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METHOD AND MACHINE FOR MAKING  
AND FILLING FLUTED CONTAINERS  
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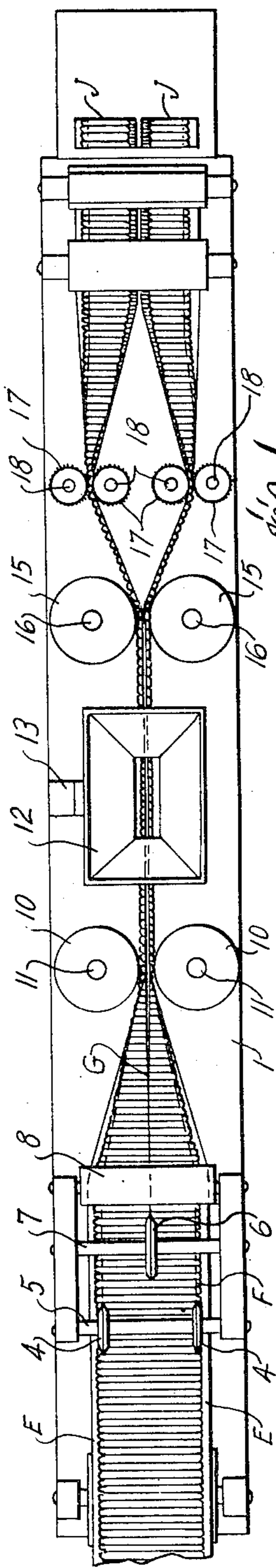


Fig. 1.

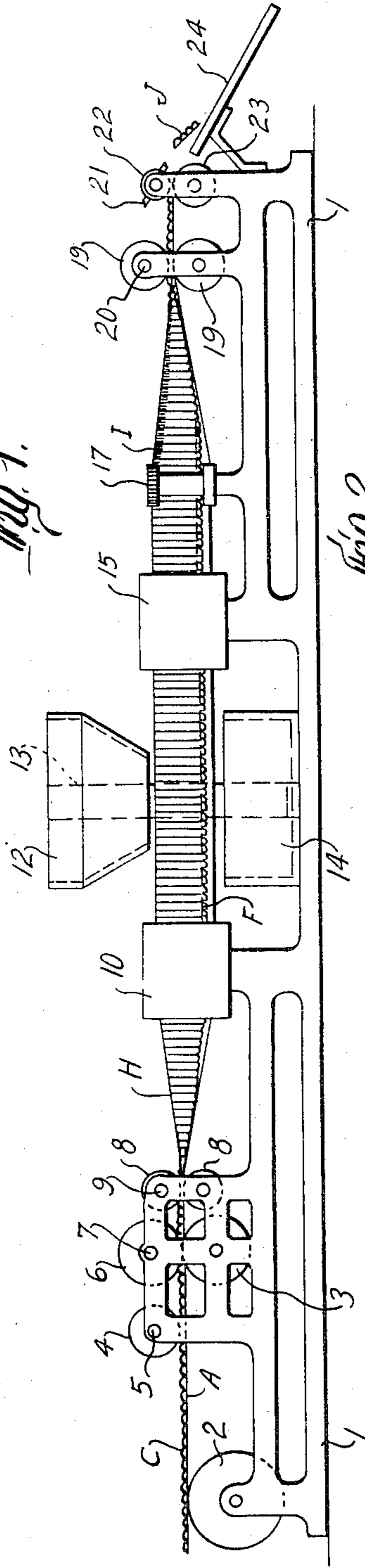


Fig. 2.

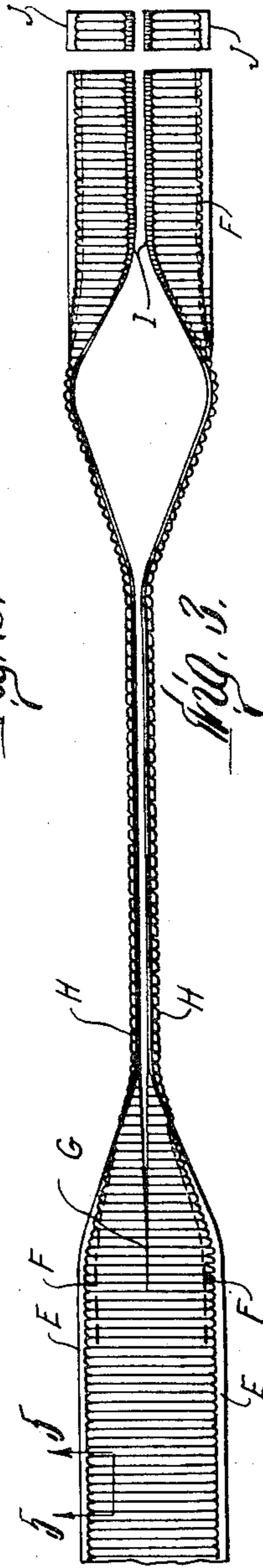


Fig. 3.

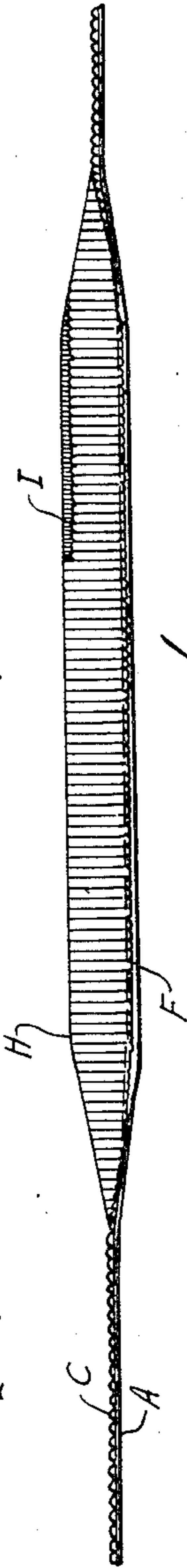


Fig. 4.

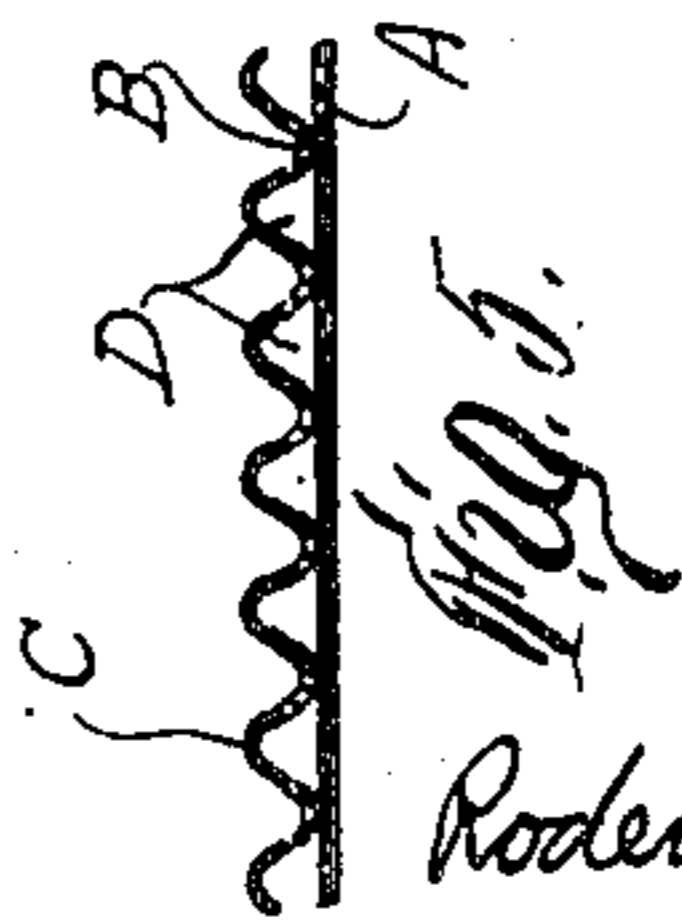


Fig. 5.

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## UNITED STATES PATENT OFFICE

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## METHOD AND MACHINE FOR MAKING AND FILLING FLUTED CONTAINERS

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13 Claims. (Cl. 93—3)

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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, powdered and pellet like materials. Such a package is described and claimed in my co-pending application for "Shaker Dispenser" filed June 22, 1945, to which Serial Number 601,022 now Patent No. 2,499,313 has been assigned. The invention which is the subject of this present application is an improvement over my co-pending application for "Method and Machine for Making Fluted Containers," filed June 24, 1948, to which Serial Number 34,986 has been assigned.

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 two webs, with the ends of the flutes of the corrugated material sealed tight adjacent the margins of the web, and thereafter slitting the web longitudinally to provide two webs, each web having flutes closed at one end and open at the opposite end, then filling the flutes of both webs through the open ends of the flutes, and sealing tight the ends of the flutes.

Another object of my invention is to provide a machine which will automatically and continuously convert a web of transversely corrugated material into two webs, and thereafter fill the flutes of each web with a commodity to be packaged, then seal the commodity within the flutes, and finally sever the web to provide packaging units.

With said objects in view, and others that will be apparent to those skilled in the art, 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 elevation view of Figure 1.

Figure 3 is a schematic plan view showing the condition of the web as it is operated upon in its travel through the machine.

Figure 4 is a front elevation of Figure 3.

Figure 5 is a partial section at 5—5 of Figure 3 drawn to a larger scale.

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

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

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terial having the ends of the corrugations adjacent to the web margins sealed tight.

The single faced corrugated material, which comprises the starting material for the product manufactured by the method and machine of the instant application, consists of a relatively flat web of flexible material A (Figs. 2, 3 and 5) to which is adhesively secured the crowns B of the corrugations on the corrugated web C, to provide a series of flutes D. The corrugated web for the purposes of this application is provided with flutes which are closed at both ends.

The first operation in producing my improved container consists in feeding a web of single faced, transversely corrugated material, having the ends of the corrugations adjacent to the margins of the web sealed tightly against the flat web of the composite corrugated web. The web with the flutes positioned horizontally is advanced to contact two rotary slitting knives which partially cut through the free crown of each corrugation near each end of each flute along the margins of the web. The web is then longitudinally severed to provide two webs of equal width. Each web is next turned to vertical position, with the flutes standing upright; and with the closed ends of the flutes downward and the open ends of the flutes upward. The webs of flutes are 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 of the flutes are closed tight by crimping or by any other suitable means.

The cuts F made by the slitting knives previously described, provide an easy means for opening the flutes of the completed container to dispense the contents. These cuts F serve to weaken the package so that it may be broken along the cut line.

The final operation consists in cutting the web apart transversely, to provide the desired number of flutes for each packet unit. The units J shown in Figures 1, 2 and 3 comprise four flutes; however, a packet unit may consist of a single flute, or any desired number of flutes.

Referring again to Figures 1 and 2, the different parts or members of the machine are mounted on a suitable base 1 shown in Figures 1 and 2. The web of single faced transversely corrugated paper, with the flutes of the corrugations adjacent to the margin of the web closed tightly, is advanced horizontally with the corrugations facing upward to pass over roller 2 journaled in frame 1. From the roller 2 the web is advanced to roller 3 journaled in frame 1. Rotary knives

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4 secured to shaft 5 journaled in frame 1 operate to cut through the crowns of the corrugations adjacent to the margin of the web, to provide dispensing openings for the flutes. The web is then longitudinally slit by rotary knife 6 secured to shaft 7 journaled in frame 1. The web is thus severed to provide two separate webs, the flutes of each web being closed at one end and open at the other end. Both webs are next advanced to pass between rollers 8 secured to shafts 9 journaled in frame 1. Both webs are next turned to vertical position with the open ends of the flutes facing outward and away from each other. The webs then pass between vertically rotating rollers 10 secured to shafts 11 journaled in frame 1. From the rollers 10 the webs are advanced under filling hopper 12 supported by bracket 13 secured to frame 1. A receiving bin 14 supported by frame 1 is provided to receive material spilled during the filling operation. From the filling position the webs are advanced to pass between rollers 15 secured to shafts 16 journaled in frame 1. The open ends of the flutes are then closed by the action of crimping rollers 17 driven by shafts 18 journaled in frame 1. Both webs are then turned again to horizontal position to pass between guide rollers 19 secured to shafts 20 journaled in frame 1. The final operation consists in transversely severing the webs by means of rotating knives 21 secured in roller 22 journaled in frame 1. The severed units J pass from roller 23 journaled in frame 1 to a delivery member 24 where the units may be picked up for use.

Referring to Figures 3 and 4, the left hand portions illustrate the corrugated member as it is received by the machine. E represents the closed ends of the flutes. F indicates the dispensing cuts. G shows the web severing operation. H indicates the open ends of the flutes. I indicates the top closing operation. J shows the completed container units cut from the web.

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 speed to effect travel, control, and fabrication of the web through the machine in order that the operations of the several units thereof will be effected in suitable sequence.

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.

Having described my invention, what I claim is:

1. The method of making filled, fluted containers by a sequence of operations, consisting in advancing a web of single faced, transversely corrugated, flute formed material having the ends of the corrugations along the side margins of the web closed tight; cutting the crown of each corrugation at each end near the margin of the web; longitudinally severing the web to provide two webs; turning both webs to vertical position; filling the flutes of the corrugations of both webs with a commodity; crimp sealing the open ends of the flutes; and transversely severing the web.

2. The method of making filled, fluted containers by a sequence of operations, consisting in advancing a web of single faced, transversely corrugated, flute formed material having the ends of the corrugations along the side margins of the web closed tight; cutting the crown of

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each corrugation at each end near the margins of the web; longitudinally severing the web to provide two webs; filling the flutes of the corrugations of both webs with a commodity to be packaged; sealing the open ends of the flutes; and transversely severing the web.

3. The method of making filled, fluted containers, consisting in advancing a web of single faced, transversely corrugated, flute formed material having the ends of the flute formed corrugations closed, cutting the crown of each corrugation near each end, longitudinally severing the web to provide two webs, filling both webs with a commodity to be packaged, closing the open ends of the flutes, and severing the web to provide flute filled units.

4. The method of making filled, fluted containers, consisting in advancing a web of single faced, transversely corrugated, flute formed material having the ends of the corrugations closed, severing the web to provide two webs, filling the flutes of the webs with a commodity to be packaged, and closing the open ends of the flutes.

5. The method of producing filled containers, consisting in advancing a web of material having a series of closed empty pockets, longitudinally severing the web to provide two webs of pockets, each pocket being open along the line of severance, filling the pockets with a commodity to be packaged, closing the open end of each pocket, and severing the pockets from the web.

6. The method of making containers, consisting in advancing a web of material having a series of closed pockets, longitudinally severing the web to provide two webs of pockets, each pocket being open along the line of severance, filling the pockets, and closing the pockets.

7. A machine for making filled containers, comprising means to advance a web of single faced, transversely corrugated, flute formed material having the ends of the corrugations along the side margins of the web closed tight, rotary knives to cut the crown of each corrugation at each end near the margin of the web, a rotary knife for longitudinally severing the web to provide two webs, web guide elements to position both webs with the open ends of the flutes upward, a filling hopper for filling the flutes of both webs with a commodity, a crimping device for sealing the open ends of the flutes, and a knife for severing the web to provide flute units.

8. A machine for making filled containers, comprising a device to advance a web of single faced, transversely corrugated, flute formed material having the ends of the corrugations along the side margins of the web closed tight, means to cut the crown of each corrugation at each end near the margin of the web, means for longitudinally severing the web to provide two webs, elements to position both webs with the open ends of the flutes upward, a filling hopper for filling the flutes of both webs with a commodity, a device for sealing the open ends of the flutes, and means for severing the web to provide flute units.

9. A machine for making filled containers, comprising a device to advance a web of single faced, transversely corrugated, flute formed material having the ends of the corrugations along the side margins of the web closed tight, means for longitudinally severing the web to provide two webs, elements to position both webs with the open ends of the flutes upward, a filling hopper for filling the flutes of both webs with a commodity, means for sealing the open ends of

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the flutes, and means for severing the web to provide flute units.

10. A machine for making filled containers, comprising means to advance a web of single faced, transversely corrugated, flute formed material having the ends of the corrugations along the side margins of the web closed tight, means for longitudinally severing the web to provide two webs, a filling device for filling the flutes of both webs with a commodity, a device for sealing the open ends of the flutes, and means for severing the web to provide flute units.

11. A machine for making filled containers, comprising means to advance a web of single faced, transversely corrugated, flute formed material having the ends of the corrugations along the side margins of the web closed tight, means for longitudinally severing the web to provide two webs, a device for filling the flutes of both webs with a commodity, and a device for sealing the open ends of the flutes.

12. A machine for making filled containers, comprising means for advancing a web of material having a series of closed, empty pockets,

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a cutting element to longitudinally sever the web to provide two webs each having pockets open along the line of severance, means to fill the pockets of both webs, a sealing device to close the open end of each pocket, and a web severing knife for cutting pocket units from the web.

13. A machine for making filled containers, comprising means for advancing a web of material having a series of closed, empty pockets, a cutting element to longitudinally sever the web to provide two webs, each having pockets open along the line of severance, a filling device to charge the pockets with a commodity, and a closing device to seal the open end of each pocket.

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