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RESILIENT STRIP MOUNTING FOR PLASTIC BAG FABRICATOR

Filed April 23, 1971

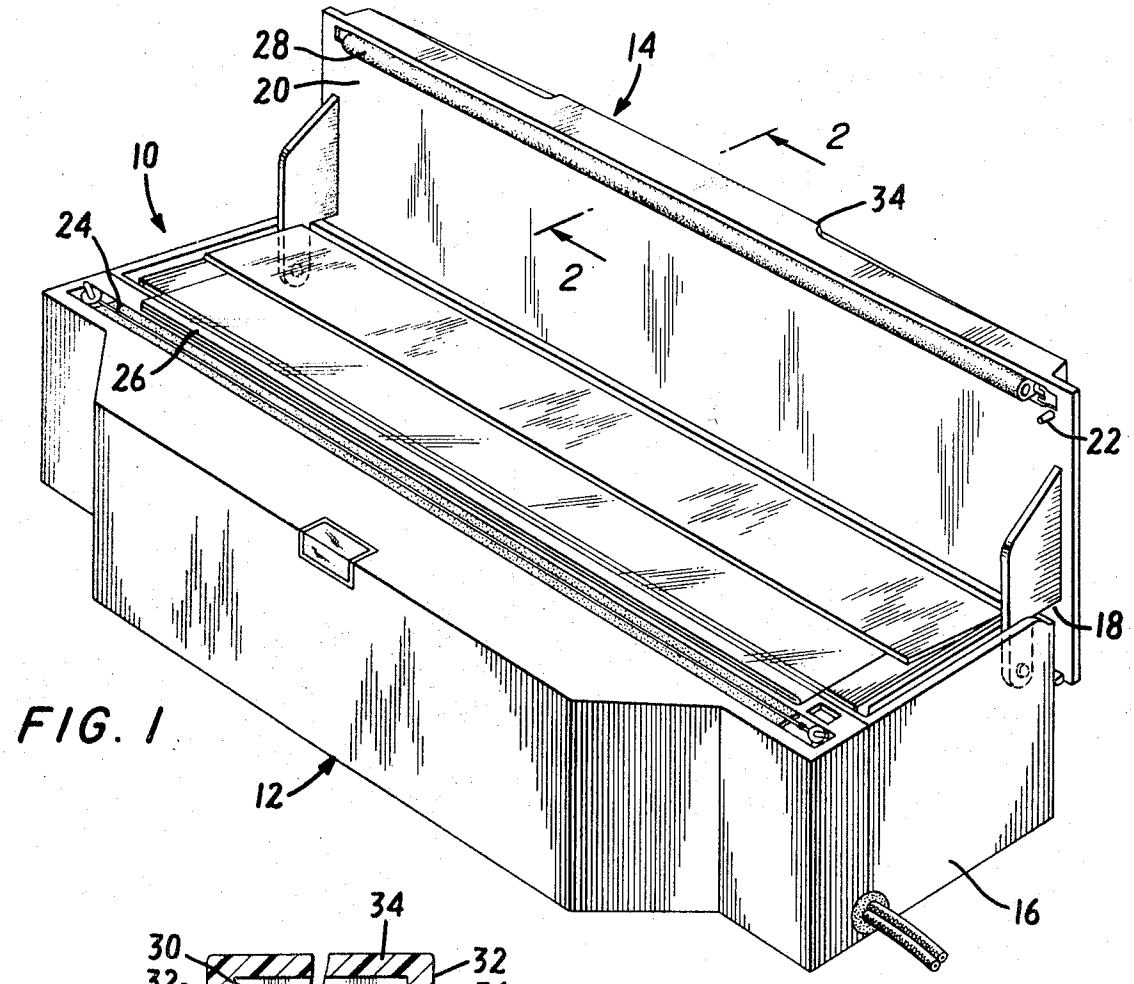


FIG. 1

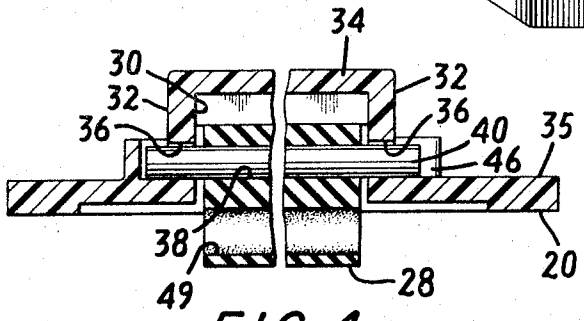


FIG. 4

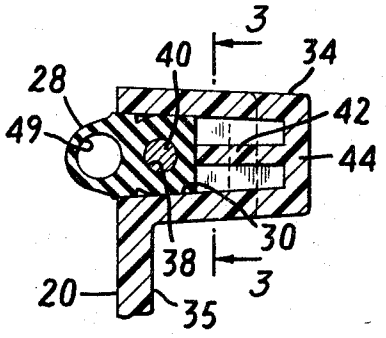


FIG. 2

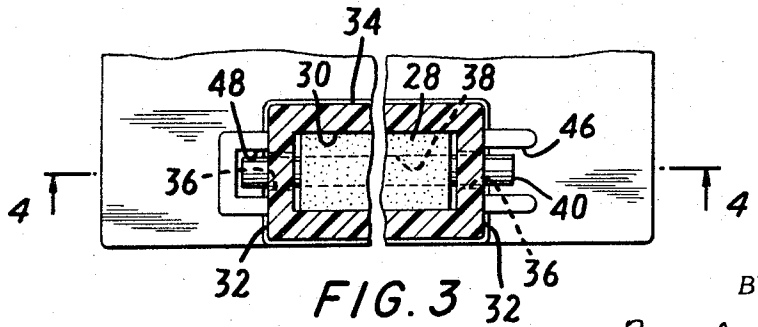


FIG. 3

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RESILIENT STRIP MOUNTING FOR PLASTIC BAG FABRICATOR

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ABSTRACT OF THE DISCLOSURE

A plastic bag fabricating, dispensing and sealing unit includes a lid having mounted on it a strip of resilient, nonadherent heat resistant material that engages a heating wire of the unit when the lid is closed, the strip being axially received in a groove that extends along the inner face of the lid. Openings formed at each end of the groove receive a rod that extends through the strip and secures it to the lid. An aperture that extends through the strip parallel to the rod provides the strip with the necessary resiliency.

BACKGROUND OF THE INVENTION

This invention relates generally to plastic bag fabricating, dispensing and sealing units and, more specifically, to the lid of such a unit which mounts a strip of resilient, heat resistant material to engage the heating wire of the unit when the lid is closed.

A safe yet easily workable portable unit for making and sealing plastic bags of different sizes has been found to be a useful item. Such a unit, which operates by thermally sealing plastic sheeting, is shown and described in my application for U.S. Letters Patent Ser. No. 82,621, filed Oct. 21, 1970. In the unit described in that application, the lid is formed with a groove that extends along the entire length of the edge of the lid. A strip of resilient, heat resistant material is shown affixed in the groove by a suitable adhesive and cooperates with the heating wire.

Difficulties have been encountered with the resilient strip. Since it must urge polyethylene sheeting against the heating wire, the strip must not adhere to molten polyethylene and it also must be resistant to the high temperatures of the wire. Materials having these characteristics have been difficult to affix by adhesives to the lid. Thus, the property of not adhering to the molten polyethylene also causes the materials to resist most adhesives.

Moreover, strips that may be adhered by adhesive to the lid do not withstand long usage and must be replaced, a difficult and time-consuming operation when it involves removing the old strip, scraping the particles of the strip from the groove and glueing in a new strip. It would be preferable to provide a substantially permanent resilient strip readily installed at the factory and yet easily removed and re-installed by a housewife if the strip inadvertently becomes damaged.

Moreover, the strip shown and described in my application Ser. No. 82,621 does not have as much resiliency and durability as desired for effective long-term operation of the unit. The unit is designed to accommodate a cartridge containing a web of double-layered plastic film in the unit, the cartridge when in place closing a safety actuator switch. The unit can be stored without energizing the heating wire even though the resilient strip engages the wire when the lid is closed. This is accomplished by disposing a contact arm on the lid that does not close a sealing switch unless pressure is exerted on the lid for urging the contact arm against a sealing plunger.

The strip, then, must be stiff enough so that it can

rest on the wire without activating the electric circuit and energizing the wire, even if brushed against, but resilient enough so that when light pressure is exerted on the lid, it will move far enough toward the wire to enable the contact arm to close the sealing switch and heat the wire. The strip, as shown and described in my application mentioned above, has not been wholly adequate for these purposes.

SUMMARY OF THE INVENTION

There is provided, in accordance with the invention, a lid for a plastic bag fabricator which has a strip of heat resistant material mounted along one edge to cooperate with the heating wire of the unit, the strip being mounted in such a way that it remains permanently in position and yet can be easily and quickly replaced. The strip also has sufficient resiliency to enable safe storage and effective operation of the unit.

More specifically, the strip is mounted in a groove that extends along the inner face of the lid near the front edge, which is the portion of the lid that cooperates with the heating wire, so that when the lid is closed the strip engages the wire.

The groove is closed by walls at each end and is preferably formed as the inner portion of a handle or gripper that projects from the outer face of the lid. The walls at the ends of the groove each have an opening that preferably is disposed above the outer surface of the lid. The openings coincide with a passage extending axially through the strip of heat resistant material. The strip is received within the groove, so that a rod can be passed through the openings from the outer side of the lid and extend through the strip and walls at each end of the groove for holding the strip in place. A guide channel provided adjacent the outer side of one wall and a retaining channel adjacent the outer side of the other wall facilitates insertion of the rod and holds it in proper position.

It is apparent that the resilient strip can readily be installed on the lid in the factory and ordinarily such installation will be permanent. The strip is formed, for example, of a silicone rubber highly resistant to heat and also having the property of not adhering to molten polyethylene. Nevertheless, if it is necessary to replace a damaged strip, a housewife can readily remove the rod, take the old strip out of the groove, and then readily install a new strip.

The strip is shaped so that when it is received axially within the groove, a portion along one side projects from the inner face of the lid and engages the heating wire when the lid is closed. When the strip is not compressed and resting on the wire, the contact arm attached to the inner face is out of engagement with the plunger of the sealing switch. So that the strip is stig enough not to cause closure of the sealing switch and still resilient enough so that light pressure exerted on the lid will move the contact arm far enough to close the switch, the strip preferably has a second passage extending axially through it between the first hole and the side that engages the wire. The strip is formed with a sufficient amount of resilient material between the passage and the wire so that the strip will deform or flatten and enable the lid and the contact arm to move far enough to activate the circuit and energize the wire when light pressure is exerted on the lid.

Thus, there is provided in accordance with the invention a lid for a plastic bag fabricating, dispensing and sealing unit carrying an easily mounted resilient, non-adherent and heat resistant strip. Moreover, the strip can be readily and quickly installed at the factory and, if necessary later, easily removed and replaced. The strip is specially designed to be resilient and yet stiff enough so that the unit can be safely stored while ready for use, and plastic bags

can easily be formed by simply applying light pressure on the lid.

DESCRIPTION OF THE DRAWINGS

For a better understanding of the invention, reference may be had to the following detailed description of an exemplary embodiment, taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of a plastic bag fabricating, dispensing and sealing unit showing in particular the lid in its open position and having the strip of resilient, heat resistant material mounted along its inner face near the front edge so that the strip will engage the heating wire when the lid is closed;

FIG. 2 is a sectional view of the front portion of the lid, taken along line 2—2 in FIG. 1, showing the groove as being the inner portion of the handle or gripper of the lid, with the strip mounted in the groove;

FIG. 3 is a sectional view of the gripper looking toward the outer face of the portion of the lid shown in FIG. 2, taken along line 3—3 in FIG. 2, the center portion being broken away to avoid repetition, the rod being shown as projecting from and engaging the walls that form the ends of the groove;

FIG. 4 is a sectional view of the gripper and the strip, taken along line 4—4 in FIG. 3, the center portion being broken away to avoid reception, showing in particular the rod that holds the strip in place and the passage through the strip that provides it with the necessary resiliency.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Now, referring to FIG. 1, a plastic bag fabricating, dispensing and sealing unit is shown, being indicated generally by reference numeral **10**, which operates essentially as described in my application for U.S. Letters Patent Ser. No. 82,621. The unit **10** comprises a main housing **12** and a lid **14** which is hinged to the side panels **16** of the housing **12**. The lid **14** is hinged in a way that a slot **18** is formed between the inner face **20** of the lid **14** and the back panel of the housing **12** so that plastic bags can be passed through the slot **18** and sealed by the unit **10**.

The housing **12** contains an electric circuit (not shown) that is activated when the lid **14** is closed far enough so that the actuator or contact arm **22**, which projects from the inner face **20** of the lid **14**, engages and closes a sealing switch (not shown) which is part of the circuit. This energizes and heats the wire **24**. When pressure is exerted on the lid **14**, plastic bags can be formed from the double-layered web of plastic film contained in the housing **12**, the leading edge of which is shown in FIG. 1 and designated by reference numeral **26**. Plastic bags, even those not fabricated by the unit **10**, can also be sealed shut by placing the open edge adjacent the wire **24** annd closing the lid **14** far enough to activate the circuit, as descirbed above.

The unit **10** operates on the so-called impulse method of sealing where heat and pressure are applied simultaneously to melt and thereby seal an edge of the double-layered plastic film and, at the same time, to sever the portions of the web disposed on either side of the heating wire **24**. The most satisfactory arrangement for accomplishing these results has been found to have the heating wire **24** extend along the upper front edge of the main housing **12** of the unit **10**, a strip of heat resistant material being interposed between the housing **12** and the wire **24**.

The lid **14** is designed and attached in such a way that the needed pressure for fabricating the bags can be easily applied. For preventing melted plastic from sticking to the lid **14** and to provide an easily workable and safe way for simultaneously heating the wire and applying the necessary pressure, a strip of resilient, nonadherent and heat resistant material **28** is mounted along the inner face **20** of the lid **14** near the front edge so that when the lid **14** is closed, the strip **28** engages the wire **24**.

As best shown in FIGS. 2 and 4, the strip **28** is received in a groove **30** which opens onto the inner face **20** of the lid **14** and extends along it near the front edge. As shown in this preferred embodiment of the invention, the groove **30** does not extend along the entire length of the lid **14** but it terminated by walls **32**, the groove **30** forming the inner portion of a handle or gripper **34** which projects from the outer face **35** of the lid **14**. The ends of the gripper **34**, which are disposed above the outer face **35** of the lid **14**, are shown as forming the end walls **32** of the groove **30**.

As best shown in FIGS. 3 and 4, each of the walls **32** has an opening **36** passing through it, which coincides with a passage **38** that extends through the strip **28** (see FIG. 2), so that a rod **40** can be inserted through the openings **36** and **38** to engage the strip **28** and the walls **32** for holding the strip **28** in place on the lid **14**. The groove **30** can have a rib **42** projecting along its back wall **44**, which abuts the strip **28** (see FIG. 2), so that the gripper **34** is sufficiently large to be easily grasped but without having to use additional material in forming the gripper **34** or the strip **28**.

Additionally, as shown in FIGS. 3 and 4, an open guide channel **46** and a closed retaining channel **48** are formed on the outer face **35** of the lid **14** adjacent the openings **36** in the walls **32**. These channels **46** and **48** facilitate insertion of the rod **40** into the openings **36** and **38**, permitting it to be passed through the openings the proper distance so that the rod **40** can be easily inserted for securely holding the strip **28** is place.

By mounting the strip **28** on the lid **14** as described above, its installation and replacement are quick and simple operations. To install the strip **28**, all one need do is insert the rod **40** through openings **36** and the strip passage **38**. To remove the strip, the procedure is merely reversed.

The strip **28** is formed of a resilient and nonadherent material such as, for example, a silicone rubber which is resistant to heat at temperatures used to form the plastic bags and to which the plastic used to form the bags does not adhere when melted. This latter property has prevented secure fastening of the strip in the channel by an adhesive. The strip **28** must be stiff enough to engage and rest on the wire **24** when the lid **14** is closed (such as when the unit **10** is not in use) without the contact arm **22** moving sufficiently to close the sealing switch and energize the wire **24**. However, the strip **28** must be resilient enough so that when light pressure is applied to the lid **14** (by pushing down on the gripper **34**), the front edge of the lid **14** and the contact arm **22** will move far enough to close the sealing switch so that a plastic bag can be formed or sealed.

To provide the strip **28** with the necessary resiliency, a second passage **49** is formed in the strip **28**, which extends through it between the passage **38** and the outer side of the strip **28** that engages the wire **24** when the lid **14** is closed. As best shown in FIGS. 2 and 4, the outer side of the strip **28** is rounded to conform to the shape of the passage **49** and there is sufficient material between the passage **49** and the wire **24** so that the strip **28** has the optimum resiliency to operate the unit **10**.

By providing the passage **49** in the strip **28**, when the strip **28** is engaging the wire **24** and pressure is applied to the lid **14**, the portion of the strip **28** through which the passage **49** passes will deform or flatten, thereby causing the contact arm **22** to move a sufficient distance to close the sealing switch and heat the wire **24**. When the pressure is released, the strip **28** will reassume the shape shown in FIGS. 3 and 4, de-activating the electric circuit.

Thus, there is provided in accordance with the invention a mounting for a resilient, heat resistant strip on the lid of a plastic bag fabricating, dispensing and sealing

unit. The embodiment of the invention as described above is intended to be merely exemplary, and those skilled in the art will be able to make variations and modifications, without departing from the spirit and scope of the invention as set forth in the appended claims, and those variations and modifications are intended to be within the scope of the appended claims.

I claim:

1. In a plastic bag fabricator of the type that has a main housing, a heating wire extending along a portion of the housing, the wire being connected to an electric circuit contained in the housing, the circuit including a normally open switch, a lid hinged on the housing, a strip of resilient, heat resistant material attached to the inner face of the lid and positioned so that when the lid is closed, the strip engages the wire, and the lid further including an actuator projecting therefrom and cooperating with the switch so that when the lid is closed a predetermined distance the actuator closes the switch thereby energizing the wire, the improvement comprising a pair of rod retaining means spaced apart on the lid, each of the retaining means including an opening, the strip being positioned on the lid between the retaining means and having a first passage extending axially therethrough coinciding with the openings in the retaining means, and a rod passing through the openings and the passage and engaging the retaining means for securing the strip to the lid.

2. The improvement according to claim 1, in which the strip is formed of a heat resistant silicone rubber that is non-adherent to molten polyethylene.

3. The improvement according to claim 1, further comprising a groove extending along the inner face of the lid, a gripper projecting from the outer face of the lid, the groove forming the inner portion of the gripper, the retaining means at least partially forming the ends of the gripper and projecting above the outer face of the lid so that the openings therein are above the outer face, and the strip being received in the groove and dimensioned so that a portion projects from the inner face of the lid for engaging the heating wire when the lid is closed.

4. The improvement according to claim 3, in which one of the retaining means includes means forming an open guide channel for the rod on the outer face of the lid, and the other retaining means includes means forming a closed retaining channel for the rod on the outer face of the lid.

5. The improvement according to claim 1, wherein the strip further includes a second passage extending therethrough between the first passage and the side of the strip that engages the heating wire when the lid is closed, the strip being stiff enough so that when the lid is closed the strip will rest on the heating wire without moving far enough to enable the actuator to close the switch, and the strip being resilient enough so that when light pressure is applied to the lid the actuator will move to close the switch for energizing the heating wire.

6. The improvement according to claim 5, in which the strip is formed of a heat resistant silicone rubber that is non-adherent to molten polyethylene.

7. In a plastic bag fabricator of the type that has a main housing, a heating wire extending along a portion of the housing, the wire being connected to an electric circuit contained in the housing, the circuit including a normally open switch, a lid hinged on the housing, a strip of resilient, heat resistant material attached to the inner face of the lid and positioned so that when the lid is closed, the strip engages the wire, and the lid further including an actuator projecting therefrom and cooperating with the switch so that when the lid is closed a predetermined distance the actuator closes the switch thereby energizing the wire, the improvement comprising a groove extending along the inner face of the lid, a gripper projecting from the outer face of the lid, the groove forming the inner portion of the gripper, each of the ends of the groove projecting above the outer face of the lid and having an opening therein that is disposed above the outer face of the lid, the strip having a first passage extending therethrough coinciding with the openings in the ends of the groove when the strip is received in the groove, a rod passing through all of the openings in the passage and engaging the ends of the groove and the strip for securing the strip to the lid, a portion of the strip projecting from the inner face of the lid for engaging the heating wire when the lid is closed when the strip is so secured, and the strip further including a second passage extending therethrough between the first passage and the side of the strip that engages the heating wire when the lid is closed, the portion of the strip projecting from the inner face of the lid being stiff enough so that when the lid is closed the strip will rest on the heating wire without moving far enough to enable the actuator to close the sealing switch, and the strip being resilient enough so that when light pressure is applied to the lid the actuator will move far enough to close the switch for energizing the heating wire.

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