

Nov. 23 , 1926.

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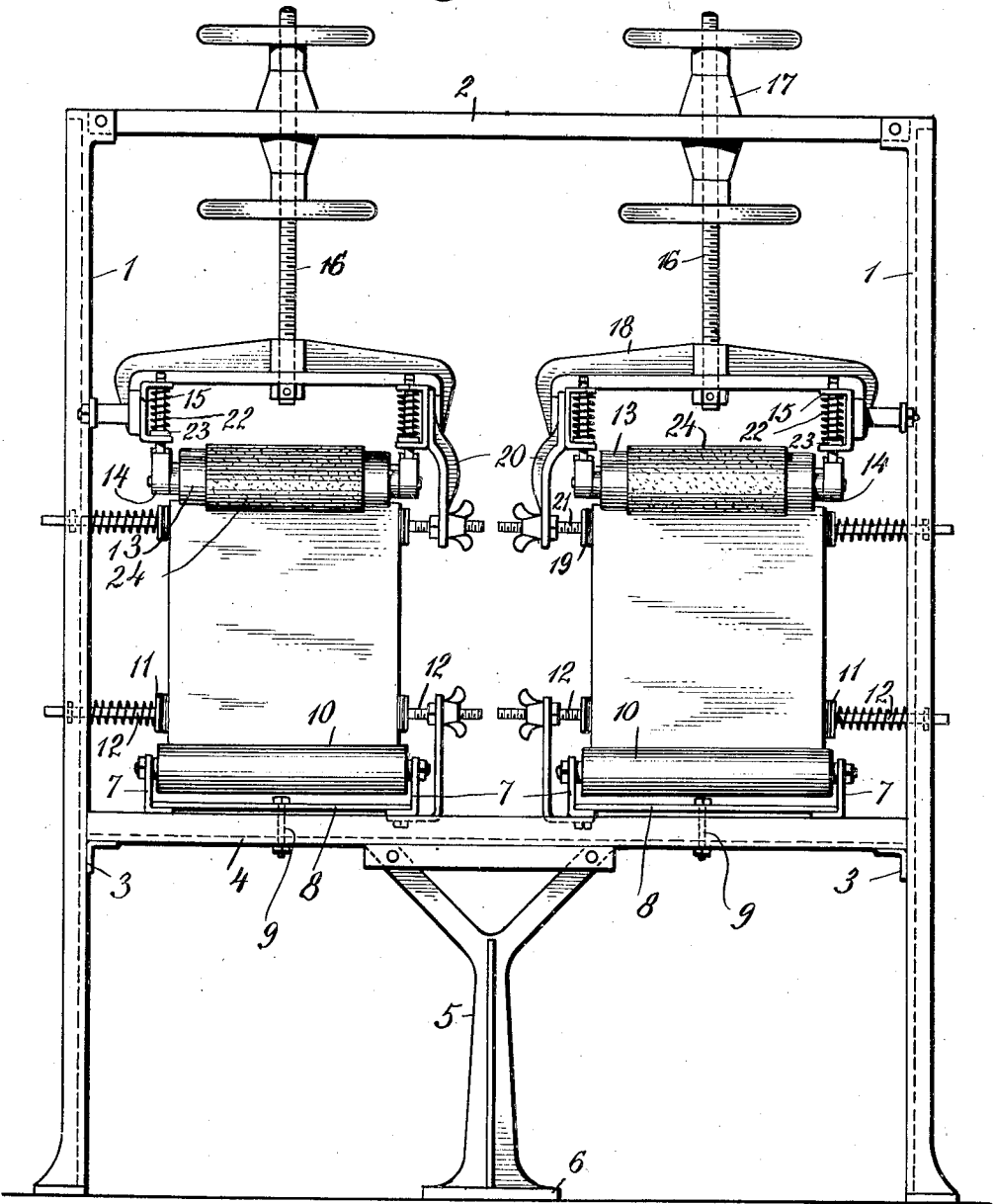
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FILLED CARTON SEALING MACHINE

Filed May 9, 1922

2 Sheets-Sheet 1

Fig. 1.



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Fig. 3.

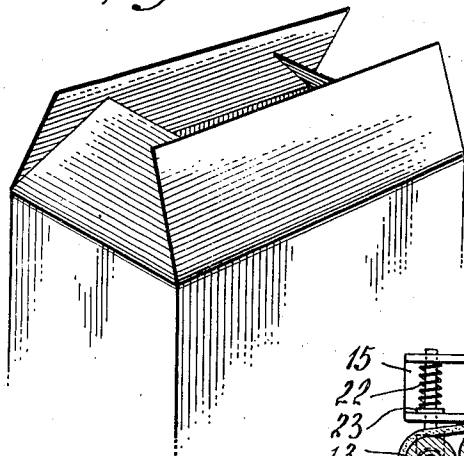
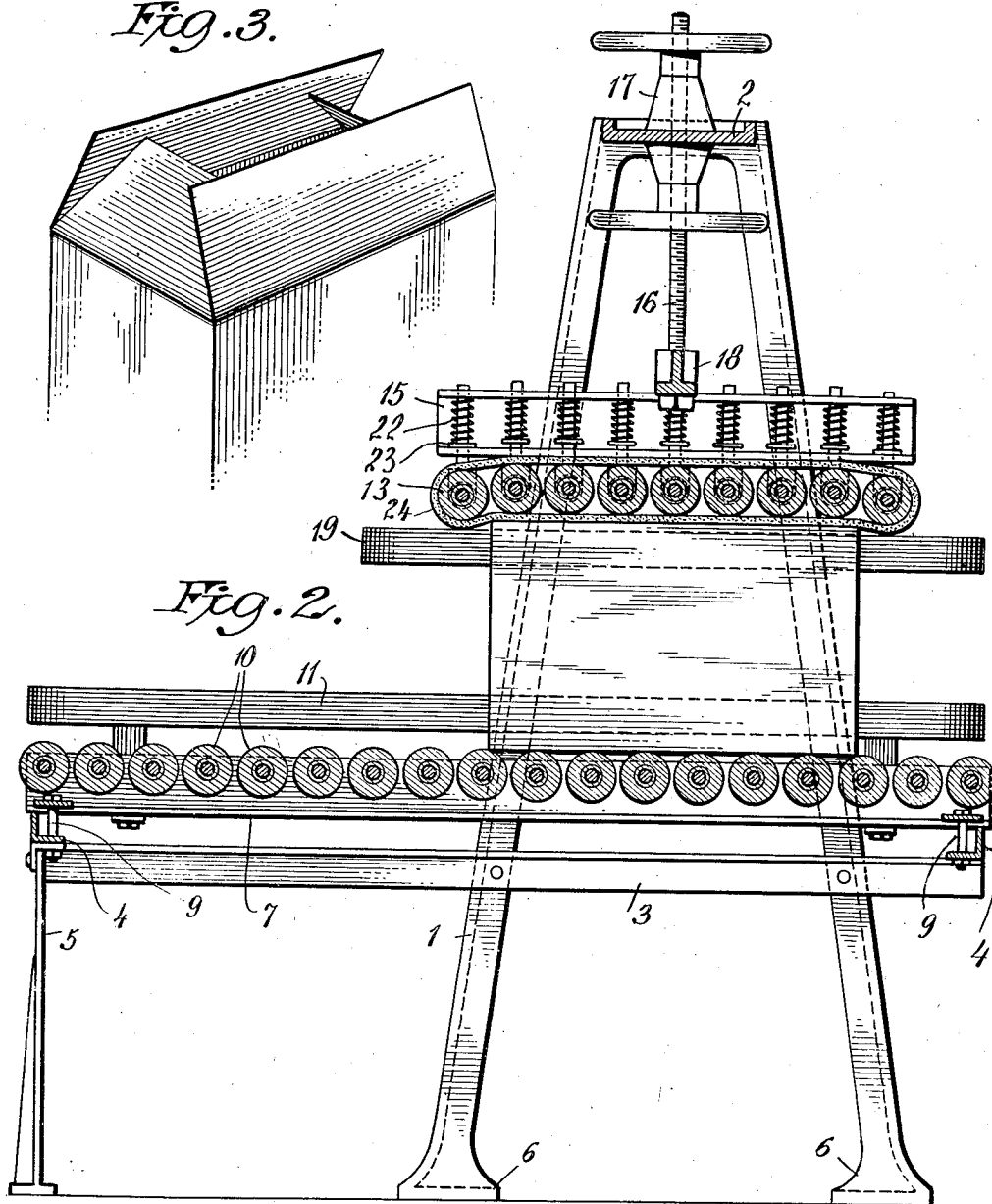


Fig. 2.



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UNITED STATES PATENT OFFICE.

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FILLED-CARTON-SEALING MACHINE.

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The present invention relates to apparatus for sealing filled cartons.

Fiber board cartons whose flaps are sealed by a coating of silicate or similar material have been found to be fully equal or superior to wood boxes when used for the shipment of merchandise, such as canned goods, soap or the like, if properly sealed, and are of materially lower cost. The fiber board which may be made by building up layers of ply wood, ship board, or other light material and applying silicate between successive layers, has proven to be extremely tough and possessed of wear-resisting qualities which adapt it particularly to the rough usage encountered during the shipment of the goods.

The sealing of the carton flaps by the application of a coating of silicate has been found to be the most successful means of securing a carton which will successfully withstand the shocks received in shipment. If a dependable point is formed between the flaps thus sealed, the end of the carton will become substantially a single unified structure. It is common to accomplish this sealing process by applying a layer of silicate and then placing a weight on the carton to hold the flaps in place until the silicate has set. This method is, however, open to the objection that it is practically impossible to obtain by this means a uniformly distributed pressure over the silicated surfaces, and the further danger of crushing down the edges of the carton. Additionally this method of sealing is slow and tedious and the output of any one operator is necessarily small.

It is a principal object of the present invention to provide an apparatus for sealing filled cartons such that the sealed portions of the carton assume a substantially unified structure throughout, the sealed joint being of strength comparable with the strength of the carton material.

It is also an object of the invention to provide an apparatus of this type such that a uniform pressure may be applied to all portions of the silicated surfaces without, however, subjecting the edges of the carton to a pressure likely to crush down the corners.

It is a further object to provide a carton sealing apparatus of the above type of small capacity and low cost, but at the same time

of such construction that cartons may be sealed in as satisfactory and convenient a manner as is possible with apparatus of much greater bulk and cost.

It is a still further object to provide an apparatus of this type in which the motions of the operator are reduced to a minimum in the sealing of a carton, and which may furthermore be easily and conveniently adapted to receive cartons of widely different dimensions.

The apparatus herein disclosed is particularly applicable for use in smaller plants whose output does not justify employment of labor for the sole purpose of sealing the filled cartons, but where the same man is employed to both pack and seal the cartons. It comprises means whereby the worker, after having filled the cartons, may place them upon the machine and with a single motion subject them to the required pressure for holding the flaps in place until the silicate has set. The carton then remains under this pressure until another is ready for introduction into the machine, at which time a single movement of the worker both discharges the sealed carton and introduces a fresh one.

We have illustrated a preferred embodiment of our invention in the accompanying drawings, in which Figure 1 is an elevation-al view of a filled carton sealing machine embodying our invention; Fig. 2 is a sectional elevation of the apparatus shown in Fig. 1; and Fig. 3 illustrates a carton in the unsealed condition.

Referring to said drawings, our improved apparatus comprises a supporting frame having end members or legs 1 and a horizontal member 2 connecting the tops of the legs 1. Additional horizontal members 3 are bolted to the legs 1 and extend at right angles to the length of the machine, being of a length equal to approximately twice the width of the legs 1 at that point. The various cross pieces and horizontal members are preferably of cast iron or steel and may conveniently be standard angle or channel members. The horizontal bars 3 are interconnected by means of the cross pieces 4, and their overhanging ends are supported on a pedestal or a bracket 5 provided for the purpose. The legs 1 and pedestal 5 are preferably provided with enlarged feet, as

shown at 6, for supporting the apparatus on a plane floor, no further mounting such as a base plate being required.

Upon the cross pieces 4 and extending transversely of their length there is mounted a roller table which comprises two longitudinal angle irons 7, spaced apart by means of cross pieces 8 and secured to the frame by a through bolt 9. A number of rollers 10, uniform in size, are mounted transversely for rotation in the member 7, the rollers being placed in close succession with their upper surfaces at the same level. This roller table constitutes a support for the carton being sealed and permits a carton or other body to be easily pushed into place in the machine. The rollers, being small and closely grouped, will exert a substantially uniform pressure along the bottom of the carton. Guide strips 11 are placed parallel to the members 7 of the roller table and are mounted on screw shafts 12 which permit of transverse adjustment to accommodate cartons of different widths.

From the cross bar 2, which is at a considerable height above the carton being sealed, is suspended a pressing mechanism adapted to seal the top flaps of the carton. This mechanism comprises essentially a series of transversely positioned rollers 13, similar to lower rollers 10, and an endless belt surrounding the rollers. This belt has a small amount of slack, is of appreciable thickness, and of width less than that of the carton to be pressed. The shafts of rollers 13 are supported at their ends by means of hangers 14 having upwardly projecting arms which pass through holes in the opposite flanges of channel bars 15, which channels extend in the direction of movement of the carton through the machine.

The channels are suspended from the upper cross bar 2 by means of threaded rod 16 which is screwed at its upper end into a bracket 17 provided for that purpose, and carries at its lower end an arch 18 whose opposite ends are attached to the channel 15. The connection between the arch 18 and screw 16 is a floating joint which permits the arch to be tilted to a limited extent and thus equalize the pressure on the rollers even though there be irregularities in the carton surface. An upper guide 19 may also be provided it being supported by an arm 20 attached to one of the channel members 15. The guide is mounted on a screw shaft 21 to permit of transverse adjustment.

Each of the hangers 14 is provided with a separate pressure spring 22, the springs preferably being placed between the walls of the channels 15 and working against collars 23 attached to the stems of the hangers. The machine may be adjusted to receive cartons of different heights by screwing the threaded rod 16 up or down until the face of

the belt 24 lies slightly below the top of the carton to be sealed, whereby the passage of the carton under the rollers raises them slightly against the pressure of their springs.

The belt 24 is preferably of an elastic material of appreciable thickness, and is narrower than the carton being sealed. This feature enables a uniform pressure to be applied along the entire length of the flap, and at the same time prevents the rollers from coming into contact with the carton and crushing down its edges. A sufficient amount of slack is provided in the belt to permit a slight relative movement of the various rollers in conformity to the irregularities in the surface of the carton.

In the use of our improved sealing machine, the carton is first filled, placed upon the rollers 10, and pushed under the pressing belt 24. The belt engages the top of the carton and moves along over the rollers 13 as the carton is pushed into the machine, the contacting surface of the belt remaining stationary relative to the carton. The rollers on the lower roller table exert a substantially uniform upward pressure along the length of the lower flaps, the weight of the carton and its contents in addition to the pressure exerted by the upper rollers being sufficient to insure a proper joint. The lower roller table may be provided with a pressure belt in the same manner as the upper rollers, and the lower rollers may be mounted in channel members and with spring supports in the same manner as the upper rollers, if desired. We have found, however, that the apparatus as illustrated in the drawings gives satisfactory service, and as its expense is considerably less than that of a device in which the lower roller table is provided with spring supports and a presser belt, it will be found most desirable in ordinary installations. The carton is allowed to remain in the machine, and the flaps of a second carton are silicated, after which the second carton is inserted into the other pressing element of the machine. A third carton is now prepared and placed upon the rollers 10 of the element containing the first carton. A single forward movement of the third carton will serve to insert it under the pressing element and at the same time discharge the first carton, which by this time is thoroughly sealed. A discharge table or chute of any desired type is preferably provided to receive the sealed cartons issuing from the machine.

If one worker is performing both the operation of filling the cartons and sealing them the interval elapsing between the sealing of two cartons is ample to allow for the setting of the silicate, and only one pressure applying element is necessary. Under such conditions the apparatus as illustrated can be used simultaneously by two workers,

each worker utilizing one of the elements. The apparatus may also be built as a unit containing only one pressure element, in which case it would be applicable to a plant
5 whose output may be handled continuously by a single worker performing both the packing and sealing operations.

The specific embodiment of our invention may be carried out in a number of ways,
10 as for instance the number of pressing elements employed, the use or omission of a pressing belt on the lower rollers, a spring support for the lower rollers, and the like. Accordingly our invention is not limited
15 to the particular structure disclosed in the accompanying drawings, but may be varied within the full scope of the appended claim.

We claim:—

An apparatus for use in sealing cartons
20 comprising a continuous worktable of a

length equal to that of two cartons to be sealed, a pressure unit overlying a portion of said worktable at one end thereof leaving the other end of the worktable free to support the carton during the manual closing
25 and sealing of its flaps, said pressure unit comprising a plurality of pressure-applying members yieldingly supported above said table, means for maintaining the pressure on said members, said members being
30 spaced from said table to be raised by said carton when shifted along said table from one end to the other, whereby the movement of a sealed carton into position under said pressure unit ejects the previously
35 sealed carton therefrom.

In testimony whereof we affix our signatures.

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