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1,607,626

E. HOPKINSON
LATEX SHIPPING BALE

Filed Feb. 6, 1922

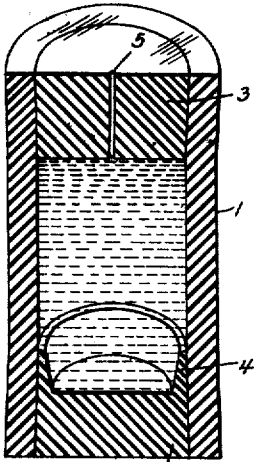


Fig. 1.

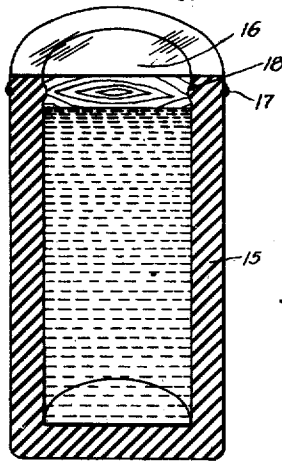


Fig. 2.

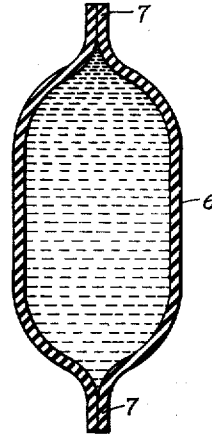


Fig. 3.

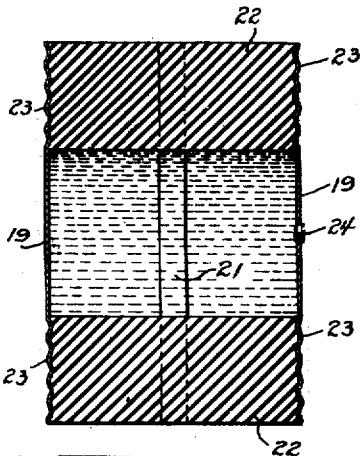


Fig. 4.

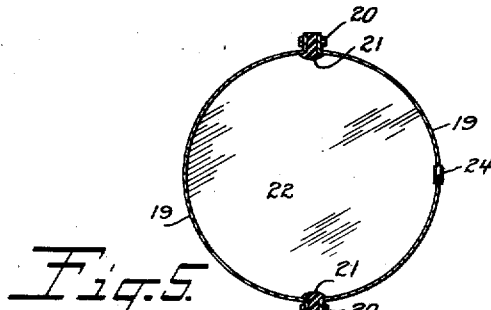


Fig. 5.

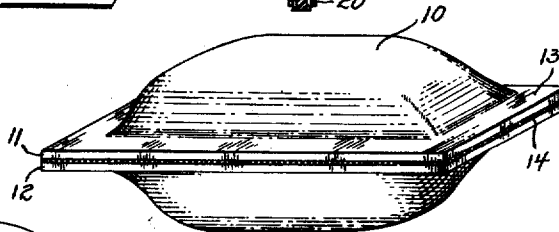


Fig. 6.

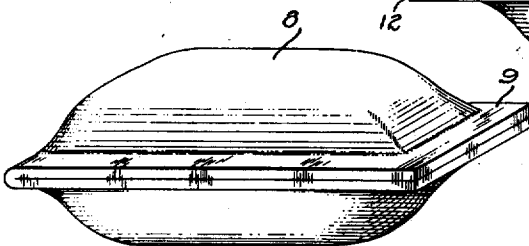


Fig. 7.

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UNITED STATES PATENT OFFICE.

ERNEST HOPKINSON, OF NEW YORK, N. Y., ASSIGNOR TO GENERAL RUBBER COMPANY,
OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

LATEX-SHIPPING BALE.

Application filed February 6, 1922. Serial No. 534,393.

This invention relates generally to the shipment of latex and rubber, and more particularly to a container or bale capable of carrying latex from the source of supply to a distant user.

It has been found desirable for the manufacture of some rubber products to furnish the manufacturer with latex but its transportation presented difficulties not satisfactorily met by available forms of shipping containers, mainly owing to their cost and weight.

The present invention contemplates the shipment of latex in a crude rubber container capable of withstanding the inevitable rough usage in transit and also of delivering the latex to a manufacturer in a substantially unaltered condition. The container may be made inexpensively and, after the manufacturer has removed the latex, the crude rubber may be used as heretofore, for compounding.

Embodiments of the invention are illustrated in the accompanying drawings, in which:—

Fig. 1 is a sectional perspective of an all-rubber container filled with a quantity of latex,

Fig. 2 is a similar view of a container with a wooden plug closure,

Fig. 3 is a vertical section of a bag-form of container,

Figs. 4 and 5 are vertical and horizontal sections, respectively, of a can-form of container.

Fig. 6 is a perspective of another bag-form of container, and

Fig. 7 is a similar perspective of a bag-form, showing the preferred seam construction.

The container may be constructed wholly or partly of crude rubber. The former is preferred and Figs. 1, 3, 6 and 7, illustrate various forms of the all-rubber container.

In Fig. 1 the all-rubber container is constructed with a hollow cylindrical body portion 1, whose opposite ends are closed by tapered plugs 2 and 3, either, neither, or both, of which may be provided with flanges 4. And one of the plugs may be provided with a vent opening 5.

The all-rubber container of Fig. 3 has a

cylindrical body portion 6, whose opposite open ends are flattened and seamed fluid-tight, as indicated at 7, by pressure.

In Fig. 6 an all-rubber bag is indicated at 8, this being made of a single sheet of rubber folded in the middle and having its superimposed margins 9 united and made substantially integral by suitable pressure.

In Fig. 7 the preferred container is illustrated. This is in the form of a bag 10, consisting of superimposed sheets of crude rubber 11 and 12, whose margins 13 are pressed powerfully upon an interposed stratum or layer 14 of relatively soft or spongy rubber of a structure such as is obtained from spraying latex into a heated chamber, as fully disclosed in United States patent to Ernest Hopkinson No. 1,423,525, granted July 25th, 1922.

While the all-rubber forms of container are preferred, the advantages of the invention may be realized to an extent in containers made largely or partly of crude rubber. In Fig. 2, the container has a body portion 15 of crude rubber which is closed at its open end by a wooden plug 16, a wire 17 being tightened about the container to force the rubber into the grooved edge 18 of the disk 16. In Figs. 4 and 5, another form of a part-rubber container is shown, this consisting of flanged semi-cylindrical steel shells 19 which are bolted together, as indicated at 20, upon intervening rubber sealing strips 21 and of relatively large closures or plugs 22. The shells 19 are preferably corrugated, as at 23, to more securely hold the plugs in position. And a filling opening with a tapered plug closure 24 may be provided in one of the shells 19.

The body portions and plugs of crude rubber in the various forms of the containers may be made in any suitable manner. Sheeted crude rubber may be coiled upon itself and compressed as the wrapping progresses to form a body portion of the desired wall thickness. This may be done between cooperating rolls one above the other, the sheet being loosely encircled about the bottom roll and being compacted by weights holding the upper roll with the requisite pressure against the stock between it and the lower roll, which latter may be

driven in any suitable manner. Or, a sheet of crude rubber may be coiled about a mandrel of the desired cross-section to give the requisite shape and size to the cavity in the body portion of the container. Or, crude rubber may be molded under pressure either externally or internally. If the body portion of the container is made by coiling up a sheet of stock, I may, if desired, suitably reinforce it by introducing between the outside convolutions, and before the body is completed, lengthwise extending strips of metal or wood. The hollow body of the container may also be extruded in a large size tubing machine.

Crude rubber however coagulated may be used as the raw material, but I prefer that derived by drying latex which is sprayed into a heated chamber as disclosed in United States patent to Ernest Hopkinson No. 1,423,525, granted July 25th, 1922.

In making the crude rubber container, I find it highly desirable to brush all joints or seams, such as around the plugs shown in Fig. 1, or the convolutions of coiled sheet stock, or between the opposed flat margins of Figs. 6 and 7, with a rubber solvent, such as solvent naphtha. This softens up the rubber so that the subsequent application of pressure unites the parts and renders them substantially integral, secure against leakage. And when in addition to softening the rubber at the seams or joints with a solvent, a strip of soft spongy rubber, i. e., coagulated rubber, substantially dry and not compacted—such as obtained by spraying latex into a heated chamber—is interposed, as in Fig. 7, between the parts of the container to be seamed or joined, I obtain an especially strong seam or union.

The container may be protected externally with a sheathing or wrapping of wood or burlap, but I prefer, in the all-rubber forms especially, to indurate it superficially, as by immersing the finished container for a few seconds in approximately a 3% solution of bromine or other halogen, as disclosed in one of my previously filed applications. This treatment forms a brominated or halogenated skin which is relatively hard, resistant to oils, acids, alkalies, and free from tackiness and liability to pick up particles of sand, dirt, or other foreign matter. For the shipment or transport of oils, or other fluids, I may, if desired, subject the interior of the container, as well as the exterior, to the above mentioned brominating or halogenating treatment.

The container may, of course, be made in any size and proportions desired. Practically, I think it desirable to construct it with a cavity volume of about two cubic feet. Its walls may be varied from an inch or more in thickness for the bag types of containers of Figs. 3, 6 and 7, up to a thickness of three

or four inches for the substantially shape-retentive container illustrated in Figs. 1 and 2. The rubber plugs, where used, may be made in any thickness desired, six or more inches being deemed suitable. But the thickness of the rubber portions of the container may be widely varied and I do not wish to restrict myself to any precise dimensions, it being essential only that the wall thicknesses be sufficient to insure the container against rupture in transit, the thickness of walls depending, of course, upon the size of the bale, the presence or absence of an external or imbedded reinforcement, and whether or not it is to be shape-retentive in transit, as in Fig. 1.

The latex carrier or container of my invention possesses many advantages. In the all-rubber forms, it may be made indestructible, or at least proof against rough handling in shipment and damage in violent seas. It insures receipt by the manufacturer of the latex in substantially the condition introduced, and this, notwithstanding the many months that may intervene between packaging and arrival at the factory. If the latex, as introduced, contains its natural quantity of water, or a relatively high content, it has been found that the inside walls of the container are lined or coated with relatively thick latex, this being attributed to a dialytic or absorptive action by which some of the water of the latex seems to pass into the rubber body of the container. And thus, the container may be utilized or relied upon to partially de-hydrate the latex in transit. The manufacturer on emptying or removing the latex may use the rubber of the container for compounding. Thus, there need be no, or inconsiderable, wastage through discard of an expensive container like a box and, incidentally, of course, eliminates or reduces useless transport of dead weight. From what has been stated, it will, therefore, be clear that an essential feature of the invention is a container made entirely or largely of crude rubber, and consequently, is entirely or largely usable raw material.

The latex introduced into the bale may be in the natural milky condition, or dehydrated to a suitable extent. I prefer to reduce the water content to about 20% by gentle evaporation and thus economize in shipping costs. In whatever form the latex is introduced, it is desirable to add a preservative, such as a weak solution of ammonia—about 2%—, to insure against coagulation. The bale when closed and sealed should preferably be completely filled with the latex.

It will be understood that in the above I have endeavored to fully and completely disclose the invention so as to enable others skilled in the art to practice the same, but thereby, it is not intended to be limited to

details more than is required by the prior art and pointed out in the following claims. Therein the expression "unvulcanized rubber" is employed to comprehend crude rubber alone, or mixed with preservative, beneficial, or vulcanizing agents, and to solely exclude vulcanized rubber, in some instances, it being desirable to incorporate such agents in the rubber at the source of supply, plantation or forest.

And by the term "latex", I intend to comprehend in the claims any and all conditions of the milk of rubber trees short of coagulation, i. e., containing more or less water and at least miscible therewith for restoration to any desired milky consistency. The meaning of these terms should be borne in mind in referring to the accompanying claims defining the scope of the invention. Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. As an article of manufacture, a mercantile shipping unit made of compressed unvulcanized rubber and completely encasing latex.

2. As an article of manufacture, a mercantile shipping unit made of unvulcanized rubber and completely enclosing latex, said container being substantially shape-retentive in transit.

3. As an article of manufacture, a shipping container of compressed unvulcanized rubber provided internally with a cavity and the surface of which is halogenated, said container being adapted to be closed substantially fluid-tight.

4. A shipping article consisting of, a mass of unvulcanized rubber having internally a cavity containing latex and externally an indurated surface.

5. A shipping article consisting entirely of, a mass of unvulcanized rubber having internally a cavity containing latex, and externally a brominated skin.

6. A shipping container provided with walls of unvulcanized rubber having an indurated surface.

7. As an article of manufacture a mercantile shipping unit which comprises a receptacle containing walls of unvulcanized rubber, the receptacle being completely full of and entirely enclosing latex.

8. As an article of manufacture a mercantile shipping unit which comprises a receptacle containing latex, the receptacle having walls of unvulcanized rubber, the entire area of which has been compressed.

9. The method of transporting latex which comprises forming a container having walls of crude rubber, encasing a body of latex within this container and transporting it.

10. The method of transporting latex which comprises compressing unvulcanized rubber, forming it into a container, completely encasing a body of latex within this container and transporting it.

11. The method of transporting latex which comprises forming a container having walls of compressed unvulcanized rubber, encasing a body of latex with this container so that the container is completely full and transporting it.

12. The method of forming a mercantile shipping unit which comprises molding a container of unvulcanized rubber through pressure, filling the container with latex and closing the container.

Signed at New York city, county of New York, State of New York, this 4th day of February, 1922.

ERNEST HOPKINSON.

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Signed at New York city, county of New York, State of New York, this 4th day of February, 1922.

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CERTIFICATE OF CORRECTION.

Patent No. 1,607,626,

granted November 23, 1926.

to ERNEST HOPKINSON.

It is hereby certified that error appears in the printed specification of the above mentioned patent requiring correction as follows: Page 1, line 20, for the word "manufactures" read "manufacturer"; page 3, line 28, claim 2, before the word "unvulcanized" insert the word "compressed", and line 33, claim 3, strike out the word "compressed"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of March, A. D. 1927.

Seal.

M. J. Moore,
Acting Commissioner of Patents.

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