

No. 791,778.

PATENTED JUNE 6, 1905.

W. E. HEATH.  
SEALING DEVICE.  
APPLICATION FILED SEPT. 2, 1904.

Fig. 1.

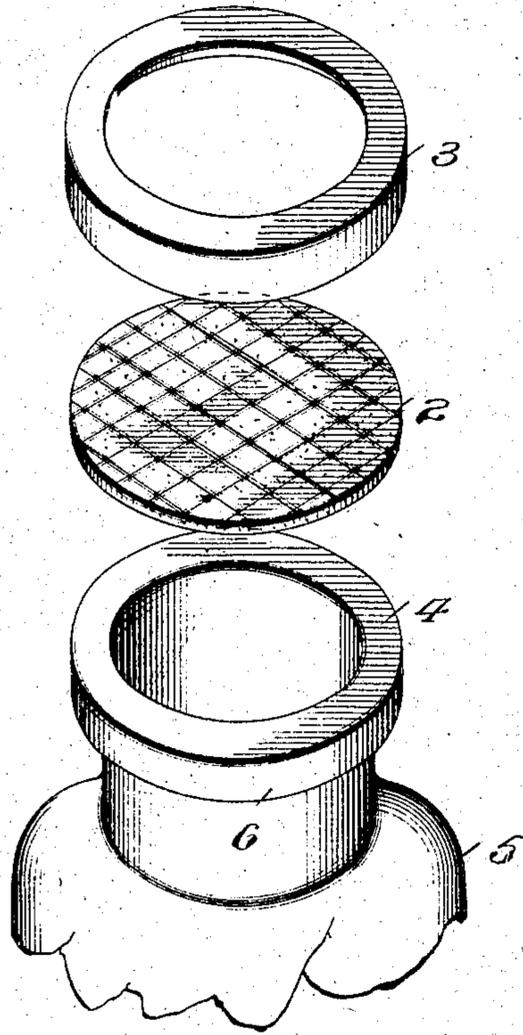


Fig. 2.

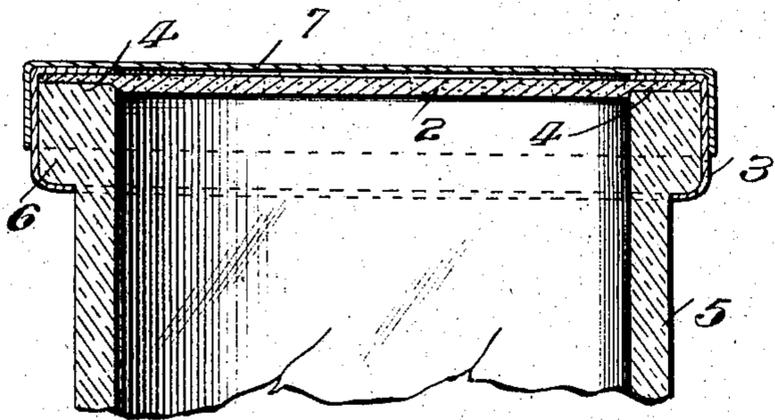
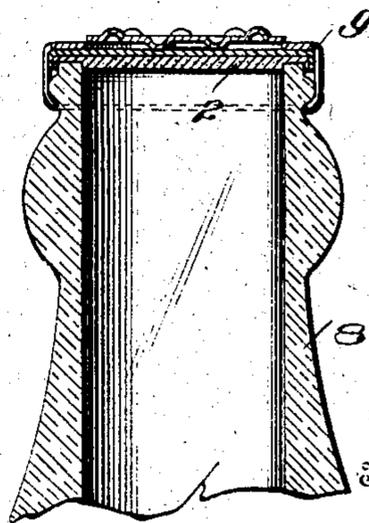


Fig. 3.



Witnesses  
*pro Inven.*  
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# UNITED STATES PATENT OFFICE.

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## SEALING DEVICE.

SPECIFICATION forming part of Letters Patent No. 791,778, dated June 6, 1905.

Application filed September 2, 1904. Serial No. 223,151.

*To all whom it may concern:*

Be it known that I, WILLIAM E. HEATH, a citizen of the United States, residing at Baltimore city, Maryland, have invented certain  
5 new and useful Improvements in Sealing Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use  
10 the same.

This invention relates to certain improvements in sealing devices for bottles, jars, and the like, and more particularly relates to a novel combination of holding and compressing means with a peculiar compressible sealing medium.  
15

Heretofore cork, composition washers, (composed largely of ground wood,) and rubber rings and tin-foil have been used in conjunction with metal sealing-caps for sealing the  
20 mouths of bottles and jars. Cork is expensive and is not a sanitary sealing medium when used in connection with a metal cap on account of the soot and dirt which accumulate  
25 in the pores and cracks of the cork and also because of the porosity of the cork, which permits the liquid contents of the vessel to permeate to the metal cap, thereby causing corrosion. An effort has been made to overcome this disadvantage by using paraffin-paper as a backing for the cork; but this additional element merely adds expense. To avoid the objections to as well as the almost prohibitive cost of cork as a washer composition  
30 washers, above mentioned, have been used in conjunction with waxed paper, as the wood board from which such washers are made is not impervious nor waterproof. The composition washers are of a stiff board-like consistency, not capable of sufficient compression to make a proper seal, and are composed largely of ground wood, which is impure inasmuch as it contains all the salts and wood acids found in the original tree. These composition washers are hence chemically impure  
35 and as a sealing medium are objectionable in other respects. Rubber rings and tin-foil are

too expensive for ordinary use and are only used in connection with food products that are processed—that is, cooked or boiled after  
50 the package is sealed.

The object of this invention is to combine with a metal sealing or compressing cap a cheap compressible sealing medium of a chemically-pure and sanitary nature and which can  
55 be easily and economically treated—for instance, waxed or paraffined—to render the same impervious to the liquid contents of a jar or other package without causing any objectionable discoloration of the sealing medium.  
60

The invention consists in the combination of a sealing or compressing cap or means to compress a sealing medium against the sealing edge or shoulder of a jar or other package to form and maintain the seal with a compressible sealing medium comprising one or more plies of approximately chemically-pure sheet raw pulp usually treated to render the same impervious.  
65 70

Referring to the accompanying drawings, Figure 1 is a perspective view of the mouth portion of a jar, the sealing-medium disk and metal sealing-cap being shown separated and arranged above the mouth of the jar in position to be applied thereto. Fig. 2 is a sectional view through the jar-mouth and sealing device locked thereto in sealing position, an exterior protecting-cap being also shown. Fig. 3 is a sectional view through a bottle-mouth and sealing-cap locked thereto and compressing a sealing-medium disk of sheet raw pulp.  
75 80

The sealing-medium disk 2 shown in the various views of the accompanying drawings  
85 is of sufficient thickness and of such a texture or nature as to be compressible to the necessary degree to form a tight seal without cracking or breaking, and thereby permitting the liquid of the package to leak through the sealing medium. The disk 2 is also usually waxed,  
90 paraffined, or otherwise suitably treated to render the same impervious to the liquid of the package and to prevent the disk becom-

ing exteriorly discolored objectionably by the liquid of the package. Said disk can be produced of the desired thickness to insure the proper compressibility by pasting together several plies or sheets of the sheet raw pulp hereinafter described or by employing a single ply which has been rolled or produced of the desired thickness. Said disk is composed of approximately chemically-pure material which is white in color and which approximately retains the white color after the disk has been treated to render the same impervious, the object being to produce a "sanitary" sealing medium which can be compressed by the sealing-cap in the act of sealing and which will not absorb nor in any way taint nor become tainted by the liquid of the package. Said disk hence comprises sheet raw pulp treated where it is to be used to seal liquids to render the same impervious and from which the impurities—such as pitch, gums, salts, and wood acids—have been essentially removed, so that the sheet raw pulp consists of pure white cellulose fiber matted together in a compressible mass.

Wood is made up of vegetable fibers or cellulose glued or bound together by a substance which is ordinarily termed "pitch" or "gums." These gums and pitch substances are known chemically as "lignin" and form the incrustating or intercellular substance between the fibers. Pure cellulose fiber is pure pulp after all the impurities in the wood have been extracted, including the gums and wood acids. This pulp is made by dissolving the intercellular substances, the gums, and acids in caustic soda. The wood is first chipped or reduced to small pieces or chips and then cooked for a number of hours in a solution of caustic soda under steam-pressure. The resulting pulp is then washed with filtered hot water, which removes the soda and gums in the solution. The pulp is then carried through a series of purifying-machines and is thereafter bleached to remove all traces of coloring-matter, leaving the stock white and chemically pure. The pulp is finally rolled in sheets of the desired thickness for convenience in handling and shipping preparatory to delivery to paper-mills, where it enters as an ingredient or raw material in the process of manufacturing paper fabric.

For bottled products of a dry nature, such as powders, I can in my combination use the sheet raw pulp as it comes direct from the mill for the sealing medium without additional treatment to render the pulp impervious. For liquids and products containing liquids such as are liable to permeate a somewhat porous material I prefer to treat the sheet raw pulp with wax, paraffin, or other suitable material to render the pulp impervious without destroying its compressible quality and preferably without subjecting the pulp

to objectionable discoloration. The sheet raw pulp can be rendered impervious by a simpler and more economical process than must be followed in creating a sealing medium from commercial blotting-paper, and the pure sheet raw pulp furthermore produces a white and strictly sanitary seal at a cost far below that of the paper on account of the pulp being strictly a raw material, while the paper is a finished product made from raw material. The raw-sheet-pulp sealing medium is also far cheaper, purer, and more sanitary than cork, rubber, or wood board and is free from the chemical impurities which are present in the latter.

Merely as examples of forms of metal sealing-caps which can be employed as elements of my combination I show in Figs. 1 and 2 a metal sealing-cap for jars and in Fig. 3 a metal sealing-cap for a bottle; but I do not wish to limit my combination to any particular construction of metal sealing and compressing cap, and I do not in this application make claim to the forms and arrangements *per se* of metal sealing-caps shown.

In the jar-seal shown the metal cap 3 compresses the sealing-medium disk 2 against the top edge 4 around the mouth of the jar 5 to maintain the tight seal. The sealing-cap 3 is in the form of a ring having a horizontal top flange, leaving the central opening exposing the central portion of the imperforate sealing-medium disk 2, so that the disk can be cut or severed around the inner edge of the cap to open the jar. The vertical annular flange of the cap 3 is turned or spun under the annular exterior locking-shoulder 6 of the jar, while the cap is held down under the necessary pressure to compress the sealing-medium disk 2 against the edge of the jar.

7 is an exterior cap covering the top portion of the sealing-cap and the exposed part of the disk 2 and having a vertical flange fitting around and frictionally engaging the vertical flange of the sealing-cap.

In Fig. 3 the sealing-medium disk 2 of the raw sheet-pulp is compressed against the top edge of the bottle 8 by the removable sealing and compressing cap 9, which has its vertical flange turned under the exterior locking-shoulder of the bottle to lock the cap to the bottle, holding the sealing-medium disk compressed to the necessary extent to maintain the seal. The cap can be constructed in any suitable manner for removal, as will be apparent to those skilled in the art.

What I claim is—

1. A sealing device comprising a compressible disk of sheet raw pulp forming the sealing medium, in combination with locking and compressing means to hold said disk compressed maintaining the seal, substantially as described.

2. A sealing device comprising a sealing

and compressing cap, in combination with a sealing medium comprising a sheet of compressible approximately pure raw pulp, substantially as described.

- 5 3. A sealing device comprising a sealing medium of compressible sheet raw pulp treated to render the same impervious, in combination with means to hold said medium compressed against the sealing-seat of a package.
- 10 4. A sealing device comprising a compressi-

ble impervious disk of white sheet raw pulp, in combination with a flanged metal sealing-cap.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM E. HEATH.

Witnesses:

F. HEATH COGGINS,  
D. ARDIN CARRICK.