

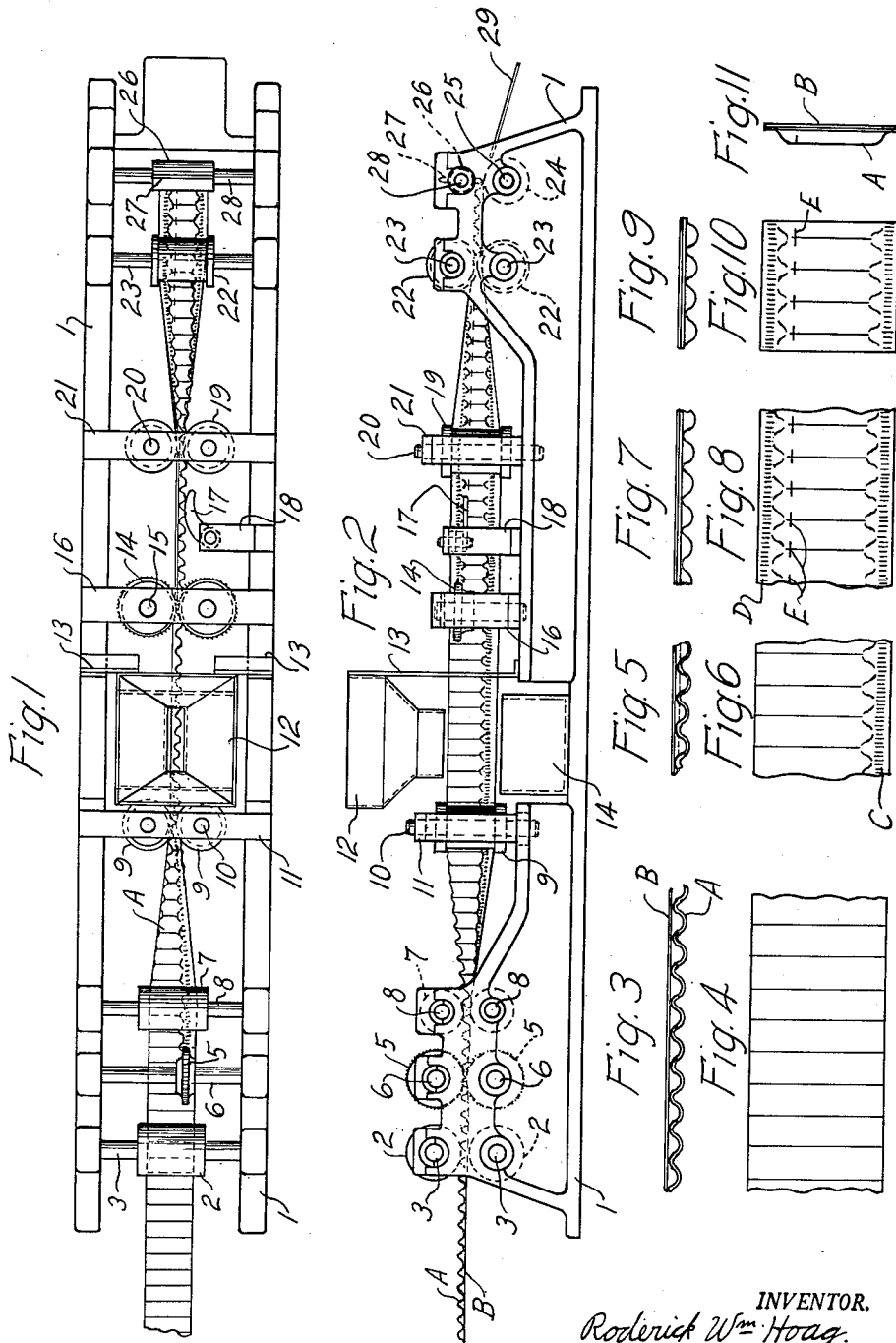
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MACHINE FOR MAKING FLUTED CONTAINERS

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## MACHINE FOR MAKING FLUTED CONTAINERS

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2 Claims. (Cl. 53—89)

1

This invention relates to methods and machinery for making and filling packages in general, and more specifically to the manufacture of shaker dispenser packets for packaging granular and powdered materials. Such a package is described and claimed in United States Patent No. 2,499,313, which was issued to me on February 28, 1950.

One object of my invention is to provide a method of manufacture, consisting of a sequence of operations for converting a traveling web of single faced corrugated material into a series of pockets, filling the pockets, and sealing the material within the pockets to provide individual packages.

Another object of my invention is to provide a machine for converting a corrugated web of paper into a succession of pockets made from the flutes of the corrugations, filling the pockets, and sealing the material within the pockets to provide filled, individual, shaker packages.

With said objects in view, and others hereinafter explained, my invention consists in the method and machine for making fluted containers substantially as hereinafter described and claimed.

Of the accompanying drawings:

Figure 1 is a plan view of the machine.

Figure 2 is a front view of Figure 1.

Figure 3 is a top edge view of the corrugated web formed by securing together a web of corrugated material A and a relatively smooth sheet of material B to produce a single faced corrugated web.

Figure 4 is a front elevation of Figure 3.

Figure 5 is an edge view of the corrugated web after the flutes of the corrugations along one margin of the web have been closed.

Figure 6 is a front elevation of Figure 5.

Figure 7 is a top edge view of the corrugated web after the flutes of the corrugations have been filled with the product to be packaged and the said product sealed within the flutes by closing both ends of the flutes.

Figure 8 is a front view of Figure 7.

Figure 9 is a top edge view of a complete package consisting of a plurality of filled flutes severed from a web formed by a succession of packages.

Figure 10 is a front elevation of Figure 9.

Figure 11 is a side edge view of Figure 10.

Similar reference characters indicate similar parts or features in all of the views.

It will aid toward an understanding of the machine and of the method for making fluted containers, to first described the action of the machine as it operates to produce packages.

2

The machine shown in Figures 1 and 2 operates to fabricate individual shaker packets from a web of flexible, single faced, transversely corrugated material.

Single faced corrugated material, comprises, a relatively flat web of flexible material B (Fig. 3) to which is adhesively secured the crowns of the corrugations on the corrugated web A (Fig. 3) to provide a series of flutes or open end pockets.

The first operation in producing my improved container consists in closing tight, by crimping, as shown at C (Fig. 6), or by any other suitable means, one end of each flute along one margin of the web (Fig. 6). Thus, the flute of each corrugation forms a pocket with one end closed and the other end open. After the flutes of the corrugations along one margin of the web have been closed, the web is positioned with the flutes standing upright, with the closed ends of the flutes downward and the open end of the flutes upward. The web is then filled by pouring the commodity to be packaged into the open ends of the flutes. After the flutes of the corrugations have been filled, the open top ends are closed tight, as shown at D (Fig. 8), by crimping, or by any other suitable means.

In order to provide an easy means for opening the flutes to dispense the contents, a cut E (Fig. 8) is made across each flute of web A to provide a weakened line which may be broken through when the packet is to be opened.

The final operation consists in cutting the web apart transversely, to provide the desired number of flutes for each packet unit. Figures 9, 10 and 11 of the drawing illustrate a packet unit comprising four flutes; however, a packet unit may consist of a single flute.

Referring to Figures 1 and 2, there is illustrated a practical embodiment of my invention consisting of a machine which receives a web of single faced corrugated material having transversely positioned flutes, and thereafter performing fabricating and filling operations to provide a succession of filled packets.

In the operation of the machine, a web of single faced, transversely corrugated paper is advanced to be received by feed rollers 2 secured to shafts 3 journaled in frame 1. The said feed rollers 2 advance the web into position to be acted upon by crimp rollers 5 secured to shafts 6 journaled in frame 1. From the crimping device the web advances to guide rollers 7 secured to shafts 8 mounted in frame 1. The web is turned from horizontal to vertical position as it advances to guide rollers 9 mounted on shafts 10 supported by bracket 11 secured to frame 1. The traveling

3

web then advances in vertical position to pass under feed hopper 12 supported by bracket 13 secured to frame 1. The filling hopper 12 contains a supply of the product to be packaged. As the web of pockets passes under the hopper, a quantity of the material to be packaged is permitted to drop by gravity to fill the flutes of the web. The amount of the product discharged from the hopper is usually in excess of what is required to fill the flutes of the web. The excess drops into the receiving bin 14 and is emptied from time to time back into the hopper 12. It will be obvious that many other types of feeding devices may be employed without departing from the spirit of my invention.

The filled web then advances to be engaged by crimping rollers 14' which crimp and seal the tops of the filled flutes. The said rollers 14' are driven by shafts 15 mounted in bracket 16 supported by frame 1. The next operation consists in partially cutting through the crowns of the corrugations by causing the advancing web to engage a slitting knife 17 pivotally supported in bar 18 secured to frame 1. Thence the filled strip of packets is advanced, by vertically rotating guide rolls 19 secured to shafts 20 journaled in bearing strip 21 mounted on frame 1. The advancing web is turned from vertical position to horizontal position as it advances to pass between the two horizontal guide rolls 22 secured to shafts 23 in frame 1. The web next passes over roll 24 secured to shaft 25 journaled in frame 1. The web, in passing over roll 24, is operated on by a cutting device which transversely severs the web at a point between certain corrugations to provide a pre-determined number of flutes for each package unit. The web severing knives 27 are secured to spool 26 secured to shaft 28 journaled in frame 1. The severed packaging units pass from the roll 24 to a delivery shelf 29 where the packets may be picked up for use.

It will be understood without need of illustration that any suitable motor may be employed for operating the machine, and that suitable gearing is employed in practice to cause the various rolls to rotate at uniform peripheral speed to affect travel of the web through the machine in order that the operations of the several units thereof will be effected in suitable sequence. The various rolls operate to maintain the web of packets under uniform continuous tension throughout the sequence of operations.

While I have illustrated and described the preferred construction of my machine and the preferred method for carrying out my invention, these are capable of variation and modification, without departing from the spirit of the invention. By way of example the slitting knife 17 may be positioned to operate before the first crimping operation or just before the filling operation.

The crimping operation which effects the closing and sealing of the ends of the flutes is sometimes called "paper-welding," which consists in

4

making a series of small cuts and folding, pressing and sealing of the ends of the flutes is some-flat web B and the corrugated web A. However, I do not limit my invention to this particular means for closing the ends of the flutes, as adhesives, plastics, waxes, and some other sealing elements will very well serve the purpose.

Having described my invention, what I claim is:

1. A machine for making a succession of filled, commodity container units; comprising, means for advancing a web of flexible, single faced, transversely corrugated material, crimp-sealing wheels to close tight the ends of the flutes of the corrugations along one margin of the web; a dispensing hopper, having a delivery opening, for containing a supply of the commodity to be packaged; means to guide the web with the flutes in vertical position with the free ends of the flutes positioned upwardly to pass under the delivery opening of the hopper; crimp-sealing wheels for closing tight the ends of the filled flutes along the top margin of the web; a knife positioned to engage the traveling web and cut across the crown of each corrugation to provide a weakened point so that the package may be easily broken for dispensing the contents of the flutes; and means for transversely severing the flutes from the web to provide individual container units.

2. A machine for making a succession of filled, commodity container units; comprising, means for advancing a web of single faced, transversely corrugated material; means to close tight the ends of the flutes of the corrugations along one margin of the web; means to advance the web of flutes in vertical position with the free ends of the flutes positioned upwardly; a dispensing hopper for charging the flutes of the corrugations with the commodity to be packaged; means for closing tight the ends of the flutes along the top margin of the web; a knife positioned to engage the traveling web and cut across the crown of each corrugation to provide a weakened point so that the package may be easily broken for dispensing the contents of the flutes, and means for transversely severing the flutes from the web to provide individual container units.

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