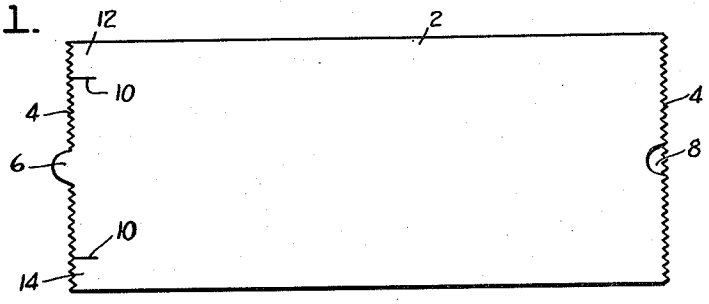
Dec. 21, 1937. J. N. TOOKER 2,102,767

MACHINE FOR FORMING VALVE BAGS

Original Filed Aug. 29, 1934 3 Sheets-Sheet 1

Fig. 1.



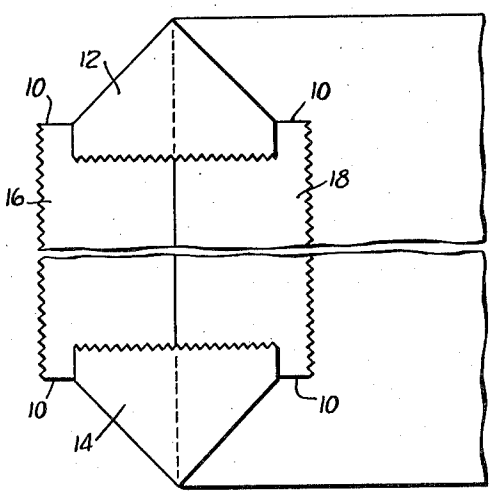


Fig. 2.

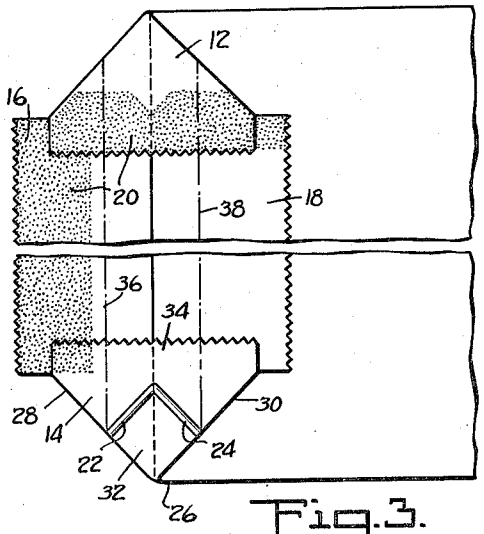


Fig. 3.

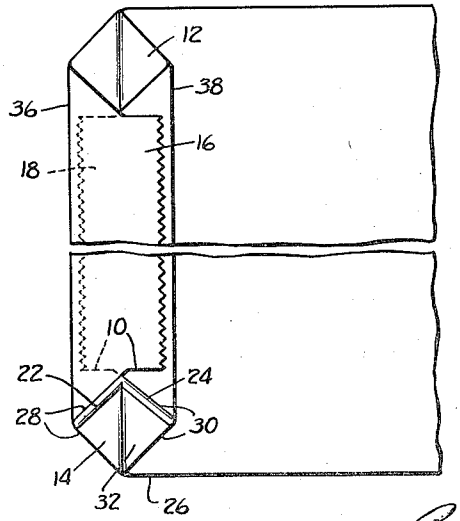


Fig. 4.

INVENTOR
JOHN N. TOOKER
BY
Bartlett Eyer Scott & Reed
ATTORNEYS

Dec. 21, 1937. J. N. TOOKER 2,102,767

MACHINE FOR FORMING VALVE BAGS

Original Filed Aug. 29, 1934 3 Sheets-Sheet 2

Fig. 5.

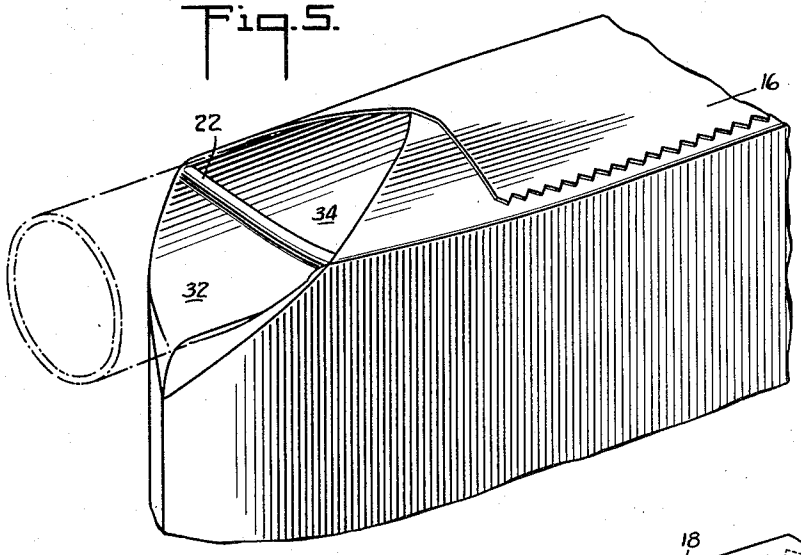
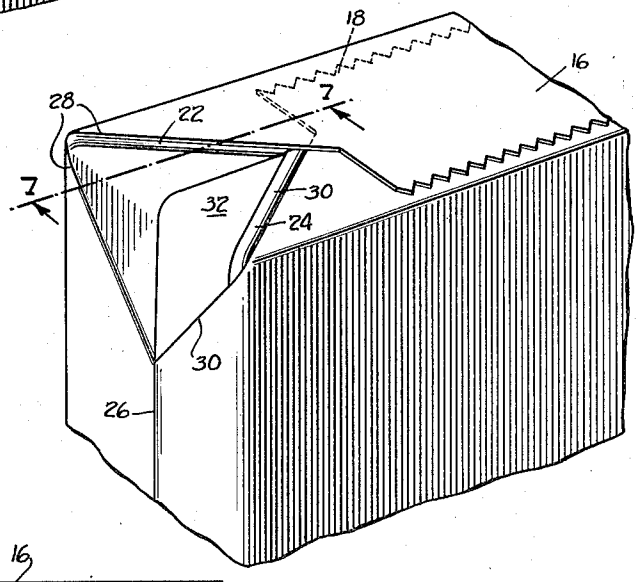


Fig. 6.



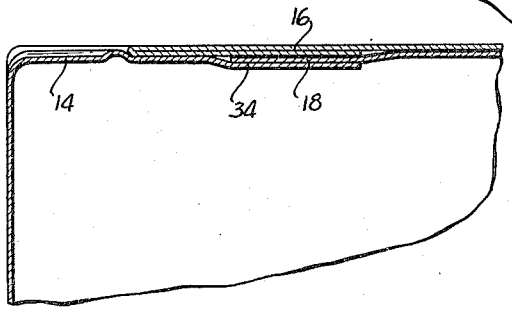


Fig. 7.

INVENTOR
JOHN N. TOOKER
BY
Bartlett Eyre Scott & Keech
ATTORNEYS

Dec. 21, 1937. J. N. TOOKER 2,102,767

MACHINE FOR FORMING VALVE BAGS

Original Filed Aug. 29, 1934 3 Sheets-Sheet 3

Fig. 8.

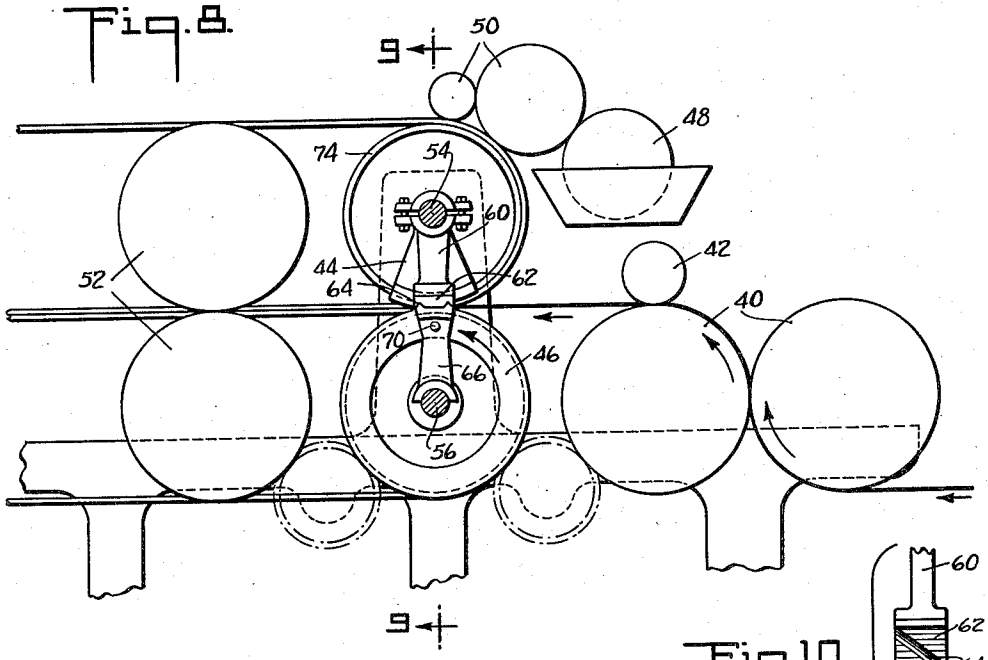
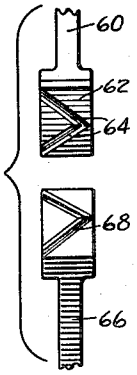


Fig. 10.



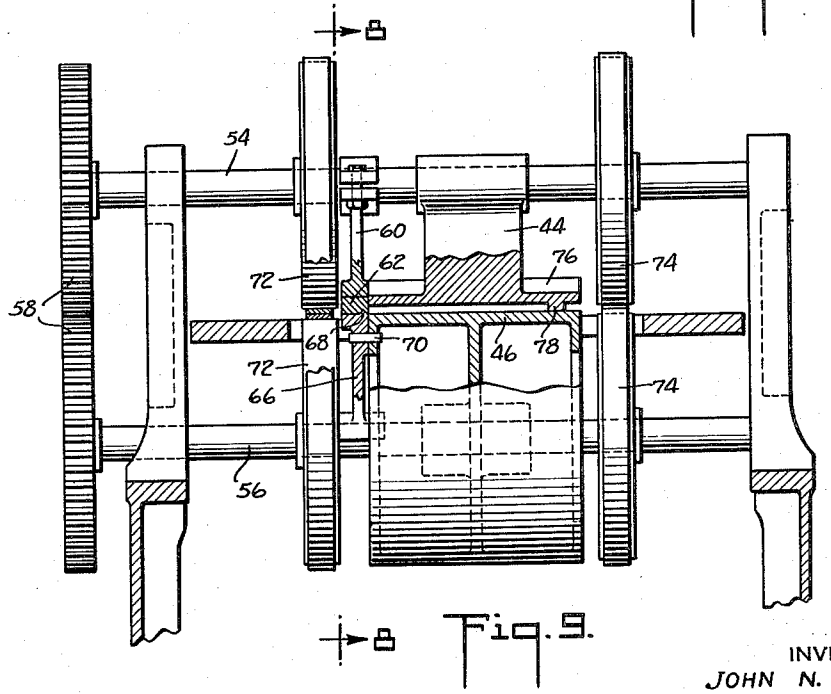


Fig. 9.

INVENTOR
JOHN N. TOOKER

BY Bartlett Eyre Scott & Kesl
ATTORNEYS

Patented Dec. 21, 1937 2,102,767

UNITED STATES PATENT OFFICE

2,102,767

MACHINE FOR FORMING VALVE BAGS

John N. Tooker, Canajoharie, N. Y., assignor to Bartlett Arkell, New York, N. Y.

Original application August 29, 1934, Serial No. 741,892. Divided and this application April 22, 1936, Serial No. 75,713

1 Claim. (Cl. 93—8)

The present invention relates to machines for use in the manufacture of valve bags and especially multi-ply bags having pasted or satchel ends and has for its object to provide a novel and improved machine of this character.

For an understanding of the invention, reference should be had to the accompanying drawings, of which—

Figure 1 is a plan view of a bag tube illustrating the first step in the method of forming the bag on my improved machine;

Figs. 2 and 3 are views illustrating successive steps in the forming of the valve end of the bag;

Fig. 4 is a plan view of the valve end of the completed bag;

Figs. 5 and 6 are perspective views of the valve end of the completed bag showing the valve in open and closed position, respectively;

Fig. 7 is a vertical sectional view along the line 7—7 of Fig. 6;

Fig. 8 is a side view, partly in section and partly diagrammatic, illustrating the novel features of the improved bottomer machine, constructed according to the invention;

Fig. 9 is a transverse sectional view taken along the line 9—9 of Fig. 8 and

Fig. 10 is an enlarged detail view showing portions of the convex fold forming members of the machine of Figs. 8 and 9.

The bag produced by my improved machine is of the type of the one described and claimed in the pending application of Alfred Du Bois, Ser. No. 710,403, filed February 9, 1934.

In forming a pasted or satchel ended bag, a paper tube of the desired number of plies is first cut by any suitable means into bag lengths such as indicated at 2 in Fig. 1. Each bag length has the usual serrated edges 4 and a centrally disposed tab 6 on one wall thereof at one end with a corresponding cut out 8 of the same wall at the other end. To form a pasted end bag, each such bag length is first cut longitudinally at one end to form slots 10. The slotted end of the bag length is then spread and flattened into the position indicated in Fig. 2, with the end flaps 12 and 14 between corresponding slots 10 folded inwardly toward the axis of the bag and wall portions 16 and 18 spread. Paste, indicated at 20 (Fig. 3), is then applied over the surface of wall portion 16 and over the greater part of the inwardly folded flap 12. No paste is applied to the flap 14, which serves as the valve when the bag is completed.

In the bag of said Du Bois application, the under flap of the valve is scored or creased to form a hinged portion which is so arranged that it tends to snap firmly and tightly into engagement with the upper wall of the valve throughout the overlying portion thereof when the bag is filled and the filling tube is withdrawn.

In accordance with the present invention, such scoring or creasing is performed at the stage of the bag manufacture when its end is in spread and flattened condition as above described, the creasing being done on lines 22 and 24.

As in the bag of said Du Bois application, these creases 22 and 24 together form a V having its apex on the infolded median fold 26 of the bag tube and with legs extending away from the adjacent end of the bag tube to the folds 28 and 30 forming the edges of flap 14. This V-shape crease, which is convex on the outer surface of flap 14, divides the flap area into a substantially diamond shape portion indicated at 32 and a portion, indicated at 34, lying between the end of the tube and the folds 28 and 30. After the creases 22 and 24 are formed, the end of the bag tube is scored along parallel lines 36 and 38.

Score 36 extends transversely of the bag from the junction of folds 22 and 28 and similarly score 38 extends transversely of the bag from the junction of folds 24 and 30. Wall portion 18 is then folded inwardly upon score line 38 and wall portion 16 is similarly folded inwardly upon score line 36 to form overlapping side flaps, and the folded parts pressed firmly together to cause the paste to seal all of the end of the bag except the valve flap 14.

In the so completed bag end, the convex fold or crease 22 of the valve lies adjacent the portion of the fold 28 lying between the end of score 36 and slot 10, and crease 24 lies adjacent the portion of the fold 30 lying between the end of score 38 and the corresponding slot 10. During filling, the end of the filling tube, indicated in dotted lines in Fig. 5, depresses the valve flap and forces the creases 22 and 24 downwardly. When the bag is filled and the filling tube removed, the convex creases 22 and 24 cause the valve flap to snap into the position indicated in Figs. 6 and 7 in which a tight closure of the bag is effected and the creases are positioned adjacent the upper folded edges of the flap to form a seal therefor. Upon closure of the valve, as shown best in Fig. 7 the central portion of area 34 of flap 14 lies flush with the top surface of the bag formed by the pasted overlapping wall sections 16 and 18, reinforcing the end of the

bag and preventing seepage of the contained material toward the valve.

The method above described may be and preferably is the same as the method described and claimed in my pending application Serial No. 741,892, filed August 29, 1934 of which the present application constitutes a division.

My improved machine is adapted to carry out automatically the above described method (Figs. 8, 9 and 10). The machine is of the general type now in use and known as a bottomer machine, but is modified, in accordance with the invention, to include means for forming the convex folds or creases hereinbefore described in connection with Figs. 1 to 7 inclusive.

The machine includes the usual roll 40 and associated means (not shown) for forming the slots 10 and for spreading the end of the tube, the usual flattening drum 42, a pasting segment 44 cooperating with a drum 46 and receiving paste from a paste roller 48 through the intermediary or roller 50, and scoring rollers 52 for forming the transverse scores or creases 36 and 38. Pasting segment 44 is rigidly secured to a shaft 54 for rotation thereby, and drum 46 is similarly secured to and rotated by a shaft 56, shafts 54 and 56 being suitably driven in timed relation by means of gears 58.

In accordance with my invention an arm 60 is rigidly secured at one end to shaft 54 to be rotated thereby. The other end of arm 54 carries a block 62 having a V-shaped groove 64 therein which is disposed with its apex toward the pasting segment and its arms extending substantially at right angles therefrom. An arm 66 having at one end thereof a V-shaped projection 68 for cooperation with the groove 64, is secured to drum 46 by means of a pin 70 to rotate therewith.

Adjacent the creaser arms 60 and 66 and rigidly mounted on shafts 54 and 56 is one pair of aligned pulleys 72 for engaging one lateral edge of the bag tube during passage thereof between the creasers and between the drum 46 and the pasting segment. A similar pair of aligned pulleys 74 is provided for engagement with the other lateral edge of the bag. Thus, as the flattened end of a bag tube advances from beneath the pressure roller 42 and passes over the drum 40 with its edges guided and held by pulleys 72 and 74 a portion 76 of the pasting segment 44 first applies paste to wall portion 16. Immediately thereafter, during the application of paste to flap 12 by a portion 78 of the pasting segment, the arms 60 and 66 move into position where projection 68 enters groove 64 and forms the convex creases 22 and 24. In Fig. 10 the creasers are shown just prior to engagement. When the end of the bag length advances into position between rolls 52 the transverse scores 36 and 38 are formed.

Thereafter the wall portions 16 and 18 are folded by any suitable means (not shown) along the score lines 36 and 38 and pressure is applied to the pasted portions. The bag length may then be run through another bottomer machine so as to close its other end in the usual manner.

It will be apparent as the desired creasing to form the hinged portion in the under flap of the valve is preferably effected during the operation of closing the valve end of the bag tube, that this may be accomplished without interrupting such operation. The creasing or hinge forming devices may be easily applied to the usual bottoming machine and when in use do not interfere with the speed of operation of the machine.

As will be evident to those skilled in the art, my invention permits various modifications without departing from the spirit thereof or the scope of the appended claim.

What I claim is:

In a bag machine, the combination of a rotatable pasting segment and a drum adapted to cooperate therewith to engage opposite surfaces of the spread and flattened end of a bag tube, means operated in timed relation with the rotation of said segment for forming a V-shaped crease in one infolded flap of the bag tube during the period of engagement of the tube by said segment and drum, and a shaft to which said pasting segment is secured for rotation thereby, said crease-forming means comprising a pair of members, one rigidly secured to said shaft in substantial radial alinement with a portion of said segment and the other of said members secured to said drum for rotation thereby, one of said members having a V-shaped groove therein and the other of said members having a correspondingly shaped projection thereon whereby the V-shaped crease is formed in the flap of the bag tube when said projection and groove are alined and in engagement with opposite surfaces thereof.

JOHN N. TOOKER.