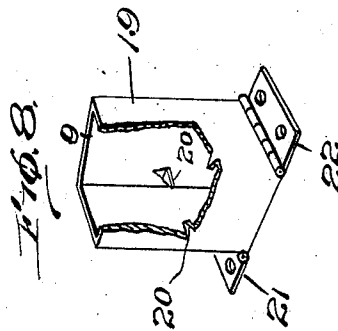
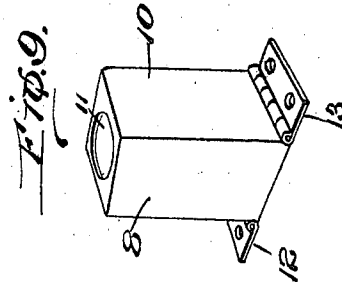
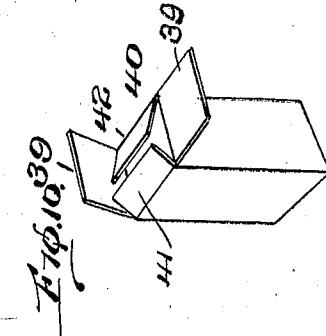
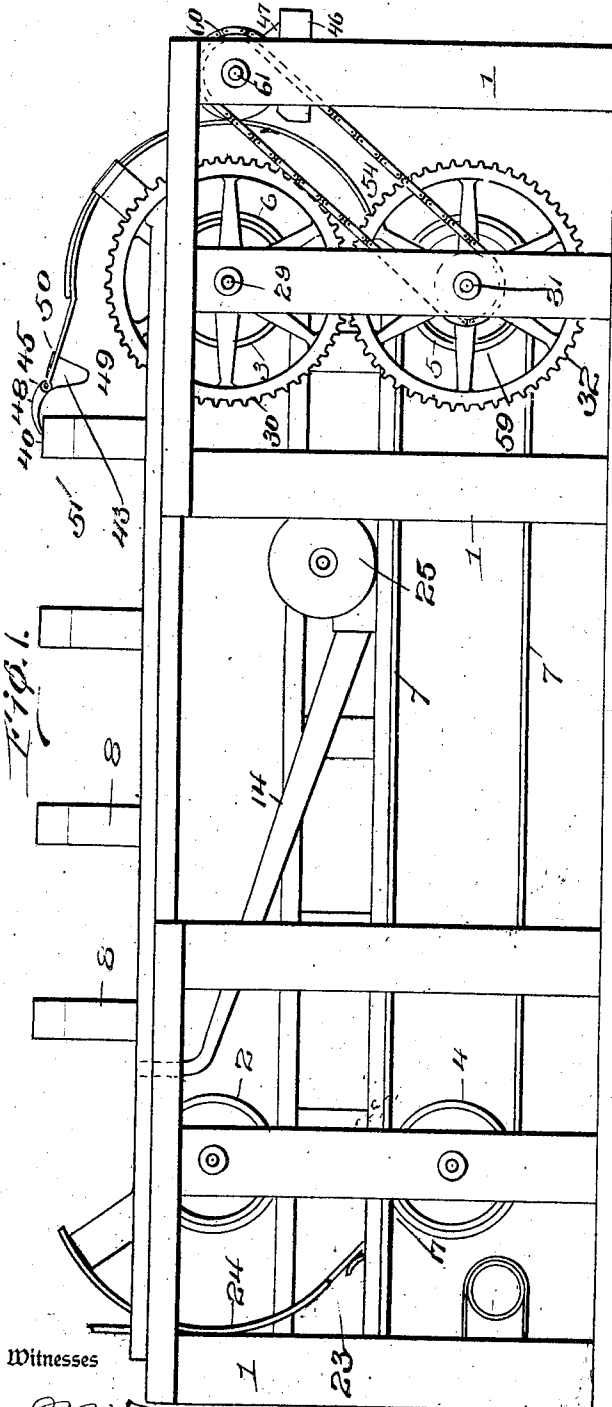


H. HAGER,
 CARTON SEALING MACHINE,
 APPLICATION FILED APR. 11, 1911.

1,013,768.

Patented Jan. 2, 1912.

4 SHEETS-SHEET 1.



Witnesses

M. Bowler
W. Kitchen

Inventors

Harry Hager
Wesley F. Lawrence
 his Attorneys

H. HAGER.
 CARTON SEALING MACHINE.
 APPLICATION FILED APR. 11, 1911.

1,013,768.

Patented Jan. 2, 1912.
 4 SHEETS—SHEET 2.

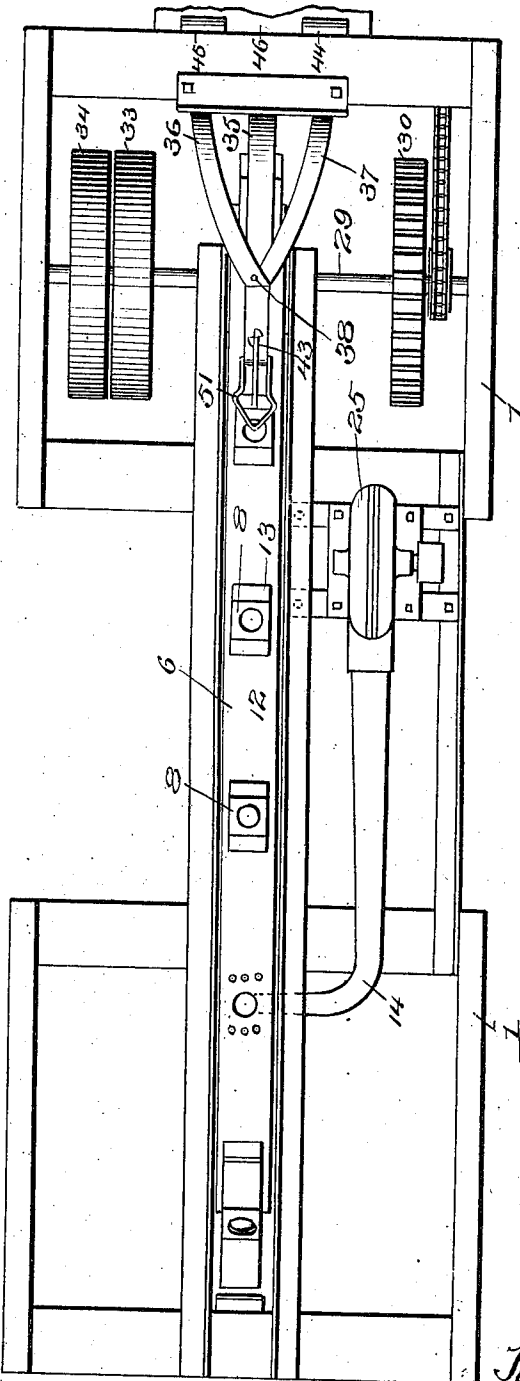


Fig. 2.

Witnesses

J. M. Fowler
W. Kitchen

Inventors

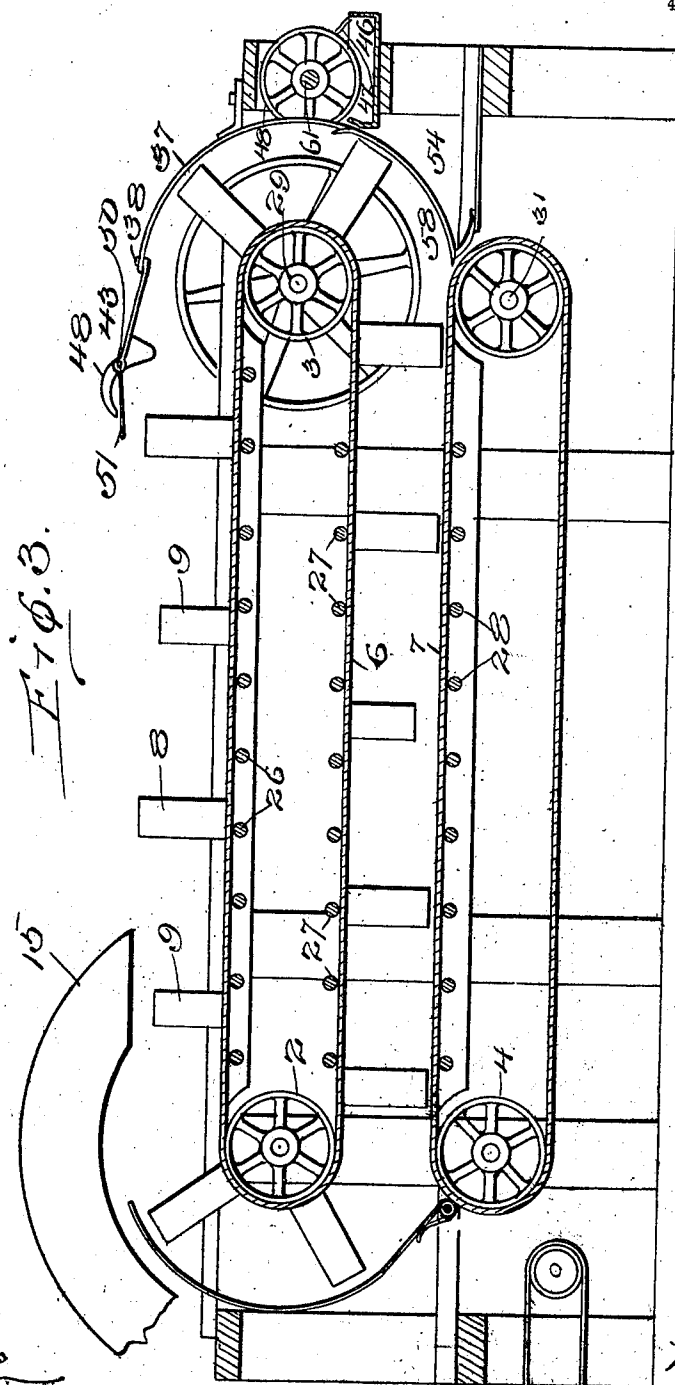
Harry Hager
 By *Wason Farnick Lawrence*
 his Attorneys

H. HAGER.
 CARTON SEALING MACHINE.
 APPLICATION FILED APR. 11, 1911.

1,013,768.

Patented Jan. 2, 1912.

4 SHEETS—SHEET 3.



Witnesses

J. M. Fowler Jr.
M. S. Mum.

Inventors

Harry Hager

By J. H. Mason, J. M. Smith & Lawrence

Attorneys

H. HAGER.
 CARTON SEALING MACHINE.
 APPLICATION FILED APR. 11, 1911.

1,013,768.

Patented Jan. 2, 1912.

4 SHEETS—SHEET 4.

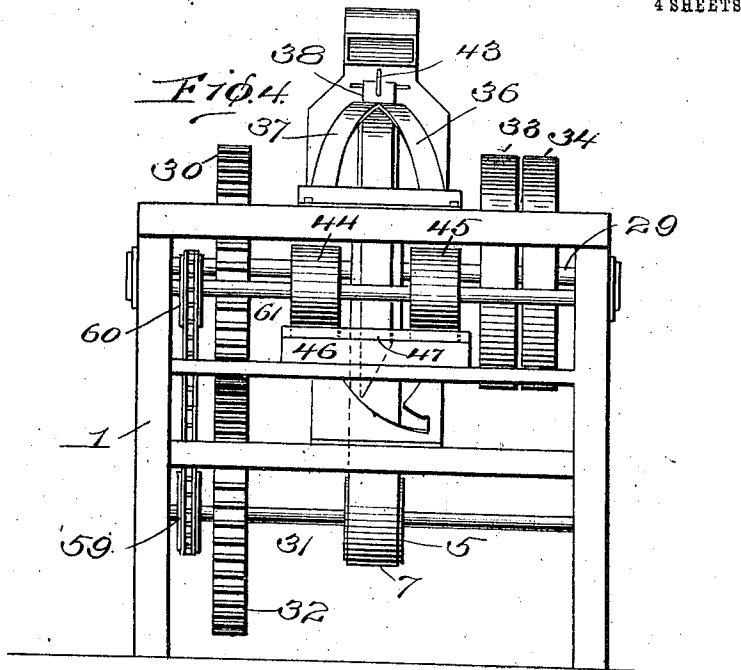


Fig. 5.

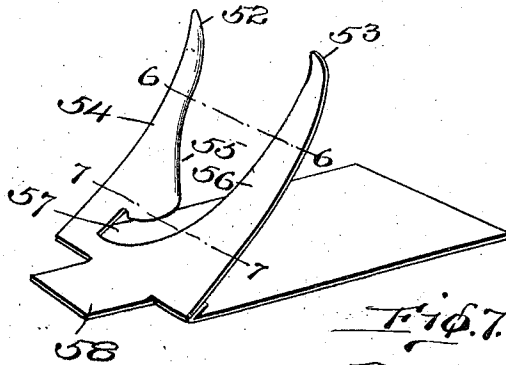


Fig. 6.

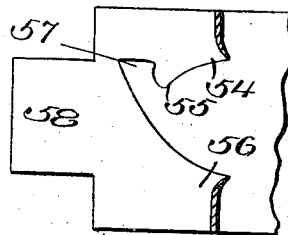
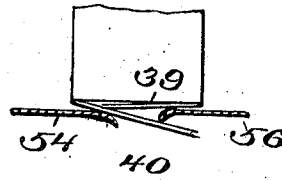


Fig. 7.



Witnesses
J. M. Fowler Jr.
A. L. Kitchen

Inventors
Harry Hager
 By *Mason Finnick Lawrence*
 his Attorneys

UNITED STATES PATENT OFFICE.

HARRY HAGER, OF CHICAGO, ILLINOIS.

CARTON-SEALING MACHINE.

1,013,768.

Specification of Letters Patent.

Patented Jan. 2, 1912.

Application filed April 11, 1911. Serial No. 620,378.

To all whom it may concern:

Be it known that I, HARRY HAGER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Carton-Sealing Machines; and I 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 improvements in carton or box sealing machines, and has for an object the arrangement of improved means for sealing the bottoms and tops of cartons.

Another object of the invention is the arrangement of a carton sealing machine formed with means for automatically turning over the ends of the carton, applying glue or other adhesive material thereto, and pressing the ends properly in a closed position and exerting pressure on the closed ends until the glue sets.

Another object of the invention is the arrangement in a carton sealing machine, of an endless belt designed to carry either empty or filled cartons, associated with means for turning over part of the end flaps in one direction, and the other end flaps in the opposite direction, for receiving glue or other adhesive, after which the glued end flaps engage a cam member and are turned over and pressed together.

A still further object of the invention is the arrangement of means which will receive either empty cartons or filled cartons, and seal the ends thereof, after which the empty cartons are forced from the machine in one direction and the filled cartons are forced from the machine in a different direction, the machine operating continuously.

With these and other objects in view the invention comprises certain novel constructions, combinations, and arrangement of parts as will be hereinafter more fully described and claimed.

In the accompanying drawings: Figure 1 is a side elevation of one embodiment of the invention. Fig. 2 is a top plan view of the structure shown in Fig. 1. Fig. 3 is a section through Fig. 2, approximately on line 3—3. Fig. 4 is a front view of the machine shown in Fig. 1. Fig. 5 is a detail perspective view of the cam for folding some of the end flaps. Fig. 6 is a section through Fig. 5 on line 6—6. Fig. 7 is a section

through Fig. 5 on line 7—7. Fig. 8 is a member for carrying filled cartons. Fig. 9 is a member for carrying empty cartons. Fig. 10 is a perspective view of a carton.

In constructing a carton sealing machine embodying the invention, a framework of any desired kind is provided, and a pair of belts mounted thereon arranged to travel at the same speed and in opposite directions. Mounted on one of the belts are a plurality of forms for holding either empty or filled cartons, which are moved by the belt to a folding and sealing device, after which the belt moves the cartons in proximity to the second belt and presses the cartons against the second belt for a short time in order to permit the sealed ends to set before the boxes are discharged. After the boxes have been once placed on the machine the same are automatically moved and operated upon by the machine until the same have been sealed and discharged.

In order that the invention may be more clearly understood an embodiment of the same is shown in the accompanying drawings, in which—

1 indicates the framework comprising any desired number of uprights, longitudinal and transverse members, as well as any desired number of braces. Mounted in framework 1 are wheels or pulleys 2, 3, 4 and 5 on which are mounted belts 6 and 7. The belt 6 has connected therewith a plurality of box forms 8, and a plurality of box forms 9. The box forms 8, shown more clearly in Fig. 9, are formed of an upright portion 10 having an aperture 11 in the top, and a pair of hinge members 12 and 13 at the bottom. The hinge members 12 and 13 are secured at one end to the upright portion 10, and the opposite ends are secured to the belt 6. By this arrangement the form is held in proper place, and may freely pass around the wheels or pulleys 2 and 3.

The aperture 11 is provided in form 8 for permitting the escape of air which is supplied to the form from an air tube 14, a suitable aperture being provided in the belt for permitting the air to escape from tube 14 into form 8, and from thence through aperture 11. When the blast of air passes in this direction the carton on form 8 will be raised and moved therefrom and forced into a guiding chute 15 which directs the carton to a suitable transporting belt or other transportation means not shown. The carton thus blown from the

form 8 is, of course, empty, and is transported by the carrier 15 to any desired point for being filled. After the carton has been filled the same is placed in one of the forms 9 and is moved past the sealing means, which closes and seals the ends of the carton and eventually discharges the same out gate 17 on a carrier 18. The form 9 comprises a housing 19 constructed similar to housing 10, but with the entire top removed. The housing 19 is considerably shorter than the housing of form 8 so that a filled carton placed therein will project a short distance above the housing. A plurality of turned over portions 20 are provided in housing 19 on which the filled carton rests so that the upper end of the carton will be substantially flush with the upper end of the empty cartons placed on the forms 8. If desired the turned-over portion 20 may be eliminated and a shelf of any desired kind substituted. The housing 19 is provided with hinge members 21 and 22 similar to the hinge members 12 and 13 of form 8 for holding the form 9 flexibly to belt 6. There is no aperture formed in belt 6 below housing 19, as air is not supplied thereto, but the filled carton is permitted to freely slide by gravity out of the housing 19 against the gate or door 17. The gate or door 17 is normally held by a spring 23 in an elevated position for forming a continuation of the guiding member 24 so as to properly guide the empty cartons as the same pass around wheel 2. It will, of course, be evident that the empty cartons are sealed only at one end, and after passing the sealing means are caused to travel around pulley 2 and to a position directly over the end of tube 14 in order to be removed automatically by the air blast from the tube. Tube 14 is connected with a suitable fan 25 which is operated by any desired means for driving the fan at a sufficient speed for providing an ample air blast for lifting and moving off the forms 8 the empty cartons. In order to prevent the upper part of belt 6 from sagging and to avoid friction a plurality of rollers 26 are provided, and in order to prevent the lower part of belt 6 from bowing upward and to avoid friction a plurality of retaining rollers 27 are provided. Ordinarily the lower part of belt 6 would not bow upward, but the forms 8 and 9 are made of such a length that the same will cause the ends of the cartons placed thereon or therein to press against the upper part of belt 7 which is prevented from sagging down by a plurality of rollers 28. The upper part of belt 7 is moved in the same direction and at the same speed as the lower part of belt 6 in order to permit the proper setting of the glue or other adhesive used in sealing the ends of the cartons. Pulley 3 is mount-

ed upon a shaft 29 which carries a gear wheel 30, while pulley 5 is mounted upon shaft 31 which shaft carries a gear wheel 32. Gear wheels 30 and 32 are of the same size and intermesh so that both of the belts 6 and 7 will run at the same speed, and the upper part of belt 7 and the lower part of belt 6 will move in the same direction. The shaft 29 carries a power wheel 33 and an idler 34, power wheel 33 receiving power from a belt driven from any desired source.

At the end of framework 1 opposite the guiding chute 15 is arranged a folding and sealing mechanism which folds two of the flaps of a carton and spreads the remaining two, after which glue or other adhesive material is placed upon the spread flaps and then the spread flaps are folded and pressed together. This mechanism comprises a central guiding member 35 and side guiding members 36 and 37 which radiate from a point 38 and are used for spreading the flaps 39 and 40, flaps 41 and 42 having been previously folded down by a folding member 43 known as a tucker. The guiding members 35, 36 and 37 are bent upon the arc of a circle with the center of shaft 29 as the center of the arc, so that the guiding member 35 may hold the flaps 41 and 42 in their folded position as the carton passes around pulley 3. By causing the guiding members 36 and 37 to radiate from point 38 the flaps 39 and 40 are spread until they extend laterally from the carton, and thus present their under surfaces to the glue rollers 44 and 45, which rollers are mounted so as to receive glue from glue pot 46 mounted upon one of the cross members of the framework 1, or held in place in any desired manner. The glue pot 46 is provided with a scraping member 47 for preventing an excessive amount of glue to adhere to the rollers 44 and 45. The central guiding member 35 is bent at point 38 in an upward direction for forming a support for the tucker 43, which is pivoted thereto. The tucker 43 is formed with an overhanging beak structure 48 and a cam structure or member 49. A stop 50 is also provided immediately above cam structure 49 for limiting the downward swinging movement of said cam structure as well as limiting the upward swinging movement of beak structure 48. In operation the beak structure 48 reaches over the spans the flaps 41 and 42 and as the carton moves toward guiding member 35 the flap 42 engages the upper part of cam member 49 and is lowered thereby. Cam member 49 is also raised which lowers the beak structure 48, and as beak structure 48 is lowered the same depresses somewhat flap 41 so that when flap 41 engages cam structure 49 the same is in an almost completely folded position. The cam structure 49 completes the folding of the flaps, and as the carton passes

the tucker 43 the flaps 41 and 42 engage guiding member 35 which holds the same in their folded position until the side flaps 39 and 40 are folded over against the same. Connected with the turned up portion of guiding member 35 is a spreading device 51 made from strong wire or other suitable material and held rigidly in place so as to pass between flaps 39 and 40 for causing said flaps to engage the sides of guiding member 35 before the same engage the guiding members 36 and 37, in order that guiding members 36 and 37 may spread the flaps for permitting the under surface thereof to engage the rollers 44 and 45. The spreading device 51 is formed preferably substantially spear shaped for more easily entering between the flaps 39 and 40, and is arranged to spread flaps 39 and 40 at the same time that tucker 43 folds flaps 41 and 42. The guiding members 36 and 37 extend down to rollers 44 and 45 but not beyond the same, so that the flaps 39 and 40 pass from the guides 36 and 37 onto the glue rollers, and from thence pass between points 52 and 53 to a cam structure 54 which folds flap 39 against flaps 41 and 42, and then folds flap 40 against flap 39. The cam structure 54 is formed with a cam face 55 which engages flap 39 and folds the same first while cam face 56 engages flap 40 and folds the same after flap 39 has been folded, the end of flap 40 passing through opening 57 constructed beneath cam face 55. The cam structure 54 is formed with an extension 58 which guides the carton onto belt 7 so that the gummed flaps will not have a chance to open. The cam structure 54 is formed arc shaped and acts as a continuation of the guiding member 35 and extends from rollers 44 and 45 to belt 7.

It will be seen from the drawing that the cam structure 54 comprises an arc shaped strip of sheet material provided with a substantially wedge shaped opening having an apex off center, and an arc shaped slot merging into the apex of said wedge shaped opening for causing one of the flaps of a carton to be folded before the other. This cam also might be said to be formed with a V-shaped notch merging into an arc shaped way, the formation of these notches and ways guiding the gummed flaps so that one will be folded on top of, or rather over, the other, before they engage the belt 7.

By the arrangement of the gear wheels 30 and 32 the belts run synchronously, and power is conveyed from sprocket wheel 59 secured to shaft 31 on which gear wheel 32 is mounted to gear wheel 60 which is rigidly secured to shaft 61. On shaft 61 are arranged the glue or gumming rollers 44 and 45. By this arrangement whenever the belts are operated the gumming rollers are also

operated for properly applying adhesive to the cartons, either while the same are in a filled condition or empty condition.

What I claim is:

1. In a carton sealing machine, a traveling member, means for supporting cartons on said traveling member, a pivotally mounted tucker for folding some of the flaps of said cartons, said tucker comprising an arc shaped portion and a cam portion, and a plurality of means for applying paste to the flaps not folded by said tucker and folding said last mentioned flaps.
2. In a carton sealing machine, a movable member, means secured to the movable member for receiving and moving filled and empty cartons, means for folding some of the flaps of said cartons, means for spreading the remaining flaps of said cartons, means for applying adhesive to said spread flaps, a cam structure for folding said spread flaps, a traveling belt structure co-acting with said movable means for holding and pressing said folded flaps until the adhesive thereon has set, and a yielding gate arranged to guide empty cartons in one path and guide filled cartons in another path after the cartons have been sealed.
3. In a carton sealing machine, a traveling member, means for supporting cartons having flaps on said traveling member, a tucker for folding some of said flaps on said cartons, said tucker comprising an arc shaped portion and a cam portion, means for applying paste to the flaps not folded by said tucker, and means for folding said last mentioned flaps, said means comprising an arc shaped member formed with a substantially V shaped notch merging into an arc shaped way.
4. In a carton sealing machine, a movable member, means for receiving a carton connected with said movable member, means for folding some of the flaps of said carton, a plurality of means for spreading the other flaps of said carton, means for applying adhesive to said spread flaps, and a folding member for folding said spread flaps, said folding member comprising an arc shaped strip of sheet material provided with a substantially wedge shaped opening having an apex off center and an arc shaped slot merging into the apex of said wedge shaped opening, whereby the edges of said opening are of different shapes for causing one of the flaps of said carton to be folded before the other.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY HAGER.

Witnesses:

JAY D. MILLER,
ALBERT G. HUBBARD.