Sept. 4, 1923. 1,467,045

W. D. KIMBALL ET AL

CARTON SEALING MACHINE

Filed Feb. 8, 1919

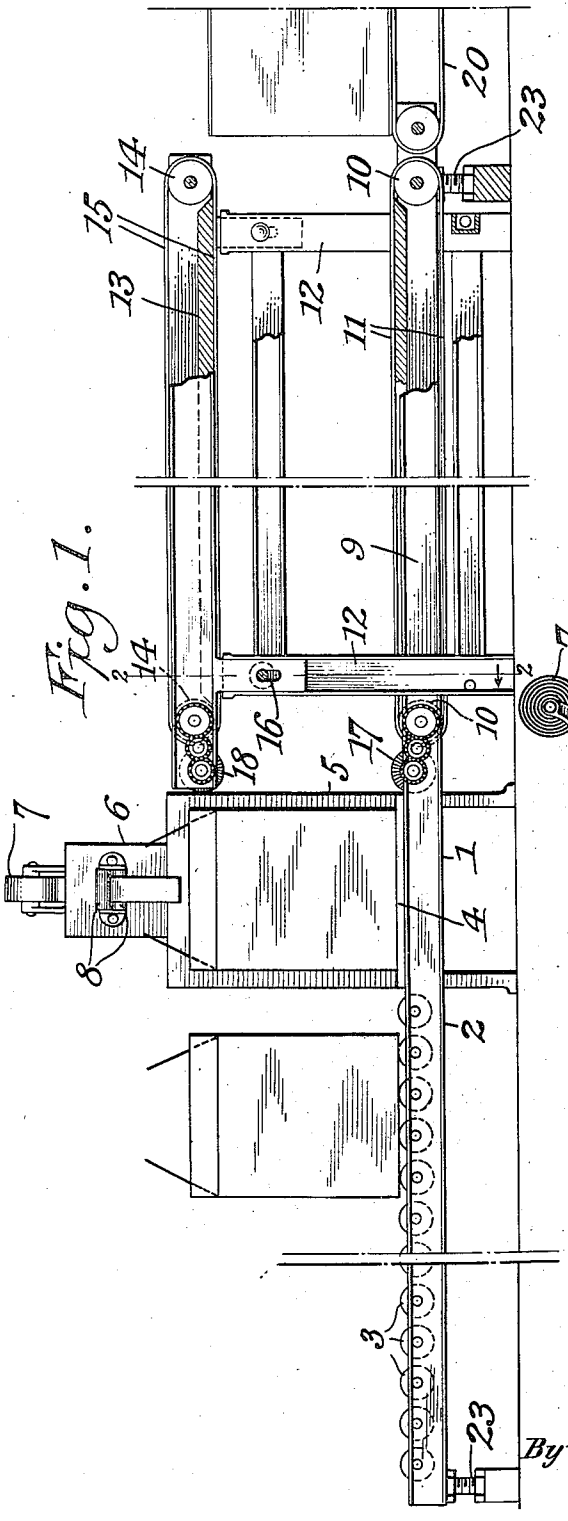


Fig. 1.

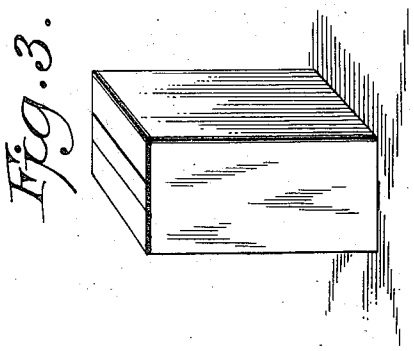


Fig. 3.

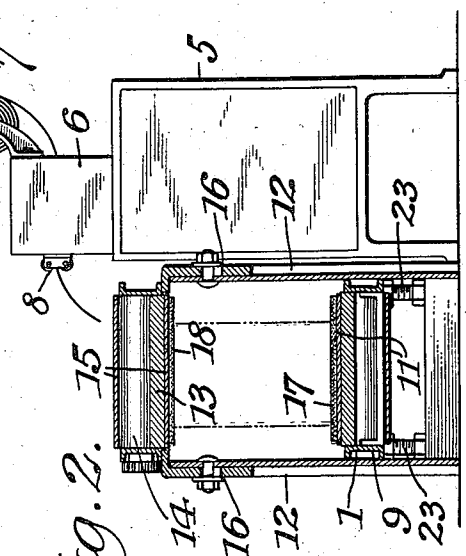


Fig. 2.

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UNITED STATES PATENT OFFICE.

WALLACE D. KIMBALL, OF NEW YORK, N. Y., AND ARTHUR E. RIDEOUT, OF CHICAGO, ILLINOIS, ASSIGNORS TO STANDARD SEALING EQUIPMENT CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

CARTON-SEALING MACHINE.

Application filed February 8, 1919. Serial No. 275,764.

To all whom it may concern:

Be it known that we, WALLACE D. KIMBALL and ARTHUR E. RIDEOUT, both citizens of the United States, and residents, respectively, of the city, county, and State of New York, and Chicago, county of Cook, and State of Illinois, have invented new and useful Improvements in Carton-Sealing Machines, of which the following is a specification.

This invention relates to improvements in apparatus for sealing cartons, particularly heavy cartons known in the trade as fibre containers, and in common use in place of packing cases for shipping goods of all descriptions. Such cases are made of heavy fibre board or corrugated board and usually have at each end four flaps which are overlapped and sealed together with silicate or other adhesive, and also for further security are bound over the meeting edges of the topmost flaps with a strip of heavy gummed paper tape.

Such containers have heretofore usually been sealed by hand, the only apparatus used being the machine for moistening and delivering the tape in proper lengths for the cartons, the pressing of the flaps together and the application of the tape being done by hand and requiring time and care to obtain a proper adhesion of the flaps and tape to secure the case against the rough handling to which it is subjected.

The object of our invention is to provide an apparatus to facilitate the sealing and taping of the cartons and particularly to insure a uniform and sufficient pressure on the adhesive bearing faces without skill or care on the part of the operator.

A further object of the invention is to provide an apparatus to facilitate the rapid handling of the cartons so that the successive operations of folding, taping and pasting the cartons may be rapidly performed without lost time or wasted movements.

In the accompanying drawings, we have shown a preferred embodiment of our invention which we have found highly advantageous in practice, and in said drawings,

Figure 1 is a side elevation of our improved apparatus;

Fig. 2 is a transverse sectional view on line 2—2 of Fig. 1; and

Fig. 3 is a perspective view of the sealed package.

Referring to the drawings, 1 indicates the main frame of the machine to be supported on a suitable work table here indicated by the base line. The frame is here shown as having on the left a feed table 2 upon which the filled cartons are placed ready for sealing. The top of the table 2 is preferably provided with a series of parallel rollers 3 upon which the cartons are placed so that they may be easily pushed without lifting from the feed table 2 to the work table 4, in a line with the feed table and on the same level, the work table consisting preferably of a projecting shelf measuring greater in both dimensions than the end of the carton.

The cartons usually have their bottom flaps folded together but not sealed, and their upper flaps upstanding, as shown in Fig. 1. The weight of the material in the carton holds the bottom flaps closed so that the carton may be easily advanced to the work table for sealing.

Back of the work table 4 a stand 5 is provided which supports the tape moistening and delivering machine 6 which is preferably of the type known as an "automatic" machine in that without attention on the part of the operator it periodically delivers a moistened strip of tape cut to a predetermined length. The tape is supplied by a roll 7 at the back of the machine and is delivered between the feed rolls 8 at the front of the machine, where its end hangs down in position to be grasped by the operator and applied to the carton on the work table.

The automatic machine is preferably driven through a speed gear so that the rate of delivery of the strips may be regulated and also has a suitable stop motion, not shown, so that the feed may be discontinued when desired, should there be an interruption of normal continuity of the work. At the right of the work table the bed of the frame is continued as shown at 9, this portion consisting of a metal or wooden table top provided at each end with

belt rollers 10 over which the conveyor belt 11 is trained.

The frame 1 is provided at the four corners of the table 9 with posts 12 supporting an upper board 13 which carries at each end rollers 14 over which a belt 15 similar to the belt 11 is trained in the manner shown. The upper board 13 will be connected to the upper ends of the post 12 so as to have a slight lost motion, as indicated at 16, whereby the board may be positioned to permit the weight of the board to rest on the cartons as they are advanced between the belts.

Immediately in front of the rollers 10 and 14 adjacent the work table, there is provided a pair of rotary brushes 17, 18, respectively, the bristles of the brushes projecting into the space between the belts so as to wipe with some pressure against the faces of the carton. The brushes are revolved through gearing from the adjacent rollers 10 and 14, the gearing between the two being such as to revolve the brushes at much higher speed than the rollers.

Beyond the top of the table 9 a conveyor belt 20 is provided to carry off the sealed cartons.

We have not illustrated the driving mechanism for the machine, as it will be readily understood that the conveyors and brushes may be driven from a countershaft or from the power shaft of the automatic machine, which is usually continuously driven from its individual electric motor.

The operation of the machine will be readily understood from the foregoing description. The packed cartons are placed on the rollers 3 from which they are easily pushed by the operator onto the work table 4. The operator first silicates the upstanding flaps and folds them down one upon the other, and then seizes the piece of tape projecting from the feed rollers 8 and which has been previously cut by the automatic machine to the proper length, and lays it over the meeting edges of the two top flaps, the carton being positioned for the tape to extend lengthwie of the machine. The box is then inverted and the other flaps silicated and taped in the same manner, the operator merely having to press the flaps and the tape together sufficiently for them not to be accidentally displaced. After both ends are sealed and taped in the above described manner the operator shoves the box to the right between the revolving brushes and the advancing belts, the rapidly revolving brushes serving to wipe the tapes smoothly over the irregular faces of the flaps while the belts, under the action of the weight of the carton and the weight of the upper board, hold the flaps and tapes pressed firmly in place until secure. The table 9 will be long enough for the flaps to be secured by the time they reach the conveyor 20, and the belt 11 will be timed to advance slightly more than the length of the carton at each operation of the automatic machine so as to carry off the cartons as rapidly as sealed.

The machine may be adjustable for cartons of different heights by supporting the tables 2, 4 and 9 for vertical adjustment, the upper table 13 being mounted at a fixed height. The adjustment may be secured in any suitable manner, for instance, by the supporting jacks 23 at each end of the frame members 1 which support the tables. The advantage of having the lower tables adjustable is that the elevation of the upper flaps of the carton which are handled by the operator are not disturbed. The adjustment, however, may be readily secured, as will be obvious, by making the table 13 adjustable to different heigths.

The chief advantage of our improved apparatus is that it insures uniform application of the tape and effective drying of the pasted flaps without care on the part of the operator, whereby the work may be done much more rapidly than when the apparatus is not used. By providing suitable speed gear drive for the automatic machine and the drying conveyors, the machine may be set to operate at a rapidity corresponding to the speed of the particular operator.

It will of course be understood that various changes may be made in the details of construction withopt departing from the spirit of the invention or the scope of the appended claims.

We claim:

1. In a carton sealing apparatus, the combination of a work table adapted to support the carton while being sealed, means for simultaneously pressing the sealed flaps at both ends of the carton comprising a supporting belt to receive and convey the cartons away from the work table, a presser belt overlying the supporting belt in position to rest upon the upper end of the carton, means for pressing said belt against the carton, and spaced smoothing and pressing devices arranged between said work table and said belts in planes to engage and smooth the sealed ends of the cartons as they are advanced from the work table to the belts.

2. In a carton sealing machine, means for exerting a positive pressure on the sealed carton flaps comprising a conveyer belt, a supporting frame, a backing for said belt, a presser belt positioned above said conveyer and actuated independently thereof, and a backing for said presser belt, and a single adjusting means for vertically adjusting one of said belts and its associated backing whereby cartons of different sizes may be accommodated.

3. In a carton sealing machine, means for

exerting positive pressure on the sealed carton flaps comprising a conveyer belt, a supporting frame, a presser belt positioned above said conveyer belt and actuated independently thereof, and a rigid backing for said presser belt, and means for vertically adjusting said conveyer belt for adapting the machine to receive cartons of different heights, the upper ends of the cartons remaining at the same level.

4. In a carton sealing machine, the combination of a frame, a strip-serving machine supported on said frame at a fixed height, a work table adjacent said strip-serving machine adapted to support the carton while being sealed, means for pressing the sealed cartons comprising a conveyor having its surface in the same plane as the surface of the work table, a pressing belt independently supported in the frame over said conveyor and means for simultaneously vertically adjusting said work table and said conveyor to adapt the machine to cartons of different sizes.

5. In a carton sealing apparatus the combination of a work table adapted to support the carton while being sealed, means for simultaneously pressing the sealed flaps at both ends of the carton comprising a supporting belt to receive and convey the cartons away from the work table, a presser belt overlying the supporting belt in position to rest upon the upper end of the carton, and a pair of rotating brushes interposed between said work table and said pressing means in position to engage the ends of the cartons as they are advanced from the work table to the conveyor.

6. In an apparatus of the class described, the combination of a support for the carton, means adjacent the support for supplying sealing type, a tape pressing means adjacent said table comprising a supporting belt for advancing the carton away from said support, said belt having its upper face in substantially the same plane as said carton support, a tape smoothing device intermediate said support and said belt for smoothing the applied tape to the bottom of the carton in its passage from the support to the belt, means for simultaneously smoothing and pressing the tape on the upper face of the carton comprising a tape presser supported above the belt with its face in a plane to engage and press the upper face of the carton as it is advanced by the belt, and a tape smoothing member supported adjacent said presser to engage and smooth the tape as it is advanced under the presser.

7. In a carton sealing apparatus, the combination of a frame, a work table carried by the frame, means adjacent the work table for supplying sealing tape, a conveyor for advancing the carton away from the work table, said conveyor being also supported by the frame, carton pressing means arranged over said conveyor, a support for said pressing means independent of said frame and means for vertically adjusting said frame to vary the distance between said pressing means and said conveyor for different sized cartons while maintaining the upper end of the carton which is resting on the work table at a substantially fixed height.

Signed at New York city, county, and State of New York, this 7th day of December, 1918.

ARTHUR E. RIDEOUT.
WALLACE D. KIMBALL.