Feb. 7, 1967 A. VINCIGUERRA 3,302,369

AUTOMATIC PACKAGING MACHINES

Filed Feb. 11, 1964 2 Sheets-Sheet 1

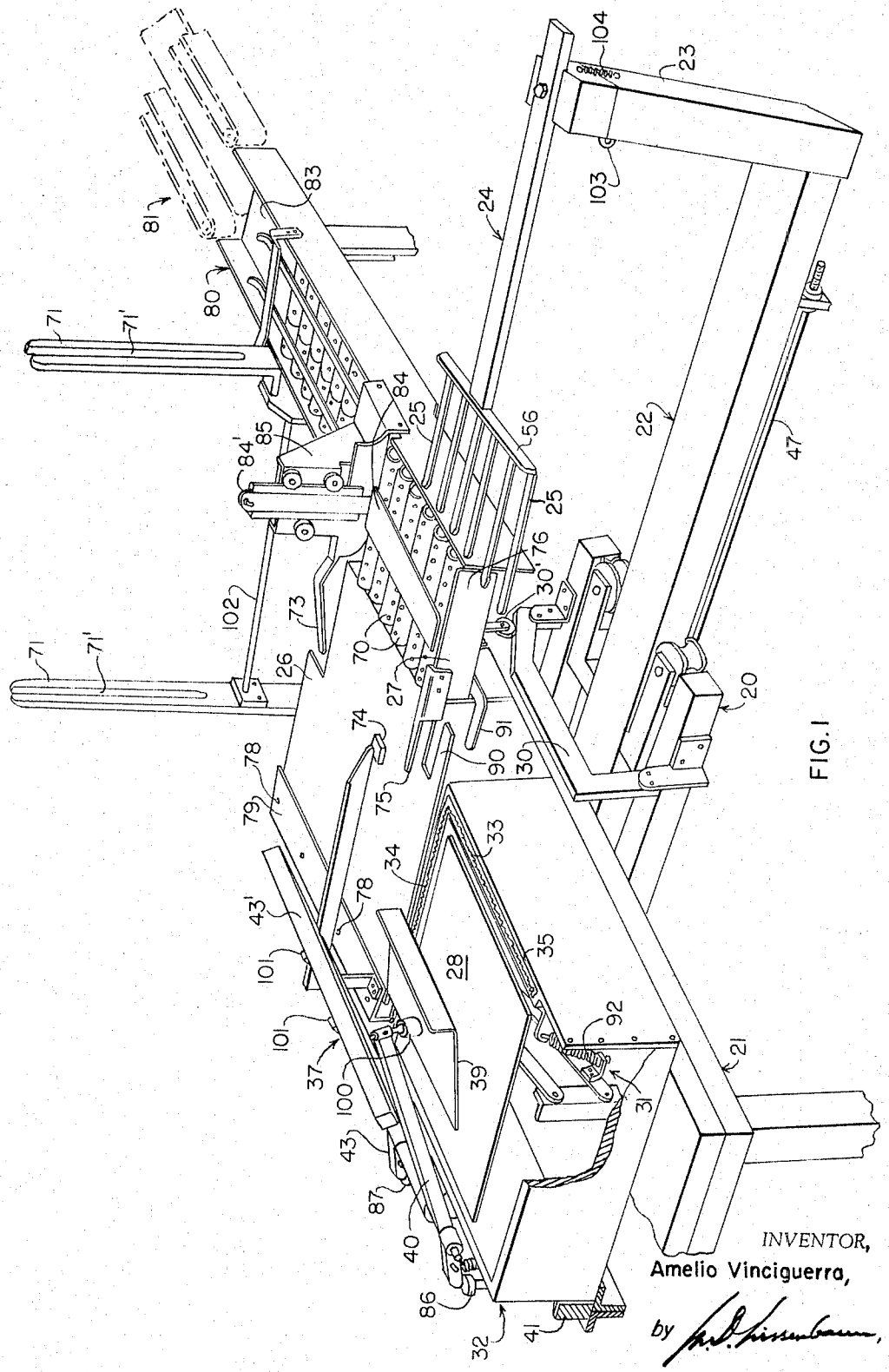


FIG. 1

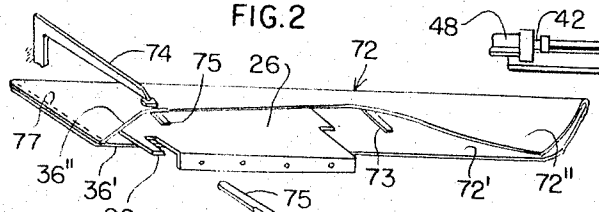
INVENTOR,
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Feb. 7, 1967 A. VINCIGUERRA 3,302,369

AUTOMATIC PACKAGING MACHINES

Filed Feb. 11, 1964 2 Sheets-Sheet 2

FIG.2



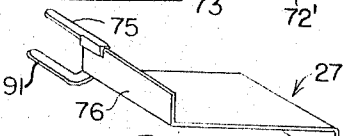


FIG.3

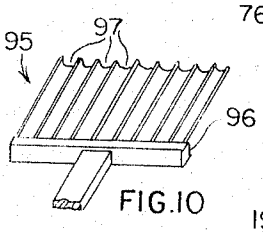


FIG.10

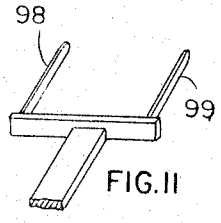


FIG.11

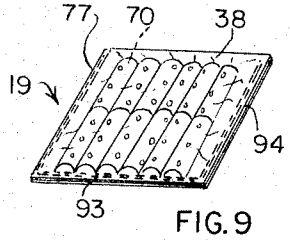


FIG.9

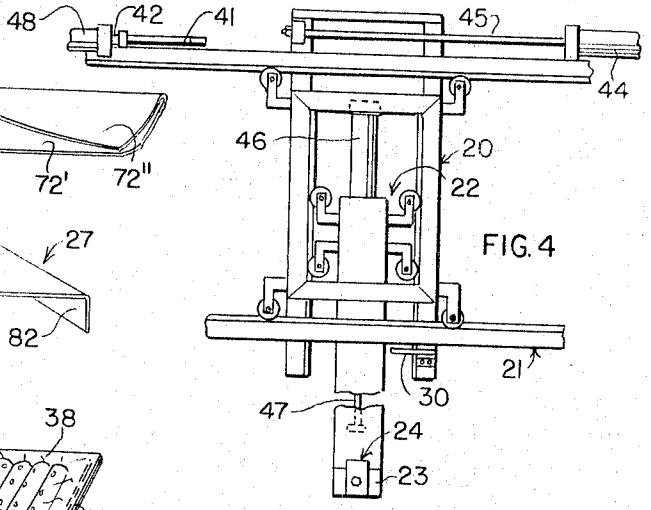


FIG.4

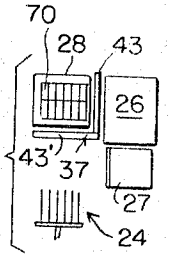


FIG.8

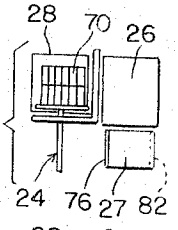


FIG.7

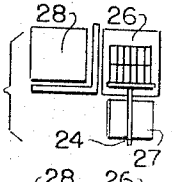


FIG.6

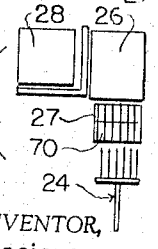


FIG.5

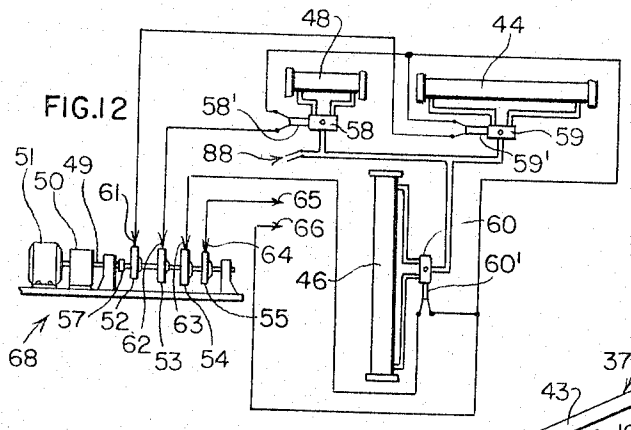


FIG.12

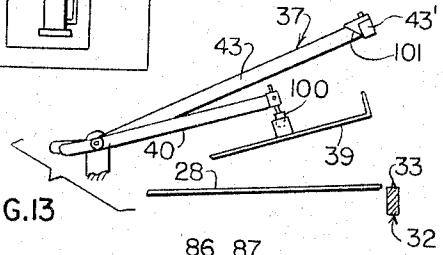


FIG.13

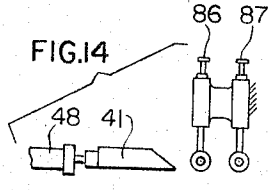


FIG.14

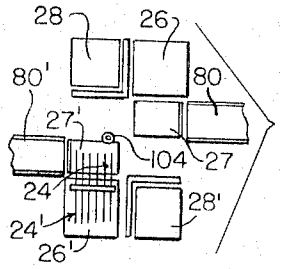


FIG.15

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3,302,369

AUTOMATIC PACKAGING MACHINES

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Filed Feb. 11, 1964, Ser. No. 344,098
12 Claims. (Cl. 53—182)

The present invention relates to automatic packaging machinery.

An object of this invention is to provide a novel and improved machine for automatically making separate packages containing an identical amount of identical articles; there being a continuous supply of such articles fed into the machine in a desired formation and a supply of wrapping sheet material therefor, to be dealt with by novel mechanisms in novel functional relationships having a new mode of operation.

Another object of this invention is to provide a packaging machine of novel and improved construction for automatically making packages as mentioned, of a large variety of articles. Of course, each run is for identical articles which may be tubular items, cylindrical items, prismatic items and articles of many other shapes. As examples, the machine is adaptable for the packaging of tubular hair curlers, spools of thread, cylindrical packages of candy or lozenges, prismatic packages which are small boxes containg tacks, shelled nuts, candy or other items and for many other kinds of merchandise as frankfurters, patties of chocolate, bars of candy and many other types of goods.

A further object thereof is to provide a novel and improved automatic packaging machine of the character described which is simple in construction, needs little attention, is reasonable in cost to manufacture and which is efficient in carrying out the purposes for which it is designed.

Besides being very easy to set up to run and by a very simple replacement made adaptable for different kinds of articles, other objects and advantages of this machine will become apparent as this disclosure proceeds.

For one practice of this invention, the machine has a means to bring a constant supply of arranged articles to a lowered elevator platform of sufficient area to admit thereon only a prescribed number of them at one time. Raising said elevator platform, its load is brought to the level of a cantilever shelf which is straddled by the free end portion of wrapper sheeting which comes to said shelf folded in half longitudinally. A downward flange on said elevator platform holds back the remainder of the supply of articles, upon the raising of said platform. A transporter in position to contact or engage the articles on the elevator platform when the latter is in its raised position, is carried on a cross slide or carriage which is on a second carriage slidable along the machine. Movement of the cross carriage is now effected so that the transporter shall push the articles on the elevator platform onto said shelf to lie under the upper ply of said folded sheeting which is supported high enough for such purpose. This sheeting is preferably a transparent thermoplastic. The transporter has a finger which is now either at the lead end of load or through the article which is at the lead end. It is to be noted that in setting up the machine initially, the end transverse meeting edges of the sheeting are seamed. Now the carriage which is movable along the machine, is slid so that said finger or the item it may be through as the case may be, shall contact the seam and pull the folded sheet lengthwise whereby the load on the elevator platform is transferred together with the folded sheet onto a sealing platform whereupon the cross carriage is moved back to its initial position on the other carriage and such second carriage is then moved back to its initial position adjacent the elevator platform which has been lowered and

thus receives a fresh load from the supply of articles to be packaged, all ready to start a repetition of the cycle while an L-shaped bar at sealing station is swung down to press the longitudinal edges of the sheet's plies together against a heated wire below them and simultaneously press the plies together against another heated wire below them and across them beyond the tail end of the load, whereby the latter is encased in the envelope thus formed and the seams made are trimmed and cut by said hot wires, leaving the transverse ends of the sheeting supply seamed. Now the L-shaped bar is swung upward to its raised initial position, leaving the package made, on the sealing platform, to be shoved away directly into a receptacle or onto a conveyor to be collected therefrom, by the next load coming onto the sealing platform.

Other incidents of structure will be included in the following detailed description which will now be given, for which reference will be made to the accompanying drawings which are part of this specification, in which drawings, similar characters of reference indicate corresponding parts in all the views.

FIG. 1 is a perspective view of an automatic packaging machine embodying teachings of this invention, arranged to package two rows of tubular elements used as hair curlers.

FIG. 2 is a fragmentary perspective view showing the meeting lead ends of a folded sheeting seamed, and the shelf that is straddled by its plies; the upper ply being raised so the load can be pushed onto said shelf by the transporter to be between the plies.

FIG. 3 is a perspective view showing the elevator platform.

FIG. 4 is a top plan view of the associated carriages, a cam related to sealing station operation and their pneumatic operating means.

FIGS. 5–8 are diagrammatic representations of top plan views which will be used to explain the cycle of operation.

FIG. 9 is a perspective view of a finished package.

FIG. 10 is a fragmentary perspective view of a transporter suitable for use when the machine is to package frankfurters or other cylindrical articles.

FIG. 11 is a fragmentary perspective view showing a transporter suitable for use when the articles to be packaged are prismatic as for instance packs of chewing gum, of small boxes.

FIG. 12 is a diagrammatic representation of a control system for this machine.

FIG. 13 is a fragmentary side view of the components which comprise the sealing station.

FIG. 14 is a front view of the cam means included in FIG. 4 and its followers.

FIG. 15 is a diagrammatic representation in the nature of FIG. 8, showing a modification of the machine of FIG. 1, to have it make two packages per cycle of operation.

In the automatic packaging machine shown in the drawings, a carriage 20, mounted to slide horizontally along the frame 21, has another carriage 22 mounted on itself to slide horizontally thereon in a direction perpendicular to its own, to serve as a cross carriage. Said carriage 22 has an upright post 23, supporting a horizontally extending transporter 24, which as shown is a fork structure whose tines 25 extend in a plane a predetermined distance above a cantilever shelf 26 which is fixed to the frame and extends in like direction as said tines. Each of the carriages 20, 22 move in succession and each has a definite stroke so the locus of movement of said post 23 is rectangular thereby determining four vertex positions in a horizontal plane. At the second vertex position in the cycle of operation, the transporter fork 24 is entirely over said shelf 26 as shown in FIG. 6, after such fork has passed over an elevator platform 27, upon a movement of the cross carriage 22 from the first

vertex position at the commencement of the cycle of operation where said elevator platform 27 is between said shelf 26 and fork 24 as shown in FIG. 5. Now upon movement of the carriage 20 from its position in FIG. 6 to the third vertex position in the cycle of operation, the fork 24 is over a sealing platform 28 as shown in FIG. 7. Now upon the return stroke of the carriage 22 to the fourth vertex position in the cycle of operation, the fork 24 is in line again to be at the first vertex position upon the return stroke of the carriage 20.

The elevator platform 27 is slidably mounted on the frame for movement along the vertical and has a follower 30' which when engaged by the cam 30 on the carriage 20, will cause said elevator platform to rise and when said cam moves away with said carriage 20, the said elevator platform will fall. The sealing platform 28 is resiliently mounted on a parallelogram linkage 31 so it always remains horizontal in its associated heat-sealing and trimming apparatus indicated generally by the numeral 32 which is an article of commerce. Such apparatus consists of heated elements powered by an electric current passed through the wires 33, 34 which are exposed but insulatedly mounted along the edge 35 along which the meeting longitudinal edges 36', 36'' ride at sealing station and come to rest when the machine is in the condition shown in FIG. 7. When the fork 24 leaves the sealing station as shown in FIG. 8, an L-shaped arm denoted generally as 37, swings down to press the wrapping plies against said electrically heated wires 33, 34 whereby the wrapper envelope 38 is sealed and trimmed. Before said L-shaped arm comes down, a presser plate 39 is swung downward against the packaged goods on the sealing platform 28, upon movement of the lever 40 which holds such presser plate 39. A cam 41 which is slidable on the frame and at the end of the piston rod 42, in its movement first causes the lever 40 to swing to bring the presser plate down and soon thereafter swings the arm 43 of the L-shaped arm to bring the latter down to press across and along the wrapper plies. When said cam 41 moves back, the presser plate 39 and the L-shaped arm 37 swing upwardly because the lever 40 and the arm 43 are spring loaded to accomplish this. There are stops fixed on the machine, suitably positioned but not shown, to limit the movement of the carriages 20, 22, the upward position of the elevator platform 27 and the upward swing away from the sealing platform 28 of the lever 40 and the arm 43.

A pneumatic cylinder 44 fixed on the frame and its piston rod 45 connected to the carriage 20, constitutes the means to move said carriage. To move the carriage 22, there is the cylinder 46 fixed to the frame and its connecting rod 47 is connected to said carriage 22. A cylinder 48 fixed on the frame, has its connecting rod 42 as mentioned, connected to the cam 41.

In the control system shown in FIG. 12, which is one way that may be used, each of the air cylinders 44, 46, 48 is double-acting and is controlled by a valve which normally connects one end of the cylinder it is associated with, to atmosphere and the other to compressed air supplied to the distributor pipe 67. Upon actuation of the valve's related solenoid, the cylinder end which was connected to atmosphere will now receive compressed air and the cylinder end which initially supplied compressed air, will now be connected to atmosphere. These control valves are well known in this art and are indicated as 58 for the cylinder 44, 59 for the cylinder 46 and 60 for the control of the cylinder 48. The solenoids associated with said valves are indicated as 58', 59' and 69' respectively.

In this system illustrated to show one manner of control, there is a timing apparatus indicated generally by the numeral 68 which serves to operate all the components in proper timed relation, and such consists of a revolvably mounted shaft 49 driven by a motor 51 through a gear box 50 so that said shaft shall revolve at such speed that during one revolution of such shaft, machine operation is one complete cycle. Hence, one terminal of each of the solenoids 58', 59', 60', is connected to the terminal 66 of a suitable electric power supply. The other power supply terminal 65 is connected to a stationary brush 64 which is in constant contact with the circular wheel 55 secured on said shaft. The other terminals of said solenoids 58', 59', 60' are respectively connected to the fixed brushes 62, 61, 63. Each brush is adapted to coact with a cam; the cam 52 being associated with the brush 61, cam 53 with the brush 62 and the cam 54 with the brush 63. All said cams and the wheel 55 are electrically conductive and so is the shaft part which carries all of them and makes them all electrically connected, but such shaft part is insulated from the shaft's remainder by the insulative coupling 57. The cams are respectively designed so that through a predetermined part of a revolution in respect to each of them as need be, they are in contact with their related brushes and for the balance of the revolution, they are out of contact with their related brushes, and the cams are so arranged on their shaft around the 360 degrees of said shaft, that the several valves shall be operated in proper timed relation in accordance with the sequence of occurrences as set forth in the cycle of operation. It is evident that during such interval that a cam remains in contact with its related brush, that the circuit of its associated solenoid remains closed. When there is no such contact, that particular circuit is open.

As illustrated herein, the goods chosen to be packaged are perforated cylindrical tubes used as hair curlers. Each package 19 is to contain twelve such items in a sealed envelope 38 made of thermoplastic sheeting, wherein they are arranged in two rows of six each; the articles in each row to be alongside each other. So a fork 24 is used, including the six tines which extend from a common pusher bar 56; the length of each tine being nearly twice the length of each tube 70.

To set up the machine shown in FIG. 1 for operation, a supply of thermoplastic sheeting is needed which is folded lengthwise in half as shown at 72. Means may be provided to so fold the sheeting before its plies as set to encompass the cantilever shelf 26 after coming off a roll on a shaft through the slots 71' of the brackets 71 to hold such roll, but I have chosen to use a roll (not shown) in which the web is already so folded so it comes off the roll and its upper ply 72'' is set over said shelf 26 and the fixed finger 73, and between the fixed finger 74 and the finger 75 which extends from the top edge of the upward wall 76 of the elevator platform 27, while the lower ply 72' is set under said shelf 26; the fold line of the wrapper sheeting thus placed, being along and at the free edge of said shelf. The meeting edges of the lead ends of the plies are seamed as shown at 77. The pins 78, downward from the fixed plate 79, serve to keep the folded web 72 from moving away from said shelf 26. The folded sheeting is moved so that the seam 77 shall be at and along the sealing wire part 34.

A supply of the articles 70 to be packaged is continuously fed to the trough 80, in two rows, either by hand or from a suitable hopper (not shown) but well known in this art, onto the trough which should be a bit slanted towards the lowered platform 27, or onto a conveyor system indicated generally by the numeral 81, from where they are urged to come to the elevator platform 27 when the latter is in its lowered position, at which time a supply can come thereon because the downward wall 82 will be just below the discharge end of the chute's floor 83.

The condition of the machine as shown in FIG. 1, is when the elevator platform 27 is already loaded from the supply in the trough 80, with twelve items 70 which is its capacity and said platform is partially raised towards the plane of the shelf 26. It is to be noted that at the commencement of the cycle of operation, the carriage 20

is a bit to the right of its position shown in FIG. 1, where the tines of the fork **24** would be in position to enter into the items on the elevator platform. The level of said tines is always at such fixed height and of course can enter into the items **70**, when the elevator platform is in its raised position, which it is at at the commencement of the cycle. The cycle's start is shown in FIG. 5, where the fork is ready to make such entrance.

At the commencement of the cycle of operation, the condition of the valves **58**, **59**, **60** is such that the carriage **20** is at the end of its travel to the right, the carriage **22** is at the end of its travel forwardly on the carriage **20**, and the cam **41** is away from the slidable followers **86** and **87** which when raised, will swing the pressing plate **39** downward and then the L-shaped sealing arm **37**. With the valves in such condition, their solenoids **58'**, **59'** and **60'** are inactive, meaning that the circuits thereof are all open.

With the machine so laden, the current is turned on to feed the circuits of the solenoids and the sealing wires **33** and **34**, by connecting the terminals **65**, **66** to main power lines. The circuit for said wires are not shown. Also, compressed air is fed in at **88** to be distributed by piping **67** to the intake ports of the several valves **58**, **59**, **60**. Also, the motor **51** is actuated, whose circuit is not shown. The elevator platform at the commencement of the cycle is in its lowered position and laden, for it has received a load from the trough **80**. The piston **45** and the piston **42** are in their innermost positions in their respective cylinders **44** and **48** while the piston **47** is in its outermost position in the cylinder **46**. These cylinders are of the double acting type.

At the commencement of the cycle, the condition is as shown in FIG. 5. Now, the cam **54** comes in contact with the brush **63**, acting as a switch to close the circuit of the solenoid **60'**, which in turn will cause the carriage **22** to move inward. The fingers of the fork **24** will enter two aligned articles **70** each which are on the raised elevator platform **27** and the pusher **56** will push them off said elevator platform, onto the shelf **26** and under the top ply **72''** of the wrapping **72**, which is held raised by the finger **73** and clamped by the fingers **74** and **75**. At the finger **90** extending from said shelf **26**, the lower ply **72'** will be clamped by the finger **91** which extends from the lower edge of the wall **76** of the elevator platform. Said fingers **73** and **74** being a greater distance above the shelf **26**, the articles **70** from off the elevator platform **27**, are free to come between said plies.

When the carriage **22** has reached its limit of travel rearwardly on the carriage **20**, the transported items **70** will be beyond the longitudinal edges **36'**, **36''** of the folded sheeting **72**. The contact of said cam **54** and its brush **63** continues and now the cam **52** will come in contact with its brush **61** to close the circuit of the solenoid **59**, whereupon the carriage **20** will be moved to the left in FIG. 1. This causes the fork **24** to move the load and the wrapping web **72** onto the resiliently mounted sealing table **28** as shown in FIG. 7. The contact of said cam **52** and its brush **61** continues. Now the cam **53** will come in contact with its brush **62**, whereupon the cam **41** will move. It will first raise the slide **86** to bring the presser plate **39** against the load underneath it which will be pressed down, causing the platform **28** to descend a bit, preferably a distance equal to the radius of an item **70** and thus stress the spring **92** of the parallelogram linkage **31** which holds said platform **28** horizontal at all times. As soon as the presser plate **39** has made contact with what is below it, the cam **54** will leave the brush **63**, whereupon the solenoid **60'** will become deactuated for its circuit is now opened. This will cause the carriage **22** to move forward, back to its original position on the carriage **20**, and of course, the fork **24** will leave the load and the machine condition will be as shown in FIG. 8. As soon as the pressing plate **39** has reached the limit of its downward travel, the continued movement of the cam **41** will raise the slide **87** to swing the L-shaped arm **37** so that its branch **43'** will press the longitudinal marginal edges of the wrapper portion on the sealing platform **28** against the sealing and trimming wire **33** to effect the seam **93** and to bring its branch **43** against and across the plies to press them against the sealing and trimming wire **34** to effect the seam **94**. The standard sealing apparatus **32** makes a wide seam and cuts it down the middle, so the finished package **19** is on the sealing platform **28**, to be shifted off therefrom by the next package made, to be collected in a receptacle or carried off to a predetermined station off the machine, and the wrapping supply is left with a seam **77** needed for the next package to be made by the machine.

When the carriage **22** has reached the end of its forward travel on the carriage **20** as shown in FIG. 8, the cam **52** goes out of contact with its brush **61**, causing the solenoid **59** to become deactuated, whereupon the carriage **20** will be moved to the right and again be in its position as shown in FIG. 5. It is to be noted that after the load has been transferred from the elevator platform onto the shelf **26** as shown in FIG. 6, and upon movement of the carriage **20** to the left, the cam **30** will have been moved away from the follower **30'** and thereupon the elevator shelf did descend due to its weight. The wall **82** thereof which acted as a stop against the supply in the trough **80**, is now below the chute's floor **83**, and so items **70** will come from the chute and again fill the elevator platform **27**, whose wall **76** acts as a stop for the onrush of a new load. After the sealing and trimming of the package on the sealing platform **28** is completed, the cam **53** will turn out of contact from its brush **62**, to open the circuit of the solenoid **58'**, whereupon the cam **41** will be caused to return to its initial position as shown in FIG. 13, and of course in such return movement will have left the slide followers **87** and then **86**, causing the L-shaped arm **37** and the pressing plate **39** to return to their initial raised positions. It is also to be noted that upon the return movement of the carriage **20** to the right, the cam **30** will have caused the laden platform **27** to rise. The machine has completed one cycle which it will now automatically repeat as long as there is a supply of items **70** and wrapping therefor.

When the items to be packaged are cylindrical, then a transporter or pusher as **95** is used. This is a multi-channeled shovel having the common pusher bar **96** for all the channels **97** which receive such cylindrical objects which may be packaged candy, frankfurters and the like. When the items are rectangular prismatic in shape, the transporter as for instance shown in FIG. 11 may be used. This has one tine **98** to push at the seam **77** and the other tine **99** to push the load. The tines may be pins or other suitable form and in place of the tines, a single horizontal plate may be used which extends substantially from said seal to the end of the package being made.

The presser plate **39** may be on a ball joint **100**, in which case the bar **43'** can have the cams **101** to right the presser plate if it should turn askew. The sealing platform **28** may be fixed, if it is not desired to have the seams at mid-region of the package as shown in FIG. 9. Of course, for such instance, the extent of downward travel of said pressing plate **39** need be adjusted to suit.

The presser blade **84** extends from a slidably mounted vertical arm **84'** which is spring-biased and is stopped a bit lower than shown in FIG. 1, so that when the laden elevator **27** has risen, it will raise the arm **84'** a bit against spring tension and thus the blade **84** will press on the items **70** on the elevator. Contact with the blade **84** can be made by said items on the elevator, as soon as the latter has risen a bit. The spring action on the slide **84'** should be light so as not to interfere with the work of the transporter **24**.

The paper roll (not shown) rests on the rotatable bar **102** which is positioned that its top is in the plane of the shelf **26**, whereby the sheeting is properly guided to said

shelf. Also provided is to allow the fork 24 to swing upwardly forwardly when the pressing plate 39 shifts the sealing platform 28 downward, and for the fork to return to normal position when withdrawn from the work. For this, the upper section of the post 23 is a separate piece hinged at 103 and biased by the spring 104.

In FIG. 15, the machine of FIG. 1 has had added to it a second elevator platform 27', fed from a second chute 80' for a second package to be sealed on a second platform 28'. The transporter 24 has added to it a rearward set of tines to constitute a fork 24'. The raising and lowering of the elevator platform 27' may be accomplished by a double-acting cylinder 103 as any of the other cylinders and likewise controlled by a solenoid-operated valve, a cam on the shaft 57 and an associated brush therefor, all arranged in the manner as described for any of the other cylinders 44, 46, 48, and of course, the elevator 27 may in the first instance in FIG. 1, be likewise outfitted, in which latter event, the cam 30 and its follower 30', would be omitted.

It is important to note that essentially the locus of movement of the fork 24 is along a rectangle in the horizontal plane and though it is possible to arrange that the fork 24 after leaving the work in FIG. 7, that its return to initial position in FIG. 5, thereafter may be slanted for a little distance, for it can continue after leaving the work in a straight line in FIG. 7, by a combined forward and sidewise movement by simultaneous operation of the carriages 20 and 22. This slight deviation when employed shall be deemed within the purview and protection of the appended claims which call for a locus of movement along a rectangle.

Although packages have been shown to consist of two rows of items, it is evident that the number of rows may be one or more than two and that when the items are of rectangular prismatic form, each row may consist of more than one layer of items, for then they will be put in such formation in the trough and can be transported and shoved onto the elevator platform by having the floor of the trough, a conveyor, which embodiment is easily understood without further illustration.

This invention is capable of numerous forms and various applications without departing from the essential features herein disclosed. It is therefore intended and desired that the embodiments shown herein shall be deemed merely illustrative and not restrictive and that the patent shall cover all patentable novelty herein set forth; reference being had to the following claims rather than to the specific showings and description herein to indicate the scope of this invention.

I claim:

1. The combination in an automatic machine to make packages consisting of a predetermined quantity of articles within a sealed envelope of sheet material of the kind used for wrapping purposes, an elevator platform having a surface area to admit only said quantity of articles thereon, mounted on a frame for movement between a lowered position and a raised position thereon, a first means to receive a constant supply of articles to be packaged in a predetermined formation, adapted to guide and discharge said articles onto said elevator platform when the latter is in its lowered position, a second means moving with said elevator platform to halt the articles remaining on said first means when said elevator platform is away from its lowered position, a pusher member, a cantilever shelf mounted on the frame, adapted to be straddled by wrapping sheet material which is a web folded longitudinally substantially in half; the fixed end of the shelf being along said elevator platform so that when the folded sheet wrapping material is set to straddle said shelf, the longitudinal edges of the folded web are along and at said fixed end of said shelf, a sealing platform, a supply to present a folded web of wrapping sheet material about said shelf; the web extending in such direction that upon movement thereof longitudinally to deplete said supply, said folded web will move onto said sealing platform, a third means to move said pusher member along a horizontal rectangular path without turning; said pusher member, shelf and elevator platform being so positioned on the frame that when the pusher member is at the first vertex location in its path, said elevator platform is intermediate said pusher and said shelf; said pusher member when moved from the first to the second vertex location in its path, will have passed over the said elevator platform and come over said shelf; said pusher member when moved from the second to the third vertex location of its path, will have moved from over said shelf and come over said sealing platform; said pusher member when moved from the third to the fourth vertex location in its path, will have left its position over said sealing platform and pass aside and beyond said elevator platform so that the next movement of said pusher member will be to the first vertex location in its path; said elevator platform when in its raised position, allowing the pusher member while traveling from the first to the second vertex location, to shift any articles on said elevator platform onto said shelf below the upper ply of said folded sheet material, a fifth means holding the longitudinal edge of said upper ply raised to permit the articles pushed off the elevator platform to come onto said shelf and below said upper ply; said elevator platform when in its raised position being at least up to and near the upper surface of said shelf, a sealing means adapted when moved and actuated, to seam the plies along their free longitudinal edges and across from said edges to the fold in the web, a sixth means to move said elevator platform between its lowered and raised positions, a seventh means for operating said sealing means, a fourth means for operating said third, sixth and seventh means in a predetermined timed relation and at least one tine extending from the pusher member adapted to enter between the plies of the folded web on said shelf so that when the pusher member travels towards the sealing platform, the meeting lead ends of the folded web being seamed, said tine will move the folded web together with the articles between said plies onto the sealing platform so that the cross seam thereafter made by the sealing means in said plies is beyond the articles on the sealing platform at the tail end of the package being formed by said sealing means.

2. The combination as defined in claim 1, including means to sever the plies along said cross seam so that the then lead end edges of said plies are also seamed.

3. The combination as defined in claim 1, wherein the said third means comprises a first carriage mounted on the frame for movement between the second and third locations in said path and between the third and first locations of said path and a second carriage mounted for movement on said first carriage between the first and second locations of said path and between the third and fourth locations of said path; said pusher member being carried on the second carriage.

4. The combination as defined in claim 1, wherein the pusher member is a fork structure whose tines are adapted to enter tubular articles.

5. The combination as defined in claim 1, wherein the pusher member has a plurality of side-by-side channels extending therefrom, adapted to receive articles therein in the manner of a shovel when said pusher member is traveling from the first to the second location in its path.

6. The combination as defined in claim 1, wherein the pusher member is a fork structure having two tines positioned thereon to be substantially along the cross edges of the group of articles it meets on the elevator platform.

7. The combination as defined in claim 1, including means to clamp the lower ply and the raised upper ply of the folded web of wrapper sheeting at regions adjacent the said shelf and sealing platform when the elevator platform is in its raised position.

8. The combination as defined in claim 7, wherein said clamping means comprises vertically spaced fingers car-

ried by the elevator platform cooperating with fixed elements on the frame.

9. The combination as defined in claim 1, including a pressing plate normally spaced from and above the sealing platform, adapted to be lowered to press against the package being formed on the said sealing platform and means to move said pressing plate between predetermined raised and lowered positions; said timing means also controlling said means which moves said pressing plate.

10. The combination as defined in claim 9, wherein the sealing platform is resiliently mounted and wherein the sealing means engages the plies when sealing same on a predetermined plane and also wherein said sealing platform is below said plane when the pressing plate is in its lowered position.

11. The combination as defined in claim 1, including means affording the tines to swing forwardly upwardly and biasing said tines to return to their normal position.

12. The combination as defined in claim 1, including at least a second tine extending from the pusher member in the direction opposite to that of the other tine thereon, a duplicate elevator platform, a duplicate article supply receiving, guiding and discharging means, a duplicate means to move the duplicate elevator platform, a duplicate article halting means, a duplicate cantilever shelf, a duplicate sealing platform, a duplicate sealing means,

a duplicate supply for presenting a folded web to said duplicate shelf, all such duplicates being associated in relation to each other in like manner as mentioned for their counterparts herein and so positioned that when the pusher member has traveled from its third to the fourth vertex position of its path, the second tine shall have passed over the duplicate elevator platform and be over the duplicate shelf and when said pusher member has traveled from its fourth to the first vertex position of its path, the second tine shall have passed over said shelf and be above the duplicate sealing platform; said timing means also controlling the means to move the duplicate elevator platform and the duplicate sealing means whereby two packages are made during one cycle of operation of the machine.

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