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G. K. HENDERSON

SEALING MACHINE

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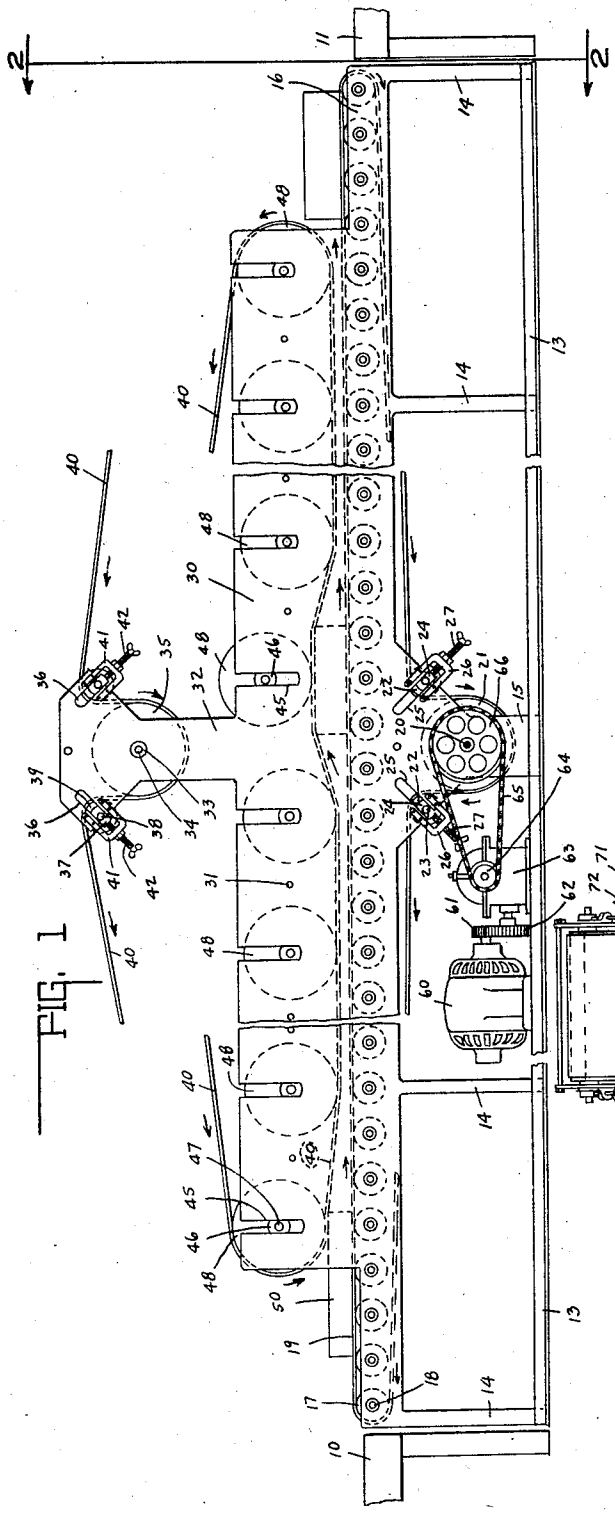

FIG. 1

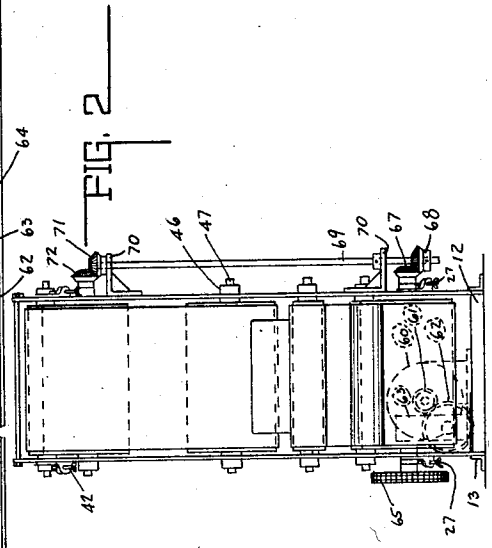

FIG. 2

INVENTOR.
GEORGE K. HENDERSON.

BY

ATTORNEYS.

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GEORGE K. HENDERSON, OF INDIANAPOLIS, INDIANA.

SEALING MACHINE.

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This invention relates to a sealing machine.

The chief object of the invention is to provide a machine which is adapted to seal a carton for mailing purposes and insure that the seal is tightly secured.

The chief feature of the invention consists in the passage of the carton between two compression members which exert just sufficient pressure to insure sealing and not enough pressure to collapse the carton to be sealed and which sealing machine maintains said pressure for a sufficient length of time to insure setting of the glue or adhesive and thus prevent subsequent detachment of the sealed parts by reason of defective sealing.

Another and incidental feature of the invention consists in the arrangement of the sealing machine so that it may constitute, where desired, a conveyor for directional discharge.

Still a further feature of the machine consists in its arrangement whereby the same is automatically adjustable to cartons of various dimensions, said dimensions varying in one, or two, or all three planes, said machine being adapted to simultaneously accommodate any variation of cartons at any one time as will more fully appear hereinafter.

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

In the drawings Fig. 1 is a side elevational view, with parts broken away to foreshorten the figure, illustrating the invention in detail. Fig. 2 is an end elevational view of the same taken in the plane of 2—2 of Fig. 1 and in the direction of the arrows.

In the drawings 10 indicates a supply platform, 11 a receiving platform. Interposed between said platform is a framework consisting of a plurality of transverse members 12 connecting angle irons 13 and uprights 14 all in spaced relation. The central upright 15 is a plate which includes suitable bearings hereinafter to be described. The side plates 16 are maintained in spaced relation by suitable means, and each of said side plates pivotally supports a plurality of supporting rollers 17 as at 18. These rollers are of uniform diameter and support the upper run 19 of the lower supporting belt.

Portion 15 connected to the side plate 16 includes a pivotal support in the form of a shaft 20 carrying a driving roller 21. Immediately adjacent the driving roller and at each side thereof, are the idler tension adjusting rolls 22. These rolls are carried by shafts 23 rotatably supported in the bearing blocks 24 which are slidably supported in the inclined slots 25 of the upright 15. A bracket 26, through the medium of an adjusting bolt 27, determines the position of the tension roll and adjusts the tension to be applied to the lower belt having the upper run 19. The endless belt has substantially semi-circular contact with the driving pulley or roller 21 and is maintained in such relation by means of the tension adjusting rollers positioned at each side of said driving roll.

Each of the side frame members 16 is extended upwardly as at 30 and the same are suitably maintained in spaced relation by the cross members 31. An upright portion 32 pivotally supports at 33 the shaft 34 carrying a driving roller 35 substantially identical to the driving roller 21. The upright 32 is provided with a pair of oppositely inclined slots 36 similar to the slots 25, and these slots slidably support the bearing blocks 37 each of which rotatably supports the shaft 38 of the idler and adjusting pulley 39 associated with the upper endless belt 40. The tension is adjusted through the medium of the bracket 41 and the adjusting bolt 42.

The side plates 30 are herein shown provided with a plurality of vertical slots 45 in each of which is slidably mounted a bearing block 46 pivotally supporting a shaft 47 upon which is mounted the roll 48. A plurality of these rollers 48 are illustrated and these rollers are in rolling engagement with the lower run of the belt 40. As the carton 50 is fed into the receiving end of the machine, it is carried into engagement with the lower run of the upper belt by the upper run of the lower belt. Immediately upon engagement the carton elevates the roller 48 and its sliding bearing and the carton passes between the adjacent rolls, that is the upper and lower rolls respectively covered by the upper and lower belts. The weight of the roller 48 is the sealing pressure exerted and these rollers may be suitably weighted if desired or necessary for the purpose of securing the effective seal. As

the carton passes through the machine it successively elevates the slidably mounted rolls and thus pressure is applied to the carton for sealing purposes and the length of the machine and duration of pressure application is so determined by the rate of travel of the belt that the carton is disengaged from the upper belt and carried by the upper run of the lower belt from the machine in a perfectly sealed condition.

As shown clearly in Fig. 1, the machine is automatically adjustable to various sizes of cartons and the machine is capable of simultaneously handling different size cartons. The cartons may vary in length, breadth and thickness and the limitations imposed by the machine with respect to the dimensions of the cartons to be handled are the width or spacing of the side plates 30, the minimum and maximum possible clearance between the rolls 17 and 48. Herein three cartons are illustrated which vary in width and in depth. It is to be understood that in place of the vertical slottings, a yielding roller construction can be employed, but the simplest form of the invention is one that is most fool proof and which requires the least adjustment and the fewest number of parts is the upper belt supporting mechanism shown herein as the preferred form of the invention in its restricted sense.

The means for driving the aforesaid endless belt consists of a motor 60 driving a pinion 61 meshing with a gear 62 that drives a worm and worm wheel gear reduction indicated generally by the numeral 63, which drives a sprocket pinion 64, in turn driving a sprocket chain 65 which drives the sprocket gear 66 mounted upon shaft 20 of the lower or driving roll 21. Also mounted upon the opposite end of this shaft 20 is a bevel gear 67 meshing with gear 68 mounted on shaft 69 rotatably supported in the brackets 70. Shaft 69 also carries a bevel gear 71 meshing with another bevel gear 72 carried by shaft 34 supporting roller 35. Thus rollers 21 and 35 are driven at the same angular rate and in the same direction and are herein shown of substantially the same size, so that the belts 19 and 40 will have substantially the same linear speed. Thus as the carton passes through the machine the two belts have relatively little linear movement with respect to each other, and therefore, no abrasive action.

The invention claimed is:

1. In a sealing machine, the combination of a pair of endless belts, a pair of idler rolls for each belt adjustably mounted for securing the desired tension therein, a driving roll interposed between each pair of idler rolls and engageable by the belt, and a common drive for said driving rolls.

2. A device of the character as defined by claim 1, characterized by the driving rolls being of predetermined size with respect to each other and the connection therebetween and the common drive being of such character that each belt has substantially the same linear belt speed.

3. In a sealing machine, the combination of an endless belt arranged in substantially triangular formation, the base thereof having engagement with the article to be sealed and the apex thereof including tension adjusting and driving means.

In witness whereof, I have hereunto affixed my signature.

GEORGE K. HENDERSON.