

Oct. 6, 1964

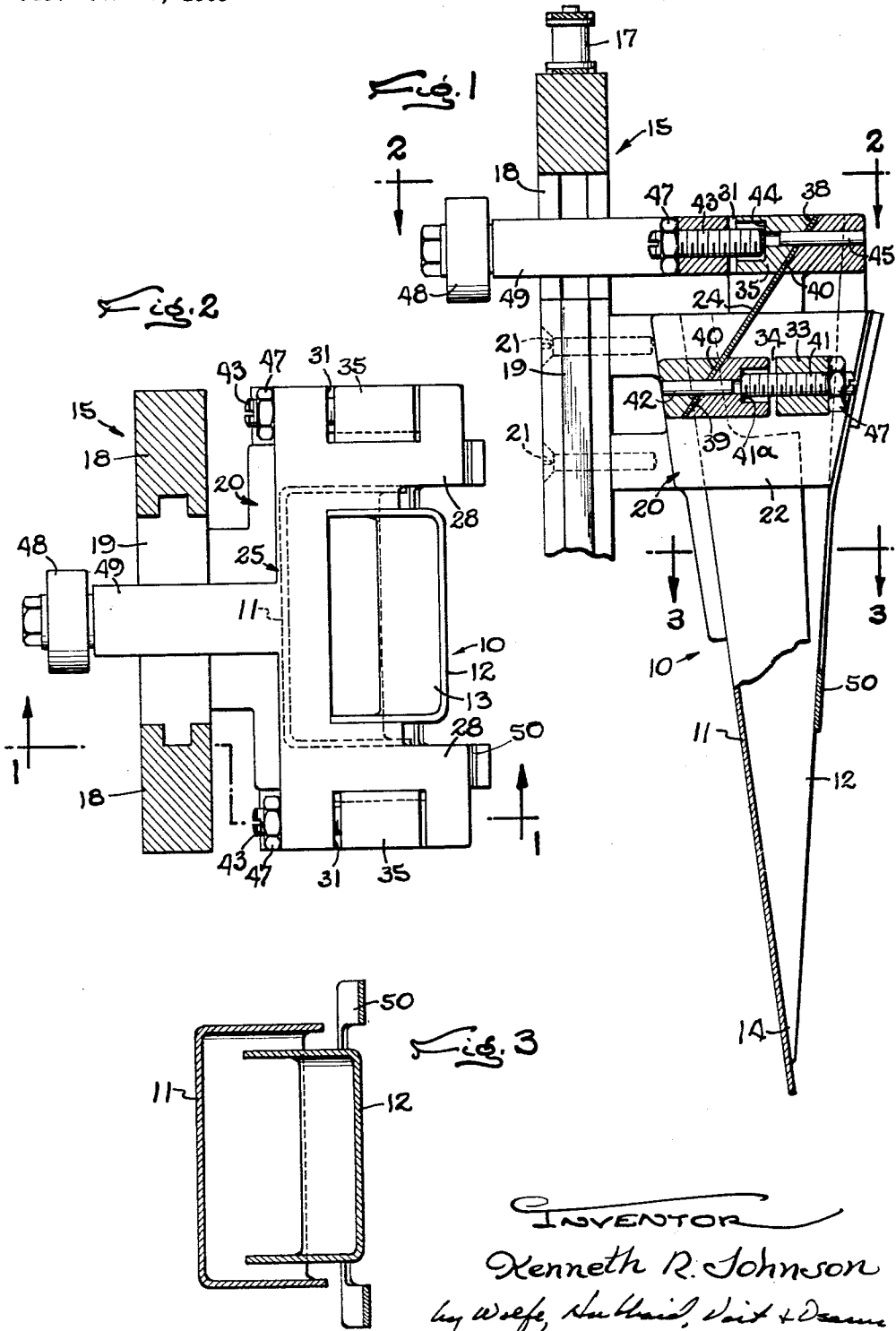
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3,151,786

FILLER FOR A PACKAGING MACHINE

Filed June 4, 1963

2 Sheets-Sheet 1



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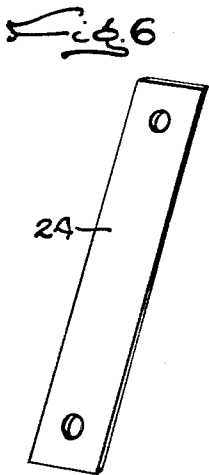
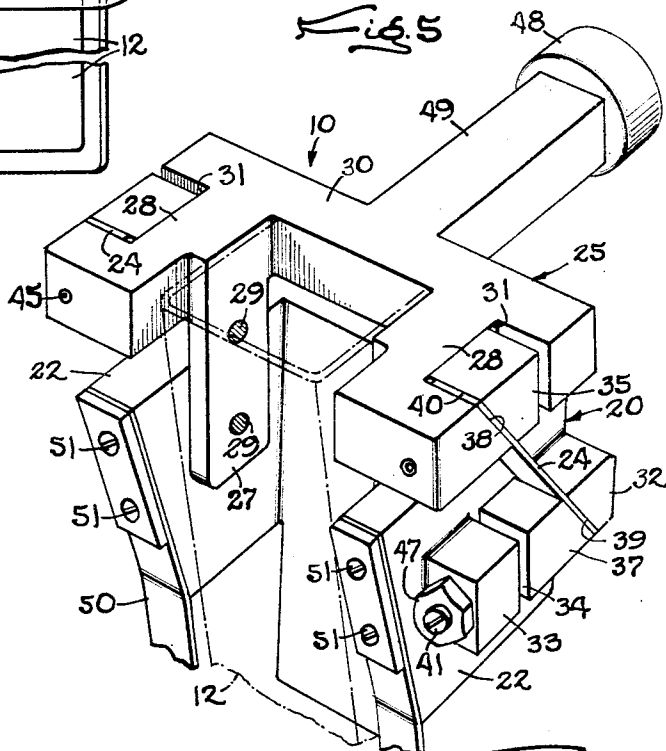
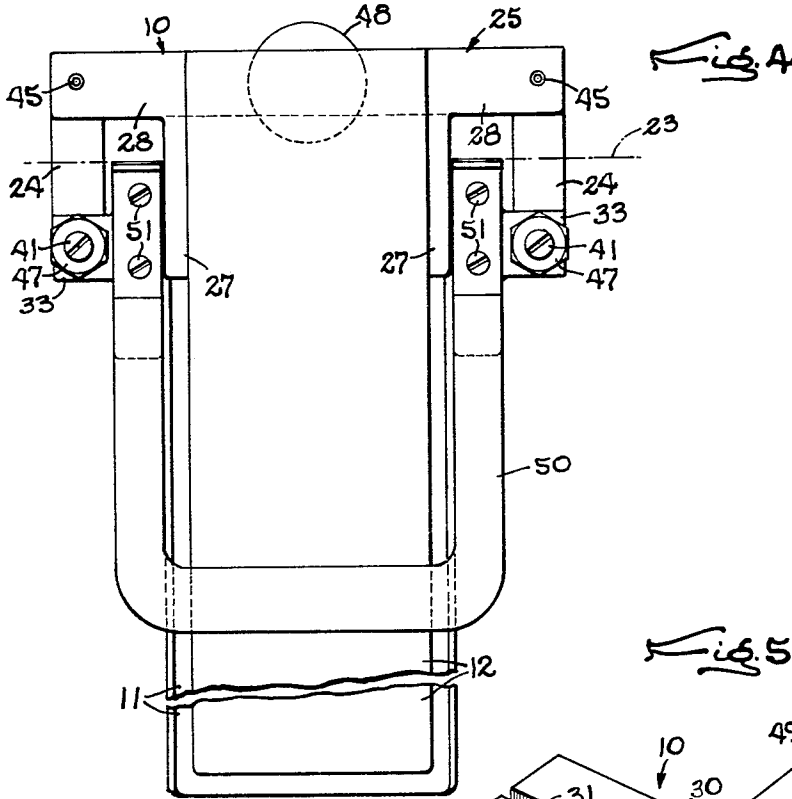
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3,151,786

FILLER FOR A PACKAGING MACHINE

Filed June 4, 1963

2 Sheets-Sheet 2



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3,151,786

FILLER FOR A PACKAGING MACHINE

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Filed June 4, 1963, Ser. No. 285,287

5 Claims. (Cl. 222-502)

This invention relates to fillers for use on packaging machines and, more particularly, to fillers of the type including two shells fitted together to form a spout having an open upper end and a normally closed lower end, one of said shells being hinged on the support for swinging of its lower end portion away from the other shell to open the spout and release the material therein into a receptacle.

The primary object of the present invention is to eliminate all bearing surfaces in the hinges of such fillers thereby to avoid all problems arising from fouling of the hinges by the grit and dust that collect on the hinges when products such as sugar are being packaged.

A more detailed object is to hinge the movable shell on the support solely by one or more flexible elements mounting the movable shell on the support and capable of flexing intermediate their ends to define the pivotal axis of the shell thereby eliminating bearing surfaces that wear away quickly when fouled with gritty substances.

Other objects and advantages of the invention will become apparent from the following detailed description taken in connection with the accompanying drawings, in which

FIGURE 1 is a fragmentary side elevational view of a filler embodying the novel features of the present invention with parts broken away and shown in section.

FIG. 2 is a fragmentary sectional view taken along the line 2-2 of FIG. 1.

FIG. 3 is an enlarged fragmentary sectional view taken along line 3-3 of FIG. 1.

FIG. 4 is a fragmentary front elevational view of the filler.

FIG. 5 is a fragmentary perspective view of part of the filler.

FIG. 6 is an enlarged perspective view of one of the flexible elements.

As shown in the drawings for purposes of illustration, the invention is embodied in a filler 10 of the duckbill or clamshell type adapted for use on packaging machines to receive measured charges of fluent material such as sugar and eventually open to deposit each charge in a receptacle such as a pouch. Such fillers comprise two elongated shells 11 and 12 of downwardly tapering channel-shaped cross-section fitted together to form a downwardly tapering spout having an open upper end 13 and a normally closed lower end 14, the shells being mounted on a support 15 and movable relative to each other to open the lower end of the spout. Preferably, the interior cross-section of one shell is substantially larger than the exterior of the other shell so that the side walls of the shells are spaced apart as shown in FIG. 3 when the filler is closed.

The general environment and operation of such fillers are well known to those skilled in the art and, for this reason, only one filler 10 and its mounting are shown herein. In general, a plurality of fillers are mounted side by side on a carrier which usually is formed by a pair of vertically spaced endless chains 17 (see FIG. 1) with the supports 15 spanning and suitably secured to the chains. The fillers are advanced by the carrier along a predetermined path and preferably with a continuous motion past a dispensing device (not shown) which deposits a charge of material in each filler, and then through a station in which each filler is opened to deposit the ma-

terial therein in a pouch disposed below the filler. Usually, the lower end portions of the fillers are lowered into the receptacle before being opened thereby to reduce dusting and avoid contamination of the seal areas around the open ends of the pouches.

Herein, each support 15 is formed by a pair of spaced upright bars 18 spanning and fast on the carrier chains 17 with a block 19 slidably guided between the bars for up and down movement relative to the carrier. The shell 11 is supported on the block 19 by means of a yoke 20 bolted at 21 to the block with the legs 22 of the yoke straddling the shell and suitably fastened thereto. The slide block is positioned vertically between the guide bars by a follower (not shown) fast on the block and adapted to ride on a cam track formed on the machine frame in the usual manner.

To open the filler 10 and release the charge of material therein, the lower end portion of the shell 12 swings forwardly away from the shell 11 about an axis indicated generally at 23 (FIG. 4) spaced upwardly from the lower end 14 of the filler and preferably located adjacent the upper end thereof. In prior fillers of this type, the pivotal axes of the shells have been defined in various ways such as by simple pivot pins. In service use, however, the bearing surfaces of such pivots frequently become fouled with grit and dust from the material being packaged and require frequent disassembly and cleaning. Moreover, such bearings wear away quickly when fouled with grit and dust. As a result, the bearings become loose and make it difficult to maintain the shells of the filler in tightly closed relation.

The present invention contemplates a novel filler construction in which all bearing surfaces are eliminated thereby avoiding the problems caused by fouling. To this end, the movable shell 12 is hinged on the support 15 solely by two flexible elements 24 each secured at one end to the movable shell and fast at the other end on the support whereby the elements mount the movable shell on the support and flex intermediate their ends to define the pivotal axis of the filler.

In the present instance, the flexible elements 24 take the form of two flat spring plates disposed on opposite sides of the filler in a common plane including the pivotal axis 23 of the movable shell 12 and each secured at one end to the yoke 20 and at the other end to a second yoke 25 spaced above the first yoke and fast on the movable shell. The upper end portion of the movable shell projects above the lower yoke and is secured to the upper yoke by means of tabs 27 (FIG. 5) depending from the legs 28 of the yoke and lying along the opposite sides of the shell, the tabs being fastened to the shell by rivets 29. The upper surface 30 of the upper yoke preferably is level with the upper end of the shell 12.

To secure the ends of the springs 24 to the yokes 20 and 25, the outer side of each upper yoke leg 28 is notched at 31 to receive the upper end portion of the associated spring, and two spaced lugs 32 and 33 are fast on each leg 22 of the lower yoke to project laterally therefrom and define a notch 34 for receiving the lower end portions of the springs. Blocks 35 and 37 disposed in the respective notches are pressed against the springs to clamp the latter against the side walls 38 and 39 (FIG. 1) of the notches.

As shown most clearly in FIGS. 1 and 5, the springs 24 are inclined upwardly and forwardly from the lower yoke 20 at an angle on the order of thirty degrees with the vertical. To position the springs in this manner, the upper notch wall 38 is offset forwardly from the lower wall 39 and these two walls and the adjacent walls 40 of the clamping blocks are inclined upwardly and forwardly at angles corresponding to the desired spring angle. With this arrangement, the pivotal axis 23 defined by the

springs intersects the latter adjacent their longitudinal midpoints.

Herein, the lower clamping blocks 37 are pressed against the lower ends of the springs 24 by set screws 41 threaded through the lugs 33 and projecting into the notches 34 to engage the bottoms of recesses 41^a (FIG. 1) in the forward side of the lower blocks. Pins 42 pressed into registering holes extending horizontally through the lugs 32, the lower end portions of the springs, and the blocks 37 hold the blocks and the springs in alignment as the set screws are tightened and reinforce the clamping by the blocks.

Similarly, the upper clamping blocks 35 are pressed against the upper end portions of the springs 24 by set screws 43 threaded through the rear walls of the notches 31 and engaging the bottoms of recesses 44 in the rear sides of the upper blocks to clamp the latter against the springs, and pins 45 are pressed into registering holes extending horizontally through the blocks 35, the upper end portions of the springs, and the front wall of the notches 31 to hold the blocks and the springs in proper alignment. Lock nuts 47 are provided to prevent loosening of the set screws 40, 43 in service use.

With the foregoing arrangement, the lower end portion of the movable shell 12 is free to swing away from the fixed shell 11 about the axis 23 defined by flexing of the hinge springs 24 between the two yokes 20 and 25. In practice, opening and closing of the filler usually is controlled by a cam track (not shown) engageable with a follower 48 carried by the movable shell and operable to swing the latter away from the fixed shell as the filler is moved through the filling station. Herein, this follower comprises a roller journaled on the end of an arm 49 fast on and projecting rearwardly from the upper yoke 25 intermediate the legs 28 thereof as shown in FIGS. 1, 2 and 5. Thus, as the roller is pressed downwardly by the cam track, the forward end of the yoke is rocked upwardly about the axis 23 to swing the lower end portion of the shell 12 forwardly and away from the fixed shell thereby to open the filler.

Means is provided for urging the movable shell 12 yieldably toward the fixed shell 11 normally to hold the filler closed. In this instance, this means takes the form of a generally U-shaped spring 50 (see FIGS. 4 and 5) fastened by screws 51 to the ends of the lower yoke legs 22 and extending downwardly and across the outer side of the movable shell. This spring yields outwardly as the filler is opened and then swings the movable shell back into tight engagement with the fixed shell after the charge in the filler has been discharged.

From the foregoing, it will be seen that all bearing surfaces are eliminated in the hinge of the filler shown herein and, therefore, all problems of fouling of such hinges by dusty material are avoided. At the same time, the springs 24 effectively hinge the movable shell on the support 15 for opening and closing of the filler.

I claim as my invention:

1. A filler including, in combination, first and second shells fitted together to form an upright spout having an open upper end and a normally closed lower end, a support including a first yoke having legs straddling and fast on said first shell below said upper end, a second yoke having legs straddling and fast on said second shell and spaced above the legs of said first yoke, a pair of parallel flat spring plates disposed in a common plane and on

opposite sides of said spout, each of said spring plates spanning the space between the two legs on one side of said spout, means on said legs for clamping the ends of said plates thereto to mount said second shell on said support and hinge the shell thereon for swinging of its lower end portion forwardly about an axis defined by flexing of said plates intermediate said legs thereby to open said spout, and a spring acting between said support and said second shell to urge said lower end portion rearwardly toward said first shell.

2. A filler as defined in claim 1 in which said spring plates are disposed in a plane inclined upwardly and forwardly from the legs of said first yoke.

3. A filler including, in combination, first and second shells of downwardly tapering channel-shaped cross-section fitted together to form a spout having an open upper end and a normally closed lower end, a support including a first pair of legs fast on opposite sides of said first shell, a second pair of legs vertically spaced from said first legs and fast on opposite sides of said second shell, a pair of parallel flat spring plates disposed on opposite sides of said spout in a common plane and each extending between and secured to the two legs on one side of the spout thereby hinging said second shell on said support for swinging of the lower end portion of the second shell away from said first shell to open said spout, and a spring acting between said support and said second shell to urge said lower end portion yieldably toward the first shell and close the spout.

4. A filler including, in combination, a support, first and second shells fitted together to form a downwardly extending spout having an open upper end and a normally closed lower end, said first shell being fast on said support and the lower end portion of said second shell being swingable away from the first shell about an axis spaced upwardly from said lower end to open said spout, a pair of flat spring plates disposed adjacent opposite sides of said spout in a common plane including said axis, and means securing one end of each of said plates to said second shell and the other end to said support whereby the plates hinge the second shell on the support for swinging of said lower end portion toward and away from said first shell to close and open said spout.

5. A filler including, in combination, a support, first and second members mounted on said support and fitted together to define a downwardly extending spout having an open upper end and a normally closed lower end, said first member being fast on said support and the lower end portion of said second member being swingable away from said first member about an axis spaced upwardly from said lower end to open the lower end of said spout, a flexible element extending transversely of and intersecting said axis, means securing one end of said element to said second member and the other end to said support thereby to hinge said second member on the support, and means yieldably urging said lower end portion toward said first member thereby to close said spout.

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