To all whom it may concern:

Be it known that we, WALLACE D. KIMBALL and ARTHUR E. RIDEOUT, both citizens of the United States, and residents of the city, county, and State of New York, have invented certain new and useful Improvements in Single-Head-Carton-Sealing Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to carton-sealing machines of the character employed for sealing the flaps of the heavy fibre board packing cases now largely employed in lieu of wooden boxes for packing goods for shipment.

These cartons come from the factory in flat knockdown condition, and the flaps at one end are usually folded down and sealed together before the box is packed and the other flaps are thereafter closed upon the material in the box and sealed. To effect a tight joint between the heavy cardboard flaps it is necessary that the flaps be held together under considerable pressure, while the silicate or other adhesive is drying; and the purpose of the present invention is to provide an apparatus for supporting the carton while the flaps are being folded and the adhesive applied, and to hold the gummed flaps under proper pressure while drying.

The particular objects of the present invention are to provide an apparatus of this character which holds the box in position to facilitate rapid work by the operator and with which a heavy pressure may be applied to the folded flaps without undue exertion on the part of the operator.

Further objects of the invention are to provide a machine of simple design and rugged construction which will be of low manufacturing cost and will withstand the hard usage to which machines of this character are necessarily subjected.

In the accompanying drawings we have illustrated a preferred design of our improved machine, and in the said drawings Figure 1 is a perspective view showing the machine with the sealed carton still in place on the form, parts of the machine being broken away to better show the mechanism.

Fig. 2 is a sectional detail of the presser; and Fig. 3 is a detail view of the box flap support.

Referring to the drawings, 1 indicates the base of the machine, here shown as a triangular plate having attached to its apex a tubular column 2 which is set at an angle of about 60 degrees to the base plate with its free end projecting toward the base line of the triangle.

A heavy spiral spring 3 is enclosed in the tubular column 2, and working against the spring is a plunger rod 4 which has a telescoping movement in the column 2, the extent of movement being limited by a cross pin 5 driven through slots 6 in the opposite sides of the column 2 and through a hole in the plunger 4. The spring 3 is of a length such that when the plunger is assembled in position it will be under the desired initial compression to effect a proper sealing of the flaps of the carton.

Supported on the top of the plunger 4 is a form plate 7 of dimensions corresponding approximately to the inner dimensions of the carton to be sealed.

The pin 5 also serves as a support for the lower end of the open carton. To this end there is attached to each end of the pin 5 a bracket 9 having its lower end outturned to form a support 10 for the lower edges of the carton flaps to support the carton on the plunger with the fold lines of its upper flaps in the same plane as the corners of the form 7. The bracket 9 is slotted where it engages the pin 5 so that it may be adjusted on the pin to suit cartons of varying depth. To further support the carton in proper position the rear edge of the block 7 may be provided with an apron 11 at right angles to the outer face of the block to hold the carton against tendency to tilt to vertical position.

At the other two corners of the triangle base standards 12 are mounted, the upper ends of the standards terminating at about the plane of the top of the form plate 7. Hinged on one of the standards 12 is a cross bar or lever 13 which has attached to its under side at a point corresponding to the middle of the plate 7 a round bearing 14 against which a form plate or block 15 is held by springs 16 working on pins 17 set in the back of the form block and projecting...
loosely through holes in the lever 13. The hinge pin of the lever 13 extends parallel to the edge of the form block 7, that is, it lies at an angle of thirty degrees to the horizontal. Hinged to the other standard 12 also on a hinge pin at thirty degrees to the horizontal is a pair of links 18 supporting at their free ends a locking lever 19 designed to cooperate with the end of the lever 13.

To this end the lever 13 is provided on its upper surface with a slightly concave seat and the lever 19 is formed with a cam arm 21 projecting at right angles to its length and with its nose curved to cooperate with the seat in the end of the lever 13.

The form blocks 7 and 15 are readily detachable from their supports so that with different sizes of form blocks a single machine may within reasonable limits be adapted for different size cartons.

The operation of the machine will be apparent from the above description. The operator takes the flat carton and opens it up to square form by pressing against the opposite folded corners and slips it over the form until the edges of the lower flaps engage the supporting fingers 10 at the ends of the brackets 9. With the brackets properly adjusted the carton will be supported so that the hinge lines of the four upstanding flaps coincide with the corners of the block 7. The two inner flaps will then be folded down and the silicate applied, and then the two outer flaps folded down against the silicated surfaces of the inner flaps. The operator then swings the lever 13 down against the folded flaps and swings the locking lever 19 over the end of the lever 13 with the handle of the lever 19 projecting upwardly or in line with the links 18 which allows sufficient opening beneath the lever 19 to admit the end of the lever 13 without compressing the spring 3. After the lever 19 is in position over the concave seat of the lever 13, the handle 19 will be turned down to the position shown in Fig. 2 thereby compressing the spring 2 and forcing the pin 5 away from the slots in the column 2, so that the full pressure of the spring comes against the flaps held between the two presser blocks. In this movement the block 16 can rock in any direction on the round bearing 14 to the necessary extent, for the block to adjust itself to any irregularities in the carton flaps so that the pressure will be equally applied throughout the entire area of the flaps.

By having the column 15 at an angle to the base plate in the manner shown, the block is supported in the best position to receive the carton with the least movement on the part of the operator, and the arrangement of the pressure head 15 on the hinged cross bar allows sufficient room between the standards 12 to give free movement to the operator in silicating and folding the flaps. The cam lever 21 affords a large leverage to the locking handle so that slight exertion is required to put the flaps under heavy pressure and the cross lever 13 may be counterweighted, if desired, to lessen the labor required to lift the presser head to its normal open position slightly beyond the vertical, in which it is maintained when opened by the stop pin 22.

Machines of this character are usually set up in groups of three for each operator so that two cartons may be drying while the third is being sealed. If desired, the present machine may obviously be formed in three units mounted on a single base with each intermediate standard supporting the presser head of one unit and the locking lever of the adjacent unit. Other modifications of the structure may also obviously be made without departing from the spirit of the invention.

We claim:

1. In a carton closing machine, the combination of a form block, means for supporting said block with its working face at a fixed acute angle to the horizontal, said supporting means being fixedly mounted at an angle to the vertical and comprising a hollow column, a plunger sliding therein, and a spring within said column reacting against said plunger for resisting the movement of said members in one direction, and a presser block mounted to be pressed against a form block with its working face parallel to the working face of the form block.

2. In a carton-closing machine, the combination of a form block adapted to receive the carton to be closed, a resilient support for said form block normally maintaining said form block in a position over the concave seat of the lever 13, the handle 19 to be turned down to the position shown in Fig. 2, and means for compressing the spring 2 and forcing the pin 5 away from the slots in the column 2, so that the full pressure of the spring comes against the flaps held between the two presser blocks. This movement of the block 16 can rock in any direction on the round bearing 14 to the necessary extent, for the block to adjust itself to any irregularities in the carton flaps so that the pressure will be equally applied throughout the entire area of the flaps.

3. In a carton-closing machine, the combination of a form block, a support therefor comprising a hollow column, a plunger telescoping therein and upon which the form block is mounted, a spring in the column working against said plunger to maintain said form block normally in an elevated position, a slot in the said column, a pin carried by said plunger and working in said slot to limit the upward movement of the form block under pressure of the said spring and a carton-support carried thereon.
by said pin to move in synchronism with the form block.

4. In a carton-closing machine, the combination of a form block, a support therefor comprising a hollow column, a plunger telescoping therein and upon which the form block is mounted, a spring in the column working against said plunger to maintain said form block normally in an elevated position, a slot in said column, a pin carried by said plunger and working in said slot to limit the upward movement of the form block under the pressure of the said spring, a carton-support carried by said pin to move in synchronism with the form block, and a presser block mounted to be moved against said form block and depress the latter below its normal position whereby the said spring support will be effective to maintain a pressure on said block.

In testimony whereof we have hereunto affixed our signatures.

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