MEANS FOR OPENING CARTON FOLDING CLOSURE FLAPS

Fig. 3

Fig. 4

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MEANS FOR OPENING CARTON FOLDING CLOSURE FLAPS

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This invention relates to carton opening devices and, more particularly, to means for opening the closure flaps of folding paperboard cartons to prepare them for filling with liquid or semi-liquid contents, such as ice cream and similar confections, and is concerned particularly with cartons commonly manufactured with one end open for receiving the contents and provided with folding flaps for closing the opening after filling and are commonly manufactured also in collapsed condition for storage and shipment. When erected for filling, the closure flaps still lie in the planes of the carton side walls with which they are respectively connected and extend above the open end of the carton. Such cartons are usually filled from a dispensing nozzle and in order to apply the open end of the carton closely to the nozzle, the flaps are first folded outwardly and back toward the carton side walls below the carton opening, so as not to interfere with such application of the opening to the nozzle. One object of the invention is to provide simple and efficient means for rapidly effecting such outward folding of the closure flaps, so that the tops of the side walls forming the carton opening are presented closely to the nozzle for rapidly, accurately and cleanly filling the carton.

The sanitary regulations governing the manufacture and use of such food containers commonly prohibit contact of the hands with the inner surfaces of the carton which come into proximity with the food contents and another object is to provide a device having the above advantages and adapted to quickly fold the carton flaps outwardly without any contact of the hands with the flaps in filling the carton, and without contact with the inner surfaces of the flaps in the subsequent closing and securing of the flaps to close the carton opening.

Another object is to provide a flap closing means of the above character having a simple and efficient construction adapted to be readily and economically manufactured and conveniently installed and used.

To these other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:
Fig. 1 is a side elevation of a flap opening device embodying the present invention;
Fig. 2 is an outer and elevation of the same;
Fig. 3 is an enlarged, sectional elevation on line 3—3 of Fig. 2, partly broken away and showing the carton as initially or partly applied and folded, and
Fig. 4 is a view similar to Fig. 3, but showing the carton as fully applied and the flaps are completely in support in the form of a clamp 20 formed with a fixed jaw 22 and a coacting spindle 24 threadedly engaged in an opening in the other jaw 26, for securing the clamp to a suitable portion of a machine or work bench, as hereafter further described.

A rod 26 has one end slidably mounted in an opening or bore 28 in the clamp which carries a set screw 30 for securing the rod in longitudinally adjusted position or height. The rod has its upper end turned at an angle and threaded for insertion in an opening in one end of a carton receiving guide means or body 32, with lock nuts 34 and 36 for rigidly clamping the body to the support.

Body 32 is preferably of hollow metal construction and adapted to have the open end of the carton 38 fitted telescopically over its outer or free end, as shown. Such cartons are commonly erected, as referred to above, with their closure flaps positioned in extension of and in the planes of the respective carton side walls to which they are foldably connected, and the purpose of the present invention is to fold these flaps outwardly and downwardly toward the respective carton side walls, below the plane of the carton opening, so as to clear the tops of the side walls for application directly to a dispensing nozzle for filling the carton closely to the nozzle, as by wiping the nozzle to eliminate dripping. Body 32 is preferably of generally rectangular or other shape in cross section and adapted to fit closely within the body of a carton either of the same size from top to bottom or of a shape tapering inwardly from top to bottom. Whether the carton side walls are straight or curved, body 32 is preferably tapered inwardly towards its outer or free end to facilitate the sliding of the carton telescopically thereover.

Several of the side walls of body 32 are each provided with their inner ends with an outwardly flaring member or plate 40. The inner end of each plate is secured to the inner end of the body side wall as by means of screws 42, with interposed spacers 44 which separate the inner end of the plate from the side wall to form the throat 46. The other or free end of the plate is flared outwardly away from the body as at 48 and provided with a hinged element or tip 50. The tip is preferably pivoted to the plate by a spindle 52 provided with a spring 54 coiled thereabout and having its ends bearing against the plate and tip in a direction to urge the tip outwardly away from the body. The body is preferably formed with an opening 56 in which the free end of the tip may swing inwardly toward the plate end 48 and the outer end 58 of the opening is positioned to serve as a stop for limiting the outward swinging of the tip to a position at which it is inclined outwardly at an angle of about 45° to the body wall, as shown.

In the use of the device, the open end of the erected carton has its flaps extended in line with its side walls, as described, and is fitted over the outer end of the body 32 and slid telescopically inwardly of the body, with the result that its flaps engage the tips 50 and are thereby deflected outwardly, as shown, the spring actuation of the tips being strong enough to turn the flaps outwardly, as described, without moving the tips. However, as the carton body is further advanced, the relatively stiff tops of the side walls engage the tips 50 and swing them inwardly to positions against the inner sides of plate ends 48, so that they serve as guides for directing the top edges of the carton walls into the throats 46. The tops of the side walls carry their flaps at their folding connections therewith into the throats, with the result that the flaps are folded backwardly adjacent the outer sides of the carton walls, as shown, with sufficient pressure to impart to the flaps a set which they substantially retain when the carton is withdrawn, so as to lie somewhat spaced from the carton side walls but below the plane of the opening. The flaps are thus folded down to positions which leave the carton opening unobstructed for application directly to the nozzle, the noted condition of the carton the elements or tips 50 are returned to initial position ready for the next carton. While it is
preferred to provide each wall of body 32 with a plate 40, the plate may be omitted from one or more of the walls if desired.

The opening of the carton flaps as described and the filling thereof, are accomplished by holding the carton adjacent its bottom and without any contact of the hands with the closure flaps. After filling, the flaps remain projecting from the carton side walls at a sufficient angle so that they may be readily raised by engagement with their outer surfaces, by hand or other known means, and folded and fastened in an overlapping position so as to close the carton opening. Such manipulation of the flaps is thus accomplished without any contact of the hands with the inner surfaces of the flaps which are brought into proximity with the carton contents, so as to fully comply with the sanitary regulations commonly governing the handling of such food cartons to prevent contamination of their inner surfaces and contents.

While the device has been described as comprising one form of support, it is contemplated that body 32 may be otherwise suitably supported and in conjunction, for example, with a carton erecting machine such as disclosed in Tobey Patent No. 2,759,401 in place of the means there disclosed for feeding the erected carton and opening its flaps.

The invention thus provides a simple and effective means for rapidly and conveniently folding the carton flaps outwardly and downwardly to fully clear the carton opening for presentation directly and closely to the nozzle or other source of supply so that it can be quickly, accurately and cleanly filled with the intended contents and the dispensing nozzle wiped clean of any excess extrusion, without soiling the carton or spilling the filling material. This is accomplished in a way which insures compliance with the applicable sanitary regulations requiring handling and filling the carton without contact of the hands with the inner carton surfaces. In addition, the invention provides a device having the above advantages in a simple and practical form of construction adapted to be readily and economically manufactured and conveniently installed and used.

It will thus be seen that the invention accomplishes its objects and while it has been herein disclosed by reference to the details of a preferred embodiment, it is to be understood that such disclosure is intended in an illustrative, rather than a limited sense, as it is contemplated that various modifications in the construction and arrangement of the parts will readily occur to those skilled in the art, within the spirit of the invention and the scope of the appended claims.

I claim:

1. In a device for folding outwardly the closure flaps foldably connected with the side walls of a paperboard carton, for folding said flaps from a position in extension of and parallel with said side walls to a position extending outwardly below the plane of the carton opening to clear said opening for filling, a support, means on said support for engaging and guiding the carton side walls during movement thereof relative to said guide means, members on said guide means each forming therewith a throat, and spring actuated elements pivotally mounted on said members an outwardly dimensioned outwardly in the direction of movement of the carton for engaging said flaps during the carton movement and folding said flaps to positions inclined outwardly from the carton walls, said elements being movable by the engagement therewith of the carton side walls to swing said elements inwardly toward said throats, said carton side walls and their respective flaps being moveable into said throats for pressing and folding said flaps into proximity with said side walls.

2. In a device for folding outwardly the closure flaps foldably connected with the side walls of a paperboard carton, for folding said flaps from a position in extension of and parallel with said side walls to a position extending outwardly below the plane of the carton opening to clear said opening for filling, a support, a form body on said support shaped to fit within and guide the carton side walls during telescopic movement of the carton over said body, members on said body each forming therewith a throat, and elements pivotally mounted on said members and spring actuated to positions inclined outwardly in the direction of movement of the carton for engaging said flaps during the carton movement and folding said flaps to positions inclined outwardly from the carton walls, said elements being movable by the engagement therewith of the carton side walls to swing said elements inwardly toward said throats, said carton side walls and their respective flaps being moveable into said throats for pressing and folding said flaps into proximity with said side walls.

3. In a device for folding outwardly the closure flaps foldably connected with the side walls of a paperboard carton, for folding said flaps from a position in extension of and parallel with said side walls to a position extending outwardly below the plane of the carton opening to clear said opening for filling, a support, a form body on said support shaped to fit within and guide the carton side walls during telescopic movement of the carton over said body, plate members on and inclined outwardly from said body and each forming therewith a throat and plate elements pivotally mounted on said members and spring actuated to positions inclined outwardly in the direction of movement of the carton for engaging said flaps during the carton movement and folding said flaps to positions inclined outwardly from the carton walls, said elements being movable by the engagement therewith of the carton side walls to swing said elements inwardly to form guides to said throat, said carton side walls and their respective flaps being moveable into said throats for pressing and folding said flaps into proximity with said side walls in position for the filling of the carton.

No references cited.