

E. C. & V. E. SMITH.
SEALING MATERIAL FOR BOTTLES AND THE LIKE.
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983,319.

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Fig. 1.

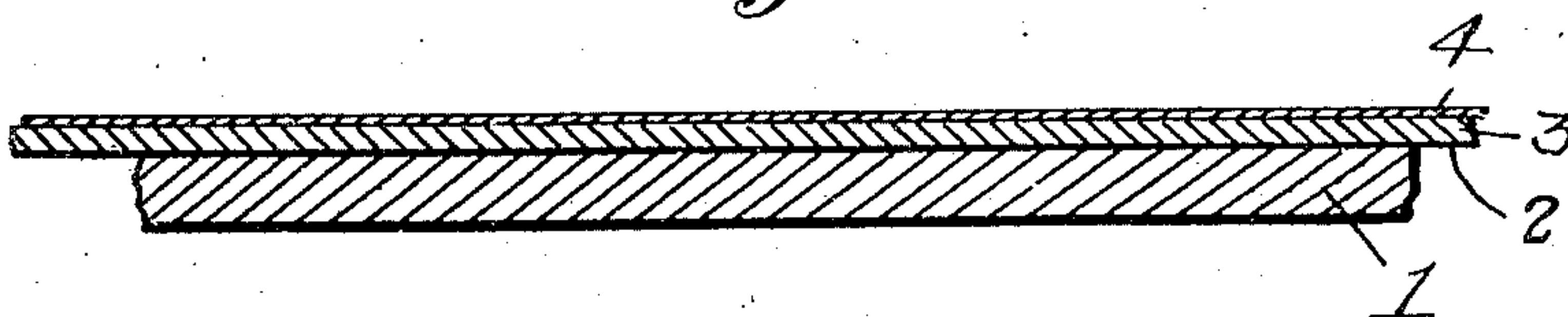
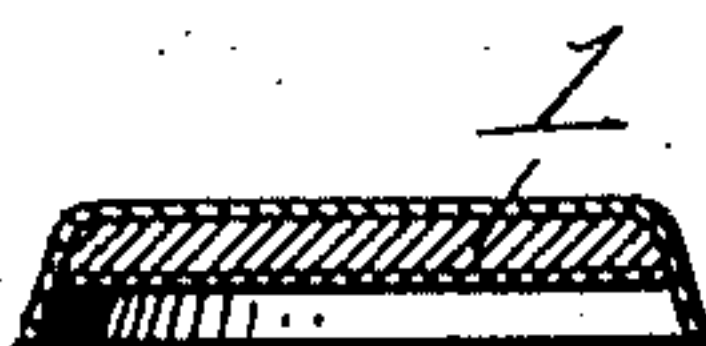


Fig. 2



Witnesses:
Wm. A. Courtland
Henry C. Workman

Eugene C. Smith
Victor E. Smith
Inventors

By their Attorneys *Smith Bros.*

UNITED STATES PATENT OFFICE.

EUGENE C. SMITH AND VICTOR E. SMITH, OF PROVIDENCE, RHODE ISLAND.

SEALING MATERIAL FOR BOTTLES AND THE LIKE.

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Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed September 27, 1909. Serial No. 519,852.

To all whom it may concern:

Be it known that we, EUGENE C. SMITH and VICTOR E. SMITH, both citizens of the United States, and residents of the city and county of Providence, in the State of Rhode Island, have invented new and useful Improvements in Sealing Materials for Bottles and the Like; and in order that those skilled in the art may understand and practice our invention we give the following specification.

We have illustrated our invention in the accompanying drawings, of which—

Figure 1 is a cross section view of the sealing material, and Fig. 2 is a similar view of a metallic cap such as is used for sealing bottles having a sealing disk constructed in accordance with our invention inserted therein.

Our invention relates to sealing material for hermetically closing bottles and similar vessels to preserve their contents, and it has for its object to provide a sealing material for the purposes stated which shall possess advantages over the materials at present generally known and commonly used.

Our invention is more particularly intended to provide an improved sealing material for use in connection with metallic caps which are crimped upon the necks of bottles, which sealing material shall be easy and inexpensive to manufacture and which shall form a perfect gas and air tight seal to prevent the contents of the bottles from deterioration, and which shall be unaffected by the conditions involved in capping, bottling and sterilization, and also unaffected by the liquids or contents inclosed in the bottles, and at the same time impart no flavor or objectionable influence to the same.

Cork has long been regarded as the most satisfactory and efficient sealing material for the purposes stated, but owing to the growing scarcity and increasing cost of the same various expedients have been proposed from time to time to meet this condition. The wide use of the metallic or crown cap while reducing the amount of cork required to form a seal compels the selection of the finest grade of cork, freest from pores, in order to produce a gas or air tight seal. This condition not only involves the expense of the best grade material, but also the expense involved in the process of selection and gives rise to considerable waste. In order to insure gas tight seals of cork

and similar material, it was found necessary to back the cork disk or lining of the cap with such material as paraffin paper or the like; but this while adding to the expense did not remedy but only mitigated the difficulty. Various materials other than cork have been proposed but these, so far as we are aware, are generally either too expensive in their production or are inferior to cork as a seal, or deteriorate with age, or do not withstand the conditions occurring in capping, bottling or sterilization, or impart a flavor or odor to the contents of the bottles, or are acted upon by such contents. When the enormous quantity of bottle seals required for use are considered, the item of expense or cost of their production becomes a leading feature for consideration, and when it is further considered that in a large proportion all the materials to be bottled consist of aerated or carbonated liquids, or liquids containing or generating gas under pressure, it will be apparent that a successful sealing material must be low in cost of production and must at the same time form such a perfect seal with the neck of the bottle that no air may enter or gas escape.

Our invention which from careful tests has been found to satisfy and fulfil the above stated conditions and requirements is carried out as follows. We take a sheet of relatively soft compressible felt or fibrous material of about one twelfth of an inch more or less in thickness. For this material we have found satisfactory a specially made compressible felt paper closely resembling blotting paper but preferably softer. This material is represented in Fig. 1 of the drawings on an exaggerated scale as to thickness by the numeral 1. On one side of this compressible fibrous material 1 we secure a sheet of thin but tough and strong fibrous paper. For this thin sheet material, we have found a good Manila paper to give satisfactory results. This thin sheet material is represented in the drawings by the numeral 3. The thin tough sheet 3 is attached to the soft compressible sheet 1 by means of an elastic glue composition, indicated at 2, of such character as will not become hard or brittle upon drying or setting. For this purpose we employ an elastic glue composition made up of glue, glycerin and saccharine material such as sugar or molasses, in about the proportions respectively as they are used in the well

known printers' roller composition. This elastic glue composition 2 is spread upon the thin sheet material 3, and a number of such sheets coated with said composition may be prepared, to be used as may be necessary. When these sheets are used the glue composition is softened or melted by placing the sheets upon a steam table or hot plate or by heating them in any convenient manner. When the glue has been softened or melted in this manner the thin sheets are applied to the compressible fibrous sheets 1, pressure being applied by means of rollers or otherwise, and the two sheets are united and are then laid aside to dry and set. The outer face of the thin sheet is then coated with a layer of cellulosic varnish, as indicated by numeral 4. For this material we prefer to use a flexible pyroxylin or collodion varnish or the so called celluloid varnish. This coating is applied to such thickness that the same will, when fully dried, be of about two thousandths of an inch thick. When this cellulosic coating is dried, which will take but a few minutes, sealing disks of a size to snugly fit the caps may be stamped therefrom, and are ready for insertion in the caps. It will be understood that the cellulosic varnish coating 4 will in use come in contact with the edges of the mouths of the bottles.

The material produced as above described constitutes a very perfect sealing material for liquids and beverages of all kinds such as are usually bottled and sealed. It forms a practically perfect seal when applied in the usual manner or with the sealing and capping machines usually employed by bottlers, being air and gas tight and successfully sealing the gas contained or generated in gaseous or aerated liquids against escape. The cellulosic coating being flexible and stretchable and impervious to gases, forms a gas and air tight seal and when the seal is applied by the usual bottling apparatus, it forms a perfect gas and air tight seal, the compressible fibrous backing sheet yielding to the pressure of the mouth of the bottle and the cellulose coating being flexible and stretchable, makes close contact about the lips or edges of the mouth of the bottle preventing access of air to, or escape of gases from the contents of the bottle. The cellulose coating is also unaffected by contact with the contents of any liquids or beverages which are customarily put up in bottles for sale and imparts no odor or flavor to such liquids or beverages. The materials employed in the manufacture of our sealing material are such that the same may be produced at a cost below that of cork or of any satisfactory substitute sealing material with which we are acquainted. Our sealing material also withstands a degree

of heat as high as 250° F. or a heat which is considerably higher than any degree of heat used in the sterilizing or pasteurizing processes employed in bottling.

We are aware that pyroxylin, celluloid or the like, varnish is, *per se*, old as a varnish or surfacing material, but we are the first, so far as we are aware, to discover that the same possesses properties and characteristics in relation to the sealing or capping of bottles and the like, particularly in combination with other features of our invention, whereby important and useful advantages are obtained, and a sealing material produced which successfully meets the requirements and conditions of a bottle seal, and we therefore claim the employment of the same in this connection broadly.

What we claim is:

1. A sealing material of the character described, comprising a body portion of compressible fibrous material and a layer or facing thereon of flexible cellulosic varnish to contact with the mouth of the vessel to be sealed.

2. A sealing material of the character described, comprising a backing of compressible fibrous material, a relatively thin paper sheet united thereto and a coating or layer of flexible cellulosic varnish on said thin paper sheet.

3. A sealing material of the character described, comprising a body portion of compressible fibrous material and a layer or facing of flexible collodion varnish to contact with the mouth of the bottle to be sealed.

4. A sealing material of the character described, comprising a backing of compressible fibrous material, a relatively thin paper sheet united thereto and a coating or layer of flexible collodion varnish on said thin paper sheet.

5. A sealing material of the character described, comprising a backing of compressible fibrous material, a relatively thin paper sheet united thereto by a flexible glue composition, and a coating or layer of flexible collodion varnish on said thin paper sheet.

6. The combination with a metallic sealing cap of a sealing disk therein, said disk comprising a body portion of compressible fibrous material having an outer layer or facing of flexible collodion varnish.

7. The combination with a metallic sealing cap of a sealing disk therein, said disk comprising a body portion of compressible fibrous material, a facing of thin paper united thereto and an outer coating of flexible collodion varnish on said paper.

EUGENE C. SMITH.
VICTOR E. SMITH.

Witnesses:

ALFRED A. SAUNDERS,
WILLIAM B. BLIFFORD.