

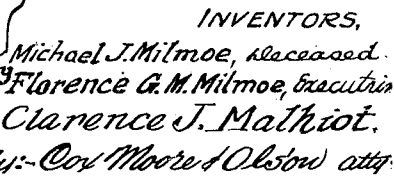
Feb. 1, 1944.

M. J. MILMOE

2,340,678

PACKAGING MACHINE AND CIRCULAR APPLYING MECHANISM THEREFOR

Original Filed Sept. 17, 1937 3 Sheets-Sheet 1



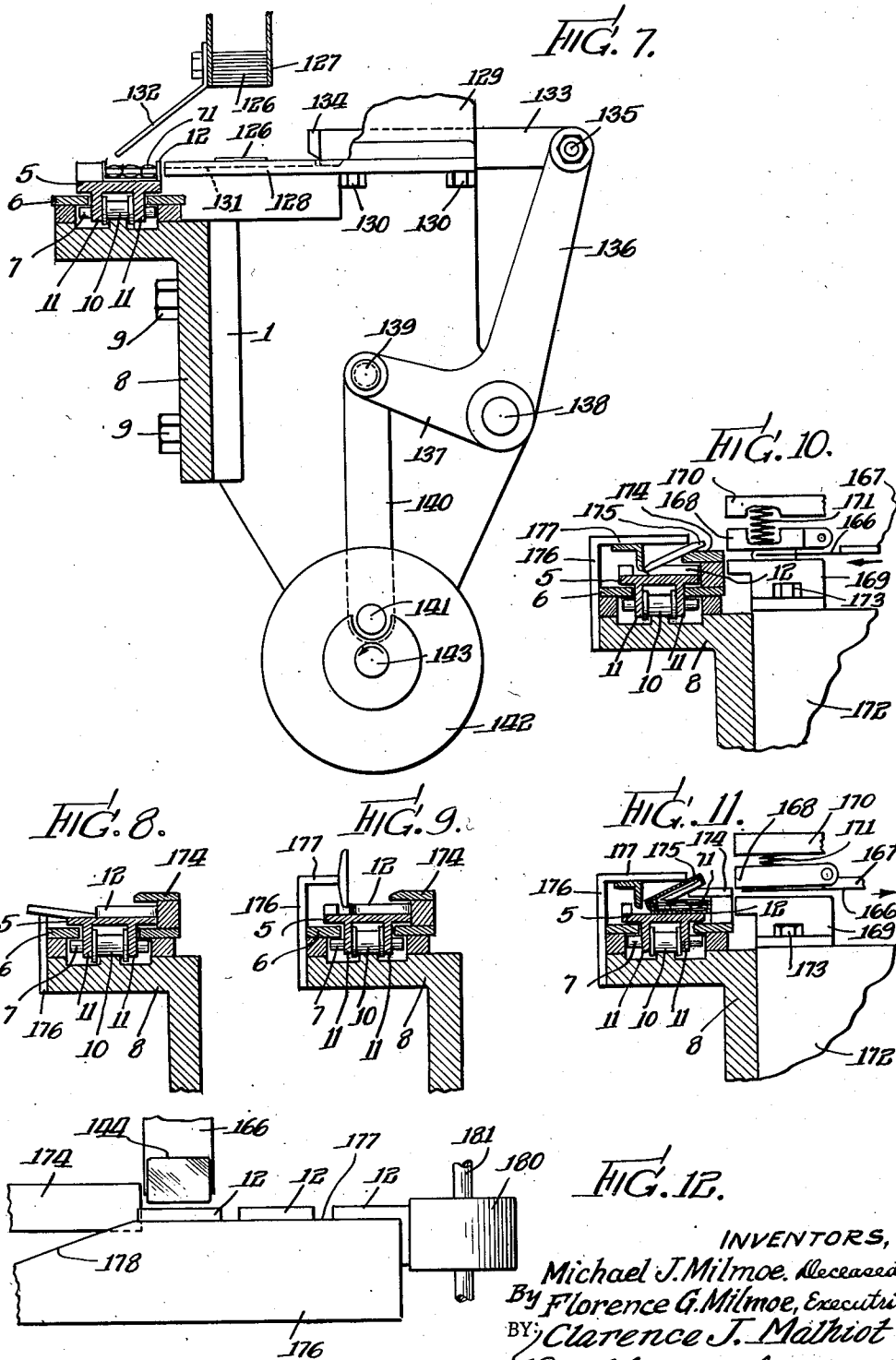
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PACKAGING MACHINE AND CIRCULAR APPLYING MECHANISM THEREFOR

Original Filed Sept. 17, 1937 3 Sheets-Sheet 3



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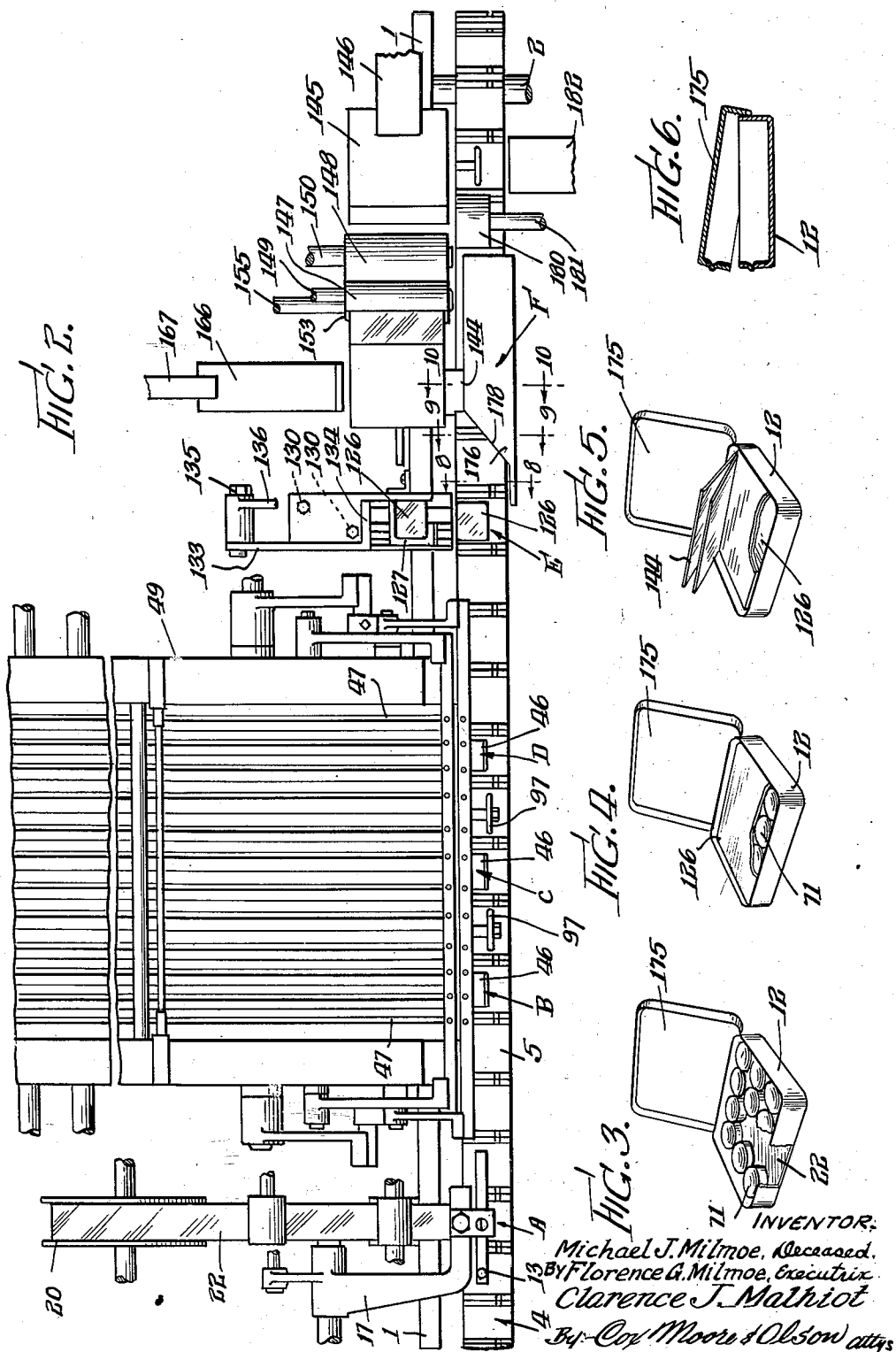
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PACKAGING MACHINE AND CIRCULAR APPLYING MECHANISM THEREFOR

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UNITED STATES PATENT OFFICE

2,340,678

PACKAGING MACHINE AND CIRCULAR
APPLYING MECHANISM THEREFOR

Michael J. Milmoie, deceased, late of Glen Ellyn, Ill., by Florence G. M. Milmoie, executrix, Glen Ellyn, Ill., and Clarence J. Malhiot, Oak Park, Ill.; said Michael J. Milmoie and said Clarence J. Malhiot assignors to F. B. Redington Co., Chicago, Ill., a corporation of Illinois

Original application September 17, 1937, Serial No. 164,364. Divided and this application October 31, 1940, Serial No. 363,785

16 Claims. (Cl. 226—2)

This invention relates to packaging machines and the like, and concerns more particularly circular folding and applying mechanisms for use in connection therewith and in association with the packaging operations.

It is an object of the invention to provide a new and improved article packaging machine, the machine having improved circular folding and applying mechanisms cooperable therewith and with the various packaging operations thereof.

More specifically stated, the invention contemplates in a packaging machine or the like, the provision of improved means for introducing a slip, such as a piece of paper, into a container adapted to receive articles, and means for introducing a folded circular also into the container and preferably into superposed relation with the articles loaded therein. In accordance with the invention, the circular introducing means includes an improved form of folding mechanism cooperable therewith at the circular introducing station, and the circular introducing mechanism cooperates with the several packaging operations, and more particularly in the embodiment illustrated with the final container closing operation, in a novel and improved manner. The circular introducing means is adapted for operation as an incident to the container closing operation and without interference therewith, the container and its closing means being utilized to facilitate the proper performance of the circular introducing means.

Another object of the invention is to provide a packaging machine for packaging articles into containers having hinged lids, in combination with circular introducing means, wherein the hinged lids of the containers, and the closing thereof is utilized for insuring and facilitating the proper performance of the circular introducing mechanism.

Various other objects, advantages and features of the invention will be apparent throughout the progress of the following specification.

The accompanying drawings illustrate a selected embodiment of the invention, and the views therein are as follows:

Fig. 1 is an elevation of an improved machine, specifically a machine for packaging tablets or the like in hinged-lid containers, constructed in accordance with the principles of the invention;

Fig. 2 is a top, plan view of the machine;

Fig. 3 is a detail, perspective view of one of the containers in open position, showing the tablets arranged therein;

Fig. 4 is a view similar to Fig. 3 showing a slip inserted on top of the arranged tablets;

Fig. 5 is a view similar to Figs. 3 and 4 showing a folded circular arranged within the container;

Fig. 6 is a detail, sectional view of the container showing the lid-locking means;

Fig. 7 is a sectional view, more particularly of the mechanism for actuating the pusher arm to feed the slip of Fig. 4 into position within the container;

Fig. 8 is a detail, sectional view more particularly illustrating the container lid-closing means, and taken on the line 8—8 of Fig. 2;

Fig. 9 is a detail, sectional view of the same mechanism, taken on the line 9—9 of Fig. 2;

Fig. 10 is a similar, detail, sectional view, on the line 10—10 of Fig. 2, and showing the folded circular being inserted in the container;

Fig. 11 is a view similar to Fig. 10, showing the condition of the parts after the insertion of the circular; and

Fig. 12 is a top, plan view of the mechanism illustrated in Figs. 8, 9 and 10.

The present invention is illustrated as applied to a machine for packing disk-shaped articles or tablets, but it is to be understood that the principles of operation and mechanisms disclosed may be applied to the packaging of other types of articles as well. This application is a division of the joint application of Michael J. Milmoie and Clarence J. Malhiot, Serial No. 164,364, filed September 17, 1937, now Patent No. 2,227,378, and entitled Packaging machine and method of packaging. The present application concerns more particularly the final packaging operations, including the closing of the loaded containers, and the slip and circular inserting mechanisms cooperable therewith.

Referring to the drawings, the machine disclosed in general comprises a packaging machine for packaging a plurality of tablets in a container having a hinged top. The containers which receive the tablets are carried by a chain conveyor along a predetermined path, which conveyor is driven intermittently of step by step and has a series of buckets or pockets for receiving the containers in open position. As soon as the containers arrive at a predetermined position, a piece of pre-cut material or paper is placed in the bottom of the container, the material being cut by a reciprocating knife, the movement of which is automatically synchronized with the feeding movement of the conveyor. The containers in the buckets continue along their path of move-

ment until they arrive at a predetermined position under spaced chute members, which have received a plurality of tablets from a tablet or article conveyor, to feed an exact number of tablets into each container at a proper timed interval. Additional means are provided adjacent the tablet-feeding means for positioning the tablets in the containers in a uniform manner. After the tablets are properly positioned and arranged in the container, the filled container is continued along a path of movement to a predetermined position where it receives a slip, card or the like containing printed matter, such as directions pertaining to the use of the tablets. The container of tablets is then moved to another predetermined position to receive a folded advertising circular in superposed relation with the tablets. The circular is first folded to proper shape and then fed into proper position in the container. When the folding mechanism, which folds and feeds the advertising circular of folded dimensional size, is operated, the container is moved by the conveyor to closing position where the hinged top will be closed to complete the packaging operation.

Referring more specifically to the drawings and particularly to Figs. 1 and 2 thereof, the machine comprises a frame 1 which is attached to a base or supporting member. Transverse shafts 2 are journaled in the frame 1 and carry sprocket wheels 3, only one of these shafts and sprockets being shown in Figs. 1 and 2. The sprocket wheels 3 support and operate a conveyor belt 4 which comprises a plurality of individual conveying buckets, receptacles or plates 5 having a package or container receiving pocket. The buckets 5 are connected by links 10, Fig. 7, secured to adjacent buckets by pins 7 passing through the downwardly extending flanges or lugs 11. The conveyor 4 and its auxiliary structure are supported and guided by stationary plates or bars 6 mounted on a bracket 8, the bracket 8 being bolted to the frame 1 by bolts 9.

A small container 12, Fig. 3, is placed in each individual bucket 5 of the conveyor 4 and is fed along the path of the conveyor into the packaging machine. The conveyor buckets 5 carrying containers 12 are successively moved by the conveyor to a series of operating stations designated as stations A, B, C, D, E and F in the drawings, see Figs. 1 and 2. At the station A a container is first accurately positioned with respect to the conveyor bucket by which it is carried, by means of a positioning pin 13 carried by an oscillating lever 17, and thereafter a short section of paper is cut from a paper web 22, Fig. 2, carried by a supply roll 20, said section being deposited in proper position at the bottom of the container as shown, for example, in Fig. 3.

After receiving the web section 22, the containers are moved from station A successively to stations B, C and D, Figs. 1 and 2, wherein the articles are deposited or loaded therein as shown, for example, in Fig. 3. In the particular embodiment illustrated the articles to be packaged are tablets or the like, three rows of four tablets each being deposited into the hinged-lid containers. In Fig. 3 certain of the tablets are broken away so as to facilitate the showing of the web piece 22 at the bottom of the container and upon which the tablets are adapted to be placed. The chute members 46, Figs. 1 and 2, deposit one row of tablets into the containers at each of the stations B, C and D, the first row of tablets being deposited at the station B, the second row being

deposited at the station C, and the third row of tablets being deposited at the station D. The tablets are fed to the chute members 46 from a hopper 49 by means of an inclined tablet conveyor structure 47. The tablets, upon being deposited into the containers, are accurately positioned therein by pusher or positioning bars 97 and a plate 224, so that as the containers leave station D and are transmitted by the conveyor 4 to the station E, the tablets will be accurately positioned therein, the container being completely loaded as indicated by the showing in Fig. 3.

The details of operation of the positioning pin 13, the mechanism for severing and placing the cut sections of web 22 into the bottom of the containers, the action of the chutes 46 and the positioning devices 97 and 224 in loading the containers, and the conveyor structures for transmitting the tablets from the supply hopper 49 to the chutes specifically form no part of the herein claimed invention and accordingly need not be specifically described. A detailed description of such mechanism appears in the aforementioned application of Michael J. Milmoie and Clarence J. Malhiot, Serial No. 164,364.

As the article-filled containers are transmitted to the station E, Figs. 1 and 2, a slip 126 containing printed matter or instructions, is placed in superposed position on the tablets 71 in each container, as best shown in Fig. 4. The means for inserting or applying the slips 126 is best shown in Fig. 7. A slip 126 is fed from a hopper 127 by suction means (not shown). The hopper 127 is disposed vertically and immediately adjacent the conveyor.

A slip 126 from the bottom of the hopper 127 is deposited by means, as stated, upon a guide table 128 mounted on a bracket 129 by means of bolts 130. The guide table 128 has a recess 131, Fig. 7, to assist in feeding the slip 126 over the table. A plate 132 bolted to the front face of the hopper 127 has a forwardly and downwardly inclined portion overlying the bucket 5 and container 12 at position E, Figs. 1 and 2, for the purpose of guiding the slip 126 into its proper position in the container. Working in conjunction with the guide table 128 is a pusher arm 133 having a perpendicular arm 134 extending across the table 128. This pusher arm 133 is pivoted at 135 to the arm 136 of a bell crank lever pivoted at 138. The arm 137 of the bell crank lever is pivoted at 139 to a link 140 which in turn is pivoted at its other end to a crank pin 141 carried by a crank member 142 fixed to a shaft 143. The crank pin 141 and link 140 oscillate the bell crank lever and cause the pusher arm 133 to reciprocate horizontally across the guide table 128, thereby pushing the slip 126 into the container 12 at position E.

The subsequent movement of the conveyor 4 brings each container 12 to a position F, Figs. 1 and 2, to receive a folded printed circular 144, Figs. 1, 2 and 5.

The unit for folding the printed circular is immediately adjacent the conveyor at the position F, Figs. 1 and 2, and consists of a horizontal folding blade 145, Fig. 1, attached to an arm 146 which is actuated back and forth by means (not shown). The folding blade 145 contacts the printed circular 144, being fed through and by the feed rolls 147 and 148, mounted on the shafts 149 and 150 which are journaled on the frame in any conventional manner. The printed circular or paper is fed downward through guides 151 into guides 152, where it is engaged by the first

folding blade 143 and then fed to the feed rolls 153 and 154. The feed rolls 153 and 154 are mounted on shafts 155 and 156, and feed the folded circular into the upwardly inclined guides 157.

A second folding blade 158, Fig. 1, between feed rolls 153, 154 and guides 157, is carried by an actuating arm 159 and is reciprocated vertically to fold the circular a second time and to feed the same into vertically disposed guides 160 which are bracketed to the frame at 161. The circular 144 is then contacted by a third folding blade or member 162 to refold the twice folded circular. The folding member 162 is horizontally disposed and is reciprocated longitudinally of the conveyor 4 to fold and feed the circular into horizontally disposed guide members 163. The guide members 163 have a vertical opening or slit 164 extending along an axis parallel to the longitudinal axis of the conveyor which allows a fourth folding member 165 reciprocable in a vertical plane to contact the circular 144 to again fold and feed it downwardly to a position wherein it is disposed in a vertical plane extending longitudinally of the conveyor. In this position it is engaged by the fifth folding member 166, Figs. 2 and 10 to 12. The fifth folding member or arm is horizontally disposed and carried by the actuating arm 167, Fig. 10.

This fifth folding member is reciprocated horizontally and in moving toward the conveyor 4 it engages and folds the circular 144 feeding it through the spring-urged guide member 168 and the guide 169, Figs. 10 and 11. The guide member 168 has a fixed upper portion 170, to which is secured at one end a helical spring 171 for constantly urging the guide member 168 into a predetermined position spaced from the lower guide 169. This urging action assists the folding arm 166 in creasing the circular when feeding it into the containers 12. The lower guide 169 is bracketed to the back magazine wall bracket 172 by bolts 173. The back bracket may be attached to the frame bracket 8 in any conventional manner. The circular 144, which has been folded five times, conforms in substantial dimensional size to that of the container 12, so that it can be easily and readily inserted therein. The completely folded circular 144 is pushed by the fifth folding member 166 into the container 12.

The lid 175 of each container 12 as it approaches the position F is engaged by the guide member 176, Figs. 1, 2 and 8 to 11. This guide member 176 is disposed vertically adjacent the conveyor 4 and is attached to the angle bracket 8 in any convenient manner. The member 176 has an integral arm 177 extending horizontally above the conveyor buckets 5, Figs. 10 and 11. This arm 177 has an angle or cam portion 178 to move the lid toward closed position (see Fig. 2). The extension arm 177 may be integrally attached to the guide member 176, or it may be hinged in any convenient manner (not shown). The lid 175 of the container, as the container is fed along, comes in contact with the angled portion 178 of the guide to progressively close the lid, Figs. 8 to 11.

The extreme end of the guide arm 177, opposite the angled end 178, substantially overlies the lid 175 of the container 12, but the lid 175 is prevented from completely closing by the horizontal arm 174 which extends into a position beneath a corner of the lid of the container at the position F, Fig. 10. The lid is prevented from closing so that the folded circular 144 can be fed from

the guide members into and inserted in the container 12 as shown in Fig. 11.

The next movement of the conveyor causes each container to be moved away from position F and from the extension arm 174. The right end of the guide arm 177 pushes the lid 175 downward into a substantially closed position, as shown in Fig. 6. In this latter position the conveyor moves the containers under a presser roll 180, Figs. 1, 2 and 12, which is rotatably mounted on a stud shaft 181. The presser roll presses the lid 175 into closed position to complete the packaging operation. The closed packages are then conveyed away to a table 182 for shipping, and the like.

It is to be understood that the packaging machine hereinbefore described has its various actuating mechanisms connected to a main drive shaft (not shown) for synchronizing the series of operations in timed relationship.

Operation

The open containers 12 are placed in conveyor buckets 5 and properly positioned therein by the pin 13 just prior to reaching the position A, Fig. 1, where a slip of paper 22 is fed and cut off and finally inserted in the bottom of the container. The containers are then moved in succession by the intermittently operating conveyor to the position B, under the first chute member 46, where each container receives the first row of tablets 71, coming from the inclined conveyor 47 and hopper 49.

The pusher bar 97 positions the row of tablets at the next position, after which it is fed along to position C. At this position it receives a second row of tablets by repeating the same cycle of operation, and in its next position the second pusher bar 97 properly positions the second row of tablets along the median line of the container. The conveying of the container with the two rows of tablets to the position D allows it to receive a third row of tablets from the chute member at this point. At the next position of the container the kicker arm 224 operates to cause the tablets of the third row to be properly positioned and lie flat in the container. When a container is moved to position D to receive the last row of tablets, the conveyor has positioned additional containers at positions C and B and A to receive the second and first row of tablets and the bottom paper or slip 22, respectively.

After each container is filled it is then conveyed to position E, Fig. 1, to receive a top slip 126, Figs. 1, 4 and 7, fed from the hopper 127. The slip is pushed by the reciprocating arm 133 into each container 12 into superposing relationship with the tablets 71.

Each container 12 is next conveyed to the position F, where a printed circular 144 which has been folded five times by the folding devices is inserted into the container. The lid 175 of each container 12, while approaching the position F, contacts the angular guide member 176 which functions to move the lid 175 toward a closed position, but the lid is prevented from closing completely by an extension arm 174 so that the folded circular may be inserted.

After the folded circular is inserted, the container is conveyed past the guide member 176 under a presser roll 180 which applies pressure upon the partially closed container lid to snap the lid 175 into complete closed position to form a completed package.

It will be seen that after the containers 12 have

been placed in the buckets 5 the packaging machine automatically performs its series of operations to provide a container with its full contents including the slip 126 and circular 144, and then completely closes the container to form a completed package, this automatic operation being accomplished without any manual means whatsoever.

Changes may be made in the form, construction and arrangement of the parts without departing from the spirit of the invention or sacrificing any of its advantages, and the right is hereby reserved to make all such changes as fairly fall within the scope of the following claims.

The invention is hereby claimed as follows:

1. In a packaging machine of the type adapted for the packaging of articles within hinged-lid containers, a conveyor adapted to propel a series of hinged-lid article-filled containers along a predetermined path, and means located along the path of the conveyor for inserting a paper slip into the containers in juxtaposed relation to the articles therein, said last named means comprising a reciprocally operable pusher member operable transversely of the conveyor to slide said slip edgewise into the container into position adjacent the articles within the container while the container-hinged lid remains in open unobstructing position.

2. In a packaging machine of the type adapted for the packaging of articles within containers, a conveyor adapted to propel a series of article-filled containers along a predetermined path, means located at a given station along the path of the conveyor for inserting a paper slip into the containers in superposed relation to the articles therein, and means located at a further station along the path of the conveyor for folding and inserting a circular into the containers in superposed relation to the paper slip, said last named means comprising a hopper for superposed circulars, means for successively withdrawing the circulars from the hopper, means for folding the circulars, and means for inserting the folded circulars into the containers.

3. In a packaging machine of the type adapted for the packaging of articles within hinged-lid containers, a conveyor adapted to propel a series of hinged-lid article-filled containers along a predetermined path, and means located along the path of the conveyor for folding and inserting circulars into the containers in superposed relation to the articles therein, said folding and inserting means including a folding mechanism for folding a circular and an inserting member reciprocally operable transversely of the conveyor to engage the folded circular and insert the same into the containers in superposed position upon the articles therein while the container lid remains in open unobstructing position.

4. In a packaging machine of the type adapted for the packaging of articles within hinged-lid containers, a conveyor adapted to propel a series of hinged-lid containers along a predetermined path, means located along the path of the conveyor for pivoting the container lids to a predetermined substantially closed position, and means also located along the path of the conveyor for introducing circulars transversely of the conveyor into the containers and through the respective passageways between the substantially closed lids and the bodies of the containers.

5. In a packaging machine of the type adapted for the packaging of articles within hinged-lid containers, a conveyor adapted to propel a series

of hinged-lid article-filled containers along a predetermined path, means located along the path of travel of the conveyor at a given station thereon for pivotally moving the container-hinged lids to partially closed position and for retaining them in such position, and circular inserting means located at said station for successively sliding circulars transversely of the conveyor into the containers into superposed position upon the articles therein through the respective passageways between the partially closed lids and the bodies of the containers as the containers are successively presented to said station.

6. A packaging machine as defined in claim 5 wherein circular folding means is also provided at said station for folding the circulars prior to the operation of the inserting means.

7. In a packaging machine of the type adapted for the packaging of articles within hinged-lid containers, a conveyor adapted to propel a series of hinged-lid article-filled containers along a predetermined path, fixed abutment means located along the path of the conveyor against which the hinged lids of the loaded containers are adapted to be engaged and pivoted to substantially closed position, additional fixed abutment means engageable with the lids as they reach substantially closed position to maintain them in such position, and circular inserting means operable to introduce circulars transversely of the conveyor under the lids of the containers while said lids are held between the abutment means.

8. A packaging machine as defined in claim 7 wherein circular folding means is provided in association with the circular inserting means for folding the circulars and delivering the folded circulars to said inserting means.

9. In a packaging machine of the type adapted for the packaging of articles within hinged-lid containers, a conveyor adapted to propel a series of hinged-lid containers along a predetermined path, fixed abutment means comprising a cam member located along the path of the conveyor against which the hinged lids of the containers are adapted to be engaged and progressively moved to partially closed position, additional fixed abutment means comprising a stop member engageable with the lids as they reach partially closed position to maintain them in such position, and circular inserting means operable to introduce circulars transversely of the conveyor into the containers while said lids are held between the abutment means.

10. In a packaging machine of the type adapted for the packaging of articles within hinged-lid containers, a conveyor adapted to propel a series of hinged-lid containers along a predetermined path, fixed abutment means located along the path of the conveyor against which the hinged lids of the containers are adapted to be engaged and pivoted to substantially closed position, additional fixed abutment means engageable with the lids as they reach substantially closed position to maintain them in such position, circular inserting means operable to introduce circulars transversely of the conveyor under the lids of the containers while said lids are held between the abutment means in said substantially closed position, and means operable to thereafter completely close the container lids.

11. A packaging machine as defined in claim 10 wherein the last named lid-closing means comprises a roller member arranged along the path of travel of the conveyor engageable with

the lids for compressing them to completely closed position.

12. In a packaging machine of the type adapted for the packaging of articles within containers, a conveyor adapted to propel a series of article-filled containers along a predetermined path, and means located along the path of the conveyor for folding and inserting circulars into the containers in superposed relation to the articles therein, said circular folding and inserting means including a member reciprocally operable transversely of the conveyor and adapted to engage the circular and effect a folding operation thereon and on further movement to effect an insertion of the circular into the container.

13. In a packaging machine of the type adapted for the packaging of articles within hinged-lid containers, a conveyor adapted to propel a series of hinged-lid article-filled containers along a predetermined path, means located along the path of the conveyor for holding a container lid at an acute angle with respect to the container body, and means also located along the path of the conveyor for folding and inserting a circular into the container into juxtaposed relation to the articles therein and while the container lid is held by the holding means, said circular folding and inserting means including a member adapted to engage and effect a folding operation upon a circular and upon further movement to effect an insertion of the circular into the container.

14. In a packaging machine of the type adapted for the packaging of articles within hinged-lid containers, a conveyor adapted to propel a series of hinged-lid article-filled containers along a predetermined path, means located along the path of the conveyor for holding the hinged-lid of a container at an acute angle with respect to the container body, and means

also located along the path of the conveyor for folding and inserting a circular into the container into superposed relation to the articles therein while the lid is held by the holding means, said folding and inserting means including a folding mechanism for folding a circular and an inserting mechanism operable to engage the folded circular and insert the same transversely of the conveyor into the container.

15. In a packaging machine of the type adapted for the packaging of articles within hinged-lid containers, a conveyor adapted to propel a series of hinged-lid containers along a predetermined path, means located along the path of travel of the conveyor for positively holding the hinged-lid of a container at an acute angle with respect to the container body, and means also located along the path of the conveyor for introducing a circular transversely of the conveyor into the container while the lid is held by said holding means.

16. In a packaging machine of the type adapted for the packaging of articles within hinged-lid containers, a conveyor adapted to propel a series of article-filled hinged-lid containers along a predetermined path, and means located along the path of the conveyor for folding and inserting circulars into the containers in superposed relation to the articles therein, said circular folding and inserting means including a series of at least three folding members for producing at least three folds in the circulars, and means operable transversely of the conveyor for inserting the folded circulars into the containers in superposed position upon the articles, therein while the container hinged-lids remain in open unobstructing position.

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Deceased.

CLARENCE J. MALHOT.