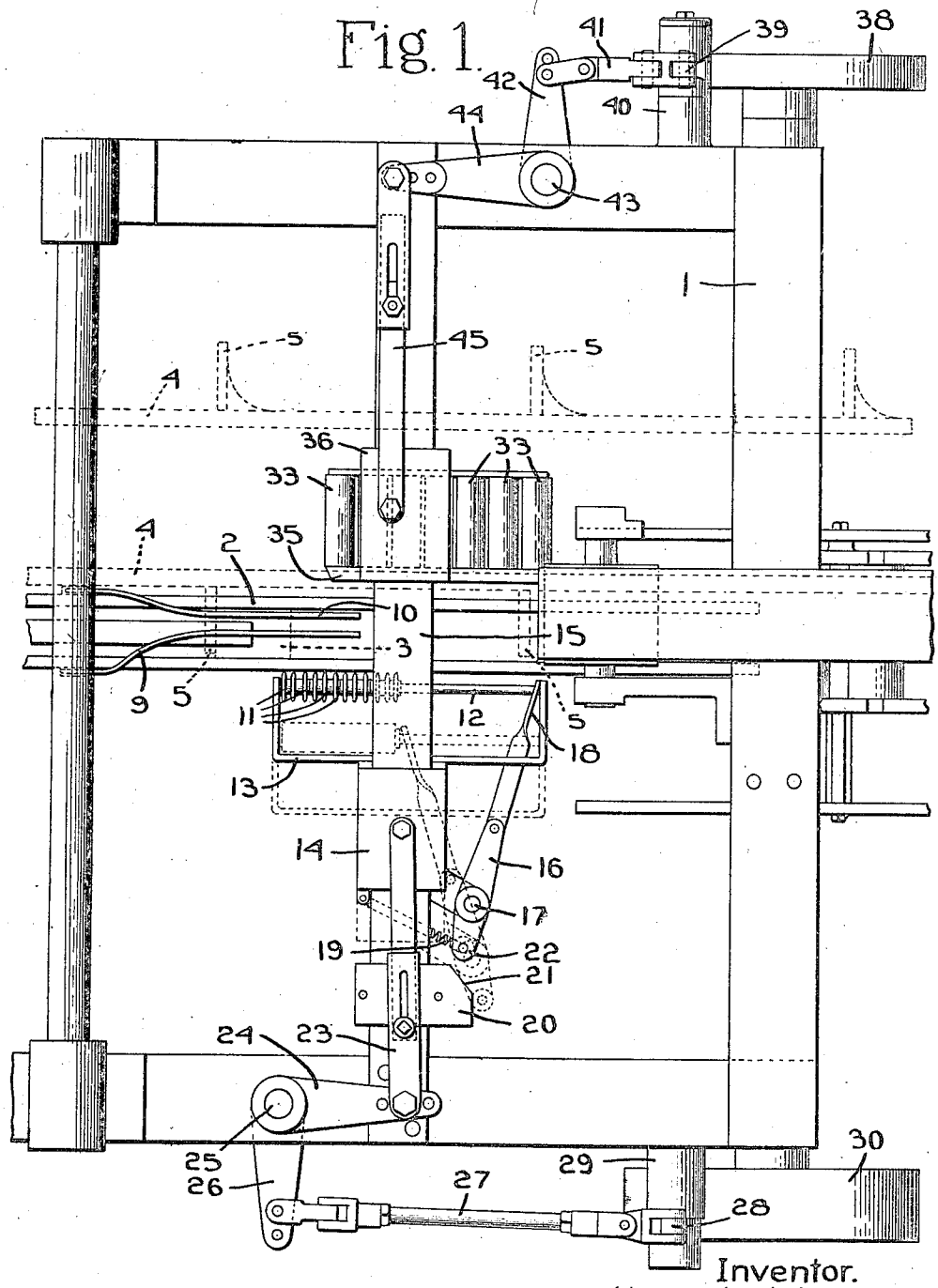
Nov. 13, 1923. 1,473,992

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PACKAGE SEALING MACHINE

Filed Nov. 28, 1922. 4 Sheets-Sheet 1

Fig. 1.



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PACKAGE SEALING MACHINE

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Fig. 2.

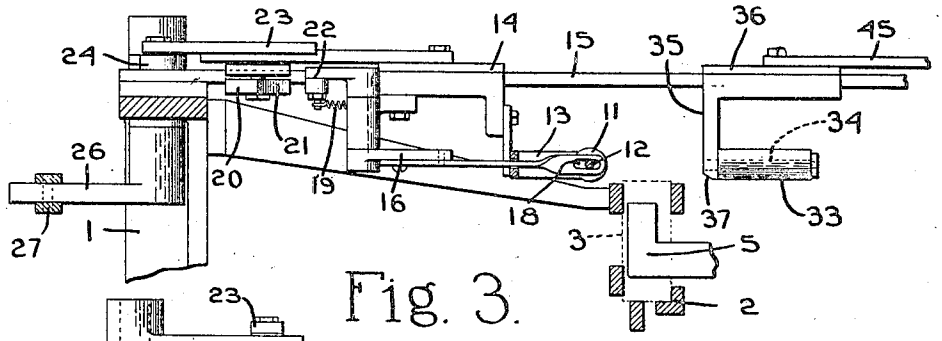
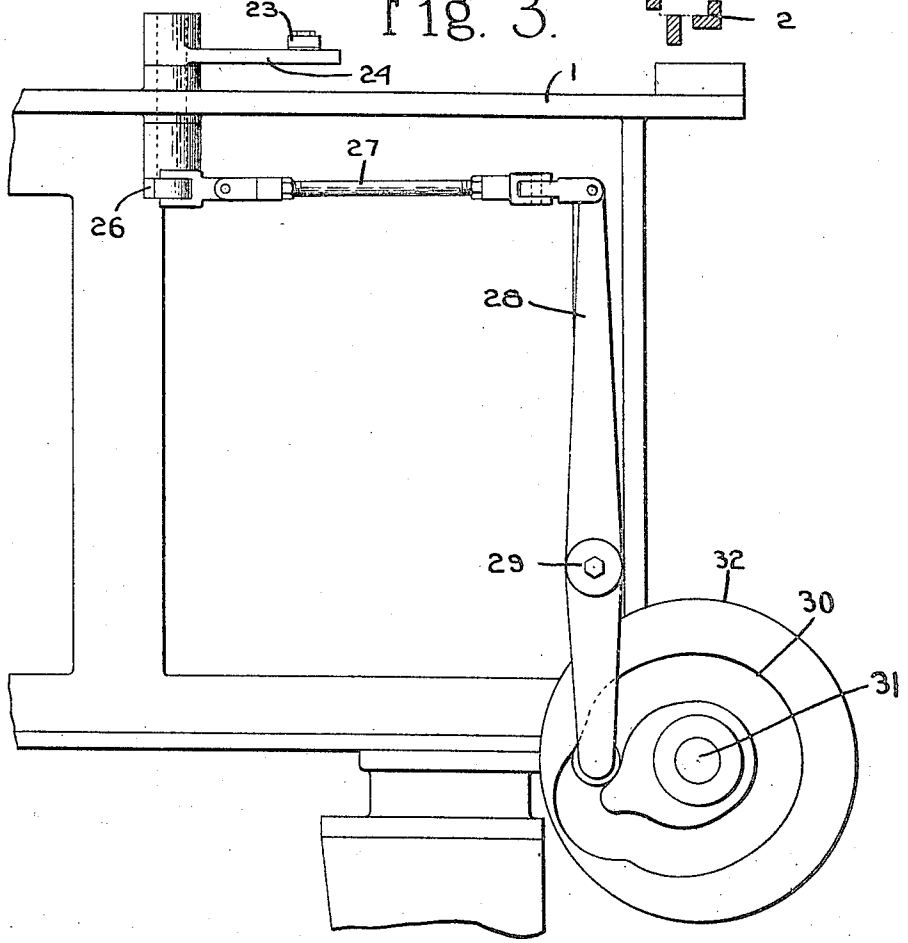


Fig. 3.



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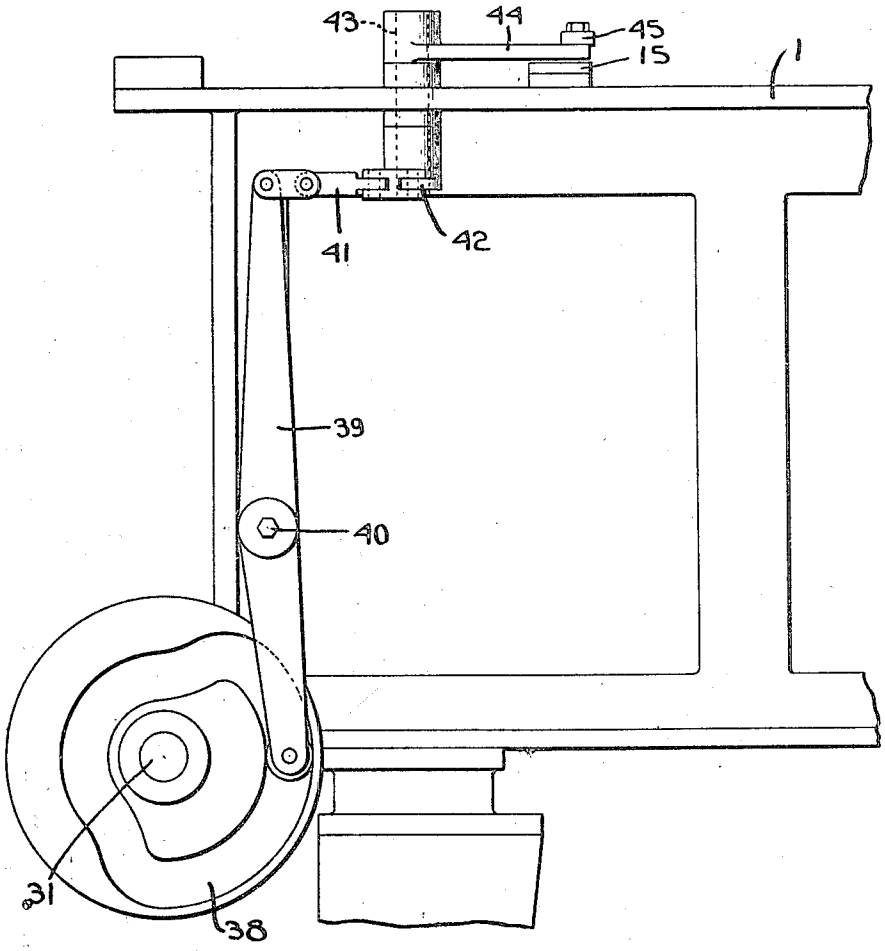
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Fig. 4



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PACKAGE SEALING MACHINE

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Fig. 5.

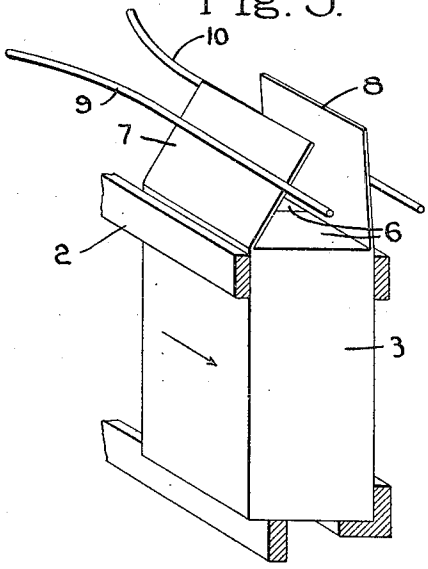


Fig. 6.

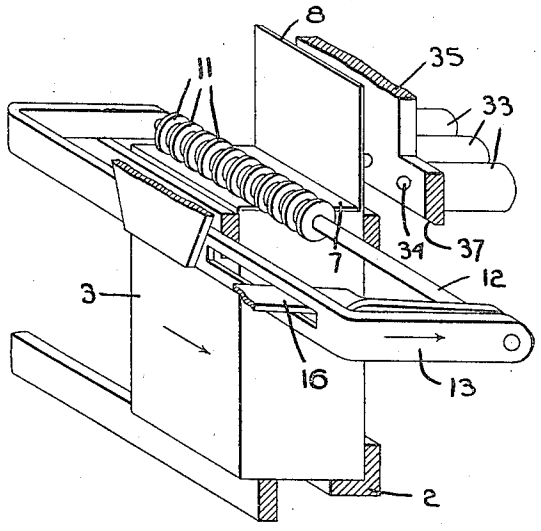
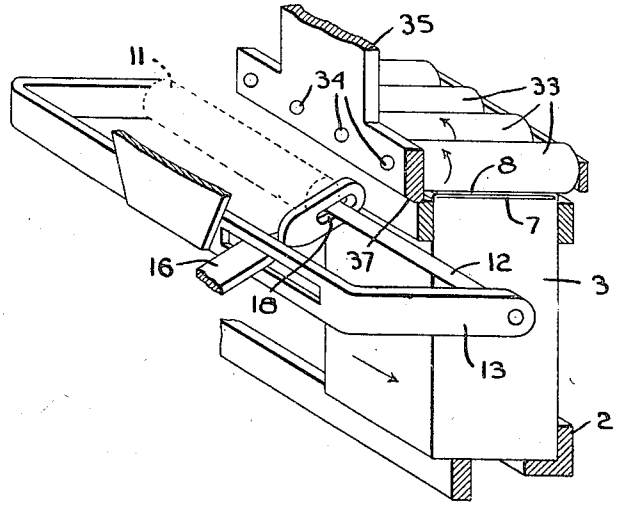


Fig. 7.



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Patented Nov. 13, 1923. 1,473,992

UNITED STATES PATENT OFFICE.

HARRY L. JOHNSON, OF JAMAICA PLAIN, MASSACHUSETTS, ASSIGNOR TO PERCY E. GINN, OF JAMAICA PLAIN, MASSACHUSETTS.

PACKAGE-SEALING MACHINE.

Application filed November 28, 1922. Serial No. 603,792.

To all whom it may concern:

Be it known that I, HARRY L. JOHNSON, a citizen of the United States, and resident of Jamaica Plain, county of Suffolk, State of Massachusetts, have invented an Improvement in Package-Sealing Machines, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to machines for sealing cartons and other packages by folding the glued flaps at the end of the carton and pressing the folded flaps firmly in their folded position.

One of the objects of the invention is to provide a novel flap-folding mechanism by which the side flaps are folded during the feeding movement of the carton and in such a way that the pressure of the flap-folding devices against the flaps will not distort or twist them out of their proper position.

Carton-sealing machines of the type to which this invention relates are usually provided with means for feeding the carton, means to fold the end flaps of the carton, if the carton is one provided with end flaps, and means to apply glue or other adhesive to the side flaps, and means for folding the side flaps successively and pressing the folded flaps firmly against each other thereby sealing the package.

Where the folding and pressing of the side flaps is accomplished during the travel of the package it is desirable that this folding and pressing should be done in such a way as not to twist or distort the flaps and as stated above one object of my present invention is to provide a novel means by which this result may be secured.

My improved device comprises a flap-folding device adapted to fold one side flap and which is rotatable about an axis parallel to the direction of travel of the package and which is adapted to be moved transversely across the package and which is also free to move in the direction of travel of the package so that while it is rolling across the flap to fold the latter it is also free to travel with the package.

My improvement further comprises a flap-folding device for folding the other side flap and which comprises a plurality of rolls each freely rotatable about an axis extending transversely to the direction of movement of the carton, and means to move said rolls bodily in the direction of their axes.

In order to give an understanding of the invention I have illustrated in the drawings a selected embodiment thereof which will now be described after which the novel features will be pointed out in the appended claims.

Fig. 1 is a plan view of a portion of a package-sealing machine having my improvements applied thereto;

Fig. 2 is a fragmentary end view of the package folding means;

Fig. 3 is a fragmentary side view of the frame showing the means for operating one of the folding devices;

Fig. 4 is a similar view showing the means for operating the other folding device;

Figs. 5, 6 and 7 are views illustrating the manner in which the folding devices act to fold successively the side flaps of the carton.

Inasmuch as the present invention relates to the folding of the side flaps I have not thought it necessary to show a complete package-sealing machine but have contented myself with showing simply that portion of the machine to which the side folders are attached. The complete machine may have a construction somewhat similar to that illustrated in my Patent No. 1,352,899, September 14th, 1920, and it comprises a conveyer for feeding the cartons, mechanism for folding the end flaps of the carton, means for applying glue to the side flaps and means for folding the side flaps successively.

These devices are supported on a suitable frame 1, a portion of which is shown. This frame is provided with a trackway 2 along which the packages or cartons 3 to be sealed are fed by a suitable carton-feeding mechanism, herein shown as an endless chain 4 having pushers 5 by which the cartons are carried along the trackway 2.

The carton 3 herein shown is made with end flaps 6 and with two side flaps 7 and 8 and in sealing the carton the end flaps 6 are first folded over as shown in Fig. 5, then the side flap 7 is folded over onto the folded end flaps and subsequently the side flap 8 is folded over onto the folded side flap 7, this being a common method of sealing a package.

The means for folding the end flaps 6 and

the means for applying glue or adhesive to the side flaps 7 and 8 are not herein illustrated as they form no part of the present invention and the mechanism for accomplishing this may have any suitable or usual construction. The present invention relates to the means which acts on the flaps 7 and 8 after they have been glued to fold them successively.

After the carton has left the gluing mechanism and is being carried along the trackway 2 the side flap 7 is engaged by a folding wire 9 which acts thereagainst to give said flap its initial folding movement as shown in Fig. 5 and at the same time the flap 8 is engaged by a positioning wire 10 which holds it in the position shown in Fig. 5.

My improved folding devices comprise one element adapted to act on the flap 7 and fold the latter and another element arranged to act on the flap 8 thereby to fold it. The element herein shown for folding the flap 7 comprises a rotatable device having an axis of rotation parallel to the direction of travel of the carton and adapted to be rolled against and across the flap 7 thereby folding it by this rolling operation. This rotatable device is also free for movement in the direction of travel of the package so that while it is rolling across the flap 7 to fold it it may be carried along with the package.

Said device is herein shown as in the form of a plurality of disks 11 which are independent from each other and which are loosely mounted on a supporting rod 12 that extends parallel to the direction of movement of the package. Said rod 12 is herein shown as carried by a yoke or support 13 which is secured to a slide 14 that is slidably mounted on a cross bar 15 of the frame.

The movement of the slide 14 and yoke 13 is in a direction transverse to the feeding movement of the package. The rod 12 on which the disks are mounted is long enough so that said disks can have considerable movement longitudinally of the rod. The disks are freely supported on the rod and can thus rotate freely thereabout and are also free to move longitudinally of the rod.

Means are provided for giving the slide 14 and yoke 13 a vertical movement in timed relation with the movement of the carton-feeding means so that whenever the carton comes opposite the rolls 11 the yoke 13 will be given a quick transverse movement to cause the rolls to engage the flap 7 as shown in Fig. 6 and also roll across the folded flap thereby compressing the flap in its folded position. This rolling movement of the disks 11 across the flap occurs while the package is moving forwardly and as said disks are free to slide on the rod 12 they may follow the carton in its movement by sliding along the rod 12 thereby preventing any distortion of the flap 7 while it is folded.

After the flap 7 has thus been folded the yoke 13 is retracted and at this time some or all of the disks 11 may have been shifted longitudinally of the rod 12 and occupy a position in which they are left by the package.

I have herein shown means for restoring said disks 11 to the left hand end of the rod ready to engage the next package and this restoration is accomplished during the retracting movement of the yoke. For this purpose I have provided a rock shaft 17 having fast thereon an arm 16 provided with a slot 18 which embraces the rod 12. This rock shaft 17 has another arm 22 fast thereon which is acted on by a spring 19 which normally holds the arm 16 in the position shown in Fig. 1. 20 indicates a fixed block having a cam surface 21 which is situated to be engaged by the arm 22 when the slide 14 is fully retracted. The engagement of the arm 22 with the cam surface 21 turns the rock shaft and swings said arm 16 into the dotted line position Fig. 1 and the full line position Fig. 7 thereby restoring the disks 11 to their initial position.

The slide 14 may be given its reciprocating movement transversely of the cross bar 15 in any suitable way without departing from the invention. I have herein illustrated said slide as connected by a link 23 with an arm 24 fast on the upper end of a vertical rock shaft 25 which is journalled in the frame and which also has fast thereon another arm 26 connected by a link 27 to the upper end of a vertical lever 28 that is pivoted to the frame at 29. The lower end of this lever has a roll operating in a cam groove 30 in a cam 32 fast on a cam shaft 31, said cam being so designed as to give the slide its reciprocating movement at the proper time.

The means herein shown for acting on and folding the side flap 8 comprises a flap-folding device adapted to move transversely across the carton and having a flap-engaging surface movable in a direction of movement of the cartons. This flap-folding device is herein shown as a plurality of rolls 33, each freely rotatable about an axis extending in a direction transverse to the direction of movement of the carton, and means to move said rolls in the direction of their axes. These rolls are shown as carried on spindles 34 which are secured in a depending portion 35 of a slide 36 that is also slidably mounted on the cross bar 15. The slide 36 is moved transversely of the direction of movement of the package in timed relation with the carton-feeding mechanism so that just after the flap 7 has been folded and while the disks 11 are being retracted the rolls 33 will be moved against the flap 8 and across the

top of the package thereby folding said flap and pressing the flap firmly against the folded flap 7. As the rolls 33 are free to rotate about their axes the movement of the carton may cause them to turn so that the flap-engaging surface of the rollers moves with the cartons thus preventing the flap 8 from becoming twisted or distorted.

The portion 35 carrying the rolls is shown as having a bevelled edge 37 which acts on the flap 8 and guides it underneath the rollers.

The slide 36 may be operated in any suitable way and I have herein shown for this purpose a cam 38 on the cam shaft 31, which cam actuates a lever 39 pivoted to the frame at 40. This lever is connected by a link 41 to an arm 42 fast on a rock shaft 43 which is journalled in the frame and said shaft has another arm 44 thereon which is connected to the slide 36 by a link 45.

I claim:

1. In a carton-sealing machine, the combination with means for conveying cartons to be sealed, of a flap-folding device freely rotatable about an axis parallel to the direction of movement of the carton and also freely movable in an axial direction, and means to move said device bodily in a direction transverse to the direction of movement of the cartons and in timed relation therewith to cause said device to engage and fold a flap of the carton.

2. In a carton-sealing machine, the combination with means for conveying cartons to be sealed, of a flap-folding device comprising a plurality of disks mounted to rotate about an axis parallel to the direction of movement of the carton, means to move said device bodily in a direction transverse to the direction of movement of the cartons thereby to cause said disks to engage and fold a flap of the carton, said disks being freely movable in an axial direction.

3. In a carton-sealing machine, the combination with means for conveying cartons to be sealed, of a plurality of disks mounted to rotate about an axis extending in the general direction in which the cartons are conveyed, and means to move said disks bodily transversely to the direction of movement of said cartons thereby to cause them to engage and fold a flap of the carton.

4. In a carton-sealing machine, the combination with means for conveying cartons to be sealed, of a slide movable transversely to the direction of movement of the cartons, a rod supported by said slide, a plurality of flap-folding disks loosely mounted on said rod, and means to operate the slide to cause the rolls to engage and fold a side flap of the carton.

5. In a carton-sealing machine, the combination with means for conveying cartons to be sealed, of a slide movable transversely to the direction of movement of the carton, a rod carried by said slide and extending parallel to the direction of said movement, a plurality of flap-folding disks on said rod freely rotatable thereabout and also freely movable longitudinally thereon, and means to operate the slide thereby to cause the disks to engage and fold a side flap of the carton.

6. In a carton-sealing machine, the combination with means for conveying a carton to be sealed provided with two side flaps, of means to fold one side flap, a plurality of rolls each freely rotatable about an axis extending transversely to the direction of movement of the cartons, and means to move said rollers across the carton in a direction parallel to their axes.

7. In a carton-sealing machine, the combination with carton-feeding means, of a slide movable transversely to the direction of movement of the cartons, a plurality of rollers carried by said slide and each rotatable about an axis extending parallel to the direction of movement of the slide, and means to operate the slide.

8. In a carton-sealing machine, the combination with carton-feeding means, of two slides each movable transversely to the direction of movement of the carton, a plurality of disks carried by one slide, said disks being freely rotatable about an axis parallel to the direction of movement of the cartons, a plurality of rolls carried by the other slide, each freely rotatable about an axis extending transversely to the direction of movement of the carton, and means to move the slides alternately across the path of movement of the carton thereby to fold the two side flaps of a carton successively.

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

HARRY L. JOHNSON.