

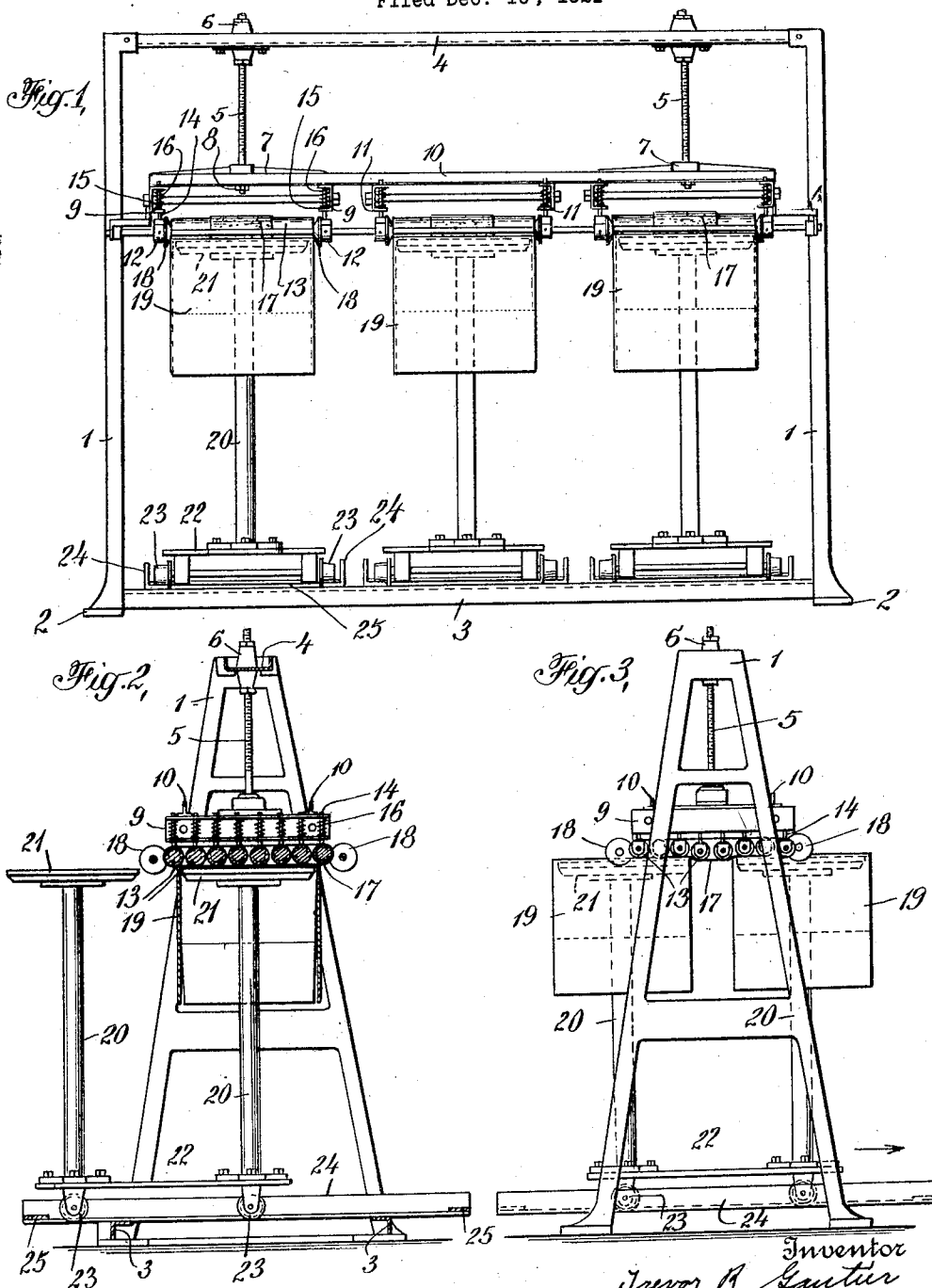
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FLAP SEALER FOR CARTONS

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# UNITED STATES PATENT OFFICE.

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FLAP SEALER FOR CARTONS.

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*To all whom it may concern:*

Be it known that I, TREVOR R. GAUTIER, a citizen of the United States, residing at Yonkers, in the county of Westchester, State of New York, have invented certain new and useful Improvements in Flap Sealers for Cartons; 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 a device for sealing the bottom flaps of unfilled cartons made of fiber board or the like.

It is usually desirable that one end of cartons used for containing goods for shipment be sealed at the time the carton is made, thus putting it in readiness to be filled. If sealed properly, fiber board cartons will withstand readily the handling received in shipment and may be used in the transportation of a wide variety of goods. If improperly sealed, however, the flaps are apt to work loose and spill the contents of the carton. For proper sealing it is necessary that pressure be applied to the flaps uniformly along their gummed edges. This is difficult to accomplish because of the tendency of the carton to yield under pressure and cause the edges and more rigid portions to be stressed unduly while the yielding portions are held together insufficiently to insure a good seal.

It is common to perform this sealing operation by placing the carton on a support, lowering a weight upon it or otherwise exerting a pressure and, after allowing the adhesive some time for drying, lifting the weight. The carton is then removed and the operation repeated on another. To produce satisfactory results by this method requires slow and laborious effort. The weight, or spring-loaded presser, which must be lifted when each carton is removed from the form requires considerable exertion to manipulate, and the number of operations which must be performed for each carton sealed are so many that the average operator can keep busy with a machine having but three sealing heads. That is, within the time required for the adhesive to dry the average operator can seal only two cartons.

The principal object of this invention is to provide an apparatus with which the production of a single operator is greatly increased, and with the apparatus disclosed

an average operator requires a machine of six sealing heads to keep fully occupied. This result is accomplished chiefly by a design of machine which requires less physical exertion on the part of the operator, also by reducing the number of operations necessary for sealing each carton.

A further object of this invention is to provide a machine which is especially adapted to properly seal flaps of unfilled containers, particularly at the corners and edges of the flaps where the liability to become loosened is greatest.

A further object of the invention is to provide a machine of this type which may be easily manufactured in light compact units, and which with little change in design may be provided with varying numbers of sealing heads, depending upon the class of work and type of operator to be suited.

My invention is illustrated in the accompanying drawings in which:

Figure 1 is a side elevation of a flap-sealing machine in accordance with my invention;

Fig. 2 is a transverse sectional view taken centrally through the apparatus of Fig. 1; and

Fig. 3 is a side elevation showing the operation of the machine.

Referring to the drawings, the frame of the machine as shown consists of two supporting members 1 at the ends of the machine having feet 2, which rest on a floor or may be fastened thereto if the machine is to be permanently installed. The ends are joined by two longitudinal beams 3 connecting the bottoms of the members 1 and a beam 4 bracing their tops.

The pressing apparatus is suspended from beam 4 by means of threaded rods 5 screwed at their upper ends into the collars 6 on beam 4. To the lower ends of the rods 6 the members 7, by means of nuts 8, are loosely attached to permit a slight play in any direction. Each of the supporting members 7 have bolted to their ends, channels 9, extending crosswise of the machine. The members 7 are slightly longer than the width of the cartons to be sealed and the channels are somewhat longer than the length of the cartons, as shown in the drawings.

The channels 9 carry two longitudinal angle irons 10 which in turn serve to support two channels 11 at the same height and in parallelism with the channels 9.

Series of bearings 12 in which the shafts of the rollers 13 revolve are supported by the channels 9 and 11. These bearings are provided with legs 14 which pass through the channel webs and held against downward pressure by collars 15 and restrained against upward movement by the springs 16 which are compressed between the upper web of the channel and the collar 15. Around each of these three sets of rollers is fitted an endless belt 17 of heavy webbing or like material which is narrower than the carton to be sealed. The belts are allowed a considerable amount of slack to permit of vertical movement of the rollers, and are of appreciable thickness to insure a good pressure being exerted on the flaps, which are somewhat yielding, without bringing the rollers in contact with the edges of the carton. The rollers 13 are placed with their peripheries close together and form a backing for the belt.

Rotary guides are designed to press against the edges of the carton, when it is being placed under the rollers, and guide it correctly into the pressing position. These guides consist of beveled rollers 18 attached to a shaft mounted for rotation in bearings bolted to the outer channels 9. The rollers are adjustably attached to the shaft to adapt the machine to different size cartons.

The cartons 19 are placed upon supports consisting of a stand 20 upon which is fastened a flat head 21 of approximately the size of the interior of the carton. The flat surface of thin head 21<sup>a</sup> supports the carton flaps when they are subjected to pressure. Corresponding to each of the three sets of pressing rollers there are two of the carton supports 21. These supports are mounted on a carriage 22 at sufficient distance apart to allow two cartons to be conveniently carried at one time. This carriage is provided with flanged wheels 23 that engage a track formed by a pair of angle irons 24 laid crosswise of the beams 3 and supported by them. The track length is approximately twice that of the carriage, being sufficient to allow each of the supports to be positioned directly under the pressing rollers. The spacers 25 serve as bumpers and prevent the carriage rolling off the end of the track.

In Fig. 2 is shown the manner in which the rollers grip the carton. They are at such height as to be raised slightly when a carton is pushed beneath them, thus compressing the springs 16 and producing a pressure on the flaps to be sealed. The rollers at the edges of the carton pull the pressing belt 17 down over the corners as shown, securing a uniform pressure all along the length of the flap.

Fig. 3 shows a sealed carton in the process of being removed and a freshly gummed one being inserted. Here again is shown the

action of the rollers in following the irregularities of the contacting surface.

In operation of the machine a pile of unsealed cartons is provided at each side of the machine to be within convenient reach. The operator draws one of the carriages to its end position, fits an unsealed carton over the head, gums the flaps, and pushes it under the rollers. He repeats the operation on the other two supports on that side of the machine, after which he goes to the other side and places a carton upon the support which occupies the opposite end of the first carriage used. Upon gumming this carton he pushes it under the pressing rollers and, as shown in Fig. 3, simultaneously moves the first carton out from under the rollers and in position to be removed on his next trip. Thus the relieving of pressure on a carton, removing it from under the rollers, and applying pressure to a fresh carton, is all done in a single easy movement. I have found by experience that a three track machine of the type illustrated allows each carton to remain under pressure sufficiently long to secure a good seal, and at the same time allow the operator to be busy all the time.

This machine reduces to a minimum the number of operations required, makes the operator's work light and rapid, facilitates a large output, and turns out a sealed carton in which the flaps are sealed to the very edges where the danger of tearing loose is greatest.

I claim:

1. In a machine for sealing the flaps of unfilled cartons, the combination of a pressing member and means for simultaneously relieving pressure on one carton and applying it to another, said means comprising individual carton supporting members adapted to be successively brought to rest under said presser element.

2. In a machine for sealing the flaps of unfilled cartons, the combination of a pressing member and means for simultaneously relieving pressure on one carton and applying it to another, said means comprising a carriage, and carton-supporting members mounted in fixed relation on said carriage, whereby movement of said carton serves to alternately bring each of said carton supporting members under said presser member.

3. In a machine for sealing the flaps of unfilled cartons, the combination of a pressing member and means for simultaneously relieving pressure on one carton and applying it to another, said means comprising a track, a carriage having wheels adapted to engage said track, thereby securing movement of the carriage relative to said pressing member, and carton-supporting members mounted on said carriage.

4. In a machine for sealing the flaps of

unfilled cartons, two carton-supporting members adapted to be positioned alternately beneath said pressing member and rigid connections between said carton supporting members whereby the introduction of one of said supporting members beneath the presser member serves essentially to displace the other of said supporting members from beneath said presser member.

5. In a machine for sealing the flaps of unfilled cartons, the combination of a pressing member, a track, a carriage movable on said track, and two carton-supporting members mounted rigidly on said carriage in such manner that one of said supporting members is moved out from beneath said pressing member and the other is moved under it in a single movement of the carriage along the length of the track.

6. In a machine for sealing the flaps of unfilled cartons, the combination of a pressing member and means for simultaneously relieving pressure on one carton and applying it to another, said means comprising a track, a carriage having wheels adapted to engage the track, and two carton-supporting members mounted rigidly on the carriage, the length of the track being approximately twice the distance between centers of said carton-supporting members for allowing said members to be alternately positioned under said pressing member.

7. In a machine for sealing the flaps of unfilled cartons, the combination of a pressing member and means for simultaneously relieving pressure on one carton and applying it to another, said means comprising two carton-supporting members adapted to

be positioned alternately beneath said pressing member, each of said carton-supporting members having a flat head of approximately the same size as the carton and adapted to receive said carton.

8. A carton sealing machine of the class described comprising a presser element for applying pressure to the carton flaps, a carriage movable longitudinally with respect to said presser element, a pair of carton supports mounted on said carriage and spaced to render one of said supports free of the presser element when the other support is beneath said element whereby a finished carton may be removed from said support and a fresh carton placed upon it.

9. In a device for sealing the flaps of unfilled cartons the combination of means for applying pressure to said flaps, said means comprising a series of rollers each provided with individual springs permitting vertical movement of said rollers and a pressing belt of width less than the width of the carton fitted upon the rollers with an appreciable amount of slack, and means for simultaneously relieving pressure on one carton and applying it to another, said means comprising a track, a carriage having wheels adapted to engage the track, and two carton-supporting members mounted rigidly on the carriage, the movement of the carriage along the track adapting said carton-supporting member to be positioned alternately beneath said pressing belt.

In testimony whereof I affix my signature.

TREVOR R. GAUTIER.