

Feb. 3, 1925.

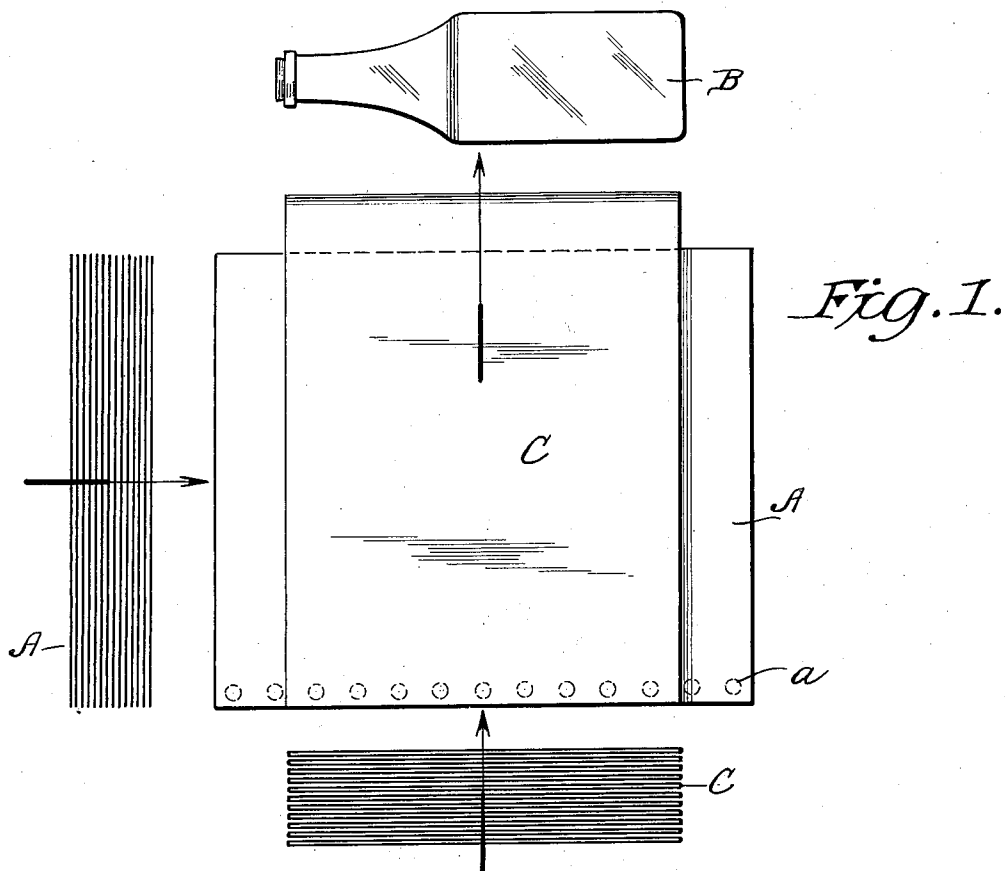
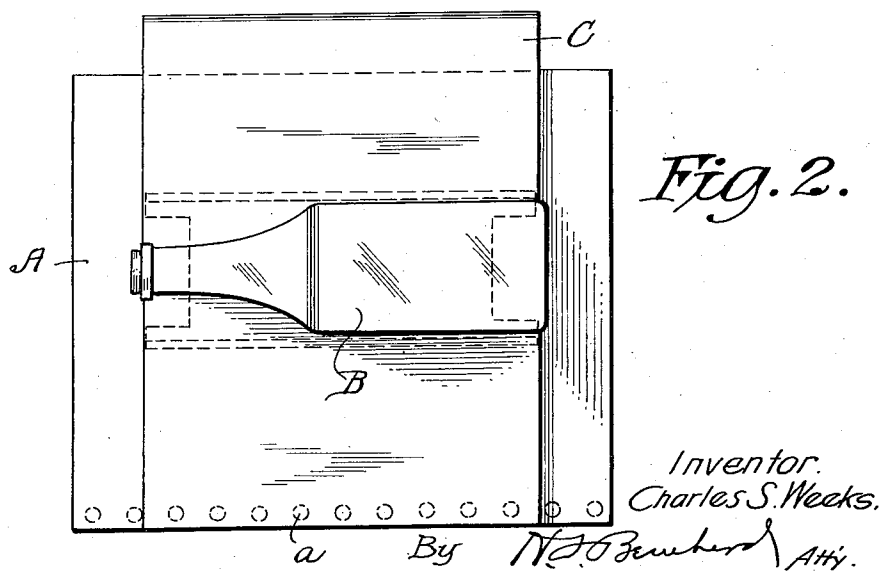
1,525,015

C. S. WEEKS

ART OF WRAPPING PACKAGES

Filed Dec. 24, 1920

3 Sheets-Sheet 1



Feb. 3, 1925.

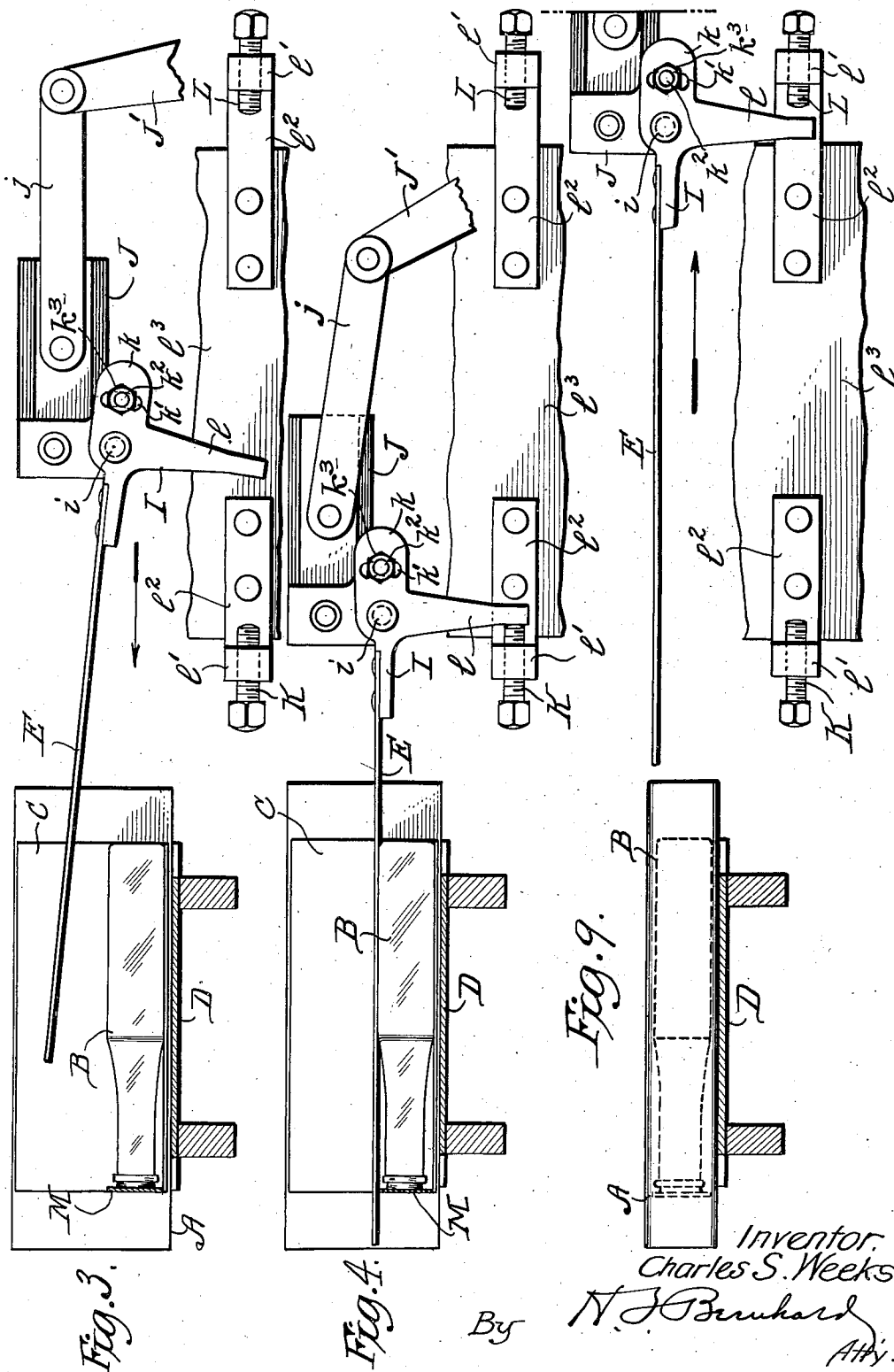
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C. S. WEEKS

ART OF WRAPPING PACKAGES

Filed Dec. 24, 1920

3 Sheets-Sheet 2



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C. S. WEEKS

ART OF WRAPPING PACKAGES

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3 Sheets-Sheet 3

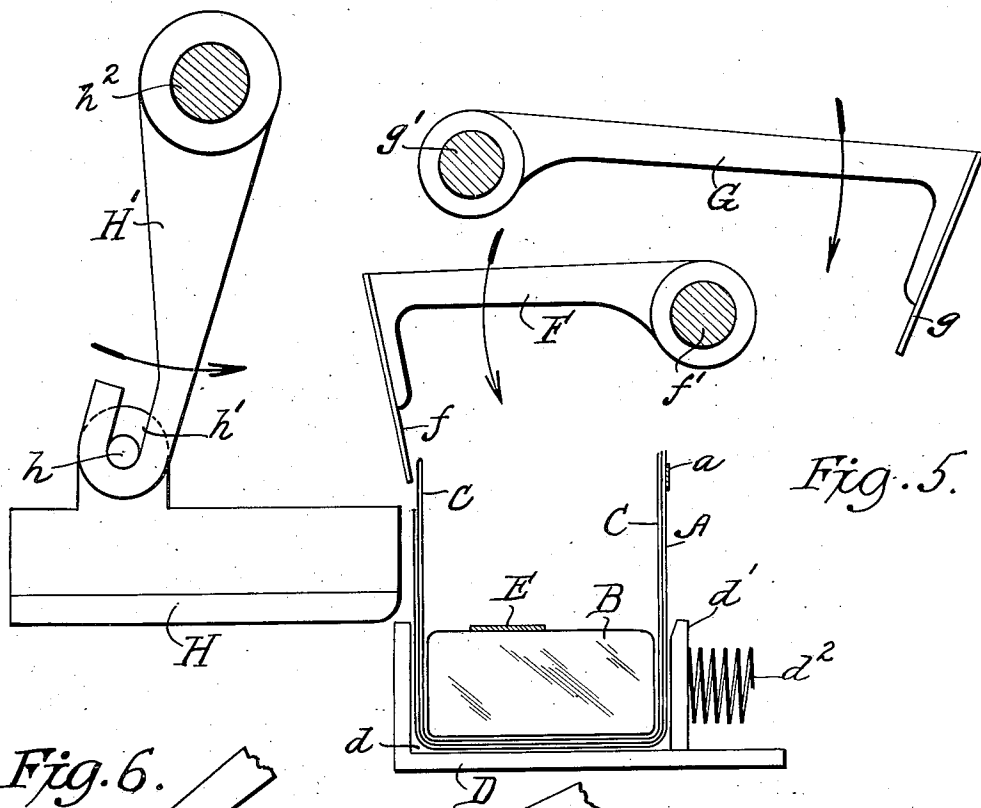


Fig. 5.

Fig. 6.

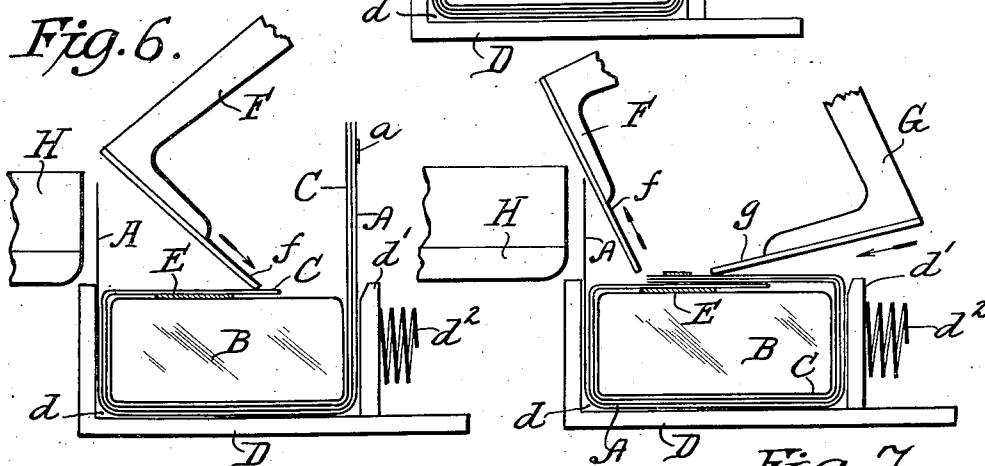


Fig. 7.

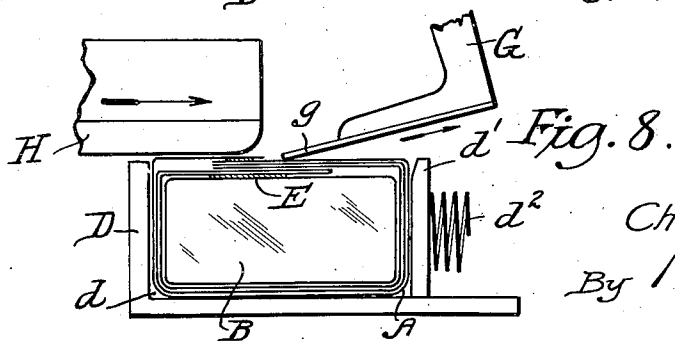


Fig. 8.

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Patented Feb. 3, 1925.

1,525,015

UNITED STATES PATENT OFFICE.

CHARLES S. WEEKS, OF SOUTH ORANGE, NEW JERSEY, ASSIGNOR TO WEEKS ENGINEERING CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

ART OF WRAPPING PACKAGES.

Application filed December 24, 1920. Serial No. 432,910.

To all whom it may concern:

Be it known that I, CHARLES S. WEEKS, a citizen of the United States, residing at South Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in the Art of Wrapping Packages, of which the following is a specification.

This invention pertains to the art of wrapping packages, the same including a new mode of procedure and a novel mechanism whereby a wrapper is applied to an article the external surface or contour of which is irregular, more or less.

The application of a wrapper directly to an article is attended with more or less difficulty in instances where the surface of said article or the contour thereof is irregular, a chief source of the difficulty being the inability to obtain, without the aid afforded by a carton or analogous element, a smooth plane surface for the application of the pressure required to fasten or seal the wrapper.

In a broad comprehensive aspect, my invention involves a procedure as well as a means whereby a smooth solid support is provided for the lapping marginal portions of a wrapper, which smooth solid support affords a continuous surface for the application of the pressure required to effect the sealing of one portion of the wrapper to an underlying portion thereof.

The improvement in the art of applying a wrapper to an article the surface or contour of which is or may be irregular involves in a preferred mode of procedure the steps of folding a wrapper, with or without a circular or other insert, around the article so as to position one marginal portion of said wrapper into overlapping relation to another marginal portion thereof, interposing a relatively unyielding or stiff member intermediate the article and the lapped portions of said wrapper, and applying pressure to said lapped portions of the wrapper, the aforesaid interposed member affording a solid smooth continuous bearing surface for supporting the lapped portions of the wrapper whereby the pressure is applied equally to said wrapper along the line of the seam notwithstanding an irregularity or inequality in the surface of the article to which said wrapper is applied.

The mechanism which I have devised for the performance of the wrapping and seal-

ing operations includes, as its salient feature, the employment of a part or member which for the purpose of identification will be referred to herein as a sealing blade, the same comprising a metallic member the length and width of which is suited to the size of the wrapper so as to afford the required support to the lapping marginal portions of said wrapper during the application of the closing, or folding and sealing, pressure. Said sealing blade co-operates with the wrapper folding mechanism to the end that said blade may be positioned in operative relation to the article and to the wrapper prior to the operation of finally folding the marginal portions of said wrapper relatively to said article, suitable means being provided for actuating said sealing blade to effectuate the introduction of the blade into the required operative relation to the article and to the wrapper, and to withdraw said blade from such relation to the article and the wrapper subsequent to the application of the pressure for closing or sealing the wrapper.

The invention consists, further, in assembling a wrapper and an article with or without an insert or an end piece in such manner that said article is superposed upon the wrapper; folding the wrapper partially around said article; thrusting a sealing member alongside the article and in a plane parallel to the line of the seam by which the wrapper is ultimately fastened or sealed; folding one side of the wrapper after the other for the free marginal portions thereof to occupy a lapping relation to the sealing member; then applying pressure to the lapping marginal portions of said wrapper, the sealing member affording a solid, continuous backing to said lapped margins of the wrapper, and finally withdrawing the sealing member from its position intermediate the article and the wrapper.

Other functions and advantages of the invention will appear from the following description taken in connection with the drawings, wherein—

Figure 1 is a diagrammatic view in plan illustrating the wrappers, the article, and the inserts ready for assemblage, and showing also an insert upon the wrapper.

Figure 2 is a similar view showing the insert imposed upon the wrapper and the article imposed upon the insert.

Figure 3 is an elevation partly in section of the assembled wrapper, insert, end piece, and article positioned within the pocket of a carrier, and the sealing blade in a position partly thrust over the assembled parts, the actuating means for said sealing blade being shown in elevation.

Figure 4 is a view similar to Figure 3 with the sealing blade advanced to its operative position with respect to the article.

Figure 5 is an elevation partly in section looking toward the right in Figures 3 and 4 illustrating the wipers and a pressure device for folding the upstanding marginal portions of the wrapper, said pressure device performing the function also of applying sealing pressure to said wrapper.

Figures 6 and 7 are views similar to Figure 5 illustrating the successive stages of folding the wrapper.

Figure 8 is an elevation similar to Figures 5, 6 and 7 illustrating the application of pressure for sealing the folded marginal portions of the wrapper, and

Figure 9 is an elevation partly in section similar to Figures 3 and 4 showing the sealing blade withdrawn from an operative relation to the package.

In the drawings, A is the wrapper, B an article, and C an insert to be assembled for wrapping the article, resulting in a package wherein the wrapper is applied to the article without utilizing a carton for encasing the article prior to the application of the wrapper, although it is to be understood that I may in some cases use a carton around the article and apply such wrapper to the carton.

Wrapper A is a flat sheet of suitable material, usually paper, and of a desired shape and dimensions, and in a preferred form, said wrapper is provided with adhesive material on one face and adjacent an edge thereof, the adhesive material being shown by dotted lines in Figures 1 and 2 as spots composed usually of a suitable paste.

Article B may be of any form, the same being shown in Figure 1 as a bottle the contour of which is irregular; i. e., the neck is tapering and the mouth and stopper are of different shape from the contour of the body.

Insert C is or may be a circular or folder adapted to be assembled with the article and to occupy a superposed relation to the wrapper. The insert may be omitted, or any kind of insert may be used.

The wrappers and inserts are contained in suitable magazines, and provision is made for feeding the wrappers, the inserts, the end piece, and the articles in the required order. The wrapper is first advanced to assume a flat horizontal position, after which the insert is positioned upon the wrapper, the relative dimensions of the wrapper and insert being such that one end of the insert

extends beyond a side edge of the wrapper whereas two edges of the wrapper protrude beyond corresponding edges of the insert, see Figure 2. It is to be understood that the insert may be of such dimensions as to lie altogether within the limits of the wrapper, and it may, in that case, be folded with the wrapper in two motions, instead of three, as shown herein. The article is imposed upon the insert, see Figure 2, and the three parts thus assembled are moved conjointly and in their assembled relation, to the wrapper folding mechanism certain elements of which are illustrated in Figures 3 to 9 inclusive.

D is a carrier of any suitable kind, the same being provided with a pocket d , one wall d' of which is movable and under the pressure of a spring d^2 , (see Figures 5 to 8). The pocket is open at the top to permit the free introduction of the assembled wrapper, article and insert, the opposing walls of said pocket acting to impart the first folds to the wrapper and the insert when the three assembled parts (A B C) are thrust into the pocket, the effect of which is to fold the wrapper and the insert around two sides of the article, leaving the marginal portions of the wrapper and the insert to extend upwardly from the pocket and with one end of the insert extending upwardly beyond a corresponding edge portion of the wrapper, see Figure 5.

Subsequent to the assemblage of the wrapper, article and insert, and to the operation of depositing the assembled parts into one pocket of the carrier for preliminary folding the wrapper and insert partly around said article, the carrier is advanced to assume an operative relation to a sealing member E, a plurality of wipers F G, and a pressure member H, a preferred construction of which elements will now be described.

Referring more particularly to Figures 3, 4 and 9, the sealing member is a thin straight blade composed of metal, usually of spring steel. The length of the blade usually exceeds the length of the article and the width of the wrapper, the said blade being sufficiently wide for the marginal portions of the wrapper to overlap said blade. The blade is secured at one end fixedly to a rocker I, the same being pivotally mounted at i on a slide J, the latter having reciprocating motion imparted thereto by a link j of a vibrating member J' , whereby the blade and the rocker may at the required times be advanced toward the carrier and withdrawn therefrom. The rocker is shown as being provided with two arms k , l , one of which (k) is provided with a slot k' which receives a fixed stud k^2 having a nut k^3 and carrying a helical friction spring (not shown) which acts to frictionally retain the rocker I in either of

its extreme positions, with blade E raised or lowered. The other arm *l* of the rocker is shown as depending from the slide, and said arm plays between two tappets K L during the reciprocating travel of the rocker and the blade with slide J, each tappet being shown as a screw mounted for adjustment in a lug *l'* of a plate *l''* attached to a stationary member *l'''* of the mechanism.

Wipers F G are shown as vibrating arms provided with suitable blades *f g* respectively, said arms being fixed to rockshafts *f' g'*. Means are provided for imparting vibratory motion to the wipers and for actuating said wipers in due order one after the other, the effective stroke of wiper F being in one direction whereas the effective stroke of wiper G is in a contrary direction, as indicated by the arrows in Figure 5.

The function of wiper F is to fold one of the two upstanding portions of insert C downwardly upon the article as shown in Figure 6, leaving the two marginal portions of wrapper A and the other upstanding marginal portion of insert C unaffected, whereas wiper G acts, upon the withdrawal of wiper F, for the purpose of folding downwardly the upstanding portions at the right of Figure 6 of wrapper A and insert C, leaving one portion of wrapper A at the left of Figure 6 still upstanding. Said second folded portions of the insert and the wrapper are turned over simultaneously and imposed upon the article and upon the previously folded edge of the insert, thus positioning in overlapping relation one portion of the insert and the wrapper with respect to the previously folded edge portion of the insert, such folded portions overlapping the sealing blade E, see Figure 7.

The two upstanding portions of the insert and the upstanding edge of the wrapper having been folded by successive operations of the wipers F G, pressure shoe H is operated to perform the function of folding the remaining upstanding portion of wrapper A into lapping relation to the previously folded edge of said wrapper, see Figure 8, said pressure shoe H being advanced into contact with the wrapper during the period of withdrawal of wiper G in order that said wiper G may act in retaining the folded insert and the partly folded wrapper in their proper relations to the article and to preclude an undesirable lifting and unfolding of the material upon the withdrawal of said wiper G and the effective stroke of the pressure shoe. Said shoe applies the pressure required to complete the operation of folding the wrapper and to forcibly depress one marginal portion of said wrapper into contact with the pasted margin *a* of the wrapper, the shoe having such action upon the folded mate-

rial as to finally press the same to the required form snugly around the article and to seal one margin of the wrapper to the other, the paste spots *a* having been applied by suitable mechanism to the underlying margin of the wrapper at a desired stage in the operation and prior to the folding of the pasted margin.

The pressure device in the embodiment of the invention herein shown consists of a shoe mounted for reciprocating movement in a rectilinear path across the carrier D to be capable of the required contact with the folded material. Said shoe is provided with a pin *h* fitting in a slot *h'* of a vibrating arm H', the latter being carried by a rockshaft *h''* which is associated with appropriate means for imparting movement to the arm H' and shoe H in due order with respect to the operation of the wipers F G.

The mechanism described operates as follows:—The wrapper, the insert, and the article are assembled as described in superposed order, and the assembled parts are deposited in the pocket *d* of carrier D, the walls of which act upon the wrapper and the insert to preliminarily fold the same around two sides of the article, and the marginal portions of said wrapper and insert extending upwardly from the walls of the pocket, one edge of said insert being flush with an adjacent edge of the wrapper whereas the other edge of the insert extends upwardly from the corresponding edge of the wrapper, see Figure 5. As the carrier D, with its load, is approaching the required position for the performance of the final folding and sealing operations, the blade E, wipers F G and shoe H occupy positions out of the path of said carrier; but as the latter comes to a state of rest, slide J is advanced, the sealing blade having been already lifted by contact with the tappet L at the finish of the previous withdrawal movement of the slide J and held in its lifted position by the friction spring (not shown) to an inclined position relatively to the carrier and its contained parts, and said sealing blade while so lifted being moved by the advancing motion of the slide over the article, see Figure 3. As the slide continues its movement toward a final position, arm *l* of the rocker I contacts with tappet K, the effect of which is to turn the rocker on its pivot and thus depress by a positive motion the sealing blade to a position parallel to the axial line of the article, said sealing blade in its final position being in contact with the article (see Figure 4) and presenting a continuous smooth surface at that part of the article over which the wrapper is to be lapped and sealed. The sealing blade remains in a stationary position over and in contact

with the article during the periods of operation of wipers F G and shoe H, but after shoe H acts to seal the wrapper, slide J is moved in an opposite direction and the sealing blade is withdrawn from its position intermediate the article and the wrapper, said blade during such withdrawal being movable in a path parallel to the axial line of the article (see Figure 9) in order to avoid disturbance of the wrapper and the insert with respect to the article. As the slide approaches its final withdrawn position, arm l of the rocker I contacts with the other tappet L, (see Figure 9) the effect of which is to turn the rocker on its pivot and to lift the sealing blade to the inclined position, in which position the sealing blade and the rocker are retained by the friction of the spring around the stud k² until the slide is again moved forward into contact with tappet K.

The carrier D and sealing blade being at rest in contact with the article as in Figure 4, the wiper F is oscillated in an accurate path indicated by the arrow in Figure 5, the other wiper G and shoe H being at rest, whereby the blade f of said wiper F presses on the insert at that edge which extends upwardly from the wrapper, the result of which is to fold one margin of the insert over and to press the same downwardly upon the article B and blade E, see Figures 5 and 6.

The wiper G now moves downward folding over simultaneously the right hand upstanding marginal portions of the insert C and the wrapper A. The respective movements of wipers F and G are so timed that the blade f remains in its lowermost position while the right hand portions of the wrapping materials are folded against it by blade g. Both blades f and g are made of some flexible material, such, for example, as relatively thin spring steel, hence the pressure exerted between them is a yielding pressure and the blade f is bent downwardly, pinching the left hand margin of insert C against the upper right hand corner of the sealing blade E (Fig. 6). This left hand fold of insert C is in this manner engaged by the sharp corner of the sealing blade so that the wiper F may recede and withdraw the blade f without also partially withdrawing along with it the insert C and making a bulge in the package. This receding movement of the wiper F now takes place (Fig. 7) and wiper G proceeds in its downward movement to complete the folding of the right hand margins of the insert and wrapper upon the left hand margin of the insert C, as shown in Fig. 7.

Thus the second fold of the wrapper and the insert is effected to position the insert and one portion of the wrapper in overlapping relation to the previously folded

portion of the insert at a time when the wiper F is effective in precluding the displacement of the first fold of the insert with respect to the article. As the wiper G recedes, shoe H is advanced, see Figure 8, said shoe pressing upon the remaining upstanding edge of the wrapper and acting to fold the same downwardly upon the previously folded edge of said wrapper, and the advancing movement of the shoe taking place during the period of withdrawal of the wiper and closely following the same so that there is no possibility of a displacement of the folded insert and one edge of the folded wrapper, thus insuring precision in effecting the overlap between the two margins of the wrapper. The shoe applies pressure upon the folded portions of the insert and the wrapper, and acts to forcibly press one margin of the wrapper into close contact with the other and pasted margin of said wrapper, the sealing blade E affording a solid continuous bearing surface for the application of the pressure required to effect the sealing of the lapping margins of the wrapper and said sealing blade compensating for the irregularity in the surface or the contour of article A, whereby the overlapped wrapper margin is pressed firmly upon the pasted wrapper margin throughout the length of the wrapper to effectively seal the two margins together. The side seal of the package being now complete, the sealing blade is pulled out of the package by the movement of slide J, as heretofore described, and the carrier D is moved by suitable means and carries the package from under shoe H to a position for the end folds to be made, shoe H returning meanwhile to its initial position as shown in Figure 5.

Subsequent to the application of the wrapper as herein set forth, the end portions of said wrapper are folded to produce closures to the ends of the packages. It is apparent that the closures at each end of the package should desirably present a neat appearance in order to conform to the regularity in outline of the package, and while such desirable regularity is attained at one end of the package by the relatively flat form of the bottle or other filler contents, still at the stoppered or capped end of the bottle the surface is comparatively irregular, hence the stoppered or capped end of the filler (bottle) does not afford the desirable plane surface for the end closure.

To overcome this objection and in furtherance of the purpose to so apply the wrapper to a bottle or other filler as to obtain a desirable regularity in appearance, it is proposed to supply a flat end piece M within the wrapper and to position said end piece into co-operative relation to the uniform end of the bottle or other filler. The end piece may desirably consist of a flat

piece of cardboard or other material, and it is supplied automatically at a desired stage in the operations of folding and sealing the wrapper. It is preferred to feed each end piece M into position against the capped or stoppered end of the bottle subsequent to the partial folding of the wrapper around the package by the deposit of the wrapper, insert and article within the pocketed carrier, suitable means being provided for feeding the end pieces to the successive packages. Also, the end piece is positioned within the limits of the partially folded wrapper prior to the introduction of the sealing blade into the desired relation to the filler contents, so that the end piece affords a support for the free end of the sealing blade (see Figure 4) during the operations of folding the insert and the wrapper upon said sealing blade and the application of sealing pressure to the lapped margins of the wrapper. The end piece affords a solid backing against which the material of the wrapper is folded and pressed during the operation of folding, or folding and sealing, the wrapper to form and complete the end closure for the wrapper of the package, whereby the end closure at the stoppered end of the article is adapted to be folded for presenting the desired regular appearance.

It is apparent that the invention is not restricted to the application of wrappers to bottles, nor to the use of an insert in connection with the wrapper and the article or filler; but on the contrary the invention includes the application of the wrapper with or without an insert to a desirable filler, which latter may be a bottle such as shown or any other article or material to be encased by a wrapper in accordance with the invention.

By my invention an article is wrapped in such manner that it presents a desirable regular form although such article is or may be of irregular contour, and the wrapper is sealed uniformly throughout the length of the lap or seam at the marginal or meeting ends thereof.

The invention in respect to the improvement in the art may be practiced by hand, but for economy and rapidity of operation it is desirable to utilize mechanism analogous to the devices herein disclosed, it being apparent, however, that the process may be practiced through the instrumentality of mechanism other than that shown and described as a practical means for the performance of the functions required.

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

1. In a package wrapping apparatus, the combination of mechanically actuated means for applying sealing pressure to the prox-

imate margins of a folded wrapper, and supporting means co-operating with said pressure means mechanically actuated to one position so as to support said margins during the application of the sealing pressure and to a second position to withdraw said supporting means from the package.

2. In a package wrapping apparatus, the combination with mechanically actuated wrapper-folding mechanism, of mechanically actuated means for applying sealing pressure to a wrapper, and supporting means co-operating with said pressure means mechanically actuated to one position so as to support the proximate margins of said wrapper during the application of sealing pressure and to a second position to withdraw said supporting means from the package.

3. In a package wrapping apparatus, the combination with mechanically actuated wrapper-folding arms, of mechanically actuated means for applying sealing pressure to a wrapper, and means co-operating with said pressure means mechanically actuated to one position so as to support the proximate margins of said wrapper during the application of sealing pressure and to a second position to withdraw said means from the package, said means also co-operating while in its first position with said folding arms to retain a margin of the partially folded wrapper in its folded position during the withdrawal of a folding arm.

4. In package wrapping mechanism, the combination with mechanically actuated wrapper-sealing means, of a blade for supporting the margins of a wrapper during the sealing thereof, and mechanically actuated means for moving said blade into and out of operative position with respect to the wrapper.

5. A package wrapping apparatus comprising, a carrier for supporting a filler and a wrapper in partially folded relation thereto, a blade mechanically actuated to a position adjacent a side of the filler for providing a straight folding and sealing surface therefor, means for folding the wrapper upon said blade with its marginal edges overlapping, and means for applying sealing pressure to said edges, said blade being also mechanically actuated to a second position to withdraw it from the package.

6. A package wrapping apparatus comprising, a carrier adapted to receive an article and partially fold a wrapper thereabout as the article and wrapper are laid therein, a blade mechanically actuated to a position adjacent a side of said article for providing a straight folding and sealing surface, a plurality of wipers mechanically actuated to fold the margins of the wrapper onto said blade in lapping relation, and a sealing device mechanically actuated to press

the margins together against said sealing surface, said blade being also mechanically actuated to a second position to withdraw it from the package.

5 7. A package wrapping apparatus comprising, a carrier adapted to receive an article and partly fold a wrapper thereabout as the article and wrapper are laid therein, and a blade adapted to be laid adjacent a side
10 of said article for providing a straight folding and sealing surface upon which to fold and seal the unfolded portions of the wrapper, said blade being pivotally mounted upon a slide mechanically reciprocated relative
15 to the carrier, and means associated with said slide for rotating the blade about its pivot, said means being actuated when the slide approaches one end of its stroke to lower the blade into position adjacent the
20 article, said means also being actuated when the slide approaches the opposite end of its stroke for raising the blade to its initial position.

8. In package wrapping mechanism, the
25 combination with mechanically actuated wrapper-sealing means, of a wrapper-supporting blade adapted, when in operative position adjacent a filler to provide a straight folding and sealing surface for the
30 wrapper, a carrying member upon which said blade is pivotally mounted and which is mechanically reciprocated to bring said blade into said operative position and to withdraw it from the package after the
35 wrapper has been sealed, and means co-operating with said blade for imparting pivotal movement thereto as the carrying member approaches each end of its stroke.

9. In package wrapping mechanism, a
40 carrier provided with a pocket, one wall of which is yieldable with respect to the other walls, combined with a wrapper supporting member, means for inserting and withdrawing said member relatively to the pocket of
45 said carrier, and wrapper folding and sealing means.

10. In the art of wrapping packages, the process which comprises, assembling a wrapper and a filler of uneven contour in superposed relation, inserting a wrapper-sup-

porting member in operative relation to said filler to provide an even surface upon which to fold the wrapper, folding the wrapper upon said member with the margins thereof overlapping each other, and withdrawing
55 the wrapper-supporting member from the thus wrapped filler.

11. In the art of wrapping packages the process which comprises, assembling a wrapper and a filler in superposed relation, folding
60 the wrapper partly around the filler leaving the ends upstanding in substantially parallel relation, inserting a wrapper-supporting member alongside the filler in a plane parallel to the line of the seam by
65 which the wrapper is to be ultimately sealed, folding the upstanding ends of the wrapper with their margins in lapping relation upon the wrapper-supporting member, applying sealing pressure to the lapping marginal
70 portions, and withdrawing the wrapper-supporting member from the filler thus wrapped.

12. In the art of wrapping packages, the
75 process which comprises assembling a wrapper and a filler in superposed relation, positioning an end-piece in opposing relation to the filler, inserting a wrapper-supporting member in operative relation to the filler, folding the wrapper into lapping relation to
80 the wrapper-supporting member so as to encase said end piece, and withdrawing the wrapper-supporting member from the wrapped filler.

13. In the art of wrapping packages, the
85 process which comprises assembling a wrapper and a filler in superposed relation, partially folding said wrapper with respect to the filler, feeding an end-piece into position adjacent the filler and into superposed relation to the partially folded wrapper, introducing a wrapper-supporting member into
90 operative relation to the filler, folding the wrapper into lapping relation to the wrapper-supporting member so as to encase the
95 end piece, and withdrawing the wrapper-supporting member from the wrapped filler.

In testimony whereof I have hereto signed my name this 17th day of December, 1920.

CHARLES S. WEEKS.