

No. 834,719.

PATENTED OCT. 30, 1906.

D. GENESE.

HERMETIC SEALING MEANS.

APPLICATION FILED DEC. 28, 1904. RENEWED APR. 13, 1906.

Fig. 1.

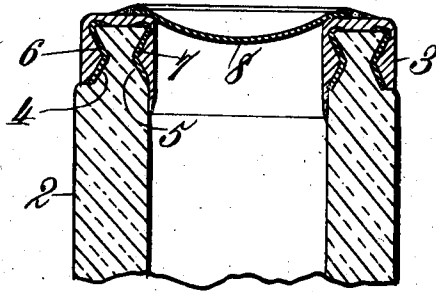


Fig. 2.

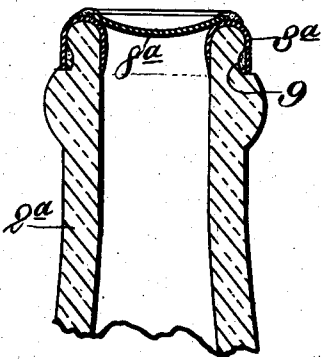


Fig. 3.

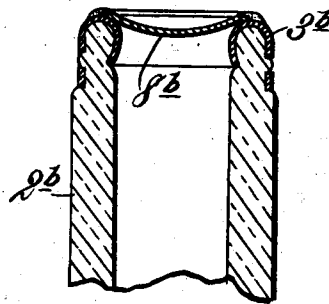
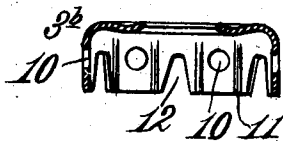


Fig. 4.



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UNITED STATES PATENT OFFICE.

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HERMETIC SEALING MEANS.

No. 834,719.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed December 28, 1904. Renewed April 13, 1906. Serial No. 311,555.

To all whom it may concern:

Be it known that I, DAVID GENESE, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented new and useful Improvements in Hermetic Sealing Means, of which the following is a specification.

This invention relates to hermetic sealing means, and it may be employed in conjunction with many kinds of receptacles, such as bottles of glass and jars of earthenware, for containing different kinds of substances, either liquid or solid.

In the drawings accompanying and forming a part of this specification I show several different articles provided with hermetic sealing means involving my invention; but I do not limit myself to the disclosure thus made, for certain variations may be adopted within the scope of the claims succeeding the description hereinafter made of said sealing means.

The invention includes as one of its features a receptacle having a seal-seat and means for holding the seal-seat permanently in place, combined with a seal and solder for holding the seal on its seat and fusible. The seal, as will hereinafter appear, is puncturable, in order to effect the removal of the contents of the receptacle, and when the contents of the receptacle have been withdrawn the seal can be removed by heat applied to the solder, and the heat may be either that of boiling water or a smokeless flame; but these are points upon which no particular reliance is placed, except that the seal is held relatively permanently in place by a fusible solder. The seal-seat may be of any desirable character—for example, in the form of a metal ring, either cast onto the receptacle, cemented thereto, or embedded into the receptacle mass. In employing a cast metallic seal-seat I interpose between the seat and the receptacle a yieldable medium, so that when the said cast metal seat, which is usually made in the form of a band, shrinks the receptacle, provided the same be of glass or equivalent material, cannot be fractured or broken. This yieldable medium between the cast seat and the receptacle may be of any desirable character, a heat-resisting medium, such as asbestos, being quite satisfactory for the purpose. As will be understood, the sealing means is not limited to application to any particular kind of receptacle; but it is particularly advantageous when used in connection with bottles for containing beer, and when employed for

such use the seal, its seat, and the solder for holding the two parts relatively in permanent relation will be made, preferably, of tin or some material which will not impart to the beer or other liquid a disagreeable or undesirable effect.

Referring to the drawings, Figure 1 is a sectional elevation of the neck of a bottle including a hermetic sealing means involving my invention. Fig. 2 is a similar view and illustrates a modification. Fig. 3 is a like view of a different modification. Fig. 4 is a sectional view of the seal-seat shown in Fig. 3.

Like characters refer to like parts throughout the several figures.

In Fig. 1 I illustrate a portion of a receptacle, and such portion is shown as being the neck of a bottle, as designated by 2. As will be understood from the foregoing statements, the invention includes a seal-seat and a seal, the former of which may be connected to the receptacle in any desirable way. The seal-seat represented in Fig. 1 is of annular form and is denoted by 3. Said seal-seat 3 is cast to or upon the bottle-neck. In finishing said neck I form, near the upper edge thereof, interiorly and exteriorly, annular grooves, as 4 and 5, respectively, which may be of any desirable cross-sectional shape, but which are illustrated as of V form in cross-section, so that the metal which is to form said annular seat can enter the grooves in order to secure a permanent and interlocked relation between the cast seal-seat and the bottle-neck. Prior to casting the circular seal-seat or molding it onto the bottle I place in the two grooves 4 and 5 rings, as 6 and 7, of some yieldable and preferably heat-resisting material. These rings 6 and 7 will snugly fit the grooves, and their upper edges will overlie the upper edge of the bottle-neck. When the two rings 6 and 7 are fitted in place, I can cast the seal-seat to the bottle. By reason of the interposition of the yieldable substance between the cast metallic seal-seat and the bottle-neck there is no possibility when the seal-seat shrinks or contracts in cooling of cracking or fracturing the bottle.

The material of which the two rings 6 and 7 is composed is preferably of a heat-resisting or non-conducting character, and I find asbestos to be satisfactory for this purpose, by virtue of which when I pour the hot molten metal into the seal-seat-forming molds such hot metal cannot fuse the glass of which the bottle is composed owing to the interposi-

tion of the non-conductors of heat between the parts. The cast seal-seat 3 has its upper side rounded to prevent the presence of objectionable sharp edges, and the seal 8 rests on the upper side of the seat. In the case of beer-bottles the seal 8 will be preferably made of tin and will be readily puncturable, so that when it is permanently united with the seal-seat a sharp instrument can be projected through it to permit the withdrawal of the contents of the bottle. The seal is of disk form and is concaved or dished in its upper side to receive the convex end of a holding-tool which holds the disk or seal centrally over the seat therefor. The seal is illustrated as of concavo-convex form and as having a slight straight or flat marginal portion which is directly sustained upon the annular seat or band 3. When the seal 8 is positioned on the band after the bottle, of which the neck 2 forms a part, is filled, the seal will be relatively permanently united to its seat by means of a solder which is readily fusible. I find that a solder for this purpose can be satisfactorily made of a composition

of pure tin, cadmium, and bismuth. The sol-

der will of course withstand great pressure, and yet will readily melt, for example, at a point below the boiling-point. It will therefore be understood that after the contents of the bottle have been removed by puncturing the seal 8 said seal can be easily removed by dipping the bottle-neck into boiling water or passing it through a flame. The metallic solder, therefore, which unites the seal and its seat is consequently more readily fusible than either the seat or the receptacle, so that when the seal is removed by heat there is no possibility of fusing either the seat or the bottle or the means which hold the two latter parts in permanent relation.

In Fig. 2 the neck of the bottle is indicated by 2^a and the seal-seat by 3^a. In the outer side of the bottle, near the upper edge thereof, I form during the process of manufacture of the bottle-neck an annular rabbet or groove 9, into which what might be considered the lower edge of the annular seat is placed, cement of a suitable character having been put into the annular rabbet or groove. What might be considered the upper portion of the band from which the annular seat 3^a is formed is then rolled over the upper edge of the bottle-neck and then into the inside of the neck. The seat within the bottle-neck will be then rolled down firmly by the lateral pressure. When the annular seat or band is in place, it presents a structure that has depending flanges which closely embrace the top of the neck, the outer flange, as will be understood, being fitted and cemented into an external annular groove in the neck, so that the annular seal-seat or band will be permanently held in place. The cement is one that cannot be attacked by the

heat employed in removing the solder which holds the seal 8^a relatively permanently to its seat 3^a. The seal 8^a is held to the seat 3^a by fusible solder exactly as is the case with the seal 8. It will be understood that in the case of both seals, they being of concavo-convex form in cross-section, they fit within the upper open side of the annular seat, so as to aid the solder in holding the same in place.

In Fig. 3 I show another means of securing the seat to the bottle-neck, the latter being designated by 2^b and the former by 3^b. Both annular seal-seats 3^a and 3^b can be secured in place by spinning. The cross-sectional form of the seat 3^b is practically the same as that of the seat 3^a. The seat 3^b, however, is applied to the bottle-neck while the latter is in a plastic condition, by virtue of which the inner depending flange of the seat 3^b when lateral pressure is applied thereto can be embedded or pressed into the semiplastic mass of which the neck is composed. In the outer flange of the seat 3^b I form perforations, as 10, corrugations, as 11, and notches, as 12. The semiplastic bottle mass will be

pressed into the perforations, corrugations,

and notches, so that when the bottle is cold the stock of which the same is composed will be embedded firmly and permanently in the seal-seat, so as to anchor the latter firmly in place and prevent it from motion in any direction. In fact, the two parts when assembled present a structure that is equal in strength to an integral one.

In applying the seal-seat 3^b to the bottle-neck this is done when the mouth of the neck is being tooled to a finish, the glass at this time being in a comparatively soft condition, so that it can be pressed into the roughened portion of the seat, composed of the perforations, corrugations, and notches. The seal 8^b applied to its seat 3^b is the same as the seals 8 and 8^a and is united to its seat in the same way that the other seals are connected with their seats.

The seal-seat and seal may be of any desired material, either tinned iron, German silver, or other metal that will withstand the temperature to which the vessel is subjected after being filled. The seal-seat or cap, as well as the seal itself, may be of any desirable shape, although in the form illustrated the seal-seat has two depending flanges, between which the upper edge of the bottle is firmly gripped, so that when the seal is soldered thereon a perfectly air-tight seal for the bottle is provided.

While I have described the seal-seat 3^b as united with a glass bottle, a part of the bottle being embedded in the seal, and vice versa, this is not essential, for the receptacle might be of earthenware, in which case the plastic mass would be embedded in the seal and the latter in turn embedded in the plastic mass, following which the earthenware receptacle

would be baked, and when baked it will be found that the seal when thus united to the earthenware receptacle will be immovably secured in position.

5 In applying the solder to the seal in the different forms it will be apparent that the same is simply applied to the marginal portion of the seal, and by virtue of the relation of the latter and its seat there is no possibility of the solder entering the vessel. The
10 sealing means is simple and economical, and it is found that a large number of receptacles can be sealed in a short space of time.

It will be understood that the disks or seals
15 are not removed to pour out the contents of the receptacle, but are simply punctured with a sharp instrument, which spreads the material of which the disks or seals are composed into the neck of the bottle. When the
20 bottle is returned to the factory with the punctured disk thereon, the latter will be removed by passing the bottle-neck through boiling water or through a smokeless flame in order to secure the quick and ready detachment of the seal. Following this, the
25 bottle-neck and seal-seat are cleaned and the bottle filled and sealed. The seal when removed is not thrown away, but can be remelted for further use.

30 In the case of the several seats they present each depending flanges which grip between them the bottle or receptacle neck. The outer faces of these flanges are flush with the corresponding surface of the bottle
35 or receptacle neck in each case, so as to avoid recesses in which dirt might lodge.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

40 1. A receptacle having a seal-seat provided with depending flanges tightly gripping the receptacle on the inner and outer surfaces at the neck thereof, combined with a seal, and fusible solder for holding the seal onto its
45 seat to hermetically seal the receptacle.

2. A receptacle having a metallic seal-seat,

combined with a seal having a marginal flat portion to rest on the seat and an intermediate concavo-convex portion, the concave surface being up, and fusible solder on the seat,
50 overlying the upper surface of the seal along the margin thereof.

3. A receptacle having a metallic seal-seat cast thereon, and a yieldable heat-resisting medium between the seat and receptacle. 55

4. A receptacle having a metallic seal-seat cast thereon, and an asbestos packing between the seat and receptacle.

5. A receptacle having a neck, provided interiorly and exteriorly with annular grooves,
60 a cast metallic seal-seat adapted to enter the grooves, and a yieldable medium in the grooves between the seat and neck.

6. A receptacle having a seal-seat permanently connected therewith, combined with
65 a concavo-convex seal, the concaved side being uppermost, said seal being supported upon the seat, and fusible solder applied to the marginal portion of the seal on the upper surface thereof for uniting it with its seat and
70 hermetically sealing the receptacle.

7. A bottle-neck combined with a seal-seat provided with depending flanges fitting solidly against the inner and outer surfaces of the neck at the top thereof, a disk constituting a seal for the bottle, resting upon said
75 seat, and fusible solder on the seat, overlying the upper surface of the disk.

8. A bottle-neck combined with a seal-seat provided with depending flanges inter-
80 locked with the inner and outer surfaces of the neck at the top thereof, a disk resting upon said seat and constituting a seal, and fusible solder on the upper side of the seat, overlying the marginal portion of the disk. 85

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

DAVID GENESE.

Witnesses:

JOHN R. SMITH,
GEORGE A. DRAGER.