June 9, 1942. J. SILBERMAN 2,285,842

PACKAGE WRAPPING MACHINE

Filed Oct. 23, 1940 3 Sheets-Sheet 1

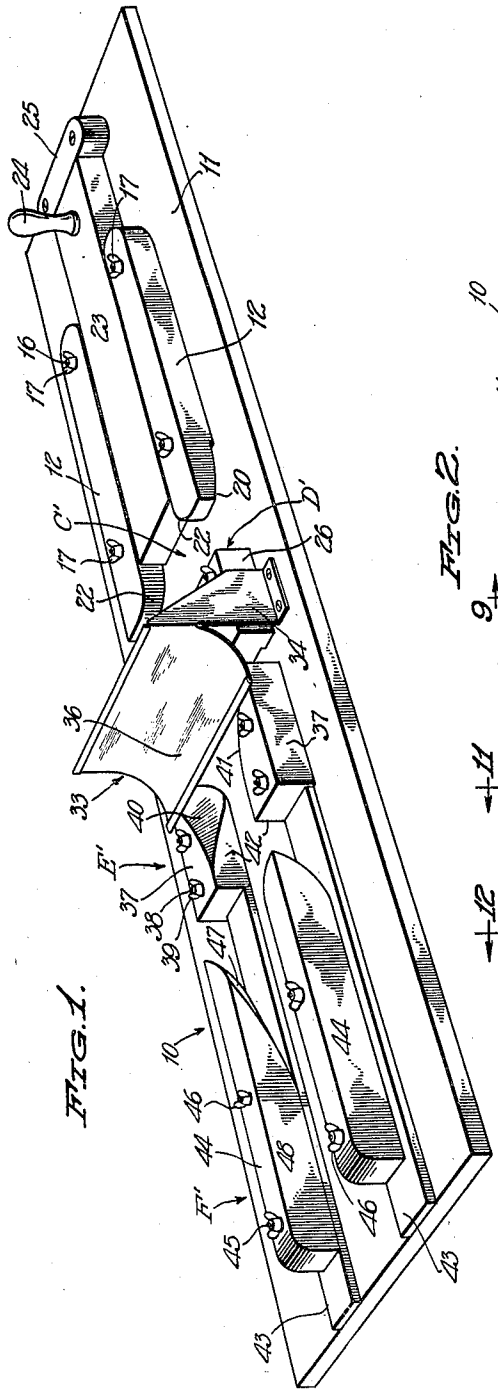


FIG. 1.

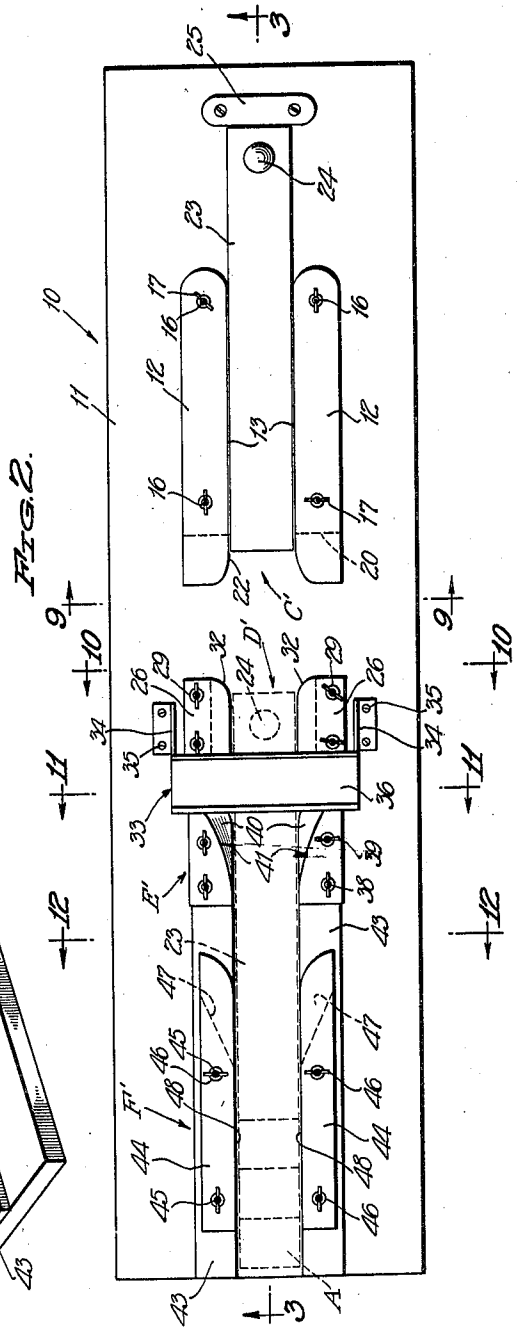


FIG. 2.

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Filed Oct. 23, 1940 3 Sheets-Sheet 2

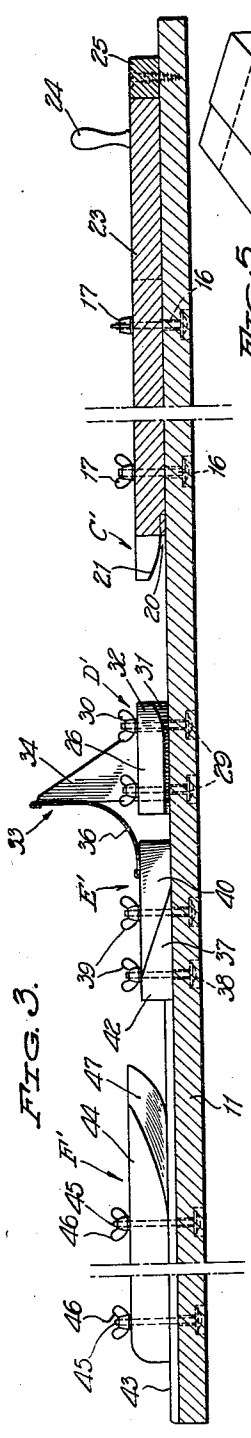


FIG. 3.

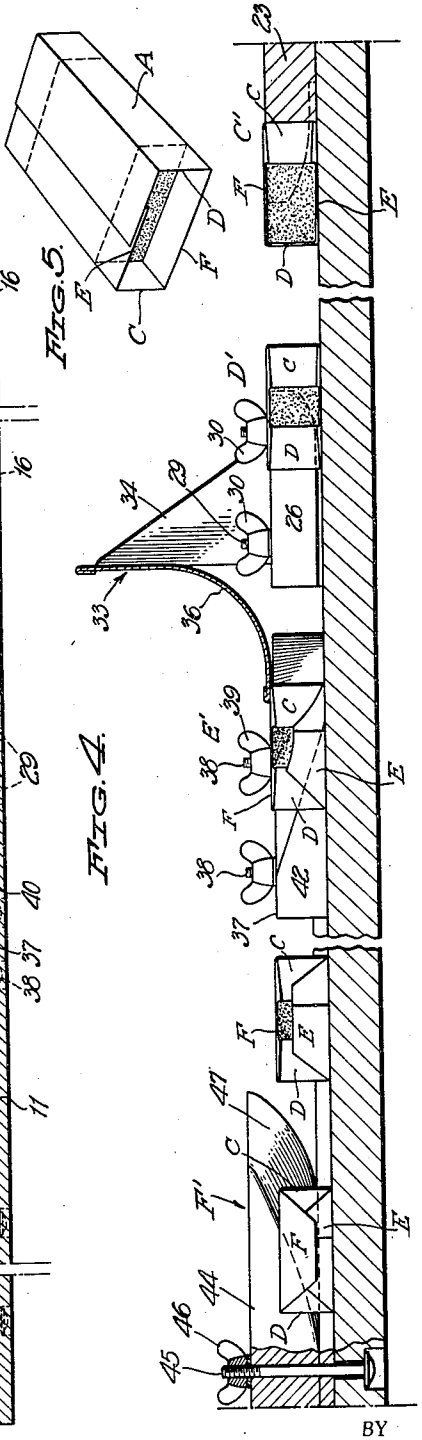


FIG. 4.

FIG. 5.

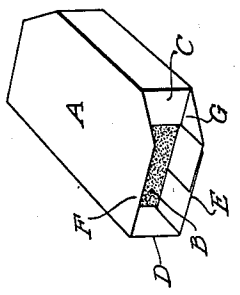


FIG. 5a.

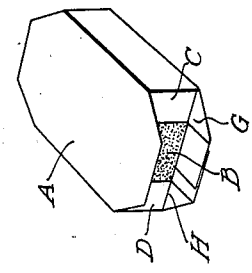


FIG. 6.

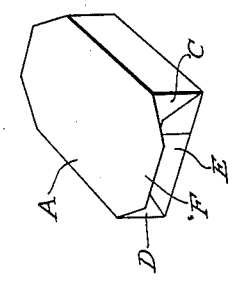


FIG. 7.

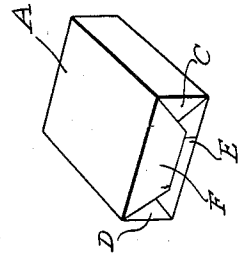


FIG. 8.

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June 9, 1942. J. SILBERMAN 2,285,842

PACKAGE WRAPPING MACHINE

Filed Oct. 23, 1940 3 Sheets-Sheet 3

FIG. 9.

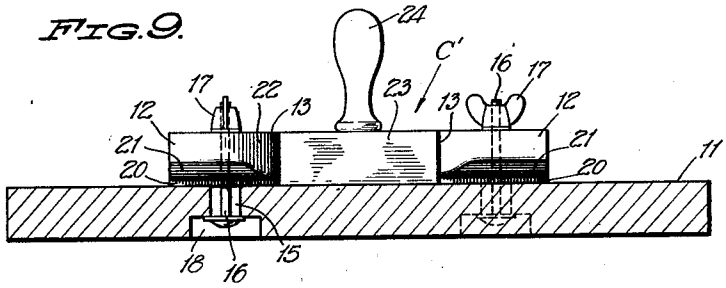


FIG. 10.

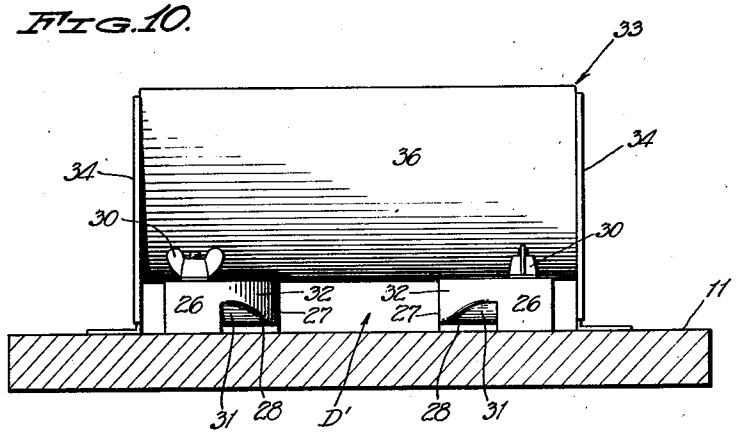


FIG. 11.

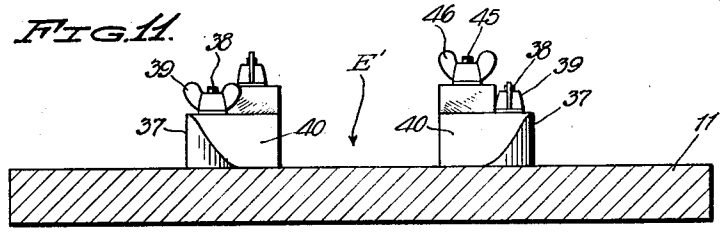
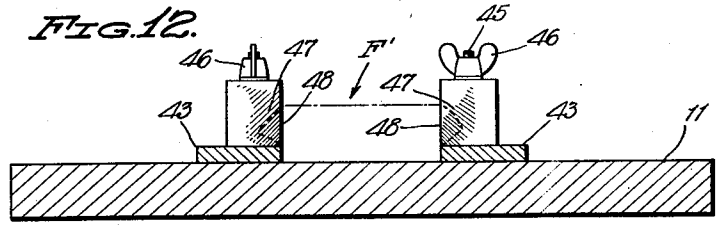


FIG. 12.



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Patented June 9, 1942

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UNITED STATES PATENT OFFICE

2,285,842

PACKAGE WRAPPING MACHINE

Jacob Silberman, Lima, Ohio

Application October 23, 1940, Serial No. 362,323

4 Claims. (Cl. 93—2)

This invention relates to improvements in package wrapping machines and more specifically to a machine for wrapping cream cheese in foil wrappers.

One of the features of the invention resides in a machine for folding the ends of the package wrapper inwardly in lapped relation about the cheese to be wrapped by means of a series of successive folding operations to which the ends of the partially wrapped package are subjected when manually inserted into and pushed through the machine.

Another feature of the invention is to provide a package wrapping machine in which the pairs of opposed end folders may be adjusted relative to each other to facilitate the wrapping of different width packages.

A further feature of the invention is the provision of a semi-automatic package wrapping machine for use by small manufacturers of cream cheese, who due to the high cost of full automatic wrapping machines, resort to hand wrapping.

A further feature of the invention is to provide a cream cheese wrapping machine which is simple and inexpensive of construction, easy to operate by a single operator, and which is easy to take apart for replacement of parts and for maintaining the machine in a sanitary condition.

Other features of the invention will become apparent as the following specification is read in conjunction with the accompanying drawings, in which:

Figure 1 is a perspective view of the wrapping machine.

Figure 2 is a top plan view.

Figure 3 is an enlarged vertical longitudinal sectional view on the line 3—3 of Figure 2 with intermediate portions omitted.

Figure 4 is an enlarged fragmentary vertical longitudinal sectional view illustrating packages at the respective folding stations, the ends of the packages being in end elevation.

Figure 5 is a perspective view of a block of cream cheese with a wrapper folded thereabout preparatory to insertion of the same into the wrapping machine.

Figures 5a to 8 inclusive are perspective views illustrating the successive folding steps imparted to a package by the package wrapping machine.

Figure 9 is an enlarged vertical transverse sectional view on the line 9—9 of Figure 2.

Figure 10 is an enlarged vertical transverse sectional view on the line 10—10 of Figure 2.

Figure 11 is an enlarged vertical transverse sectional view on the line 11—11 of Figure 2.

Figure 12 is an enlarged vertical transverse sectional view on the line 12—12 of Figure 2, illustrating in dot and dash lines the final fold imparted to a package being wrapped.

Referring to the drawings by reference characters, the numeral 10 designates my package wrapping machine in its entirety which is intended to fold the ends of a wrapper about the ends of a rectangular shaped article, such as a block of cream cheese, butter, or the like. In order to appreciate the various successive folder devices embodied in the machine 10 and their relationship, I shall first describe the successive folding steps necessary to fold the ends of a wrapper to closed position, and which folds are imparted to the wrapper during the passage of the wrapper through the package wrapping machine 10. These folding operations are clearly illustrated in Figures 5a to 8 inclusive.

Assume that a rectangular block A of cream cheese is to be wrapped in a normally flat foil sheet wrapper B. The wrapper B is wider than the length of the block A and of a length to entirely fold about the sides of the block with the ends thereof disposed in overlapping relation as illustrated in Figure 5. This initial folding operation is performed by hand preparatory to the insertion of the partially wrapped package into the machine 10, and by reason of the projecting ends of the wrapper, there is sufficient material which when folded inwardly, is capable of entirely closing the ends of the block A. The open extending ends of the wrapper are simultaneously closed by a series of four folding operations illustrated in Figures 5a to 8 inclusive, and in order to distinguish the respective portions of the wrapper to be successively folded, I shall refer to them as four flaps arranged at each end of the wrapper, namely, a rear side flap C, an opposed front side flap D, a bottom flap E consisting of the lapped ends of the wrapper, and a top end flap F. The flaps C, D, E, and F, are successively folded inwardly at folding stations C', D', E', and F', arranged on a flat elongated base 11 of the machine 10, and which base may be placed upon a table, or it may have legs so as to be self supporting. The folding stations are arranged in longitudinal alinement upon the flat elongated table or base 11 and the package to be wrapped is successively presented to the stations in the order above mentioned.

Folder station C' comprises a pair of spaced parallel bars 12—12 having flat confronting side walls 13—13 and which bars are adjustably mounted on the base 11 for a limited movement toward and away from each other. Bolts 14 pass upwardly through elongated transversely elongated slots 15 in base 11 and through openings 16 in the bars 12 and the upwardly projecting threaded ends of the bolts receive wing clamping nuts 17. The heads of the bolts are countersunk in recesses 18 in the underside of the base and engage washers 19 which bridge the slots 15. The inwardly facing end of each bar 12 is undercut or recessed as at 20 and the face 21 of the undercut is curved outwardly and upwardly. The flat vertical wall 13 meets the inner end of the bar 12 at a round corner 22, and the rounded corners of the two bars are in confronting relation and constitute the folders for infolding of the rear side flaps C at the ends of the package as illustrated at the right of Figure 4. The spaced parallel bars 12—12 also act as guide rails for a pusher bar 23 which is provided with an upstanding hand grip 24 adjacent its outer end. A fixed stop 25 is secured to the base 11 in the path of rearward movement of the pusher bar, and when the rear end of the pusher bar is abutting the stop, the front end thereof is disposed inwardly of and adjacent the rounded corner folders 22—22 as illustrated in full lines in the drawings. After the operator prepares the wrapper B about the blank A in the manner shown in Figure 5, the same is reversed and placed upon the base forward of the bars 12 with the lapped portions of the wrapper face down so as to prevent accidental unfolding thereof. The package is now pushed rearwardly by the operator of the machine so as to enter the space between the rounded corners of the bars 12 and abut the front end of the pusher bar 23. As the rear flaps C of the package wrapper engage the round folder corners 22 during the sliding of the package between the bars 12—12, the same will be folded inwardly against the ends of the block of cheese A, thus completing the initial folding operation. Due to the ductile characteristic of the foil from which the wrapper is made and also by reason of the formation of folded triangular shaped webs G from the projecting ends of the wrapper, the flaps C will remain in their folded position during travel of the partially wrapped package to the next folder station D'. As the package is slid between the bars 12—12 the bottom flaps E and folded webs G enter the recesses or undercuts 20—20. To move the package from station C' to station D', the operator grasps the handle 24 of the pusher bar 23 and pushes forwardly thereon, whereupon the package is presented to station D' to impart infolding of the flaps D.

The folder station D includes a pair of spaced relatively short bars 26—26 having flat confronting vertical side walls 27—27 and which are disposed in alinement with the walls 13—13 of the bars 12—12. The underside of the bars 26—26 are undercut or recessed inwardly from the confronting vertical walls 27—27 as at 28 to facilitate the free passage of the yet unfolded bottom flaps E as the package passes from station D' to E'. The bars 26—26 are secured in adjusted spaced relation by bolts 29 which pass through slots in the base and through openings in the said bars, the upper threaded ends thereof having clamping wing nuts 30 thereon. The adjustable fastening means for the bars 26—26 is similar to that for the bars 12—12 as are like adjustable fastening means for the folders at the stations E' and F' hereinafter to be described. The entrance ends of the top walls of the undercuts or recesses 28 are curved upwardly as at 31 to guide the flaps E into the undercut passages. Those inner corners of the bars 26—26 confronting the bars 12—12 are rounded as at 32—32 and as the unfolded flaps D—D are pushed against the rounded folder surfaces 32—32 by a push exerted upon the pusher bar 23, the package passes the rounded folder surfaces 32—32, causing the front end flaps D to be folded inwardly against the block of cheese A in the same manner as the already infolded flaps C. The package now assumes the position shown in Figure 6, the folding of the flaps D forming triangular webs H. As the package passes between the bars 26—26, the inner flat walls 27—27 thereof serve to hold the infolded flaps C and D in their respective infolded positions. As the package passes from the folder station D' to the folder station E', the same passes beneath a flattener or ironer member 33 which is constructed of metal and includes spaced legs 34—34 which are fixedly secured to the base 11 by screws 35. Integral with the legs 34 and spanning the space therebetween, is a forwardly and downwardly curved resilient member 36, the lower free edge of which rests upon the spaced parallel bars 37—37 which constitute station E'. The space between the lower edge of the member 36 and the base 11 is less than the thickness of the package passing therebeneath, thus the package must be forced past the member 36 which being of resilient material, flexes upwardly and the tension produced by the upward flexing causes the top and bottom sides of the wrapper to be smoothed out and which pressure applied to the package causes the opposed top and bottom sides of the wrapper to adhere to the block of cream cheese A. Also, the member 36 prevents the partially folded wrapped article from riding upwardly as it passes the up-folder station E'.

The folder bars 37—37 are adjustable toward and away from each other in the same manner as the bars 12 and 26 hereinbefore described, and they are clamped in adjusted position by bolts 38 to which thumb nuts 39 are threaded. The ends of the bars 37—37 which are in confronting relation with respect to the bars 26—26 have their inner side walls beveled upwardly to provide upfolder surfaces 40, the said surfaces being curved as at 41. As the bottom end flaps E of the package are forced against the upwardly beveled surfaces 40, the flaps E will fold upwardly to the position shown in Figure 7, and these upwardly folded flaps E are held in folded position by the flat vertical walls 42 provided on the inner sides of the bars 37—37.

Extending forwardly from the bars 37—37 are spaced flat parallel guide rails 43—43 which rails support the folder bars 44—44 of the final folder station F'. The guide rails 43—43 and bars 44—44 are adjustable toward and away from each other as units in the same manner as the previously mentioned folder bars, that is, by bolts 45 which receive wing clamping nuts 46 on their threaded ends. The ends of the folder bars 44—44 which are disposed in confronting relation with respect to the folder bars 37—37, have undercut folder surfaces 47 against which the top end flaps F engage as the package is pushed forward thereagainst. The undercut surfaces 47—47 push the top end flaps F downwardly into

overlapping engagement with the upfolded flaps E, thus completing the end folding of the package as shown in Figure 8. The flaps are held in their infolded position as they pass between the bars 44—44 by means of the flat inner vertical side walls 48, and also by the inner sides of the guide rails 43—43. After passing between the bars 44—44, the packages leave the base 11, and if desired, there may be provided a chute, conveyor, or other means for receiving the wrapped packages as they pass from the wrapping machine 10.

The length of the pusher bar 23 is not sufficient to push a single package entirely past all of the folder stations, but it will be understood that after a package to be wrapped has been folded by the stations C' and D', and the said package is pushed forward by the pusher bar 23, that subsequent packages to be wrapped will, when inserted into position, provide a row or train of abutting packages as illustrated in dotted lines in Figure 2, thus one package will push the next forward package. It is only necessary for the operator to actuate the pusher member 23 a relatively short stroke to move a package from the station C' to the station D'.

From the foregoing description it will be seen that the machine may be rapidly operated by a single operator and by a relatively short stroke not tiring to the operator. The various folder devices may be adjusted toward and away from each other to accommodate packages of different sizes, and also, the parts are readily removable for replacement and cleaning purposes. For sanitary reasons, the entire machine may be constructed of wood with the exception of the ironer member 33, and the bolts and nuts which secure the folder members in adjusted position upon the base 11.

While I have shown and described what I consider to be the most practical embodiment of my invention, I wish it to be understood that such changes in construction as come within the scope of the appended claims may be resorted to without in any way departing from the spirit of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

1. A manually operated machine for folding inwardly the ends of a wrapper about the corresponding ends of a rectangular article to be wrapped comprising a flat base, a pair of opposed spaced parallel folder bars fixedly mounted on said base, the inner ends of the bars being undercut and their inner corners rounded, a pusher member slidably mounted on said base and disposed between said bars and guided thereby during its sliding movement, the inner end of the pusher member being disposed short of the rounded inner corners of the bars when the pusher member is in fully retracted position, whereby a partially wrapped package may be placed upon said base and manually slid inwardly between the bars to cause the rounded corners thereof to impart an initial infold to each end of the wrapper, and a plurality of succcessive spaced apart folder stations mounted on said base forwardly of and in longitudinal alinement with the folder bars whereby manual sliding of the pusher member forwardly will cause the initially infolded ends of the wrapper to be successively presented to the respective folder stations to complete the infolding of the ends of the package.

2. A manually operated machine as set forth in claim 1, including a resilient presser element mounted on said base and disposed between two adjacent folder stations and beneath which the package being wrapped must be forcibly pushed to cause the smoothing out of the upper side of the wrapper after partial folding of the ends and prior to the passage of the package past the final folder station.

3. A manually operated machine for inwardly folding the ends of the wrapper of a partially wrapped rectangular shaped package comprising a flat elongated base having a package feeding station intermediate its ends, front and rear side end folder devices mounted on said base in spaced confronting relation and respectively disposed at the front and rear of the feeding station and arranged in longitudinal alinement, each front and rear side end folder device including a pair of spaced transversely opposed bars, the width of the space between the bars being equal to that of the package to be wrapped, a manually actuated package pusher element slidably mounted on said base between the bars of the rear side end folder device, stop means for limiting the rearward retracted movement of the pusher element so that the front end of the same is inwardly of the plane of the front ends of the bars when fully retracted, the inner sides of the front ends of the bars being rounded and undercut, an up-folder device mounted forwardly of the front side end folder device, a down-folder device mounted forward of the up-folder device, said up-folder and down-folder devices being in longitudinal alinement with the front and rear side end folder devices whereby a rectangular shaped article having a wrapper prefolded about the sides thereof and with the ends of the wrapper projecting beyond the ends of the article, may be placed upon the base at the feeding station and manually slid rearwardly between the bars of the rear side end folder device to receive initial side end folds and by subsequent manual forward sliding of the pusher element, the partially wrapped package may be forcibly pushed past the front side end folder device, the up-folder device, and the down-folder device successively in the order named to complete the folding of the ends of the wrapper about the article to be wrapped.

4. A manually operated package wrapping machine as set forth in claim 3, including a downwardly and forwardly curved resilient presser member fixedly supported above the top of the up-folder device in the path of the upper side of the package being wrapped to smooth the upper side of the partially wrapped package and prevent accidental riding up of the package as it passes the up-folder device.

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