before, and so on alternately, keeping the folds *a a* entirely down upon the former C, and then turning back the inner edges of the folds to form the edge folds *a' a'*. After passing the rolls B B' the various bag-lengths of paper are cut off and pasted, and the bags completed by mechanism not shown in the drawing. The bag, when formed, is one-half, or thereabout, the length of the blank, the latter being folded transversely at or near its middle after the paste has been applied to the

edge folds  $a^1 a^1$ . The slits  $a^2 a^2$  are preferably in the line of this transverse fold, the slitting-knife therefore being caused to act every time a bag-length of paper passes, and so as to make the slits at or about the middle of the blank. So far as the longitudinal folds in the paper are concerned, and the cutting of the slits  $a^2 a^2$ , the web of paper can be cut into blanks before coming to the slitting-knife, as well as after passing the rolls B B'.

The knife E may be straight, as shown, so as to make the slits  $a^2 a^2$  directly at right angles to the longitudinal axis of the blank, or it can be shaped so as to make them at any desired angle therewith. The back  $e$ , Fig. 1, of the knife is sloped from the shank  $e^1$  downward to the ends of the knife, to enable the latter to readily pass the folds  $a a$  in its upward movement. The knife is attached to an arm, E<sup>1</sup>, that in turn is fastened to a shaft, E<sup>2</sup>, having a crank, E<sup>3</sup>. A lever, E<sup>4</sup>, pivoted at  $e^4$  to a suitable bearing, is slotted at one end to engage with a wrist-pin,  $e^3$ , on the crank E<sup>3</sup>, and at the other end is provided with a projection,  $e^5$ , that rides upon a cam, E<sup>5</sup>. The latter may be suitably rotated by means of the gears E<sup>6</sup> E<sup>7</sup> E<sup>8</sup>. As it turns, the projection  $e^5$  rises into the depression  $e^6$  in the cam, and the other end of the lever falls, allowing the crank E<sup>3</sup> and knife E to drop and effect the desired cut. The mechanism by which the presser-plate I is caused to rise and fall from and to the paper is as follows: The arm J, that supports the presser-plate, is fastened to a shaft, J<sup>1</sup>, that is held in the bearings  $j j$ , and is furnished with the crank J<sup>2</sup>. From

the latter a connecting-rod leads to a spur-wheel, K, that is in gear with the pinion K'. The pinion is on the same shaft that carries the cam E<sup>5</sup> and gear-wheel E<sup>6</sup>. The gear E<sup>8</sup> is on the driving-shaft B. The various wheels are suitably proportioned to produce the above-described movements in the manner set forth. The slitting-knife E, in making the cut, passes entirely beneath the folds  $a a$ , enabling the paper to pass along without interruption.

We claim—

1. The combination of the former C, provided with the raised portion C<sup>2</sup>, having the slot  $c'$  and the slitting-knife E, as and for the purpose described.
2. The combination of the spring-plate F and the presser-plate I, for the purpose described.
3. The combination of the former C, the spring-plate F, and the presser-plate I, substantially as described.
4. The former C, provided with the spring-plate F, for the purpose of deflecting the edges of the paper upward, as described.
5. The combination of the plate F, guide G, and formers H H, substantially as described.
6. The combination of the former C, part C<sup>2</sup>, having the slot  $c'$ , plates F and I, guide G, and formers H H, substantially as described.

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Witnesses:

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