

Dec. 5, 1950

H. L. REITZES
BAG MAKING MACHINE
Filed April 30, 1946

2,532,784

FIG. 1

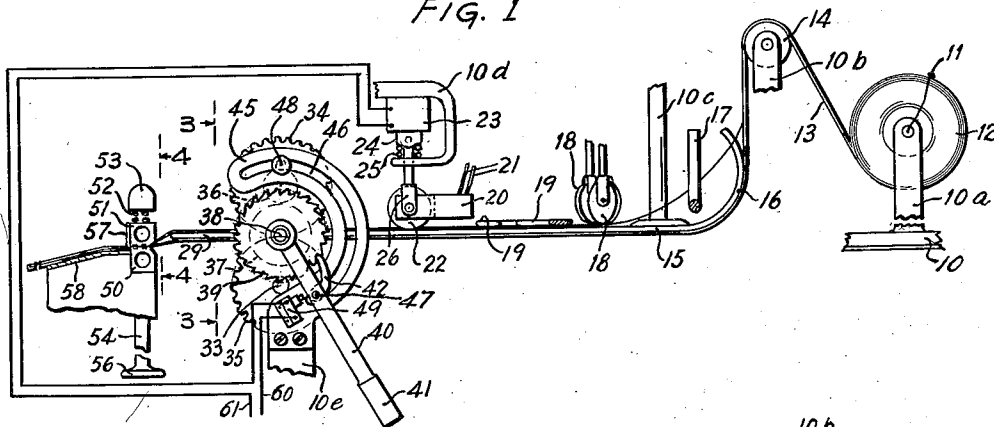


FIG. 2

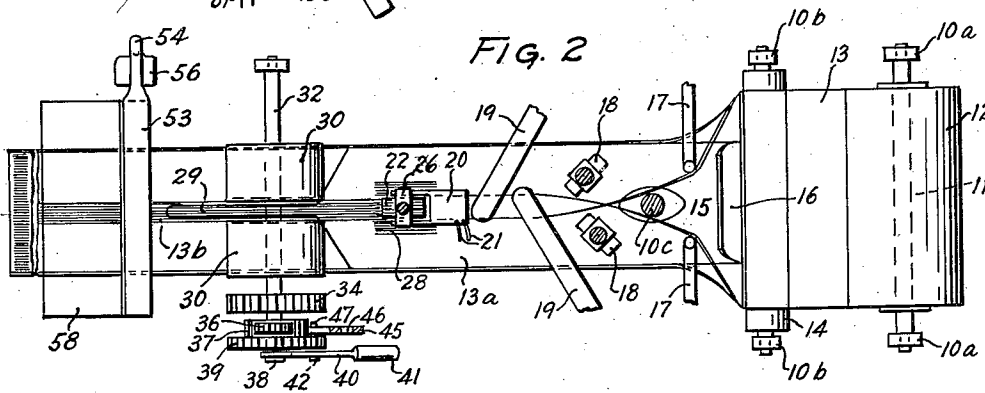


FIG. 3

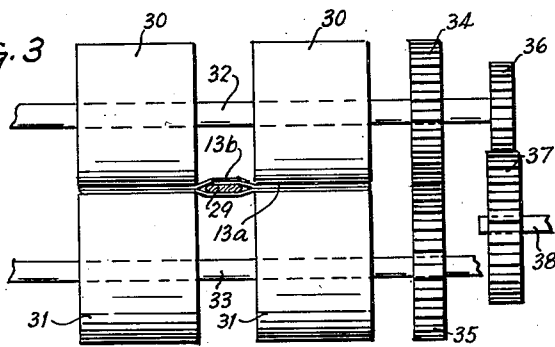


FIG. 4

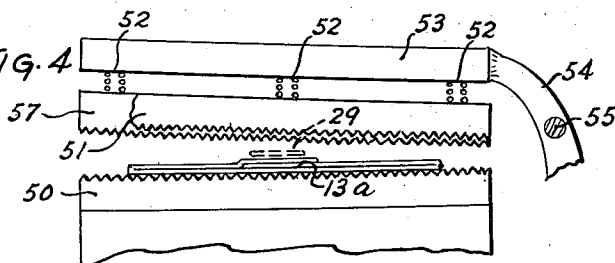
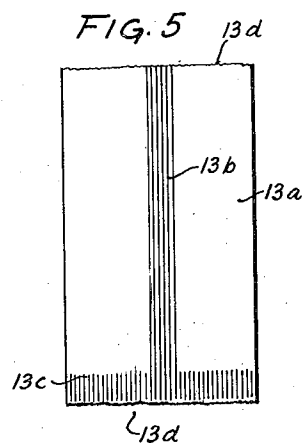


FIG. 5



INVENTOR.
HERBERT L. REITZES
BY *G.T. Wolensmith*
ATTORNEY

UNITED STATES PATENT OFFICE

2,532,784

BAGMAKING MACHINE

Herbert L. Reitzes, Philadelphia, Pa., assignor to
Globe Products Heat Seal Corporation, Los Angeles, Calif., a corporation of California

Application April 30, 1946, Serial No. 666,063

3 Claims. (Cl. 93—18)

1

This invention relates to bag making machines and more particularly to improved apparatus for the manufacture of containers, in the form of bags or envelopes, from a continuous band or strip of flexible sheet material such as cellophane, Pliofilm and the like.

It has heretofore been proposed to form a strip or band of flexible material into a container by bringing the edges of the strip into overlapping relationship and sealing the overlapping edges together, and then providing transverse sealed portions at spaced intervals. The packages as thus formed are separated in any desired manner from the band or strip. The apparatus heretofore available has not proven wholly satisfactory in use, is not adapted for manual operation, and is not adapted for ready adjustment to vary the length or the width of the container.

In accordance with the present invention, an improved bag making machine is provided for the formation of containers having longitudinally sealed portions and transversely sealed portions.

In accordance with the present invention, also, a bag making machine is provided which is simple to operate, which may be readily set up and adjusted by unskilled persons, and which is capable of rapid operation to produce strong containers of the desired sizes.

In accordance with the present invention also, a bag making machine is provided in which the length of the bag may be readily varied by a simple manipulation by the operator.

In accordance with the present invention, also, a bag making machine is provided in which the strip or band of material from which the bag is made is protected from the heat sealing elements when the machine is not being operated.

Other advantageous features of the invention will be apparent from the specification and claims.

The nature and characteristic features of the invention will be more readily understood from the following description, taken in connection with the accompanying drawings forming part hereof, in which:

Figure 1 is a side elevational view of a machine in accordance with the present invention, the outer enclosing casing being omitted and parts being broken away to show the details of construction;

Fig. 2 is a horizontal plan view of the machine shown in Fig. 1;

Fig. 3 is an enlarged fragmentary sectional view taken approximately on the line 3—3 of Fig. 1;

Fig. 4 is an enlarged fragmentary sectional view taken approximately on the line 4—4 of Fig. 1; and

Fig. 5 is a view in elevation of a bag or envelope

2

made with the machine of the present invention.

It should, of course, be understood that the description and drawings herein are illustrative merely, and that various modifications and changes may be made in the structure disclosed without departing from the spirit of the invention.

Referring more particularly to the drawings, a frame 10 is provided for supporting the various parts of the structure, the details of the frame being omitted as the same form no part of the present invention. The frame 10 includes upwardly extending arms 10a for carrying a shaft 11 upon which a roll 12 of the flexible band or strip material 13 employed for making the bags is mounted. The frame 10 also includes additional upwardly extending arms 10b in which a guide roll 14 is mounted for guiding the band or strip material 13 as the same is drawn from the roll 12.

A former plate 15 is provided and is carried by a standard 10c which is connected to the frame 10 in any desired manner. The former plate 15 has an upwardly extending curved guiding portion 16 at the rear end thereof for directing the band or strip 13 and around which the strip 13 is adapted to be formed into bag form, as hereinafter explained. The former plate 15 is preferably of a width in accordance with the desired width of the bag or envelope to be formed. Adjacent the rear end of the former plate 15, a pair of former rods 17 are provided for initiating the forming of the bag or envelope by directing the edges of the strip or band 13 toward each other and into flat tubular form around the former plate 15. The rods 17 are also carried by the frame 10.

Spaced forwardly from the former rods 17, a pair of former rolls 18 are provided, supported from the frame 10, and on opposite sides of the central longitudinal axis of the former plate 15 for directing the edge portions of the band or strip 13 into overlapping relationship above the central portion of former plate 15.

Forwardly of the former rolls 18, flat horizontally extending former fingers 19 are provided for directing and holding the edge portions of the strip or band 13 in overlapping relationship above the center of the former plate 15, and so that the strip or band is formed into flat tubular shape as at 13a, enclosing the former plate 15.

Forwardly of the former fingers 19 and above the central portion of the former plate 15 a longitudinal heat sealer is provided, carried by a supporting bracket 19d mounted on the frame 10. The longitudinal heat sealer preferably includes an electric heater 20 having power leads 21 for connection to a suitable source of electric energy, the heater 20 being adapted to heat

a sealing roll 22. The heat sealer, including the heater 20 and the roll 22, are mounted with respect to the bracket 10d for movement to bring the roll 22 into contact with the uppermost of the overlapping edges of the tubular portion 13a and to remove the heater 20 and roll 22 from contacting position and to a location where the roll 22 has no effect on the tubular portion 13a.

In order to control the positioning of the roll 22, a solenoid 23 is mounted on the bracket 10d, and an armature 24, normally held in its upper position by a spring 25, is adapted to be repulsed and propelled downwardly upon energization of the solenoid 23. The armature 24 carries, on the lower end thereof, a fork 26, on which the heater 20 is carried and within which the roll 22 is rotatably mounted. The roll 22 is provided with circumferentially disposed grooves for forcing the overlapping edges of tubular portion 13a of the strip or band 13 into engagement with each other and into engagement with longitudinally extending grooves 28 on the upper face of the former plate 15. The grooves on the roll 22 and the grooves 28 on the plate 15 aid in the formation of a longitudinal seal 13b on the tubular portion 13a, having longitudinally extending crimp lines.

The former plate 15 has a forwardly extending supporting tongue 29 and, on opposite sides of the tongue 29, pairs of upper advancing rollers 30, closely spaced with respect to lower advancing rollers 31, are provided for gripping the band or strip 13 for advancing the same from the roll 12 as hereinafter explained.

The upper advancing rolls 30 are connected to a shaft 32 for rotation therewith and the lower advancing rolls 31 are connected to a shaft 33, the shafts 32 and 33 being connected by gears 34 and 35, for simultaneous operation. The shafts 32 and 33 are operated in any desired manner but preferably by a gear 36, driven by a gear 37, which gear 37 is connected to a manually operable shaft 38. The shaft 33 has a ratchet pinion 39 connected thereto and a lever 40 for manual operation by a handle 41 is provided, freely rotatable on the shaft 38. The lever 40 carries a spring pressed ratchet finger 42 for engagement with the teeth of the ratchet pinion 39.

In order to control the movement of the lever 40 and thereby determine the length of the bag or envelope a segment 45 is provided, mounted on a portion 10e of the frame. The segment 45 has a curved slot 46 therein within which a finger 47, carried by the lever 40, is movable. The segment 45 is also provided with an adjustable stop 48 for limiting the movement of the finger 47 and the lever 40.

The positioning of the roll 22, as previously indicated, is controlled by the solenoid 23 and the solenoid 23 is in turn controlled by a switch 49. The switch 49 is interposed in an actuating circuit which includes power leads 60 and 61. The power leads 60 and 61 are connected to a suitable source of electric energy and extend to the solenoid 23. The switch 49 is in the "off" position when the lever 40 is in its lowermost position and the solenoid 23 is deenergized. Upon initiation of movement of the lever 40 the switch 49 takes an "on" position, the solenoid 23 is energized, and the roll 22 is moved to sealing position. Upon return of the lever 40 to its lowermost position, the switch 49 is moved to "off" position, and, the solenoid 23 being deenergized, the spring 25 raises the roll 22 out of sealing position.

In advance of the tongue 29, a manually operated transverse heat sealing unit is provided for effecting a transverse seal of the tubular portion 13b as at 13c. The transverse heat sealing unit preferably includes a lower fixedly mounted electric heating element 50, having an upper face provided with longitudinally extending corrugations or grooves and an upper electric heating element 51 provided with longitudinally disposed grooves or corrugations on its lower face. The upper heating unit 51 is preferably resiliently mounted by means of springs 52 on an actuator bar 53. The actuator bar 53 is carried on the end of a lever 54, pivotally mounted at 55, and adapted for actuation by a foot pedal 56 on the lower end of the lever 54. On the front face of the upper heating element 51, a cutter knife 57, having a lower serrated cutting edge, is provided for manually severing the completed bag from the tubular portion 13a along a transverse cut line 13d.

The transverse heat sealing unit is preferably located so that the upper face of the lower heating element 50 is at a lower level than the tongue 29 so that, upon the completion of the transverse seal and the separation of the heating elements 50 and 51, the sealed portion 13c will free itself from the heating elements 50 and 51.

In advance of the transverse heat sealing unit, a supporting apron 58 may be provided for supporting the bag prior to its separation from the tubular portion 13a.

A typical bag made with the apparatus of the present invention is illustrated in Fig. 5 and includes a flat tubular portion 13a, a longitudinal seal 13b at the overlapped edges, a flat transverse sealed portion 13c closing the tubular portion 13a, and transverse cuts 13d at each end.

The mode of operation of the machine in accordance with the present invention will now be pointed out.

With the strip material in the position shown in Figs. 1 and 2, and with the lever 40 in its lowermost position, the roll 22 will be out of engagement with the tubular portion 13a, and the heating elements 50 and 51 will be separated.

With the heating elements 23, 50 and 51 energized, upon initiation of upward movement of the lever 40, the switch 49 will move to its "on" position, energize the solenoid 23, and downward movement of the roll 22 to the sealing position will be effected. Upon initiation of upward movement of the lever 40, also, the ratchet finger 42 will engage one of the teeth of the ratchet 39, and will effect rotation of the shaft 38 and drive the advancing rolls 30 and 31 through the gears 37, 36, 34 and 35.

The movement of the rolls 30 and 31, between which the tubular portion 13a is gripped, will advance the tubular portion 13a along the former plate 15. The advancing of the tubular portion 13a by the rollers 30 and 31 draws additional strip material from the roll 12, over the guide roller 14, and around the former plate 15, the former rods 17, the former rolls 18 and the former fingers 19 directing the strip material into flat tubular condition around the former plate 15 and with the edges overlapping and ready for longitudinal sealing at the proper location. As the tubular portion 13a is advanced, with the edges overlapping, the roll 22 presses the overlapping edges of the tubular portion 13a in engagement with each other and against the corrugations 28 of the former plate 15 to effect a longitudinal seal as the tubular portion 13a is advanced past the roll

22. As the lever 40 is raised the finger 47 strikes the stop 48 and further movement of the lever 40 is prevented. At this time the foot pedal 56 is depressed to operate the lever 54 and to move the heating element 50 to a position to grip the tubular portion 13a between the faces of the heating elements 50 and 51 for transversely sealing the tubular portion 13a. As soon as the lever 40 has reached the limit of its upward movement, it is immediately returned manually to its lowermost position to actuate the switch 49 to de-energize the solenoid 23 so that the roll 22 is retracted from its sealing position. Injury to the tubular portion 13a is thus prevented.

As soon as the heating elements 50 and 51 are in engagement with the tubular portion 13a for forming a transverse heat seal, the tubular portion 13a just beyond the transverse seal which is being formed may be severed and separated by pulling the same against the knife 57 to provide a transverse cut line 13d. Upon the release of the foot pedal 56, the heating element 51 separates from the transverse sealed portion 13c and the sealed portion 13c separates from the heating element 50, thereby permitting a further advance of the tubular portion 13a. The ratchet finger 42 permits the return movement of the lever 40 without backward rotation of the advancing rolls 30 and 31.

The operations of advancing the tubular portion 13a, longitudinally sealing the same, transversely sealing the tubular portion 13a, and severing the bag or envelope along a transverse cut line 13d may be repeated as rapidly as warranted by the speed of the operator.

By adjustment of the stop 48 in the slot 46 the length of the bags produced may be varied as desired, and by the use of a former plate 15 of different width, the width of the bag may also be selected as desired. It may also be noted that by successive manipulations of the lever 40 without any intervening manipulation of the pedal 56, a tube of any desired length may be provided.

With the machine in accordance with the present invention, and by simple manipulations, bags or envelopes may be rapidly produced of the desired size.

I claim:

1. In apparatus for making containers from a flat continuous strip of material, means for forming the material into a flat tube with overlapping edges, heat sealing means for longitudinally sealing the strip material into a flat tube, said heat sealing means including a heating roller for engagement with said tube at said edges, members for positioning said roller including a sole-

noid for urging said roller in one direction and a spring for urging said roller in the opposite direction, manually operable means for advancing the strip material with respect to said forming means and said longitudinal heat sealing means, and a member controlled by the manually operable means at one position for energizing said solenoid.

2. In apparatus for making containers from a flat continuous strip of material, means for forming the strip into a flat tube with overlapping edges including an elongated former plate of a width corresponding to the interior width of the tube, heat sealing means for longitudinally sealing the strip material in tubular form, a plurality of pairs of advancing rollers in engagement with the tube between the side edges thereof, said plate having a tongue portion extending between pairs of rollers and in advance of the rollers for supporting said tube, at a predetermined level and heat sealing means spaced in advance of said tongue portion for transversely sealing the tube, said last means including separable heat sealing members engageable with opposite faces of the tube at a different predetermined level from that of the tongue portion.

3. In apparatus for making containers from a flat continuous strip of material, means for forming the strip into a flat tube with overlapping edges including an elongated former plate of a width corresponding to the interior width of the tube, heat sealing means for longitudinally sealing the strip material in tubular form, tube advancing rollers in engagement with the tube on each side of said sealed edges, said plate having a tongue portion extending in advance of the rollers for supporting said tube at a predetermined level, and heat sealing means in advance of said tongue portion for transversely sealing the tube, said last means including separable heat sealing members engageable with opposite faces of the tube at a different predetermined level below that of the tongue portion.

HERBERT L. REITZES.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
721,144	Brown	Feb. 24, 1903
2,066,618	Gautier	Jan. 5, 1937
2,066,619	Gautier	Jan. 5, 1937
2,103,339	Salfisberg	Dec. 28, 1937
2,192,527	Salfisberg	Mar. 5, 1940
2,330,446	Piazze et al.	Sept. 28, 1943