Oct. 12, 1926. 1,603,057

W. L. WRIGHT

CAPPING MILK BOTTLES AND OTHER CONTAINERS

Filed July 12, 1923

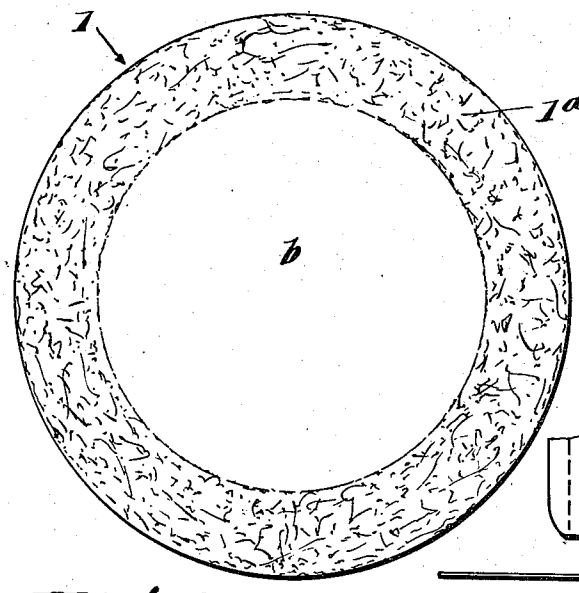


Fig. 1.

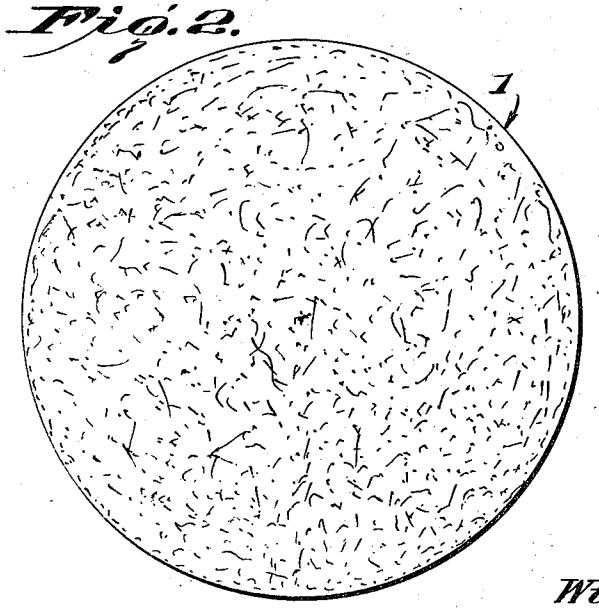


Fig. 2.

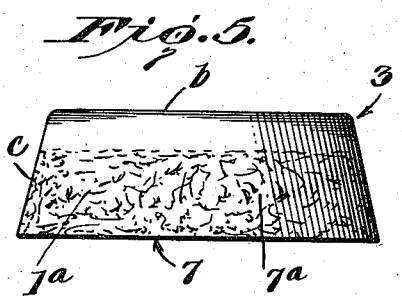


Fig. 5.

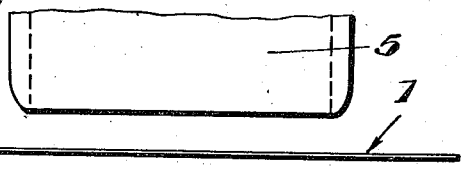
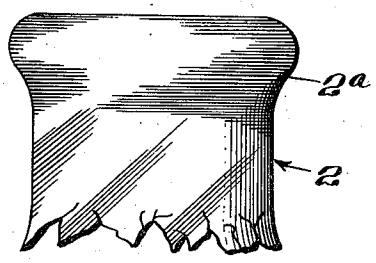


Fig. 3.



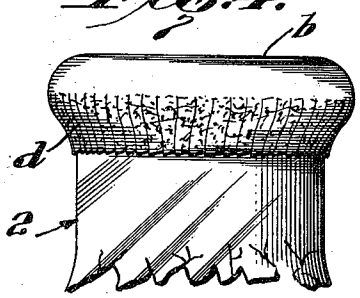


Fig. 4.

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Witness:

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UNITED STATES PATENT OFFICE.

WILBUR L. WRIGHT, OF FULTON, NEW YORK, ASSIGNOR TO OSWEGO FALLS CORPORATION, OF FULTON, NEW YORK, A CORPORATION OF NEW YORK.

CAPPING MILK BOTTLES AND OTHER CONTAINERS.

Application filed July 12, 1923. Serial No. 650,980.

This invention has relation to the provision of sheet paper or other fibrous material in the form of or for the formation of container mouth hood covers, and particularly involves a paper or other fibrous material disk either in hood cap form or in flat form, as an article of manufacture, that possesses certain peculiar characteristics, whereby such disk is adapted, when softened by heat, to be molded and secured by contraction under the exterior rim of a container mouth or into exterior depressions or irregularities of the container mouth or neck, to become stiff or approximately rigid when cool and to maintain its position covering and locked on the container by reason of the stiffness or approximate rigidity of the contracted part of the set disk thus shaped on the container, without added or separate bands, ties or other fastening means; and the objects and nature of the invention will be readily understood by those skilled in the art in the light of the following explanations of the accompanying drawings that illustrate what I now believe to be the preferred mechanical expressions or embodiments of my invention from among other forms, substances, compositions, constructions, and adaptations within the spirit and scope of my invention.

An object of the invention is to provide an inexpensive effective sheet paper material hood cap or hood cap disk for containers, particularly for glass bottles and the like, carrying a binder that is of high-melting-point quick-setting, and normally-hard, and that imparts to the portion or portions of the hood cap carrying the same sufficient strength for hood cap securing purposes and the characteristic of being capable of stripping or peeling from glass surfaces without leaving an objectionable glass fouling deposit such as results from attempts to employ paraffin alone to bind hood caps on glass bottles, without noting the softness, low melting point, low strength, and slow setting properties of such paraffin.

With this and other objects in view, my invention consists in hood cap sheet paper or other fibrous material possessing certain characteristics as more fully and particularly appearing and specified hereinafter.

Referring to the accompanying drawings, forming a part hereof:—

Fig. 1 shows a sheet disk in plan embodying my invention and particularly intended to be molded over a container mouth to form a hood cap or cover thereon in accordance with my invention.

Fig. 2 likewise shows in plan a sheet material disk of my invention adapted to be pressed into hood form on a container mouth, the sheet material being impregnated or treated throughout with material or substances within the scope of my invention.

Fig. 3 more or less diagrammatically illustrates in side elevation, a bottle mouth, a forming head, and in edge view a disk of Figs. 1 or 2 in heated condition to be pressed down and molded on the bottle mouth by any suitable head diagrammatically illustrated.

Fig. 4 shows a bottle mouth and the sheet disk shaped thereon to form a hood cap or cover self secured thereon.

Fig. 5 shows in side elevation, paper or other sheet fibrous material possessing the characteristics of and embodying my invention, and in skirted or flared hood form for application in such form to container mouths for securing thereon, when softened by heat, by contraction under the exterior container mouth rim.

In carrying out my invention, flat sheet disks 1 are punched or stamped from sheet material such as paper or other fibrous material suitable for the uses to which the completed disks are to be applied, such as exteriorly capping the mouths of containers. These flat disks 1 are of a size to form a skirted or flanged cover or hood cap, such as 3, that will exteriorly cover and protect the mouth portion of a container, such as bottle 2, and fit under the shoulder formed by the annular exterior rim 2^a, of the mouth portion thereof, or otherwise to lock the cap on the bottle mouth by contraction into a depression or under a projection at the exterior of the neck.

It is a characteristic of my invention that by embodying in the disk certain substances or their equivalents, I can form each disk of a single ply or layer of thin inexpensive fibrous material such as certain commercial papers or so-called pulp boards, without building up special material layer by layer or otherwise constructing the same in lami-

nated or multi-ply form to structurally include therein layers of one or more materials. I have discovered that a sheet of comparatively thin flexible commercial paper of one thickness, when carrying any one or more of several substances such as waxes that meet certain requirements, distributed throughout a sheet of such paper, or if only at the portions thereof that are to perform securing or holding functions, will possess certain characteristics necessary for hood cap purposes, under my invention. For instance, sheet fibrous material suitable for hood cap purposes, impregnated in whole or in part with any one of certain synthetic waxes or insoluble soaps, or with carnauba wax, or with bleached refined Montan wax, or with shellac wax, or with a composition of candelilla wax and paraffin oil, or with the commercial product known as Smith and Nichols vegetable wax, possesses characteristics within the spirit and scope of my invention.

I find that sheet paper material that embodies any one or more of such substances remains stiff or set at the portions treated therewith, at atmospheric or climatic temperatures, and becomes soft, pliable or moldable when heated to the necessary temperatures, is perfectly sanitary for use on or in connection with food products, is approximately insoluble in water, is without objectionable odor when cool or set, does not attract vermin or insects, is non-poisonous, does not foul or objectionably adhere to glass or to the surfaces of the cap forming or applying head, and is not seriously objectionable in color.

The single ply or thin paper material disks can be treated with one or more of the waxes and insoluble soaps hereinbefore mentioned, by dipping in the wax while such wax is in the melted state, or in any other suitable manner. I prefer to impregnate the paper or sheet fibrous material with the molten wax and drain or otherwise remove surplus wax from the surface of the paper. As at present advised by experience, I wish to avoid excess exterior coatings of the wax on the surfaces of the paper but wish the wax to fill or impregnate the body or interior of the paper, as the excess surface coatings are but surplusage and when the paper is heated to the wax melting point such surplus surface coatings are liable to flow therefrom to adjacent or contacting objects. The wax is reduced to the melted state by heat, and when the liquid wax is applied to the paper sheet, or the paper sheet is completely or partially dipped or immersed in the wax, the wax is absorbed or otherwise taken up by the paper which then becomes internally impregnated with the wax. I preferably drain or otherwise dewax the paper surfaces to remove exterior or surface wax from the paper to avoid excess exterior coatings of wax or wax surplusage, while retaining sufficient wax within the body of the paper and on the surface thereof, for the purposes of my invention. Any suitable method can be followed to remove exterior surplus wax from the paper.

The paper disks 1, can be impregnated and thereby rendered normally stiff at their edge portions only, see 1^a, Fig. 1, or can be rendered normally stiff throughout by more or less complete impregnation, as indicated by the disk 1, of Fig. 2.

In both forms, however, the disk when softened by heating to or above the melting point of the binder, is molded, shaped or pressed on the bottle mouth into hood cap form, by any suitable forming, pressing or spinning head 5, diagrammatically indicated in the drawings. The hood cap thus formed on the bottle mouth from the flat disk 1 when softened by heat, has a usually flat central portion *b* (whereon usually appear certain exposed display indicia, legends or advertising) and an annular depending skirt or flange *c* that quickly sets and is contracted at *d* under the exterior rim of the bottle mouth, and that becomes stiff or more or less rigid at climatic or atmospheric temperatures to secure or lock the hood cap on the bottle mouth. The skirt or flange thus provides the self securing or locking portion *d* of the hood cover, and it is essential that at least the portion of the paper disk 1 that is to form this part *d* of the hood cap, be impregnated with one or more of the waxes hereinbefore mentioned or the equivalent thereof.

The flat paper disks will be usually placed on the market properly impregnated with one or more of the waxes or equivalent substances, usually with the central portions of the disks imprinted or bearing the desired display matter.

The bottlers will purchase these flat treated paper disks, and will be equipped with proper implements or machines for molding the flat disks, when softened by heat, directly on the bottle mouths to form the hood caps thereon, in such manner that said caps remain locked or secured on the bottle mouths by the stiff or rigid contracted flanges of the caps. The softened portions of the caps, quickly cool to atmospheric temperatures and quickly become set and rigid so that removal of the cap preferably requires rupture or tearing of the flange thereof, although this can be accomplished by the fingers without the use of special or other tools.

Bleached Montan wax, carnauba wax, candelilla wax, shellac wax, and Smith and Nichols vegetable wax are waxes of commerce and are known in commerce by these names. Shellac wax is obtained in the process of refining shellac, and is derived from the secre-

tion of an insect. Montan wax is a mineral product produced in Europe but for the purposes of my invention it is necessary to use the refined or bleached commercial product of this wax, either alone or mixed with a small proportion of paraffin oil, or other neutral wax, grease or oil, suitable for the purpose.

Carnauba, candelilla, and Smith and Nichols, are vegetable waxes and for my purposes can be mixed with usually small proportions of paraffin oil, or other neutral waxes, oils or greases of the proper characteristics. It is believed to be necessary, however, to mix the candelilla wax with paraffin oil or its equivalent in about the proportions of two parts wax to one part oil, to produce a composition suitable for my purposes, for this wax when used for my purposes without being thus diluted sticks to glass and metal and tends to foul the bottle neck and cap forming head. The paraffin oil, or its equivalent, corrects this difficulty and renders the wax neutral as an adhesive for glass and metal when impregnating the paper disk.

All of these waxes even when mixed with paraffin oil in proper proportion, are homogeneous masses or solids at atmospheric or climatic temperatures and paper impregnated therewith remains sufficiently stiff, set or rigid at such temperatures for the purposes of my invention, and becomes soft or moldable when heated approximately to the melting points of the waxes which is approximately between 150° and 200° F.

Paper or other sheet fibrous material impregnated with or embodying various insoluble soaps or so-called synthetic waxes, also possesses the characteristics of, and is within the scope of my invention. Such insoluble soaps are solids at climatic temperatures and have melting points around 270° F. more or less, and can be composed of Montan, carnauba, or candelilla wax, stearic acid, and other ingredients. For instance, I find that compositions about as follows are suitable for the purposes of my invention, namely:—

(1) Montan wax ..... 500 g.
Stearic acid ..... 270 g.
Soda ash solution ..... 15½ g.
Magnesium acetate solution ..... 17 g.
Caustic aluminum solution about ..... 37½° Bé 50 c. c.

For use for my purposes, this composition is mixed with paraffin oil in the proportion of about 20 parts of composition to 1 part oil.

(2) Carnauba wax ..... 420 g.
Stearic acid ..... 420 g.
Magnesium acetate solution ..... 15 g.
Caustic aluminum solution about ..... 37½° Bé 75 c. c.

This composition is also mixed with paraffin oil in about the same proportions as where the composition (1) is used.

(3) Candelilla wax ..... 160 g.
Stearic acid ..... 640 g.
Magnesium acetate solution ..... 10 g.
Paraffin ..... 48 g.
Caustic aluminum solution about ..... 37½° Bé 120 c. c.

For my purposes this composition is mixed with paraffin oil in about the proportions of ten parts composition to one part oil.

The proportions of the ingredients of the several compositions can be varied and also equivalent ingredients can be employed in each composition, and I do not wish to limit my invention to the compositions as outlined but wish to cover and include sheet material possessing the characteristics of my invention whatever waxes, compositions or substances suitable for the purpose, may be included or embodied therein.

In the compositions indicated caustic solutions of other metals than aluminum can be employed to form an insoluble stearate or palmitate (for example, such as lead).

Paper or other fibrous sheet material of my invention hereinbefore described possessing the characteristics substantially as pointed out, can be put on the market in various forms, and shapes for container capping and other purposes, and I do not wish to limit all features of my invention to the flat disk form, hereinbefore described.

For instance, in Fig. 5, I show such sheet material of my invention in premolded, drawn or pressed into flanged, skirted or flared hood cap form, for the market. These caps 7, of Fig. 5 can be prepared for the market from the flat disks of Figs. 1 or 2, either impregnated at the lower edge or securing portions of their skirts 7^a, or impregnated throughout. These flared skirted caps are usually pressed or drawn by dies from commercial sheet paper such as pulp board, as hereinbefore described, and then impregnated with any one or more of the commercial or synthetic waxes hereinbefore mentioned, as described in connection with the flat disks. Surplus or surface coating wax is preferably removed from the skirted caps, before they are ready for packing and shipment.

These skirted treated caps, are flared so that they can be nested to reduce the space required for packing, and also to facilitate the application thereof to bottle mouths. These flared skirted caps are softened by heat before or after they are slipped onto the bottle mouths, and while so softened, any suitable means is utilized to contract the securing impregnated portions of the cap skirts, to fasten and secure the caps on the bottle mouths, by the cooling and setting

thereof, as hereinbefore described in connection with the flat impregnated disks.

No claim is made herein specifically to a paper material hood cap carrying any one of the so-called synthetic wax or insoluble soap binders, as claim thereto is made in my hood cap application filed Sept. 15, 1926, Ser. No. 135,668.

Also, no claim is made herein specifically to a paper material hood cap carrying a binder composition that includes a hard high melting point ingredient and a soft modifying ingredient, as such as specifically claimed in my pending hood cap application filed Jan. 29, 1923.

Various changes, modifications and variations can be resorted to without departing from the spirit and scope of my invention, hence I do not wish to limit myself to the exact disclosures hereof.

Desiring to protect my invention in the broadest manner possible under the law, what I claim is:—

1. In combination with a bottle having an enlarged mouth portion, of a cap molded snugly over the enlargement thereof, said cap being impregnated with a quick setting binder, said binder in its solidified form not objectionably adherent to glass and having no tendency to foul the same as a result of the molding and cooling of the cap incident upon its application to the bottle mouth, whereby the cap is held in position on the bottle mouth by the rigidity of the contracted portion of the cap below the enlarged mouth portion which forms a camlike obstruction against removal of the cap.

2. In combination with a bottle having an exteriorly enlarged mouth portion, of a paper hood cap fitted over said mouth portion with its skirt molded snugly to and contracted under said enlargement and securing the cap tightly down on the bottle mouth by the non-adhering contact between said contracted skirt portion and said bottle enlargement, the annular securing portion of said cap skirt embodying a quick setting binder, said binder in its solidified form not adherent to glass and having no tendency to adhere thereto as a result of the molding and cooling of the cap incident upon its application to the bottle mouth.

3. In combination with a bottle having an enlarged mouth portion, of a sheet fibrous material hood cap having an annular securing skirt portion impregnated with a hard quick-setting binder that strips or peels from glass surfaces, said cap being fitted snugly over said mouth portion with its securing skirt portion molded to and contracted in rigid form under said enlarged portion and thereby secured down on the bottle mouth.

4. In combination with a bottle having an enlarged mouth portion, of a thin sheet paper material hood cap covering said mouth portion, the skirt of said cap having an annular non-glass fouling securing portion carrying a hard wax-like binder, said securing portion being molded snugly to and set in rigid contracted form under said enlargement into close non-glass fouling contact therewith, whereby said enlargement constitutes an obstruction above said rigid contracted skirt portion to secure the cap down on the bottle mouth.

5. A fibrous sheet material hood cap for covering the enlarged mouth portion of a bottle and secured thereon by molding the cap skirt into rigidly set contracted form under the enlarged bottle mouth portion, the skirt of said cap carrying a quick-setting high-melting-point bottle-surface-contacting binder possessing the characteristic of stripping or peeling from such surface.

6. A hood cap provided with a cap securing quick setting binder rendering the portion of the cap embodying the binder moldable when highly heated and hard and rigid and capable of stripping or peeling from glass bottle surfaces when set.

7. A paper hood cap carrying a quick-setting binder characterized by its capacity of stripping or peeling from glass bottle surfaces.

8. A paper sheet hood cap carrying a cap-securing binder rendered quick-setting and non-adherent to glass bottle surfaces by the presence of a hard wax, such as carnauba wax.

9. A sheet paper hood cap, for covering the exteriorly enlarged mouth portions of glass bottles, carrying a quick-setting cap-securing binder extending to the glass contacting surface of the cap securing portion of the cap skirt and embodying a substantial quantity of a hard high melting point wax that peels or strips from glass bottle surfaces.

10. In combination with a bottle having an enlarged mouth portion, of a single-ply sheet paper material hood cap having its annular skirt carrying a non-fouling hard high-melting point quick-setting binder exposed on the skirt surface, said cap fitting snugly over the enlarged bottle mouth with said skirt molded to and under said enlargement, the rigidly set contracted portion of the skirt located under said enlargement serving to seal and secure the cap down on the bottle mouth.

11. In combination with a bottle having an enlarged mouth portion, of a fibrous sheet material hood cap the skirt of which has an annular securing portion embodying an exposed hard quick setting plastic, such as carnauba wax, said cap snugly covering said mouth portion and contracted into rigid cap securing form under the enlarged mouth portion.

12. A hood cap for a bottle having an enlarged mouth portion, composed of flexible fibrous sheet material and a high-melting point quick-setting binder providing the cap skirt with an annular securing portion having the binder exposed to contact the bottle surface, said securing portion formed and adapted for molding when hot and plastic to and under the bottle mouth enlargement and to set thereunder in rigid contracted cap securing form without leaving an objectionable glass-fouling deposit when removed from the bottle.

13. A fibrous material hood cap carrying a carnauba wax binder.

14. A fibrous material hood cap having the cap securing portion of its skirt impregnated with a carnauba wax binder.

15. A hood cap for glass bottles and other containers, composed of a single-thickness paper material sheet carrying a binder rendering the paper material carrying the same soft for molding when heated to or above the melting point of the binder, and quick setting to hard hood-cap-securing form, and capable of stripping from glass without objectionably fouling the same.

16. A hood cap for containers, composed of a single-thickness sheet of fibrous paper-like material, and a binder contained within the fibrous mass of the sheet and extending to the surfaces thereof, said binder when fused within the sheet by high temperature rendering the portion of the cap containing the binder moldable, quick-setting to approximately hard stiff condition and of non-fouling properties.

17. A paper hood cap for glass bottles and containers carrying a cap-securing normally hard high-melting point quick-setting plastic rendered non-glass fouling by the presence of a substance which has the property of readily peeling from glass.

18. A hood cap for containers composed of a sheet of paper of one thickness the skirt of which carries a quick-setting high-melting point binder rendering said skirt capable of peeling from glass without leaving fouling deposits thereon.

19. A paper hood cap for glass containers containing an internal high-melting point binder impregnum imparting to the cap quick-setting and non-fouling characteristics.

20. A non-fouling hood cap disk for glass and other containers having an annular cap securing portion composed of a paper sheet carrying a binder of definite high-melting point that renders said sheet moldable when the binder therein is melted by high temperature, and quick setting to a normal rigid condition.

In testimony whereof I have hereunto set my hand at Fulton, N. Y., this 29th day of June, 1923.

WILBUR L. WRIGHT.