

April 15, 1930.

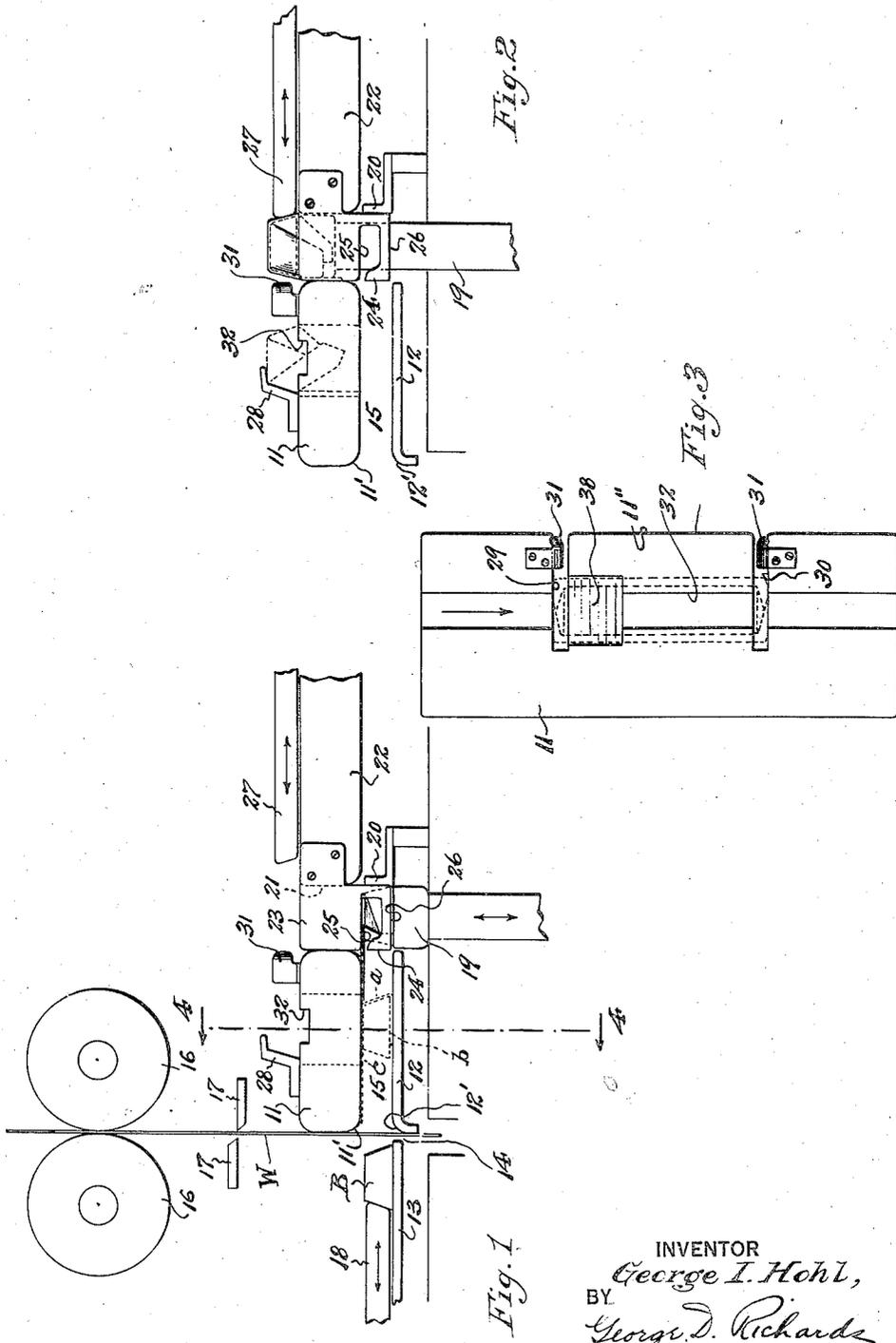
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1,754,318

PACKAGING MECHANISM

Filed Aug. 15, 1928

2 Sheets-Sheet 1



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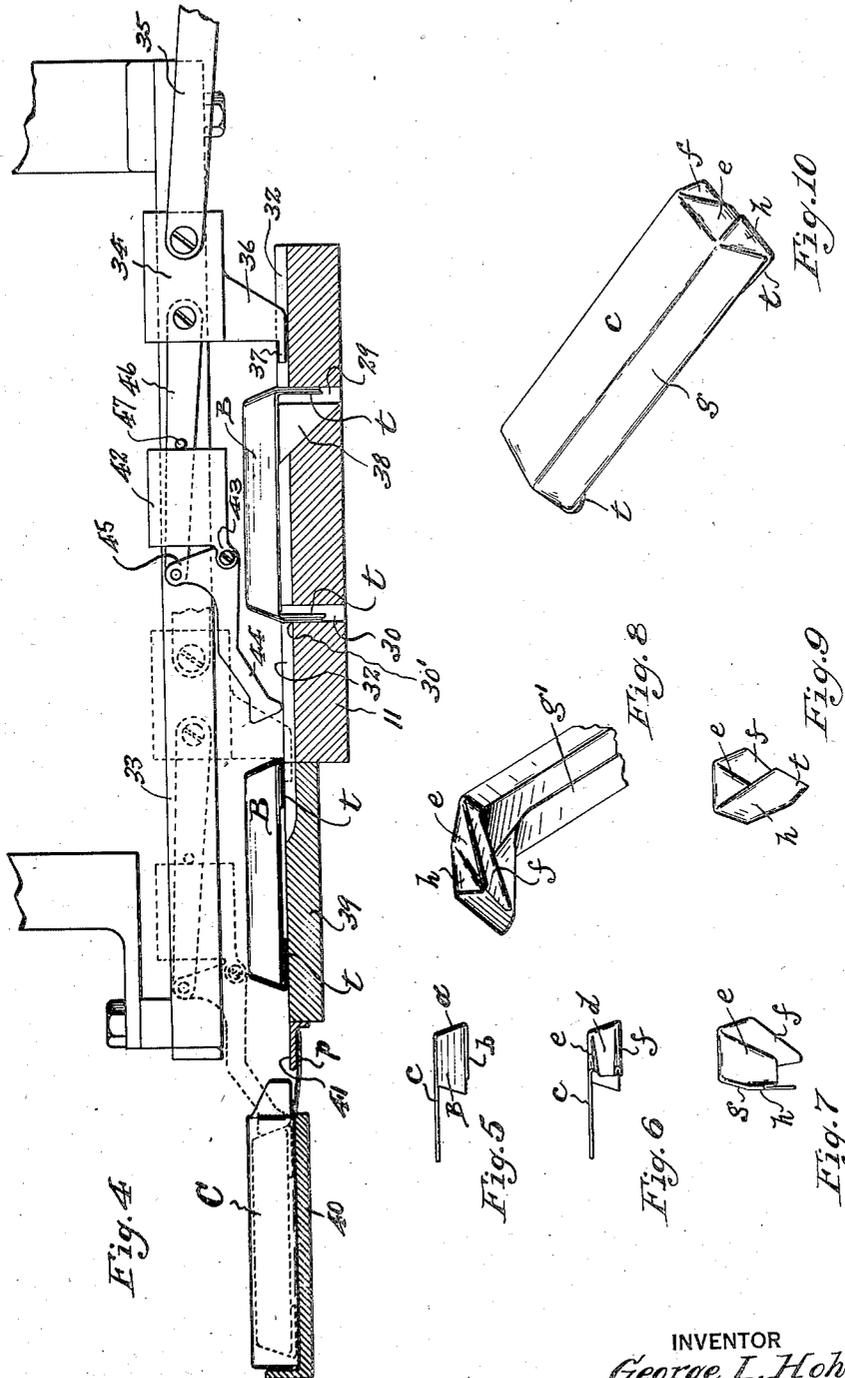
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# UNITED STATES PATENT OFFICE

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## PACKAGING MECHANISM

Application filed August 15, 1928. Serial No. 299,679.

This invention relates to an improved mechanism for packaging articles of commerce; and the invention has reference, more particularly, to an improved means for wrapping articles and, if desired, inserting the same in paper cartons or boxes.

The invention has for its principal object to provide a very simple mechanism for folding a paper wrapper or wrapper of other flexible material in enveloping relation to an article, which mechanism has been reduced to great simplicity, and in which the wrapper folding means are stationary, the manipulation of the wrapper being attained by bodily shifting the article with the wrapper material through the several stationary wrapper folding devices.

The invention also has for its object to provide a novel arrangement of machine whereby the movement of the article through the final wrapper folding means may be utilized to also insert the wrapped article in a carton or box.

Other objects of this invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a fragmentary side elevation of portions of the wrapping mechanism, showing the provisions for making longitudinal folds of the wrapper about an article; Figure 2 is a similar view showing advanced stages of the longitudinal folding of the wrapper; Figure 3 is a plan view of the end fold wrapping means; and Figure 4 is a sectional view taken on line 4—4 in Figure 1 and showing the means for moving the article and its wrapper relative to the end fold wrapping means, together with the means for stationing a carton to receive the wrapped article.

Figures 5, 6, 7, 8 and 9 are fragmentary end views showing various stages of the wrapper folding operations; and Figure 10 is a perspective view of the completely wrapped article.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

The novel mechanism, according to this invention, is adapted to fold a wrapper sheet about barlike articles, such e. g. as chewing-gum, confectionery bars, soap-cakes and similar articles of commerce. The underlying principles involved in this invention are the provision of stationary wrapping means with relation to which the bar to be wrapped and a sheet of flexible wrapping material may be progressively and bodily moved to effect the successive formation of the wrapper folds; such arrangement greatly reducing the number of moving parts and consequently greatly simplifying the mechanism. The moving parts consist in means for moving the bar and wrapper in operative relation to the stationary fold producing devices, and it will be understood that suitable time power transmission means (not shown) may be applied to said moving parts in order to obtain desired sequential operation thereof.

Referring now to said drawings, the reference character 11 indicates a folder block beneath which is arranged, in parallel relation to the under side thereof, a folder plate 12, which is spaced from said folder block 11 for a distance slightly exceeding the thickness of the bar B to be wrapped. Disposed in advance of said folder plate 12, and substantially level therewith, is a bar delivery platform 13, so arranged as to provide a space 14 for the insertion of wrapping material at the mouth of the bar receiving opening 15 intermediate the folder block 11 and folder plate 12. Located above the folder block 11, and vertically aligned substantially in the plane of the mouth of the bar receiving opening 15 intermediate the folder block 11 and folder plate 12, are a pair of wrapping material feed rolls 16, beneath which are located the wrapper cutter shears 17. The wrapping material W is drawn from a supply roll (not shown) by the timed operation of the feed rolls 16. The wrapping material (usually paper) is furnished in a width exceeding the length of the bar B to be wrapped, and is fed downwardly across the mouth of said receiving opening 15, whereupon the timed operation of the shears 17 severs a portion therefrom of

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sufficient length to laterally encircle the bar B.

The bars B are delivered from a supply thereof (not shown) by the timed reciprocation of a delivery plunger 18. The plunger 18 thrusts the bar sidewise along the delivery platform 13 with engagement with the wrapper sheet, which is severed from the main supply by timely operation of said shears 17, whereupon continued forward movement of the delivery plunger 18 moves the bar together with the wrapper sheet into and through the opening or passage 15, thus forming a longitudinal wrap *a* across the leading side of the bar B. As the bar and wrapper sheet enter said opening or passage, the lower end portion of the wrapper sheet is engaged by the lip 12' of the folder plate 12 and is thereby caused to fold longitudinally, as at *b*, under the bottom of the bar B, while the upper end portion of the wrapper sheet is engaged by the lip 11' of the folder block 11 and is thereby caused to fold longitudinally, as at *c*, over the top of the bar B. The initial feeding and positioning of the wrapper sheet is such that the fold *b* is of size less than the width of the bottom of the bar B, while the fold *c* substantially exceeds the width of the top of said bar B so as to provide excess material to be later folded around the rear side of the bar B and under the bottom thereof.

Located at the far side of said folder plate 12 is a vertically reciprocable plunger 19, which is initially disposed with its effective face initially flush with the plane of said folder plate 12. Said plunger 19 is of a width slightly exceeding the maximum width of the bar B, and situated adjacent the far side of said plunger 19 is a stationary stop member 20. Located in the plane of said folder block 11 and spaced from the far side thereof so as to provide an intermediate passage 21 for the movement of the plunger 19, is a secondary folder block 22. Secured to said secondary folder block 22 to extend transversely across the ends of the passage 21 are end folder plates 23. Said end folder plates 23 are each provided at their lower end portions with a tuck finger 24 spaced downwardly from the folding lip 25 thereof, and the lower marginal edge of each tuck-finger 24 also provides a folding lip 26 spaced slightly above the plane of the folder plate 12.

As the delivery plunger 18 completes its inward stroke the bar B with the wrapper is carried out of the passage 15 and stopped against the stop member 20, thereby depositing the bar upon the plunger 19. As the bar and wrapper move onto the plunger 19, the bar passes between the tuck-fingers 24 whereby portions of the wrapper which project beyond the ends of the bar are engaged and folded inward over the latter to form tuck-folds *d* and simultaneously therewith an upper end fold *e* and a lower end fold *f* to ini-

tially extend in outward horizontal planes from the bar ends. As the bar is finally deposited on the plunger 19, the upper end folds *e* underlie the folding lips 25 of the end folder plates 23 and the lower end folds *f* underlie the folding lips 26 of the tuck-fingers 24.

When the bar is positioned as above stated upon the plunger 19, timed actuation of the plunger 19 causes the same to rise with the bar and its wrapper through the passage 21, with the following effects. The fold *c* is engaged by the lower rear lip 11'' of the folder block 11 whereby the same is caused to be turned downwardly and thus folded over the adjacent side of the bar to produce the side covering fold *g*, while also forming end folds to extend in vertical plane beyond the ends of the bar and at the same time the lower end fold *f* and the upper end fold *e* are turned down as they are carried upwardly past the respective folding lips 26 and 25 as the bar is lifted upwardly between the end folder plates 23. The upward stroke of the plunger 19 raises the bar to the level of the top or upper surface of the folder block 11.

Disposed above the secondary folder block 22 is a longitudinally reciprocable plunger 27. The forward stroke of the plunger 27 is timed to follow the completion of the upward stroke of the plunger 19, so that said plunger 27 may engage the bar and its wrapper, which has been raised by the plunger 19, and thereupon move the same laterally for deposit upon the upper face of the folder block 11, and against a position determining stop 28 which is fixed upon the latter. Said folder block 11 is provided with a pair of transverse inwardly entering vertical slots 29 and 30 aligned with the ends of the bar B. As the plunger 27, on its operative forward stroke, moves the bar B and its wrapper toward the folder block 11, the free depending end of the side covering fold *g* is engaged by the upper rear folding lip 11'' of the folder block 11 whereby the same is caused to be turned under the bottom of the bar to form the final longitudinal lap fold *g'*, while at the same time the folds *h* are engaged by folder ears 31 which are respectively mounted on the folder block 11 adjacent to the outer sides of the respective slots 29 and 30 near the upper rear folding lip 11''. Said folder ears 31 serve to turn back said folds *h* over the ends of the bar and the previously formed folds *e* and *f*. As the bar B thus far wrapped moves upon the folder block 11, the depending terminal portions *t* of the end folds respectively ride into the said slots 29 and 30.

Formed in the upper face of the folder block 11 and longitudinally aligned with the longitudinal axis of a bar B deposited thereon is a channel 32. Suitably supported above said folder block 11, and also aligned

to the longitudinal fold of movement of the bar B thereupon, is a stationary slide-rail 33 upon which is slidably mounted a slide-block 34 adapted to be reciprocated on the side-rail by a suitably driven connecting rod or link 35. Said slide-block is provided at its forward end with a depending push-piece 36, having a forwardly projecting folding finger 37 adapted to ride in said channel 32 below the top surface plane of said folder block 11. Formed in the body of said folder block 11 in alignment with the position of the deposited bar B and so as to communicate with the rear slot 29 and underlie the rear end of the deposited bar B, is a cutaway portion or clearance space 38, opposite which the depending terminal portions *t* of the rearward end folds of the wrapper are positioned when said bar B is deposited on the folder block 11 in proper position as determined by the stop 28. When the bar B is so deposited the depending terminal portions *t* of the forward end folds of the wrapper lying in the slot 30 are opposed to a folding lip 30' provided by the upper edge of the outer side of said slot 30.

After the bar B with the thus far folded wrapper is deposited on the folder block 11, in the manner above stated, timed actuation of said slide-block 34 is initiated whereby the same moves forward toward and into engagement with the rear end of said bar B. Under this operation the forwardly projecting folding finger 37 engages the said depending terminal portions *t* of the rearward end folds of the wrapper, and swings such parts upwardly through the clearance space 38 to underlie the bottom of the bar, and on completion of this operation the push-piece 36 is brought into engagement with the rear end of the bar B. Continued movement of the slide-block 34 now moves the bar B longitudinally or endwise over the surface of the folder block 11, thus causing the depending terminal portions *t* of the forward end folds of the wrapper to ride over the folding lip 30' whereby the same are turned back under the bar B. As the bar is moved forward the terminal portions *t* of the end folds of the wrapper will be engaged between the upper surface of the folder block 11 and the bottom of the bar B and thus held in final folded position, and at the end of the forward stroke of the slide block 34 the completely wrapped bar B will be moved off of the folder block 11 into a receiving platform 39 which is disposed flush with the same.

As shown in Figure 4 of the drawings, means are provided for presenting an open-ended carton C in the path of the wrapped bar B, the same comprising a carton support or shelf 40 disposed adjacent to the outer end of the platform 39, and preferably spaced somewhat therefrom, so that a carton closure flap retaining flange 41 may be provided to

engage and remove from the path of the wrapped bar B the foldable carton closure flap *p*. The means for propelling the wrapped bar B over the platform 39 and thence into the awaiting carton, comprises the following devices. Slidably arranged on the slide-rail 33, in advance of the slide-block 34 is a second slide-block 42 having a fulcrum ear 43 at its lower forward end. Pivoted to said fulcrum ear 43 is a forwardly projecting impeller arm 44 having at its pivoted end an integral upwardly extending arm 45. This latter arm 45 is interconnected with the forward end of said slide-block 34 by a pivoted link 46. Projecting from the side of said link 46 rearward of the second slide-block 42 is a stud 47 which at proper times engages said rear end of said second slide-block 42 to transmit forward movement thereto. As the slide-block 34 is moved forward on its operative stroke, the link 46 moves forward therewith to thereby first swing forward the arm 45 to turn the impeller arm 44 downward on its pivotal connection so that its free end is positioned behind the rear end of a wrapped bar B which has been previously deposited on the receiving platform 39. By the time the impeller arm 44 has completed its downward swing, the stud 47 abuts the rear end of the second slide-block 42 and consequently forward movement is imparted thereto and to the impeller arm 44. Said impeller arm 44 on such forward movement engages the advanced wrapped bar B and slides the same toward and into the carton C, while at the same time the slide-block 34 has propelled a succeeding bar from the folder block 11 to the platform 39 thereby completing the folds of the wrapper applied thereto. On the retractive stroke of the slide-block 34, the initial pull on the link 46 first swings rearwardly the arm 45 of the impeller, thereby swinging upwardly the impeller arm 44 so that the same clears the succeeding wrapped bar B, which has been deposited on the platform 39, whereupon the arm 45 abuts the forward end of said second slide-block 42 to impart retractive movement thereto so that all parts of the propelling mechanism are returned to normal initial positions.

From the above description of the construction and operation of the mechanism it will be understood that the articles passed therethrough will be enveloped in their wrappers in a rapid and efficient manner; and since the means for producing folds of the wrappers are stationary, the wrapping operations are effected merely by moving the articles and their wrappers step by step relative to said folding means. Such arrangement results in a very simple and easily timed and actuated mechanism which may be continuously operated, and which is little likely to become accidentally disarranged in use.

A further advantage of the mechanism of

this invention is that it produces the wrapper end folds in successive overlapping relation, whereby a tight close fitting enclosure of neat appearance is obtained.

5 As many changes could be made in the above described construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description as shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:—

15 1. In a packaging mechanism, a stationary folder block, means to provide a passage contiguous to the underside of said folder block through which an article and wrapper therefor may be moved to produce initial longitudinal folds of the latter about the former, means to provide a second passage contiguous to a vertical face of said folder block and communicating with said first mentioned passage through which the said article and its wrapper may be moved to produce additional longitudinal wrapper folds, end folder plates bordering said second passage, said end folder plates having tuck fingers aligned with said first mentioned passage, said tuck fingers and end folder plates operating to produce certain end folds of the wrapper when the article and wrapper are moved past the same, means to move the article and wrapper through said first passage, means to move the article and wrapper through said second passage, means to move the article and wrapper from said second passage onto the upper surface of said folder block whereby the longitudinal wrapper folds are completed, means connected with the upper side of said folder block for completing the end folds of the wrapper, a discharging means for removing a wrapped article from said folder block, said discharging means having a finger for inturning end folds at one end of the wrapped article, and means connected with said folder block for inturning the end folds at the opposite end of the wrapped article as the same is discharged from said folder block.

2. A packaging mechanism, a stationary folder block, means to provide a passage contiguous to the underside of said folder block through which an article and wrapper therefor may be moved to produce initial longitudinal folds of the latter about the former, means to provide a second passage contiguous to a vertical face of said folder block and communicating with said first mentioned passage through which the said article and its wrapper may be moved to produce additional longitudinal wrapper folds, end folder plates bordering said second passage, said end folder plates having tuck fingers aligned with said first mentioned passage, said tuck

fingers and end folder plates operating to produce certain end folds of the wrapper when the article and wrapper are moved past the same, said folder block having transverse indented slots entering the same from said second passage through which depending portions of the wrapper end folds may move as the article and wrapper are transferred from said second passage onto said folder block, upstanding folder blades mounted on said folder block respectively contiguous to said respective slots of the latter, means to move the article and wrapper through said first passage, means to move the article and wrapper through said second passage, means to move the article and wrapper from said second passage onto the upper surface of said folder block whereby the longitudinal wrapper folds are completed and additional end folds are produced by said folder blades, a stop on said folder block for positioning the article and wrapper thereon, said folder block having a cutaway portion communicating with one of said slots thereof, a discharging means for removing a wrapped article from said folder block, and said discharging means having a finger for inturning end folds at one end of the wrapped article through said cutaway portion and under said article, the end folds at the opposite end of said wrapped article being inturned beneath the same by engagement with the margin of the other of said slots when said wrapped article is discharged from said folder block.

3. In a packaging mechanism, a stationary folder block having a bottom face, a rear side face and a top face respectively bounding successive portions of a path through which an article and wrapper therefor may be moved to produce successive longitudinal folds of said wrapper around the article; means contiguous to the path of movement of said article about said folder block adapted to form end folds of the wrapper; and means for moving said article and its wrapper relative to said faces of the folder block and to the end fold forming means.

4. In a packaging mechanism, a stationary folder block having a bottom face, a rear side face and a top face respectively bounding successive portions of a path through which an article and wrapper therefor may be moved to produce successive longitudinal folds of said wrapper around the article; means contiguous to the path of movement of said article about said folder block adapted to form end folds of the wrapper thereof; means cooperative with said folder block for inturning end folds at one end of the wrapped article; means connected with said folder block for in-turning end folds at the other end of the wrapped article; and means for moving said article and its wrapper relative to said faces of the folder block and to the end fold forming and in-turning means.

5. In a packaging mechanism, a stationary folder block, means to provide a passage contiguous to the underside of said folder block through which an article and wrapper therefor may be moved to produce initial longitudinal folds of the latter around the former, means to provide a second passage contiguous to a vertical face of said folder block and communicating with said first mentioned passage through which the article and its wrapper may be moved to produce additional longitudinal wrapper folds, means to move the article and wrapper through said first passage, means to move the article and wrapper through said second passage, and means to move the article and wrapper from said second passage onto the upper surface of said folder block whereby the longitudinal wrapper folds are completed.

6. In a packaging mechanism, a stationary folder block, means to provide a passage contiguous to the underside of said folder block through which an article and wrapper therefor may be moved to produce initial longitudinal folds of the latter around the former, means to provide a second passage contiguous to a vertical face of said folder block and communicating with said first mentioned passage through which the article and its wrapper may be moved to produce additional longitudinal wrapper folds, means to move the article and wrapper through said first passage, means to move the article and wrapper through said second passage, means to move the article and wrapper from said second passage onto the upper surface of said folder block whereby the longitudinal wrapper folds are completed, means bordering said second passage to form certain end folds of the wrapper, and means at the upper side of said folder block to complete the end folds of the wrapper.

7. In a packaging mechanism, a stationary folder block, means to provide a passage contiguous to the underside of said folder block through which an article and wrapper therefor may be moved to produce initial longitudinal folds of the latter around the former, means to provide a second passage contiguous to a vertical face of said folder block and communicating with said first mentioned passage through which the article and its wrapper may be moved to produce additional longitudinal wrapper folds, means to move the article and wrapper through said first passage, means to move the article and wrapper through said second passage, means to move the article and wrapper from said second passage onto the upper surface of said folder block whereby the longitudinal wrapper folds are completed, means bordering said second passage to form certain end folds of the wrapper, means connected with the upper side of said folder block for making additional end folds of the wrapper, and

means cooperative with said folder block for in-turning the extremities of the end folds of the wrapper as the wrapped article is discharged from the upper side of said folder block.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 27th day of July, 1928.

GEORGE I. HOHL.

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