Nov. 12, 1929. H. J. HAGIST 1,735,681

CARTON SEALER

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FIG. 1

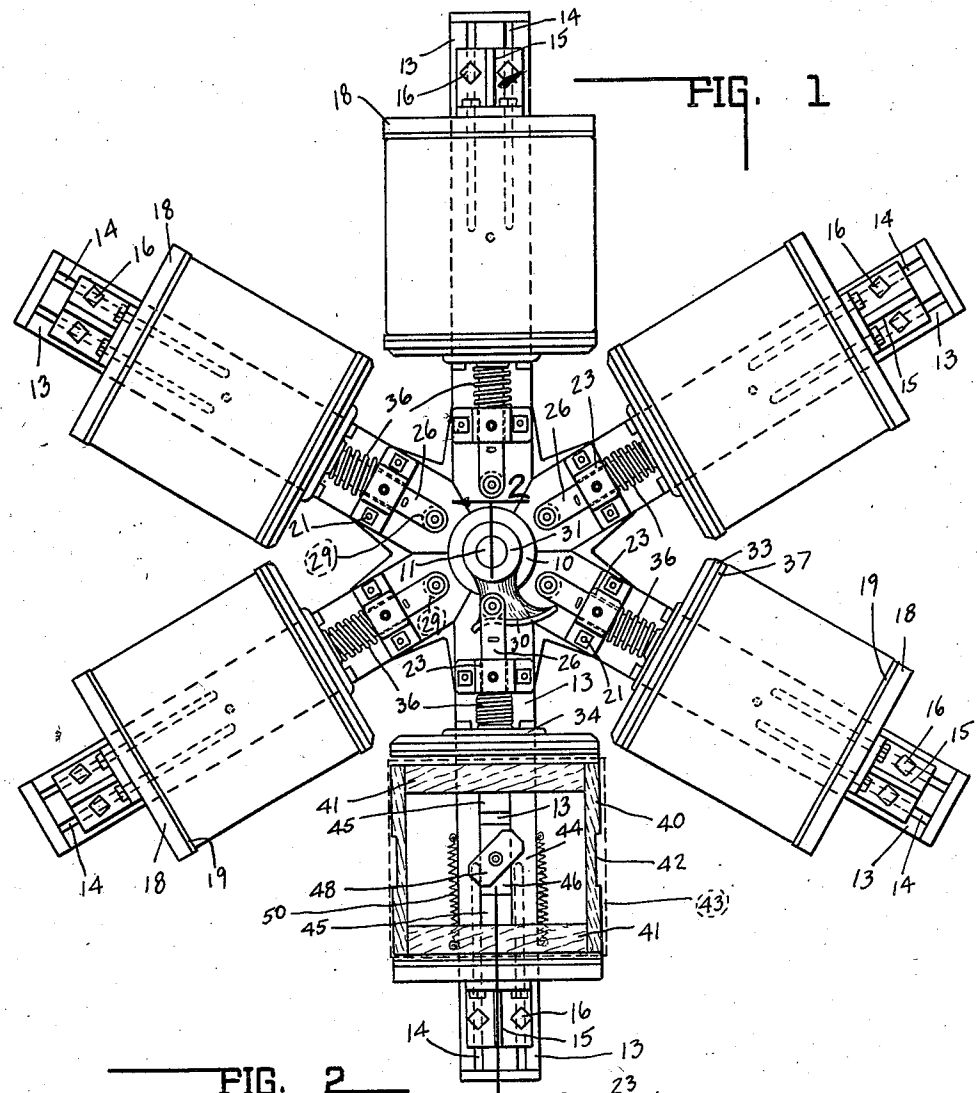
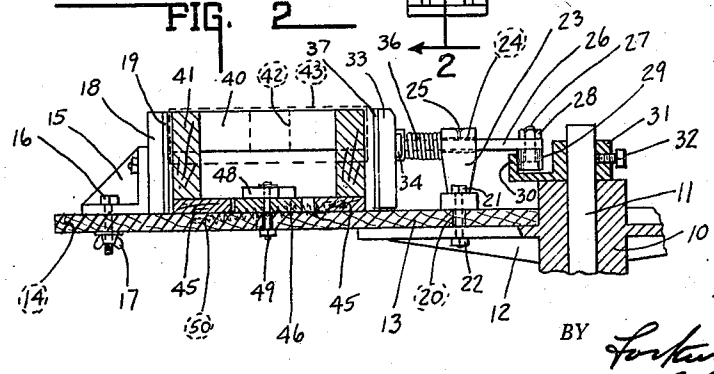


FIG. 2



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FIG. 3

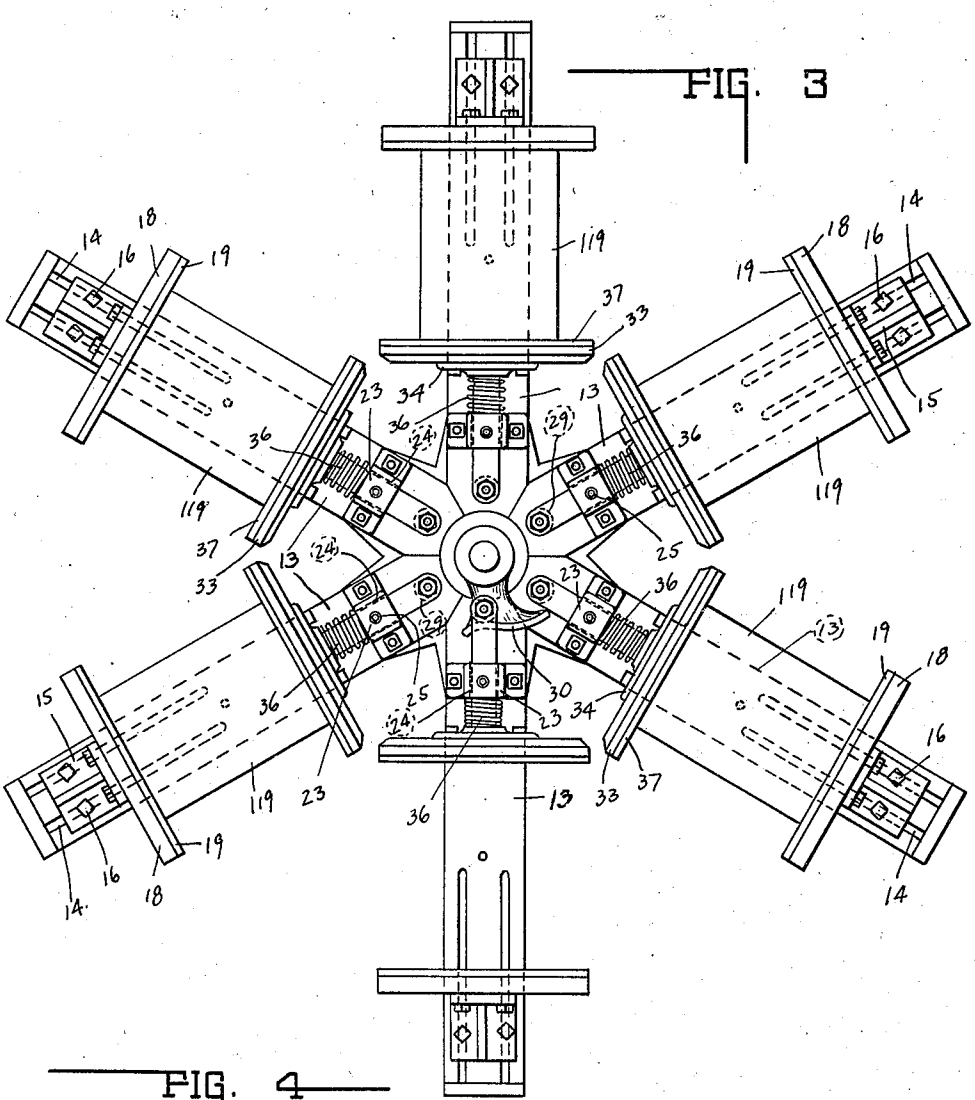
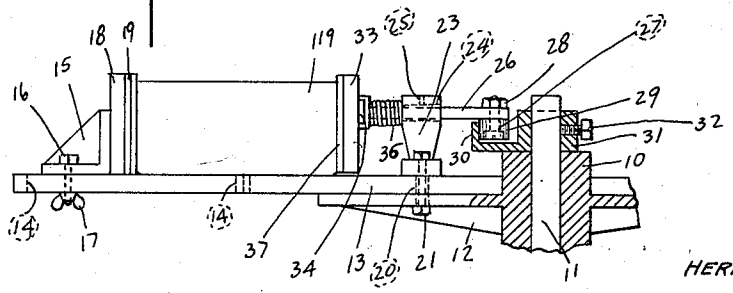


FIG. 4



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UNITED STATES PATENT OFFICE

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CARTON SEALER

Application filed June 25, 1928. Serial No. 288,157.

This invention relates to a box or carton sealing machine of the general character disclosed in Patents Nos. 1,424,018, July 25, 1922, and 1,555,117, Sept. 29, 1925, to George K. Henderson.

The chief object of this invention is to provide a device which is adapted to automatically maintain a predetermined pressure for sealing purposes until the sealed article is to be removed from the machine and an unsealed article substituted therefor for subsequent sealing.

The present invention is directed to a double-end, one or two-piece box sealing machine and the chief feature of the invention consists in the specific arrangement of the several parts for cooperation to apply uniform pressure at both and opposite ends of a one-piece carton or one of the pieces of the two-piece carton to be sealed.

The full nature of the invention will be more clearly understood from the accompanying drawings and the following descriptions and claims:

In the drawings Fig. 1 is a top plan view of a multiple unit machine with one-half of two-piece cartons mounted in each sealing unit except that at the loading station, which unit includes a spacing form. Fig. 2 is a vertical sectional view taken on the line 2—2 of Fig. 1, and in the direction of the arrows, with one-half of the two-piece box shown dotted. Fig. 3 is a view similar to Fig. 1 of the same or a similar machine adapted for double-end sealing of one-piece cartons, that at the loading station being omitted. Fig. 4 is a side elevation of a unit with carton mounted thereon.

In the drawings 10 indicates a suitable standard having a spindle 11 mounted therein and the standard 10 includes a plurality of projecting arms 12, each of which is adapted to support a radially-projecting base 13. Each base 13 is provided with a plurality of elongated slots 14 near its outer end and an angle member 15 having a portion at right angles to the plane of the base is adjustably but rigidly secured to said base thru the bolts 16 and the wing nuts 17, said bolts extending thru said slots. The transverse portion of the angle member 15 supports a transverse clamping member 18 provided with a cushion surface 19 as shown.

The base member 13 is suitably apertured as at 20 and bolts 21 pass therethru and thru nuts 22 and secure a bracket guide 23 to the base. Said guide has a squared opening 24 extending therethru and parallel to the base. An oil hole 25 may be provided if desired. An elongated square bar 26 is slidably supported in the opening 24 and each bar at its inner end supports a bolt 27 by a nut 28 and said bolt constitutes a swivel or pivotal support for a cam roller 29. Cam roller 29 is adapted to be engaged by the cam member 30 carried by collar 31 rigidly secured to the spindle 11 as at 32.

A clamping member 33, similar to member 18, is supported by the opposite end of the bar 26 as at 34. Interposed between the member 33 and the guiding support 23 is a coil spring 36 which, in the absence of the cam 30, is adapted to cause relative movement of the two clamping members 18 and 33 toward each other, separating relative movement between said clamping members being obtained by the roller 29 engaging the cam 30, whereupon spring 36 is compressed and clamping plate 33 retracted toward the center of the machine. Clamping member 33 is provided with a cushion face 37 similar to the cushion surface 19.

From the foregoing, it will be noted that the device is adapted to simultaneously seal opposite ends of a carton, the opposite ends of which are to be sealed and that the machine is so arranged that the sequence is as follows:

At the loading station spring 36 is compressed and the clamping member 33 retracted about one and one-half inches or more from its clamping position, this being the difference between the high and low points on the cam 30 and then, after the carton has been placed between the clamping members 33 and 18, while clamping plate 33 is held retracted, the base is revolved, relieving the roller 29 from the cam 30 and releasing the plate 33 to spring 36, whereupon both ends of the carton are simultaneously sealed with

equal pressure exerted by spring 36 and held thereby until the base 13 again approaches the loading station, whereupon the cam 30 engages the roller 29 and compresses spring 36. The carton can then be removed in its completely sealed state and a new carton substituted therefor and for subsequent sealing.

The device is adjustable to carton size through the adjustable mounting of angle member 15. The clamping pressure available is only that inherent in spring 36 and the effectiveness thereof is inversely as the elongation thereof. The greater the elongation of spring 36 the smaller will be the effective clamping force and the lesser the elongation permitted the greater will be the clamping force for sealing. The elongation desired and hence the sealing pressure is determined by adjusting the position of clamping member 18 with regard to the length of carton to be sealed, a smaller carton requiring the positioning of clamping member 18 closer to the central axis of the machine to obtain the same spring elongation and therefore the same clamping pressure.

To insure the universal character of the machine, means are provided whereby the machine is adapted to simultaneously seal the opposite ends of one piece of a two-piece box. Such a piece of a two-piece box is indicated by the dotted lines in Fig. 2. It will be understood of course that each alternate clamping unit, such as previously described, can accommodate or seal a cover, and each intermediate unit can seal a bottom of a two-piece box, and, after being sealed, the two pieces can be telescoped to form a completed box. This is permissible by the adjustment possible thru the arrangement of several parts previously described. Each half of the two-piece box is formed and sealed upon an individual form. This form includes a rectangular frame having sides 40 and ends 41, the latter recessed as at 42 for finger engagement to remove the half of the box indicated at 43 from the form.

The two end members 41 are herein shown projecting below the level of the side members 40, see Fig. 2, connecting the end members 41. Beneath the plane of said side members are two parallel members 44 in spaced relation, and also supported by the same are the stop members 45. Intermediate said parallel members 44, stop members 45 are adapted to be engaged by an elongated block or guide member 46 carried by arm 13 and thus the form is slidably mounted upon the arm, that is, for slight relative sliding movement. Tiltable lock 48 is carried by the bolt 49 that secures the guide member 46 to the base 13 and this tiltable lock, when registering with the guide member, permits the later removal from the base or later application to the base, but, when angularly positioned relative thereto, locks the form to the base.

A pair of springs 50 provides an additional yielding connection between the form and the base 13. As shown by the dotted lines, in Figs. 1 and 2 and indicated by the numeral 43, the half-carton edges are positioned vertically relative to the base upon and enveloping the form. After the sides are vertically positioned relative thereto, the machine is rotated and the form with the carton blank is moved into engagement with the pad 19 and when the roller 29 leaves the cam 30 in the rotation of the base 13, pad 37 engages the form and carton positioned thereon and maintains the sides in clamped relation for sealing the same. Each form may be of the desired size to accommodate the box to be sealed.

From the foregoing, it will be noted that the present invention is adapted to maintain a predetermined pressure upon opposite ends of a carton construction for sealing the same, and this predetermined pressure can be adjusted to different over-all lengths of cartons, and the device is arranged to accommodate any width of carton up to a predetermined width, and, more particularly, the device can seal single-unit, double-end cartons or half units of a two-piece double-end carton. Of course the device is also adapted to seal a single-end carton if such type of sealing is required.

In Figs. 3 and 4 the same machine is illustrated but the forms are removed and the machine is used for tubular-box, single-carton, double-end sealing.

The clamping plate at the loading station is shown fully retracted ready for the reception of a manually-folded tubular box for end clamping and sealing.

The invention claimed is:

1. A universal carton sealer of the character described, comprising a rotatable base construction, a stationary cam associated therewith, a plurality of pairs of opposed clamping members, each pair being arranged for relative movement toward and away from each other substantially radial to the axis of rotation of said base, the outer of each opposed pair of clamping members being substantially rigidly mounted, spring means associated with each of the other of said clamping members for normally forcing said members together, and a cam follower successively engaging the cam for separating said clamping members in opposition to said spring.

2. A device as defined by claim 1 characterized by an adjustable but rigid connection between said base and the outermost of each of said clamping members for adjusting the same whereby the necessary clamping pressure and the desired overall clamping length is simultaneously obtained.

3. A device as defined by claim 1, characterized by an elongated bar slidably and non-

rockably mounted, and means carried by the base supporting said bar and thru which the bar extends, said means constituting a spring seat for said spring.

4. A device as defined by claim 1, characterized by an elongated bar slidably and non-rockably mounted, and means carried by the base supporting said bar and thru which the bar extends, said means constituting a spring seat for said spring, said spring being coiled about said bar and said bar carrying at its inner end said cam follower.

5. A carton-sealing machine including a machine-supported form, a base portion, means slidably supporting said form upon said base, a pair of clamping members separated by said form and normally constrained toward each other, and cam means for removing such constraint for loading and unloading purposes.

6. A device as defined by claim 5, characterized by the addition of yielding means interposed between said base and said form for constraining the latter to predetermined position.

7. A device as defined by claim 5, characterized by the addition of means for detachably locking said form to said base.

8. A device as defined by claim 5, characterized by the addition of means for detachably locking said form to said base, and additional means interposed between said form and said base for normally constraining the form toward predetermined position adjacent one of the clamping members.

9. A device as defined by claim 5, characterized by one of said clamping members having an adjustable connection with said base for accommodating different length forms.

In witness whereof, I have hereunto affixed my signature.

HERMAN J. HAGIST.