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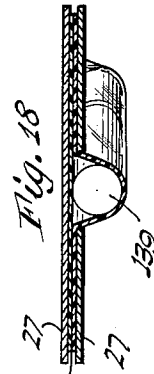
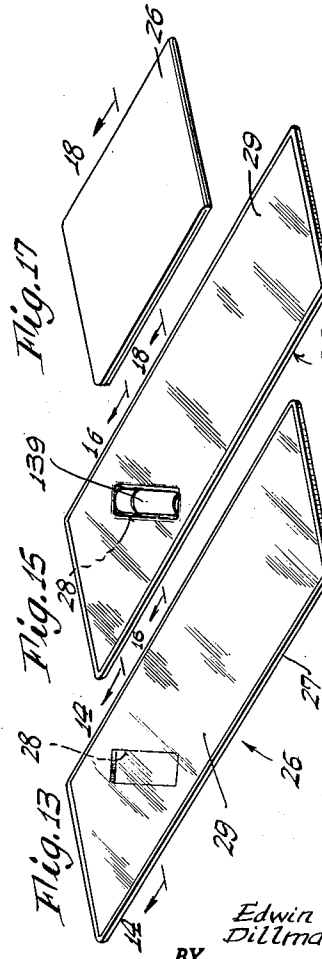
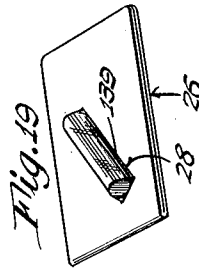
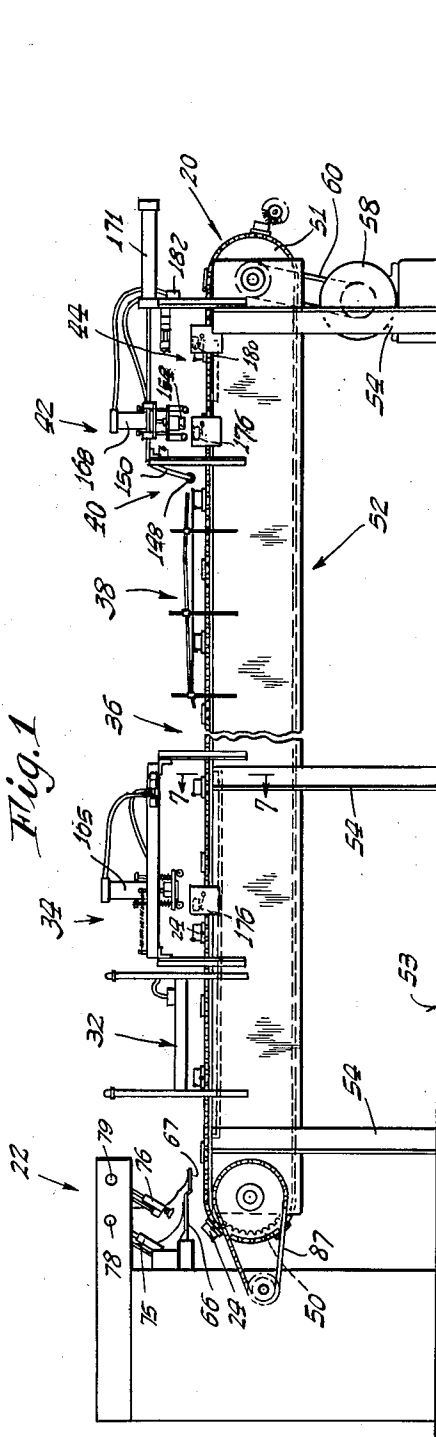
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APPARATUS FOR PACKAGING ARTICLES

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5 Sheets-Sheet 1



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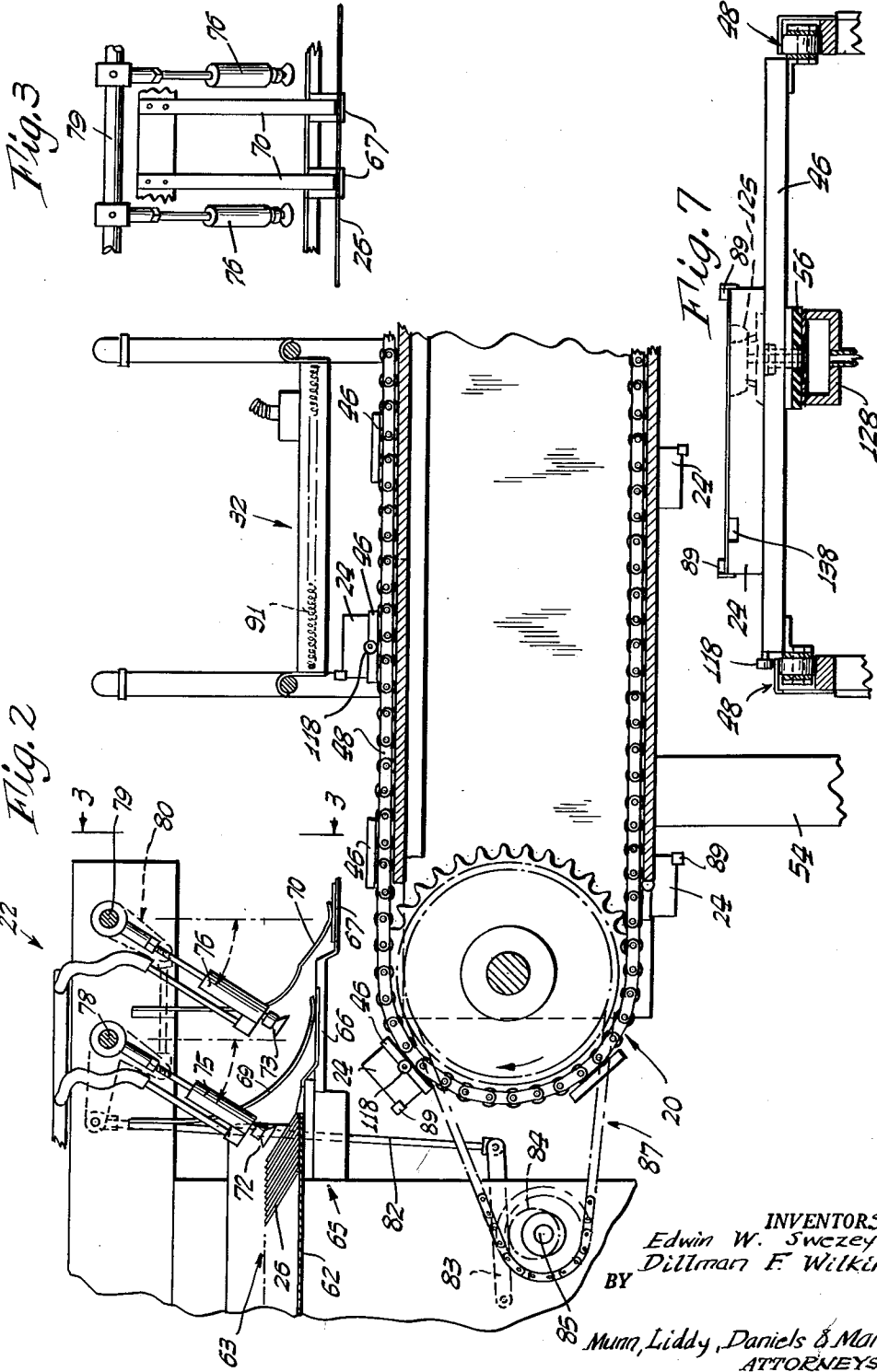
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Fig. 6

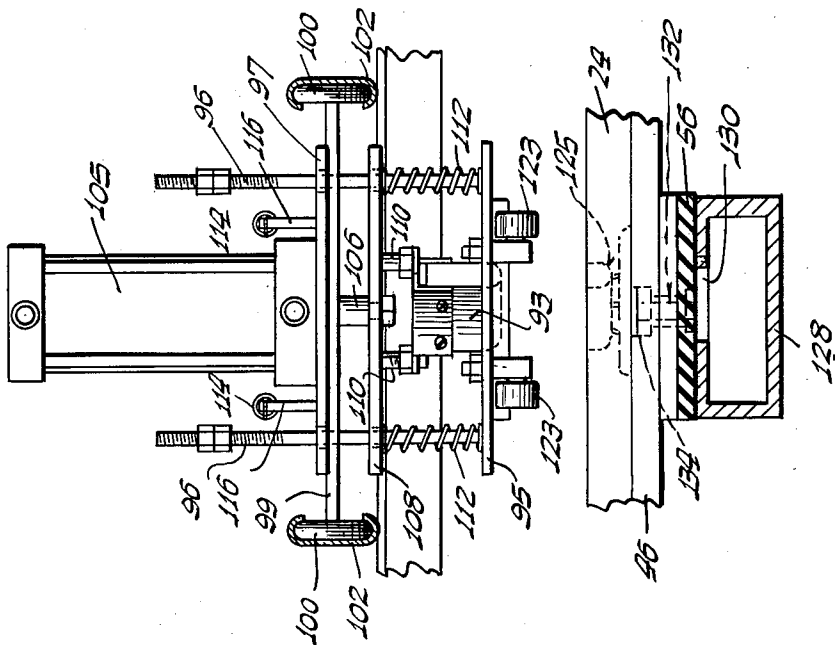


Fig. 4

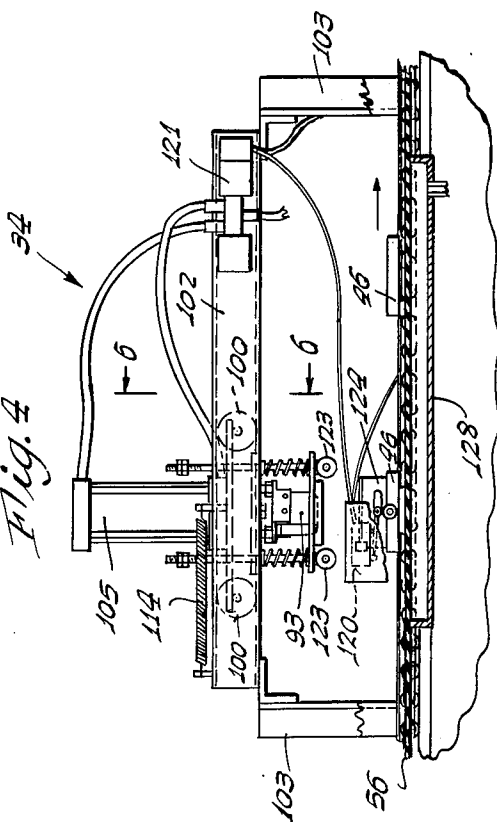
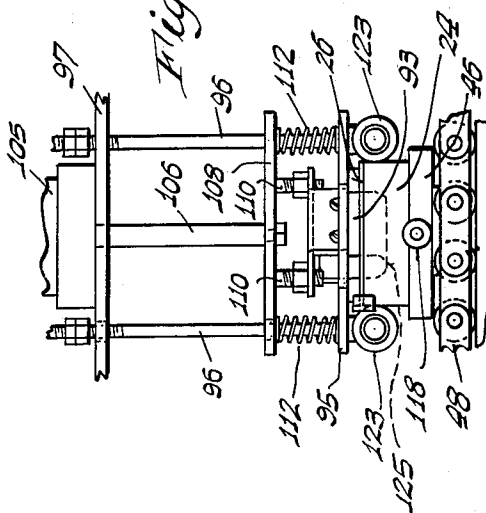


Fig. 5



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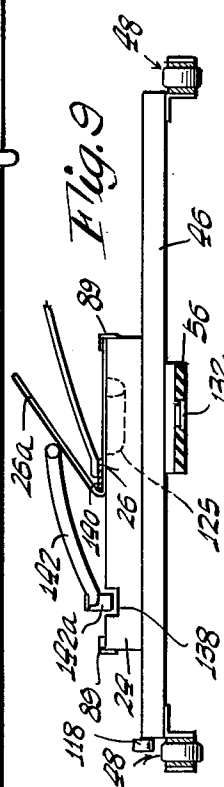
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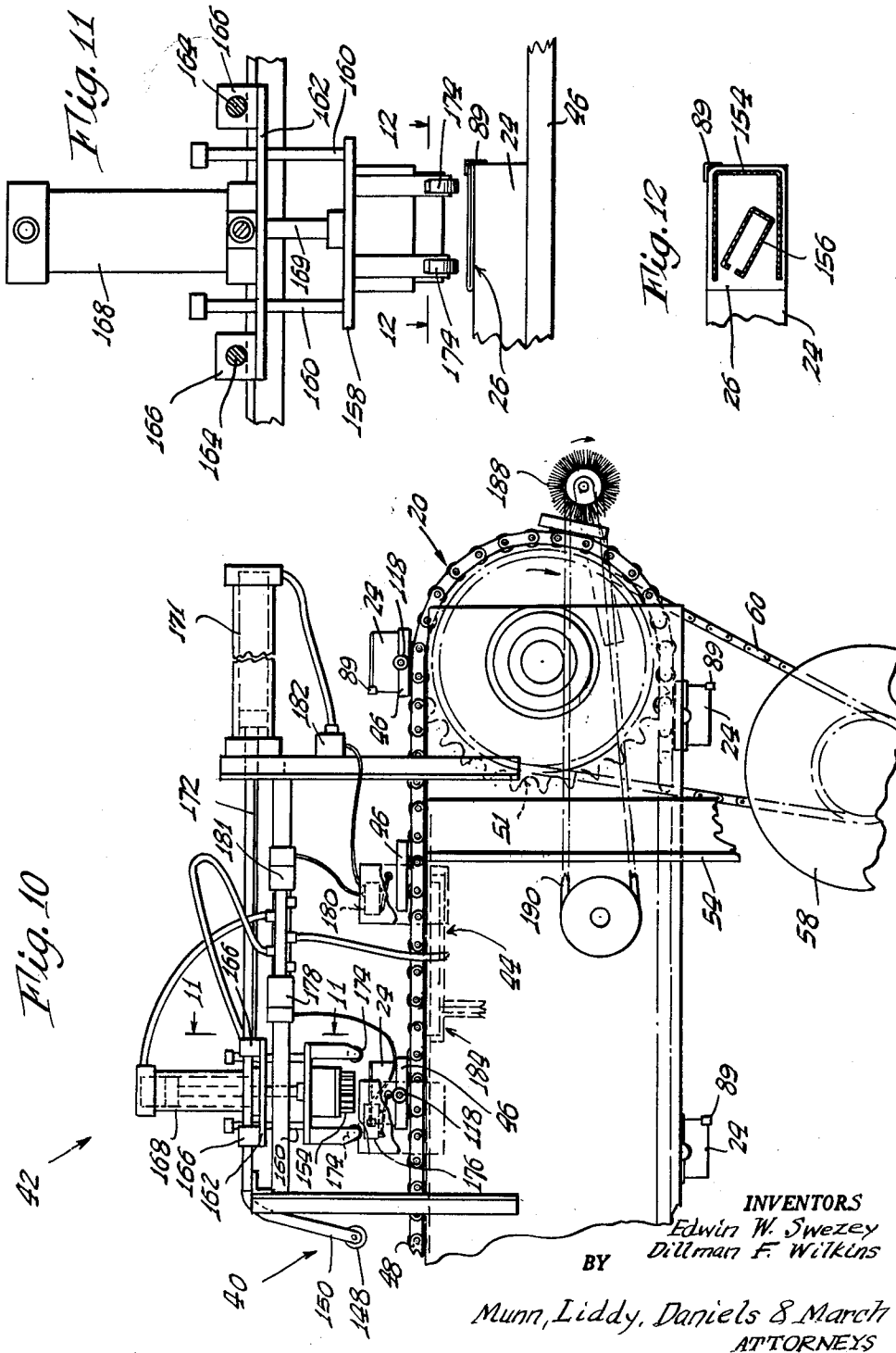
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APPARATUS FOR PACKAGING ARTICLES

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APPARATUS FOR PACKAGING ARTICLES

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19 Claims. (Cl. 53—184)

This invention relates to the packaging art, and more particularly to the packaging of relatively small articles, utilizing as at least part of the package a stretchable and shrinkable plastic sheet of membrane arranged to conform more or less to the contour of the article.

An object of the invention is to provide a novel and improved automatic apparatus for packaging articles using packaging materials having at least in part plastic sheeting, as for purposes of display and the like, which apparatus is extremely efficient and effective in operation, and reliable at all times in carrying out the desired packaging procedure.

Another object of the invention is to provide an improved apparatus or machine in accordance with the foregoing, which is capable of a relatively high production rate, thereby to effect a saving in the time required to package the articles or goods.

A further object of the invention is to provide an improved and novel packaging machine as characterized, wherein there is required a minimum amount of hand labor, in carrying out the packaging operation.

Still another object of the invention is to provide a packaging machine as above outlined, which does not require especially costly or intricate components or assemblies but instead may be economically fabricated from readily available materials.

Yet another object of the invention is to provide an automatic packaging machine as above set forth, wherein the various operating assemblies are readily accessible for adjustment, servicing and the like.

A still further object of the invention is to provide an improved packaging apparatus which is arranged to enclose an article behind a plastic membrane or the like in accordance with the foregoing which apparatus requires a minimum amount of servicing and maintenance.

An additional object of the invention is to provide an effective and reliable packaging machine as characterized, which is of relatively simple in its construction and is economical to fabricate and produce.

A further object of the invention is to provide a simple and effective method for packaging or enclosing small goods or articles in a wrapper or cover which includes plastic sheeting in its make-up, for the purpose of providing a more effective display of the merchandise.

Other features and advantages will hereinafter appear.

In the drawings accompanying this specification, similar characters of reference have been used to designate like components throughout the several views, in which:

FIG. 1 is a side elevational view of the improved packaging machine or apparatus as provided by the invention, drawn on a reduced scale.

FIG. 2 is a fragmentary elevational view of the left end portion of the machine shown in FIG. 1, drawn on a larger scale which, however, is still appreciably reduced in size as compared with the actual physical dimensions.

FIG. 3 is a fragmentary vertical or elevational view, looking in the direction of the arrows 3—3 of FIG. 2.

FIG. 4 is a fragmentary view partly in side elevation and partly in vertical section, of the membrane-forming or shaping portion of the machine.

FIG. 5 is a fragmentary side elevational view showing a portion of the forming or shaping station of FIG. 4 on

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a slightly larger scale, with the membrane-forming punch illustrated in its operative position.

FIG. 6 is a fragmentary view partly in elevation and partly in transverse section, taken on the line 6—6 of FIG. 4.

FIG. 7 is a fragmentary vertical sectional view taken on the line 7—7 of FIG. 1.

FIG. 8 is a fragmentary top plan view showing a portion of the apparatus at which the folding station is located.

FIG. 9 is a fragmentary vertical sectional view taken on the line 9—9 of FIG. 8.

FIG. 10 is a fragmentary side elevational view of the right end portion of the machine as shown in FIG. 1.

FIG. 11 is a fragmentary transverse vertical sectional view, taken on the line 11—11 of FIG. 10.

FIG. 12 is a fragmentary horizontal sectional view taken on the line 12—12 of FIG. 11.

FIG. 13 is a perspective view of a prepared packaging component as utilized with the machine and method of the invention.

FIG. 14 is a transverse sectional view, taken on the line 14—14 of FIG. 13.

FIG. 15 is a view like FIG. 13 but showing the plastic membrane portion of the component formed to have a pocket-like shape, and showing an article or merchandise disposed in the pocket provided by the said formed portion.

FIG. 16 is a transverse sectional view, without the article taken on the line 16—16 of FIG. 15.

FIG. 17 is a perspective view of the obverse or rear side of the packaging component having the formed membrane and article contained therein, the said component being folded in half.

FIG. 18 is a transverse sectional view, taken on the line 18—18 of FIG. 17.

FIG. 19 is a perspective view of the package and article shown in FIGS. 17 and 18 but showing the front side thereof.

Referring first to FIGS. 1 and 2, the packaging apparatus as provided by the invention includes a plurality of sequentially disposed operation-performing stations or assemblies arranged along the upper side of an endless conveyor or carrier belt, the latter being indicated generally by the numeral 20. Starting at the leftmost end of the conveyor means, considering FIG. 1, there is located a feeding station 22 to which point packaging components are brought, the said components being fed one at a time to carrier elements or holders 24 which are secured to the belt 20. The holders 24 are also illustrated in FIGS. 2, 5, 7, 8 and 9.

One such packaging component, of the type which is supplied in quantity to the feeding station 22 and deposited one at a time on the holders 24, is illustrated in FIGS. 13 and 14. This component is indicated by the numeral 26, and comprises a sheet-like foldable portion 27 having a diagonally extending opening 28 and having, secured to one side, a plastic sheet member 29 which has a portion 30 spanning the opening 28 and constituting in effect a membrane which is stretched across the said opening. The plastic sheet 29 is of the type which may be readily stretched, especially when it is heated, and which may be also heat shrunk.

One type of material which is suitable for forming the plastic sheets 29 is known commercially as polyvinyl chloride.

Such material, when stretched as by the application of heat and pressure, may thereafter be shrunk taut about an object upon a further application of heat to it, preferably dry heat as supplied by a warm air blast.

The packaging components 26, upon being placed in-

dividually on the holders 24 are brought to successive operation-performing stations by the holders 24 as the upper horizontal portion of the endless belt or carrier 20 is made to travel from left to right. The holders 24 and packaging components are first brought to a heating station 32, then to a forming station 34, then an article loading station 36 which may be located at an accessible portion of the carrier 20 disposed just beyond or to the right of the forming station 34. Thereafter the holders and packaging components are brought to a folding station 38, then to a creasing station 40, after which they pass to a fastening station 42 and finally to a shrinking station 44, which latter is disposed at the right end of the carrier 20 as viewed in FIG. 1.

The travelling movement of the holders 24 and components 26 is effected by securing the holders to struts 46 attached to endless chains 48 which pass over end sprockets 50 and 51 to a conveyor-like structure indicated generally by the numeral 52, the said structure being supported on a floor surface 53 by means of suitable legs 54. The chains 48 and struts 46 may be considered as constituting the endless conveyor or carrier 20 indicated in FIG. 1.

Additionally, in accordance with the present invention, the conveyor or carrier 20 comprises a central flexible endless belt portion 56 which may be secured to the transverse struts 46 on which the holders 26 are mounted. The flexible belt 56 provides an important function, in accordance with the invention, as will be later brought out in detail in connection with the forming or shaping of the membrane portion 30 of the packaging component. The belt 56 may be rubber or rubber-like material or the equivalent, and may pass around suitable end pulleys or drums (not shown for clarity of illustration) which are carried on the same shafts as the sprockets 50 and are disposed between the sprockets of the end pairs.

A power drive for the carrier 20 is provided, being indicated as comprising an electric motor 58 and gear reduction mechanism supplying power to a belt drive 60.

Considering FIGS. 1-3, the packaging-component feeding station 22 may have a table surface 62 on which the packaging components 63 are disposed in sloping, coengaging positions. Secured to the table surface 62 is a stepped platform 65 having upper and lower supporting portions 66 and 67 respectively. Leaf spring peelers 69 and 70 are associated respectively with the supporting portions 66 and 67, for engagement with the packaging components 26 to effect a positioning of the latter on the portions 66, 67 and also to strip the components from suction-cup type lifters 72, 73 respectively which are carried by piston-and-cylinder assemblages 75, 76 mounted on spindles 78, 79. The assemblages 75, 76 are linked for simultaneous movement by a bell crank and linkage system shown in dotted outline and indicated generally by the numeral 80. The linkage system 80 is operated by a transmission rod 82 pivotally connected to a cam follower lever 83 which is reciprocated by a cam 84 on a shaft 85 powered from the endless carrier 20 through the medium of a chain and sprocket drive indicated generally by the numeral 87.

It will be understood that the feeding station operates to deliver the components 26 one at a time to the supporting portion 67 of the platform 65, whereby the components may be picked up by the holders 24 as the latter are travelled in response to the movement of the carrier 20. The holders 24 have angle-shaped picking members 89 which engage corner portions of the components 26 as the holders travel from left to right, see FIG. 2. As each holder 24 leaves the feeding station 22 it is provided with one of the packaging components 26. Each such holder and its packaging component then proceeds to and passes by the heating station 32, where there is mounted a radiant-type electric heater 91 which effects a heating of the plastic sheet portion 29 and membrane portion 30 of the packaging component. Thereafter, the

holders 24 and components 26 carried thereby are brought to and past the forming station 34. At this station, see FIGS. 4, 5 and 6, there is provided a forming tool 93 which is carried by a vertically reciprocable multi-part slide structure comprising a punch holder in the form of a base plate 95 carrying upstanding rods 96 which pass through a guide plate 97 constituting a carriage, said plate having axles 99 mounting wheels 100 which ride in stationary tracks 102 secured to a frame portion 103 of the machine. The forming tool slide further has associated with it an actuating mechanism to effect vertical reciprocation of the tool 93, said mechanism comprising a cylinder and piston assemblage 105 having a piston rod or plunger 106 joined to a driver plate 108 at the underside of which the forming tool 93 is mounted by means of studs 110. Coil springs 112 normally hold the driving plate 108 in a raised position, said plate being lowered by the cylinder and piston assemblage 105 which effects a compression of the springs 112 all as illustrated in FIG. 5. It will be understood that the base plate 95 has a suitable opening to permit the forming tool 93 to pass through the plate and to have vertical movement with respect thereto, as may be observed from an inspection of FIGS. 4, 5 and 6.

The carriage comprising the drive plate 97, axles 99 and wheels 100 is normally held in an initial, left-most position as shown in FIG. 4 by suitable coil springs 114 anchored to the frame portion 103 or tracks 102 and connected with studs 116 extending upward from the carriage.

Actuation of the forming tool 93 is initiated by the presence of a holder 24 at the forming station 34. The holders 24 have switch-actuating rollers 118 arranged to engage and close an electric switch which is connected to a solenoid-valve control 121 for the cylinder and piston assemblage 105. Upon a holder 24 arriving at the forming station 34 the actuation of the switch 120 will cause operation of the cylinder and piston assemblage 105, thereby effecting a descent of the forming tool 93 to cause the same to engage and shape the membrane portion 30 of the packaging component 26, as illustrated in FIG. 5.

To effect a precise positioning of the forming tool 93 during its functioning, the base plate 95 is provided with positioning rollers 123 arranged to engage the forward and rear surfaces of the holders 24. The straddling of the holders 24 by the wheels 123 as the base plate 95 descends occurs prior to any appreciable engagement of the forming tool 93 with the packaging component, by virtue of the multi-part construction of the slide carrier for the tool. As seen in FIGS. 4 and 6, the tool 93 projects only a slight extent below the base plate 95, and the assemblage of the plates 95, 97 and 108 descends with these relative positions being held, until the holder 24 is fully engaged by the base plate 95. Thereafter, continued movement of the driving plate 108 will compress the springs 112 and project the forming tool 93 to a greater extent below the base plate. Such continued movement of the tool 93 causes the membrane 30 to be formed into a pocket-like shape in a recess 125 (see FIGS. 5-7 and 9) which is provided in each of the holders 24. By virtue of the preheating of the plastic sheet 29 and membrane portion 30 thereof, the membrane portion may be readily stretched in response to the descent of the forming tool 93.

In accordance with the present invention a vacuum or suction is provided at the underside of the membrane 30 to further aid and complete the forming of the same to the pocket-like shape. Referring to FIGS. 4 and 6, a vacuum chamber 128 is provided under the belt 56, being connected to a suitable source or means for exhausting air. The vacuum chamber 128 has an elongate, centrally disposed opening or slit 130, and the belt 56 is provided with openings 132 at the locations where the holders 24 are positioned. The openings 132 in the belt

56 communicate with passages 134 which in turn are connected with the recesses 125 in the holders 24, thereby to enable the suction in the chamber 128 to be communicated to the underside of the membrane portion 30 of the plastic 29.

Thus, in addition to the forming of the membrane portion 30 by the tool 93, the heated membrane portion is also vacuum formed as it continues to travel and traverse the forming station 34.

Upon completion of the membrane-forming operation and departure of the holders 24 and packaging components 26 from the forming station 34 an accessible portion of the apparatus is traversed, which portion represents the loading station 36. At this point an operator may place the articles which are to be packaged in the pockets constituted by the formed membrane portions 30 of the packaging components. Upon these components being thus loaded with the articles or goods, the holders 24 and components 26 proceed to the folding station 38, FIGS. 1, 8 and 9.

The pocket-like shape of the formed membrane portion 30 is clearly indicated in FIGS. 15, 16, 18 and 19 as well as in FIG. 8.

Referring to FIG. 7 it will be seen that each of the holders 24 is provided with a groove 138 (FIGS. 7, 8 and 9) which is covered by a portion of the packaging component 26 as illustrated in the left portion of FIG. 8. The folding of the packaging component is effected by a folding rail 140 which is rigidly mounted on the machine frame, together with a pair of diagonally extending folding bars 142 and 144, also rigid on the machine frame. Considering FIG. 8, as a holder 24 and component 26 approach the first folding bar 142 the leading portion or extremity 142a of the bar enters the slot 138 below the component 26. Immediately thereafter the component 26 passes under the leading end 140a of the folding rail 140 and, as seen in FIG. 9, this rail maintains the upper half as viewed in FIG. 8 of the component 26 flat on the holder 24. Continued left to right movement of the holder 24 and component 26 will effect a folding of the lower half (as seen in FIG. 8) of the component and which half is indicated at 26a in FIG. 9, so as to superpose the latter upon the said upper half. The first folding bar 142 initiates the folding movement and the second folding bar 144 is so arranged as to complete the folding movement when the component 26 leaves the first folding bar 142, as may be understood. Upon the packaging components being thus folded, the articles 139 which have been placed in the pockets provided by the formed membranes 30 will be completely enclosed on one side by the folded portions 26a and on other sides by the plastic membrane 30. The holders 24 and folded packaging components 26 now come to the creasing station 40, wherein there is provided a creasing roller 148 carried by a stationary arm 150 mounted on the machine frame. The roller 148 engages the fold of the component, and tightly creases the component at this location as the latter continues its travel from left-to-right to the discharge end of the apparatus, considering FIG. 1.

It will be noted that the plastic sheet 29 is now folded on itself and disposed between the two folded portions of the member 27 of the packaging component. The holder 24 and the component 26 now approach the fastening station 42, where, in accordance with the invention, a heat-fastening operation is performed to secure the two folded halves of the component 26 together.

Referring to FIGS. 10 through 12, at the fastening station 42 heated irons or members 154 and 156 having the shape shown in FIG. 12 are provided, the said members being carried by a vertical slide structure comprising a plate 158 having upstanding rods 160 passing through a guide plate 162 which also constitutes a carriage, said carriage being movable along horizontal bars 164 by means of bearing sleeves 166. A cylinder-and-

piston assemblage 168 is mounted on the carriage plate 162, said assemblage having a plunger or piston rod 169 secured to the plate 158 to effect reciprocative movement of the plate and the heated members 154, 156. The heated members when engaged with a folded component 26 also travel therewith, and to effect a return of the carriage there is provided a second cylinder and piston assemblage 171 having a piston rod 172 which is secured to the carriage plate 162.

The guide plate 158 has positioning rollers 174 similar to the rollers 123 at the forming station 34. The rollers 174 engage the forward and rear surfaces of the holders 24, and accurately position the heated members 154, 156 with respect to the folded component 26 at the time that the members are made to descend and engage the said component.

An electrical switch 176 is actuated by the holders 24, said switch energizing the solenoid control 178 which effects lowering of the slide structure 158 and tools 154, 156. Engagement between the holder 24 and the positioning rollers 174 causes the slide structure to travel from left to right with the holder, as permitted by the horizontal slide bars 164. As the holder 24 continues to advance it engages another electrical switch 180, which energizes solenoid valves 181 and 182, the valve 181 effecting a raising of the slide structure 158 and heated members 154, 156, and the valve 182 operating the cylinder and piston 171 to return the carriage 162 to its initial or starting position as shown in FIG. 10.

The application of the heated members 154, 156 to the folded component 26 will cause the two folded portions of the plastic sheet 29 to adhere to each other, and the securement of these portions will be along marginal edges of the folded component, and also along the edges of the opening 28 therein, as may be understood from an inspection of the shapes in FIG. 12.

Upon the holders 24 and components 26 leaving the fastening station 42 they proceed to the shrinking station 44, where equipment 184 is provided to introduce a blast of heated air through the openings 132 of the belt and the channels 134 of the holders, the said heated air impinging against the formed membranes 30 and effecting a heat shrinking of the latter about the enclosed articles 139. The introduction of heated air in this manner may be effected by the use of a chamber similar to the suction chamber 128 illustrated in FIGS. 4 and 6, or else it may be effected merely by the provision of an orifice or nozzle arranged to direct an air blast at the openings 132 in the belt 56 as the said openings approach and pass through the shrinking station 44.

Referring to FIG. 10 a pair of rotary brushes 188 is provided at the discharge end of the apparatus, said brushes being driven by a suitable belt drive 190 from a power source, and effecting a removal of the packages from the holders 24 upon completion of the packaging operations.

The machine or apparatus as provided by the invention and described above, and also the method of the invention is characterized by handling of the packaging components with a continuous movement while the various operations are performed to effect the packaging of the objects or articles. It will be seen from an inspection of FIG. 1 that from the time that the packaging components 26 are placed on the holders 24 at the left end of the machine until the components are stripped from the holders at the rightmost end, both the holders and the components carried thereby are in continuous motion. During such movement, the components pass to and through the heating station 32, the forming station 34, the loading station 36, the folding station 38, the creasing station 40, the fastening station 42 and finally the shrinking station 44.

It may now be readily understood that the method as provided by the invention embraces the steps of placing the packaging components on the holders, and moving

the holders and components in a predetermined path consecutively to and past a plurality of operation performing stations. While the holders and components are caused to travel in this predetermined path and are continually moving, the membranes of the components are subjected to heat, and are then formed into the recesses of the holders; thereafter articles are inserted in the formed membranes, the components are folded to enclose the articles and the two halves of the components are secured together. Finally, the formed membranes are shrunk about the articles to cause them to closely conform to the contours thereof.

The method of the invention is thus seen to be relatively simple and conducive to the packaging of components at a high rate of production, since it embraces a continuous movement of the holders and components. Further, the apparatus has been found to be extremely efficient and effective, and reliable in its operation. It has a high production rate, and requires a minimum of hand labor. Moreover, the construction of the apparatus does not require costly or intricate special components, or fabrications. All portions of the apparatus are readily accessible, and the apparatus may be easily adjusted as required.

Variations and modifications may be made within the scope of the claims, and portions of the improvements may be used without others.

We claim:

1. Apparatus for automatically packaging articles, comprising a holder arranged to receive and support a single, unitary foldable packaging card component of the type having an opening in it and having a stretchable and shrinkable plastic membrane spanning the said opening, said holder having a forming recess adapted to register with the said opening; powered means for effecting a continuous travel of the holder in a predetermined path past a plurality of operation-performing stations; automatic means for heating the membrane of the packaging component as the holder moves past a heating station in said path; automatic forming means including a travelling punch for forming the heated membrane to a hollow shape as the holder moves past a forming station in said path; folding means cooperating with the movement of said holder and card component carried thereon for folding said component on itself while on the holder and without tilting the holder, thereby to enclose the hollow of the formed membrane as the holder moves past a folding station in said path; automatic means for securing together the folded portions of the folded component as the latter is carried by the holder and as said holder moves past a fastening station in said path; and automatic means for heating the formed membrane to heat-shrink it, as the holder moves past a shrinking station in said path.

2. The invention as defined in claim 1, in which the powered means for effecting travel of the holder comprises an endless belt and causes a shifting of the holder in substantially a straight line over a portion of the said path of travel, along which portion the said operation-performing stations are disposed.

3. The invention as defined in claim 1, in which the automatic forming means includes means for effecting a vacuum at one side of the heat membrane, to suck the membrane into the recess of the holder.

4. The invention as defined in claim 1, in which there is means mounting the said punch for movement with the holder over a portion of the said predetermined path, and means for reciprocally mounting the punch for movement toward and away from the holder respectively prior and subsequent to travel of the punch with the holder.

5. The invention as defined in claim 4, in which there is means for effecting a vacuum at one side of the membrane for at least a portion of the time that the membrane is engaged by the punch, thereby to suck the membrane into the recess of the holder.

6. The invention as defined in claim 4, in which the means mounting the punch for movement with the holder includes a spring biased carriage the spring of which effects automatic return of the carriage to a starting position, and in which the means reciprocally mounting the punch includes a plunger on the carriage and power means for advancing and retracting the said plunger.

7. The invention as defined in claim 4, in which the means for reciprocally mounting the punch includes a punch holder mounting the punch, and in which there are cooperable means on the said holders, for effecting a predetermined positioning of the punch with respect to the holder for the packaging component as the punch holder is advanced toward the component holder, said positioning means comprising rollers carried by one of said holders and engageable with the other of the holders.

8. The invention as defined in claim 1, in which there is means for creasing the folded packaging component as the holder passes a creasing station prior to the holder reaching the said fastening station.

9. The invention as defined in claim 8, in which the creasing means comprises a roller and stationary mounting means for rotatably mounting the roller at a point in the predetermined path of travel of the holder.

10. The invention as defined in claim 1, in which the means for securing together the folded portions of the packaging component includes means for applying heat and pressure to the same.

11. The invention as defined in claim 10, in which the means for applying heat and pressure comprises a heated member arranged to extend along peripheral portions of the folded component and along the edges of the said opening in the component.

12. The invention as defined in claim 11, in which the said heated member is reciprocally mounted for movement toward and away from the said holder, and is mounted for traveling movement with the holder along a portion of the said predetermined path, said member being advanced on the holder and retracted from the holder respectively prior and subsequent to travel with the holder.

13. The invention as defined in claim 12, in which there are powered plungers for effecting the reciprocative movements of the heated member, and for effecting a return travelling movement of the heated member after it has travelled with the said holder.

14. The invention as defined in claim 1, in which the automatic means for heating the membrane comprises a radiant heater extending along the said predetermined path of travel of the holder.

15. The invention as defined in claim 1, in which the automatic means for heating the formed membrane comprises means for directing a blast of heated air against the said membrane.

16. The invention as defined in claim 1, in which there is means comprising a rotary brush, engageable with the said holder at a point beyond the shrinking station, to remove the folded packaging component.

17. Apparatus for automatically packaging an article in an individual card package of the type formed of a card blank having an opening therein to define a window therein and having a stretchable and shrinkable plastic membrane spanning said opening comprising a plurality of holders spaced from one another and each being arranged to receive and support thereon a single unitary foldable card blank, each of said holders having a forming recess therein adapted to register with the opening in the card blank carried thereon, means for effecting a continuous travel of the holders in a predetermined path past a plurality of operation-performing stations whereby each of said holders and card blank carried thereby are progressively passed from one station to the next, means for individually feeding an individual card blank to each holder with the stretchable membrane face up, as each holder passes through the feeding station, automatic means for heating the membrane of the card blank as the respec-

tive holders pass the heating station, automatic forming means including a punch movable between inoperative retracted position to operative protracted position for forming a pocket in said membrane by forcing the same into the recess in the respective holders, means for rendering said punch operative each time a holder passes thereunder, and means for moving said punch with said holder in register therewith over a portion of said predetermined path, means for returning said punch to its initial position upon forming said pocket, a loading station for loading an article in said pocket formed in the card blank, folding means cooperating with the movement of the holder and card blank carried thereon for folding the card blank over onto itself with the card retained on its holder to encase the article therein, automatic means for securing together the folded over portion of the card blank as the latter is carried by its holder through a fastening station, said securing means including a heater movable between operative and inoperative positions, and means for moving said heater with the holder in the operative position thereof through a predetermined portion of said travel of said holder on which said heater is operating, means for returning said heater to its initial position upon completion of the fastening operation, and means for heat shrinking said membrane about the article encased in said card package as the holder carries the same through a shrinking station.

18. The invention as defined in claim 17 wherein said punch and fastening heater are rendered operative and inoperative independently of one another.

19. Apparatus for automatically packaging articles comprising a holder arranged to receive and support therein a single unitary foldable packaging card component of the type having an opening in it and having a stretchable and shrinkable plastic membrane spanning said opening, said holder having a forming recess adapted to register with the said opening; powered means for effecting repetitive travel of the holder in a predetermined path past a plurality of operation-performing stations seriatim; automatic means for heating the membrane of the packaging

card component as the holder moves past a heating station in said path; automatic forming means including a movable punch for forming the heated membrane to a hollow shape as the holder moves through a forming station in said path; folding means cooperating with the moving holder and card component carried thereby for folding said component on itself while on the holder and without tilting the holder to enclose the hollow of the formed membrane as the holder moves past a folding station in said path; automatic means for securing together the folded portions of the folded component as the latter is carried by the holder and as said holder moves past a fastening station in said path; and automatic means for heating the formed membrane to heat-shrink it as the holder moves past a shrinking station in said path.

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