Feb. 10, 1931. R. E. B. WAKEFIELD 1,792,203

PACKAGE MAKING MECHANISM

Filed Jan. 23, 1928 5 Sheets-Sheet 1

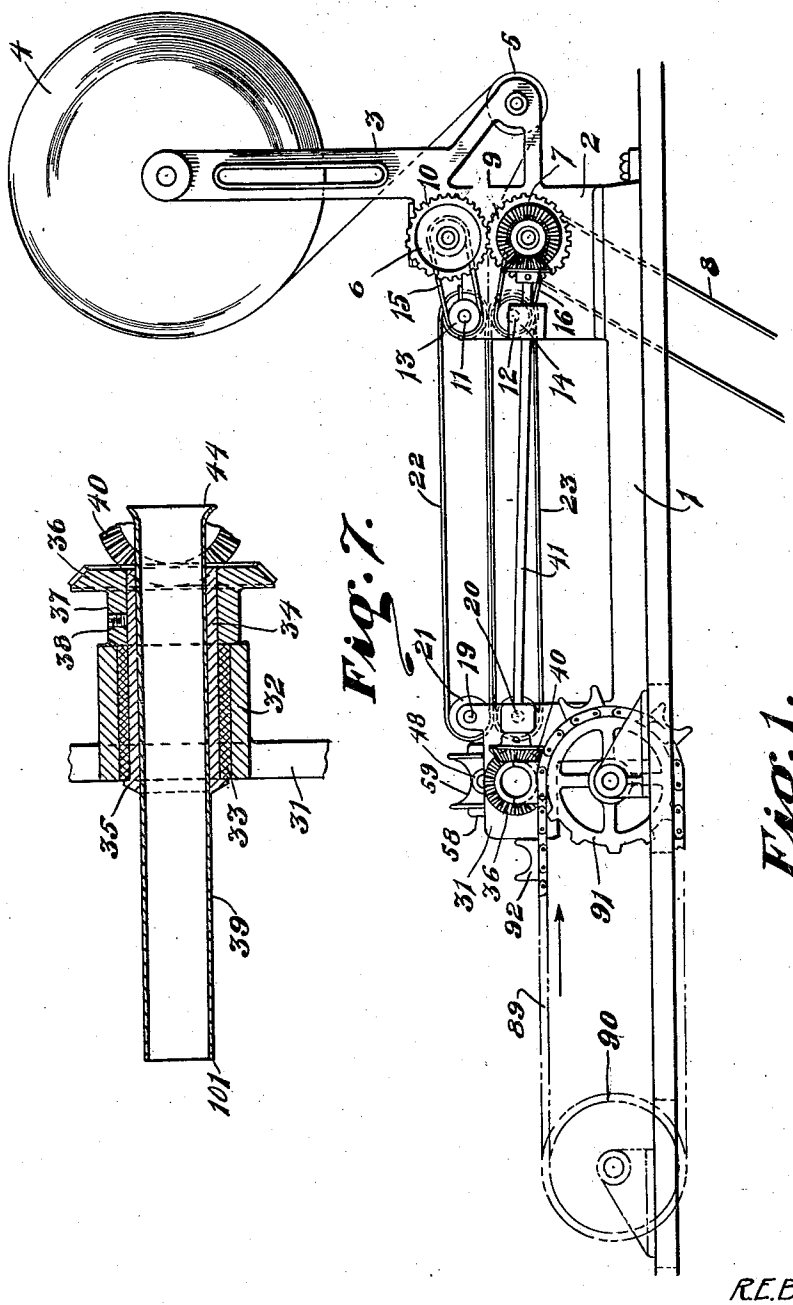


Fig. 1.

Fig. 7.

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PACKAGE MAKING MECHANISM

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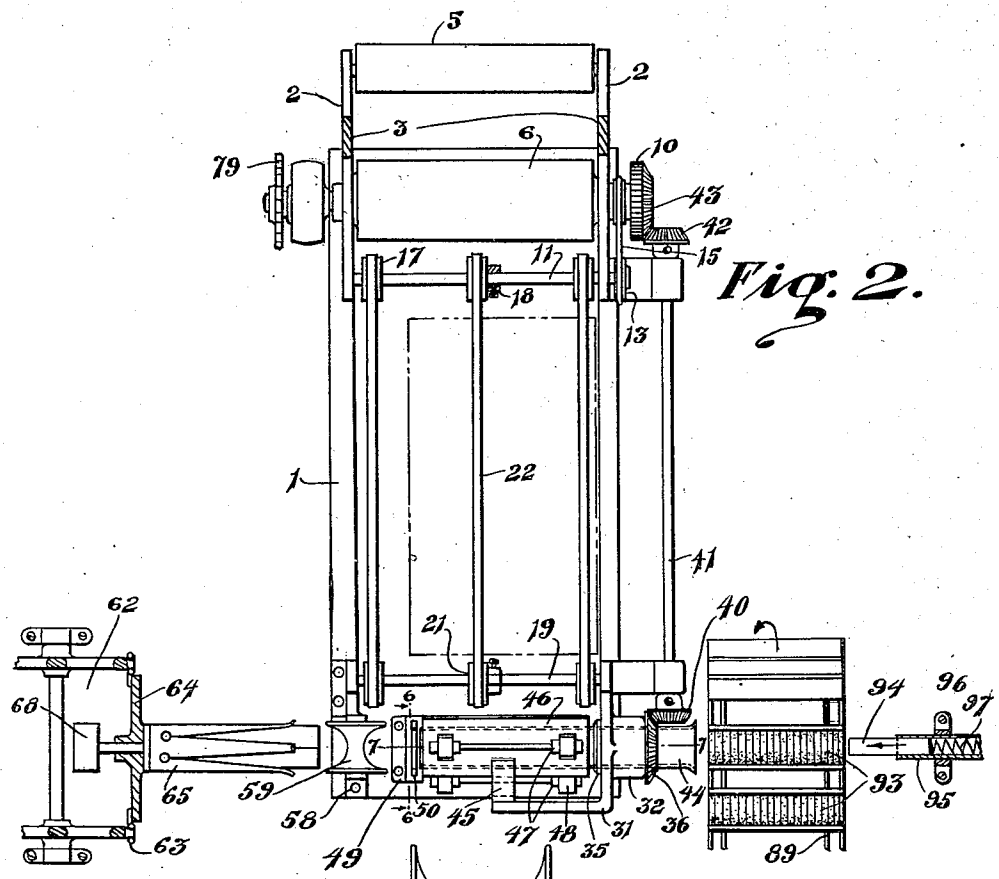


Fig. 2.

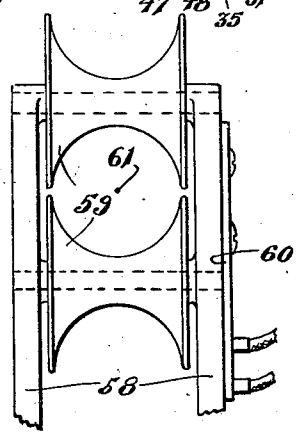


Fig. 3.

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PACKAGE MAKING MECHANISM

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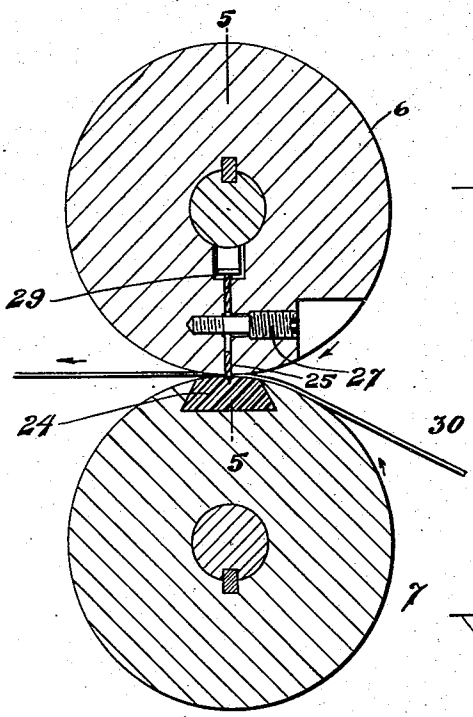


Fig. 4.

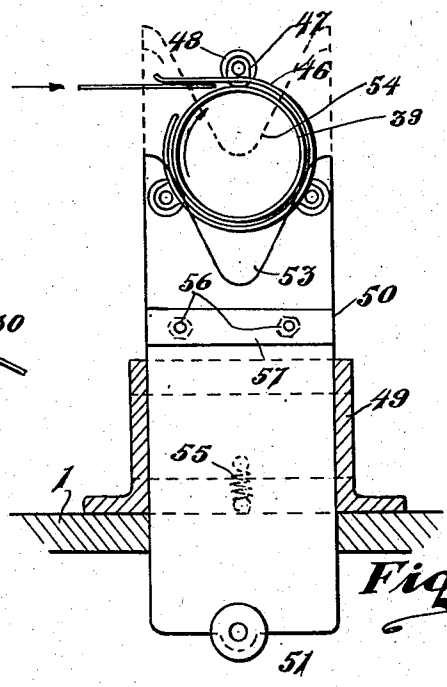


Fig. 6.

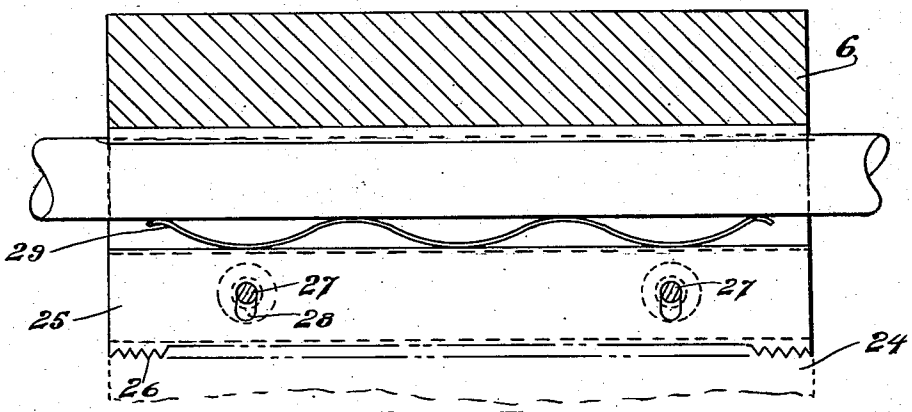


Fig. 5.

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PACKAGE MAKING MECHANISM

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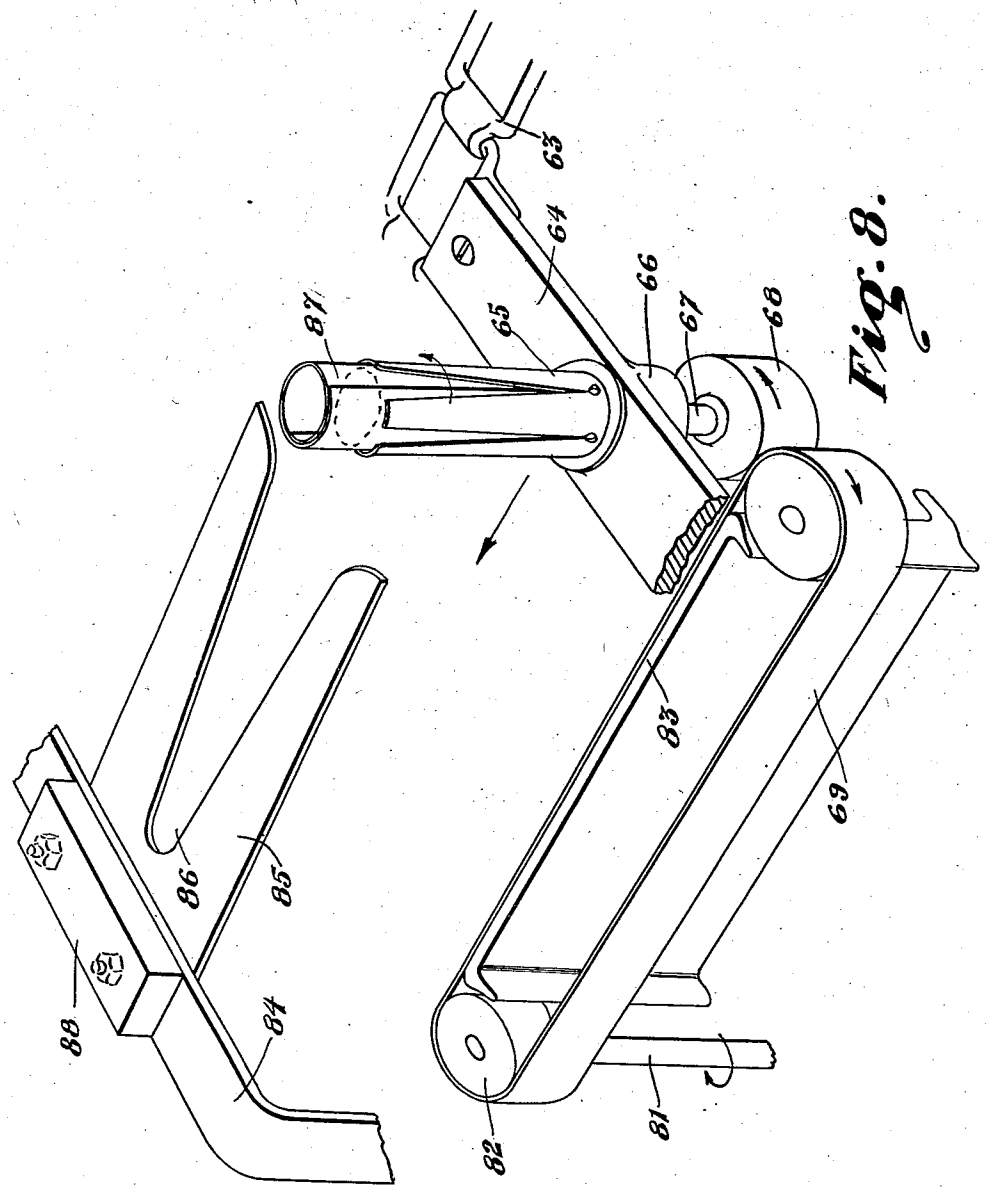


Fig. 8.

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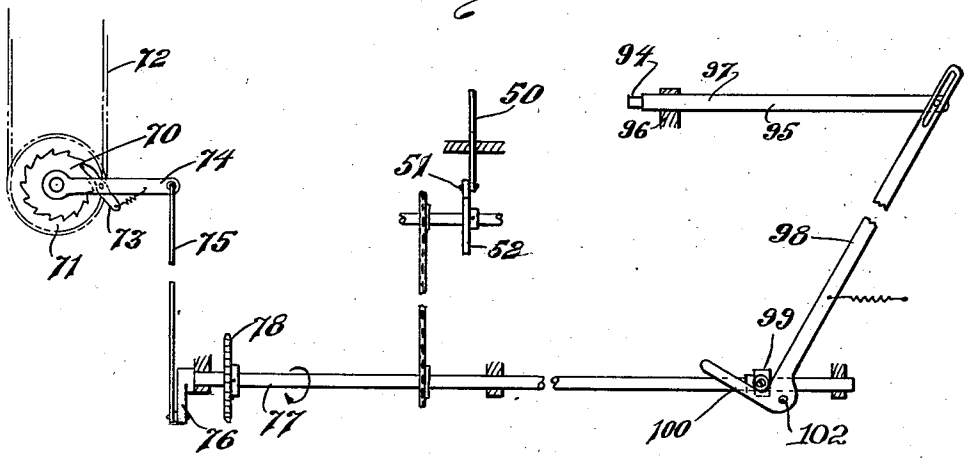
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PACKAGE MAKING MECHANISM

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Fig. 9.



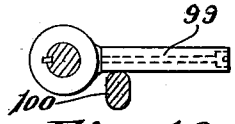


Fig. 10.

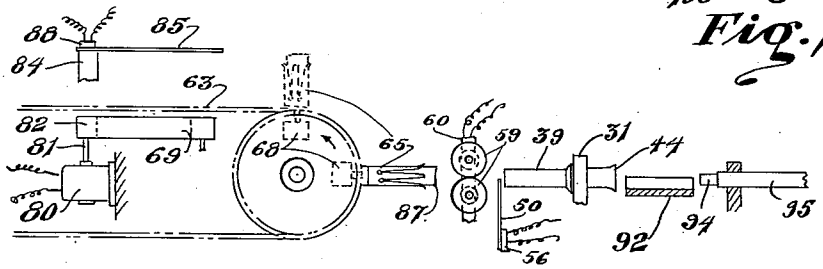


Fig. 11.

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Patented Feb. 10, 1931 1,792,203

UNITED STATES PATENT OFFICE

RICHARD E. B. WAKEFIELD, OF BLOOMFIELD, NEW JERSEY

PACKAGE-MAKING MECHANISM

Application filed January 23, 1928. Serial No. 248,870.

This invention relates to a machine for automatically making, wrapping and hermetically sealing small individual articles into a package. By way of illustration, but not of limitation, I have chosen to illustrate my invention in the form of a machine, particularly adapted to use in making, wrapping and hermetically sealing small discs of candy, or the like, into a roll of a well-known type now on the market. So far as I am aware, no machine has heretofore been devised for doing, in one complete sequence of operations, what the herein disclosed machine is capable of doing, and it is therefore the general object of my invention to provide a machine such as herein disclosed for the purpose of making up such a roll, covering it with a suitable wrapper, and hermetically sealing the same and delivering the completed packages from the machine ready for the market.

Another object of my invention is to provide a machine for doing the work set forth in the principal object, which is relatively simple and therefore inexpensive to manufacture. These and other ancilliary objects will be clear to one skilled in this particular art, after a study of the specification taken in connection with the annexed drawing, wherein:

Figure 1, is a side elevation of the machine.

Figure 2 is a top plan view with paper feed roll omitted.

Figure 3, is an elevation on enlarged scale from Fig. 2 of the longitudinal intermediate sealing and support rollers.

Figure 4 is a sectional view enlarged from that shown in Fig. 2, through the main feed and cutter rolls.

Figure 5, is a sectional view taken on line 5—5 of Fig. 4.

Figure 6 is a view on line 6—6 Figure 2, partly in elevation of the guide shield and primary sealing and crimping mechanism.

Figure 7 is a sectional view on the line 7—7 of Figure 2 of the forming mandrel or spindle and its driving mechanism with certain parts omitted.

Figure 8 is a detail perspective view on an enlarged scale of final or secondary sealing and crimping mechanism.

Figure 9 is a schematic view showing the coordination of the loading, primary sealing and transfer mechanism.

Figure 10, is a detail view of the loading plunger operating device.

Figure 11 is a diagram showing certain sequential final operations.

Referring to the details wherein like numbers refer to corresponding parts in the various views: 1 illustrates the base of the machine on one end of which is mounted frame members 2, from which project arms 3. Between the arms 3 is supported for rotation, a roll of paper 4. This paper is preferably pretreated with a suitable grade of paraffin or its equivalent, for a purpose which will be hereinafter referred to. Carried by the frame members 2, is an idler roller 5. Also carried by the frame members 2 is a pair of feed rollers 6 and 7. The roller 7 is adapted to be driven by any suitable means, as by a driving belt 8, and through the medium of gears 9 and 10, it drives the roller 6. Also mounted on the frame members 2 is a pair of spindles 11 and 12, on the end of the spindle 11 is a pulley 13, and on the end of the spindle 12 is a pulley 14, which are connected by suitable driving means, such as belts 15 and 16, with corresponding pulleys on the ends of the shafts carrying the gears 9 and 10. Also carried on the spindles 11 and 12 are additional pulleys 17, which may be adjustable thereon in any satisfactory manner as by a set screw 18, passing through a hub on the end of said pulleys.

Spaced apart from the spindles 11 and 12, and corresponding pulleys 17, on another portion of the machine is a second set of spindles 19 and 20, and on these spindles are mounted pulleys 21 of the same size as the pulleys 17. The pulleys 21 are also adjustable on their spindles in the same manner as the pulleys 17. By referring to Figure 2 it will be seen that the pulleys 17 and 21 may be adjusted laterally on their respective spindles so as to give any desired space and by making the pulleys of the split type the pair shown in the center in Figure 2, may be removed entirely, thereby leaving only two sets of pulleys. Passing over the pulleys

17 and 21, are belts 22 and 23, which are of a texture having a nap, such as velvet for the purpose of securing the necessary carrying ability for the paper strips, as they come from the feed rolls 6 and 7. It is to be understood that the belts 22 and 23 as shown in Figure 1, are operated so that the lower half of the belt 22 is in engagement with the upper half of the belt 23 and the paper strips are thus held between these two edges of the belt, and carried forward thereby. In Figure 4 I have shown an enlarged sectional view through the rolls 6 and 7. The feed roller 7 is provided with a matrix 24, which may be of any suitable material, such as soft rubber, while the roll 6 carries a cutting knife 25. The cutting edge of the knife 25 is preferably made serrated as indicated at 26 as I have found that this sort of cutting edge used in association with the matrix 24 gives the best results in cutting off the paper. The cutting blade 25 is held in position on the roll by a pair of screws 27, the ends of which screws pass through slots 28 in the cutting blade 25, which is resiliently held in the position shown in Figures 4 and 5 by a spring 29. As the rolls 6 and 7 are operated in the direction of the arrows, the cutting blade 25 is brought into engagement with the strip of paper 30 in the manner indicated in Figure 4, and completely severed, that is to say, a length of paper is cut off, of a predetermined length according to the size of the package that is to be wrapped and sealed, which length is determined by the diameter of the feed roll 6.

Forming, sealing and wrapping mechanism

Mounted on the base 1 of the machine, is a support member 31, which carries the spindles 19 and 20 previously referred to. The frame member 31 also carries a hub 32 within which is positioned a bearing bushing 33. Mounted within the bearing bushing 33, is a sleeve 34, having a head 35, in engagement with one end of the bushing 33. On the opposite end of the sleeve 34 is carried a driving pinion 36, having a hub 37, which by means of the set screw 38 serves to secure the pinion 36 to the sleeve 34. The end of the hub 37 preferably abuts against the end of the bushing 33, and hub 32 so as to hold these parts in proper working relationship. Carried within the sleeve 34 and securely attached thereto in any satisfactory manner, as by brazing is a hollow mandrel 39. The walls of the mandrel 39 are rather thin, of course depending on the character of the material that is to be formed into a package, and wrapped and sealed by the machine. For the purpose of small candies of the "Life Saver" type I have found that the wall of the mandrel need be only about seven thousandths of an inch thick. The reason for this will be later apparent when the operation of the machine is more fully described. The outer end of the mandrel 39 is flared at 44, for a purpose which will be later described. The pinion 36 is operated by a gear wheel 40 carried on a shaft 41, which in turn is operated by a gear 42, in mesh with a gear 43, integral or associated and operated from the same shaft as the gear 9. The support member 31 has an arm 45 (see Figure 2) which carries a curved shield member 46, (see Figure 6). The shield member 46 has preferably formed integral therewith a series of ears 47, between which are mounted small rollers 48. As shown in Figure 6, there are three sets of these rollers 48 arranged around the periphery of the shield 46. In Figure 2, only the top set of rollers and those on one side are shown for the purpose of clarity. The rollers 48 are so positioned around the shield as to be tangential with the mandrel 39, for a purpose which will be hereinafter explained.

Carried by the frame 1 is another support member 49. The support 49 carries a member 50, in a manner such that the member 50 may slide up and down in its support. Mounted on the lower end of the member 50 is a roller 51 which is adapted to be engaged by a cam 52 (see Figure 9), for the purpose of raising the member 50, which is provided with a throat 53 to engage the end of the wrapping paper, which projects beyond the end of the mandrel 39, as will be later described. In the full upward position, the throat 53 will occupy substantially the position shown by the dotted lines 54 and after the cam 52 has turned sufficiently the spring 55, returns the member 50 to its normal position shown in Figure 6.

It is to be noted here that the crimping member 50 is provided with a pair of binding posts 56 to which the wires of an electrical circuit may be connected for the purpose of conveying current to a heat element 57, which heats up the arms, forming the throat 53 for the purpose which will be brought out during the description of the operation of the machine.

Mounted adjacent the support 49 is another support member 58, which carries a pair of rolls 59 (see Figure 3) these rolls are what I term longitudinal sealing rollers, and are provided with a heating means 60 for a similar purpose as the heater 57. The rollers 59 are so constructed and positioned that the axis 61 is located in the longitudinal axis of the mandrel 39.

Transfer and secondary sealing and crimping mechanism

Mounted on the machine is a conveyer 62, which is preferably composed of a plurality of chains composed of links 63, two links being shown on an enlarged scale in Figure 8. Connected between the chains is a series of

bars 64, on which are mounted receptacles 65, that are adapted to receive the packages as they are ejected from the rolls 59. Each bar 64 is provided with a bearing 66, which carries a shaft 67 to the upper end of which is attached the receptacle 65, and on the lower end of which is provided a pulley 68 adapted to be engaged by a belt 69, which turns the various pulleys 68 and the receptacles 65 as the conveyer 62 is carried forward in the direction of the arrow (Figure 8). The movement of the conveyer 62 is brought about by the crank arm and ratchet movement shown in Figure 9, where 70 is a ratchet wheel carried on a driving sprocket 71, operated in any suitable manner, as by a sprocket chain 72. The ratchet wheel 70 is connected by means of a pawl 73 to a lever 74, which in turn is connected by an arm 75 to the end of a crank arm 76. The crank arm 76 is operated by the shaft 77, through the medium of the sprocket wheel 78, and this in turn is driven by a sprocket 79 (see Figure 2). It will be seen from what has just been said that as the shaft 77 is turned in the direction of the arrow, an intermittent movement is given to the belt or chain 72 and hence to the conveyer 62. The belt 69 may be operated in any satisfactory manner, but since it is operated at high speed, I prefer to operate it by an individual motor 80, connected to a shaft 81 with the pulley 82. In order to prevent any sag of the belt 69, adjacent the pulley 68 I have provided a guide member 83, which acts to guide the edge of the belt and insure that it makes a good contact with the pulley 68. Associated with the conveyer 62, and in proximity to the high speed belt 69, there is a support arm 84, more or less yieldable, which carries a member 85, which is constructed in a somewhat similar manner to the member 50. A throat 86 is provided for engaging the ends of the paper sticking upward from the roll 87, as the same is brought toward the throat 86 by the conveyer 62. The secondary sealing member 85 is preferably provided with a heater 88 for the purpose hereinafter indicated.

Loading mechanism

Referring to Figure 2, there is shown adjacent to the flared end 44 of the mandrel 39, a conveyer 89, which preferably comprises a pair of sprocket chains operated by the sprocket wheels 90 and 91, which sprocket wheels may be operated in any satisfactory manner, by any of the driving wheels or shafts. Carried by the conveyer 89 is a series of carriers 92, preferably concave or cradle shaped, which act to cary the pieces 93 intermittently up to and in alignment with the loading mandrel 39. Mounted adjacent the conveyer 89 is a plunger 94, carried by an arm 95, the end of which is supported by a bracket 96. The plunger 94 is resiliently held in the arm 95 as by a spring 97. The arm 95 is adapted to be actuated by a lever 98 through the medium of a cam 99, acting on the end 100 of the lever 98 which is pivoted at 102. The cam 99 is carried on the operating shaft 77 (see Figure 9).

Operation

Coming now to the operation of my machine, the paraffin treated paper is withdrawn from the roll 4 and after passing over the idler 5, is drawn between the feed rollers 6 and 7, and cut off into pieces of a pre-determined length as heretofore described. These pieces are then fed forward by the belts 22 and 23, as above described, up to the forming, sealing and printing mechanism. The pieces 30 are fed by the belts 22 and 23 under the end of the shell 46 (Figure 6) and are immediately caught by one of the rollers 48 and the mandrel 39, the mandrel 39 being operated at a much higher speed than the feed belts 22 and 23, quickly snaps the pieces of paper 30 from these belts and wraps it around the mandrel, the paper is preferably of a width so that a pre-determined portion of the paper projects beyond the end of the mandrel 39. As the rolling operation is finished, the cam 52 acts on the roller 51 and starts the primary crimping member 50 into motion upwardly so that the throat 53 engages the end of the paper and twists this, together as it is spun around on the mandrel, and as it is twisted, due to the heat applied by the heater 57, the paraffin is melted and flows to securely seal the crimpings. While this is going on, the conveyor 89 is bringing up the pieces, discs of candy or articles to be formed and wrapped and as one of the cradles 92 is brought into alignment with the flared opening 44, of the mandrel, the cam 99 operating on the end 100 of the lever 98 operates the plunger 94 to push the pieces 93 from the cradle 92 into the hollow mandrel 39, and against the crimped end of the roll of paper, and the continued movement of the plunger 94 pushes the roll or paper with the pieces of candy or other material through the mandrel, and between the rollers 59, which rolls the paper securely around the pieces of candy or other material, and due to the heat applied by the heater 60, the paraffin is melted and seals the entire outer surface of the roll. The plunger 94 has a stroke sufficiently long so that it pushes the entire package through the rollers 59 into the receptacle 65 as indicated in Figure 2, it being understood that at this instant the conveyer 62 is stationary. Immediately the roll 87 has been forced into the container 65, the mechanism shown in Figures 8 and 9 act to carry the roll so that the uncrimped end of the paper roll is carried into the throat 86 where it is rotated in the manner previously described, and due to the heat applied by the heater 88, the paraffin is melted and seals this

last crimped end and the conveyer 62 moves the roll onward, drawing the crimping roll out of the throat 86 and the roll 87 is complete and ready to be withdrawn from the receptacle 65. It is obvious that the rolls 87 may be automatically ejected from the receptacle 65, but the same has not been indicated on the drawing. From what has been said it will be obvious that many changes may be made in the details of my machine, without departing from the spirit of my invention and the scope of the appended claims.

Having thus described my invention, what I claim is:

1. A mechanism for making, wrapping and sealing packages of a single article or a plurality of articles including a pair of rollers for feeding a strip of wrapping material to cutting means of the mechanism, means for cutting off predetermined lengths from the strip, a conveyer for catching the pieces of strip as they are cut off, means for moving the conveyer to carry the pieces to a forming and wrapping means, forming and wrapping means comprising a hollow mandrel, means for rotating said mandrel, means for guiding the pieces of said strip from said conveyer so as to engage said mandrel whereby successive strips are quickly wrapped around the same to form a roll, said pieces being wider than the length of mandrel around which they are wound, means actuated substantially on completion of the roll for twisting up and closing one end of the roll, means for inserting said article or articles into the mandrel through the end opposite said closed package end, a pair of main sealing rollers adjacent said twisting means, said inserting means acting also to push the roll from the mandrel and through said main sealing rollers, a secondary conveyer and means for operating the same, receptacles thereon for receiving said rolled packages as they are pushed through said main rollers, means for rotating said receptacle on the secondary conveyer, and means for engaging the rotating open end of the rolled package for twisting up the wrapper and closing the end of the package.

2. A mechanism for making, wrapping and sealing packages of a single article or a plurality of articles including a pair of rollers for feeding a strip of wrapping material to cutting means of the mechanism, means for cutting off predetermined lengths from the strip, a conveyer for catching the pieces of strip as they are cut off, means for moving the conveyer to carry the pieces to a forming and wrapping means, forming and wrapping means comprising a hollow mandrel having an outer flared end, means for rotating the mandrel, a guide and shield member associated with said mandrel, a plurality of feed and guide rollers associated with the shield member for assisting the mandrel in quickly withdrawing the pieces of wrapping material from the conveyer and wrapping them around the mandrel to form a roll, means for engaging one end of the wrapping and twisting it up adjacent the inner end of the mandrel, means for inserting said article or articles into the mandrel through its flared end, a pair of main sealing rollers adjacent said twisting means, said inserting means acting also to push the roll from the mandrel and through said main sealing rollers, a secondary conveyer and receptacles thereon for receiving said rolled packages as they are pushed through said main rollers, means for moving the secondary conveyer, means for rotating said receptacle on the secondary conveyer and means for engaging the rotating open end of the rolled package for twisting up the wrapper and closing the end of the package.

3. A mechanism as set forth in claim 1, further characterized in that the wrapping material used is previously treated with a sealing material having a low melting temperature and means associated with both said twisting means and the main sealing rollers for heating the same so as to melt said sealing material and cause the same to flow so as to hermetically seal the package.

4. A mechanism as set forth in claim 2, wherein the wrapping material is paper treated with paraffin further characterized in that means are associated with at least the twisting means for melting the paraffin as the twists are made thereby causing the paraffin to flow and hermetically seal the twisted ends.

5. A mechanism for making, wrapping and sealing packages of a single article or a plurality of articles including; a pair of rollers for feeding a strip of wrapping material to cutting means of the mechanism, means for cutting off predetermined lengths from the strip, a double belt conveyer arranged so the bottom of one belt and the top part of the other run close together to carry the pieces away from the cutting means, forming and wrapping means adjacent the conveyer end opposite to the cutting means comprising a hollow mandrel having a flared outer end, means for rotating the mandrel, means associated with the mandrel for guiding and quickly moving the wrapping pieces from the conveyer and rolling it on the mandrel so as to form a roll, means adjacent one end of the mandrel actuated to twist up the end of the roll of wrapping material, means actuated substantially on completion of said twist to insert said article or articles through the flared end of the mandrel and to push the rolled package from the mandrel and through a pair of rollers, a pair of rollers for rolling the body portion of the package as said means pushes the rolled package through them, a secondary conveyer and receptacles thereon for receiving said rolled packages as they

are pushed through said main rollers, means for moving the secondary conveyer, means for rotating said receptacles on the secondary conveyer, and means for engaging the rotating open end of the rolled package for twisting up the wrapper and closing the end of the package.

6. A mechanism for making, wrapping and sealing packages of a single article or a plurality of articles including a pair of rollers for feeding a strip of wrapping material to cutting means of the mechanism, means for cutting off predetermined lengths from the strip, a double belt conveyer arranged so the bottom part of one belt and the top part of the other run close together to carry the pieces away from the cutting means, forming and wrapping means adjacent the conveyer end opposite to the cutting means comprising a hollow mandrel, having an outer flared end, means for rotating the mandrel, a guide and shield member associated with said mandrel, a plurality of feed and guide rollers associated with the shield member for assisting the mandrel in quickly withdrawing the pieces of wrapping material from the conveyer and wrapping them around the mandrel to form a roll, means for engaging one end of the wrapping material and twisting it up adjacent the inner end of the mandrel, means for inserting said article or articles into the mandrel through its flared end, a pair of main sealing rollers adjacent said twisting means, said inserting means acting also to push the roll from the mandrel and through said main sealing rollers, a secondary conveyer and means for operating the same, receptacles thereon for receiving said rolled packages as they are pushed through said main rollers, means for rotating said receptacles on the secondary conveyer and means for engaging the rotating open end of the rolled package for twisting up the wrapper and closing the end of the package.

7. In a mechanism for the purpose described including; means for cutting off strips of wrapping material from a continuous sheet or roll and also means for conveying said strips away from the cutting means; means for winding said strip into a roll, closing up one end, loading and ejecting the roll, comprising; a hollow mandrel having a flared end, a guard associated with the mandrel, said guard having a plurality of rollers arranged around the mandrel and cooperating with it to catch the end of the strip when brought up by said conveyor, means for turning the mandrel so as to quickly pull the strip from the conveyor and wind it around itself, a crimping member having a throat for drawing in an open end of the wound roll, means for moving the crimping member at the proper time to cause said throat to engage the end of the roll projecting beyond the mandrel whereby the roll end is closed, means for positioning an article or articles in alignment with said flared end of the mandrel and a plunger operated in time with the other mechanism to push said article or articles within the mandrel and against the closed end of the wound roll, said plunger having a stroke length sufficient to push the now formed roll and its load from the mandrel to secondary sealing and crimping devices.

8. In a mechanism as set forth in claim 7 further characterized in that heating means is associated with said primary crimping member to assist in securely sealing said roll end.

9. In a mechanism as set forth in claim 7 further characterized in that a pair of sealing and support rollers are provided adjacent the primary crimping means between which the formed roll is pushed by the plunger for the purpose described.

10. In a mechanism as set forth in claim 7 further characterized in that a pair of sealing and supporting rollers are provided adjacent the primary crimping means between which the formed roll is pushed by the plunger, and still further characterized in that heating means is associated with both the primary crimping member and said sealing rollers for the purpose described.

11. In association with the mechanism as set forth in claim 7, secondary sealing and crimping means comprising; a secondary crimping member shaped similar to the primary crimping member and a conveyor having a receptacle adapted and operated to receive said formed roll as it is ejected from the mandrel by the plunger and means for rotating said receptacle and roll as its conveyor moves the end of the roll into contact with the secondary crimping member whereby the end of the roll is twisted up.

12. In a mechanism as set forth in claim 7 further characterized in association with the mechanism therein set forth, a secondary sealing and crimping means comprising; a secondary crimping member shaped similarly to the primary crimping member and a conveyor having a receptacle adapted to be operated to receive said formed roll as it is ejected from the mandrel by the plunger, and means for rotating said receptacle and roll as its conveyor moves the end of the roll into contact with the secondary crimping member, whereby the end of the roll is twisted up, and still further characterized in that the secondary crimping member is provided with a heater for assisting in sealing the end of the roll.

13. In a mechanism as set forth in claim 7 further characterized in association with the mechanism therein set forth, a secondary sealing and crimping means comprising; a secondary crimping member shaped similarly to the primary crimping member and a conveyor having a receptacle adapted to be

operated to receive said formed roll as it is ejected from the mandrel by the plunger, and means for rotating said receptacle and roll as its conveyor moves the end of the roll into contact with the secondary crimping member, whereby the end of the roll is twisted up, and still further characterized in that the receptacle and roll carried thereby are started in rotation before the roll reaches the secondary crimping member and kept in continuous rotation as its conveyor is moved forward until the crimping member has completed its work, said means for rotating the receptacle consisting of a pulley on the end of the receptacle shaft and a moving belt engaging said pulley as the same moves forward with its conveyor and means for insuring that the belt is always in contact with said pulley.

14. In a machine for making, wrapping and sealing cylindrically shaped packages of one or more articles, said machine having; feed rollers, a strip conveyor, a hollow winding mandrel, an element carrier, a package conveyor, main sealing rolls, and a secondary sealing device, means for passing a strip of wrapping material between said feed rolls, means for cutting the strips into pieces of a predetermined length and transferring them to a conveyor, means for passing the strips to and winding them onto said hollow mandrel, means for twisting up and sealing one end of the strip which projects beyond one end of the mandrel, means including said carrier for bringing up said elements to be made into a package, into alignment with the hollow mandrel, means for pushing said elements into said hollow mandrel and into engagement with the then sealed end of the strip and then pushing the rolled-up strip with the piece within the same, from the mandrel, means including said main sealing rolls for then rolling and sealing the main part of the package, means for passing the package to said package conveyor, means for moving the package conveyor and the package thereon to said secondary sealing device, means including said secondary sealing device for then twisting the open end of the package and sealing the same for final delivery from the package conveyor.

15. In a machine for making, wrapping and sealing packages of disc shaped articles, said machine having; feed rollers, a strip conveyor, a hollow winding mandrel, an article carrier, a package conveyor, main sealing rolls and a secondary sealing device, means for passing a strip of paper, treated with a material having a relatively low melting point, between a pair of said feed rolls, means for cutting off predetermined lengths of said strip, means for passing these strips to and winding them onto said hollow mandrel, means for twisting up one end of the strip, means for applying heat thereto at the same time to cause the material of low melting temperature to flow so as to seal the twists of paper, means including said carrier for bringing a quantity of said discs into alignment with the hollow mandrel, means for pushing said discs into the mandrel against the sealed end of said strip and for pushing the discs and rolled strip from the mandrel to and between said main sealing rolls, means for applying heat through said rolls to seal the body of the package similarly to the end just mentioned, means for passing the package to said package conveyor, means for moving the package conveyor and the package to said secondary sealing device, means including said secondary sealing device for twisting up the open end of the package, means for applying heat thereto to seal the same as done with the first end, for final delivery from the package conveyor.

16. In a machine for making, wrapping and sealing packages of one or more articles, said machine having; feed rollers, a strip conveyor, a hollow winding mandrel, an article carrier, a package conveyor, main sealing rolls and a secondary sealing device, means for passing a strip of wrapping material between said feed rolls, means for cutting off a piece of the strip, means for conveying the piece to said hollow mandrel, means for moving the piece from said conveyor around the mandrel at a speed faster than said conveyor speed, means for twisting up one end of the wound-up strip, means including said carrier for bringing said article or articles into alignment with the mandrel opening, means for pushing said article or articles into the mandrel against said twisted strip end and pushing the whole from the mandrel between said main sealing rolls and then onto said package conveyor, means for moving said package conveyor to said secondary sealing device, means for moving the package on said package conveyor for cooperation with said secondary sealing device to twist and seal the end of the package ready for removal from the conveyor.

17. In a machine for making, wrapping and sealing packages of one or more articles, said machine having; feed rollers, a strip conveyor, a hollow winding mandrel, an article carrier, a package conveyor, main sealing rolls and a secondary sealing device, means for passing a strip of wrapping material between said feed rolls, means for cutting off a piece of the strip, a pair of belts, means for passing the cut-off strip between said pair of belts, means for catching the end of the strip as it reaches the end of forward travel of the belts and withdrawing it rapidly from the belts and winding it around said hollow mandrel, means for twisting up one end of the wound-up strip, means including said carrier for bringing said article or articles into alignment with the mandrel against said twisted strip end, means for pushing the

whole from the mandrel between said main sealing rolls and then onto said package conveyor, means for moving said package conveyor to said secondary sealing device, means for moving the package on said package conveyor for cooperation with said secondary sealing device to twist and seal the end of the package, making the same ready for removal from said package conveyor.

18. In a machine for making, wrapping and sealing packages of one or more articles, said machine having; feed rollers, a strip conveyor, a hollow winding mandrel, an article carrier, a package conveyor, main sealing rolls and a secondary sealing device, means for passing a strip of wrapping material between said feed rolls, means for cutting off a piece of the strip, a pair of belts, means for passing the cut-off strip between said pair of belts, means for catching the end of the strip as it reaches the end of forward travel of the belts and withdrawing it rapidly from the belts and winding it around said hollow mandrel, a movable device to assist in twisting one end of the wound-up material, means for moving said device to engage one end of the rolled up strip whereby the end of the roll is twisted up and closed, means for injecting into the hollow mandrel the article or articles and for ejecting from the mandrel the rolled-up strip with the article or articles inside thereof, and for passing the package between a pair of said main sealing rollers and then onto said package conveyor, means for moving said conveyor in a manner to receive said packages as they are ejected from said rollers, means for turning the packages on said package conveyor, a secondary sealing device, means for moving the package conveyor so the open end of the package is brought into engagement with said secondary sealing device which with the rotary movement of the package twists up the end thereof, making the package ready for removal from the conveyor.

19. In a machine for making, wrapping and sealing packages of an article, said machine having; feed rollers, a strip conveyor, a hollow winding mandrel, an article carrier, a package conveyor, main sealing rolls and a secondary sealing device, means for supplying strips of wrapping paper to said strip conveyor, means for moving said strip conveyor to carry the strips at a certain speed, means for catching successively the end of each strip and moving it rapidly from said conveyor and winding it rapidly on said hollow mandrel, means for twisting up one end of the roll, means including said carrier for passing said article into the hollow mandrel and for pushing from the mandrel the package with the article within, a secondary sealing device, means for passing the package to a package conveyor and by it to said secondary sealing device, and means cooperating with said secondary sealing device for twisting up the open end of the package, ready for removal from the package conveyor.

In testimony whereof, I affix my signature.

RICHARD E. B. WAKEFIELD.