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(54) PLASTICS CONTAINERS AND METHOD OF SEALING THEM

(71) We, IMPERIAL CHEMICAL INDUSTRIES LIMITED, of Imperial Chemical House, Millbank, London, S.W.1., a British Company, do hereby the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a method and apparatus for producing a package comprising a sealed flexible plastics container with contents including a gas at superatmospheric pressure.

The invention relates particularly to the filling and sealing of flexible plastics containers containing liquids under pressure, including liquids containing dissolved gases, such as beer and carbonated soft drinks, and liquids which are packed under pressure of a gas that is not soluble in the liquid, to give substantially rigid packs. It may be applied also to the packaging of solid articles, the pack being pressurised to make it rigid, usually for the purpose of protecting the contents or to improve the sale appeal of the pack, and to the packaging of particulate solids. The invention includes the filling of the container with gas alone under superatmospheric pressure.

In accordance with the present invention, a method of producing a package comprising a sealed flexible plastics container, with contents including a gas at superatmospheric pressure, comprises: locating an aperture in the wall of the closed container (as hereinafter defined) over an orifice (as hereinafter defined) in a substantially smooth surface, said orifice being connected to a source of a gas at superatmospheric pressure; inflating the container by the introduction of said gas while the container wall surrounding said aperture is held substantially in gas-tight contact with said surface; and, while said container is still fully inflated (as hereinafter

defined) and in gas-tight contact with said surface, sliding it along relative to said surface to bring that portion of the wall of the container which surrounds said aperture into contact with a supported flexible sealing strip held in substantially continuous relationship to said surface; and sealing the sealing strip to the wall of the container around said aperture, by applying heat if necessary.

In the term "over an orifice" we include any case where the container is located so that the aperture covers the orifice, irrespective of whether the surface containing the orifice is generally located above, beneath or beside the container. By the expression "closed container" we mean that the container is gas-tight, in respect of the pressure of gas to be reached within the container, except at the aperture provided for pressurising the container and at any further aperture in the wall of the container that may be held in gas-tight contact with a surface and sealed in similar manner to the aperture described. By the term "fully inflated" we mean that the pressure inside the container is at least sufficient to enable the container wall to be pneumatically held in substantially gas-tight contact with the surface.

When the container is to be filled with a liquid or particulate solid, this is preferably introduced through the aperture after the container has been inflated with gas. It may be introduced through the same orifice as the gas, or through a closely adjacent second orifice that is also covered by the aperture in the container, or through a second orifice spaced from the first orifice, to which the inflated container may be slid after it has been pressurised at the first orifice. When the package is to contain a solid article or articles, these are put into the container before it is closed, and the container is subsequently pressurised and sealed in the manner described.

The method of the invention is used with

particular advantage in the packaging of beer and carbonated soft drinks in flexible plastics containers.

The present invention further provides apparatus for performing a method as described, that includes a smooth surface having therein an orifice; means for supplying a sealing strip in such a manner that it may be drawn from its source of supply along a path on said surface, or on a second surface substantially continuous therewith, and in line with the orifice; means for supplying through the orifice a gas for inflating to superatmospheric pressure a plastics film container presented to said surface with an aperture in its wall located over said orifice; means for holding the container sufficiently under compression against said surface or surfaces to maintain a seal around said aperture, while it is slid along said surface or surfaces to bring said aperture into the path of said sealing strip and until the sealing strip covers and surrounds the aperture; and, if necessary, means for heat sealing the sealing strip around the aperture.

The invention will now be more particularly described by way of example with reference to the drawings accompanying the provisional specification of Application No. 9849/68, of which:

Figure 1 is a diagrammatic elevation, seen from one side and partly in section, of a filling and sealing apparatus; and

Figure 2 is a view of a section through X, X' of Figure 1, seen from the direction A.

The apparatus is shown for convenience in the vertical position, but in operation it is located with surfaces 2 and 9 at an angle to the vertical, preferably approaching the horizontal, and in downwardly facing position.

In Figure 1: 1 is a brass block provided with a smooth, flat front surface, 2, in which are a first orifice, 3, through which passes a retractable probe, 4, which is connected to a reservoir of beer stored under pressure of carbon dioxide, and a second orifice, 5, connected to the carbon dioxide filled space above the beer in the reservoir. The beer reservoir is located at a higher level than the orifice, 3, to provide a gravitational head. The orifices 3 and 5 are close together. The lines to orifices 3 and 5 are provided with valves, 6 and 7 respectively. Below the brass block 1 is shown an impulse heat sealing unit, the body 8 of which consists of an electrically insulating and heat resistant material, suitably of a hard, bonded asbestos block. The heat sealing unit has a smooth, flat front face, 9, contiguous with the front surface, 2, of the brass block, except for a 0.005 in. gap provided to allow a continuous length of heat sealable tape, 10, to be fed between the brass block 1 and the heat

sealing unit 8, to pass down the face of the latter. 11 is the heating element, suitably of 0.0005 inch thick stainless steel strip, connected at one end to a transformer at terminal, 12, passing over and down the front face of the heat sealer 8, and having its other end in close contact with a 1/8 inch thick brass strip, 13, which is connected to the other terminal of the transformer and held between the heat sealer 8 and a supporting block, 14. The latter is also made of electrically insulating material. The front face of the brass strip 13 is level both with the front face 9 of the heat sealing unit and with the front face of the supporting block 14. A strip of glasscloth (not shown) impregnated with polytetrafluoroethylene covers the outer surface of the heat sealing element, to provide a non-stick surface.

A plate 15 is provided, which may be formed of transparent material such as polymethyl methacrylate, and which is mounted in a support so as to be slidable in a plane parallel with the front faces of the brass block 1 and heat sealer 8. The assembly comprising the brass block 1, heat sealer, 8, and supporting block, 14, is also slidably mounted on four rods (not shown) connected to the support (not shown) for the plate 15, so that the assembly is adapted for relative motion towards and away from the plate 15. A stop is provided to limit the gap between the plate 15 and the front face, 2, of the block 1.

At 16 is shown a fully inflated plastics film container located in the apparatus. This container is formed from a length of oriented, tubular plastics film, provided with gas tight seals at each end and with a pressurising and filling aperture which, when the container is in the pressurising and filling position, is located over the two orifices 3, 5. For clarity of illustration this aperture is shown at 17, but the gap between the plate 15 and the faces of the brass block 1 and heat sealing unit 8 is adjusted so that, when the container is fully inflated, the surface of the container surrounding the aperture is pressed flat against the surface of the brass block 1 by the gas pressure.

In Figure 2 are shown: the front face, 2, of the brass plate 1; the orifices 3 and 5, the gap, 18, through which the sealing tape, 10 is fed; the position of the heating element, 11, beneath the PTFE-impregnated glasscloth covering the front face, 9, of the heat sealing unit; the front edge of the brass strip, 13; and the front face of the supporting block 14.

In operation, the empty, flat container is placed between the sliding plate 15 and the surfaces 2 and 9 of the uppermost part of the apparatus with its longitudinal axis parallel to that of the apparatus, and located so that the aperture 17 is opposite the two orifices, 3

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and 5, use being made, as required, of the sliding movement of plate 15, to locate the aperture. The uppermost part of the apparatus is then allowed to return under gravity to its position against plate 15, with the container held between itself and the plate. The valve 7 is then opened, and the container is inflated and pressurised with the carbon dioxide, causing the plate 15 and the surfaces 2 and 9 to separate to the stop position. The stop will have been adjusted so that the gap between the sliding plate 15 and the front face of the block 1 is sufficiently less than the diameter of the container when freely inflated to fully circular shape, for the wall of the container around the aperture to lie flat against the face 2 when the container is fully inflated in the apparatus. It has been found, surprisingly, that this provides a perfect seal, even against pressures as high, or higher than, 30 p.s.i. With the container thus inflated, and with the valve 7 still open, the probe 4 is inserted into the container. The valve, 6, to the beer supply is then opened, and beer flows under its gravity head through the probe into the container, to fill it to the desired level. During the filling operation, the carbon dioxide is displaced back into the beer reservoir. The valve 6 is then closed. Because the pressure within the container is equal to the pressure above the beer supply, the beer does not froth. After valve 6 has been closed, the probe 4 is withdrawn into the supply tube. The filled container is then slid down through the apparatus by hand or mechanically, with a further length of sealing strip being drawn from the supply, until the aperture is brought into a position opposite the heat sealing element, with the sealing strip and polytetrafluoroethylene/glass-cloth layer lying between it and the heat sealing element. The heat sealer is then brought into operation to seal the sealing strip around the aperture, and when the patch has cooled, the filled, sealed container is drawn through and out of the apparatus. The sealing strip is cut above the seal.

As previously explained, the apparatus, shown in the vertical position, is arranged during operation so that the surface 2 is held in a downwardly facing position and inclined at an angle approaching the horizontal, with the orifices in surface 2 located above the filling aperture, 17, during the steps of pressurising and filling the container and applying the sealing strip. The container may then be sufficiently filled with the beer, but a gas space still left under the aperture until the aperture has been sealed. The presence of this gas space allows the surface of the container to be kept dry while the container is filled, particularly when a hollow probe is used as described; it also facilitates heat sealing, since the loss of heat through the gas is much less than if a liquid were in con-

tact with the film. The apparatus is suitably tilted to an angle of about 20° C. to the horizontal. With such an arrangement, the part of the apparatus constituted by the block 1, heat sealing unit 8 and supporting block 14 is preferably slidably mounted on rods attached to the support for the sliding plate 15. It is then urged by gravity towards the plate, thus exerting pressure upon the container. On inflation of the container, this part of the apparatus is pushed away from the plate to the stop position, at which the container is filled. Alternatively, the said part of the apparatus may be fixed and the plate support slidably mounted on the connecting rods, and urged by springs towards the said part of the apparatus.

If desired, a band of tape may be attached horizontally around the container, over the sealed aperture, to give added security.

Various other modifications may be made in the method and apparatus particularly described. For example, instead of the surfaces upon which the pressurised container is slid being flat, they may form parts of a cylindrical surface, of circular or otherwise curved configuration. In this modification these surfaces should have a radius of curvature greater than that of the inflated container, so that there is a flattening effect on the wall of the container when pressed against the filling block. The surfaces of the sliding plate 15 may be correspondingly curved. It is also not essential for the container to be slid in the direction of its longitudinal axis from the filling station to the sealing station. These stations, and the supply of sealing strip, may be so placed that the container may be slid at right angles to its longitudinal axis from one station to another, or may change direction during the process. For example, the container may be moved in the direction of its longitudinal axis to bring the aperture over a first, pressurising orifice in the smooth surface, the pressurised container then slid upon the surface in a direction at right angles to its longitudinal axis, to bring it to a second station at which the aperture covers a second orifice in the surface, and the filled and pressurised container then slid to a third station at which the aperture is opposite the sealing strip and is there sealed. The filling orifice is preferably provided with a reciprocable filling probe as described hereinbefore. In this modification, the container may be rotated after the aperture has been sealed, to allow an additional length of tape to be attached as a band around the container and the sealed aperture.

The sealing strip may if desired comprise a carrier strip on which are mounted separate patches of heat sealable tape, appropriately spaced apart for attachment to successive plastic film containers passing through the apparatus.

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5 Instead of the liquid or particulate solid being fed into the container under gravity, it may be fed by means of a metering device which is capable of supplying the required amount and providing the pressure necessary to force it into the pack. In this case the reservoir need not be above the filling orifice, and the amount and rate of filling may easily be adjusted. In packaging carbonated drinks, the carbon dioxide for pressurising the container may still be supplied from, and returned to, the reservoir for the liquid.

15 When, in the process described, the aperture is sealed by a heat seal adhesive on the sealing strip, it is essential for the seal to be cool before the internal pressure acts upon it. The seal may be heated and cooled with the pack stationary, using an impulse heat sealing device, or the pack may be moved successively over a heated zone in the position of the patch, followed by a cooling zone.

20 The filled containers are preferably provided with a sleeve of paper, foil or other flexible sheet material, preferably formed by wrapping or winding around substantially the whole of the cylindrical part of the container a sheet or strip of the sheet material and securing it by means of an adhesive, preferably a hot melt adhesive, applied at least to the edges of the sheet. If the sleeve is applied closely to the container while the contents are cold, subsequent slight expansion of the container results in the container walls being firmly supported by the sleeve. This gives added strength to the pack and also provides for its labelling and decoration. The sleeve may be extended at one end to form a stand.

40 An advantage of the packaging method of this invention over the conventional methods of bottling and canning carbonated drinks, particularly beer, is that the liquid need never come into contact with oxygen after it leaves the reservoir, until the package is opened. The flavour of the beer may thus be excellently preserved. Another advantage is that there is no spillage.

50 We find that the method and apparatus as described may be adapted to continuous operation, as a process in which the containers are presented successively to the said smooth surface. The containers may be fed to the apparatus as a continuous strip of apertured tubular container units, from which individual units may be separated. The container units may be mechanically formed from a continuously advancing length of tubular plastics film by forming filling apertures through the wall of the tubular film at intervals spaced so as to provide an aperture to each desired container, and forming transverse heat seals between the walls of the flattened tubular film between the spaced apertures, to close the ends of the containers. Such a method of making

the containers is described and claimed in our copending Application No. 2113/71.

One preferred form of container for use in the method of the invention is that described in our copending Application No. 35333/67 (Serial No. 1241947) and its cognate applications, each container being closed at both ends in the manner described, and provided with a suitable filling aperture in the wall thereof. These containers are tubular and closed at each end by a bunched neck, with a ligature or other encircling closure applied to the bunched neck immediately inwards of a thickened region thereof that is greater cross-sectional area than the region encompassed by the encircling closure, and all passages leading through the bunched neck from inside the container to the atmosphere are sealed against egress of gas from the container. The seal is preferably a heat seal, but may be formed by a layer of self-adhesive material coated on to one or both opposed surfaces of the container neck.

The method herein described for forming the container units as a continuous strip from tubular plastics film may readily be adapted to provide a strip of tubular containers with bunched necks of the type just described. The regions of greater cross-sectional area of the necks of the containers may be provided, for example, by forming tucks in the film before heat sealing, so that more than two layers of film are included in the heat seal, or by feeding strips of plastics material into the heat sealing region, so that they become included in the seal, or by forming crimped seals that are less compressible than the adjacent areas of the neck region of the containers.

The method of the invention may be continuously operated with the use of such strips of containers in varying manner. For example, it may be operated in such manner that the containers travel in one direction, parallel with their longitudinal axes, from the feeding in of the tubular film or strip of containers to the release of the filled package. Or the tubular film containers may be fed to the pressurising head in a direction parallel to their longitudinal axes, severed from the length before or during the pressurising and filling steps, and moved in a direction transverse to their direction of feed, for the subsequent sealing operation.

The nature of the plastics material forming the container will be chosen in accordance with the intended pressure to be enclosed or developed within the container. For high pressures, such as those exceeding 15 p.s.i., containers formed of biaxially oriented polyethylene terephthalate film (as described in copending Application No. 35337/67 (Serial No. 1241948) one is especially suitable, particularly when coated with a heat-sealable, gas impermeable coating, for example a coating

of vinylidene chloride copolymer. The coating is preferably an external coating.

The adhesive used for sealing the container aperture must also be chosen to suit the pressure it will have to withstand. Hot melt adhesives, particularly when used on a carrier strip of plastics film of the same type as used for the construction of the container, are generally preferred. Particularly suitable hot melt adhesives include those based on copolymers of two or all of the acids sebacic, terephthalic and isophthalic acid condensed with ethylene glycol. Hot melt adhesives based on ethylene/vinyl acetate copolymers are also suitable. It is however within the scope of our invention to use a sealing strip bearing a pressure sensitive adhesive coating. Our invention is illustrated but in no way limited by the following example.

EXAMPLE

A container formed from a 9 inch length of biaxially oriented lay-flat tubing of polyethylene terephthalate, having a wall thickness of 0.0008 inch and a flat width of $2\frac{1}{2}$ inches ($1\frac{1}{2}$ inches diameter when inflated at 15 p.s.i. (gauge) pressure), having a 0.00015 inch thick external coating of vinylidene chloride, and closed at both ends by a ligature and thickened seal as described hereinbefore, was filled with beer by the following method.

A circular aperture $\frac{7}{32}$ inch in diameter was punched in the wall of the container, 2.5 inches from the top closure, and the container was placed in a filling device as described hereinbefore with reference to the drawings, with the aperture located over the carbon dioxide and beer inlet orifices. The beer supply was at a temperature of 70° F and under a carbon dioxide pressure of 18 p.s.i. and was located at a height of 4 ft. above the filling device. The stop setting the gap between the sliding plate and the rest of the apparatus was set to provide a gap of $1\frac{1}{2}$ inches between the plate and the flat surfaces of the filling head and heat sealing unit. The apparatus was tilted so that the longitudinal axis of the container was at an angle of 20° to the horizontal, with the aperture located uppermost and at the top end of the container. The container was first pressurised with the carbon dioxide and then filled with beer in the manner described hereinbefore. After the filling probe had been withdrawn, the sliding plate was moved downwards with the filled container and sealing strip, the surface of the container sliding upon the filling block, until the aperture was opposite the centre of the heat sealing element. An impulse of 10 volts for 20 secs. was then passed through the sealing element, which was a $4\text{-}1/8 \times 7/8 \times 0.0005$ in. stainless steel strip. The seal was allowed to cool, and the filled, sealed container was withdrawn from the apparatus; the sealing strip was then trimmed off at each

side of the seal. A length of the same sealing strip was heat sealed horizontally around the container, over the sealed aperture.

The sealing strip used was a strip of biaxially oriented film of polyethylene terephthalate, bearing a heat seal coating of 50 parts of ethylene/vinyl acetate copolymer (24% vinyl acetate copolymer (24% vinyl acetate) and 50 parts of polyterpene resin.

The filled pack was held at 70° F for 2 days, then at 40° F for 3 days, and finally at 80° F for 2 days. At the end of this time the seal was intact, and the contents when tested were indistinguishable from the same beer bottled at the same time in the conventional manner.

WHAT WE CLAIM IS:—

1. A method of producing a package comprising a sealed flexible plastics container, with contents including a gas at super-atmospheric pressure, that comprises: locating an aperture in the wall of the closed container (as hereinbefore defined) over an orifice (as hereinbefore defined) in a substantially smooth surface, said orifice being connected to a source of a gas at super-atmospheric pressure; inflating the container by the introduction of said gas while the container wall surrounding said aperture is held substantially in gas-tight contact with said surface; and, while said container is still fully inflated, (as hereinbefore defined) and in gas-tight contact with said surface sliding it along relative to said surface to bring that portion of the wall of the container which surrounds said aperture into contact with a supported flexible sealing strip held in substantially continuous relationship to said surface; and sealing the sealing strip to the wall of the container around said aperture, by applying heat if necessary.
2. A method as claimed in Claim 1 in which, after the container has been inflated by said gas, the major part of the gas is displaced by a liquid or particulate solid filled under pressure into the container.
3. A method as claimed in Claim 2 in which the container is filled with beer or another carbonated liquid, and the gas is supplied from and returned to a gas space in a reservoir for the liquid from which the liquid is fed to the container.
4. A method as claimed in Claim 2 or Claim 3 in which the container is inclined at an angle approaching the horizontal, with the aperture in its wall located on its uppermost side, for the filling and sealing operations.
5. A method as claimed in Claim 1 in which the closed container contains at least one article to be packaged, which has been previously inserted therein.
6. A method as claimed in any one of the preceding claims in which the sealing strips

of vinylidene chloride copolymer. The coating is preferably an external coating.

The adhesive used for sealing the container aperture must also be chosen to suit the pressure it will have to withstand. Hot melt adhesives, particularly when used on a carrier strip of plastics film of the same type as used for the construction of the container, are generally preferred. Particularly suitable hot melt adhesives include those based on copolymers of two or all of the acids sebacic, terephthalic and isophthalic acid condensed with ethylene glycol. Hot melt adhesives based on ethylene/vinyl acetate copolymers are also suitable. It is however within the scope of our invention to use a sealing strip bearing a pressure sensitive adhesive coating. Our invention is illustrated but in no way limited by the following example.

EXAMPLE

A container formed from a 9 inch length of biaxially oriented lay-flat tubing of polyethylene terephthalate, having a wall thickness of 0.0008 inch and a flat width of 2½ inches (1½ inches diameter when inflated at 15 p.s.i. (gauge) pressure), having a 0.00015 inch thick external coating of vinylidene chloride, and closed at both ends by a ligature and thickened seal as described hereinbefore, was filled with beer by the following method.

A circular aperture 7/32 inch in diameter was punched in the wall of the container, 2.5 inches from the top closure, and the container was placed in a filling device as described hereinbefore with reference to the drawings, with the aperture located over the carbon dioxide and beer inlet orifices. The beer supply was at a temperature of 70° F and under a carbon dioxide pressure of 18 p.s.i. and was located at a height of 4 ft. above the filling device. The stop setting the gap between the sliding plate and the rest of the apparatus was set to provide a gap of 1½ inches between the plate and the flat surfaces of the filling head and heat sealing unit. The apparatus was tilted so that the longitudinal axis of the container was at an angle of 20° to the horizontal, with the aperture located uppermost and at the top end of the container. The container was first pressurised with the carbon dioxide and then filled with beer in the manner described hereinbefore. After the filling probe had been withdrawn, the sliding plate was moved downwards with the filled container and sealing strip, the surface of the container sliding upon the filling block, until the aperture was opposite the centre of the heat sealing element. An impulse of 10 volts for 20 secs. was then passed through the sealing element, which was a 4-1/8×7/8×0.0005 in. stainless steel strip. The seal was allowed to cool, and the filled, sealed container was withdrawn from the apparatus; the sealing strip was then trimmed off at each

side of the seal. A length of the same sealing strip was heat sealed horizontally around the container, over the sealed aperture.

The sealing strip used was a strip of biaxially oriented film of polyethylene terephthalate, bearing a heat seal coating of 50 parts of ethylene/vinyl acetate copolymer (24% vinyl acetate copolymer (24% vinyl acetate) and 50 parts of polyterpene resin.

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WHAT WE CLAIM IS:—

1. A method of producing a package comprising a sealed flexible plastics container, with contents including a gas at super-atmospheric pressure, that comprises: locating an aperture in the wall of the closed container (as hereinbefore defined) over an orifice (as hereinbefore defined) in a substantially smooth surface, said orifice being connected to a source of a gas at super-atmospheric pressure; inflating the container by the introduction of said gas while the container wall surrounding said aperture is held substantially in gas-tight contact with said surface; and, while said container is still fully inflated, (as hereinbefore defined) and in gas-tight contact with said surface sliding it along relative to said surface to bring that portion of the wall of the container which surrounds said aperture into contact with a supported flexible sealing strip held in substantially continuous relationship to said surface; and sealing the sealing strip to the wall of the container around said aperture, by applying heat if necessary.
2. A method as claimed in Claim 1 in which, after the container has been inflated by said gas, the major part of the gas is displaced by a liquid or particulate solid filled under pressure into the container.
3. A method as claimed in Claim 2 in which the container is filled with beer or another carbonated liquid, and the gas is supplied from and returned to a gas space in a reservoir for the liquid from which the liquid is fed to the container.
4. A method as claimed in Claim 2 or Claim 3 in which the container is inclined at an angle approaching the horizontal, with the aperture in its wall located on its uppermost side, for the filling and sealing operations.
5. A method as claimed in Claim 1 in which the closed container contains at least one article to be packaged, which has been previously inserted therein.
6. A method as claimed in any one of the preceding claims in which the sealing strips



for successive containers are supplied as separate patches mounted on a carrier.

7. A method as claimed in any one of the preceding claims operated as a continuous process, the containers being fed successively from a continuous strip of container units.

8. A method of producing a package, substantially as hereinbefore described with reference to the drawings accompanying the Provisional Specification of Application No. 9849/68.

9. A method of producing a package, substantially as described in the foregoing Example.

10. A method as claimed in any one of Claims 1 to 4, 6 or 7 in which the container is inflated through a first orifice in said surface, the inflated container is slid along said surface to bring its aperture over a second orifice in said surface, a liquid or particulate solid is supplied through the second orifice into the container, and the container is further slid along said surface to bring that portion of the wall thereof which surrounds said aperture into contact with the sealing strip.

11. A method as claimed in Claim 2 in which the liquid or particulate solid is fed into the container by means of a metering device which is capable of supplying the required amount and providing the pressure necessary to force it into the container.

12. A method as claimed in any one of the preceding claims in which the package, after its aperture has been sealed, is provided with a tubular sleeve by wrapping or winding around substantially the whole of the cylindrical part of the container a strip of flexible sheet material, and securing it by means of an adhesive.

13. Apparatus suitable for performing a method as claimed in Claim 1 that includes: a smooth surface having therein an orifice; means for supplying a sealing strip in such manner that it may be drawn from its source of supply along a path on said surface, or on a second surface substantially continuous therewith, and in line with the orifice; means for supplying through the orifice a gas for inflating to superatmospheric pressure a plastics film container presented to said surface with an aperture in its wall located over said orifice; means for holding the container sufficiently under compression against said surface to maintain a seal around said aperture, while it is slid along said surface or surfaces to bring said aperture into the path of the sealing strip and until the sealing strip covers and surrounds the aperture; and, if necessary,

means for heat sealing the sealing strip around the aperture.

14. Apparatus as claimed in Claim 13 that includes means for supplying through said orifice a liquid or particulate solid to be filled into the container.

15. Apparatus as claimed in Claim 13 that includes a second orifice in said smooth surface, adjacent to the first said orifice, and means for supplying through said second orifice a liquid or particulate solid to be filled into the container.

16. Apparatus as claimed in Claim 14 or 15 in which said means is a hollow probe connected to a source of the liquid or particulate solid under pressure and adapted to be advanced and withdrawn through the orifice, and, when in the advanced position, to feed said liquid or particulate solid into an inflated container which has its filling aperture located over the orifice or orifices.

17. Apparatus as claimed in any one of Claims 13 to 16 that includes means for holding the apparatus with the smooth surface in a downwardly facing position and inclined at an angle approaching the horizontal.

18. Apparatus substantially as hereinbefore described with reference to the drawings accompanying the Provisional Specification of Application No. 9849/68.

19. Apparatus as claimed in Claim 13 that includes a second orifice in the smooth surface, spaced between the said orifice and the path of the sealing strip, and connected to a source of liquid or particulate solid to be filled into the container.

20. Apparatus as claimed in Claim 19 that includes a hollow probe connected to a source of liquid or particulate solid under pressure, adapted to be advanced and withdrawn through the filling orifice, and, when in the advanced position, to feed said liquid or particulate solid into an inflated container which has its filling aperture located over said second orifice.

21. Apparatus as claimed in any one of Claims 14 to 20 that includes a metering device for feeding the liquid or particulate solid under pressure into the container.

22. A package whenever produced by a method as claimed in any one of Claims 1 to 6, 8 or 9.

23. A package whenever produced by a method as claimed in any one of Claims 7, 10, 11 or 12.

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