Feb. 4, 1930. F. X. KUHN 1,745,936

CONTAINER LINING MACHINE

Filed April 27, 1928 2 Sheets-Sheet 1

Fig. 1.

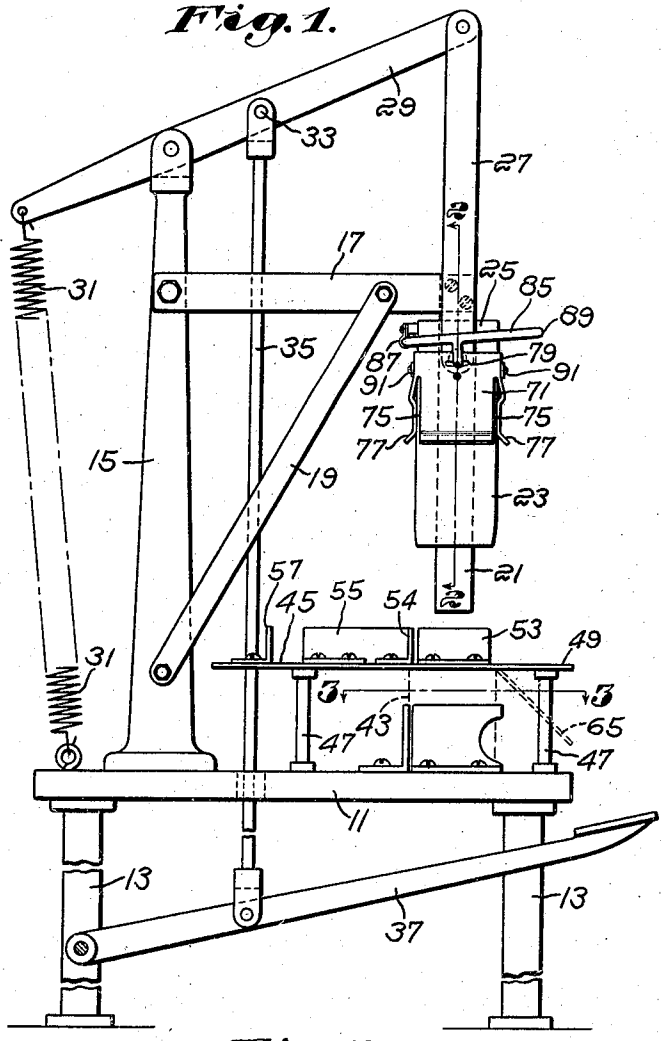


Fig. 2.

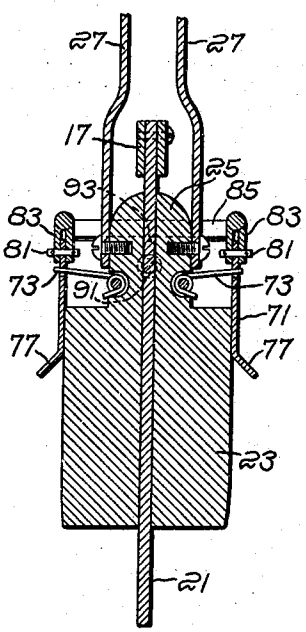


Fig. 3.

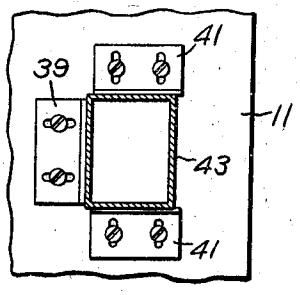
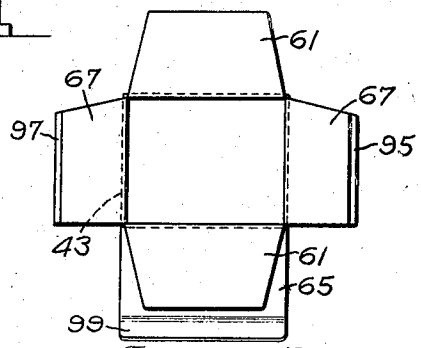


Fig. 7.



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Filed April 27, 1928 2 Sheets-Sheet 2

Fig. 4.

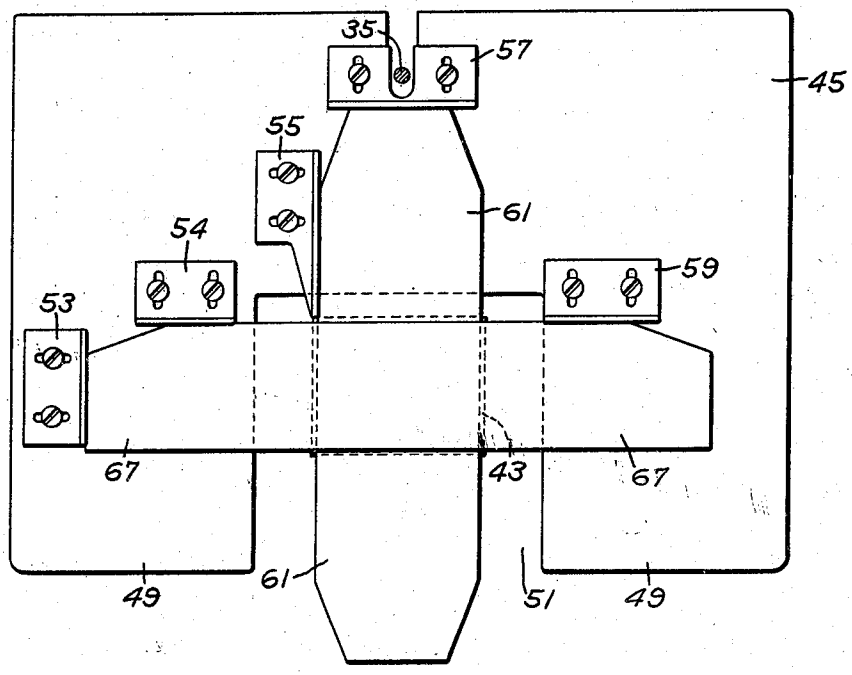


Fig. 5.

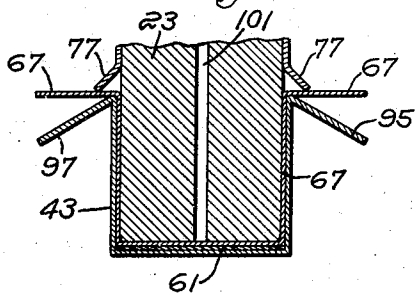
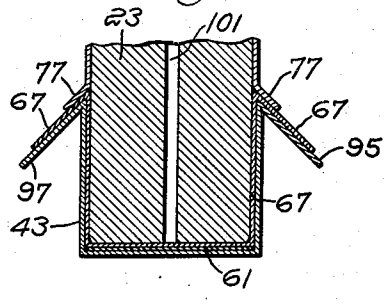


Fig. 6.



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UNITED STATES PATENT OFFICE

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CONTAINER-LINING MACHINE

Application filed April 27, 1928. Serial No. 273,383.

This invention relates to machines for lining containers, such, for example, as cartons employed for holding ice cream or like material. These are ordinarily lined with a flexible wrapping material, such as parchment paper or other material, treated to be more or less impervious to the moisture contained within the ice cream.

One object of the invention is the provision of an apparatus capable of lining an ice cream carton with flexible material uniformly and in rapid succession so that a minimum amount of material is required, and such that the paper lies evenly against the walls of the container without the irregularities and wastages involved in the production of multiple folds or thicknesses of the lining material at certain spots, and where the lining is such that on the removal of the contents from the carton the lining material may be easily stripped from the frozen brick.

The invention will be best understood by reference to the following description when taken in connection with the accompanying illustration of one specific embodiment thereof, while its scope will be more particularly pointed out in the appended claims.

In the drawings:

Fig. 1 is a side elevation of an apparatus embodying one form of the invention;

Fig. 2 is a cross sectional elevation on the line 2—2 in Fig. 1 showing on a larger scale the reciprocatory plunger with its stationary aligning guide and the folding attachment carried thereby;

Fig. 3 is a section in plan on the line 3—3 in Fig. 1 showing the locating devices for the carton;

Fig. 4 is a plan view of the gauge rests or plates for supporting the blanks of lining material in proper relation to the carton and the plunger;

Fig. 5 is a sectional elevation taken through the lined carton showing the plunger entered therein;

Fig. 6 is a similar section after the attachment for folding or turning back the protruding edges of the blanks has been actuated; and

Fig. 7 is a plan view of the lined carton.

Referring to the drawings and to the illustrative embodiment of the invention there shown for purposes of exemplification, there is provided a table 11 resting on the legs 13 carrying the upright pedestal 15 to which is attached the horizontal supporting bar 17 stiffened by the brass rod or strut 19. At the outer end of the bar 17 there is fixedly secured the depending aligning guide rod 21 on which there is arranged for vertical reciprocatory movement the plunger 23.

The upper end of the plunger has an extension 25 of lesser thickness than the body of the plunger, and to this extension there is pivotally secured an actuating link comprising two straps 27, 27 which are pivotally connected at their lower ends to opposite sides of the extension 25 and at their upper ends to a lever 29. The latter is pivotally supported on the pedestal 15 and normally moved by means of the spring 31 to raise the plunger 23 to the position illustrated in Fig. 1. To depress the plunger the lever 29 is connected at 33 with the rod 35 which has connection at its lower end to the foot treadle 37, so that by depressing the treadle the operative may depress the plunger toward the table 11.

The plunger 23 is given a cross sectional shape corresponding to the cross section of the container to be lined, so that when entered within the same its entering end (see Fig. 5) substantially fills the container and is adapted to carry into the same the lining material.

Herein the plunger is in the form of a rectangular block of substantially the same cross sectional dimensions as those of the interior of the container, its leading edges being slightly beveled so as to enter readily within the mouth of the container.

To support and locate the container with its open mouth in line with the plunger, the table 11 is provided with locating devices between which the operative may readily insert the container and align it with the path of the plunger. Such locating devices are in the form of a back plate 39 and two side plates 41, each of L-shaped cross section, and fastened to the table by screws passing through slots in the plates so that the latter are sus-

ceptible of adjustment to provide an aligning recess for different sized containers. In placing the carton 43 in the machine the operative slips it between the plates 41 until it abuts against the plate 39 while resting on the table 11.

To hold the lining material in operative position with relation to the container, there is provided a supporting plate 45 carried by the supports 47 on the table 11 and located at such a height that its upper face is above the top of the tallest container which is to be filled by the machine. The supporting plate 45 (see Fig. 4) has two forwardly projecting extensions 49 separated by a gap 51 through which the plunger is adapted to pass so as to provide a rest for the lining blanks at each side and at the rear of the plunger path.

The supporting plate 45 is provided with gauge or locating plates 53, 54, 55, 57 and 59, sufficient in number and suitable in location to position the blanks of paper or other material used in relation to the path of the plunger and to receive blanks of a width and length suited to the dimensions and the internal shape of the carton. Each of the gauge plates is also formed of an L-shaped cross section to provide an upright abutting lip. Each plate also has a screw and slot connection to the plate 45 so as to be susceptible of adjustment for locating blanks of different widths and lengths for cartons of different dimensions.

After the carton has been located on the table 11, the operative places in position on the plate and above the carton a blank strip 61 of lining material extending in a direction fore and aft of the machine, the strip being located by its rear edge being brought in contact with the gauge plate 57 and one side edge in contact with the gauge plate 55. The rear extension of the blank strip 61 rests upon the plate 45, while the forward extension rests loosely upon the cover 65 (see Fig. 1) of the carton which is folded outwardly at a slight downward angle.

The operative next places in position on the side extensions 49 of the plate 45 a blank strip 67 of lining material extending in a direction laterally of the machine and lying at right angles over and across the strip 61, the strip 67 being located by one end being brought in contact with the gauge plate 53 and the rear edge being brought in contact with the gauge plates 54 and 59.

The strips 61 and 67 are each preferably of a width to provide overlapping portions representing an area approximating the area of the bottom of the container, and the adjacent extensions are preferably of a shape and of dimensions to conform to the shape and dimensions of the respective sides of the carton against which they are intended to contact, the length of the strips, however, being such as to provide protruding ends after they have been inserted in the carton.

With the carton located in position on the table 11 and the strips of lining material positioned as described, the operative next presses on the treadle 37, depressing the plunger 23 and causing it to engage with the overlapping area of the strips, carrying the strips downwardly and entering the same within the carton, the overlapping portions being carried to the bottom of the carton to line the bottom thereof and the right-angled extensions of the strips being folded up tightly against the sides of the carton to form a smooth, single layer lining substantially coextensive with each side of the carton.

When the plunger is depressed it forces the lining strips into the position represented in Fig. 5 with the ends of the strips protruding from the carton as therein represented, the strips being selected of such dimensions as to leave ends of the necessary length for folding back over the contents of the carton after the same has been filled.

Associated with the plunger, means are also preferably provided whereby the protruding ends of the strip may be engaged by suitable devices to turn or fold the same back down over the edges of the carton where they will be out of the way, leaving the mouth of the carton open for the purposes of filling and providing a self retaining lining for the carton.

To this end, the upper end of the plunger is surrounded by a sliding sleeve 71 which is normally held to its uppermost position by the springs 73 (Fig. 2). The sleeve is provided with corner slots 75 and the lower ends of the four separated ends of the sleeve are inclined outwardly to provide the folding fingers 77 which, in the lowermost position of the plunger (as shown in Fig. 5), just fall short of the top of the carton. Near the upper edge of the sleeve there are provided at its two opposite sides the slots 79 (Fig. 1) adapted to receive pins 81 (Fig. 2) each carried by a depending bifurcated arm 83 connected to the forked lever 85 pivoted on a bracket 87 carried by the rear of the plunger extension 25. After the plunger has been depressed to the position represented in Fig. 5, the operative depresses the handle 89 of the forked lever 85 which forces the slotted sleeve downwardly causing the folding fingers 77 to engage the four protruding ends of the lining strips and turn or fold them back down over the edges of the carton mouth, as represented in Fig. 6. The downward movement of the sleeve is limited by means of a pin 91 secured to the plunger extension 25 and passing through a short, vertical slot 93 in the walls of the sleeve 71. The operative then releases the forked lever 85 permitting the springs 73 to return the sleeve to its normal retracted position, and releases the foot treadle 37 causing the plunger to withdraw from the carton leaving the carton

lined with the two lining strips 61 and 67, as represented in Fig. 7.

Preferably the plunger face is provided with an air passage adapted to break any suction arising between the face of the plunger and the strips after the same have been forced to the bottom of the container. For this purpose the slot 101 which engages the guide rod 21 extends through the face of the plunger, and when the latter is depressed serves as an air leakage passage sufficient to prevent the withdrawal of the lining with the plunger.

In the illustrated form of the invention the cover of the carton is represented as being formed by two side wings 95 and 97 and the single right-angled wing 65 with the hinged tab 99, so that after the side wings are folded over the top of the contents the wing 65 may be folded down to close the carton mouth and the hinged tab 99 tucked into the inside of the box, the side wings 95 being beveled back slightly from the front of the carton, as represented in Fig. 7. To facilitate folding the blank 61 has both opposite ends tapered or beveled on each side, and to conform to the cover wings 95 and 97 the lining blank 67 is beveled at opposite ends on one side only. The apparatus, however, may be obviously used with other shapes of strips conforming to the particular shape or construction of the carton which is employed.

For cartons of different sizes suitable adjustment is made of the carton locating plates 39 and 41 and the gauge plates 53, 54, 55, 57 and 59, and the plunger 23 may be replaced by a plunger of the appropriate dimensions to fit the carton to be lined.

This apparatus provides a simple machine by which the operative is enabled readily and rapidly to line a succession of similarly dimensioned cartons, each carton being lined with the two overlapping strips of paper which form a complete lining for the interior, with a minimum amount of paper required, and conforming perfectly to the interior of the carton without irregular accumulations of paper due to multiple folds.

This device also provides a lining for the carton which can be readily removed from the brick of ice cream after it has been withdrawn from the carton by merely stripping off in succession the two separate strips 61 and 67.

While I have herein shown and described for the purpose of illustration one specific form of the invention, it is to be understood that extensive deviations may be made therefrom, all without departing from the spirit thereof.

Claims:

1. In a machine for lining a rectangularly cross-sectioned container with flexible material, the combination with a reciprocatory plunger having a head substantially corresponding in dimensions to those of the bottom of the container, of a support having means for locating the container with its open mouth in line with the plunger, means for holding and locating two strips of flexible material crossing each other at right angles in the path of the plunger and between the normal position of the latter and the open mouth of the container as positioned by said locating means, the overlapping portions of said strips conforming approximately to the dimensions of the bottom of the container and the adjacent extensions of the strips conforming in shape and width to the shape and width of the respective sides of the container, means for reciprocating the plunger to engage the overlapping portions of said strips and carry the same to the bottom of the container whereby the extensions of said strips are caused to line the sides of the container, and means carried by the plunger for engaging the ends of the strips protruding from the container and turning the same back.

2. In a machine for lining a rectangularly cross-sectioned container with flexible material, the combination with a reciprocatory plunger having a head substantially corresponding in dimensions to those of the bottom of the container, of a support having means for locating the container with its open mouth in line with the plunger, means for holding and locating two strips of flexible material crossing each other at right angles in the path of the plunger and between the normal position of the latter and the open mouth of the container as positioned by said locating means, the overlapping portions of said strips conforming approximately to the dimensions of the bottom of the container and the adjacent extensions of the strips conforming in shape and width to the shape and width of the respective sides of the container, and means for reciprocating the plunger to engage the overlapping portions of said strips and carry the same to the bottom of the container whereby the extensions of said strips are caused to line the sides of the container.

3. In a machine for lining a rectangularly cross-sectioned container with flexible material, the combination with a reciprocatory plunger having a shape substantially corresponding to the internal shape of the container, of a support having means for locating a container with its open mouth in line with the plunger, means for holding and locating two strips of flexible material crossing each other at right angles in the path of the plunger and between the normal position of the latter and the open mouth of the container as positioned by said locating means, and means for reciprocating the plunger to engage the overlapping portions of said strips and carry the same to the bottom of the container whereby the extensions of said strips are caused to line the sides of the container.

4. In a machine for lining a rectangular cross-sectioned container with flexible ma-

terial, the combination with a reciprocatory plunger, of a support with means for locating a container with its open mouth in line with the plunger, a support between the guide and the container support for holding and locating two strips of flexible material crossing each other at right angles in the path of the plunger, means for reciprocating the plunger to engage the overlapping portions of said strips and carry the same to the bottom of the carton whereby the extensions of said strips are caused to line the sides of the container and means carried by the plunger for engaging the ends of the strips protruding from the container and turning the same back.

5. In a machine for lining a rectangularly cross-sectioned container with flexible material, the combination with a vertically reciprocatory plunger, of a support with means for locating a container with its open mouth in the path of the plunger, blank locating devices between the normal plane of the plunger and the container support for locating two strips of flexible material crossing each other at right angles in the path of the plunger, the same comprising a plate at each side and at the rear of the plunger path, gauges on said plates to gauge the position of said strips with relation to the plunger path, and means for reciprocating the plunger to engage the overlapping portions of the strips and carry the same to the bottom of the container.

6. In a machine for lining a rectangularly cross-sectioned container with flexible material, the combination with a reciprocatory plunger, of a support having means for locating a container with its open mouth in line with the plunger, gauge rests for holding two strips of flexible material crossing each other at right angles in the path of the plunger and the open mouth of the container as positioned by said locating means, and means for reciprocating said plunger to engage the overlapping portions of said strips and carry the same to the bottom of the container, said plunger having an air passage extending through its face to prevent suction on its withdrawal from the container.

In testimony whereof, I have signed my name to this specification.

FREDERICK X. KUHN.