April 30, 1935. C. TREDGET 1,999,431

WRAPPING OF ARTICLES

Filed June 12, 1934 2 Sheets-Sheet 1

Fig. 1.

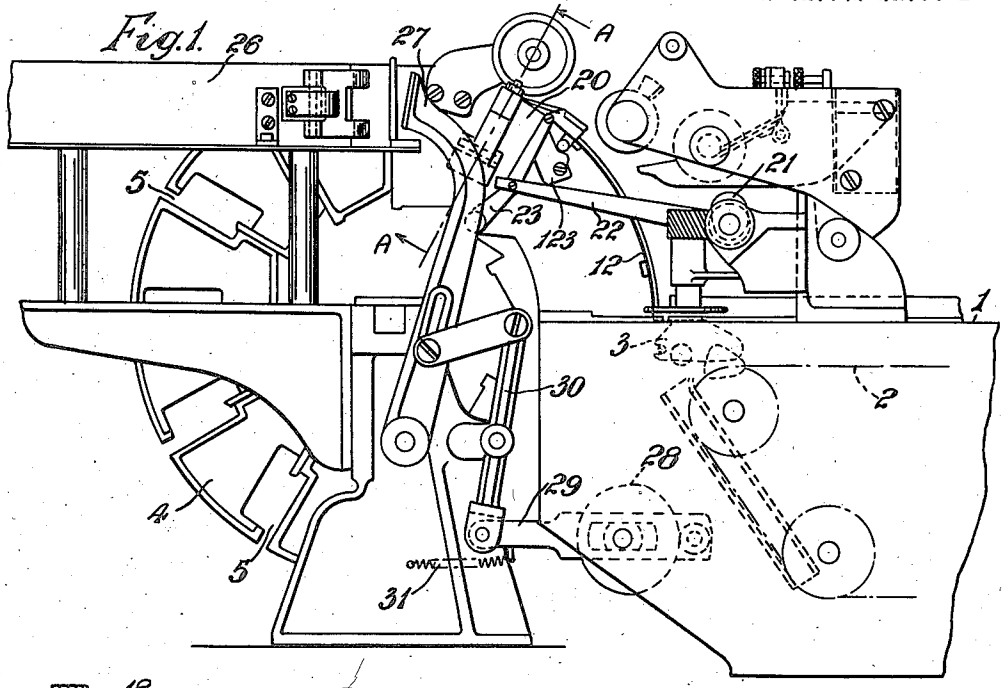


Fig. 3.

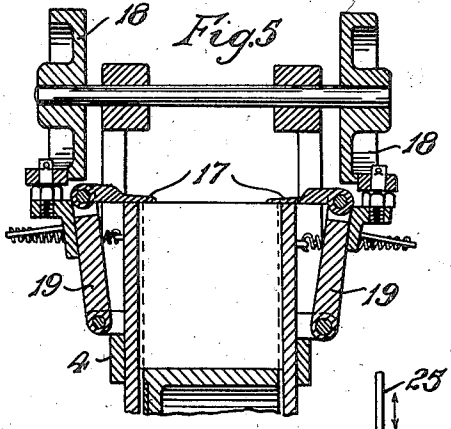


Fig. 8.

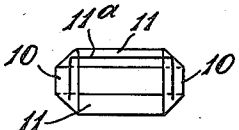
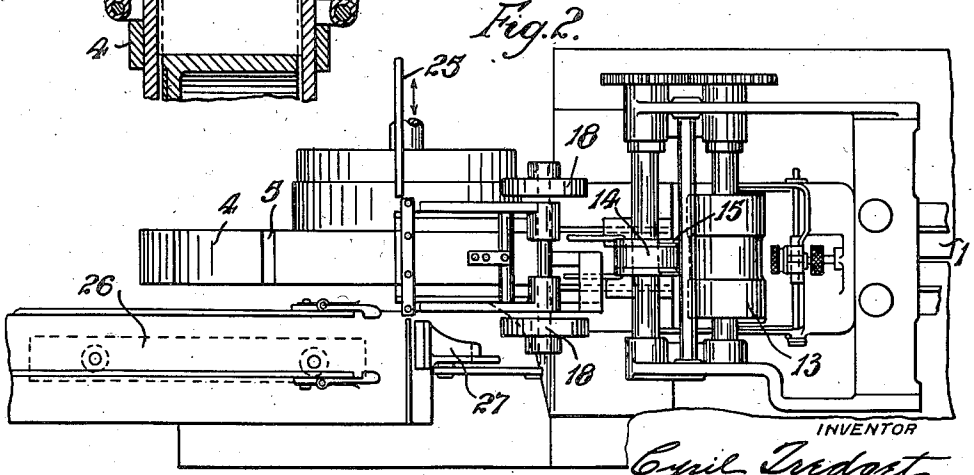


Fig. 2.



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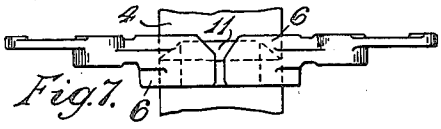


Fig. 7.

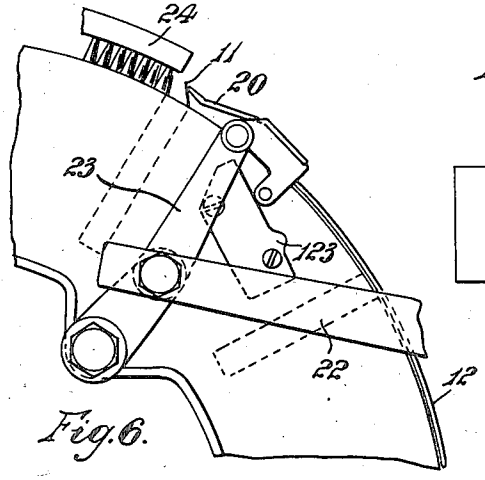


Fig. 6.

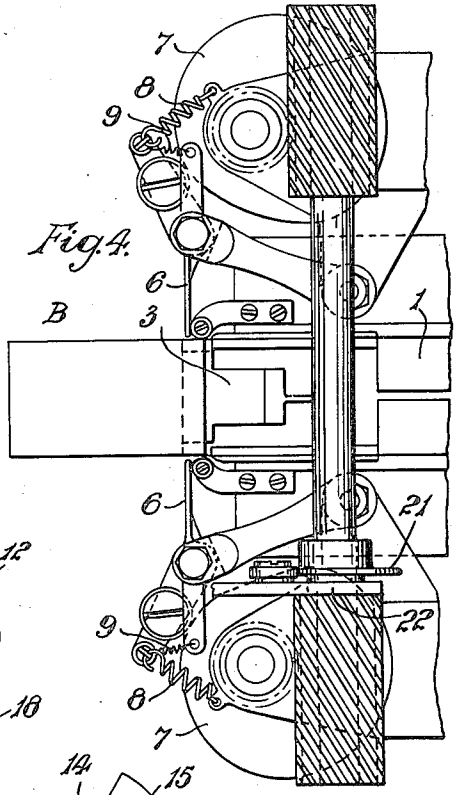


Fig. 4.

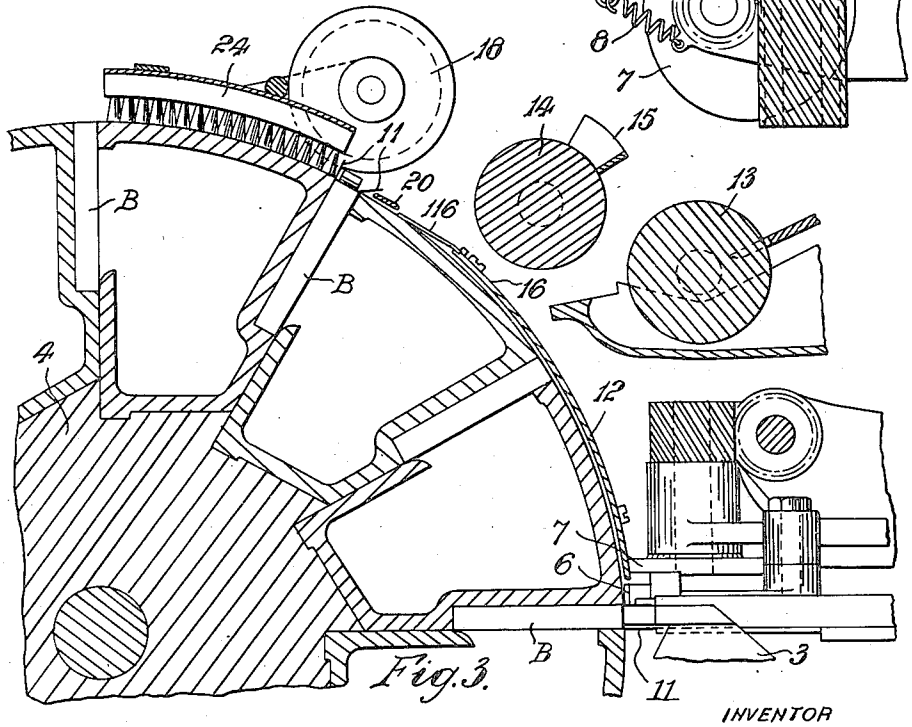


Fig. 3.

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WRAPPING OF ARTICLES

Cyril Tredget, Deptford, London, England

Application June 12, 1934, Serial No. 730,312
In Great Britain June 21, 1933

12 Claims. (Cl. 93—7)

This invention is for improvements in or relating to the wrapping of articles, and to machinery therefor, and refers more particularly to wrapping an article or batch of articles in a U shaped wrapper of the block ended type, the end opposite the block end being closed by means of end folds.

It is an object of the invention to provide a method of closing and sealing the open end of a block ended wrapper consisting of the steps of forming the narrow end folds of the wrapper and folding the broad end flaps in such a manner that they extend outwardly from the broad faces of the article, applying adhesive to the outwardly extending broad end flaps, folding one of said flaps so that it engages with and adheres to the narrow end folds, and folding the remaining broad end flap so that it engages with and adheres to the previously folded broad flap.

Further, according to the invention, there is provided an apparatus for closing and sealing the open end of a block ended wrapper wherein articles wrapped in open ended wrappers are delivered in succession to a rotatable drum and wherein means are provided to open the broad end flaps against the periphery of the drum, to apply adhesive to said opened flaps, to fold inwardly the narrow end flaps and to fold the broad end flaps to close and secure the wrapper.

The invention will be more particularly described with reference to the accompanying drawings in which:—

Figure 1 is a side elevation of apparatus constructed in accordance with the invention.

Figure 2 is a plan of Figure 1.

Figure 3 is a sectional elevation of a portion of Figure 1.

Figure 4 is a plan of part of Figure 3.

Figure 5 is a sectional view taken on line A—A, Figure 1.

Figure 6 shows a detail of Figure 1.

Figure 7 is a detail of Figure 3.

Figure 8 is a view showing a packet in the drum.

Like references refer to like parts throughout the specification and drawings.

Referring to the drawings, the articles B being wrapped are carried along the bed 1 of the machine by any suitable means, such for example, as a continuous conveyor 2 having a series of pusher pieces 3, and the wrapper is placed about the article so that it forms a U shape about the leading end of the article or batch of articles being wrapped. The side folds of the wrapper are made in any suitable manner (not shown) and the partly wrapped article with the wrapper open at the end opposite to the block end is then inserted into a rotatable drum 4 provided on its periphery with a series of pockets 5. The pusher piece 3 which has been moving the partly wrapped article up to this stage is then tripped backwardly out of engagement with the end of the article in order that the first closing operation may be performed upon the open end of the wrapper.

When the pusher piece has been removed from the open end of the wrapper, a pair of reciprocating folders 6, operated by cams 7 and springs 8 and 9, is arranged to move across the open end of the wrapper and simultaneously form the narrow end folds 10 at the end of the wrapper, and open out the upper remaining portion of the wrapper forming the broad end flap 11, in such a manner that it assumes a position substantially at right angles to the upper broad face of the article being wrapped and is caused to rest upon the surface of the drum 4 as shown in Figure 7 while the other broad end flap is formed and remains in a substantially horizontal position as shown in Figure 3. The folders 6 are operated so that on their return movement they move in a straight line. If desired, the drum may be provided with heating elements (not shown) arranged to dry the adhesive securing the side folds of the wrapper, which were formed before the articles were inserted into the drum.

The drum which is preferably given an intermittent movement, then moves a further stage, the upper broad end flap 11 being retained in the opened position by a plate 12 which partly shrouds the drum 4 and also folds the horizontally disposed lower broad end flap 11 against the surface of the drum.

Above the bed 1 of the machine or in another suitable position there is provided an adhesive applying apparatus 13 having a wheel 14 which is arranged to apply lines of adhesive 11a to the opened flaps 10 and 11 of the packet (see Figure 8). The wheel 14 is formed with segmental portions 15 which project through an opening 16 in the shroud 12 and apply lines of adhesive to the flaps 11.

The drum is now moved to a position where the broad end flaps 11 are folded down in order finally to secure the wrapper. Before these flaps can be folded down, the side flaps 10 which have sprung upwardly when passing the opening 16 and out of the control of spring guides 116 have to be again folded. To refold these flaps a pair of folders 17 operated by cams 18 and levers 19 move over the packet and hold the flaps 10 in position. A reciprocating folder 20 which moves

in a path concentric with the face of the drum and is operated by a cam 21 and levers 22 and 23, is arranged by means of a fixed cam 123 to engage the underside of the lowermost broad end flap 11 and folds it so that it engages with and adheres to the narrow side folds 10, the folders 17 being moved away as the broad flap approaches. The drum 4 is then moved a further stage and during its movement it passes beneath a fixed folder, for example, a plate, or as shown in the drawings, a brush 24 which is arranged to fold the remaining broad end flap 11 downwardly so that it engages with and adheres to the previously folded broad end flap. The completely wrapped package B is now removed from the drum by means of a plunger 25 and inserted into stacker 26 by a further plunger 27 operated by a cam 28, levers 29, 30 and spring 31. The stacker may be provided with means, for example, heaters, not shown, to dry the adhesive securing the wrappers.

What I claim as my invention and desire to secure by Letters Patent is:—

1. For a wrapping machine, apparatus for closing the open ends of block ended wrappers comprising in combination, a conveyor having pockets to receive articles in open ended wrappers, means to insert the articles into said pockets, means to form the narrow end folds of the wrapper at the open end thereof, means operable to fold the broad end flaps outwardly away from the open end of the wrapper and against a support, means to supply adhesive to at least one broad end flap and the narrow end folds, means reciprocable across the path of the article to retain the side folds in position, means movable above the path of the article and operable to follow the same to close one broad end flap, means in the path of the article to close the remaining broad end flap, and means to eject the wrapped article from the conveyor.

2. For a wrapping machine, apparatus for closing the open ends of block ended wrappers, comprising in combination, a rotatable conveyor wheel having pockets to receive articles in open ended wrappers, an element to insert the articles into the pockets, a pair of folding elements to form the narrow end folds of the wrapper at the open end thereof and fold one broad end flap upwardly against the periphery of the wheel, a stationary shroud concentric with said wheel to fold downwardly the other broad end flap against said periphery, said broad end flaps being held in the opened position by said shroud until adhesive has been applied to the end of the wrapper, a member to apply adhesive to one broad end flap and the two narrow end folds, elements reciprocable transversely of the direction of movement of the wheel to engage the narrow side folds, an element movable above the wheel and in path substantially concentric therewith to fold one broad end flap onto the end of the article, and a stationary element in the path of said articles to fold the remaining broad end flap into engagement with said other flap to close the wrapper.

3. For a wrapping machine, apparatus for closing the open ends of block ended wrappers, comprising in combination, a rotatable conveyor wheel having pockets to receive articles in open ended wrappers, an element to insert the articles into the pockets, a pair of folding elements to form the narrow end folds of the wrapper at the open end thereof and fold one broad end flap upwardly against the periphery of the wheel, a stationary shroud concentric with said wheel to fold downwardly the other broad end flap against said periphery, said broad end flaps being held in the opened position by said shroud until adhesive has been applied to the end of the wrapper, a member to apply adhesive to one broad end flap and the two narrow end folds, elements reciprocable transversely of the direction of movement of the wheel to engage the narrow side folds, an element movable above the wheel and in path substantially concentric therewith, said element being pivotally carried by a lever and controlled by a cam operative to insert the element beneath one broad end flap whereby the movements of the element cause one broad end flap to be folded onto the end of the article, and a flexible element in the path of said articles to fold the remaining broad end flap into engagement with said other flap to close the wrapper.

4. For a wrapping machine, apparatus for closing the open ends of block ended wrappers, comprising in combination, a rotatable conveyor wheel having pockets to receive articles in open ended wrappers, an element to insert the articles into the pockets, a pair of folding elements to form the narrow end folds of the wrapper at the open end thereof and fold one broad end flap upwardly against the periphery of the wheel, a stationary shroud concentric with said wheel to fold downwardly the other broad end flap against said periphery, said broad flaps being held in the opened position by said shroud until adhesive has been applied to the end of the wrapper, a member to apply adhesive to one broad end flap and the two narrow end folds, elements reciprocable transversely of the direction of movement of the wheel to engage the narrow side folds, an element movable above the wheel and in path substantially concentric therewith to fold one broad end flap onto the end of the article, and a flexible element in the path of said articles to fold the remaining broad end flap into engagement with said other flap to close the wrapper.

5. For a wrapping machine, apparatus for closing the open ends of block ended wrappers, comprising in combination, a rotatable conveyor wheel having pockets to receive articles in open ended wrappers, an element to insert the articles into the pockets, a pair of folding elements to form the narrow end folds of the wrapper at the open end thereof and fold one broad end flap upwardly against the periphery of the wheel, a stationary shroud concentric with said wheel to fold downwardly the other broad end flap against said periphery, said broad end flaps being held in the opened position by said shroud until adhesive has been applied to the end of the wrapper, a member to apply adhesive to one broad end flap and the two narrow end folds, elements reciprocable transversely of the direction of movement of the wheel to engage the narrow side folds, an element movable above the wheel and in path substantially concentric therewith, said element being pivotally carried by a lever and controlled by a cam operative to insert the element beneath one broad end flap whereby the movements of the element cause one broad end flap to be folded onto the end of the article, and a flexible element in the path of said articles to fold the remaining broad end flap into engagement with said other flap to close the wrapper.

6. For a wrapping machine, apparatus for closing the open ends of block ended wrappers, com-

prising in combination, a rotatable conveyor wheel having pockets to receive articles in open ended wrappers, an element to insert the articles into the pockets, a pair of folding elements to form the narrow end folds of the wrapper at the open end thereof and fold one broad end flap upwardly against the periphery of the wheel, a stationary shroud concentric with said wheel to fold downwardly the other broad end flap against said periphery, said broad end flaps being held in the opened position by said shroud until adhesive has been applied to the end of the wrapper, a member to apply adhesive to one broad end flap and the two narrow end folds, elements reciprocable transversely of the direction of movement of the wheel to engage the narrow side folds, an element movable above the wheel and in path substantially concentric therewith to fold one broad end flap on to the end of the article, a stationary element in the path of said articles to fold the remaining broad end flap into engagement with said other flap to close the wrapper, and an element operative transversely of the direction of movement of the wheel to eject the completely wrapped articles therefrom.

7. For a wrapping machine, apparatus for closing the open ends of block ended wrappers, comprising in combination, a rotatable conveyor wheel having pockets to receive articles in open ended wrappers, an element to insert the articles into the pockets, a pair of folding elements to form the narrow end folds of the wrapper at the open end thereof and fold one broad end flap upwardly against the periphery of the wheel, a stationary shroud concentric with said wheel to fold downwardly the other broad end flap against said periphery, said broad end flaps being held in the opened position by said shroud until adhesive has been applied to the end of the wrapper, a member to apply adhesive to one broad end flap and the two narrow end folds, elements reciprocable transversely of the direction of movement of the wheel to engage the narrow side folds, an element movable above the wheel and in path substantially concentric therewith, said element being pivotally carried by a lever and controlled by a cam operative to insert the element beneath one broad end flap whereby the movements of the element cause one broad end flap to be folded onto the end of the article, a stationary element in the path of said articles to fold the remaining broad end flap into engagement with said other flap to close the wrapper, and an element operative transversely of the direction of movement of the wheel to eject the completely wrapped articles therefrom.

8. For a wrapping machine, apparatus for closing the open ends of block ended wrappers, comprising in combination, a rotatable conveyor wheel having pockets to receive articles in open ended wrappers, an element to insert the articles into the pockets, a pair of folding elements to form the narrow end folds of the wrapper at the open end thereof and fold one broad end flap upwardly against the periphery of the wheel, a stationary shroud concentric with said wheel to fold downwardly the other broad end flap against said periphery, said broad flaps being held in the opened position by said shroud until adhesive has been applied to the end of the wrapper, a member to apply adhesive to one broad end flap and the two narrow end folds, elements reciprocable transversely of the direction of movement of the wheel to engage the narrow side folds, an element movable above the wheel and in path substantially concentric therewith to fold one broad end flap onto the end of the article, a flexible element in the path of said articles to fold the remaining broad end flap into engagement with said other flap to close the wrapper, and an element operative transversely of the direction of movement of the wheel to eject the completely wrapped articles therefrom.

9. For a wrapping machine, apparatus for closing the open ends of block ended wrappers, comprising in combination, a rotatable conveyor wheel having pockets to receive articles in open ended wrappers, an element to insert the articles into the pockets, a pair of folding elements to form the narrow end folds of the wrapper at the open end thereof and fold one broad end flap upwardly against the periphery of the wheel, a stationary shroud concentric with said wheel to fold downwardly the other broad end flap against said periphery, said broad end flaps being held in the opened position by said shroud until adhesive has been applied to the end of the wrapper, a member to apply adhesive to one broad end flap and the two narrow end folds, elements reciprocable transversely of the direction of movement of the wheel to engage the narrow side folds, an element movable above the wheel and in path substantially concentric therewith, said element being pivotally carried by a lever and controlled by a cam operative to insert the element beneath one broad end flap to be folded onto the end of the article, a flexible element in the path of said articles to fold the remaining broad end flap into engagement with said other flap to close the wrapper, and an element operative transversely of the direction of movement of the wheel to eject the completely wrapped articles therefrom.

10. For a wrapping machine, apparatus for closing the open ends of block ended wrappers, comprising in combination, a rotatable conveyor wheel having pockets to receive articles in open ended wrappers, an element to insert the articles into the pockets, a pair of folding elements to form the narrow end folds of the wrapper at the open end thereof and fold one broad end flap upwardly against the periphery of the wheel, a stationary shroud concentric with said wheel to fold downwardly the other broad end flap against said periphery, said broad end flaps being held in the opened position by said shroud until adhesive has been applied to the end of the wrapper, a member to apply adhesive to one broad end flap and the two narrow end folds, elements reciprocable transversely of the direction of movement of the wheel to engage the narrow side folds, an element movable above the wheel and in path substantially concentric therewith to fold one broad end flap onto the end of the article, a stationary element in the path of said articles to fold the remaining broad end flap into engagement with said other flap to close the wrapper, an element operative transversely of the direction of movement of the wheel to eject the completely wrapped articles therefrom onto a platform, and an element operative to insert said wrapped articles into a stacker.

11. For a wrapping machine, apparatus for closing the open ends of block ended wrappers, comprising in combination, a rotatable conveyor wheel having pockets to receive articles in open ended wrappers, an element to insert the articles into the pockets, a pair of folding elements to form the narrow end folds of the wrapper at the open end thereof and fold one broad end flap upwardly against the periphery of the wheel, a

stationary shroud concentric with said wheel to fold downwardly the other broad end flap against said periphery, said broad flaps being held in the opened position by said shroud until adhesive has been applied to the end of the wrapper, a member to apply adhesive to one broad end flap and the two narrow end folds, elements reciprocable transversely of the direction of movement of the wheel to engage the narrow side folds, an element movable above the wheel and in path substantially concentric therewith to fold one broad end flap onto the end of the article, a flexible element in the path of said articles to fold the remaining broad end flap into engagement with said other flap to close the wrapper, an element operative transversely of the direction of movement of the wheel to eject the completely wrapped articles therefrom onto a platform, and an element operative to insert said wrapped articles into a stacker.

12. For a wrapping machine, apparatus for closing the open ends of block ended wrappers, comprising in combination, a rotatable conveyor wheel having pockets to receive articles in open ended wrappers, an element to insert the articles into the pockets, a pair of folding elements to form the narrow end folds of the wrapper at the open end thereof and fold one broad end flap upwardly against the periphery of the wheel, a stationary shroud concentric with said wheel to fold downwardly the other broad end flap against said periphery, said broad end flaps being held in the opened position by said shroud until adhesive has been applied to the end of the wrapper, a member to apply adhesive to one broad end flap and the two narrow end folds, elements reciprocable transversely of the direction of movement of the wheel to engage the narrow side folds, an element movable above the wheel and in path substantially concentric therewith, said element being pivotally carried by a lever and controlled by a cam operative to insert the element beneath one broad end flap whereby the movements of the element cause one broad end flap to be folded onto the end of the article, a flexible element in the path of said articles to fold the remaining broad end flap into engagement with said other flap to close the wrapper, an element operative transversely of the direction of movement of the wheel to eject the completely wrapped articles therefrom onto a platform, and an element operative to insert said wrapped articles into a stacker.

CYRIL TREDGET.