

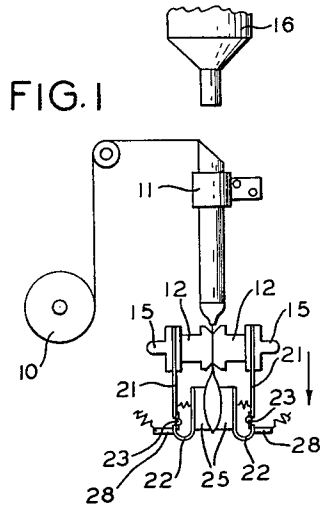
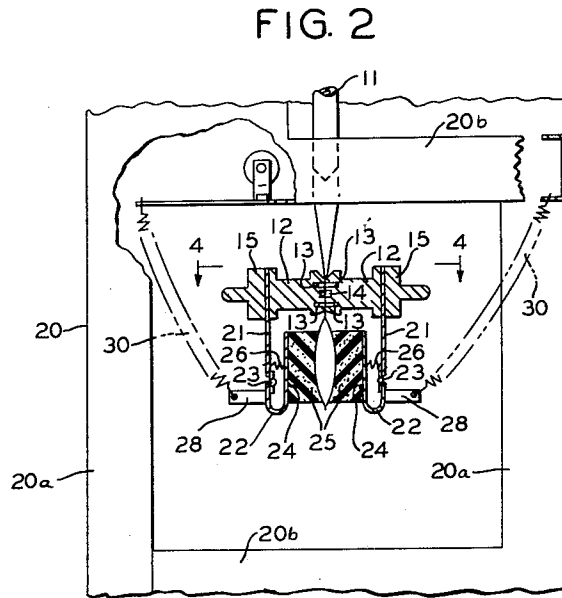
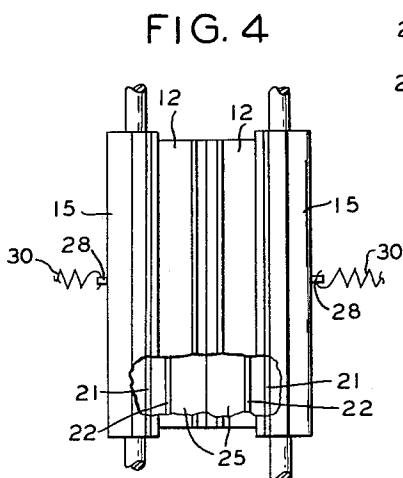
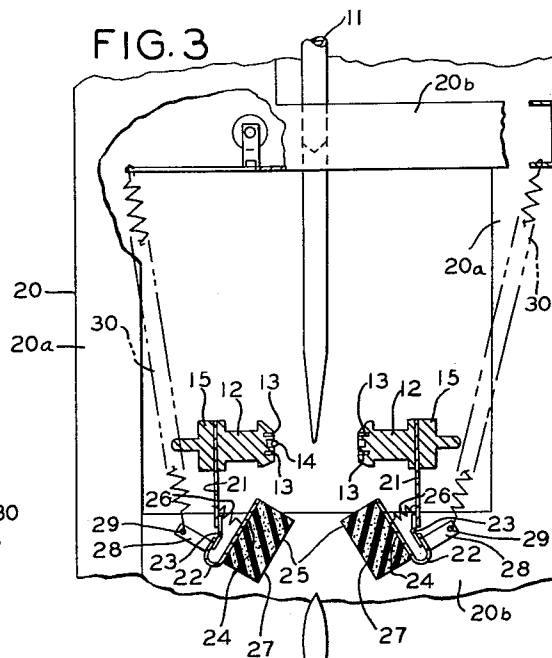
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PACKAGE MAKING APPARATUS

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PACKAGE MAKING APPARATUS

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This invention relates to package making apparatus and more particularly to air expelling and package stripping mechanism therefor.

It has heretofore been proposed to draw transparent synthetic sheet material from a web roll, form the same into a bag or envelope with a longitudinal seal, fill the bag or envelope, seal the top of one package with simultaneous sealing of the bottom of the succeeding package, and sever the seal intermediate its top and bottom edges to separate the packages, this all being repetitively effected in a timed sequence.

In the formation of packages, it is frequently desired to remove the air which might tend to be enclosed at the time of transverse sealing, and this has heretofore been effected in various ways.

In the making of packages of small size, and in which the contents are light in weight, difficulty has heretofore been encountered in stripping the package from the transverse sealing jaws subsequent to the completion of the transverse seal.

It is the principal object of the present invention to provide package making apparatus with provisions for the retention and compression of packages during their formation and which further acts to strip the completed and severed package from the sealing jaws.

It is a further object of the present invention to provide mechanism which is suitable for use with package making apparatus now in use for increasing the capabilities of such apparatus.

It is a further object of the present invention to provide an attachment for package making apparatus which is suitable for use with variable lengths of packages.

It is a further object of the present invention to provide stripping mechanism which does not necessitate any adjustment to accommodate the vertical movement of the sealing jaws but is in effect self-adjusting.

Other objects and advantageous features of the invention will be apparent from the description and claims.

The nature and characteristic features of the invention will be more readily understood from the following description, taken in connection with the accompanying drawings forming part thereof, in which:

FIGURE 1 is a diagrammatic view of a package forming and filling machine having the mechanism of the present invention applied thereto and shown at the top of the stroke and with the jaws in closed condition;

FIG. 2 is an enlarged vertical central sectional view of a portion of the package forming and filling machine shown in FIG. 1, with the mechanism of the present invention applied thereto and in a beginning position at the top of the stroke;

FIG. 3 is a view similar to FIG. 2 showing the sealing jaws and mechanism of the present invention at the bottom of the stroke; and

FIG. 4 is a fragmentary sectional view taken approximately on the line 4-4 of FIG. 2.

It should, of course, be understood that the description and drawings herein are illustrative merely, and that various modifications and changes can be made in the structure disclosed without departing from the spirit of the invention.

Like numerals refer to like parts throughout the several views.

It has heretofore been proposed to provide package making machines which include, as illustrated in FIG. 1,

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a web roll 10 having thereon a supply of sheet material to be made into a succession of longitudinally sealed tubular packages with transverse seals at each end. The prior package making machines also included a forming head or tube 11 to which the sheet material was advanced from the supply on the web roll 10, the advance being effected by the downward movement of closed but horizontally separable gripping jaws 12. The gripping jaws 12, customarily provided with upper and lower heating portions 13 for heat sealing with an interposed cutter such as an intermittently heated cutting wire 14, were reciprocated or vertically oscillated by supports 15 in a stroke of fixed or variable length, as desired, and the length of which determined the length of the package. The supports 15 were separated at the bottom of the stroke and moved upwardly with the jaws 12 in open position, then closed at the top of their stroke to bring the sealing portions 13 of the jaws 12 in transverse gripping relation to the tubular conformation of the sheet material provided by the forming tube 11. During the downward movement of the web of tubular sheet material, a longitudinal seal was provided by a longitudinal heat sealer (not shown) and the articles or materials to be packaged were delivered into the tubular formed web from a suitable source 16 through the forming tube 11. During the downward movement of the jaws 12, also, a transverse seal was applied to the tubular sheet material usually by the sealing portions 13, and the transversely sealed portion was severed intermediate its top and bottom such as by the cutter wire 14 so that the transverse sealed portion thus included a sealed transverse top margin of the filled package and a sealed transverse bottom margin of the next package to be filled. Repetition of the operations thus referred to produced a succession of filled and separated packages.

With packages which are light in weight, with small packages and with certain heat sealable materials, including polyethylene, difficulties have frequently been encountered in the separation of the severed packages from the jaws 12 or the lower heating portions 13 thereof upon separation of these jaws 12 at the bottom of the stroke.

In accordance with the present invention, stripping or separating mechanism is provided which is illustrated diagrammatically in FIG. 1, and is illustrated in detail in FIGS. 2, 3 and 4.

Referring now more particularly to FIGS. 2, 3 and 4, a fragmentary portion of the frame 20 of a package forming machine is shown having vertical frame members 20a and horizontal frame members 20b at predetermined locations. The jaws 12, reciprocable in a vertical path in the frame 20 and horizontally separable by any preferred form of well known mechanism, are provided with downwardly extending bracket plates 21 rigidly secured thereto in any desired manner. The bracket plates 21 have pivotally secured thereto on horizontal pivotal axes, auxiliary jaw plates 22 which preferably are J shape in cross section. In order to connect the jaw plates 22 to the bracket plates 21, elongated hinges 23, preferably of the type known as piano hinges, are employed.

The inner opposed facing portions 24 of the plates 22 have secured thereto in any desired manner, and such as by a suitable adhesive, strips or blocks 25 of resilient material of any desired type, but preferably of foam rubber.

Interposed between the bracket plates 21 and the jaw plates 22, springs 26 are provided which normally hold the jaw plates 22 in an upper position, in parallel relation to the bracket plates 21, and with the inner facing portions 27 of the blocks 25 in substantially parallel and facing relation.

Each of the jaw plates 22 has an arm 28 extending therefrom, the weight of which may, if desired, assist the springs 26 in positioning the jaw plates 22 as illustrated in FIG. 2. The arms 28 have openings 29 for the engage-

ment of one end of a helical tension spring 30, the other end of which is in engagement with a suitable portion of horizontal frame members 20b of the machine.

The springs 30, as illustrated in FIG. 2 at the upper end of the stroke of the jaws 12 are slightly slack or at a minimum of tension. The springs 30 are of suitable spring rate and length so as to be effective, upon downward movement, for impelling the arms 28 and the jaw plates 22, to downwardly incline the blocks 25.

After the completion of the transverse seal which forms the bottom of a package, the jaws 12 move upwardly to the upper ends of their normal path of movement and are brought together to the positions shown in FIG. 2. As the jaws 12 are brought together, the blocks 25 are also simultaneously brought together into a position to engage the opposite faces of the package which is about to be sealed by the heating portions 13. As the blocks 25 are brought together air in the package is forced upwardly before the completion of the transverse sealing and discharged. As the jaws 12 move downwardly taking the bracket arms 21, jaw arms 22 and blocks 25 with them in their downward movement, the transverse sealing of the package is completed and the severing is effected by the cutter wire 14 between the portions of the transverse seal which provide the top margin of the completed package and the bottom margin of the package next to be made.

As the jaws 12 and blocks 25 move downwardly, the tensioning of the springs 30 exerts an upward force on the arms 28 and therefrom through the jaw arms 22 to the blocks 25 tending to swing the same downwardly about the hinges 23. This downward swinging movement is effective for applying a downward impelling action by the blocks 25 on the newly formed and severed package to extract and remove the same from the lower heating portions 13 as the jaws 12 are separated preliminary to their upward movement. The blocks 25 are also separated so that the newly severed package falls for collection therebelow.

It will be noted that by reason of the use of the springs 30 in their relationship to the blocks 25, no careful or precise setting is required since the springs 30 tend to accommodate to different downward or lower positions of the jaws 12 and blocks 25 while still continuing their package separating action as desired.

I claim:

1. In apparatus for the continuous packaging of articles from an elongated web of sheet material, the combination with a frame and jaw members having heat sealing portions transversely engaging the tubular material of additional jaw members in pendant relation to said first mentioned jaw members, hinge members interposed between

said jaw members and said auxiliary jaw members for pivotally mounting said auxiliary jaw members on horizontal pivotal axes, said auxiliary jaw members including pads of resilient material having facing portions for engagement with a package and expelling air from said package, resilient members interposed between said jaw members and said auxiliary jaw members for normally urging said pads into positions with respect to said first mentioned jaw members for engagement with a package, and elongated resilient members connected to said auxiliary jaw members and to said frame and impelling said pads to downwardly inclined positions at downward positions of said jaw members.

2. In apparatus for continuous packaging of articles from an elongated web of sheet material in tubular form comprising a frame, jaw members movable in a predetermined path in said frame, said jaw members having transverse heat sealing portions and a package severing portion interposed between said heat sealing portions, bracket plates carried by said jaw members, jaw plates, hinge members having horizontal pivotal axes connecting said jaw plates and said bracket plates, resilient members interposed between said bracket plates and said jaw plates and normally urging said jaw plates to predetermined positions, said jaw plates on opposed facing portions thereof having blocks of resilient material secured thereto with portions for engagement with a package for air expulsion therefrom, arms extending from said jaw plates, and resilient members interposed between said arms and said frame for impelling said jaw plates to different predetermined positions.

3. In apparatus for the continuous packaging of articles from an elongated web of sheet material in tubular form having a frame and jaw members movable in said frame and having transverse heat sealing portions the combination comprising bracket plates carried by said jaw members, jaw plates, hinge members having horizontal pivotal axes connecting said jaw plates and said bracket plates, resilient members interposed between said bracket plates and said jaw plates and normally urging said jaw plates to predetermined positions, said jaw plates on opposed facing portions thereof having blocks of resilient material secured thereto, arms extending from said jaw plates, and resilient members interposed between said arms and said frame for impelling said jaw plates to different predetermined positions.

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