(No Model.)

C. B. STILWELL.

PAPER BAG MACHINE.

No. 263,440. Patented Aug. 29, 1882.

Fig. 1.

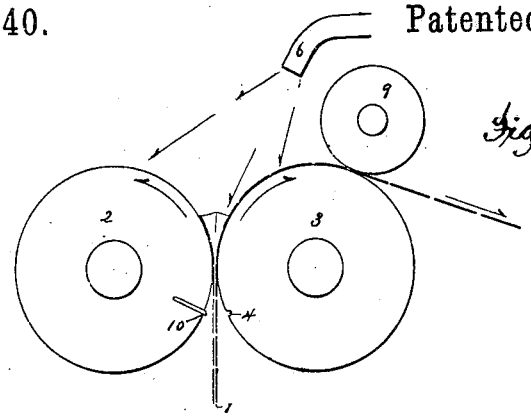


Fig. 2.

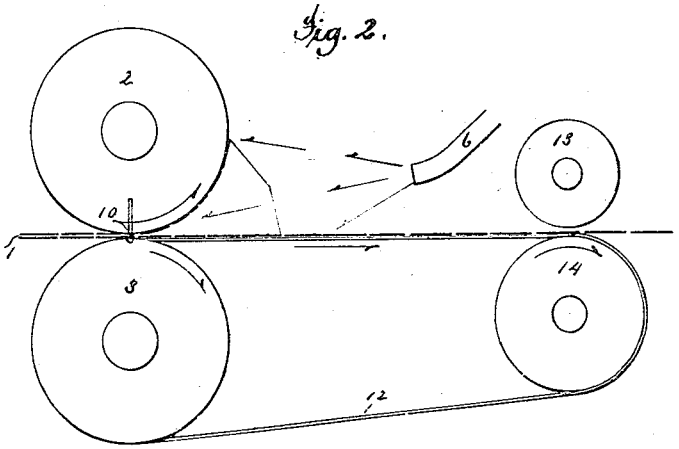


Fig. 3.

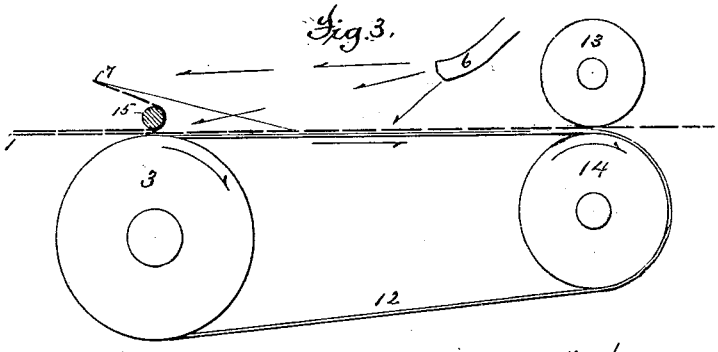
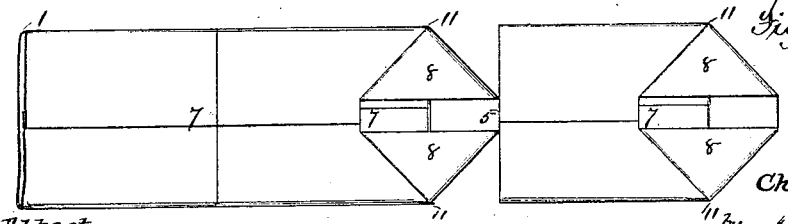


Fig. 4.



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UNITED STATES PATENT OFFICE.

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PAPER-BAG MACHINE.

SPECIFICATION forming part of Letters Patent No. 263,440, dated August 29, 1882.

Application filed May 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. STILWELL, a citizen of the United States. residing in the city of Watertown, county of Jefferson, and State of New York, have invented certain new and useful Improvements in Paper-Bag Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The present invention relates and is applicable to all of those machines for the manufacture of satchel-bottom paper bags in which the bags are made by a method involving the formation of the diamond-fold, but is particularly adapted for use in connection with the machines shown and described in United States Letters Patent Nos. 165,581 and 255,204.

It is the object of the invention to produce a mechanism for opening the tube or tubular blank to the diamond form, which shall be less complicated and expensive than those heretofore employed, and which shall be capable, without change or adjustment, of operating successfully upon blanks of varying widths and lengths.

To that end the invention consists in the combination, with a mechanism for causing a jet of air to enter the mouth of the tube as it is fed forward, of mechanism for so controlling the tube that the air-blast will distend its mouth and place the plies in position to be pressed flat into diamond form.

The invention also comprehends these mechanisms in various combinations with other parts of the machine, all of which will be hereinafter fully explained and pointed out.

In said drawings, Figure 1 is a diagrammatic view of a diamond-fold-forming apparatus embodying the present invention. Figs. 2 and 3 are like views, illustrating modifications of the same; and Fig. 4 is a plan view of the tube after the diamond-folds have been formed in the bottom-forming ends of the blanks.

The tube 1, after being operated upon by any suitable form of cutting apparatus—as, for example, that shown in the Letters Patent referred to—so as to be severed into bag-blanks, except the small feeding portions 5, will be led into the bite of the rolls 2 3. As the mouth of the blank emerges from between these rolls a jet of air from the nozzle 6, which is connected with a fan or any other appropriate form of blower, will be directed into said mouth, so as to separate the plies and hold the entirely-severed ply 7 in contact with the roll 2, while the other ply will be held to the surface of roll 3 by the feeding portions 5. As the mouth of the blank continues to advance from the bite of the rolls it will be more and more distended until its sides 8 are drawn inward to the position shown in Fig. 4, immediately after which the feed of the tube through the machine will draw the ply 7 away from the roll 2, when the jet of air will force it down onto or near the body of the bag-blank, thus forming the diamond, which will then be pressed and have its fold-lines distinctly defined by passing between rolls 3 and 9. After leaving rolls 3 9 the feeding portion 5 will be severed and the points of the diamond folded to complete the bag-bottom in any approved manner.

The roll 2 may be provided with a creasing-blade, 10, which, in connection with a groove, 4, upon roll 3, operates to define the line 11 of the central transverse fold of the diamond. Such creasing device is, however, not essential, as the diamond-fold can be successfully formed without it.

In Fig. 2 an organization of the parts is shown in which the tube, instead of being bent around roll 3, passes forward in a straight line from the bite of the rolls 2 3 and is supported upon an apron, 12. In this case the free ply of the blank will be raised and held against the surface of roll 2 by the air-blast until the sides 8 are drawn inward to the position shown in Fig. 4, after which it will be drawn away from the roll by the feed of the tube through the machine, and, coming into contact with the nozzle 6, will be forced backward, so as to be readily folded down and pressed flat as it passes between rolls 13 14.

In Fig. 3 the apparatus is shown as still further modified by dispensing with the roll 2 and using a small roll or bar, 15, instead. In this case the jet of air from the nozzle 6 will expand the mouth of the blank and bend its free ply 7 backward over the roll or bar 15, so as to draw the sides 8 inward and lay the diamond nearly flat at once, after which it will pass between rolls 13 14 to be pressed, as already described.

It will be observed that the rolls 2 3 and the roll or bar 15 and roll 3 serve in the several cases to hold the plies of the tube together, so as to prevent the air from passing into and expanding the body of the blank back of the line of the central transverse fold of the diamond.

When the apparatus is arranged as shown in Figs. 2 and 3 the air-blast must be made intermittent in its action, so as to be shut off as soon as the line 11 of the central transverse fold of the diamond passes the bite of rolls 2 3 or 15 3, so as to prevent the expansion of the body of the blank.

When the apparatus is arranged as shown in Fig. 1 the air-blast may act continuously, as the direction of the travel of the tube is such that the line of the central transverse fold of the diamond passes out of the current of air almost immediately after emerging from the bite of the rolls 2 3.

From the foregoing it will readily be seen that if the creasing-blade 10 is omitted, which, as already explained, can be done without seriously affecting the operation of the apparatus, a single mechanism of the character of that herein shown will be capable without change or adjustment of operating successfully upon blanks of different sizes.

What I claim is—

1. The combination, with tube-feeding mechanism and mechanism for holding the sides of the tube together, of mechanism for causing a jet of air to enter the mouth of the tube, all substantially as described.

2. The combination, with tube-feeding mechanism and mechanism for defining the line of the central transverse fold of the diamond, of mechanism for holding the sides of the tube together and mechanism for causing a jet of air to enter the mouth of the tube, all substantially as described.

3. The combination, with tube-feeding mechanism, of a moving apron, as 12, for supporting the tube, a roll or bar, as 15, for holding the sides of the tube together, and a nozzle, as 6, arranged to direct a blast of air into the mouth of the tube, substantially as described.

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

CHAS. B. STILWELL.

Witnesses:
JAS. A. HOVEY,
GEO. H. GRAHAM.