

- [54] **METHOD AND MEANS FOR ATTACHING FITMENTS TO A BAG OR POUCH ON A PACKAGING MACHINE**
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- [21] Appl. No.: **371,966**

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- [52] U.S. Cl. .... **53/128; 53/14; 53/28; 53/180**
- [51] Int. Cl.<sup>2</sup> .... **B65B 9/08**
- [58] Field of Search .... **53/14, 28, 29, 33, 128, 53/129, 180, 182, 183; 156/253; 93/8 VB, 36 DA; 222/105, 107**

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[57] **ABSTRACT**

A method and means for attaching fitments to a bag or pouch for a packaging machine wherein there is provided a means for forming tubular members from plastic or other stock, comprising introducing material into the formed tubular material and sealing or closing the ends of the tubular members, and continuously attaching the fitments to the tubular members.

**1 Claim, 9 Drawing Figures**

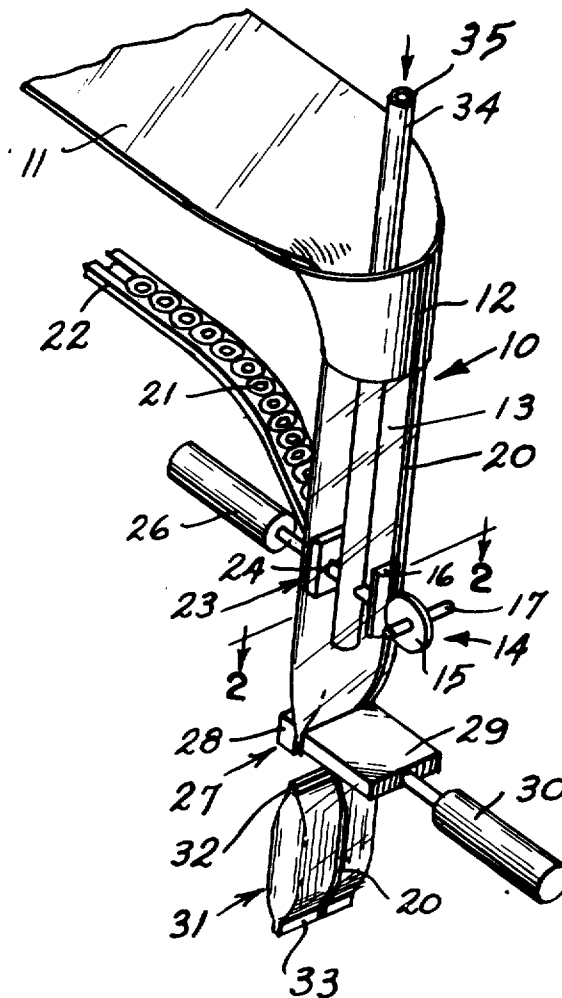


FIG. 1

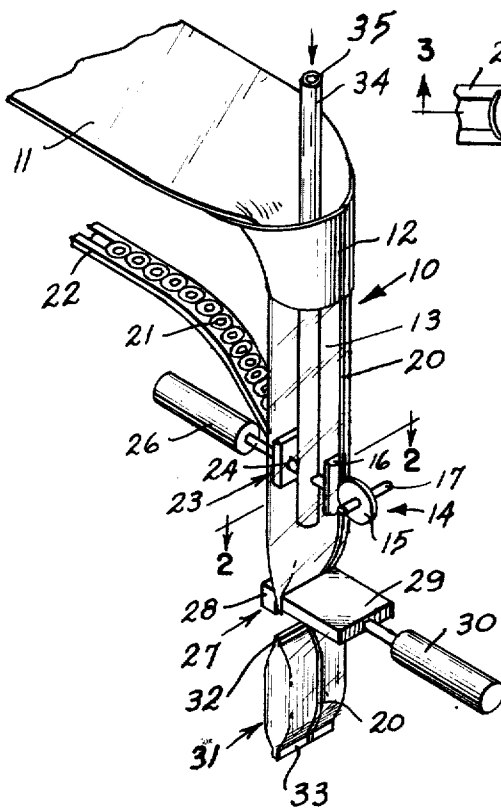


FIG. 2

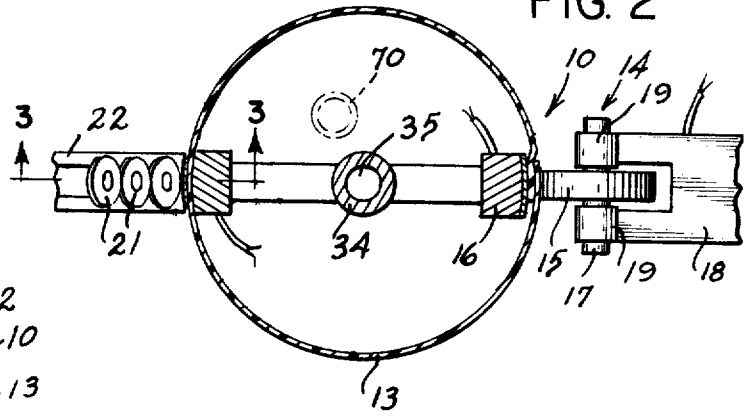


FIG. 3

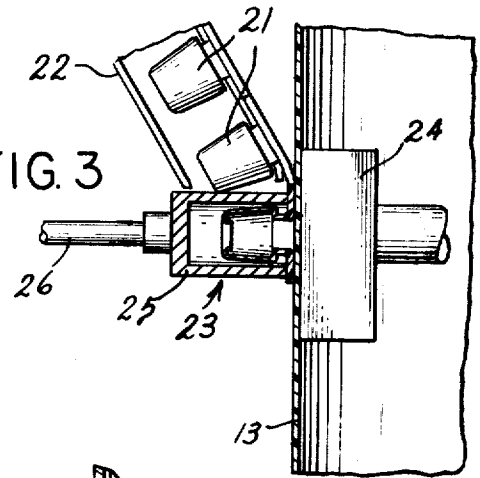


FIG. 5

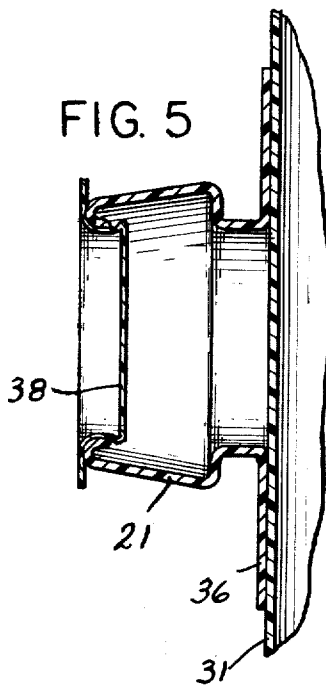
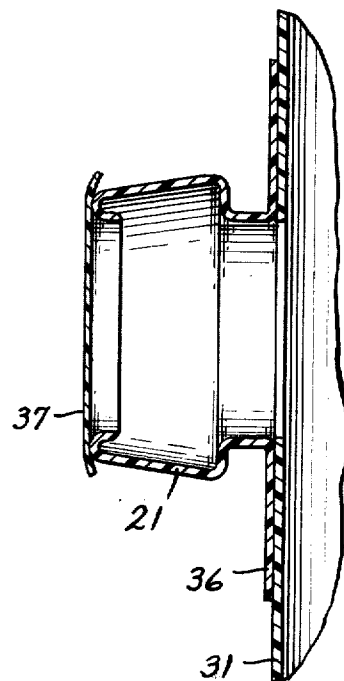
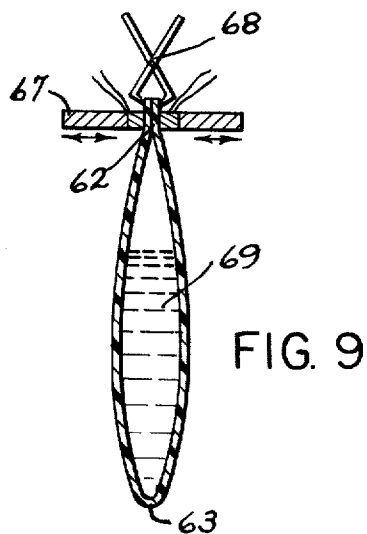
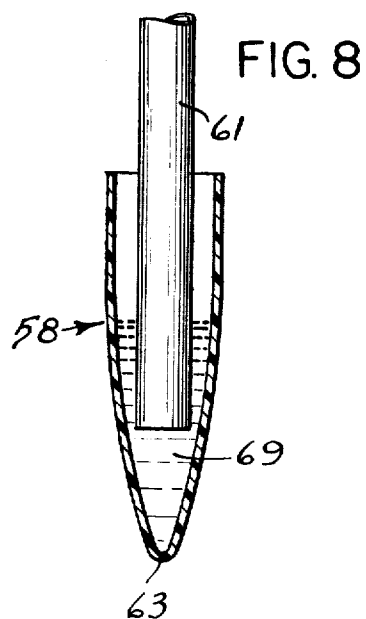
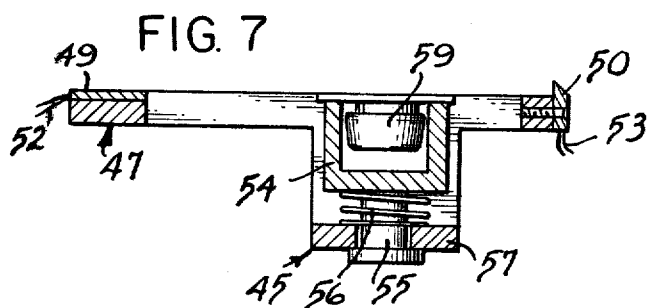
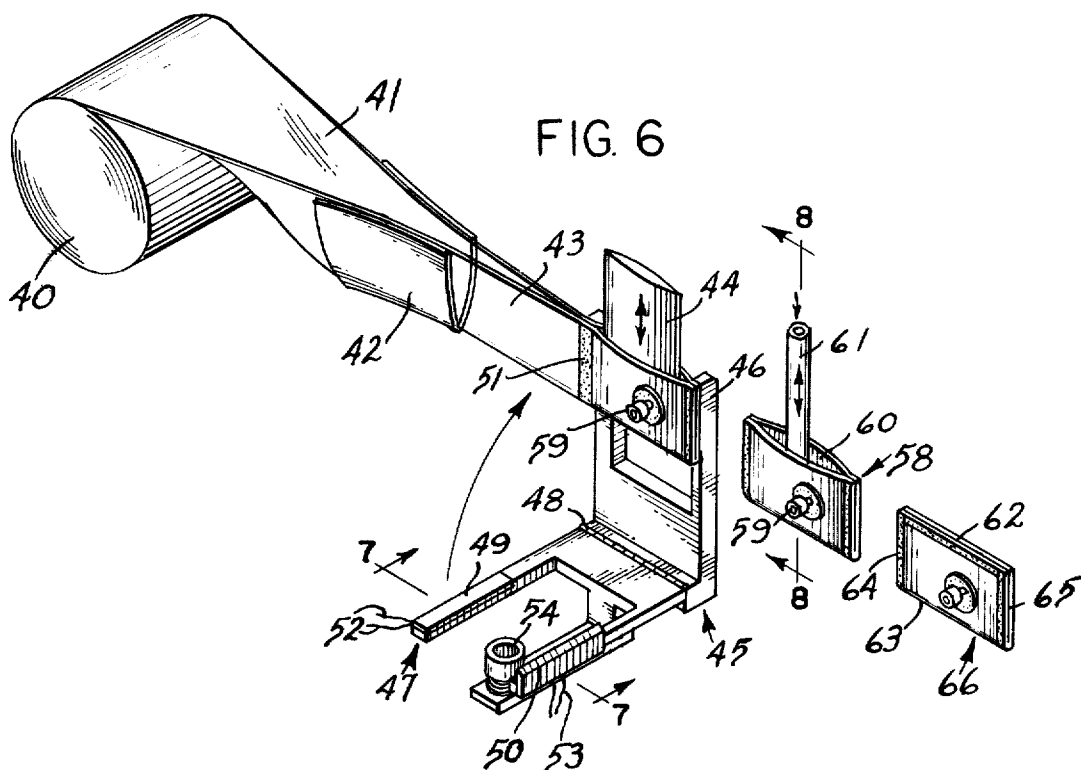


FIG. 4





# METHOD AND MEANS FOR ATTACHING FITMENTS TO A BAG OR POUCH ON A PACKAGING MACHINE

This invention relates to packaging machinery, and more particularly, to a method and means for attaching fitments to bags on such packaging machinery.

The object of the present invention is to provide a method and means for attaching fitments to bags or pouches of a packaging machine whereby the pouches or bags can be continuously formed from plastic stock or other material, and wherein a plurality of fitments are adapted to be supplied from a source of supply to the vicinity of the pouches, there being a means provided for filling the pouches or bags, and wherein there is provided a means for continuously sealing and cutting the ends of the tubular filled pouches so that the filled, formed units can be provided for any desired purpose.

Still another object is to provide such a method of and means for attaching fitments to a bag or pouch on a packaging machine wherein the present invention can be made as an attachment to be conveniently added to a conventional packaging machine such as a form fill machine.

A still further object is to provide a method and means for attaching fitments to a bag or pouch wherein either a horizontal pouch machine or a vertical bag or pillow pouch-type machine can be used, and wherein the fitment is sealed onto the pouch prior to filling the pouch, and wherein various options can be provided for, such as having a hole already prepunches just prior to sealing, and in addition, other types of fitments can be provided for, such as injection-molded types with a rip strip, and wherein different types of sealing energy sources can be provided.

Still another object of the present invention is to provide such a method and means of attaching fitments to pouches or bags on a packaging machine that is rugged in structure and foolproof in operation and which is efficient in use and economical in use or operation.

These and other objects of the invention will become apparent from a reading of the specification and claims, together with the accompanying drawing, wherein like parts are referred to and indicated by like reference characters and wherein:

FIG. 1 is a perspective view illustrating one form of the present invention in use.

FIG. 2 is an enlarged sectional view taken on the line 2—2 of FIG. 1.

FIG. 3 is an enlarged sectional view taken on the line 3—3 of FIG. 2.

FIG. 4 is an enlarged sectional view illustrating one of the fitments that has a heat seal closure across one end thereof.

FIG. 5 is a view similar to FIG. 4 but illustrating a snap-on closure for the fitment.

FIG. 6 is a perspective view illustrating schematically the forming and filling of pouches in a horizontal position.

FIG. 7 is an enlarged sectional view taken on the line 7—7 of FIG. 6.

FIG. 8 is an enlarged sectional view taken on the line 8—8 of FIG. 6.

FIG. 9 is an enlarged sectional view illustrating the final seal on the container or pouch.

Referring in detail to the drawings, and more particularly to FIGS. 1 through 5 of the drawings, the numeral 10 indicates the attachment of the present invention that is adapted to be mounted on or used in conjunction with a conventional packaging machine, and in FIG. 1 the numeral 11 indicates a continuous length of plastic material or other stock that is adapted to be supplied from a source of supply, and the plastic material 11 is initially shaped or formed into a tubular formation by means of a die or mold 12 so that a generally tubular member 13 is provided initially.

Next the tubular material 13 is passed into engagement with a sealing unit 14 that serves to automatically seal the seam along its longitudinal length as indicated by the numeral 20. The sealing unit 14 may have any desired construction or configuration and may consist of a rotary sealing unit 15 that coacts with an inner member 16, and the rotary sealing unit 15 may be supported on elements 19 by means of a shaft 17, there being a suitable supporting structure 18 provided for these parts as shown in FIG. 2.

As shown in FIG. 1 a plurality of fitments 21 are adapted to be supplied from a suitable source of supply, and the fitments 21 may be supplied to the proper location in any suitable manner as, for example, by means of a chute or conveyor 22. The fitments are supplied to the opposite side of the tubular member 13 from the seam 20.

In FIG. 3 there is illustrated a station or zone for suitably attaching the fitments 21 to the tubular member or pouch 13, and this attaching means is indicated by the numeral 23 and may consist of an inner anvil 24 as well as an outer sealing unit 25 that can be mounted on the end of a rod or plunger 26.

The numeral 27 indicates a sealing and cutting mechanism that includes an anvil-like member 28 as well as a heating unit or the like 29 that can be connected to a plunger or piston 30. The sealing and cutting unit 27 is adapted to provide sealed ends 32 and 33 on opposite ends of the completed pouches 31 that have the fitments 21 connected thereto.

Before the ends of the bags 31 are sealed as at 32 and 33, a conduit or pipe 34 is adapted to be used for introducing material into the interior of the tubular members 13, and the interior of the pipe 34 is hollow as indicated by the numeral 35 so that any suitable type of material can be supplied through the interior of the pipe 34 into the bags before the bags are sealed.

FIG. 4 illustrates a fitment 21 that has its flange 36 sealed to a portion of the pouch 31, and a closure 37 may be provided on the outer end of the fitment 21, and the closure 37 can be heat sealed across the end of the fitment.

FIG. 5 illustrates a fitment 21 having its flange 36 suitably secured to or fixed to the pouch 31, and in FIG. 5 the fitment 21 may have a snap-in closure 38 thereon instead of the heat sealed closure 37 shown in FIG. 4.

The fitments and pouches are adapted to be used for various purposes such as those enumerated on prior pending patent application Ser. No. 389,472, now U.S. Pat. No. 3,873,007.

From the foregoing, and with further regard to the arrangement shown in FIGS. 1 through 5, it will be seen that there has been provided a method of and means for attaching fitments to bags or pouches on a packaging machine, and in use with the parts arranged as shown

in FIGS. 1, 2 and 3, and with the attachment 10 of the present invention suitably mounted on a desired type of packaging machine, the plastic stock 11 can be supplied from a suitable source of supply, and this stock 11 is adapted to initially pass through a forming die 12 so as to form a tube-like member 13. Next, a sealing unit such as the rotary sealing unit 14 is adapted to automatically seal the seam as at 20 along its longitudinal length. On the opposite side of the seal from the seam 20 there is applied the plurality of fitments 21 by any suitable manner such as by means of a chute 22, and the fitments 21 are automatically affixed to the member 31, as for example, by means of the unit 23. At the same time, a predetermined quantity of material is supplied to the interior of the tubular member by means of the pipe 34. Next, the filled tubular member passes into engagement with the cutting and sealing unit 27 whereby the desired lengths of tubular material are automatically cut off and the ends are sealed as at 32 and 33 so that there is provided in a continuous fashion the filled sealed pouches or bags 31 having the fitments 21 affixed thereto. These completed filled pouches or bags 31 with the fitment attached thereto can be supplied to any desired location.

As shown in FIG. 4, the fitments 21 may have a closure 27 heat sealed across one end. Or, as shown in FIG. 5, the fitments 21 may have a snap-on closure 38 thereon instead of the heat sealed closure 37.

It is to be understood that the arts can be made of any suitable material and in different shapes or sizes as desired or required.

The present invention is thus a method of adding an attachment to any kind of packaging machine such as a film form machine. The parts may be sterilizable so that, for example, when filling the pouches with blood-type products or any other medicinal material, the necessary sterile environment can be maintained. By providing such a method and means, prefilled pouches can be automatically and continuously made at a very low cost and at a high rate of production. It is to be understood that the pouches with the fitments attached thereto can be filled with any type of material such as foodstuffs, viscous materials or any other material of a suitable composition.

It will be seen that in the present invention a continuous length of plastic or other material is passed through a forming die 12 to form a tube 13, and then the seam is sealed as at 14 to provide the closed portion 20.

The fitments 21 are automatically attached to the tube as at 23, and at the same time the material to be introduced into the pouches or bags is introduced as at 34. Finally, the filled formed pouches or bags are cut and sealed as at 27 to provide the completed pouches 31 having the fitments 21 attached thereto. The completed filled pouches 31 can be automatically and continuously conveyed or loaded into receptacles or positioned at a desired location. Primarily the present invention is a method and means of attaching fitments to bags or pouches wherein a unit such as the unit 10 of the present invention can be mounted on or used with a conventional packaging machine such as a form fill packaging machine.

Referring now to FIGS. 6 through 9 of the drawings, there is illustrated a modified or alternative form of the invention wherein the numeral 40 indicates a roll of material such as flexible plastic stock, and the web or portion 41 of material from the roll 40 is adapted to be

initially moved into engagement with a folding die 42 so that a U-shaped forward web portion 43 is provided. The numeral 44 indicates a brace or support member that is arranged as shown in the drawings, and the numeral 45 indicates a station or unit that includes a stationary member 46 as well as a movable section 47 that may be hingedly connected in place as at 48. The numeral 49 indicates a heater that is mounted on a portion of the element 47 for forming a seal 51 in the material 43, and the numeral 50 indicates a knife or blade that is carried by the portion 47 for severing the material so that a hollow member 58 is provided, FIG. 6. The heater 49 may be connected to a suitable source of electrical energy as at 52, and the knife 50 may also be electrically actuated due to the provision of wires or conductors 53.

The numeral 54 indicates a carrier for fitments 59 that are to be sealed in place to the members 58, and the carrier 54 is spring-loaded or mounted on a support piece 55 by means of a spring member 56, and the support piece 55 may be mounted on the portion 57 of the member 47.

As shown in FIG. 6, the members 58 are adapted to have an open top portion as indicated by the numeral 60 whereby a tube 61 can be used for filling the member 58 with the desired material. After the members 58 have been filled with material through the tube 61, the tops of the pouch can be closed as at 62 so that there is provided a form fill pouch 66 that has a bottom folded or closed as at 63 as well as the closed top 62, and the sealed ends 64 and 65.

FIG. 9 illustrates a sealing member 67 that can be used for sealing the top portion 62, and the numeral 68 indicates a clamp arrangement that can be used for holding the top of the pouch so that the sealing can take place by means of the member or mechanism 67.

In FIG. 8 the numeral 69 indicates the material that is placed in the pouch, and this may be any suitable or desired type of material.

From the foregoing, and with particular reference to the arrangement shown in FIGS. 6 through 9, it will be seen that the material 41 can be fed from a source of supply such as the roll 40 and initially the material is folded by means of the element or die 42 so that it has a U-shaped 43. Then, the member 45 can be used for simultaneously sealing the end as at 51 by means of the heater 49 which can be moved into and out of engagement with the material by any suitable mechanism, then at the same time the blade 50 can cut off the end of the material as shown in the drawings. The fitments 59 are introduced into the cup or carrier 54 so that as the member 47 moves towards the member 46, the fitments 59 will be carried into engagement with the material and suitably sealed to the stock or material, whereby a unit such as the unit 58 can be formed. It is to be understood that a plurality of the units 58 are adapted to be formed at a high speed and with minimum cost.

With the units 58 in the position of FIG. 6, the material such as the material 69 can be introduced into the upper open end 60 by means of the tube 61, and subsequently and finally, the top 62 can be sealed in any suitable manner as, for example, as shown in FIG. 9, so that a filled pouch 66 is provided which has the fitment 59 connected thereto.

FIG. 1 illustrates an application wherein a pouch is produced on a vertical bag or pillow pouch-type ma-

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chine, while FIG. 6 illustrates a horizontal pouch machine. The machine may be such that two webs or a single web folded into a U-shape are brought vertically in a horizontal travel through sealing, filling and final sealing. The seal is of course such that a fitment is sealed on prior to filling the pouch.

Relative to FIGS. 4 and 5, the hole may be prepunched just prior to sealing. This relates to the film that is stretched across the opening through the fitment. Also, other types of fitments such as injection molded types with the rip strip, can be used.

The sealing energy source may be provided on either or both sides of the fitment and film. The feeder arrangements can be from other positions than vertical.

FIG. 1 may have a tubular member 70 or mandril 70 to seal against the sealers so that the force can be transmitted through the cross piece that is shown. This cross piece can also be a tube inside the film as indicated by the numeral 70, but outside the filler tube 34.

The pouches can be filled with any suitable material such as food products, hardware, medicines, tobacco products or the like. It is to be understood that the attachments of the present invention can be used on any suitable type of packaging machine.

As shown in the drawings, the carrier 54 for the fitment 59 is adapted to the spring loaded as at 56 so that sufficient resiliency is provided when the fitment is being attached to the pouch. The blade may be of the heated type or a scissors type of blade can be used, and the blade is adapted to form a cut through the middle of the sealed portion 51. The station or unit 45 is adapted to accomplish several purposes, namely, it seals the web together as at 51, and it seals the fitment 59 to the pouch, and, in addition, it cuts the previously formed envelope or pouch from the web.

While a preferred embodiment in accordance with the present invention has been illustrated and described, it is to be understood that various modifications may be resorted to without departing from the spirit and scope of the appended claims.

We claim:

1. Apparatus for forming, filling and sealing a pouch and simultaneously attaching a dispensing fitment

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thereto comprising a substantially flat strip of heat sealable material of indefinite length, die means for forming a portion of said strip into a hollow tubular member with overlapping edges, filling tube means extending through said die member and having a discharge end located within said tubular member, means for sealing said overlapping edges including a base mounted on said filling tube means adjacent to said discharge, said base being disposed within said tubular member, a rotary sealing unit located exteriorly of said tubular member in a position to cooperate with said base, the overlapping edges of said tubular member passing between said base and said rotary sealing unit so that said overlapping edges are sealed together, first anvil means mounted on said filling tube means diametrically opposite said base and having a surface engaging the inner periphery of said tubular member, means for feeding a hollow fitment means having a heat sealable flange at one end into engagement with said tubular member opposite said first anvil means, an outer heat sealing unit located exteriorly of said tubular member and opposite to said first anvil means, means for moving said outer sealing unit into intimate engagement with the flange of said fitment to urge said flange into sealing engagement with said tubular member against said first anvil means, a cutting and sealing unit located in spaced relationship to the discharge end of said filling tube means, said cutting and sealing unit including a second anvil means on one side of said tubular member and a heating means on the opposite side thereof, means for moving said heating means against said tubular member and said second anvil means to seal the end of said tubular member, said cutting and sealing unit simultaneously sealing the upper end of a completed pouch and the lower end of said tubular member and cutting the pouch from said tubular member, and fluent material being discharged through said filling tube means into said tubular member after the lower end of said member is welded, whereby said strip of heat sealable material is formed into a pouch having fluent material therein and a dispensing fitment mounted thereon.

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