Jan. 14, 1958 W. J. MAUST 2,819,574

PACKAGE WRAPPING AND SEALING MACHINE

Filed Jan. 28, 1955 6 Sheets-Sheet 1

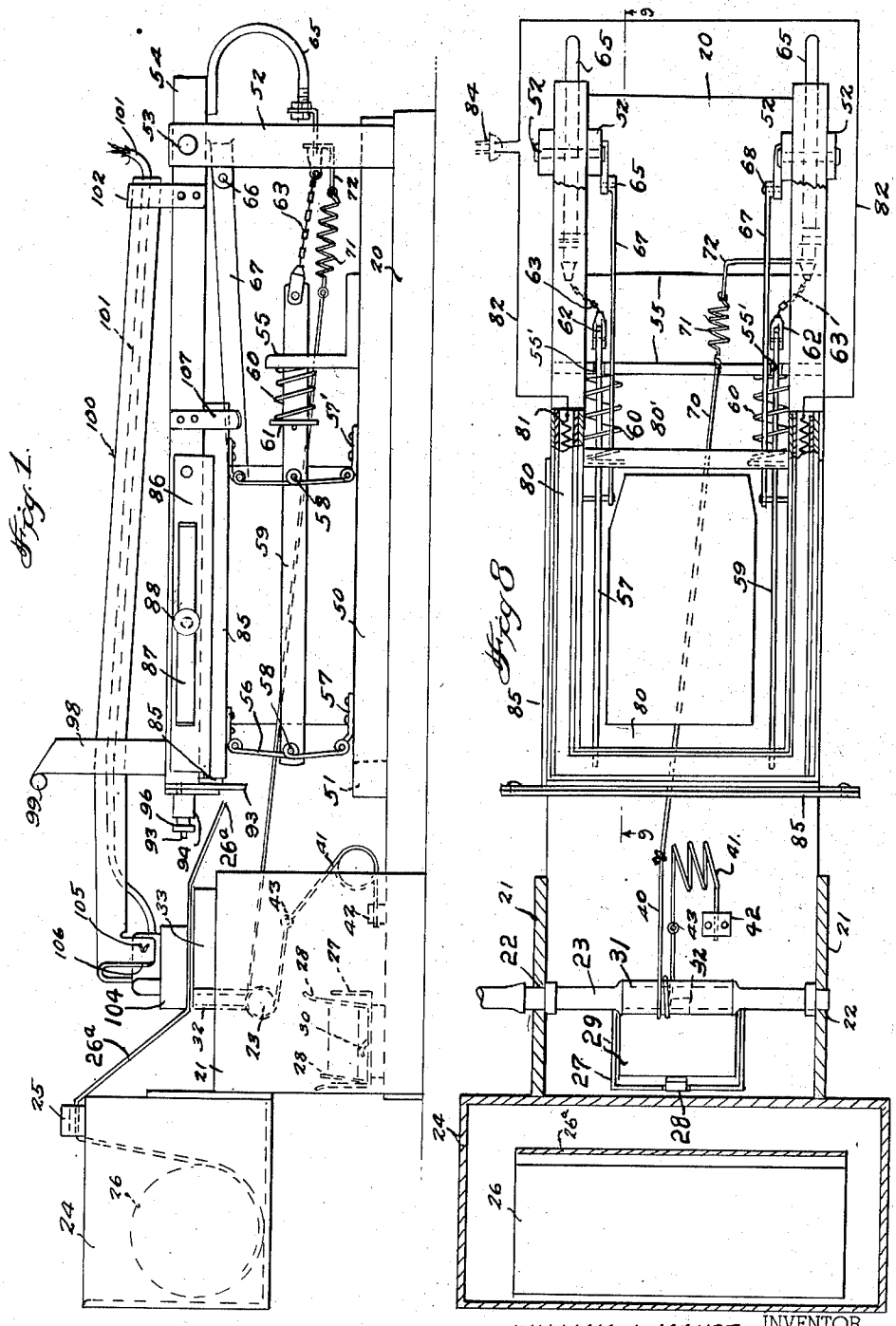


Fig. 1.

Fig. 8

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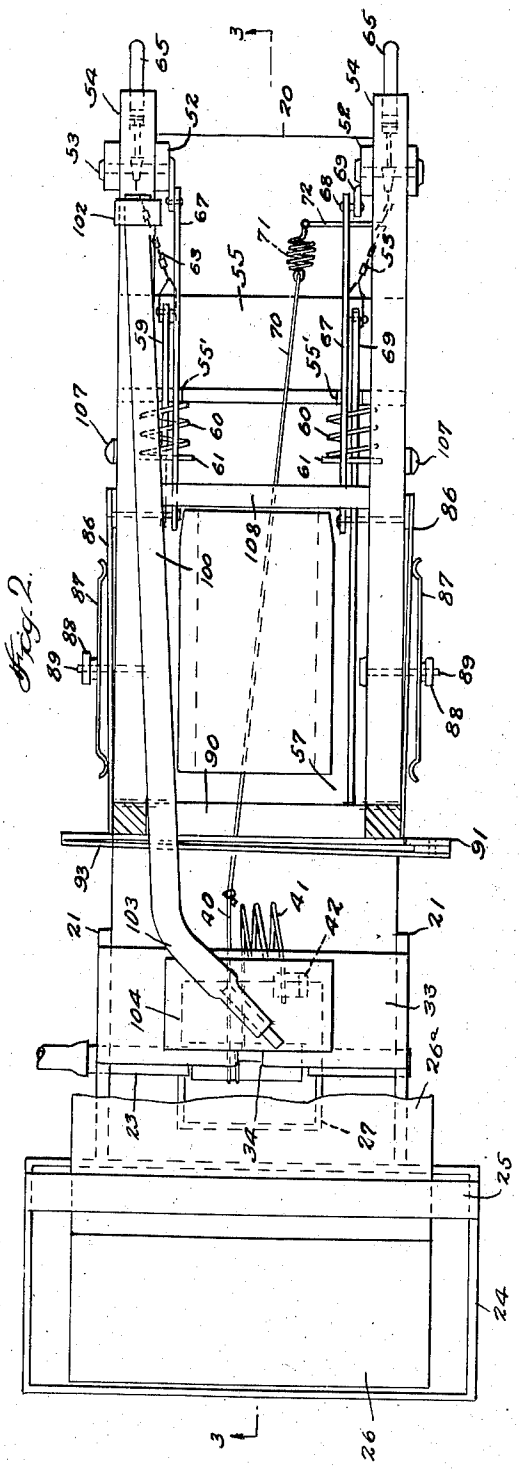


Fig. 2.

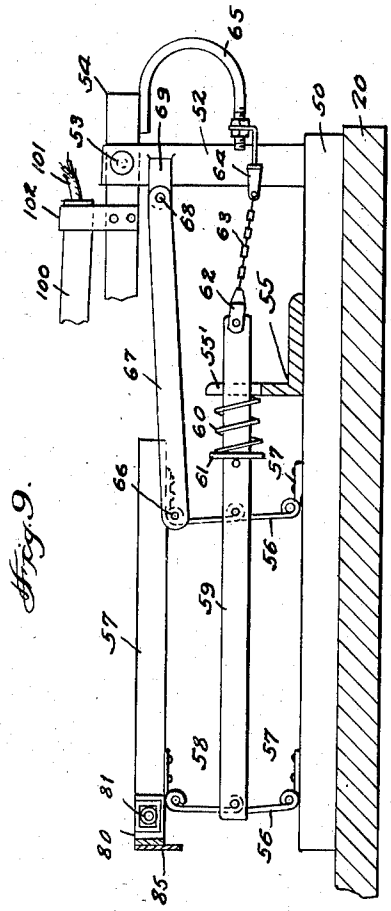


Fig. 9.

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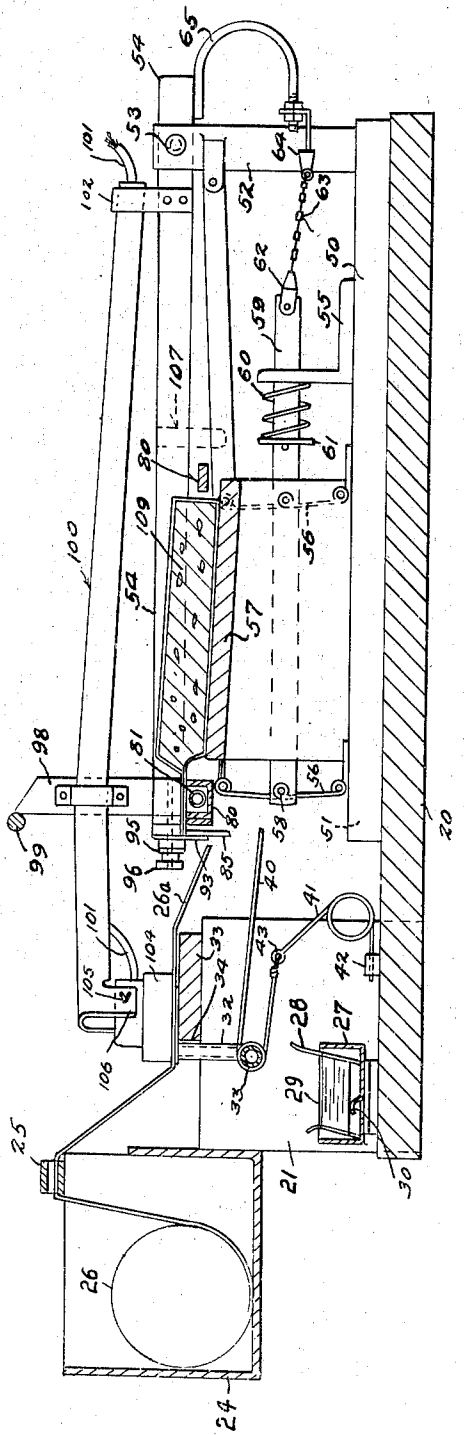


Fig. 3.

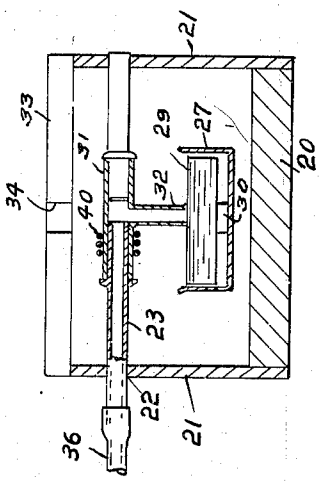


Fig. 10.

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PACKAGE WRAPPING AND SEALING MACHINE

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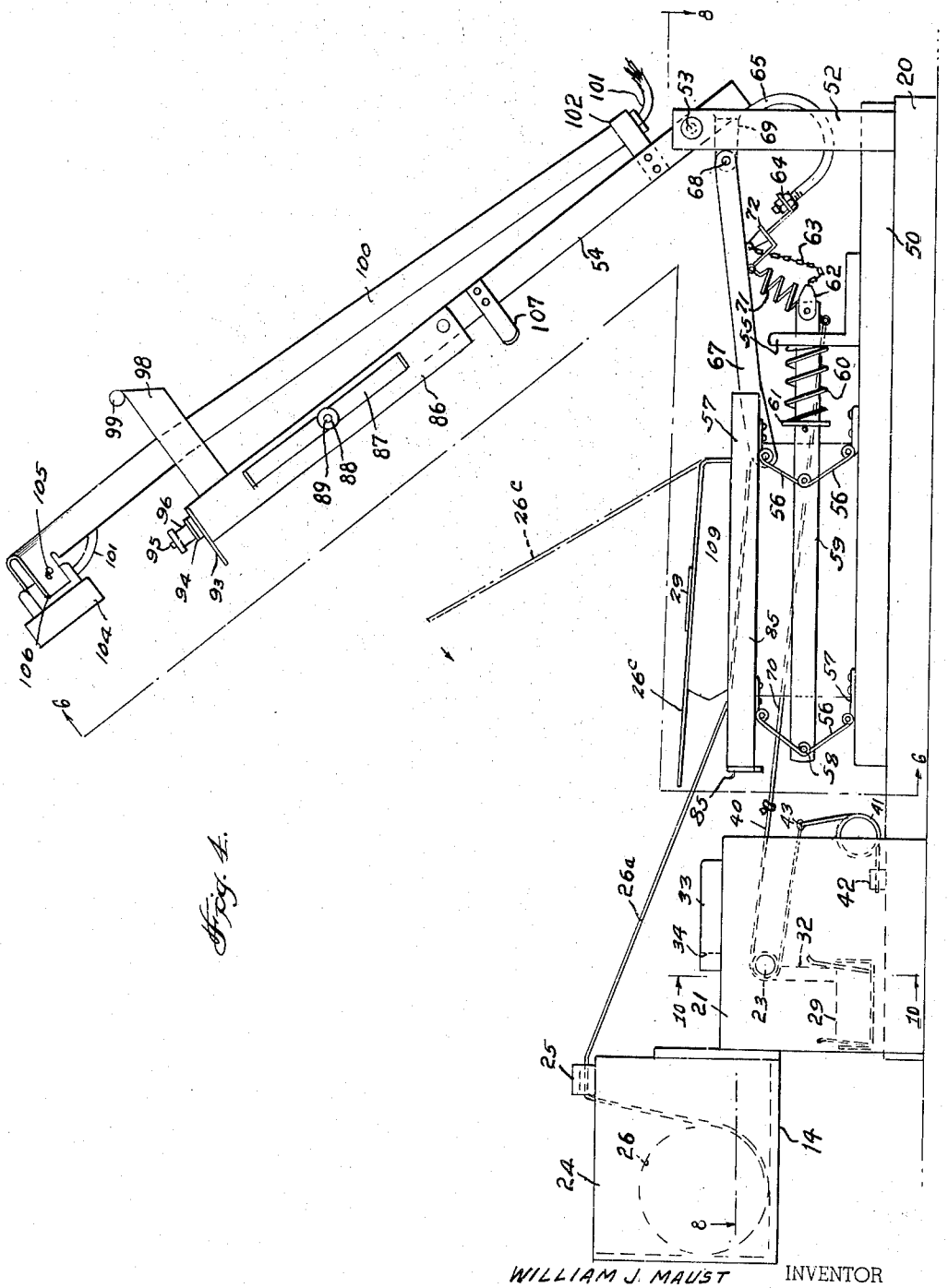


Fig. 4.

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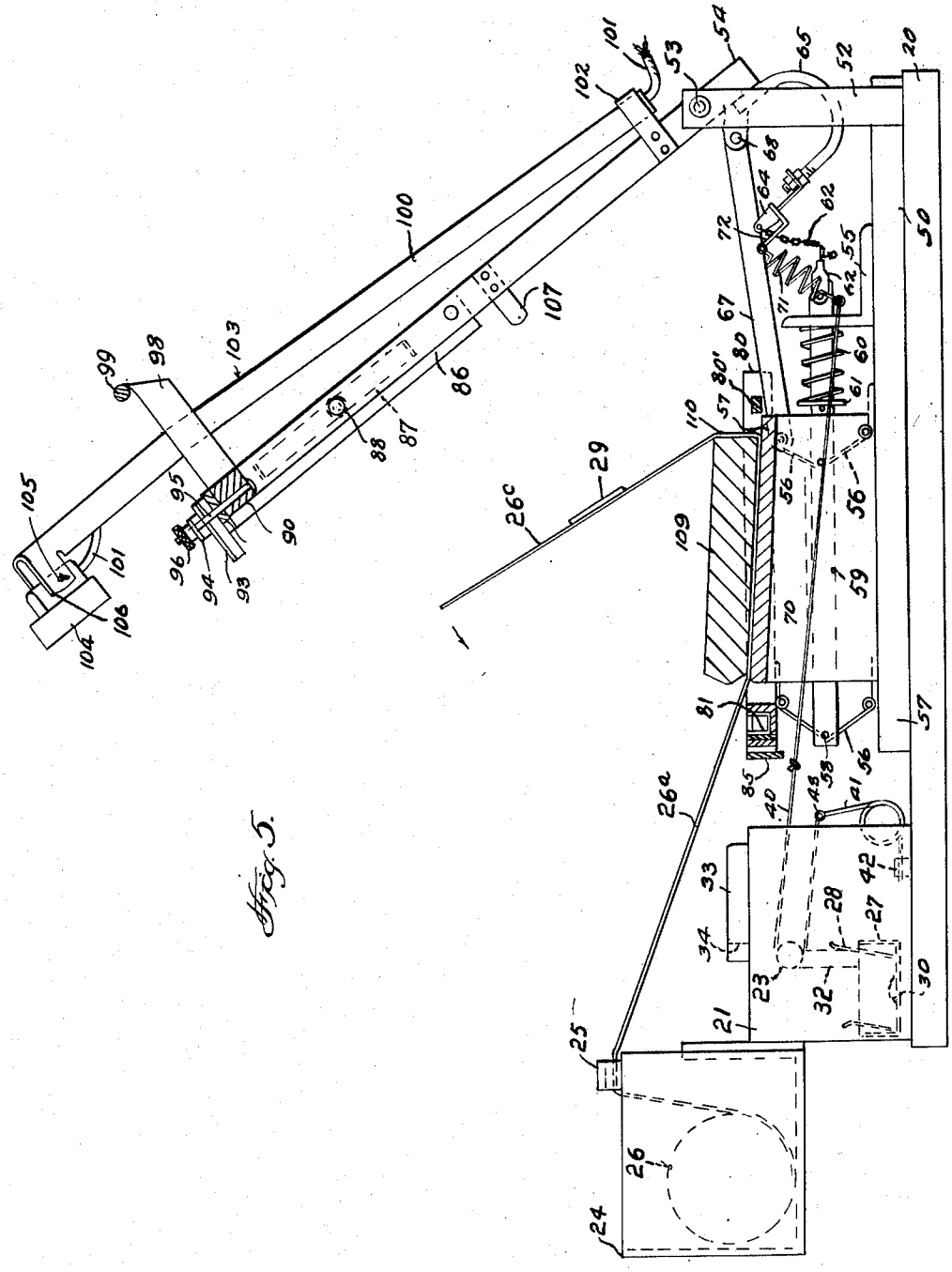


Fig. 5.

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Fig. 7.

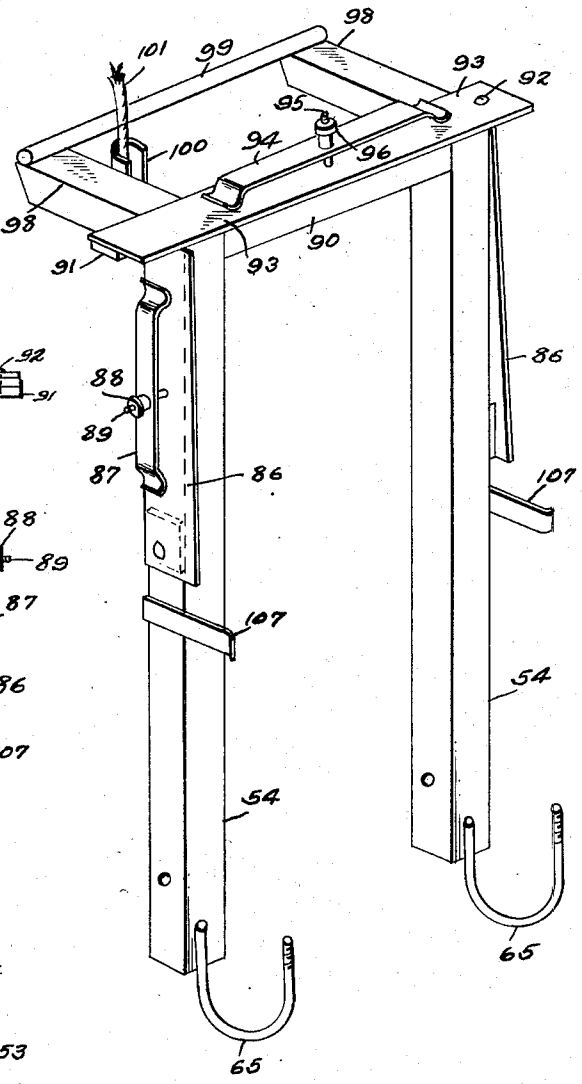
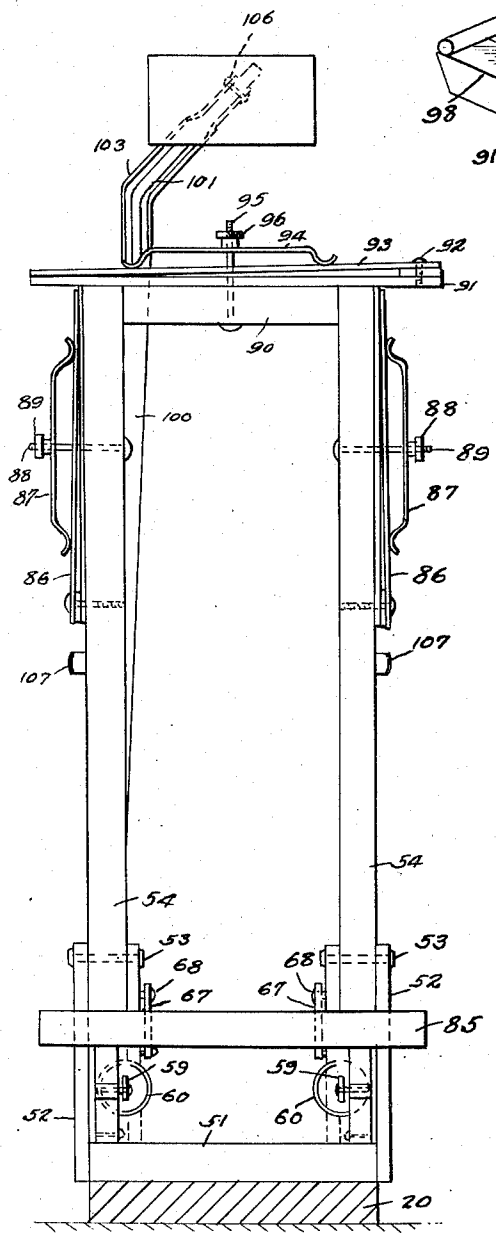


Fig. 8.



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United States Patent Office

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Patented Jan. 14, 1958

2,819,574

PACKAGE WRAPPING AND SEALING MACHINE

William J. Maust, Danville, Pa.

Application January 28, 1955, Serial No. 484,643

4 Claims. (Cl. 53—137)

This invention relates to an apparatus or machine for wrapping packages, and has particular adaptation to a machine for packaging and sealing food products or the like in wrappers of flexible material such as cellophane, or other similar thermo-plastic material.

A primary object of this invention is the provision of a relatively small, light, semi-portable apparatus adapted to facilitate the positioning of a cellophane wrapper about a package, the severing of the cellophane at a predetermined length, and the sealing of the edges of the package, in such manner as to cover and hence preserve the food in tightly sealed condition from the time it is wrapped until such time as it is opened for use.

A further object of the invention is the provision of means in association with such a wrapping and sealing apparatus of mechanical means for positioning a label in proper position on the wrapper concurrently with the sealing and wrapping of the package.

Still another object of the invention is the provision of a device of this character which is relatively simple and inexpensive to manufacture and operate, and which will facilitate the wrapping of packaged foods or the like, as well as effecting a material simplification over manual wrapping of such articles.

Still another object of the invention is the provision of a relatively small and inexpensive device of this character, which is particularly adapted for use by a small producer, which may be operated by a single individual, which may be stored in a minimum of space, readily transported, and utilized by a home producer or small manufacturer or processor for the wrapping and labeling of his individual products.

Still another object of the invention is the provision of an apparatus of this character which is sturdy and durable in construction, reliable and efficient in operation, and relatively simple and inexpensive to manufacture, assemble and utilize.

Still other objects reside in the combinations of elements, arrangements of parts, and features of construction, all as will be more fully pointed out hereinafter, and disclosed in the accompanying drawings wherein there is shown a preferred embodiment of this inventive concept.

In the drawings:

Figure 1 is a side elevational view of one form of apparatus embodying this inventive concept, certain concealed portions thereof being indicated in dotted lines, shown in one position of adjustment, comprising the initial step in the operation of the device.

Figure 2 is a top plan view of the apparatus shown in Figure 1, certain portions thereof being broken away, and certain concealed parts thereof being indicated in dotted lines.

Figure 3 is a sectional view taken substantially along the line 3—3 of Figure 2 as viewed in the direction indicated by the arrows.

Figure 4 is a side elevational view of the apparatus

similar to Figure 1, but showing the parts in a different position of adjustment.

Figure 5 is a view similar to Figure 4, but disclosing certain constructional details in section for clarity of illustration.

Figure 6 is a sectional view taken substantially along the line 6—6 of Figure 4 as viewed in the direction indicated by the arrows, portions of the apparatus, in raised position, being disclosed in elevation.

Figure 7 is a perspective view of portions of the mechanism disclosed in Figure 6, other elements of the device being omitted.

Figure 8 is a sectional view taken substantially along the line 8—8 of Figure 4 as viewed in the direction indicated by the arrows.

Figure 9 is a sectional view taken substantially along the line 9—9 of Figure 8 as viewed in the direction indicated by the arrows, parts thereof being broken away, and

Figure 10 is a sectional view taken substantially along the line 10—10 of Figure 4 as viewed in the direction indicated by the arrows.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Having reference now to the drawings in detail, there is generally indicated at 20 a base, preferably generally rectangular in configuration, which may be formed of wood, metal, plastic or any other suitable material, at one end of which are positioned a pair of upright side plates 21, forming a receptacle, and having apertures 22 in the sides thereof, the apertures being in alignment, and serving as journals for a hollow tubular shaft 23, to be more fully described hereinafter. Secured to the ends of side members 21 is a receptacle 24, provided at its top with a pair of spaced apart bars 25, forming a guide for cellophane or the like forming a portion of a roll 26 of such material contained in the receptacle 24.

Positioned between the side walls 21 is a receptacle 27 provided with spring guide fingers 28 for the guiding of a stack of gummed labels 29, and a lower spring finger 30 adapted to bias the stack of labels upwardly.

The tubular member 23 is rotatable in the journals 22, and includes an enlarged central section 31, and a spout 32, the spout being of a length selectively to engage beneath a supporting block 33, which extends across the apparatus and is supported by the tops of side walls 21. Block 33 has a cutaway portion 34 adapted to receive the end of spout 32. Tubular member 23 is open at one end, and is connected by means of a flexible tube 36 or the like to a suitable source of suction, such as a vacuum fan, and opens into spout-like member 32, whereby when the suction fan is energized, suction through the tube 32 will engage the topmost of the stack of labels 29, as best seen in Figure 10, when in its downward position, and upon rotation of the tubular shaft 23 will elevate the same to a position on top of block 33, with the gummed side of the label uppermost, it being noted that the labels are initially placed in receptacle 27 with the gummed sides facing downwardly.

A string or cord 40 is adapted to be wound about the enlarged central portion 31 of tubular shaft 23, and movement of one end of string 40, in a manner to be more fully described hereinafter, will cause the shaft to rotate to its upper position, as shown in Figure 3. Reverse rotation of the shaft to place the spout 32 in its downward position is effected by means of a suitable spring member 41 having one end secured in a fastening 42 on base 20, and its other end connected as at 43 to the end of string 40.

Base 20 carries at its end opposite receptacle 24 a pair of horizontal longitudinally extending rails 50, connected at one extremity adjacent side plates 21 by a trans-

versely extending member 51, adjacent the spring 41. At the opposite end of each of members 50 there are positioned a pair of spaced plates 52, each pair comprising an upright, and at the upper extremity of each of uprights 52 there is pivotally mounted as by means of a pivot pin 53 an elongated arm member 54, the purpose of which will be more fully described hereinafter.

A transverse angle iron 55 extends between longitudinally extending rail members 50 adjacent the supporting members 52, as best shown in Figure 2 with oppositely disposed vertical slots 55' in the vertical flange thereof. Pantograph type springs 56 are secured at their lower extremities, as at 57' to each of longitudinally extending rails 50, and support at their uper extremities a package supporting plate 57. The forward pair of pantograph springs 56 are pivotally connected at their midpoint as by pivots 58 to a link 59 which extends through one of slots 55', being biased normally to an extended position as by means of a spring 60 engaged between the vertical flange of L-shaped member 55 and a collar 16. The end of member 59 not connected to its associated spring 56 is connected by a link 62 and chain 63 to an L-shaped connecting member 64, which in turn is secured to one end of a U-shaped member 65, the opposite end of which is secured to the extremity of member 54, there being a similar connection on either side. The other of pantograph springs 56 is pivotally connected as by a pivot 66 to a link 67, the opposite end of which is pivotally connected as by means of a pivot 68 to an extension 69 extending from each of uprights 52. The arrangement is obviously such that upon pivotal swinging of members 54, in a manner and for a purpose to be more fully described hereinafter, in a downward direction to the position as shown, for example, in Figures 1, 3 and 9, the links 67 and 59 will extend pantograph springs 56 to raise the package supporting platform 57. Conversely, when the arm members 54 are swung about pivots 53 to the position disclosed in Figures 4 and 5, the flexibility of the chain 63 will, under the bias of spring 60, permit the pantograph springs to assume the position disclosed in Figures 4 and 5 lowering the platform 57.

The end of string 40 is connected to one end of a link 70, the other end of which extends through a suitable aperture in the vertical flange of L-shaped member 55 and is connected to a coil spring 71, the other end of which is connected to a bracket 72, which in turn is carried by one of U-shaped members 65. Obviously, when the parts are in the position shown in Figures 1 and 9 with pivoted members 54 in substantially horizontal relation, the pull on string 40 will rotate spout 32 to its upper position as disclosed in Figure 1. Conversely, release of the tension on member 40 will permit the spring 41 by action on string 40 to rotate the spout 32 to the position shown in Figures 4 and 5 in engagement with the top of the stack of labels 29.

As best shown in Figures 8 and 9, platform 57 is surrounded on three sides by rectangular tubular members 80, each of which contains a portion of an integral heating element 81, the heating element 81 being connected, as best shown schematically in Figure 8, by means of wires 82 and 83 to the positive and negative sides of any suitable source of electric power 84. The outer edge of each channel 80 includes a shearing blade 85 (see Figs. 1 and 9). The other ends of the pair of parallel members 80 are connected by a cross bar 80'. The purpose of these shearing blades will be more fully pointed out hereinafter.

Referring back now to the pivoted members 54, it will be seen, that each has attached thereto a cutting blade 86, held in position by an elongated spring member 87, the tension of which is secured by means of a knurled nut 88 mounted on a suitable threaded stud 89 secured to the side of each of members 54 adjacent its associated blade. As best seen in Figs. 1, 4 and 6, members 54 are connected at their outer extremity with a transverse rod or bar 90 which includes a plate 91, which has secured thereto as by a screw 92 a transverse cutting blade 93, which is in turn biased into cutting position by means of a spring 94 mounted on a bolt 95 and adapted to be adjusted by means of a nut 96.

Upwardly extending supports 98 extending from each of members 54 adjacent transverse member 90 serve to carry a handle member 99, and one of the supports 98 serves as an additional support for an inverted channel member 100 serving as a conduit for a wire 101, the other end of member 100 being secured to an upright 102 carried by one of members 54. Wires 101 extend to any suitable source of electric current. At its forward end, member 100 terminates in an angle portion 103, which carries at its outer extremity a heating element 104, the latter being pivotally connected as by a pivot 105 to depending portions 106 at the extremity of channeled shaped member 100.

In the closed position of the apparatus, the heating element 104 is adapted to impinge on block 33 carried by side members 21, for a purpose which will now be described.

Suitable guide and spacing members 107 are secured to the outer side of each of members 54 to serve as guides for the wrapping paper as passed over platform 57.

From the foregoing, the operation of the device should now be readily understandable. When it is desired to operate the device, a length 26*a* of cellophane is unrolled from the roll 26 and extended through the guide 25 over block 33. The pivotal assembly including the members 54 is then moved to the horizontal closed position disclosed in Figure 1, the heating elements energized, and the vacuum suction fan or the like simultaneously actuated. The device is allowed to remain in this position, with the end 26*b* (Fig. 1) in the position as shown until the heating elements have sufficiently heated to cause the cellophane to become tacky by thermo plastic reaction. In this initial step it may be desirable to position a label with its gummed surface upward on the top of block 33. Subsequent to this operation, the apparatus is moved to the position disclosed in Figure 4, and the sheet of cellphane 26*a* moved to the position therein disclosed over the platform 57. A package of food 109 or the like is then positioned on the cellophane, there being sufficient cellophane left as indicated at 26*c* to overlie the package as disclosed in Figure 4. It will be noted that one of the labels 29 has been adhered to the outer face of the cellophane wrapping by means of the heating element 104 and its pressure against the gummed side of the label and the extended cellophane 26. After the sheet of cellophane has been folded to the position indicated in full lines in Figure 4 the assembly, including the pivoted members 54, is again moved to closed position. The blades 86 and 93 will then act against the shear blades 85 uniformly to sever the cellophane around the edges of the package. The package which is being wrapped is substantially narrower than the width of the severed cellophane and that portion of the cellophane sheet beyond the package is pressed downwardly by the heated members 80. In this manner the wrapper will be sealed about three sides thereof, and the fourth side will be closed by the fold 110. Simultaneously the thermo plastic reaction occasioned by the heating element 81 in the members 80 will cause the impinged sheets of cellophane to closely adhere together around three edges, while the fold 110 occasioned by the rearward folding of the sheet will close the fourth side of the package, thus tightly sealing the same around all four sides.

Obviously, the handle 99 is used to raise and lower the assembly including the members 54, and the cellophane may be fed from the roll 26 either manually or by any suitable mechanical means (not disclosed).

The packages **109** may also be positioned manually if desired, or suitable mechanical means (not shown) may be employed for this purpose.

The device is particularly adaptable to the packaging of honey, cheese products, or similar comestibles requiring relatively tight sealing to cause the product to be delivered in fresh condition. During this operation it will be noted that the linkage comprised of members **59** and **67** will occasion upward movement of the platform **57**, and hence the product **109**, to cause close sealing of the cellophane thereabout. Simultaneously, the action of the link **70** on cord **40** will rotate the tubular shaft **23** to a position with its spout **32** adjacent the uppermost of labels **29**. The suction induced in the tubular member will, when the device is moved to open position, occasion the positioning of one of labels **29** on block **33**, in such position as to be adhered to the sheet of cellophane by the thermo plastic action of heating element **104**.

After the completion of the sealing and cutting operation the parts will be in the position as shown in Figures 1 and 3, and reopening of the device in order to extend the cellophane sheet **26***a* over the platform **57** will again cause the spout **32** to move downwardly to a position to engage a succeeding label. Obviously, the operation may be repeated with each successive package, until all desired articles are packed.

From the foregoing it will now be seen that there is herein provided an improved article packaging and sealing device, which accomplishes all of the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiment hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative, and not in a limiting sense.

I claim:

1. A package wrapping and sealing machine of the character described comprising a horizontally disposed base, a pair of longitudinally extending transversely spaced apart rails on said base, a package support on said base between said rails, an elongated longitudinally extending pair of heated members between said base and said support for vertical movement of said support, a pair of elongated arms pivoted to one end of said base, a sheet of thermo-plastic wrapping and sealing material engaging over said support to be clamped between said pair of members and said pair of arms for wrapping and sealing said food on said support, a pantograph hinge between each end of each of said heated members and said rails, linkage between said pair of members and said arms, the pivotal movement of said pair of arms downwardly toward said base effecting the upward movement of said heated members through said linkage, resilient means effecting the downward movement of said heated members upon manual pivotal movement of said arms into spaced relation to said heated members, a supporting roll of thermo plastic sealing and wrapping material carried by one end of said base spaced from said heated members and said support, said linkage including an actuating bar pivotally connected to said pantograph hinges on each side of said support, one end of each of said actuating bars being operatively connected to one end of each of said arms, means for severing the edges of said thermo plastic material after sealing thereof, said means including complementary blades carried by said pair of arms and said heated members, a heating element carried by the free end of said pivoted arms, means for positioning a label adjacent said thermo plastic material adjacent said heating element for affixation thereto upon downward pivotal movement of said pair of arms, said last mentioned means including a receptacle for a stack of labels, a label supporting block suction means for moving one label from said stack to said label supporting block, and means connecting said suction means to said pivoted arms for actuating said suction means upon pivotal movement of said arms.

2. A wrapping and sealing machine comprising a base, a holder for a thermo-plastic sheet at one end of said base, a package support above said base, a U-shaped heating means, means swingably supporting said heating means for movement toward or away from said support, a cutter carried by said supporting means, a swingable label pickup member, a label receptacle below said pickup member, means connected with said supporting means and said pickup member for effecting movement of the latter from a lower pickup position in said label receptacle to an upper delivery position confronting the lower side of the cellophane sheet, and a second heating means carried by said supporting means adapted in the lowered position of the latter to confront the raised label and to press the cellophane sheet against the label.

3. A wrapping and sealing machine as set forth in claim 2, wherein said connecting means comprises an elongated flexible member.

4. A wrapping and sealing machine as set forth in claim 2, wherein said connecting means comprises an elongated flexible member, and spring means maintaining said flexible member taut.

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