Dec. 5, 1944. F. P. RAMSEY 2,364,551

PAPER BAG MACHINE

Filed March 8, 1943 2 Sheets-Sheet 1

Fig. 1.

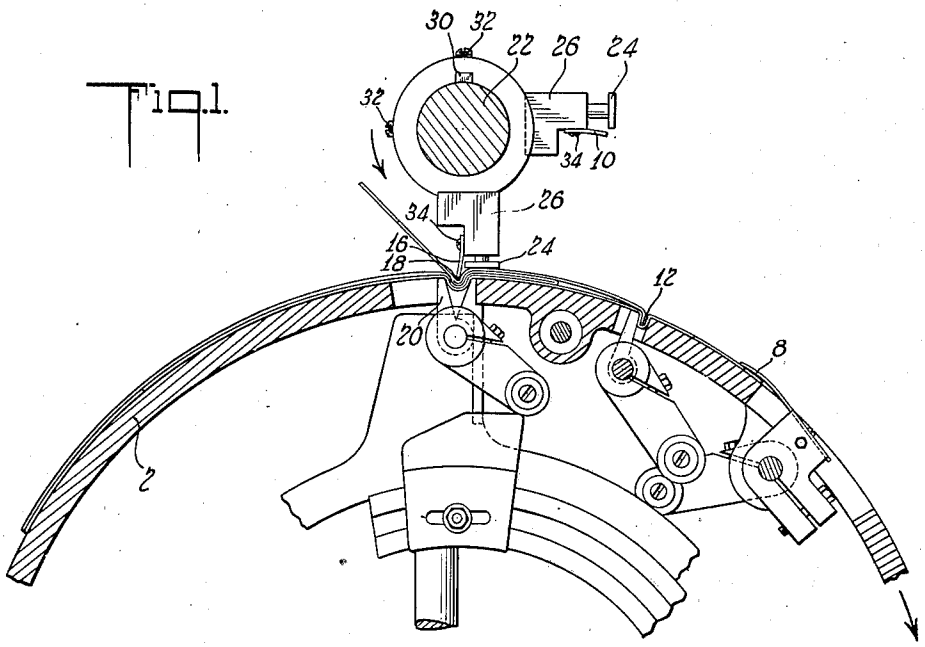
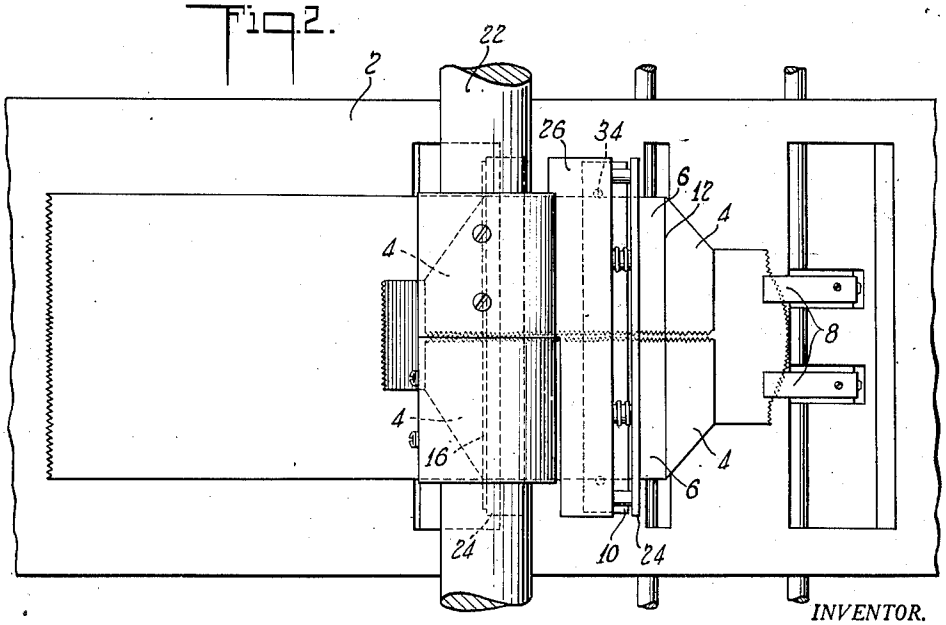


Fig. 2.



INVENTOR.
FRANK P. RAMSEY

BY

ATTORNEYS

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Fig. 3.

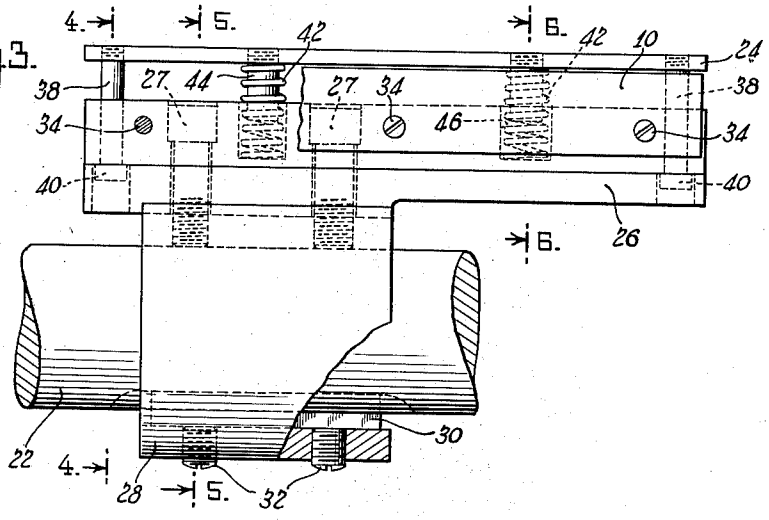


Fig. 4.

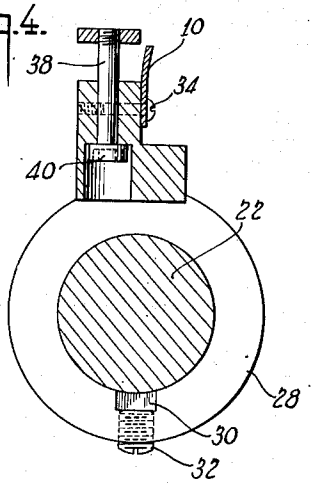


Fig. 5.

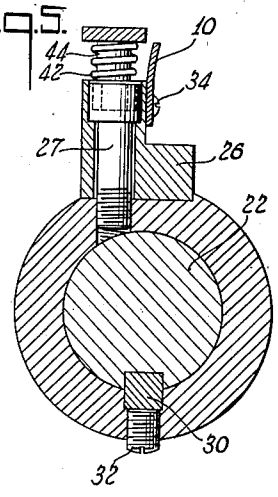
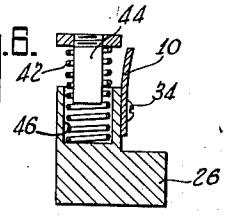


Fig. 6.



INVENTOR.
FRANK P. RAMSEY

BY

ATTORNEYS

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UNITED STATES PATENT OFFICE

2,364,551

PAPER BAG MACHINE

Frank P. Ramsey, Canajoharie, N. Y., assignor to Arkell & Smiths, Canajoharie, N. Y., a corporation of New York

Application March 8, 1943, Serial No. 478,353

4 Claims. (Cl. 93—27)

The present invention relates to machines for forming paper bags, and has for one of its objects to provide a device for insuring proper gripping and creasing of the bag blanks in forming folded and pasted bottoms on one end of the blanks.

The preferred embodiment of the invention is illustrated, by way of example, in the accompanying drawings, in which:

Figure 1 is a longitudinal sectional view, partly in elevation, of a portion of a bag-forming machine having my improved device applied thereto;

Fig. 2 is a plan view of the same;

Fig. 3 is a detail side view, partly in section, of a portion of my improved device; and

Figs. 4, 5 and 6 are detail sectional views, partly in elevation, respectively taken on lines 4—4, 5—5 and 6—6 of Fig. 3.

The bag-forming machine, a portion of which is illustrated in the drawings, may be and preferably is of the type of the one illustrated and described in the patent to Potdevin, No. 1,176,163, dated March 21, 1916. This machine is particularly adapted for use in forming paper bags having bellows folds at their sides, and folded and pasted bottoms.

As shown the machine is provided with a rotating gripper drum or cylinder 2, the periphery of which is adapted to receive previously formed bag tubes with the advancing end of the bag tube opened and flattened preliminary to forming a folded and pasted bottom. This flattened end may have the usual side flaps 4 and end tucks 6. Each bag tube that is thus delivered to the gripper cylinder, is gripped at its forward end by means of suitable gripping devices 8 so as to cause the bag tube to be carried bodily by the cylinder.

As the bag blank is thus conveyed, a tucker blade 10 engages the bag blank on a transverse line 12, and forces the blank downwardly between gripping jaws 14 which extend outwardly into an elongated opening in the cylinder. As the jaws close to grip the bag blank on said line, the tucker blade 10 is retracted.

During the continued conveyance of the bag blank by the gripper cylinder 2 another tucker blade 16 engages the bag blank on a line 18 and forces the blank downwardly between gripping jaws 20 carried by the gripper cylinder. As the jaws 20 close to grip the bag blank, this blade 16 is retracted.

The tucker blades 10 and 16 are carried by a shaft 22, the axis of which is arranged parallel with the axis of the gripper cylinder 2. Said shaft 22 is rotated in the opposite direction to the gripper cylinder 2 so as to cause the tucker blades 10 and 16 to operate at proper times on the bag blank as described.

Such gripping of each bag blank by the gripping jaws 14 and 20 creases the bag blanks on lines which define the inner edges of the front and rear side flaps 4 of the bag bottom. The gripping jaws remain in gripping engagement with the bag blank during the subsequent folding down and pasting of the rear and front side flaps 4 to complete the formation of the bag bottom.

In the operation of machines of this type, considerable difficulty has been experienced by the gripping jaws 14 and 20 failing to grip or properly grip the bag tube, and when this occurs the bag is spoiled. This difficulty is caused by the bag following the tucker blades out of the jaws before the jaws properly close on the bag. This occurs especially when the bags are slippery, because of the paper itself or because of the printing on the paper, as in the case of small coffee bags which are frequently covered with high glossy ink.

The rear jaws 20 particularly give a great deal of trouble, because the jaws must grip the bottom of the bag through the tube, the sides of which are ordinarily provided with bellows folds, and consequently the jaws must act through a number of thicknesses.

In accordance with the present invention, means is provided for insuring proper gripping of the bag blank on the lines which define the inner edges of the side flaps. As shown, a spring-pressed clamping device 24 is associated with each of the tucker blades 10 and 16. Each clamping device 24 is carried by a holder 26 which is secured by screws 27 to a collar or hub 28 that is secured on the shaft 22 by means of a key 30 and screws 32. The two hubs are shown oppositely offset on the holders 26 so as to be positioned end to end on the shaft 22, thus permitting the holders and hubs to be relatively adjusted about the shaft 22.

Each holder 26 is provided with a flattened portion to which the associated tucker blade is secured by means of screws 34.

Each clamping device 24 comprises a flat strip or bar, the ends of which are secured on the ends of guide pins 38 that are mounted to slide in apertures in the holder 26, the outer ends of the pins 38 being screw-threaded in apertures in the clamping bar. The other ends of the pin

38 are provided with collars or heads 40 which limit the outward movement of the bar.

Each clamping bar 24 is pressed outwardly by means of springs 42 which are coiled about stud pins 44 screw-threaded in apertures in said bar, the inner ends of the springs being received in sockets 46 in the holder 26.

It will be noted that the rear edge of each clamping bar 24 is arranged closely adjacent the associated tucker blade, and when the clamping bar is in its outermost position it projects slightly beyond the outer edge of the tucker blade.

With this construction, as the shaft 22 rotates to cause the tucker blades 10 and 16 to alternately engage the bag blank as above described, the blank is engaged and clamped on the cylinder by the associated clamping device or bar 24 previously to the engagement of each blade with the blank. As the tucker blade forces the blank down into the associated gripping jaws, the springs 42 of the clamping device are compressed. Consequently, as each blade is retracted the associated clamping bar continues to hold the bag blank down on the cylinder adjacent the jaws until after the tucker blade has been completely retracted from between the jaws, and the jaws are properly closed on the blank. When this occurs, the clamping bar 24 is carried out of engagement with the bag blank.

Thus, it will be apparent my improved device insures against the blank working out of each set of gripping jaws during the retraction of the associated tucker blade, and securely holds the blank in position in the jaws until the gripping jaws have effectively gripped the blank.

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 claims.

What I claim is:

1. In a bag-forming machine of the class described comprising a rotating gripper cylinder for conveying a bag blank on the periphery thereof with one end of the blank opened and flattened preliminary to forming a folded bottom on said end, gripping jaws carried by the cylinder, a tucker blade for engaging the blank on a line transversely of one of the side flaps of said end thereof to tuck said blank between said jaws, said blade retracting from said jaws as the jaws close to grip the blank, the improvement which comprises a clamping device engaging the blank on a transverse line arranged in proximity to and in advance of the line of engagement of the tucker blade to clamp the blank to the periphery of the cylinder during said retracting movement of the tucker blade.

2. In a bag-forming machine of the class described comprising a rotating gripper cylinder for conveying a bag blank on the periphery thereof with one end of the blank opened and flattened preliminary to forming a folded bottom on said end, gripping jaws carried by the cylinder, a tucker blade for engaging the blank on a transverse line defining the inner edge of the rear flap of said end to tuck said blank between said jaws, said blade retracting from said jaws as the jaws close to grip the blank on said line, the improvement which comprises a spring-pressed clamping device engaging the blank on a transverse line arranged in proximity to and in advance of the line of engagement of the tucker blade to clamp the blank to the periphery of the cylinder during said retracting movement of the tucker blade.

3. In a bag-forming machine of the class described comprising a rotating gripper cylinder for conveying a bag blank on the periphery thereof with one end of the blank opened and flattened preliminary to forming a folded bottom on said end, gripping jaws carried by the cylinder, a tucker blade for engaging the blank on a line transversely of one of the side flaps of said end thereof to tuck said blank between said jaws, said blade retracting from said jaws as the jaws close to grip the blank, the improvement which comprises a spring-pressed clamping device engaging the blank on a transverse line arranged in proximity to and in advance of the line of engagement of the tucker blade to clamp the blank to the periphery of the cylinder during said retracting movement of the tucker blade, and means for operating said clamping device comprising a shaft having its axis arranged parallel with the axis of said gripper cylinder, a holder for the clamping device carried by said shaft, and means for rotating the shaft in a direction opposite to that of the gripper cylinder whereby the clamping device is moved into and out of operative engagement with the bag blank during the rotation of the cylinder.

4. In a bag-forming machine of the class described comprising a rotating gripper cylinder for conveying a bag blank on the periphery thereof, gripping jaws carried by the cylinder, a tucker blade for engaging the bag blank on a line transversely thereof to tuck the blank between said jaws, said blade retracting from said jaws as the jaws close to grip the blank on said line, means for thus operating said tucker blade in timed relation to the rotation of the cylinder comprising a shaft arranged parallel with the axis of said gripper cylinder and rotating in the opposite direction to said cylinder, a holder for the tucker blade carried by said shaft, and a spring-pressed clamping device carried by said holder for engaging the blank on a transverse line arranged in proximity to and in advance of the line of engagement of the tucker blade to clamp the blank to the periphery of the cylinder during said retracting movement of the tucker blade, said clamping device being carried out of clamping engagement with the blank after the tucker blade has been retracted from said jaws.

FRANK P. RAMSEY.