Aug. 28, 1923. 1,465,977

J. FAULL

WRAPPING MACHINE

Filed Feb. 9, 1921 2 Sheets-Sheet 1

Fig. 2.

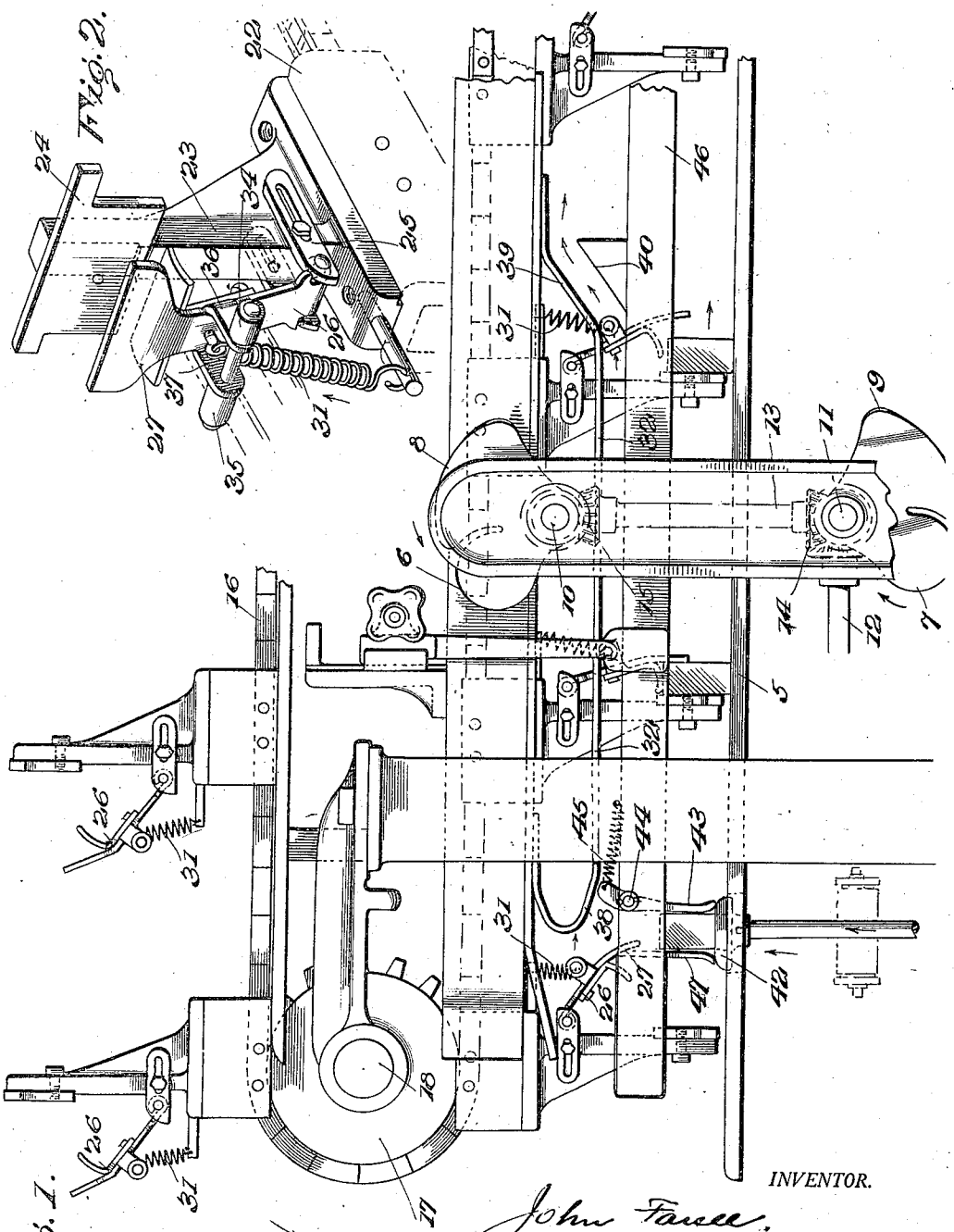


Fig. 1.

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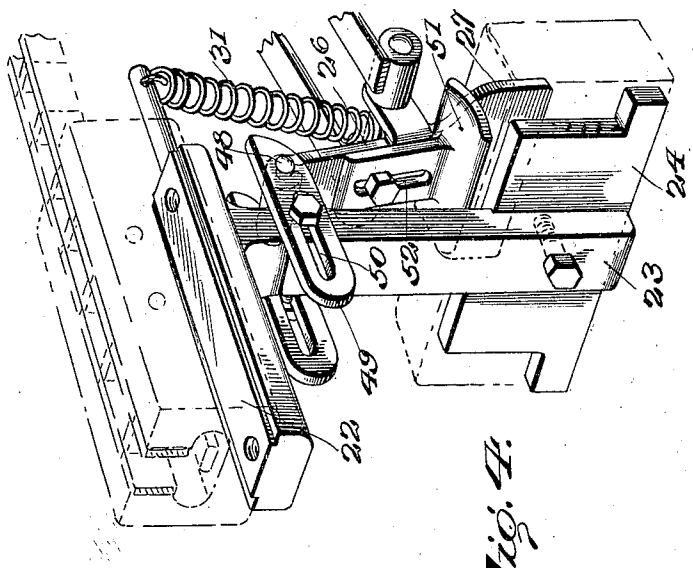


Fig. 4.

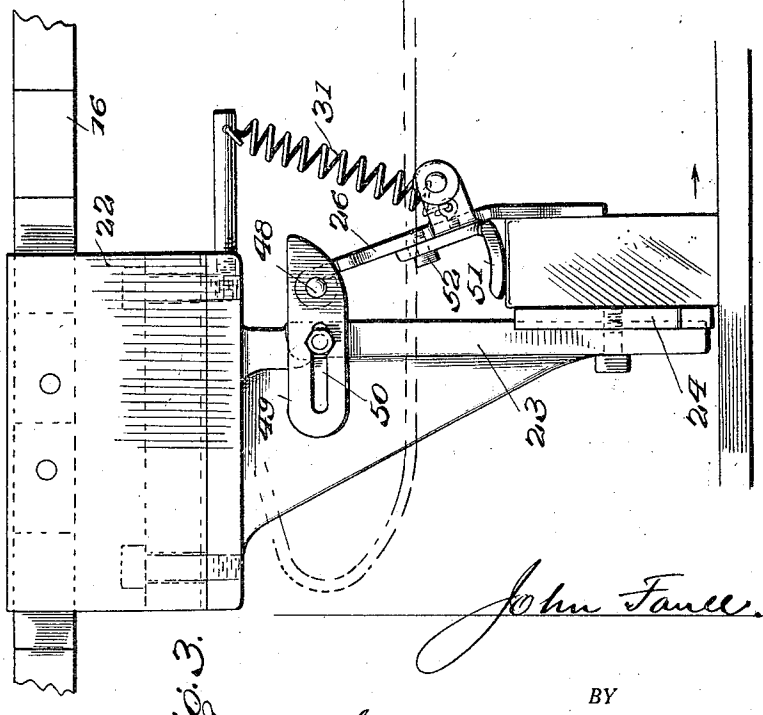


Fig. 3.

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Patented Aug. 28, 1923. 1,465,977

UNITED STATES PATENT OFFICE.

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WRAPPING MACHINE.

Application filed February 9, 1921. Serial No. 443,613.

To all whom it may concern:

Be it known that I, JOHN FAULL, a citizen of the United States of America, and a resident of Battle Creek, Michigan, have invented new and useful Improvements in Wrapping Machines, which invention is fully set forth in the following specification.

The present invention is an improvement in wrapping machines, and particularly machines in which cartons or other articles, like bread, are wrapped in waxed paper or other wrappers.

Heretofore the cartons have been fed past the folding mechanism by followers on the main conveyor chain; and it frequently happened that, particularly with light cartons, the same would become slightly displaced whereupon the folding mechanism would not act effectively and the carton would not be securely sealed in the wrapper. This was particularly the case when wrapping small cartons, as it was found that the tucker of the folding mechanism would engage the wrapper with sufficient force to displace the carton so that the folder member would not properly engage the wrapper, with the result that the rear flap would frequently not be folded against the package at all and frequently the flap would be inaccurately folded, dependent upon the degree of displacement of the package.

The object of the present invention is to provide a feeding mechanism by means of which the movement of the carton will always be positively controlled from the time it engages the wrapper until the latter has been folded and sealed about the same, whereby a uniform and excellent sealing of the carton in the waxed paper or other wrapper is secured, all danger of displacing the carton with its attendant defective sealing is eliminated, and all without any sacrifice of the speed of output and by the provision of a simple and efficient mechanism. By the present invention the carton is fixedly held by the feeding mechanism as it passes the folding devices, with the result that the action of the folding mechanism on the wrapper cannot displace or change the position of the carton with respect to the feeding mechanism and a uniform and efficient wrapping is thus effected at high speed.

The invention will be better understood by reference to the accompanying drawings, illustrating one expression of the inventive idea, and wherein—

Fig. 1 is a longitudinal elevation, partly in section, showing one end of the carton conveyor and associated mechanism;

Fig. 2 is a detail perspective showing the improved clamp;

Fig. 3 is an elevation showing a modified form of clamp with adjusting means for various sizes of cartons; and

Fig. 4 is a perspective view of the parts shown in Fig. 3.

Referring to the drawings, wherein like reference numerals indicate like parts, 5 indicates any suitable table or support along which the carton or like article is progressed past a suitable wrapper folding mechanism or other instrumentality for operating on the moving carton or article. The folding mechanism herein illustrated comprises, on each side of the table or support, an upper tucker finger 6 and a lower tucker finger 7, an upper folder finger 8 and a lower folder finger 9. Such folder mechanism is preferably of the well-known type used in the "Johnson wax-wrapper machine" (see Patent No. 1,270,416) and need not be specifically described. It is sufficient to note that the upper folding mechanism rotates in a counterclockwise direction around the shaft 10 and that the lower folding mechanism rotates in a clockwise direction around the shaft 11. The folding mechanisms are driven through shafts 12 and 13 and bevel gearing 14 and 15 from any suitable source of power.

A conveyor 16, preferably of the chain type, continuously progresses the cartons past the folding mechanism. This conveyor passes over suitably supported sprockets 17 one of which is mounted on shaft 18 which is driven through suitable means (not shown). This conveyor has mounted thereon a plurality of suitably spaced followers, each preferably consisting of a base portion 22, a standard 23 and a follower plate 24, these parts being suitably secured together and to the chain conveyor.

Pivoted in ears 25 on each follower standard is a clamp 26, the portion 27 of which, which engages the front face of the carton, being disposed at a slight angle to the main body of the clamp so that, when

in carton-engaging position, this portion is parallel to the standard 23.

The clamp is moved toward and from the carton by any suitable means. As here shown, a spring 31, one end of which is anchored to the follower and the other end to the clamp, moves the clamp away from the carton-engaging position and a pair of cam tracks 32 (one of which is shown in Fig. 1), suitably mounted on the frame of the machine, move each clamp into engagement with the carton. A pair of rollers 34 and 35, carried by ears 36 and 37 (Fig. 2) engage the cam rails 32. If desired, a single roller and a single cam track may be employed. The cam tracks are inclined (Fig. 1) at 38 to force the clamp downwardly, and at 39 to permit the spring 31 to elevate the clamp. Preferably a cam 40 is associated with the incline 39 so that the elevating of the clamp, by reason of the engagement of the roller 34 with said cam 40, is rendered more positive.

Any suitable means for moving the cartons into position to be engaged by the followers may be employed; but preferably the usual infeed belt (not shown) and elevator 42 are used, the wax-wrapper being fed into position over the elevator and the wrapper being folded around the carton in the usual manner and by the well-known mechanisms. The follower removes the carton with the wrapper around it from the elevator 42 and moves it forward against a finger 43 pivoted at 44 and having one end of a spring 45 secured thereto, the other end of said spring being suitably anchored. The finger yields and the carton moves under it. The cam action is so timed that the clamp moves downwardly toward the carton as the finger moves over the top of the carton, so that, just before the carton passes from under the control of the finger, the clamp securely grips the same, the part 27 engaging the front face of the carton. The carton is thus under positive control and not subject to any displacement by the action of the tucking and folding fingers engaging the wrapper, thus obviating a great objection and solving a very difficult problem in connection with high speed wrapping machines in which the cartons are continuously fed past the wrapping mechanism.

With such a device wherein the carton is positively controlled at every stage of the operation, it is possible to materially simplify the construction of the machine by eliminating the guide rails 46 if desired. Further, the fixed finger 47 and the pivoted finger 43, which receive the carton from the elevator, may also be removed if desired. This, however, necessitates a positioning of the cam incline 38 slightly more to the left as seen in Fig. 1.

The clamp shown in Figs. 1 and 2 has the advantage of clamping and firmly holding cartons of various sizes, the spring acting to yieldingly but firmly maintain the carton in the desired position as it is fed past the folding mechanism.

The structure shown in Figs. 3 and 4 embodies additional advantages. In that construction, the clamp 26 is pivoted at 48 to a slide 49 that has a pin and slot connection 50 with the follower standard 23. This affords a ready and efficient means for adjusting the clamp for use with widely varying sizes of cartons.

In addition, the clamp carries a shoe 51 that is adjustable by a pin and slot connection 52 along the clamp. This shoe is adjusted according to the size of the carton being handled so that, when the carton is clamped against the follower, the shoe firmly engages the top of the carton and assists the clamp is fixedly holding the carton in position as it is progressed past the folding mechanism.

It will be seen that, by this pivoted adjustable form of clamp, cartons of widely varying sizes may be handled with equal facility and efficiency. Further, it will be understood that the follower 23 may engage either the front or rear of the carton, so long as the carton is held thereagainst by the clamp; and the claims appended hereto are to be so understood.

The operation of the device is as follows:—

The cartons are carried by the infeed belt from any suitable source of supply, to the elevator 42 which raises them into the position shown at the left in Fig. 1, between the fixed and yielding fingers, the carton at the same time being enveloped by the wrapper in the usual manner. At this moment the follower moves the wrapped carton against the yielding finger 43, the cam inclines 38 operating on the rollers 34 and 35 to move the clamp downward toward the carton. The clamping action is completed just before the carton passes from under the control of the yielding finger 43 and the carton is then fixedly held as it is progressed past the folding mechanism and the hot plates (not shown). Thereafter the spring 31 and the cam 40 disengage the clamp from the carton, which latter passes onto the delivery belt.

For the purpose of convenience and simplicity, the invention has herein been illustrated in connection with a machine for wrapping filled cartons in wax-wrappers, but it will be understood that the invention is equally applicable to the wrapping of other objects, such as loaves of bread and the like; and it is to be understood that, where in the foregoing description and the claims reference has been made to "cartons," this expression is to be interpreted as including loaves

of bread or other bodies or articles to be wrapped.

Indeed, the invention, while solving an important and difficult problem in wrapping machines, is not, in its broadest aspect, limited to wrapping machines but is equally applicable to any machine in which it is desired to securely hold an object while at the same time feeding it past an instrumentality for operating thereon.

While two expressions of the inventive idea have been heretofore described and illustrated in detail, it is to be understood that the invention is not limited thereto, but that the inventive idea may be embodied in various mechanical expressions within the limits of the appended claims.

What is claimed is:—

1. In a machine of the character described, the combination of folding mechanism, means for feeding cartons past said folding mechanism including a follower engaging one face of the carton, a pivoted clamp automatically engaging another face of the carton before the operation of the folding mechanism, a shoe carried by the clamp and engaging the top of the carton, and means for automatically disengaging said clamp after the operation of the folding mechanism.

2. In a machine of the character described, the combination of folding mechanism, means for feeding cartons past said folding mechanism including a follower engaging one face of the carton, a clamp pivoted to said follower, means for automatically engaging said clamp with another face of the carton before the operation of the folding mechanism, a shoe carried by the clamp and engaging the top of the carton, and means for automatically disengaging said clamp after the operation of the folding mechanism.

3. In a machine of the character described, the combination of a folding mechanism, means for feeding cartons past said folding mechanism including a follower engaging one face of the carton, a clamp pivoted to said follower, means for shifting the pivotal point with respect to said follower, means for automatically engaging said clamp with another face of the carton before the operation of the folding mechanism, a shoe carried by the clamp and engaging the top of the carton, and means for automatically disengaging said clamp after the operation of the folding mechanism.

4. In a machine of the character described, the combination of a folding mechanism, means for feeding cartons past said folding mechanism including a follower engaging one face of the carton, a slide carried by said follower, a clamp pivoted to said slide, means for automatically engaging said clamp with another face of the carton before the operation of the folding mechanism, a shoe carried by the clamp and engaging the top of the carton, and means for automatically disengaging said clamp after the operation of the folding mechanism.

5. In combination, a conveyor, a follower carried thereby, and a pivoted clamp carried by said follower, a shoe carried by said clamp, and means for moving said clamp and shoe toward and from said follower.

In testimony whereof I have signed this specification.

JOHN FAULL.