W. A. WEIGHTMAN AND C. H. NITSCH.

APPARATUS FOR PRODUCING SEALED WRAPPED PACKAGES.

APPLICATION FILED JULY 28, 1917.

1,426,429. Patented Aug. 22, 1922.

4 SHEETS—SHEET 1.

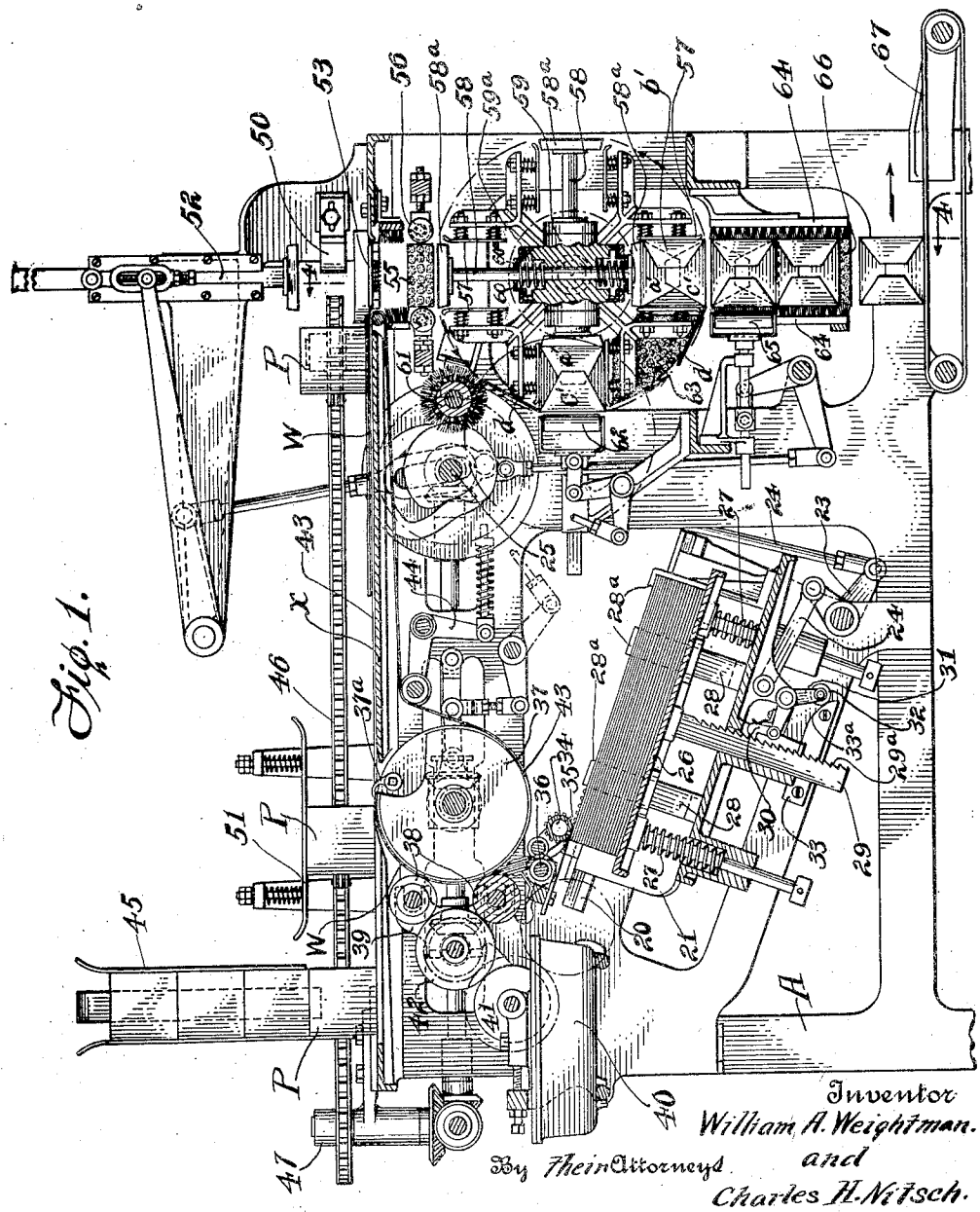


Fig. 1.

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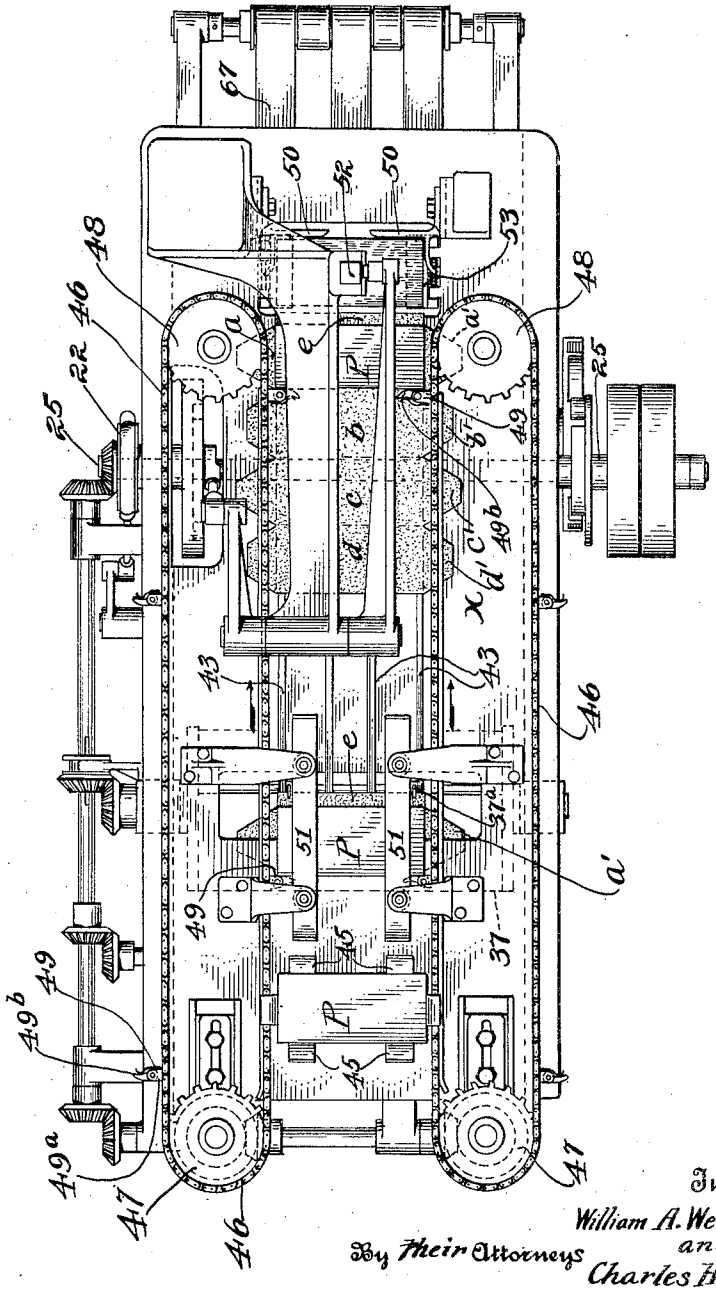
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4 SHEETS—SHEET 2.

Fig. 2.



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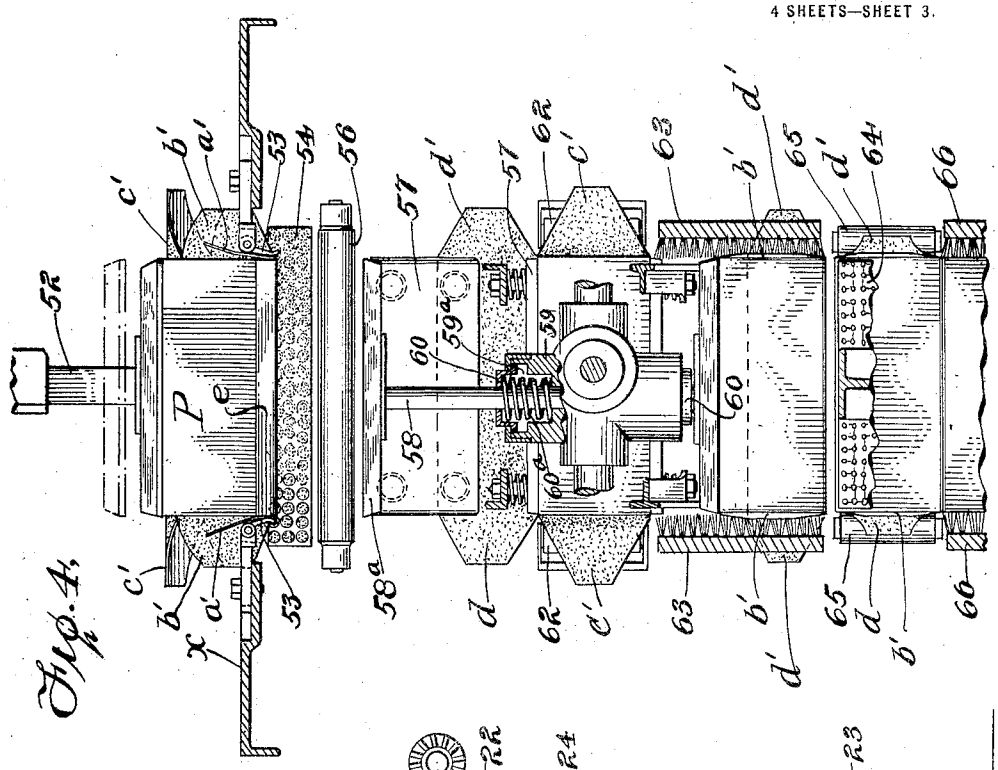


Fig. 4.

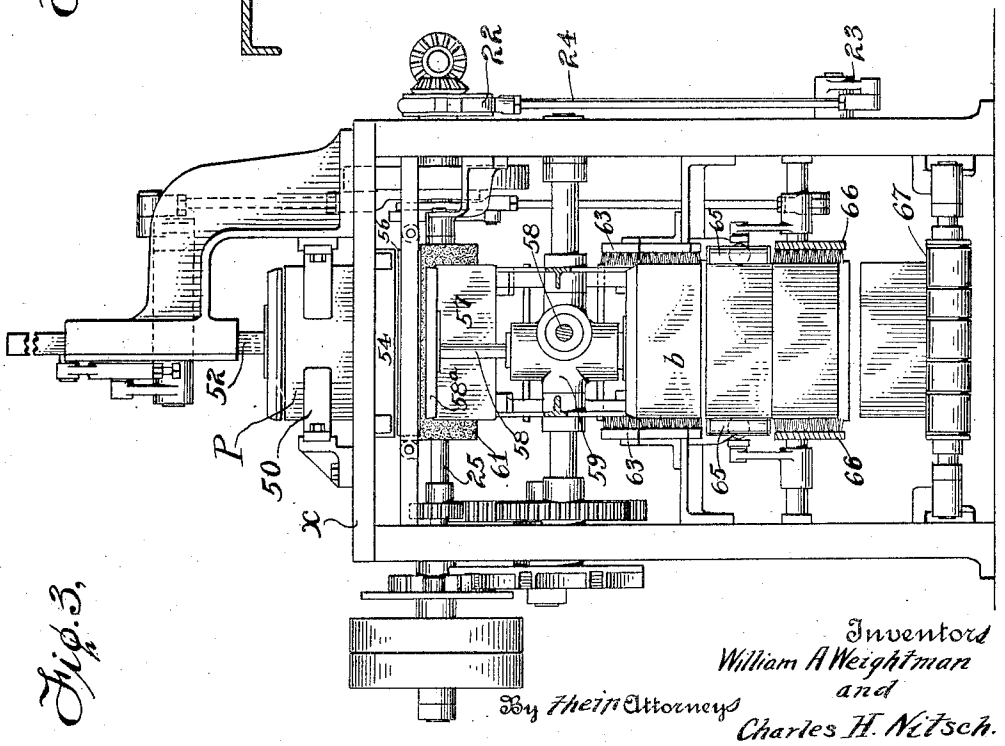


Fig. 3.

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4 SHEETS—SHEET 4.

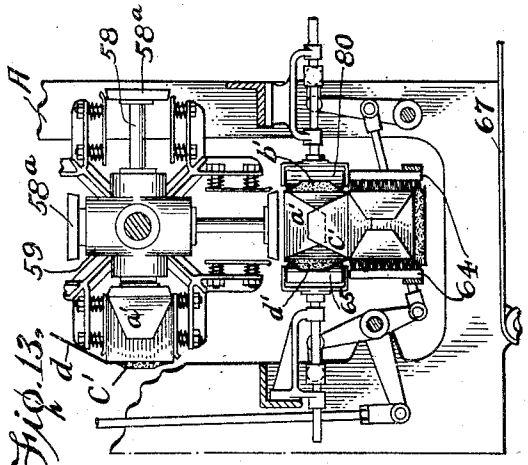


Fig. 13.

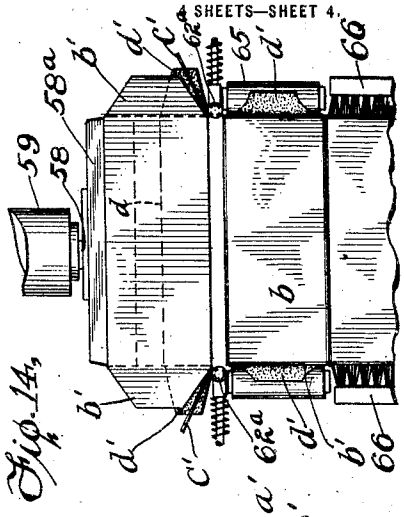


Fig. 14.

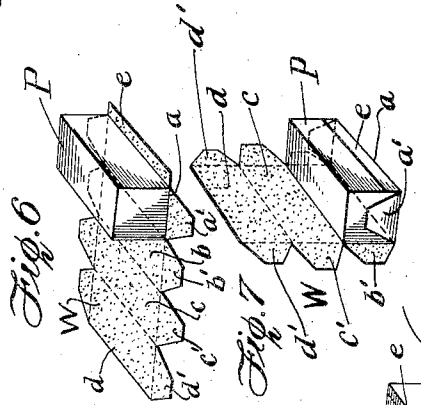


Fig. 6.

Fig. 7.

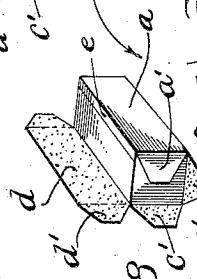


Fig. 8.

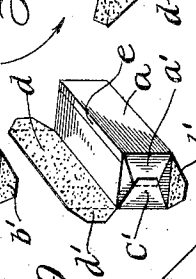


Fig. 9.

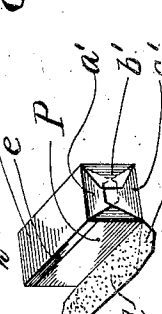


Fig. 10.

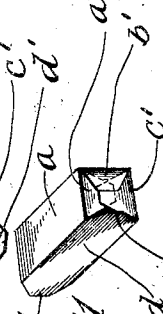


Fig. 11.

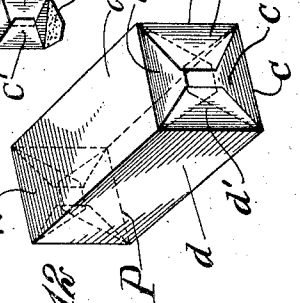


Fig. 12.

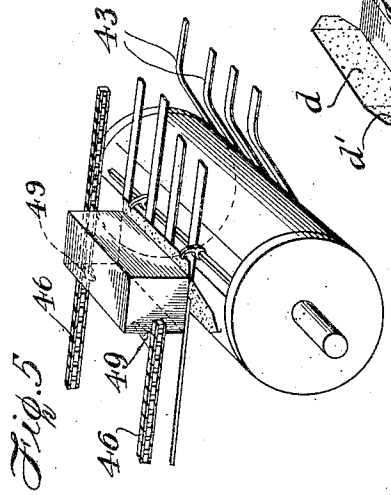


Fig. 5.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR PRODUCING SEALED WRAPPED PACKAGES.

1,426,429. Specification of Letters Patent. Patented Aug. 22, 1922.

Application filed July 28, 1917. Serial No. 183,212.

To all whom it may concern:

Be it known that WILLIAM A. WEIGHTMAN and CHARLES H. NITSCH, both citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Apparatus for Producing Sealed Wrapped Packages, of which the following is a specification.

This invention relates to the art of producing sealed wrapped packages, pertaining more particularly to apparatus for wrapping packets with an adhesively-coated wrapper to enclose the packet with a sealed wrapped effect.

Sealed wrapped packages are of two general types, one in which the wrapper is loose on the packet—the adhesive connection being between component parts of the wrapper only—the other type having adhesive connection between the wrapper and packet as well as between component parts of the wrapper. The present invention pertains more particularly to the latter type, this type having the advantage of tightly fitting the packet and remaining on the packet even after the package has been opened to gain access to the packet contents.

The wrapper employed in this type is generally in the form of a blank having its body portion made up of connected sections corresponding substantially to the contour and area of the packet walls which each is to cover together with a marginal top lap, the sections having end wings or laps which are applied at the ends of the packet the wings or laps having shapes which when applied will produce coverings for the packet ends. One face of the blank is adhesively coated and this face is adherently applied to the walls and ends of the packet, this latter operation being generally provided by covering apparatus formed of a plurality of covering instrumentalities which operate in predetermined cycles to produce the wrapped effect.

As will be understood, the formation of a commercial package of this type involves an accurate registration of the packet and blank in order that the covering operations may bring the sections, etc., in proper position on the walls and ends of the packet. To provide this accurate registration is more or less of a problem due to the length of the blank and to the fact that, after receiving its adhesive coating, the coated blank must be properly positioned in order that the packet may be brought into registration contact therewith. This problem is made more difficult where it is desired to provide a more or less automatic operation, since the conditions are such that the point of adhesive application is generally spaced from the point where the blank must be positioned at the commencement of the covering operations thus complicating the problem by the necessity for transferring the adhesively-coated blank from the adhesive-applying mechanism to the covering instrumentalities. To transfer the lengthy thin and flexible blank with its adhesive coating and accurately deliver it in position to receive the packet becomes a serious problem since the blank must be drawn in the direction of its length and while coated, tending to limit the speed of travel of the blank and thus increase the time required to transfer it, this latter in turn tending to increase the inherent curling effect produced by the setting of the adhesive. Manual transporting and positioning is more or less difficult due to the necessity for handling a thin flexible wrapper of considerable length and other dimensions when one face of the blank is entirely covered with the adhesive.

The methods by which these problems are met are disclosed generally in our companion application filed June 29, 1917, Ser. No. 177,832, the present invention pertaining more particularly to one embodiment of apparatus for carrying out the methods disclosed in the said companion application. As pointed out in the said application, the solution of these problems is had primarily by supporting the blank during the adhesive-applying operation, and, while so supported, bringing the packet and blank into registration contact, thus assembling the packet and coated blank by applying a face of the packet to the complemental portion of the adhesive face of the blank, thereby providing an extended connection between the two parts and producing an assembly such as will enable the packet to serve as the means for drawing the coated blank during the transfer of the latter from the point of adhesive application to the covering instrumentalities. As a result, the movement of the assembly can be provided by bodily moving the packet, permitting the latter to be

gripped or otherwise manipulated by the operator or the transfer mechanism and advanced with greater speed without damage to the packet and without affecting the more or less trailing portion of the blank and hence the transfer can be had in reduced time and thus tend to decrease the curling effect.

The apparatus of the present invention is designed more particularly for carrying out automatically the general solutions referred to in the companion application, the apparatus embodying various instrumentalities which are co-related in operation in such manner as to produce the automatic action.

To these and other ends, the nature of which will be readily understood as the invention is hereinafter disclosed, said invention consists in the improved construction and combination of parts, hereinafter fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

In the accompanying drawings, in which similar reference characters indicate similar parts in each of the views:

Fig. 1 is a view partly in elevation and partly in section taken longitudinally, of one embodiment of the invention, parts being omitted for clearness.

Fig. 2 is a top plan view of the apparatus shown in Fig. 1.

Fig. 3 is an end view, partly in section, looking toward the left in Fig. 2.

Fig. 4 is a sectional view on a larger scale taken on line 4—4 of Fig. 1.

Fig. 5 is a detail perspective view, more or less diagrammatic, indicating the manner in which the packet and blank are assembled.

Fig. 6 is a detail view of the packet and blank assembly.

Figs. 7 to 12 are detail perspective views showing the results of successive operations of the covering instrumentalities, Fig. 12 illustrating a completed package.

Fig. 13 is a fragmentary sectional view of parts of the covering instrumentalities shown in Fig. 1, the view showing a variation in the instrumentality covering cycle.

Fig. 14 is a detail sectional view of parts shown in Fig. 4 with parts changed to accord with Fig. 13.

Before giving a detail description of the apparatus, a brief description of the general operation is given.

The wrapped package which forms the product of the apparatus is shown in Fig. 12, this being made up of the packet P and wrapper W, these being shown in assembled relation in Fig. 6, it being understood, of course, that this assembly takes place through the operation of the apparatus. The packet P is representative of a container carrying a commodity or it may be the commodity itself, it being preferably of angular contour. The wrapper is formed of four connected sections *a*, *b*, *c*, and *d* together with a top lap *e*, these all being integrally connected together and practically constituting the length of the wrapper. The several wrapper sections are provided with end wings or laps *a'*, *b'*, *c'* and *d'*, these wings being of suitable contour, the form shown in the drawings having wings *b'* and *d'* of less projecting length than wings *a'* and *c'*, the operations of the covering instrumentalities causing these wings to be folded at the ends of the packet practically as shown in Fig. 12.

The assemblage and the successive wrapping operations are shown generally in Figs. 5 to 12, Fig. 5 indicating the manner in which the packet and wrapper are brought into registration contact, the feed of the packet and wrapper being such as to cause the packet to have its proper face applied to the adhesive coated face of section *a* of the wrapper, thus applying this section of the wrapper to the packet. As presently more fully described, this assembly of packet and wrapper takes place while the wrapper is supported by a platen on which the wrapper is supported while receiving its adhesive coating, the assembly being provided while both wrapper and packet are advancing, the advance movement placing the top lap *e*, of comparatively narrow width, in advance of the packet, sections *b*, *c* and *d* trailing behind the packet, as shown in Fig. 6.

This assembly is transferred bodily by continuing the advance movement, until it reaches a position in proper alinement with the initial folding or covering instrumentality and at the entrance of the latter, where the downward movement of a plunger carries the packet through the first folding or wrapping instrumentality into a rotatable carrier or turret. This movement applies section *b* and top lap *e* to the proper walls of the packet and at the same time turns wings *a'* into contact with the ends of the packet, as shown in Fig. 7. Rotation of the turret carries the assembly past a wiping brush or roll which applies section *c* to its proper face of the packet (Fig. 8) and positions the assembly at a point where end folding elements are operative to fold wings *c'* on to the ends of the packet, preferably in overlying relation to wings *a'* previously folded (Fig. 9). Continued travel of the turret then folds in the end flap *b'*, (Fig. 10), the turret stopping opposite an additional wrapping instrumentality, well-like in character, the assembly being in the form shown in Fig. 10 at this point. The assembly is then moved out of the turret into the well, this movement applying the last section—*d*—to the proper face of the packet and into overlapping relation to top lap *e*, as shown in Fig. 11. Upon completion of this action, end wings

d' are folded in, producing the configuration of Fig. 12, and the wrapped package is then moved out of the apparatus and delivered at the desired point.

A number of advantages result from this general sequence of operations.

The assemblage takes place while the wrapper with its freshly-applied adhesive is located on its supporting platen and before the wrapper begins any material movement in its own plane toward the wrapping instrumentalities. Hence, instead of attempting to advance a thin adhesively-coated and lengthy wrapper for a considerable distance in its own plane by the use of grippers, and attempting to properly position the wrapper with respect to the packet so as to produce registration, the registration is provided in advance and the extended connection between the packet and section will insure a proper advance of the assembly by simply advancing the packet. Hence the advance movement may be at greater speed and without liability of damage to the wrapper.

Furthermore, the production of the assembly provides an additional advantage in that covering of one wall or face of the packet is completed before the advance travel has carried the assembly into the main covering instrumentalities.

Another feature is the fact that the wrapping operation practically extends successively and progressively throughout the length of the section portion of the wrapper, one section after another being applied until the wrapper is completely applied, the result being that there is a tendency to draw or wipe the last applied section into close contact with the wall so as to reduce the liability of forming "blisters", this drawing or wiping action being made possible without liability of destroying registration by reason of the fact that the adhesive connection of section a, and the packet has taken place sufficiently in advance of the initial wiping action as to permit the adhesive to set to a more or less extent.

While the sections are applied in regular progression in the direction of length of the wrapper, the end wings are applied in an irregular progression, as indicated in the above description, the result being that the outer applied wings are thus connected to spaced apart sections, these latter wings being adhesively-connected to the previously folded wings and to the ends of the packet.

In the present apparatus the wrappers and packets are brought to assembling position from magazines which are adapted to carry a plurality of each, suitable delivery mechanisms being employed to bring the individual elements to the point of assembly. Obviously, various types of delivery mechanisms may be employed, the drawings indicating one embodiment of each which is operative to produce the desired result, it being understood, of course, that other mechanisms may be employed as equivalent structures.

Referring first to the wrapper delivery or feed mechanism, A indicates the general frame of the apparatus which is of suitable design.

Mounted on suitable slides 20 carried by the frame is a carrier frame 21 adapted to be reciprocated by the action of a suitably-driven cam 22 (Fig. 2) operatively connected to the carrier frame through bell crank lever structure 23 and link connections 24, cam 22 being carried by a drive shaft 25. Frame 21 forms a support for a table 26, the latter being supported yieldably by springs 27. Table 26 is adapted to support the blanks, guides 28, having inturned flanges or stops 28^a, serving to retain the blanks in position. Guides 28 are carried by the frame, and stops 28^a serve to limit the upward movement of the table through contact of the topmost blank with these stops 28^a, springs 27 tending to hold the topmost blank in contact with the stops. Depending from table 26 is an arm 29 having teeth 29^a which are adapted to co-operate with a pawl 30 carried by a bell crank structure 31, this structure including a roller 32 adapted to co-operate with a member 33 having a cam face 33^a.

As will be understood, reciprocating movement of frame 21 will cause roller 32 to travel over face 33^a, thus causing bell crank structure 31 to be oscillated as the frame travels backward and forward. This oscillation of bell crank structure 31 in one direction causes pawl 30 to engage a tooth 29^a of arm 29 and move said arm and table downwardly against the tension of springs 27, thereby carrying the top blank of the pile out of contact with stops 28^a. Oscillation of structure 31 in the opposite direction permits springs 27 to move the table upward until the top blank contacts with stops 28^a.

34 indicates the suction member of a suitable suction-creating and controlling mechanism (not shown), this member being mounted above the blanks, as shown in Fig. 1 and having a perforation or perforations which are adapted to be brought into operative relation to the upper blank on the table. Member 34 is rotatable, the rotation being had by a rack and gear connection 35 with frame 21, the reciprocating movements of the latter causing member 34 to be oscillated.

As will be readily understood, the suction action of member 34 will cause the top blank to adhere to this member, and when

frame 21 moves forward, carrying the pile of blanks in this direction, member 34 will be moved to raise the front end of the topmost blank into the zone of operation of a pair of feed rolls 36 which operate to feed the blank. During this advance movement of the frame and while the topmost blank is thus engaged, roller 32 will become active to lower table 26, thus leaving the top blank free to be withdrawn from the pile of blanks by the action of the feed rolls 36.

37 indicates a rotatable blank-supporting platen having suitable grip mechanism 37^a by means of which the advance end of a blank fed by rolls 36 will be gripped and drawn on to the surface of the platen. This platen structure is of any desired type, various forms being well-known in the art.

The particular delivery mechanism above briefly described is, as explained, simply representative of mechanism for this purpose, it being understood that other individual delivery mechanisms may be employed, where such mechanisms are of a type which will deliver a blank to feed rolls which will in turn deliver the blank being fed to the blank-advancing support, the latter, in the present instance, being indicated by platen 37.

After the advancing blank has been gripped by the gripping mechanisms 37^a, advance of the blank brings the outer face of the blank into the zone of operation of adhesive-applying mechanism shown as in the form of a pair of adhesive-applying rolls 38 carried by a frame 39, rolls 38 being adapted to receive the adhesive from a suitable tank 40 by means of take-up roll 41 and distributor roll 42. This general arrangement of adhesive-applying mechanism is well-known and is not described in detail, it being understood that any one of a number of different types of mechanisms for this purpose may be employed, a preferred form of mechanism being adapted to apply a coating of adhesive throughout the exposed face of the wrapper blank.

While not absolutely essential, it is preferred to provide an additional travelling support or conveyor for the blank and the assembly, this being shown as in the form of a plurality of endless bands 43 which extend partially around platen 37, (Figs. 1 and 5) and over which the gripped blank extends while on the platen, bands 43 leading over a table top x in the direction of advance of the assembly, the return flight being located beneath table top x, a suitable belt tightening mechanism, indicated at 44, being employed to maintain the conveyor taut.

It will therefore be understood, that the several mechanisms described will automatically "pick" the top blank from the pile of blanks, deliver the blank to platen 37 over conveyor 43, and, while the blank is located on the platen, it will have its exposed face coated with an adhesive film. As the platen and conveyor 43 continue their movements, the coated blank will be led off of the platen by the upper run or flight of the conveyor, gripping mechanism 37^a being operated at the proper time to permit this action to take place.

Before the blank is actually led from the platen, the packet is brought into position where its lower face will contact with the coated outer face of the blank, this being provided by the following mechanism:

45 indicates a magazine for the packets, this being of suitable type, preferably adjustable to accommodate for different types of packets, this magazine being located above the plane of the top of table x and in rear of the point where the blank is brought to the plane of such table top. The magazine is arranged in such manner that the lowermost packet therein is free to advance over the table top by the action of suitable advancing mechanism, a preferred arrangement of which is shown as in the form of a pair of endless chains 46 located on opposite sides of the path of travel of the packet, which chains carry elements adapted to contact with the rear of a packet and advance it along the table top. Chains 46 are mounted on sprockets 47 and 48, both having vertical axes, sprockets 47 being preferably located in rear of magazine 45, while sprockets 48 are positioned adjacent the entrance to the covering instrumentalities as more particularly indicated hereinafter, this arrangement producing a straight flight of the two chains at opposite ends of the packet. Each chain 46 carries a plurality of elements 49 which contact with the rear face of the packet and push the packet along the table top as the chains advance. Elements 49 may be of various types, a simple and preferred arrangement being to employ a rigid portion 49^a and a yielding finger 49^b carried by portion 49^a. Portions 49^a project from the chain a distance sufficient to contact with the rear face of the packet while in the straight flight of the chain. However, when the advance of the element carries it to a point where the chain flight passes out of the straight path in rounding sprocket wheel 48, the movement of the chain causes portion 49^a to be withdrawn from contact with the packet rear face, leaving finger 49^b in contact. The supporting spring for finger 49^b is of sufficient power to continue the advance of the packet as long as the latter is not restrained from advancing. When, however, the advance face of the packet passes into contact with adjustable stop members 50, thus preventing further advance movement of the packet, fingers 49^b will yield and permit the elements to

pass by the packet, thus leaving the latter in contact with stops 50, the latter being so positioned as to locate the packet at the proper point for further operation by the covering instrumentalities.

Chains 46 are operatively connected to travel in unison and elements 49 are positioned so that one element from each chain becomes active simultaneously on a packet, the result being that the packet will be advanced in a predetermined path and at a uniform speed.

During the advance of the packet it is brought directly over and in contact with the exposed face of the blank which is carried by platen 37, the several blank advancing instrumentalities having their operations timed in such manner, relative to the movements of the packet, that the advancing packet will be presented in proper registration with the complemental section of the blank. As will be seen from Fig. 5, the advancing blank has its direction of length extending on the arc of a circle formed by the platen while the advancing packet is travelling in a horizontal plane which corresponds to a tangent of this arc. As a result, the contact of packet and blank is progressive, so that the formation of blisters is practically prevented while this registration contact is being provided.

In order that proper pressure may be applied to produce the adhesive connection between the packet and blank, the packet is caused to pass beneath a pair of yielding plates 51, these plates providing downward pressure on the packet at the time the lower face of the latter is being applied to the wrapper section. As a result, a proper adherent connection is provided between the packet and blank while the blank is supported by the platen, the completion of this connection by the advance of both packet and blank completing the covering of this face of the packet.

As will be readily understood, the completion of this assembly before the blank has made any material movement toward the covering instrumentalities after leaving the platen, eliminates any necessity, for the use of gripping or other mechanisms for advancing the adhesively-coated blank, since the packet itself serves as an advancing means for the blank, the extended adhesive connection between the blank and packet providing a far more efficient means for advancing the blank than could be provided by gripping mechanism which would be required to grip a comparatively thin blank wetted by the adhesive. Hence the blank is not only properly and accurately advanced without the use of grips or other means for grasping the blank, but the contact between the packet and blank is at such point—advance section *a*—that the major portion of the blank, in trailing the packet, is practically unaffected by the advancing movement of the assembly. Bands 43 not only aid in providing this result, but also tend to prevent smearing or otherwise disfiguring any printing matter which may be contained on the lower face of the blank during this travel. As a result, the blank may be of comparatively thin stock without liability of being damaged during the assembly advance even though the latter be at considerable speed.

Suitable provision is made for preventing contact of rollers 38 and the face of platen 37 upon failure of proper feeding of a blank to the platen, the particular mechanism for providing this result not being specifically described, various devices of the art being available for the purpose.

Stops 50 are so positioned in the path of advancing movement of the packet as to locate the latter in proper alinement with a vertically reciprocating plunger 52 which is operative to carry the assembly into the wrapping instrumentalities. This position of the assembly places section *a* of the wrapper directly over a pair of hinged yieldable supports 53, the latter being adapted to normally support the weight of the assembly and being yieldable downwardly when plunger 52 becomes active to shift the assemblage downward. Supports 53, during this downward movement of the assembly serve to fold wings *a'* into contact with the ends of the packet (Fig. 4), thus positively affixing section *a* to the packet and preventing liability of relative shifting of blank and packet at the start of the wrapping operation. During the earlier portion of the downward movement of the assembly, the wrapper is brought into contact with a pair of wiping elements in the form of brushes 54, these brushes serving to wipe lap *e* into contact with one face of the packet and section *b* of the blank into contact with the opposite face of the packet. As the assembly continues its movement, it successively passes into contact with brushes 55 (which act to provide a wiping action on the folded wings *a'*) and into contact with rollers 56 (which act to smooth section *b* and lap *e* of the blank in their applied positions).

This provides the result indicated in Fig. 7, in which form the assembly is positioned in a rotatable carrier—shown as in the form of a turret—movable on a horizontal axis.

The turret is shown as provided with a plurality of assembly-receiving structures, these structures being arranged in pairs with each pair alined on a diameter of the turret, the pairs preferably extending in directions at right angles to each other. Each structure is shown as having the form of opposing yieldable plates 57 between which the assembly is positioned and held during move-

ments of the turret. Each pair of structures is provided with a reciprocating member 58 having its opposite ends formed with heads or platens 58^a, each platen operating in one of the structures, the length of each member 58 being such that when the face of one platen 58^a is in contact with a positioned assembly, the face of the opposite platen will be approximately at the entrance of the structure within which it operates. The turret arrangement is such that the platen 58^a which is in the path of travel of the entering assembly is normally positioned at the outer end of the structure which is to receive the assembly. Consequently, when the assembly advances under the continued movement of plunger 52, it contacts with the advanced platen 58^a and moves member 58 toward its opposite extreme of movement, this platen thus forming an element on which the assembly rests while positioned in the turret, the opposite platen serving to deliver a previously positioned assembly as presently described.

As shown in Figs. 3 and 4, members 58 preferably extend in parallel planes, and each member is mounted in a rotatable support 59, extending through the latter. The support 59 is provided with cavities 59^a, closed by members 60, these members being yieldably supported by springs 60^a and forming elements normally projecting beyond the end of the support and therefore in the path of movement of the platen 58^a which is being moved by the entering assembly, the movements of plunger 52 being such that the assembly will be moved into its receiving structure a distance sufficient to move element 60 inwardly and provide compression of its supporting spring 60^a. However, as soon as plunger 52 begins its return movement, the pressure on platen 58^a will be released, and the compressed spring 60^a will return element 60 to its outer position, thus shifting the entering assembly outwardly a small distance and positioning it for further operation.

It may be noted at this point that this temporary excess movement of member 58 is designed mainly for the purpose of moving the opposite platen a distance sufficient to carry the previously-positioned assembly an appreciable distance beyond the path of travel of the turret (Fig. 1) thus enabling proper movement of the turret to be had without being affected by an assembly discharged from the turret. The turret is operatively connected up to the drive shaft to provide for intermittent step by step rotating movement, the movements being of a length to position the assembly-receiving structures successively in position to receive an advancing assembly, dwell in the movement of the turret being provided while an assembly is being introduced and positioned.

After an assembly has been introduced into its structure, rotation of the turret carries it through an angular distance of 90° which then places the assembly in the position shown at the left in Fig. 1, the succeeding receiving structure passing into position to receive the succeeding assembly. During travel of the assembly to this position, it passes a revolving brush 61 which serves to apply section *c* of the trailing portion of the carrier in Fig. 7 on to its complemental face of the packet, placing the assembly in the condition shown in Fig. 8. After the assembly reaches the position shown at the left in Fig. 1 and during the period of dwell in such position, wiping instrumentalities, preferably in the form of rollers 62, are actuated to turn in wings *c'* and apply these wings to the ends of the packet and in overlapping relation to wings *a'*, producing the result shown in Fig. 9.

The succeeding movement of the turret places the assembly in the position shown at the bottom of the turret in Fig. 1, and during the movement of the assembly to this position, wings *b'* are brought into contact with wiping instrumentalities as in the form of brushes 63 which turn up these wings on to the ends of the packet and into overlapping relation to wings *a'* and *c'* previously applied, producing the result shown in Fig. 10, the assembly, when in this lower position, being approximately in the form shown in Fig. 10.

Longitudinal movement of member 58 then takes place by the introduction of an assembly into the opposite receiving structure, this movement of member 58 forcing the lower assembly out of its carrying structure and into a wrapping instrumentality located below the turret, this wrapping instrumentality being in the form of wiping brushes 64 between which the assembly is passed when discharged from the turret, these brushes forming a well-like structure, one of said brush structures acting to apply the remaining section *d* to the complemental wall of the packet and in overlapping relation to the top lap *e*, this action being provided by the downward movement of the assembly, which, as heretofore pointed out, carries the discharged assemblage out of the path of travel of the turret and the succeeding assembly. This produces the result shown in Fig. 11.

After the assembly is positioned in the well-like structure, the remaining wings *d'* are applied to the ends of the packet by wiping instrumentalities preferably in the form of rolls 65, this operation taking place after the assembly has come to rest and prior to its succeeding movement which is provided by the discharge of the succeeding assembly which acts to push the positioned assembly downward in the well. During

this latter movement, the ends of the packet are brought into contact with wiping instrumentalities in the form of brushes 66 which smooth out any inaccuracies of folding of these ends. This completes the wrapping operation, and the completely wrapped package—shown in Fig. 12—is discharged from the well when the next succeeding assembly is introduced.

If desired, the completed package may be delivered to a suitable endless carrier 67 which will carry it out of the path of the succeeding package.

As will be understood, the several moving parts are operatively connected with the drive shaft in such manner as to provide for their proper operation, the mechanical movements employed being of well-known types and their application being more or less along the lines of similar mechanisms in wrapper-applying or folding machines or of box covering machines.

Certain specific mechanisms employed are illustrated more or less diagrammatically in the drawings without, however, attempting to show all of the specific mechanisms employed, the general operation being somewhat along the lines of the construction disclosed in the application of James D. Reifsynder, machine for forming sealed wrapped packages, filed Sept. 6, 1916, Ser. No. 118,668.

In Figs. 13 and 14, I have shown a different arrangement of portions of the covering instrumentalities. In these views, inturning of end wings c' and b' is deferred until the packet is being discharged from the turret—the mechanisms represented by rolls 62 and wiping instrumentalities 63 being omitted at the points indicated—no end wing manipulation being provided while the packet is seated in the turret.

In this form, end wing c' is folded into position by rolls 62^a as the packet is being discharged from the turret, and wings b' are folded into position by rolls 80 mounted opposite rolls 65, causing both wings b' and d' to be applied at the same packet station, these rolls having a suitable timing relation to obtain the proper application without interference of one roll by the other.

Obviously, both forms will provide the same general result, the specific cycles of instrumentality operation varying, such variation, however, taking place after the packet has been positioned in the turret and therefore being ineffective to change the general operations leading to the positioning of the packet in the turret.

From the above description, it will be readily understood that the operation is substantially automatic, requiring but little attention, and capable of comparatively high machine capacity, thus materially decreasing the cost of operation. In addition, the package is wrapped in an efficient manner, although the blank is of somewhat irregular contour. In addition, the particular manner in which the component parts of the assembly and the assembly formation is handled in reaching the wrapping instrumentalities and while therein, enables the wrapper to be of comparatively light stock, if desired, thus permitting decrease in cost of material without materially affecting the wrapping operations.

While we have herein shown and described a preferred arrangement of parts for producing the desired result, it will be readily understood that changes and modifications in the construction and details may be found essential or desirable to meet the various exigencies of use, and we desire to be understood as reserving the right to make any and all such changes in so far as the same may fall within the spirit and scope of the invention as expressed in the accompanying claims when broadly construed.

Having thus described our invention, what we claim as new, is:—

1. In a machine for forming sealed wrapped packages wherein the packet is enclosed within a wrapper, wrapping instrumentalities operative in a predetermined cycle, and means for advancing an adhesively-coated wrapper blank and a packet and positioning them at the entrance of such instrumentalities and for bringing the wrapper and blank into predetermined registration contact to provide an assembly during such advancing movement, said means including a table on which the packet is adapted to advance, and a rotatable blank-supporting platen positioned below and having its supporting face movable in the plane of the top of the table, whereby the advancing packet and blank may be brought into registration contact.

2. In a machine for forming sealed wrapped packages wherein the packet is enclosed within an adhesively coated wrapper blank having an area to extend on to the adjacent sides and ends of the assembly face of the packet, wrapping instrumentalities operative in a predetermined cycle, and means for advancing an adhesively-coated wrapper blank and packet and positioning them at the entrance of such instrumentalities and for bringing the wrapper and blank into predetermined registration contact to provide an assembly during such advancing movement, said means including a rotatable blank support, a table on which the packet is adapted to advance, and a conveyor movable with said support and having a flight extending in the direction of assembly advance over said table, said support being positioned to permit assembly production while the blank is on the support, said con-

veyor forming a support for the assembly during its travel to said entrance.

3. In a machine for forming sealed wrapped packages wherein the packet is enclosed within a wrapper, wrapping instrumentalities operative in a predetermined cycle, and means for advancing an adhesively-coated wrapper blank and a packet and positioning them at the entrance of such instrumentalities and for bringing the wrapper and blank into predetermined registration contact to provide an assembly during such advancing movement, said means including transfer mechanism co-operative with the packet to advance the assembly substantially in the plane of the blank, and stop means in the path of travel of the assembly to register the latter at such entrance.

4. In a machine for forming sealed wrapped packages wherein the packet is enclosed within a wrapper, wrapping instrumentalities operative in a predetermined cycle, and means for advancing an adhesively-coated wrapper blank and a packet and positioning them at the entrance of such instrumentalities and for bringing the packet and blank into predetermined registration contact to provide an assembly during such advancing movement, said means including transfer mechanism having elements adapted to contact with the packet prior to the assembly and during the assembly advance, said elements including yieldable members, and stop means in the path of travel of the assembly, said elements having a path of movement adapted to permit yielding of said members when the assembly is in contact with the stop means, whereby travel of the transfer mechanism is unaffected by stoppage of the assembly advance.

5. In machines for applying a wrapper blank to a packet, said wrapper being adhesively coated and having an area to extend on the adjacent sides and ends of the assembly face of the packet, wrapping instrumentalities operative in a predetermined cycle and including a rotatable carrier movable step by step, said carrier having a plurality of assembly-receiving structures and platens movable within such structures, wrapper manipulating devices external of said carrier and operative in a predetermined cycle on an assembly carried by one of said assembly-receiving structures, means for forming an assembly of wrapper and packet in predetermined registration contact and for advancing the assembly substantially in the plane of the blank and positioning the assembly at the entrance to such instrumentalities, means for introducing the positioned assembly into such carrier structure, and mechanism for applying other predetermined portions of the wrapper to the packet while the assembly is being introduced.

6. In machines for applying a wrapper blank to a packet, wrapping instrumentalities operative in a predetermined cycle and including a rotatable carrier movable step by step, said carrier having a plurality of assembly-receiving structures and platens movable within such structures, wrapper manipulating devices external of said carrier and operative in a predetermined cycle on an assembly carried by one of said assembly-receiving structures, means for forming an assembly of wrapper and packet in predetermined registration contact and for advancing and positioning the assembly at the entrance to such instrumentalities, means for introducing the positioned assembly into such carrier structure, and mechanism for applying other predetermined portions of the wrapper to the packet while the assembly is being introduced, said platens being connected in pairs extending diametrically of the carrier with each pair relatively positioned to cause discharge of a previously introduced assembly concurrently with the introduction of a succeeding assembly, movements of a platen pair being provided by the entering assembly, and yieldable means in the path of the advancing platen for producing limited return movements of the platen after completion of the platen advance movement.

7. In a machine for adherently affixing adhesively-coated wrapper blanks to the exterior walls of a packet in the manufacture of sealed wrapped packages and in combination, means for advancing a packet to position a wall thereof in contact with a selected section of the wrapper blank to adherently affix said section of the blank to said wall and produce an assembly, devices for adherently affixing the remaining sections of the blank to complemental walls of the packet in succession and in regular progression in the direction of length of the blank, and devices for adherently affixing section end wings successively to the packet ends in an irregular progression.

8. A machine for applying an adhesively coated wrapper to a packet comprising means for advancing a packet and a wrapper concurrently and bringing them into engagement, and means for folding successive portions of the wrapper about the packet to completely enclose the latter, said means including devices located at different positions in the path of advance of the assembled packet and wrapper and a rotating carrier arranged to move the assembly and present it to any different positions for the operation of successive ones of said devices.

9. A machine for applying an adhesively coated wrapper to a packet comprising a table, means for advancing a packet along the

table, means for advancing a wrapper and engaging it with the packet at a certain point in the packet movement, means for moving the assembled packet and wrapper in a direction transverse the original direction of the packet movement, means for applying portions of the wrapper to the packet during such advance, a rotary carrier for moving the assembly after its last mentioned advance movement, and means at different positions in relation to the rotary carrier for applying successive portions of the wrapper to the packet.

10. A machine for applying an adhesively coated wrapper to a packet comprising a table, means for advancing a packet along the table, means for advancing a wrapper and engaging it with the packet at a certain point in the packet movement, means for moving the assembled packet and wrapper in a direction transverse the original direction of the packet movement, means for applying portions of the wrapper to the packet during such advance, a rotary carrier for moving the assembly after its last mentioned advance movement, means at different positions in relation to the rotary carrier for applying successive portions of the wrapper to the packet, means acting after rotary movement of the assembly to move it linearly, and means acting on the assembly during the last named movement to apply a portion of the wrapper to the packet.

11. A machine for applying an adhesively coated wrapper to a packet, comprising a table, a packet conveyor above the table, wrapper feeding mechanism including a feed roll below the table, means for supplying wrapper sheets singly to the roll, and a sheet conveyor moving over the surface of the table to support the wrapper and packet after their engagement.

12. A machine for applying an adhesively coated wrapper to a packet, comprising a table, a packet conveyor above the table, wrapper feeding mechanism including a feed roll below the table, means for supplying wrapper sheets singly to the roll, a sheet conveyor moving over the surface of the table to support the wrapper and packet after their engagement, a lateral wrapping channel arranged to receive assembled packets and wrappers, means for moving the assembled articles through the channel and wrapper, folding and smoothing devices located at different positions along the channel to apply successive parts of the wrapper to the packet.

13. A machine for enclosing articles or packages in sealed wrappers, comprising means for advancing an article and concurrently advancing a wrapper and bringing them into definitely registered engagement with portions of the wrapper extending laterally beyond the ends of the package and a relatively long portion of the wrapper extending beyond the package in the line of package advance, means for adhesively conditioning the wrapper before engagement with the article, means for advancing the assembly after registered engagement to an initial wrapping position, and means for folding the wrapper about the package and pressing it in position to produce a sealed wrapped package.

14. A machine for enclosing articles or packages in sealed wrappers, comprising means for advancing an article, means for concurrently advancing a wrapper and bringing them into definitely registered engagement with portions of the wrapper extending laterally beyond the article, a short marginal portion of the wrapper projecting before the article, and a relatively long portion of the wrapper extending behind the article in the direction of article advance, means for adhesively coating the wrapper prior to engagement with the article, means for advancing the assembly after registered engagement to an initial wrapping position, and means for folding the wrapper about the article and pressing it in position to produce a sealed wrapped package.

15. A machine for enclosing articles or packages in sealed wrappers, comprising a conveyor having means to positively engage and advance packages in spaced relation, a wrapper conveyor moving in substantial synchronism with the package conveyor, means for feeding and advancing successive wrapper sheets in spaced relation corresponding to the package spacing, means for gumming the wrapper sheets, the sheet and package conveyors being arranged to bring a sheet and a package into accurately registered contact with the sheet supported on the sheet conveyor and the package superposed upon the sheet, the conveyors being also arranged to move the assembly a substantial distance to an initial wrapping position, and means at and beyond said position for folding and pressing portions of the wrapper sheet about the package to form a complete sealed wrapped package.

16. A machine for enclosing articles or packages in sealed wrappers, comprising a conveyor having means to positively engage and advance packages in spaced relation, a wrapper conveyor moving in substantial synchronism with the package conveyor, means for feeding, gluing and advancing successive wrapper sheets in spaced relation corresponding to the package spacing, the sheet and package conveyors being arranged to bring a package into accurately registered contact with a forward portion of a sheet supported on the sheet conveyor with the package superposed upon the sheet and with sheet end flaps project-

ing beyond ends of the package, the conveyors being also arranged to convey the assembly a substantial distance to an initial wrapping position, and means at and beyond said position for folding and pressing portions of the wrapper sheet about the package to form a complete sealed wrapped package.

17. A machine for enclosing articles or packages in sealed wrappers, comprising a table, a wrapper blank feed drum having a surface substantially flush with the table, wrapper supporting bands passing about the drum and over the table surface, wrapper gripping means on the drum, means for feeding wrapper blanks successively to the gripping means, whereupon the wrapper is carried about the drum superposed upon the bands, means for gluing the blanks, a conveyor for advancing successive packages in spaced relation corresponding to the wrapper blank movement, said conveyor running substantially parallel to the table and arranged to bring a package in registered contact with a wrapper, the package conveyor extending beyond the wrapper drum and substantially parallel to the wrapper bands for a considerable distance to a wrapping station, and means at and adjacent to said wrapping station for folding the wrapper blank about the package and pressing it in position to produce a complete sealed wrapped package.

18. A machine for enclosing articles or packages in sealed wrappers, comprising a table, a wrapper blank feed drum having a surface substantially flush with the table, wrapper supporting bands passing about the drum and over the table surface, wrapper gripping means on the drum, means for feeding wrapper blanks successively to the gripping means, whereupon the wrapper is carried about the drum superposed upon the bands, means for gluing the wrappers, a conveyor for advancing successive packages in spaced relation corresponding to the wrapper blank movement, said conveyor running substantially parallel to the table and arranged to bring a package in registered contact with a wrapper near the forward edge of the wrapper and with a relatively long portion of the wrapper trailing behind the package upon the wrapper conveyor bands, the package conveyor extending beyond the wrapper drum and substantially parallel to the wrapper bands for a considerable distance to a wrapping station, and means at and adjacent to said wrapping station for folding the wrapper blank about the package and pressing it in position to produce a complete sealed wrapped package.

In testimony whereof we have hereunto set our hands.

WILLIAM A. WEIGHTMAN.
CHARLES H. NITSCH.