

No. 881,780.

PATENTED MAR. 10, 1908.

W. S. DORMAN.
BOTTLE SEAL.

APPLICATION FILED NOV. 12, 1906.

Fig. 1.

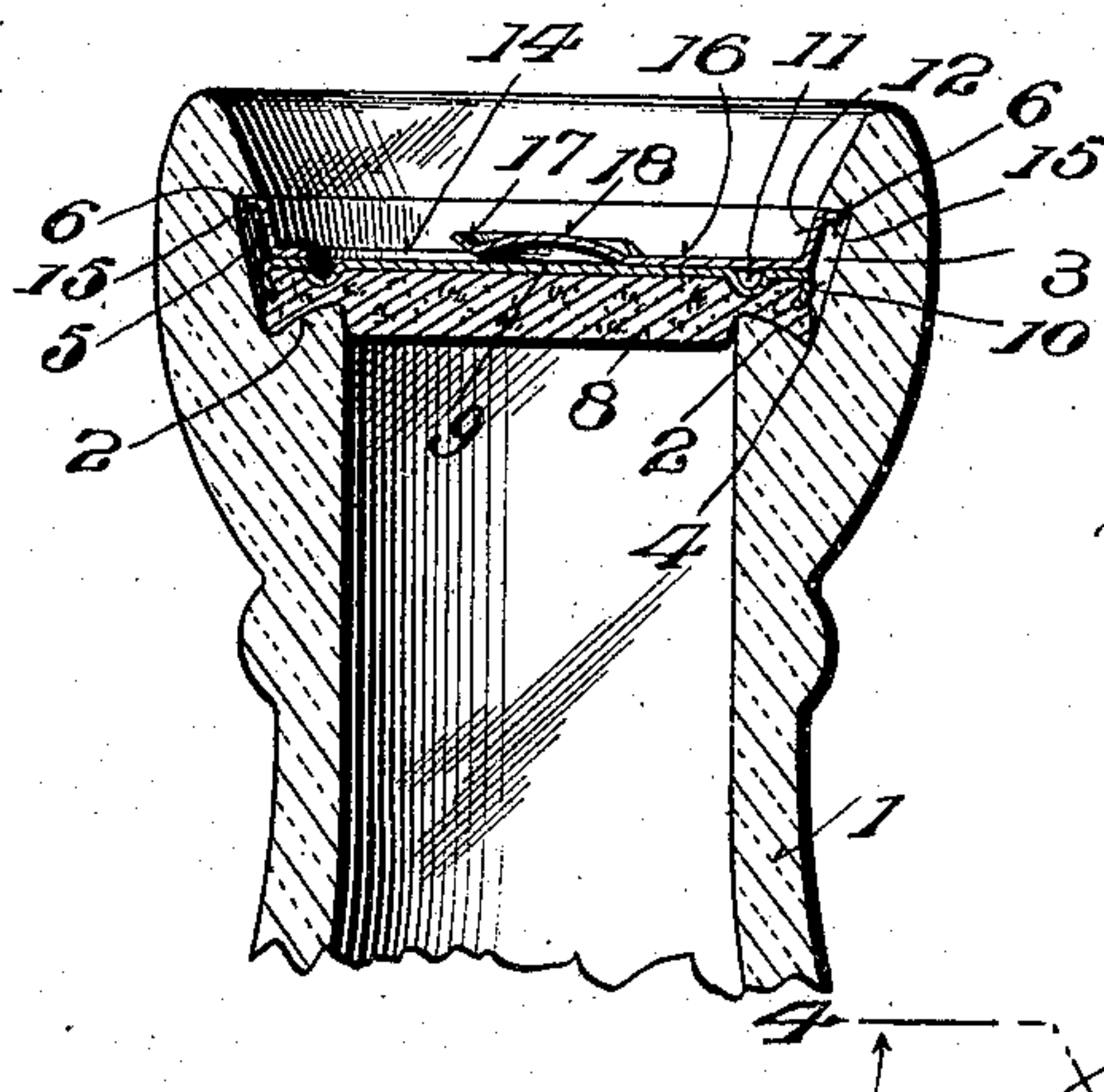


Fig. 2.

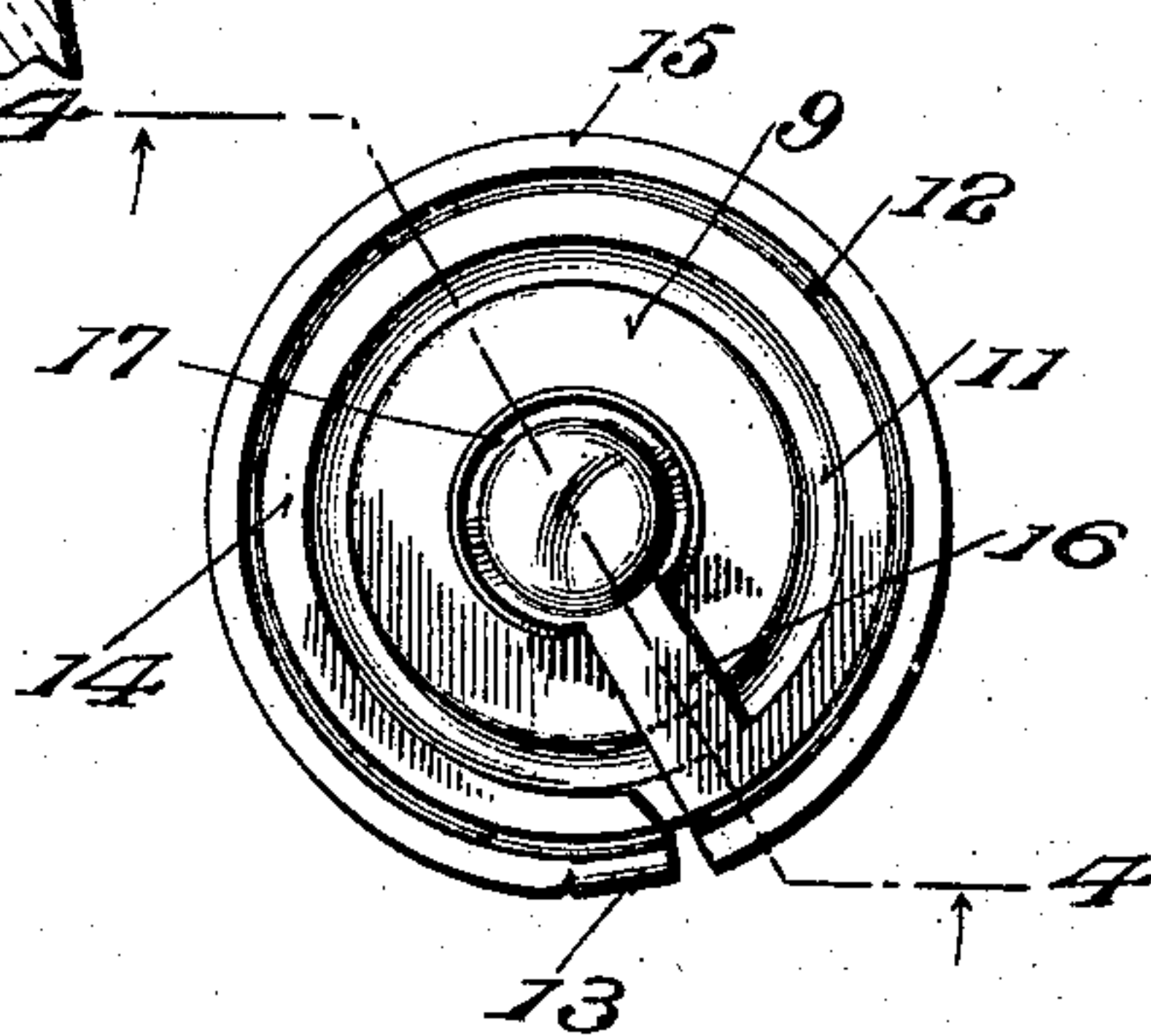
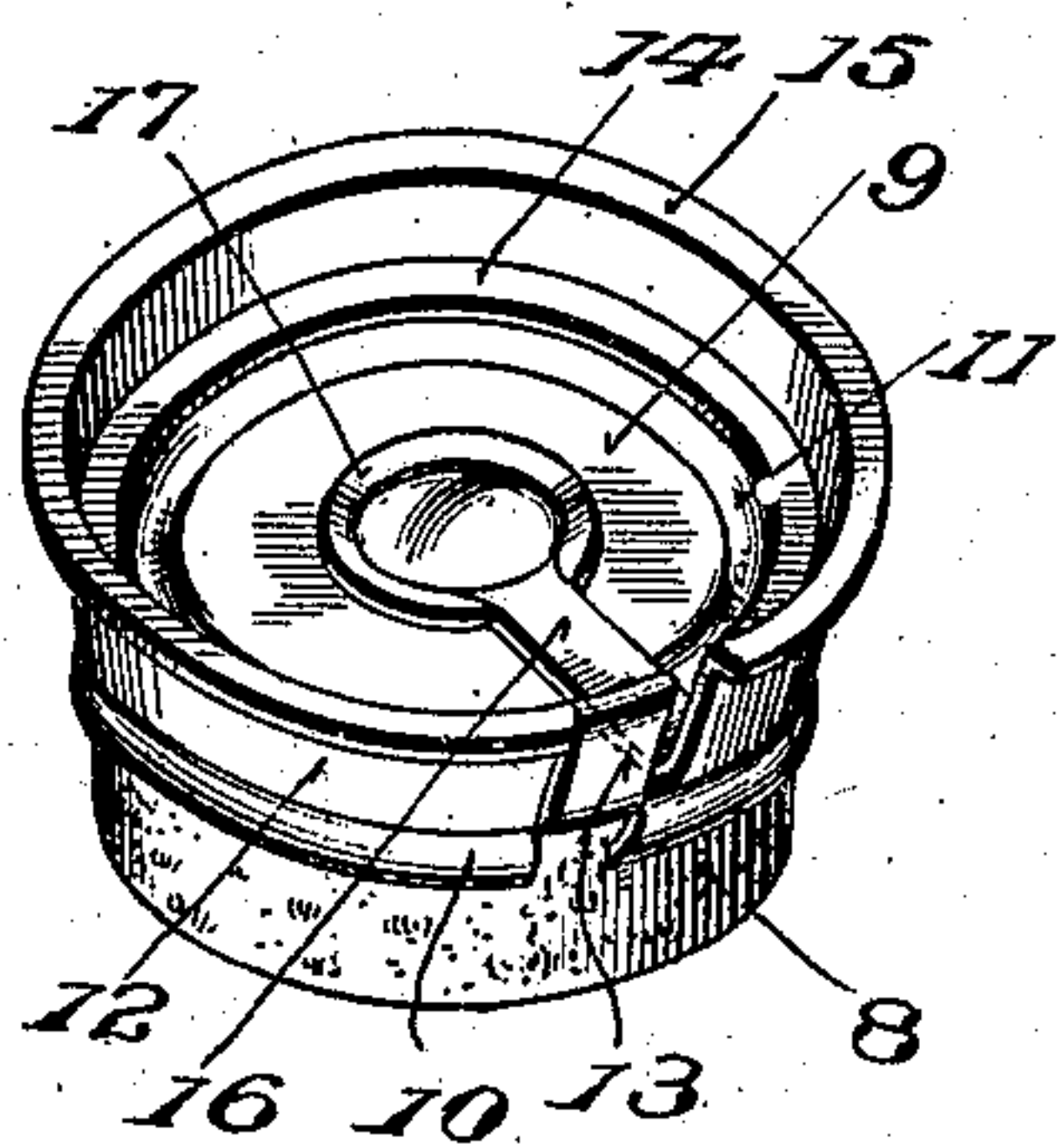
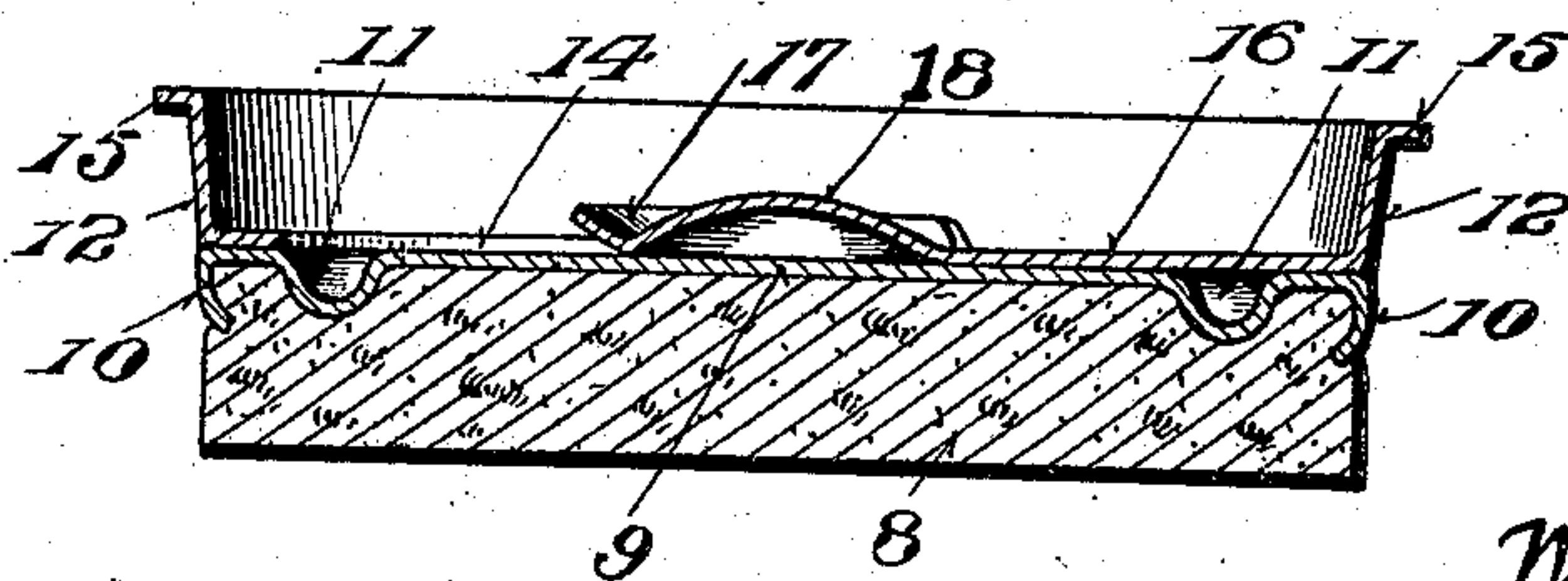


Fig. 3.

Fig. 4.



Witnesses
for Invention
E. R. Peck

By

W. S. Dorman
Inventor
E. R. Peck

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM SAMUEL DORMAN, OF BROOKLYN, NEW YORK, ASSIGNOR TO SPRING SEAL COMPANY, OF NEW YORK, N. Y., A CORPORATION OF MAINE.

BOTTLE-SEAL.

No. 881,780.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed November 12, 1906. Serial No. 343,065.

To all whom it may concern:

Be it known that I, WILLIAM S. DORMAN, a citizen of the United States, residing at Brooklyn, Kings county, New York, have
5 invented certain new and useful Improvements in Bottle-Seals; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as
10 it appertains to make and use the same.

This invention relates to certain improvements in receptacle seals, more particularly adapted for use in sealing bottles and the like; and the objects and nature of my invention will be readily understood by those
15 skilled in the art in the light of the following explanation of what I now consider the preferred embodiment of my invention illustrated in the accompanying drawings for
20 purposes of description from among other forms within the spirit and scope of my invention.

An object of the invention is to provide certain improvements in receptacle seals of the
25 class and type disclosed by my prior patents No. 716,392 of Dec. 23, 1902, and No. 753,245 of March 1, 1904, for the purpose of increasing the efficiency and accuracy of the resilient retainer carried by the internal sealing
30 plug or cap.

A further object of the invention is to provide certain improvements in details and arrangements, whereby a highly efficient and improved receptacle seal will be produced of
35 the internal sealing type.

The invention consists in certain novel features in construction and in combinations or arrangements of parts and details as more fully and particularly pointed out herein-
40 after.

Referring to the accompanying drawings:—Figure 1, is a vertical section through the mouth portion of a bottle showing the same sealed in accordance with my inven-
45 tion. Fig. 2, is a detail perspective view of the sealing plug and its attached retainer. Fig. 3, is a plan view of the sealing plug and its retainer. Fig. 4, is a cross sectional view thereof on the line 4—4, Fig. 3, on an en-
50 larged scale.

In the drawings, the bottle or other receptacle 1, is shown formed with an annular groove or depression 5, within its neck or mouth and a short distance below the top
55 edge surrounding the bottle mouth. This

depression 5, can be so shaped that the annular wall 3, of the bottle mouth tapers or inclines, about as shown, between the bottom annular sealing seat 2, and the upper annular locking or retaining shoulder 6.

The top face of sealing seat 2, is shown inclined or beveled downwardly and outwardly about from its inner annular edge to, or about to, the lower end of inclined surrounding wall 3, thereby forming, in effect,
60 an annular depression or groove 4, by and between wall 3, and the inclined top face of the sealing seat.

In the specific example illustrated, the internal sealing plug consists of a metallic disk
70 provided with and carrying an expansible resilient retainer, and also provided with and carrying a preferably imperforate circular disk 8, of suitable compressible material forming a sealing medium. Cork or any
75 other suitable material can be employed to form this sealing medium disk. The metallic disk forms a top stiffening face for the sealing medium, and when applied, said sealing
80 medium is compressed between said metallic disk and said sealing seat of the bottle mouth.

So far as certain features of my invention are concerned, the sealing medium can be
85 secured or confined to said metallic disk in any suitable manner or by any suitable means, whether or not the metallic disk be in the form of a flanged cap.

In the specific example illustrated, said metallic disk consists of a circular metallic
90 cap 9, having a generally flat top face and a generally annular depending edge flange 10. This metallic cap is forced onto the upper end of the sealing medium disk so that the depending flange 10 surrounds the upper
95 end of the disk 8, preferably leaving the disk projecting a distance below the flange.

I have found that it is desirable to firmly compress and secure the sealing medium
100 disk in the cap, and hence while the disk 8, is held under pressure compressed in the cap and against the top end thereof, I turn, bend or press the surrounding lower end or edge of the flange 10, inwardly so as to bite into the surrounding or circumferential wall of
105 the disk 8, and tightly grip the same and hold the disk in the cap. I can employ suitable inwardly pressing dies for thus turning the lower edge of the flange into the disk. I usually form the top of the cap with an an-
110

nular corrugation 11, in the form of an annular depression forming an annular rib on the bottom face of the cap top. This annular rib is forced into the inner or top end or face of the disk 8, when said disk is forced into and compressed in the cap, and said rib coöperates with the inturned edge of the flange 10, in clamping or locking the disk within the cap, as an annular portion of the upper end of the disk is compressed or gripped between said rib and the inturned flange 10, of the cap. The annular rib is arranged concentrically of the cap and of a diameter less than that of the cap, so as to leave an annular flat portion on the top of the cap between the circumferential edge thereof, and the rib, and so as to engage the upper end of the compressible disk a distance within the periphery thereof. This rib is also so arranged as to be located directly above the elevated inner margin of the sealing seat of the bottle mouth, as more fully pointed out hereinafter.

It is not only desirable to firmly lock the compressible disk to the cap to prevent accidental separation of said parts during shipment and handling and before application to the bottles, but it is exceedingly desirable that said parts be so locked together, that the compressible cork will not be left in the bottle when the cap is extracted therefrom. The compressible disk sometimes tends to stick in the bottle mouth by reason of the high compression to which it is subjected in effecting the seal and also by reason of the mucilaginous qualities of some liquid goods, and hence said disk should be so locked to the cap as to assure removal thereof with the cap even though considerable force be necessary to pull and release the disk from its seat in the bottle mouth. I find in practice that the means herein set forth are very effective and efficient in securing said parts together. For locking the plug in the bottle mouth and maintaining the sealing medium disk compressed on the sealing seat, I employ an annular or ring like retainer formed of resilient material. This retainer rests on the top end of the cap and is attached thereto and carried thereby so that all parts of the internal sealing plug are connected together and constitute a single device for shipment, handling and application to the bottle, and the entire plug is withdrawn from the bottle by and with the retainer. The retainer can be attached to the cap in any suitable manner or by any suitable means, but as at present advised by experience, I prefer to form the retainer and cap integral or in one piece of suitable sheet metal.

I can stamp and form the caps and retainers from suitable sheet metal possessing the desired stiffness and resiliency and then bend the retainer so that it will properly rest flat on the top end of the cap. In the

specific example illustrated, wherein the cap and retainer are formed integral, I show one end of the ring like or annular retainer 12, joined or connected to the edge of the cap by the vertically arranged ligament or connecting portion 13, arranged transversely of the retainer and extending down from the top edge thereof to the edge of the cap, said vertical ligament 13, being, in the example illustrated, formed by a displaced portion of the flange 10. The retainer rests on the top face of the cap between the periphery thereof and the corrugation 11 and rises vertically from the cap and when in its normal expanded condition is of greater diameter than the cap or projects outwardly beyond the periphery thereof. The retainer is angular in cross section, comprising a vertical body or intermediate portion at its lower end terminating in an inturned horizontal flange 14, resting on the top face of the cap and at its upper end terminating in an out-turned horizontal locking flange 15, projecting outwardly beyond the vertical body or intermediate portion of the retainer. This flange 15, extends from the free end of the retainer completely around the same to the connecting portion 13, and thereby stiffens the retainer and increases the strength and resiliency thereof in connection with the oppositely turned bottom flange.

The free end of the retainer is formed with a flat inwardly or radially extending pull piece or handle 16, resting on the top face of the cap and, in the specific example illustrated, terminating in an enlarged head or finger piece about at the center of the cap having an upturned surrounding edge 17, and within said edge being dished upwardly to form depression 18, at the under face of the finger piece, although I do not wish to limit other features of my invention to such pull piece or any particular formation thereof.

In applying the seal, the spring retainer is contracted from its normal expanded position during the act of forcing the seal into the bottle mouth to seat its sealing medium disk on the sealing shoulder of the bottle. Sufficient downward pressure is then applied to the seal or plug to compress the sealing medium disk to the desired extent and thereby carry the spring retainer such a distance within the bottle mouth as to enable the same to spring or expand to its normal position with its out-turned top flange 15, effectively engaged beneath the locking shoulder 6, as shown in Fig. 1, thereby locking the seal or plug in the bottle mouth with the sealing medium disk compressed and maintaining the tight seal desired. Peculiar advantages are attained by employing the retainer approximately the angular shape in cross section, shown, with the out turned top locking flange, inasmuch as a very strong and

effective lock is thereby provided and the efficiency of the seal is increased.

Bottle mouths vary in shape and formation and often depart from a true circle, but by employing the retainer with the out turned flange an effective locking engagement of the retainer under and around the shoulder 6, is secured, notwithstanding irregularities in the bottle mouth. As the locking flange extends from the free end of the retainer to the secured end thereof, said retainer can effectively engage under the locking shoulder 6, close up to the narrow connecting portion 13.

When the plug is locked in the bottle mouth, the pull piece rests flat on the top face of the cap, but it can be easily raised therefrom by reason of the up-turned edge 17, under which the finger can engage and raise the pull piece and thereby enable the fingers to engage the pull piece, and secure a firm hold thereof by reason of its dished form and said edge, so that the necessary force can be exerted to effect the release of the free end of the retainer from shoulder 6, and the removal of the entire plug from the bottle mouth with the retainer. The annular depending rib of the cap which is forced into the upper end of the sealing medium disk, is when the seal is applied and compressed, located immediately over the sealing seat of the bottle mouth and coöperates therewith in so tightly compressing the disk as to prevent leakage therethrough.

What I claim and desire to secure by Letters Patent is:—

1. An internal sealing plug provided with and carrying a resilient retainer ring angular in cross section and arranged on and projecting upwardly from the top face of the plug and at its upper edge formed with an out turned locking flange, substantially as described.

2. A bottle seal comprising a sealing plug provided with a retaining ring resting thereon and extending upwardly therefrom and at its lower edge formed with an inturned flange and at its upper edge having an out turned locking flange.

3. A bottle seal comprising a metal cap, a sealing medium disk secured thereto and depending therefrom, and a resilient upwardly projecting retaining ring secured to and arranged on the cap and formed with an inturned bottom flange resting on the cap and with an upper out-turned horizontal locking flange normally projecting outwardly beyond the cap.

4. A bottle seal comprising a sheet metal cap, a sealing medium disk secured thereto and depending therefrom, and an upwardly projecting resilient split retaining ring resting on the top face of the cap and at one end secured thereto, said ring having an upper projecting locking flange, and at its free end

an inwardly projecting pull piece having a raised inner edge and a dished portion forming a finger hold.

5. A receptacle closure comprising a sealing plug having a sealing medium and a metal top, a split retainer ring resting on and rising from said metal top, and an upwardly extending ligament connecting said ring to said top, the upper locking edge of said retainer ring extending outwardly beyond the junction between said ring and said ligament, substantially as described.

6. A receptacle closure comprising a sealing plug provided with a contractile split retainer ring at one end joined thereto and at the opposite end having a handle, said ring having a substantially vertical body portion at its lower edge bearing on the plug and at its upper edge turned outwardly to form a locking flange.

7. A receptacle closure comprising a sealing plug, in combination with a contractile split retainer ring having a substantially vertical body portion having a flange at its lower edge to rest on the plug top and an out-turned locking flange at its upper edge and approximately throughout the length thereof.

8. A receptacle closure comprising a sealing plug, a split contractile retainer ring resting thereon, and means joining one end of said ring to the plug, the opposite end of said ring provided with a handle, the upper edge of said ring being out turned to form a locking flange throughout the length of the ring from the junction between said ring and said means.

9. A receptacle having an annular sealing seat within its mouth with an elevated inner edge portion, and an annular locking shoulder a distance above said seat, in combination with an internal sealing plug comprising a sheet metal cap having a surrounding depending flange and in its top having an annular corrugation a distance within the peripheral edge of the cap and forming a depending rib within the cap above said elevated portion of the sealing seat, a retainer ring carried by the cap and resting on the flat top face thereof around said corrugation and engaging said locking shoulder, and a sealing medium disk, in and projecting below said cap and compressed between the same and said seat with an annular portion excessively compressed between said rib and said seat.

10. A receptacle having an annular sealing seat and an annular locking shoulder above said seat and within the receptacle mouth, in combination with an internal sealing plug comprising a sheet metal cap having a surrounding flange, and a sealing medium disk compressed within the cap and depending below the same, the cap top being formed a distance within its peripheral edge with an annular depending rib, the lower edge of the cap flange being inturned into the circum-

ferential edge of said disk, thereby compress-
ing an annular portion of the disk between
said rib and said inturned flange, and a re-
tainer resting on the annular portion of the
5 cap top around said rib and engaging said
locking shoulder and holding said disk com-
pressed between said seat and the annular
portion of the cap top including said rib.

11. An internal receptacle seal comprising
10 a sheet metal cap having a top formed a dis-
tance within its periphery with an annular
depending corrugation, and having an annu-
lar depending flange, a sealing medium disk
compressed in said cap and depending below

the same with said rib forced into the upper 15
end of the disk and the lower edge of said
flange bent into the circumferential edge of
the disk, and thereby compressing an annu-
lar portion of the upper end of the disk be-
tween said corrugation and said flange edge, 20
and a retainer resting on the annular portion
of the cap around said corrugation.

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

WILLIAM SAMUEL DORMAN.

Witnesses:

RICHARD A. CANFIELD,
THOMAS L. WATERS.