Nov. 3, 1925. 1,559,707

R. A. JONES

COLLAPSED CARTON FEEDING DEVICE FOR CARTON FILLING MACHINES

Filed Dec. 17, 1921

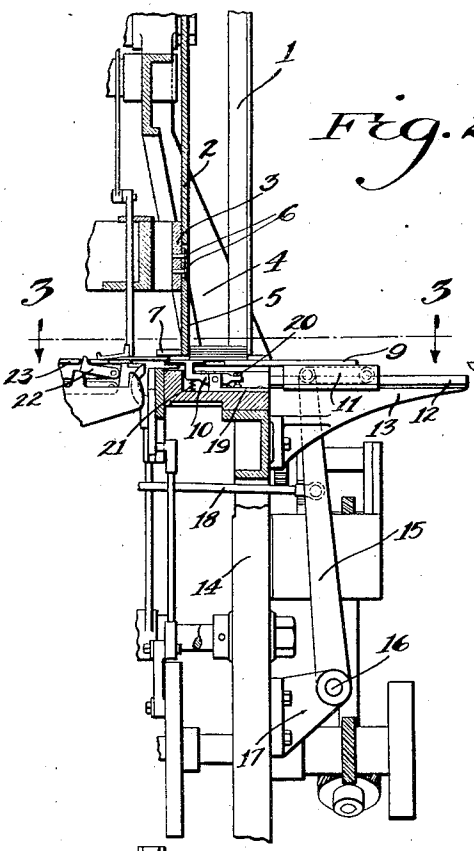


Fig. 2

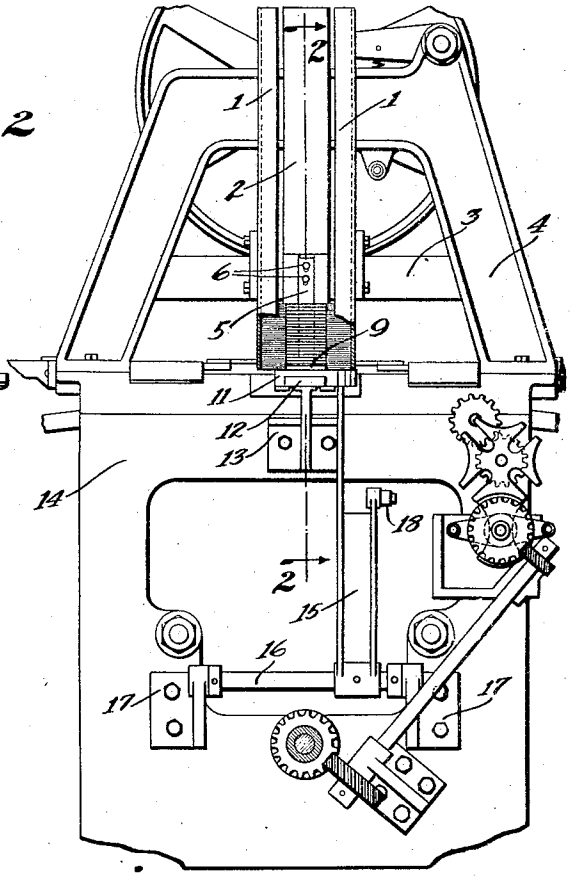


Fig. 1

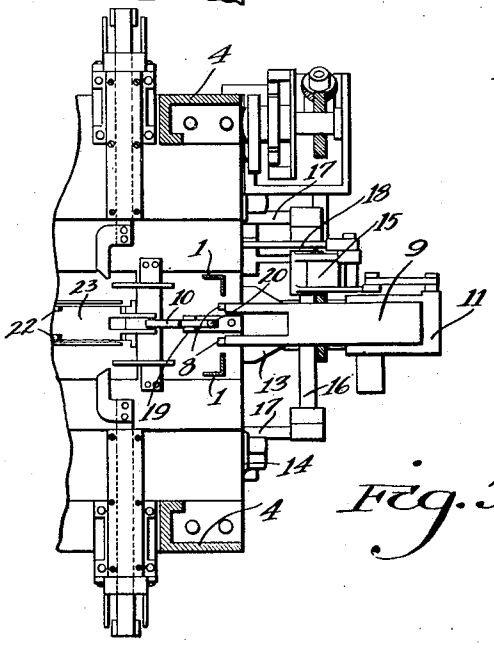


Fig. 3

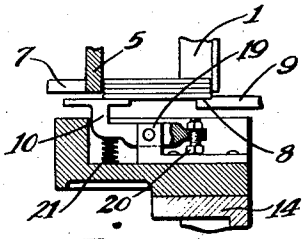


Fig. 4

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UNITED STATES PATENT OFFICE.

RUEL A. JONES, OF COVINGTON, KENTUCKY, ASSIGNOR TO R. A. JONES AND COMPANY, INCORPORATED, OF COVINGTON, KENTUCKY, A CORPORATION OF KENTUCKY.

COLLAPSED-CARTON-FEEDING DEVICE FOR CARTON-FILLING MACHINES.

Application filed December 17, 1921. Serial No. 523,237.

To all whom it may concern:

Be it known that I, RUEL A. JONES, a citizen of the United States, and residing at Covington, in the county of Kenton and State of Kentucky, have invented a new and useful Improvement in Collapsed-Carton-Feeding Devices for Carton-Filling Machines, of which the following specification is a full disclosure.

My invention relates to improvements in carton filling machines, and one of the objects of the invention is to provide a machine of this character, which will operate upon a commercial foldable carton marketed in a collapsed or knock-down state, for ejecting the cartons successively one by one from a stack or pile loaded within the magazine of the machine.

Other objects of the invention may be directed to the various features of advantage and detail of construction of improved mechanism for expelling and delivering the cartons from a stack or pile within a magazine or holder, all of which will be more fully set forth in the description of the accompanying drawings, forming a part of this specification, and in the drawings like characters of reference denote corresponding parts throughout the several views, of which:

Figure 1 is an end elevation of the machine viewed from the head or receiving end thereof.

Figure 2 is a sectional view taken on line 2—2 of Figure 1.

Figure 3 is a sectional plan view taken on line 3—3 of Figure 2, with the carton stack removed to show the mechanism beneath it.

Figure 4 is an enlarged vertical section through the magazine for holding a stack of cartons and the mechanism at the base of the magazine for sustaining the cartons at the forward end thereof so that the cartons are appropriately disposed for successively ejecting the lowermost carton of the stack.

The mechanism is arranged preferably to operate upon a particular kind of cardboard carton presented to the machine in a knock-down or flat form as received from the carton manufacturer and provides a rectangular box with opposite end closure flaps.

While this description will be confined to the particular style of carton shown, the mechanism of the machine is susceptible to operate upon other styles of cartons, likewise the setting of the mechanism is arranged for a definite size of carton with adjustments provided for different sizes of cartons, although generally the machine is built and set for a definite kind and size of carton to the preference of the users who delegate the machine for packing one kind of product for its full capacity, and any adjustability of the parts may be chiefly regarded as means for standardizing the machine manufacture to reduce its cost more than as a factor to the benefit of the user in converting its capacity to different kinds and sizes of cartons, although it inherently to a degree may have such extended range.

The carton represents a commercial rectangular cardboard box structure having opposite end closure flaps, and marketed by the box manufacturer in a flat or knock-down form. These come to the user packed in bundles, uniformly compiled or correspondingly arranged as to their ends and flaps, and ready to be deposited within the magazine of the machine, which is designed to so receive the carton bundles without rearrangement; of advantage to the capacity of the machine and reduction of expense incident to handling.

The carton is made from a single blank of material cut to proper dimension and outline, scored and folded, with its body walls united or joined together.

A stack of cartons compiled and arranged as previously set forth are deposited within a magazine supported above a table at the receiving end of the machine, said magazine comprising a pair of angle strips 1—1, which strips are suitably spaced apart to provide rear and side guide walls for the cartons disposed therebetween, and thus provide a skeleton or open-sided magazine, so that free access can be had to the cartons within the magazine.

2 indicates a vertical plate forming the forward side wall of the magazine, which is secured to cross-rails 3 of the front journal bracket 4. This wall 2 is bifurcated or slotted at its lower end and centrally to receive the foot member 5 adjustably secured by set screws 6, respectively engaged through slots in said foot member, and threaded into the cross-rail 3 as a part of the front bearing bracket 4. This foot member is provided with a forwardly projecting toe 7, disposed above the table plane,

for confining the carton travel beneath the foot upon the table.

The lowermost carton of the pile within the magazine at its rear edge rests upon prongs or a pair of lugs 8—8, projecting from the ejector blade 9, while the forward edge centrally of the carton rests upon the presser or guide foot 10, mounted within a recess in the table frame below the plane of the table. The carton, therefore, has a three-point sustension which is of quite an advantage to consecutive feeding of the cartons singly. The flat or collapsed cartons have a tendency to buckle and not lie perfectly flat upon a plane surface, and as the ejector blade bears a gauged relation to the thickness of the folded or collapsed carton, and considering that if this relation is in any wise disturbed, the ejector will miss advancing the lowermost carton of the pile, or crowd it against the forward wall of the magazine or otherwise interfere with a continuous perfect operation of the machine, this three-point sustension is seen to be advantageous. The prongs or lugs 8 are slightly recessed from the upper plane of the ejector, providing shoulders adapted to engage the edge of the carton directly sustained or resting upon the teats. The sustension of the rear edge of the carton upon two suitably spaced points insures a full bearing contact of the carton at such points, due to the weight upon the carton, whereby the cooperation of the edge of the carton against the shoulders of the ejector is obtained, and whereby but a single carton, the lowermost one of the pile, is ejected from the magazine and advanced over the table with each forward or feeding stroke of the ejector.

The ejector 9 is fixed upon a carriage or slide member 11, gibbed upon the way 12, of the bracket 13, fixed to and projecting from the end frame 14. The slide member or carriage 11 is reciprocated by a lever 15, the lever 15 at one end being pivotally connected to the carriage and its opposite end fixed upon a rock shaft 16 journaled at its ends in a pair of brackets 17, fixed to and projecting from the end frame 14.

The lever 15 intermediate of its length is provided with an ear extension pivotally connecting with a rod 18 extending to the opposite end of the machine and suitably connected with the power means (not shown).

The ejector carriage 11 moves at a properly timed interval in forward and retreat strokes, its forward stroke, through its ejector, engaging and advancing the lowermost carton of the pile within the magazine and retreating for a subsequent operation.

The presser-foot 10, centrally supporting the forward end of the carton, and substantially central to the line of travel of the carton over the table, is pivotally mounted upon a bracket member 19, secured within the recess upon the table frame. The rear end of the presser-foot is provided with an adjusting screw 20, for limiting the upward motion of the presser-foot, which is adjusted from the lower face of the toe, 7, of the foot member 5, to permit the carton to pass between said members, and offer resistance against the free passage of two cartons simultaneously, thereby preventing the advance of more than one carton at a time.

The presser-foot 10 is yieldingly urged upward by a spring 21 inserted between the presser-foot and the base of the recess within the table. The presser-foot may be adjusted by the adjusting screw 20, for micrometrically setting the presser foot a determined distance from the guide toe above. The presser-foot will yield downwardly to a degree sufficient to permit the lowermost carton to be advanced between the presser-foot and the guide toe and accommodate for any inequalities in the carton due to its folds, without impeding the advance of the carton. The carton is ejected from the magazine and advanced by the ejector over the table until it engages at its forward end against the depressible stop levers 22—22 respectively arranged at opposite sides of the table or track 23, and their hook or stop ends project upwardly through notches in the side edges of the track 23, to provide a pair of abutments aginst which the carton is engaged for holding the carton against advancing motion during the next operation.

Having described the invention, I claim:

1. The combination of a magazine for holding a stack of normally collapsed cartons, an ejector for extracting the end carton of the stack from the magazine providing a base support for the cartons in the magazine, having a pair of tangs for sustaining the carton at two points along a rear edge of the carton, means for reciprocating said ejector, and yielding means intermediate of said tangs for sustaining the carton at a forward edge.

2. The combination of a magazine for holding a stack of normally collapsed cartons, an ejector for extracting the end carton of the stack from the magazine providing a base support for the cartons in the magazine, having means projecting therefrom for sustaining the carton at spaced points along a rear edge of the carton, means for reciprocating said ejector, and yielding means intermediate of said tangs for centrally sustaining the carton at its opposite edge.

3. The combination of a magazine for holding a stack of normally collapsed cartons, an ejector for extracting the end car-

ton of the stack from the magazine and sustaining at one end the cartons within the magazine, a member for yieldably centrally sustaining the carton in the magazine at the discharge end of the magazine and with the said magazine providing a discharge throat for a single carton thickness.

4. The combination of a magazine for holding a stack of normally collapsed cartons, an ejector at the base of the magazine having an end for sustaining the carton within the magazine while in its retreat position and engaging an edge of the lowermost carton of the stack for extracting the same, said ejector in its operation moving beneath the stack and providing a base for the magazine, a yielding member for centrally sustaining the cartons within the magazine at the forward edge thereof and with the base edge of the front wall of the magazine forming a discharge throat for passing a single carton thickness.

5. The combination of a magazine for holding a stack of normally collapsed cartons, yielding means at the base of the magazine for sustaining the carton within the magazine, cooperating with a base edge of the magazine to provide an expansible throat for successively extracting the end cartons of the stack.

6. The combination of a magazine for holding a stack of normally collapsed cartons having an open base end for successively extracting the end carton of a stack, a yielding means cooperating with the magazine base and providing a throat element movable for expanding and limiting the throat opening proportionate to a collapsed carton thickness.

7. The combination of a magazine for holding a stack of normally collapsed cartons having a throat opening at its base for extracting the end carton of the stack, a member providing a yielding throat element movable for expanding the throat opening and centrally sustaining the carton within the magazine and guiding the carton beyond the magazine as a carton is advanced in extracting.

8. The combination of a magazine for holding a stack of normally collapsed cartons having a throat opening at its base, a carton extractor reciprocating across the base of said carton for successively extracting the end carton of the stack from the magazine, having means for engaging and sustaining the carton at one edge, a compressible member for centrally sustaining the carton in the magazine at an edge opposite the extractor and providing a throat element movable for expanding the throat opening when a carton is engaged in the throat.

9. The combination of a magazine for holding a stack of normally collapsed cartons having a throat opening at its base, an extractor for extracting the end carton of the stack from the magazine, a compressible member for centrally sustaining one end of the carton in the magazine and providing a throat element movable for expanding the throat opening and adjustable for limiting the guage of the throat opening proportionate to a collapsed carton thickness.

In witness whereof, I hereunto subscribe my name.

RUEL A. JONES.