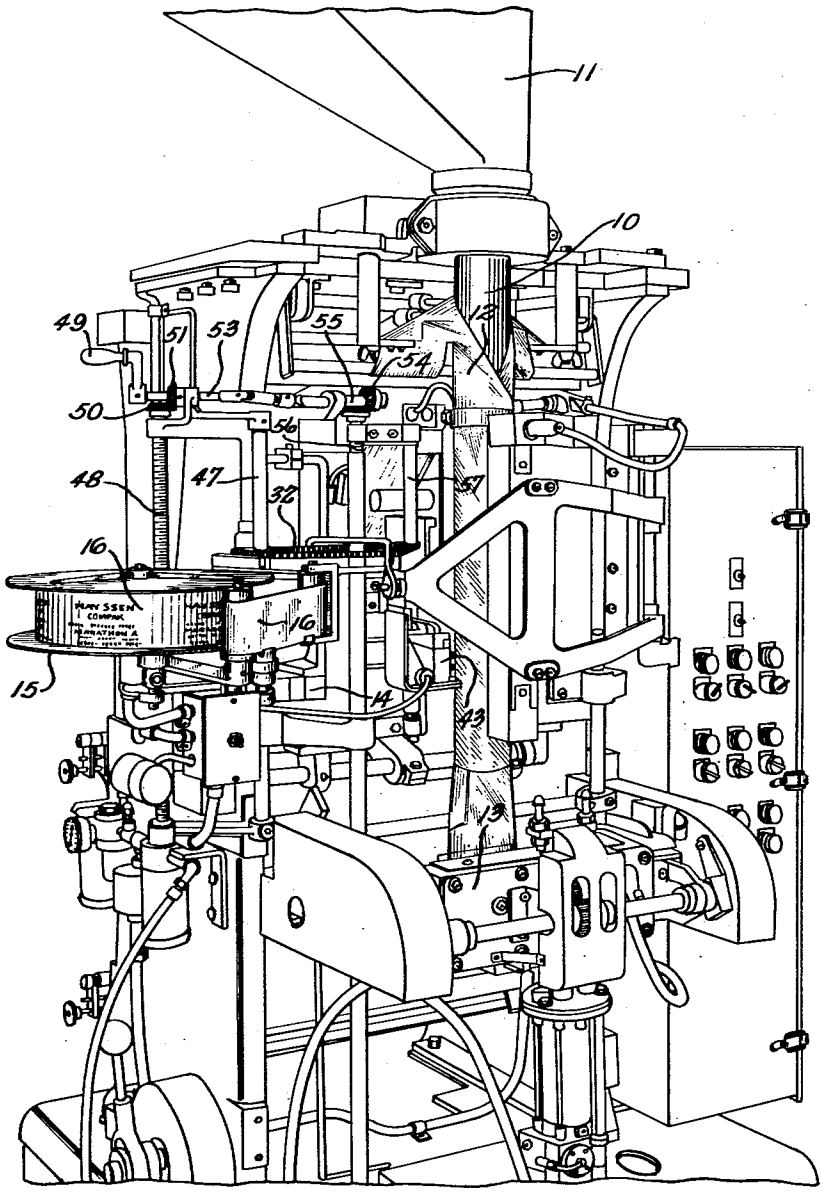
Sept. 19, 1961 A. P. GAUSMAN 3,000,155

LABELING ATTACHMENTS FOR AUTOMATIC PACKAGING MACHINES

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Fig. 1.



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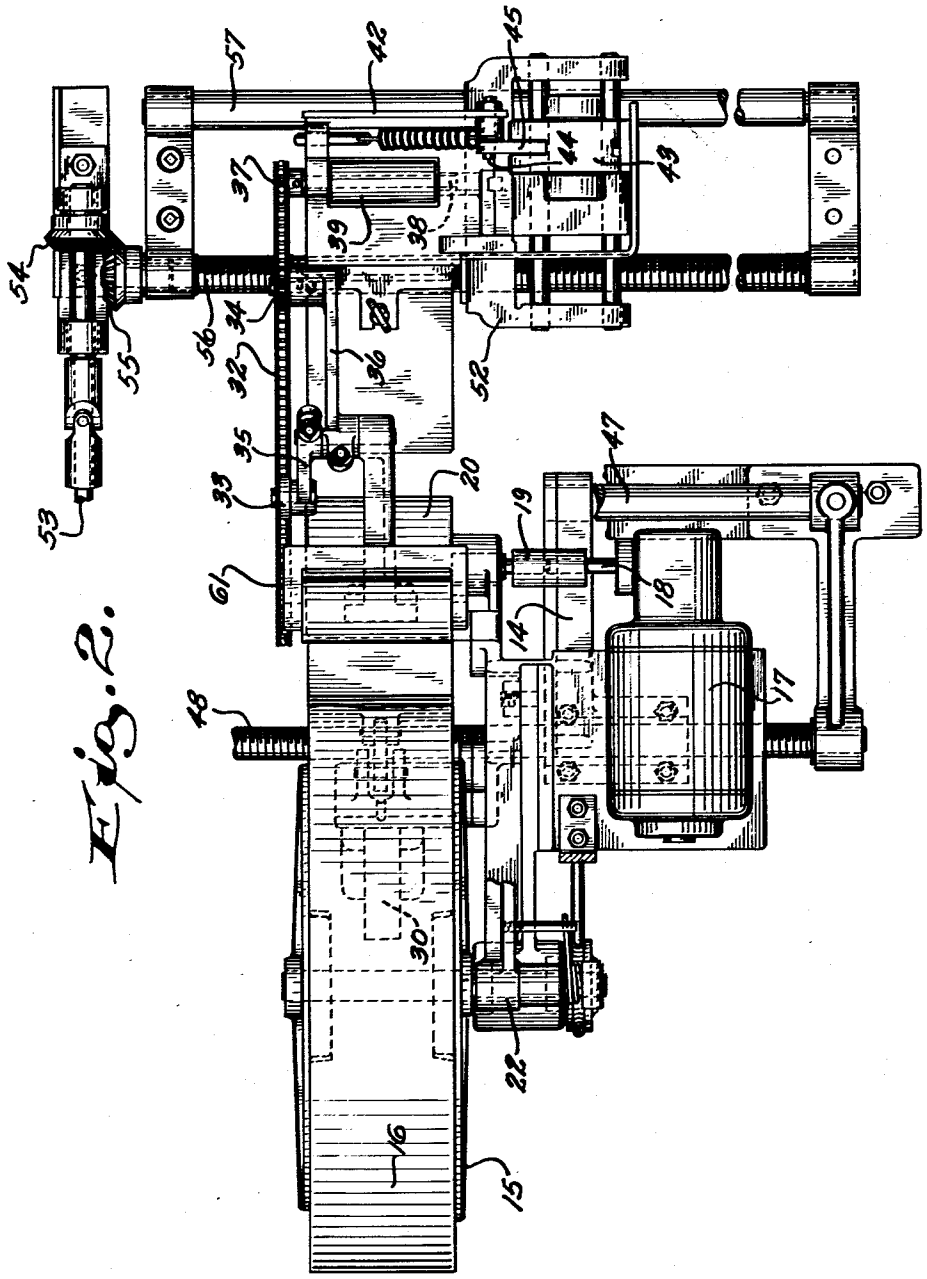


Fig. 2.

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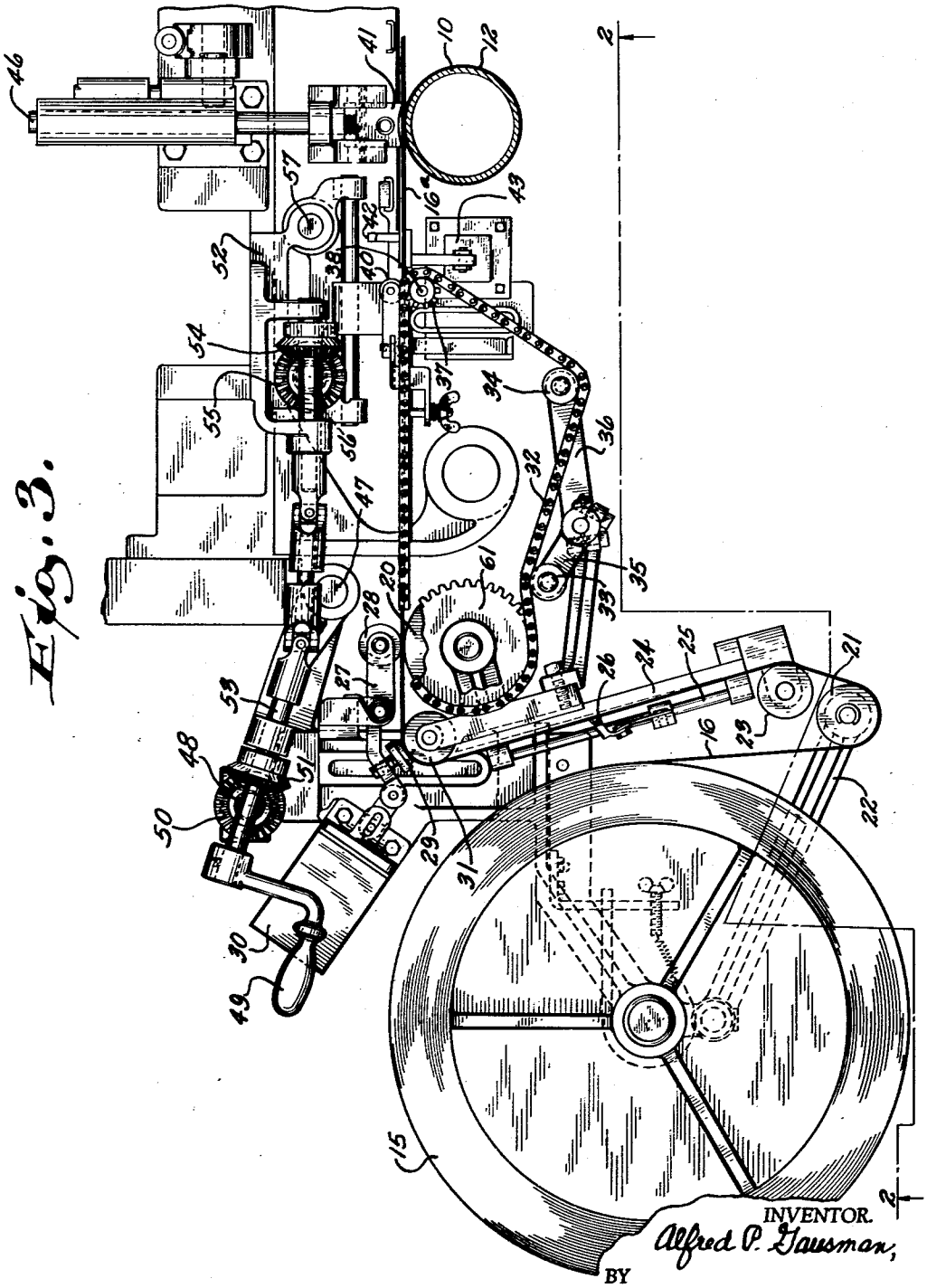
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Fig. 3.



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LABELING ATTACHMENTS FOR AUTOMATIC PACKAGING MACHINES

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This invention relates to improvements in labeling attachments for automatic packaging machines.

Automatic packaging machines are in common use for the purpose of expeditiously packaging carefully measured predetermined amounts of a commodity which is fed into a succession of formed packages. A conventional automatic packaging machine forms a package or tube from a strip of suitable flexible packaging material, preferably a thermoplastic web material, and the bottom of each bag or package, while still attached to the strip, is closed to prevent the escape of the product fed thereinto for packaging. The bag or package, which is formed with a longitudinal seal while in the machine, is subsequently sealed at its top portion and detached from the strip of package forming material and is delivered from the machine containing the article or a predetermined amount of a packaged product, the completed package being fully sealed and the succession of such filled and sealed packages are repeatedly delivered while the machine is in operation.

For denoting the product which is packaged and the manufacturer, it has heretofore been the practice to apply a label to each package after it had been filled, sealed and separated from the tube or the adjoining package.

With the foregoing in mind, it is a primary object of the present invention to provide a labeling attachment adaptable to various types of automatic packaging machines of the character described, which labeling attachment applies a face type of label to each package during the package forming and filling operation, thereby eliminating the time required to apply the labels to the packages after they had been completely filled, sealed and separated from the tube, as was done heretofore.

A further object of the invention is to provide a labeling attachment which may be incorporated in various types of automatic packaging machines without material modification of the latter and which functions automatically and in no wise interferes with the normal operations carried on by the packaging machine.

A further object of the invention is to provide a labeling attachment of the character described which is fully automatic in its operation and automatically feeds and indexes labels for successive packages from roll stock and attaches such labels to the film material as it is shaped in tubular form while on the filling tube of the machine.

A further object of the invention is to provide a labeling attachment for automatic packaging machines wherein each label to be applied is pulled from roll stock and applied to a surface portion of the tube or package being formed while the label is preliminarily heat tacked to the film material of the package followed by a final heat seal application of the label when the end seal jaws of the packaging machine reach the upper end of their stroke.

A further object of the invention is to provide a labeling attachment for automatic packaging machines wherein the labeling attachment, incorporated in the packaging machine, is readily adjustable vertically so as to properly position the labels to be applied relative to the upper end portions of the successive packages being formed.

A further object of the invention is to provide a labeling attachment for automatic packaging machines which is of simple construction, is strong and durable, is rapid and efficient in its operation, and is well adapted for the purposes described.

With the above and other objects in view, the invention consists of the improved labeling attachment for automatic packaging machines, and its parts and combinations, as set forth in the claims, and all equivalents thereof.

In the accompanying drawings in which the same reference characters indicate the same parts in all of the views:

FIG. 1 is a front and side perspective view of an automatic packaging machine equipped with the improved labeling attachment;

FIG. 2 is an enlarged fragmentary front view of that portion of the automatic packaging machine with which the labeling attachment is directly associated, parts unessential to the labeling attachment features being omitted and said view being taken approximately along the line 2—2 of FIG. 3; and

FIG. 3 is a fragmentary enlarged plan view of the showing in FIG. 2.

The improved labeling attachment or mechanism is adapted to be incorporated in an automatic packaging machine of the type, for instance, shown in the Zwoyer Patent No. 1,986,422, which includes a vertical hollow forming tube **10** (FIG. 1) which is in communication at its upper end with a suitable type of feeding device. The particular type of feeding device for the product to be packaged may be a net weight scale feed, a volumetric feed, or any of the other conventional feed devices well known in the art for measuring and delivering a predetermined quantity of a product to be packaged. The material to be packaged is supplied from a source into the particular type of feeding device with which the machine is equipped and from the latter a predetermined amount of the commodity reaches the upper end of the forming tube **10** via a funnel **11** or other conventional means. The bags or packages are in the process of being successively formed below the head of the machine, and flexible sheet material **12** from which the bags or packages are formed is fed from a roll over certain forming bars and is wrapped about the forming tube **10** as is best shown in FIG. 1, and is provided thereon with a longitudinal seal by means of a conventional longitudinal heat sealing device. Movable end seal dies operate to close and seal the lower end of the tube which is forming a bag so as to retain therein the batch of material with which the bag is packed. Said end seal dies **13** reciprocate downwardly to pull a predetermined extent of the bag forming tube downwardly with them, whereupon the end seal dies release the tube and move upwardly in open position to again close and engage the filled bag forming tube at its upper end to close and seal the same with the batch of the commodity therein, and this operation of the end seal dies in the upper position serves to simultaneously seal the lower end of the tube portion thereabove, and the top of the filled bag therebelow is simultaneously sealed. It is also conventional to incorporate with the end seal dies a cut-off knife (not shown) which operates to sever a lower filled bag from the bottom of the bag being formed thereabove and which had its lower end operated on by the end seal dies, as mentioned immediately above.

The automatic packaging machine under discussion is adapted for use with any suitable type of flexible packaging material having thermoplastic qualities which is susceptible of being heat sealed as, for instance, cellophane, glasene, pouch papers, laminated material, etc.

In commercial production it is, of course, desirable that the packages formed on the automatic packaging machine be labeled to indicate the product and the packer. Heretofore it was the practice to apply a label to each package after the package had been filled, sealed and separated from the tube of packaging material or the adjoining bag. The prior practice required an extra operation of applying the labels after the completion of the successive packages. According to the present invention the auto-

matic packaging machine has incorporated therein a labeler which operates to automatically apply a face type of label to each package during the packaging operation.

For this purpose there is supported on a convenient portion of the packaging machine by means of brackets or arms **14** a rotatable horizontally disposed reel **15** on which the labels for the particular product being packaged are wound in the form of a continuous printed roll **16**.

An electric motor is designated by the numeral **17** (see FIG. 2). The electric motor has an output shaft **18** having a coupling **19** therein and on an outer end portion of the shaft **18** there is a primary feed roller **20**. As shown in FIG. 3, an extended portion of the strip of label material from the roll **16** passes about a dancer roller **21** on the end of an arm **22**. The extent of the label strip material **16** passes from a dancer roller **21** against an idler roller **23** and along a face of an elongated supporting arm **24**. Adjacent the face of the supporting arm **24** there is mounted on a suitable rod **25** an electrically energized brush **26**. The brush **26** is longitudinally adjustably mounted on the rod **25** so that it may be positioned to properly establish the ultimate location of the severed labels relative to the tube **12** of flexible sheet material forming the packages. As is shown most clearly in FIG. 3 a centrally pivotally mounted arm **27** has on one end thereof a pressure roller **28** and on the opposite end of said arm there is a brake **29**. The strip of labeling material **16** is formed with apertures therein spaced apart equal to the desired predetermined length of the successive labels. When the energized brush **26** passes over each aperture in the strip of labeling material, the solenoid **30** will be energized. Normally the pressure roller **28** forcefully engages the advanced extent of the label strip material and holds it against the continuously operating feed roller **20** so that the strip **16** will advance. However, when the solenoid **30** is energized, the arm **27** is rocked so as to remove the pressure roller **28** from its engagement with the label strip material on the feed roller **20** and to apply the brake **29** against the label strip passing over an idler roller **31**, which interrupts the feed of said label strip.

The label strip feeding mechanism also includes a sprocket **61** which is mounted fast on a face of the primary feed roller **20** and turns continuously therewith. An endless chain **32** is trained about the sprocket **61** and said chain is also engaged by tension adjusting rollers **33** and **34**. The rollers **33** and **34** are rotatably mounted, respectively, on the outer ends of arcuately adjustable arms **35** and **36**. The chain **32** also engages and drives a sprocket **37** which is fast on the outer end portion of a shaft **38**, the latter having fast thereon an auxiliary label strip feed roller **39** (see FIG. 2). Rearwardly of the auxiliary feed roller **39** there is an idler pressure roller **40** (see FIG. 3). The purpose of the endless chain **32** which drives the sprocket **37** and the auxiliary feed roller **39** is to prevent the elongated outer extent of the label strip material from being wrinkled or buckling.

It will be observed from FIG. 3 that the outermost extent of the label strip material **16** passes between the reciprocal heat tacker **41** and the bag forming film material **12** which is wrapped about the former as is shown most clearly in FIG. 3. When a predetermined extent of the strip material **16** is properly positioned between the heat tacker **41** and the forming tube, the extent being the length of an ultimate label and indicated **16*a*** in FIG. 3, it is in position to be severed from the strip material **16** therebehind and to be tacked onto the film material **12** about the forming tube. These simultaneous operations of severing the end labels and tacking them onto the film material are accomplished by the energization of the mechanism which is controlled by the electric brush **26** moving over the spaced apertures in the label strip material. Through the swinging of the arm **27** which raises the pressure roller **28** and applies the brake **29**, further feed of the label strip material will be temporarily terminated and immediately a knife **42** will be brought into action. This is initiated through suitable electrical connections when the brush **26** feels a hole in the label strip material and it will cause, through the proper electrical circuit, the energization of a solenoid **43** (see FIG. 1). A lever **45** operated by the solenoid plunger causes a shaft **44** to which it is connected to swing and the movement of said shaft **44**, at a proper time period, causes the knife **42**, carried by the shaft **44**, to swing through a portion of the label strip **16** to sever the label **16*a*** therefrom.

Simultaneously, the heat tacker **41** is reciprocated against the intermediate portion of the severed label **16*a*** to tack its mid-portion to the film material wrapped around the forming tube **10**. The anvil **41** of the tacker is yieldingly carried by the end portion of a rod **46** (see FIG. 3) and the tacker is powered by conventional means connected with the drive for the packaging machine on which the improvements are installed.

As is conventional in automatic packaging machines of the type under consideration, the end seal dies **13** close upon a lower portion of the film material tube below the former to pull the formed tube downwardly. The advancement of the label strip material **16** through the means previously described takes place as the tube film material **12** is being pulled downwardly by the end seal dies **13**. However, when the end seal dies release the package forming tube, and the latter is momentarily at rest on the former **10**, the label severing knife **42** functions as does the temporary tacker **41**. Thereafter, the end seal dies **13** move upwardly on the stationary tube of package forming film material and then close thereon to form the transverse seal and sever the lowermost package from the package thereabove. During this conventional operation of the end seal dies the same close on the temporarily tacked label **16*a*** and wrap it onto the upper portion of the lowermost package and complete the final application of the label to the package by heat sealing.

In the continuous operation of the improved automatic packaging machine with the described labeling attachment, following the operation last described which effects the final sealing of the label to the completed and filled package, the cycle continues as long as the machine is in operation resulting in the application of labels to each successive package automatically and during the package filling and forming operations.

The entire labeling attachment for the automatic packaging machine is adjustable vertically in order that the positioning of the labels on the packages may be adjusted for different length packages and to insure the proper positioning of successive labels on the end portions of the packages being formed.

Actually, the entire sub-frame which carries the label reel **15**, drive motor **17**, and the label strip advancing mechanism, may be adjusted vertically because it is slidably mounted on a vertical guide rod **47**, the vertical adjustment being accomplished by the turning of a screw **48** which is accomplished by a manual force applied to a crank **49** operating through a shaft **53**, a pair of beveled gears **50** and **51**, gear **50** being fast on the upper end portion of the screw **48**.

Companion to the sub-frame **14** is an adjustable frame section **52** (see FIGS. 2 and 3) which carries the auxiliary feed roller **39**, the label cut-off knife **42** and the tacker **41**. Said frame portion **52** is adjustable vertically simultaneously with the sub-frame **14** when the crank **49** is turned by virtue of the shaft **53** which has universal joints therein and which extends to bevel gears **54** and **55**. The latter is fast on and drives a vertical adjusting screw **56**. Turning movement of the latter causes the frame section **52** to move vertically on a vertical guide rod **57** to a desired position of adjustment.

From the foregoing description it will be evident that the improved labeling attachment may be associated with a conventional automatic packaging machine and during the continuous operation of the automatic packaging ma-

chine the labeling attachment functions automatically to project a label on the end portion of a strip extended from a reel, onto an upper portion of a package while the package is being formed and filled. The properly positioned label is severed from the strip and attached. The labeling attachment is readily adjustable vertically so as to properly position the labels relative to the upper end portions of successive packages being formed.

The improved labeling attachment for automatic packaging machines, besides being automatic and functioning to apply labels during the package completing operation, is rapid in its operation, does not interfere with the normal functioning of the machine on which it is installed, and is well adapted for the purposes set forth.

What is claimed as the invention is:

1. In a machine for successively packaging measured charges of a product and having a former through which charges of the product are fed and about which a continuous web of flexible thermoplastic sheet material drawn from a roll is formed into a tube, and movable end seal dies for advancing the tube and transversely sealing and severing sections thereof to provide a succession of packages; the improvements which comprise: a reel turnably mounted on the machine and carrying a roll of labels in unbroken strip form; powered means independent of the end seal dies for pulling an extent of the label strip from the roll and positioning the outermost label adjacent a face of a package; and means independent of the end seal dies for severing said outermost label from the strip and preliminarily heat tacking it to a local face portion of the package, subsequent engagement of the end seal dies with the package effecting a final complete heat seal of the severed label to the package.

2. In a packaging machine of the type having a composite draw bar on which are mounted end seal dies and a cut-off knife, means for vertically reciprocating said draw bar and clamping it to the end of a tube of heat sealable sheet material when the draw bar is in an upper position and maintaining it closed as the draw bar is lowered to draw the tube therewith, means for opening said draw bar at its lower position preparatory to its return to its upper position, and means for releasing a charge of articles into said sealed package-forming tube prior to reclosing the draw bar upon the upper portion of the filled package; the improvements which comprise: a labeling attachment mounted on the machine and having means for automatically advancing the outermost label on a continuous strip of labels into registration with the upper face portion of said package and severing said outermost label from the strip and preliminarily adhering it to said package while the draw bar is in its lowermost position, the draw bar then moving upwardly on said package and closing thereon to form an upper transverse seal and severing said package from the tube thereabove, the draw bar also closing on the preliminarily applied label and wrapping it onto the upper portion of said package and permanently securing it thereto by heat sealing.

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