R. W. & M. MURPHY.

Paper-Bag Machine.

No. 201,278. Patented March 12, 1878.

FIG. 1.

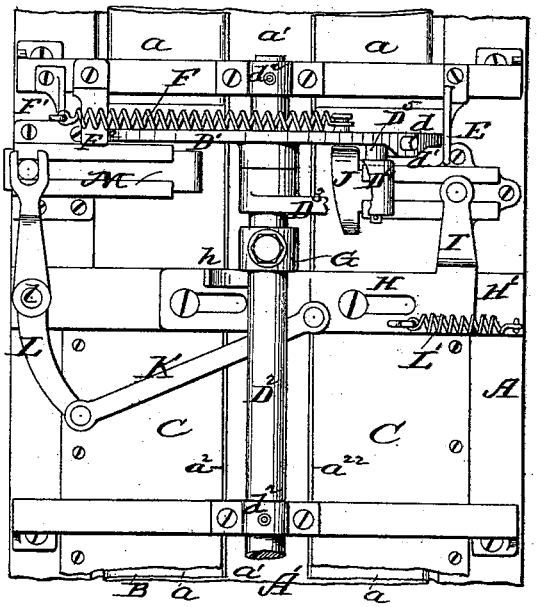


FIG. 4.

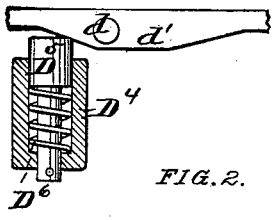


FIG. 2.

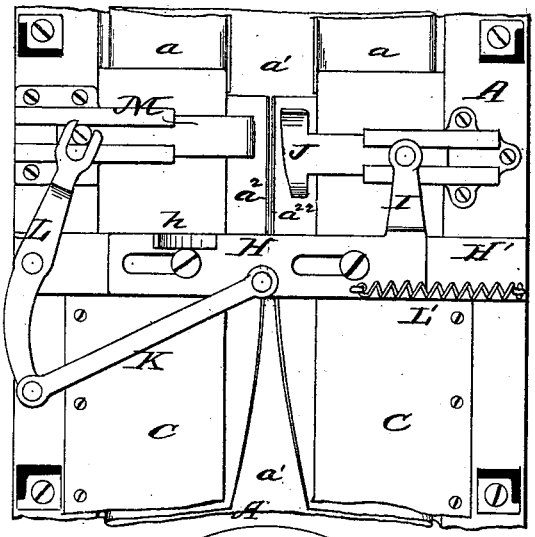


FIG. 5.

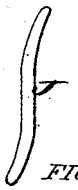


FIG. 6.

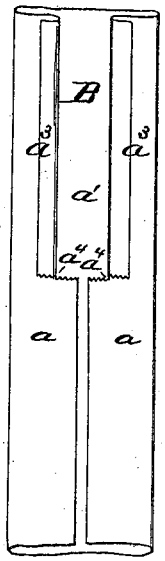
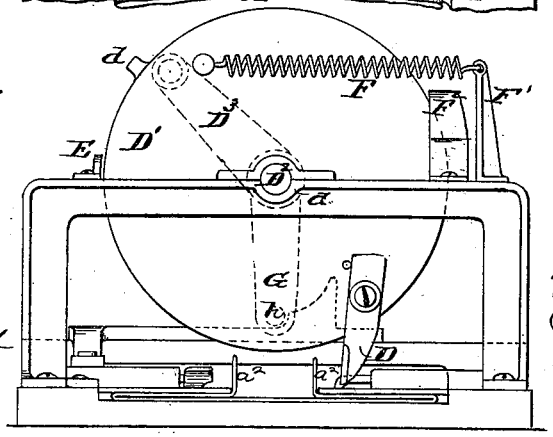


FIG. 3.



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UNITED STATES PATENT OFFICE.

RUFUS W. MURPHY AND MERRICK MURPHY, OF ST. LOUIS, MISSOURI; SAID RUFUS W. MURPHY ASSIGNOR TO M. F. MURPHY, OF SAME PLACE.

IMPROVEMENT IN PAPER-BAG MACHINES.

Specification forming part of Letters Patent No. **201,278**, 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 our improvement, a portion of the crank that operates the knife-head being removed to show the mechanism beneath, and the various parts being arranged as just before the paper is cut; Fig. 2, a similar view, the knife and mechanism for supporting and operating it not being shown, and the remaining parts being arranged as after the paper is cut; Fig. 3, an end elevation of the parts shown in Fig. 1, looking in the direction of the arrow of that figure; Fig. 4, a detail, showing a portion of the knife-head and the wrist-pin of the driving-crank; Fig. 5, an end view of one of the supports of that part of the paper that is cut; and Fig. 6, a diagram, showing the paper as after passing through the present machine.

Similar letters refer to similar parts.

By means of the present improvement a web of paper can be readily cut and folded, as indicated by the diagram of Fig. 6, and for the purpose of making a seamless-bottom square bag.

Referring to the annexed drawing, A represents a portion of the bed-plate of a paper-bag machine. The paper B is fed into the machine at A′, and in the shape shown in Fig. 1—that is, having two side folds, a a, turned down upon the center a^1, and the inner edges a^2 a^{22} of the side folds turned upward, as shown in Fig. 3, and, respectively, against the inner edges of the plates C C. This preliminary shape is given to the paper by means of a suitable former and guides. (Not shown.)

The object of the improvement is to slit the upturned edges a^2 a^{22}, and then to turn back a portion thereof upon the side folds, forming what may be termed the "edge folds" a^3 a^3, Fig. 6. To cut the slits in question, a knife, D, is caused to move transversely across the machine and against the upturned edges a^2 a^{22}, and preferably in the following manner: The knife is attached to a head, D^1, (that may be in the form of a disk, as shown,) that is loose upon a shaft, D^2. The latter is arranged longitudinally with the machine in bearings d^2 d^2. The parts are adjusted to bring the point of the knife in its movement just above the plates C C.

The shaft is provided with a crank, D^3, having a wrist-pin, D^4, that, in turn, is furnished with a bolt, D^5. The latter has a movement in and out from the pin, being pressed outward by a spring, D^6. A rotary movement is, by any suitable means, imparted to the shaft, and as it turns the bolt D^5 encounters a swell or projection, d^1, on the knife-head, causing the latter to be carried around with the crank until a pin, d, on the head encounters a stop, E. The spring D^6 now yields, and the bolt retreats into the pin, enabling the pin to pass the projection d^1. This leaves the head D^1 free, whereupon an elastic connection or spring, F, acts to turn it backward, and in so doing to move the knife against the edges a^2 a^{22}, and cause it to cut the desired slits a^4 a^4. The adjustment of the parts is such as to bring the knife, when the bolt yields, into the position shown in Figs. 1 and 3. The connection F is fastened at one end to the knife-head and at the other to an upright, F^1. The pin d, encountering a stop, F^2, prevents the head from turning back only far enough to effect the desired cutting of the paper. The knife is thus made to have a reciprocating movement at right angles to the edges a^2 a^{22}. The knife is pivoted to the head to allow it to yield as its back encounters the edges a^2 a^{22} in bringing it into position to strike the paper.

The improvement further has reference to the means preferably used in supporting the edge a^{22} as it is being cut, and in turning the edges a^2 a^{22} down upon the center a^1 after being cut, and as follows: The shaft D^2 is further provided with an arm, G, that, as the shaft turns, comes against a pin, h, that is attached to a slide, H, resting upon a bridge, H′. This causes the slide to move transversely across the bed-plate. An arm, I, attached to one end of the slide, moves a support, J, against the outer side of the edge a^{22} as the slide moves. At the same time a pitman, K, pivoted at one

end to the slide H and at the other to the lever L, that, in turn, is pivoted to the bed-plate at *l*, and that at its outer end is connected with another slide, M, causes the last-named slide M to be similarly and simultaneously moved against the outer side of the edge a^2.

The various parts are relatively adjusted to bring the slide J against the edge a^{22}, and support it as the knife makes the cut therein. The edge a^2, or the edge that is on the side of the bed-plate from which the knife strikes, does not, in practice, need supporting. After the slits have been cut the slide H continues to move a short distance farther, and far enough to cause the slides M and J to respectively press the edges a^2 a^{22} down upon the center a^1. Meanwhile, and by means of the usual drawing-rolls, (not shown,) the paper is being drawn along, and the forward ends of the deflected edges a^2 a^{22} are caught by the rolls and pressed down upon the center a^1. Previously, and in the usual manner, the portion of the edges a^2 a^{22} immediately preceding the slits a^4 a^4 have been turned back upon the side folds *a a*. The drawing-rolls continue to press the edges a^2 a^{22} down upon the center a^1 until a bag-length of paper shall have passed. During this time the crank G will have passed the pin *h*, whereupon an elastic connection, L′, attached at one end to the bed-plate and at the other end to the slide H, will have operated to draw back the latter into its original position. The crank D^3 then comes around again, as before, and the operation is repeated. The result of the operation is a web of paper cut and folded, as indicated in Fig. 6—that is, having the side folds *a a* and the edge folds a^3 a^3. The web can be cut into suitable bag-lengths either before or after passing through the present device.

The knife can be shaped and arranged to cut obliquely to the longitudinal axis of the paper web, if desired.

We claim—

1. The combination of the knife D, head D^1, shaft D^2, crank D^3, pin D^4, bolt D^5, spring D^6, projection d^1, stop E, and spring F, substantially as described.

2. The combination of the shaft D^2, arm G, pin *h*, slide H, arm I, and support J, substantially as described.

3. The combination of the shaft D^2, arm G, pin *h*, slide H, pitman K, lever L, and slide M, substantially as described.

4. The combination of the plate C, support J, and the knife D, substantially as described.

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Witnesses:
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