

PATENT SPECIFICATION

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(54) POLYMER LATEX COLLECTION BAG

(71) We, CENTURY PLASTIC SENDIRIAN BERHAD, a Body Corporate incorporated under the laws of Malaysia, of 13 Road 215, Petaling Jaya, Selangor, Malaysia, and 5 THOMAS WONG THAM THIAM, c/o 13 Road 215, Petaling Jaya, Selangor, Malaysia, a Malaysian subject, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by 10 which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to the collection of natural rubber latex, and to collection 15 vessels for this purpose.

Customarily, latex is collected from a rubber tree (*Hevea Brasiliensis*) by making, early each morning, an inclined cut or cuts through the bark and almost to the cambium of the tree, and driving a spout into the tree trunk at a point where it will catch latex running down the cut or cuts and direct it into a cup from which the latex is collected later in the day. Not only does 20 the necessity for daily collection add to labour costs by reducing the number of trees that can be attended to daily by one man, but the open cups expose the collected latex to contamination by foreign bodies, and the ill effects of weathering (for example by rain). The latex collected each day falls into two classes, the coagulated 'cup lump' which is stripped from the cup before the day's tapping and may be heavily 25 contaminated and thus of low quality and the higher quality latex collected some hours after tapping which has not suffered so much contamination. Premature coagulation in the cup is undesirable since it takes place under exposure to light and air and may lead to a discoloured and degraded product. On the other hand, coagulation after collection entails a special treatment step and associated equipment, and 30 it would be an economy if it could be eliminated. 45

[Price 25p]

The main object of the invention is to provide a method and means of collecting latex in which coagulation can take place during collection, and the quality of the 50 product is maintained by eliminating contamination and other undesirable effects and which at the same time permits the collection of the latex only at extended intervals. 55

According to the invention there is provided a bag for the collection of natural latex, manufactured from flexible synthetic plastics film, and comprising two opposite rectangular walls connected along their side, 60 top and bottom edges, a side to side passage being formed at the top of the bag to accept an elongated hanger adapted to pass through said passage, the bag being closed except for a slit or aperture formed 65 in one or both said walls midway between their side edges and towards their top edges, and for any openings necessitated by said passage. The material used is usually clear but could be of material opaque to ultra- 70 violet radiation. Preferably the passage is formed by forming a closed top end to the bag and notching the side edges immediately below the top end to provide apertures through which a hanger may be 75 passed, or by folding over and hemming the top edge of the bag to form a tube adapted to accept a hanger.

The invention also extends to a method of collecting natural latex from rubber trees 80 comprising fixing a suspension loop around the trunk of the tree above a spout driven into the trunk of the tree, and suspending from this loop a hanger carrying a bag according to the preceding paragraph, the 85 hanger passing through the passage in the bag, inserting the spout into the slot or aperture in one wall of the bag, and permitting the latex from a number of days' 90 tappings to accumulate before collecting.

The invention yet further extends to a method of producing the bags from a flat

folded tubular web of flexible weldable material, comprising passing the web through synchronized devices, the one slitting or forming an aperture in the film towards one edge at intervals equal to the width of a bag, the second punching holes adjacent said edge of the bag and half way between the slits or apertures and the third sealing together the walls of the web and separating it into bags on lines perpendicular to the longitudinal axis of the web and intersecting said holes.

In a development of this method, an additional seal may be formed across the width of the bag between the slit or slot and the holes.

In a further variation of this method of production the edge nearest the slit or slot is folded over and sealed to form a tubular hem, the punching of holes being omitted.

The slits or apertures may be formed through both thicknesses of the laid-flat web, or the web may be opened out and a support inserted so that the slit or aperture is formed through one thickness only.

The invention is described further with reference to the accompanying drawings, wherein:

Figures 1-6 show steps in the collection of latex from a rubber tree in accordance with the invention.

Figure 7 shows successive stages in the manufacture of the collection bags used in the method illustrated in Figures 1-6.

Figures 8-10 show alternative forms of bag in plan and in vertical cross-section.

Referring first to Figures 1-6, there is shown in Figure 1 and 3-6 the trunk 1 of a rubber tree (*Hevea Brasiliensis*) which has been tapped conventionally by making a spiral cut 2 into the bark of the tree towards the cambium, the cut draining down a vertical groove 3 in the bark into a spout 4 driven into the trunk 1. A length of galvanised wire 5 is secured around the trunk (see Figure 1) so that it lies just above the top of the spout, and a bag 6 suspended from a wire hanger 7 (see Figure 2) is hung from the wire so that the spout enters a slit 8 in the bag (see Figures 3 and 4).

The bag is normally deep as compared to its width, and is closed except for the slit 8 shortly below its top edge and two half moon shaped notches 9 in its side edges adjacent to the top edge which provide a passage for the insertion of the wire hanger 7. The bag is of thermoplastic film, for example polyethylene, and although usually clear film is used, it may be pigmented so as to be opaque to ultra-violet light. In the case of trees tapped very close to the ground, a shallower bag may be desirable. The bag should have a capacity of at least one litre, whilst larger capacities, for example 4 litres, may advantageously be used.

After attachment to the tree, the bag is left in place for a period which may be as long as three weeks so as to receive the flows of latex resulting from a number of day's tapplings, the latex coagulating in the bag out of reach of harmful influences such as dirt and weathering. The bag may then be removed and replaced by another, the removed bag of coagulated latex being sent for further processing. It will be understood that there is a considerable saving of labour since latex is only collected at extended intervals and daily attention to the trees is reduced to tapping only, permitting a single worker to attend to many more trees. Moreover, the production of low grade cup-lump rubber at the expense of good quality latex is eliminated, as is the need for a separate coagulation stage during processing.

A method of producing the bag shown in the preceding figures is illustrated by Figure 7. A tubular laid-flat web of thermoplastic material is subjected to a slitting operation in which the slit 8 is formed, a punching operation in which circular holes 16 are punched through the web, and a heat sealing and severing operation in which heat seals 17 are produced across the width of the web intersecting the circular holes 16 so as to sever the finished bags and produce the notches 9. The slitting, punching and sealing operation are synchronized to ensure correct relative position, the width of the bags produced being variable by altering the relative positions of the devices to suit the altered proportions, and changing the distance by which the web is advanced between each operation of the three devices.

Obviously, the design of the bags used is susceptible to variation provided that the requirements of substantial exclusion of the atmosphere, means to suspend the bag, and an appropriately placed opening for the tap or spout, are met. Moreover, the wire around the trunk and the wire hanger may if desired be replaced by string or cord, or in the latter case by an appropriately designed suspension clip.

Some alternative forms of bag are illustrated in Figures 8-10. Referring first to Figure 8, instead of the half moon notches at the top of the edges of the bag, the top of the bag is turned over to form a tubular hem 10 through which the hanger may be inserted. An aperture 11 is formed just below the hem to receive the spout, this aperture being formed either by punching through both thicknesses of the material forming the bag or preferably, as shown, through one thickness only. If the bags are produced from a laid-flat tubular web of thermoplastic material, the web is first slit at one edge fold, and a support inserted to enable

successive apertures 11 to be punched, after which the web is heat sealed and severed across its width to form individual bags, and the slit edge fold folded over and hemmed by heat sealing to form a tubular hem.

A closely similar bag is shown in Figure 9, but the method of production is different, the bag being formed from a laid-flat tubular web having the same width as the bag. A support is introduced into the free end of the web to permit the aperture 11 to be punched after which the support is withdrawn and the free end folded and hemmed by heat sealing as before to provide the hem 10. The web is either simultaneously or subsequently heat sealed and severed across its width to form the bottom end of the bag.

A somewhat similar procedure to that described with reference to Figure 8 can be used to produce the bag shown in Figure 10, except that instead of hemming the slit edge fold, that end of the bag is heat sealed across its width a short distance from the top of the bag at 18, and half moon notches 9 are formed in the side edges of the bag above the heat seal.

WHAT WE CLAIM IS:—

1. A bag for the collection of natural latex, manufactured from flexible synthetic plastics film, and comprising two opposite rectangular walls connected along their side, top and bottom edges, a side to side passage being formed at the top of the bag to accept an elongated hanger adapted to pass through said passage, the bag being closed except for a slit or aperture formed in one or both said walls midway between their side edges and towards their top edges, and for any openings necessitated by said passage.

2. A bag according to claim 1, wherein the passage is formed by notching said side edges immediately below the top edge of the bag, whereby to provide apertures through which a hanger may be passed.

3. A bag according to claim 2, wherein the bag is folded over and hemmed at its top end to form a tubular passage for a hanger.

4. A bag according to any of claims 1-3, wherein the material of the bag is polyethylene film.

5. A bag according to any of claims 1-4, wherein the material of the bag is opaque to ultraviolet radiation.

6. A bag according to any of claims 1-5, having a capacity of at least one litre.

7. A bag according to any of claims 1-6, the bag being deep compared to its width.

8. A bag for the collection of natural latex, substantially as hereinbefore described with reference to Figure 2 or Figure 8 or Figure 9 or Figure 10 of the accompanying drawings.

9. A method of producing bags according to claim 1, comprising passing a tubular flat folded web of flexible weldable material through synchronized devices, the one slitting or forming an aperture in the film towards one edge at intervals equal to the width of a bag, the second punching holes adjacent said edge of the bag and half way between the slits or apertures and the third sealing together the walls of the web and separating it into bags on lines perpendicular to the longitudinal axis of the web and intersecting said holes.

10. A method according to claim 9, wherein an additional seal is formed across the width of the bag between the slit or slot and the holes.

11. A method according to claim 9 or 10, wherein the slits or apertures are formed through only one thickness of the laid flat web, a support being inserted between the two thicknesses during the punching operation.

12. The modification of the method of claim 9, in which the punching of the holes is omitted, and the edge nearest the slits or apertures is folded over and sealed to form a tubular hem.

13. A method of producing bags for the collection of natural rubber latex, substantially as hereinbefore described with reference to Figure 7 of the accompanying drawings.

14. A bag for the collection of natural latex, whenever produced by the method of any of claims 9-13.

15. A method of collecting natural latex from rubber trees comprising fixing a suspension loop around the trunk of the tree above a spout driven into the trunk of the tree, and suspending from this loop a hanger carrying a bag according to any of claims 1-8 or 14, the hanger passing through the passage in the bag, inserting the spout into the slot or aperture in one wall of the bag, and permitting the latex from a number of days' tappings to accumulate before collection.

16. A method according to claim 1, substantially as hereinbefore described with reference to Figures 1-6 of the accompanying drawings.

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successive apertures 11 to be punched, after which the web is heat sealed and severed across its width to form individual bags, and the slit edge fold folded over and hemmed by heat sealing to form a tubular hem.

A closely similar bag is shown in Figure 9, but the method of production is different, the bag being formed from a laid-flat tubular web having the same width as the bag. A support is introduced into the free end of the web to permit the aperture 11 to be punched after which the support is withdrawn and the free end folded and hemmed by heat sealing as before to provide the hem 10. The web is either simultaneously or subsequently heat sealed and severed across its width to form the bottom end of the bag.

A somewhat similar procedure to that described with reference to Figure 8 can be used to produce the bag shown in Figure 10, except that instead of hemming the slit edge fold, that end of the bag is heat sealed across its width a short distance from the top of the bag at 18, and half moon notches 9 are formed in the side edges of the bag above the heat seal.

WHAT WE CLAIM IS:—

1. A bag for the collection of natural latex, manufactured from flexible synthetic plastics film, and comprising two opposite rectangular walls connected along their side, top and bottom edges, a side to side passage being formed at the top of the bag to accept an elongated hanger adapted to pass through said passage, the bag being closed except for a slit or aperture formed in one or both said walls midway between their side edges and towards their top edges, and for any openings necessitated by said passage.

2. A bag according to claim 1, wherein the passage is formed by notching said side edges immediately below the top edge of the bag, whereby to provide apertures through which a hanger may be passed.

3. A bag according to claim 2, wherein the bag is folded over and hemmed at its top end to form a tubular passage for a hanger.

4. A bag according to any of claims 1-3, wherein the material of the bag is polyethylene film.

5. A bag according to any of claims 1-4, wherein the material of the bag is opaque to ultraviolet radiation.

6. A bag according to any of claims 1-5, having a capacity of at least one litre.

7. A bag according to any of claims 1-6, the bag being deep compared to its width.

8. A bag for the collection of natural latex, substantially as hereinbefore described with reference to Figure 2 or Figure 8 or Figure 9 or Figure 10 of the accompanying drawings.

9. A method of producing bags according to claim 1, comprising passing a tubular flat folded web of flexible weldable material through synchronized devices, the one slitting or forming an aperture in the film towards one edge at intervals equal to the width of a bag, the second punching holes adjacent said edge of the bag and half way between the slits or apertures and the third sealing together the walls of the web and separating it into bags on lines perpendicular to the longitudinal axis of the web and intersecting said holes.

10. A method according to claim 9, wherein an additional seal is formed across the width of the bag between the slit or slot and the holes.

11. A method according to claim 9 or 10, wherein the slits or apertures are formed through only one thickness of the laid flat web, a support being inserted between the two thicknesses during the punching operation.

12. The modification of the method of claim 9, in which the punching of the holes is omitted, and the edge nearest the slits or apertures is folded over and sealed to form a tubular hem.

13. A method of producing bags for the collection of natural rubber latex, substantially as hereinbefore described with reference to Figure 7 of the accompanying drawings.

14. A bag for the collection of natural latex, whenever produced by the method of any of claims 9-13.

15. A method of collecting natural latex from rubber trees comprising fixing a suspension loop around the trunk of the tree above a spout driven into the trunk of the tree, and suspending from this loop a hanger carrying a bag according to any of claims 1-8 or 14, the hanger passing through the passage in the bag, inserting the spout into the slot or aperture in one wall of the bag, and permitting the latex from a number of days' tappings to accumulate before collection.

16. A method according to claim 1, substantially as hereinbefore described with reference to Figures 1-6 of the accompanying drawings.

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