

No. 796,356.

PATENTED AUG. 1, 1905.

F. RECHT.  
CAP FOR BOTTLES.  
APPLICATION FILED MAR. 23, 1905.

Fig. 1.

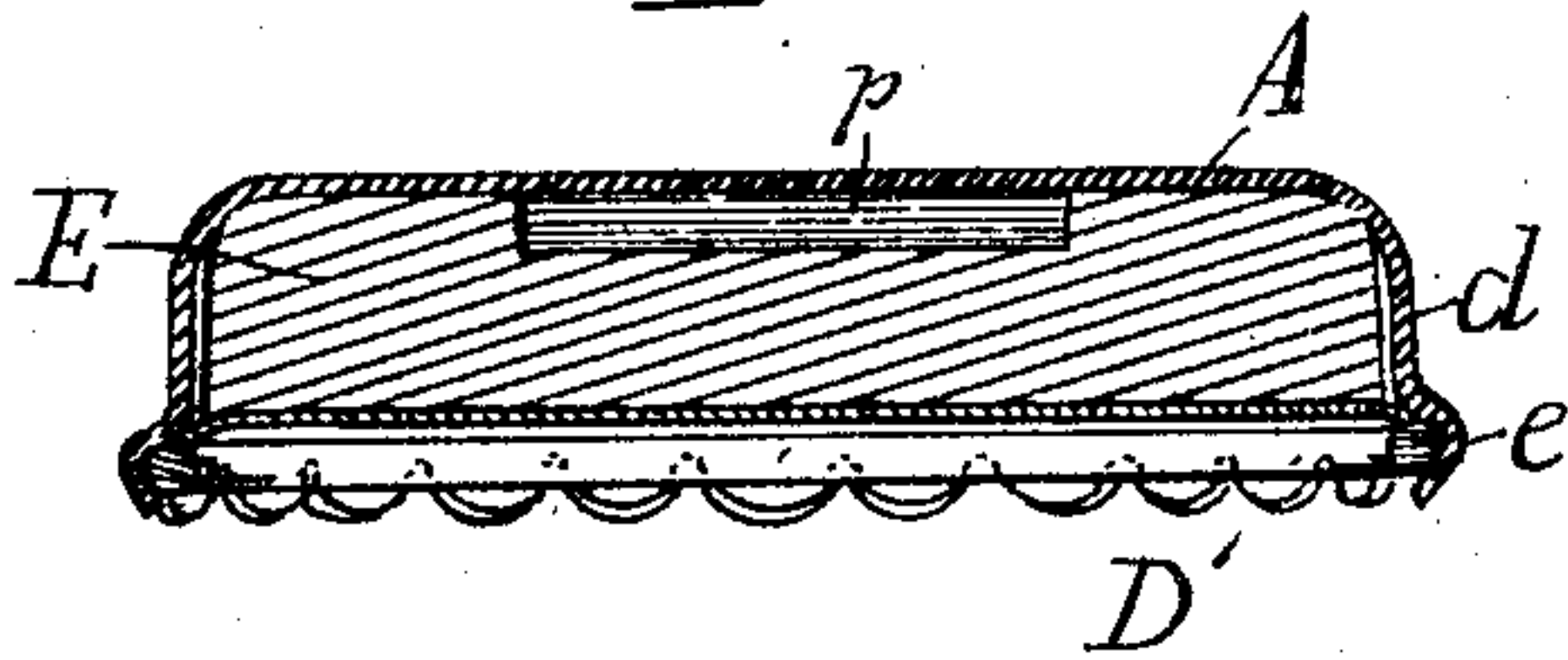


Fig. 2.

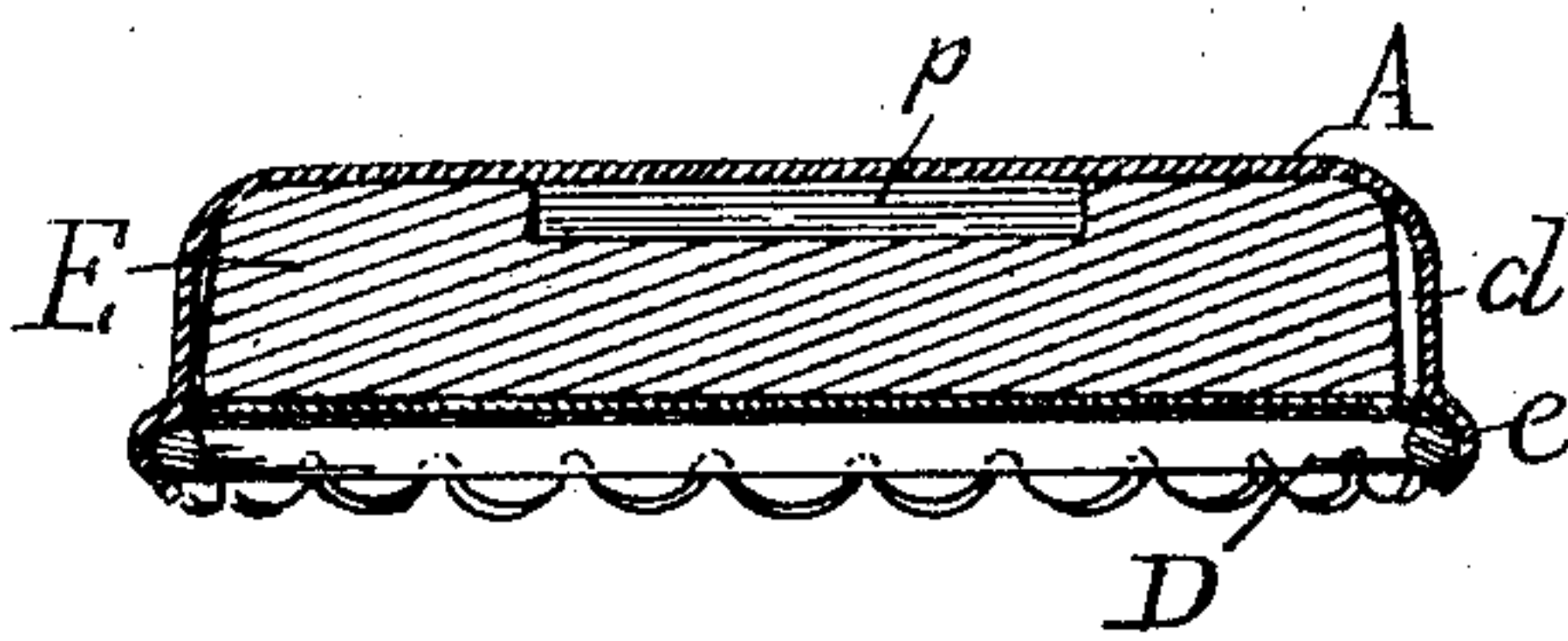


Fig. 3.

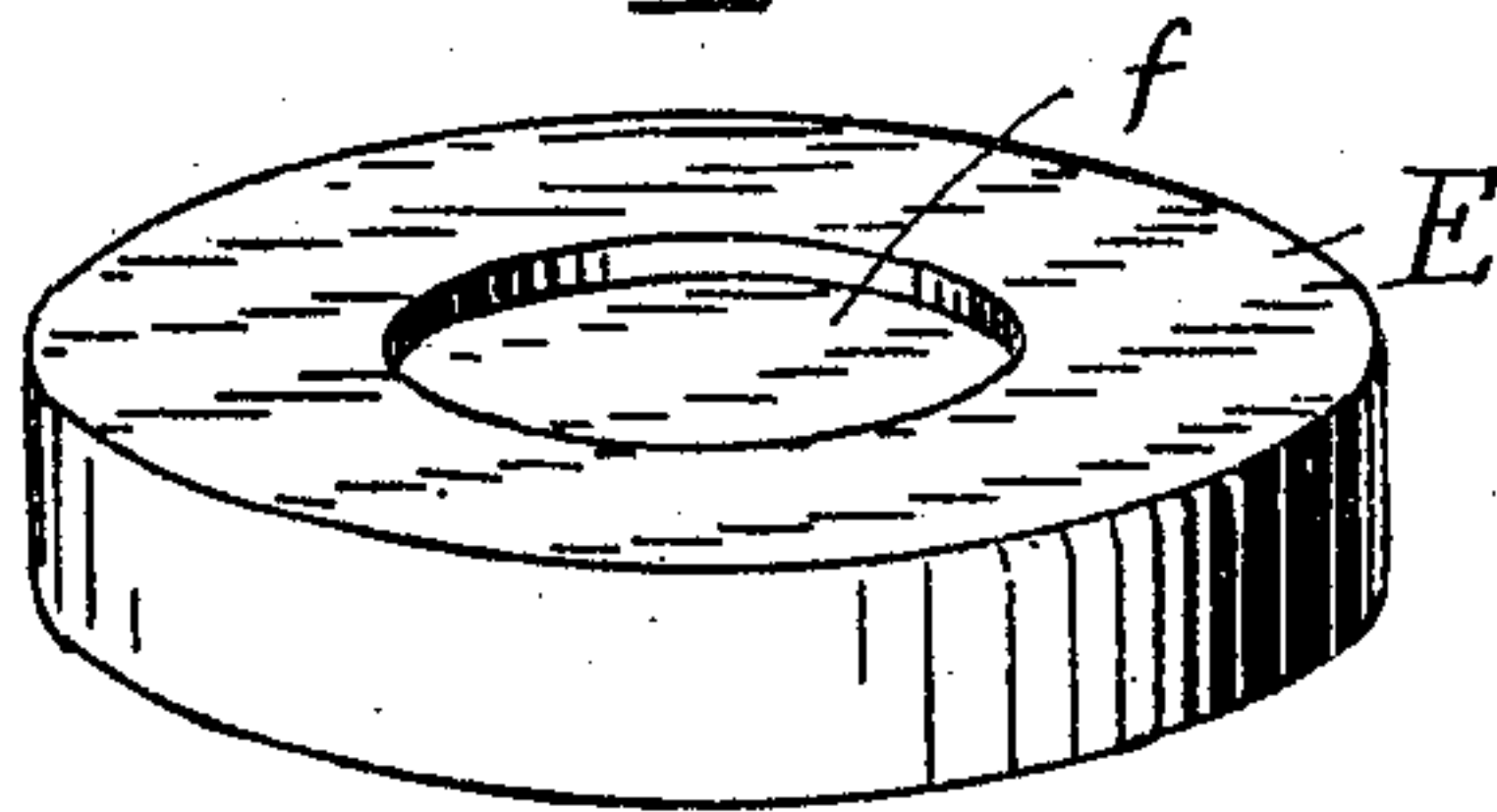


Fig. 4.



Fig. 5.

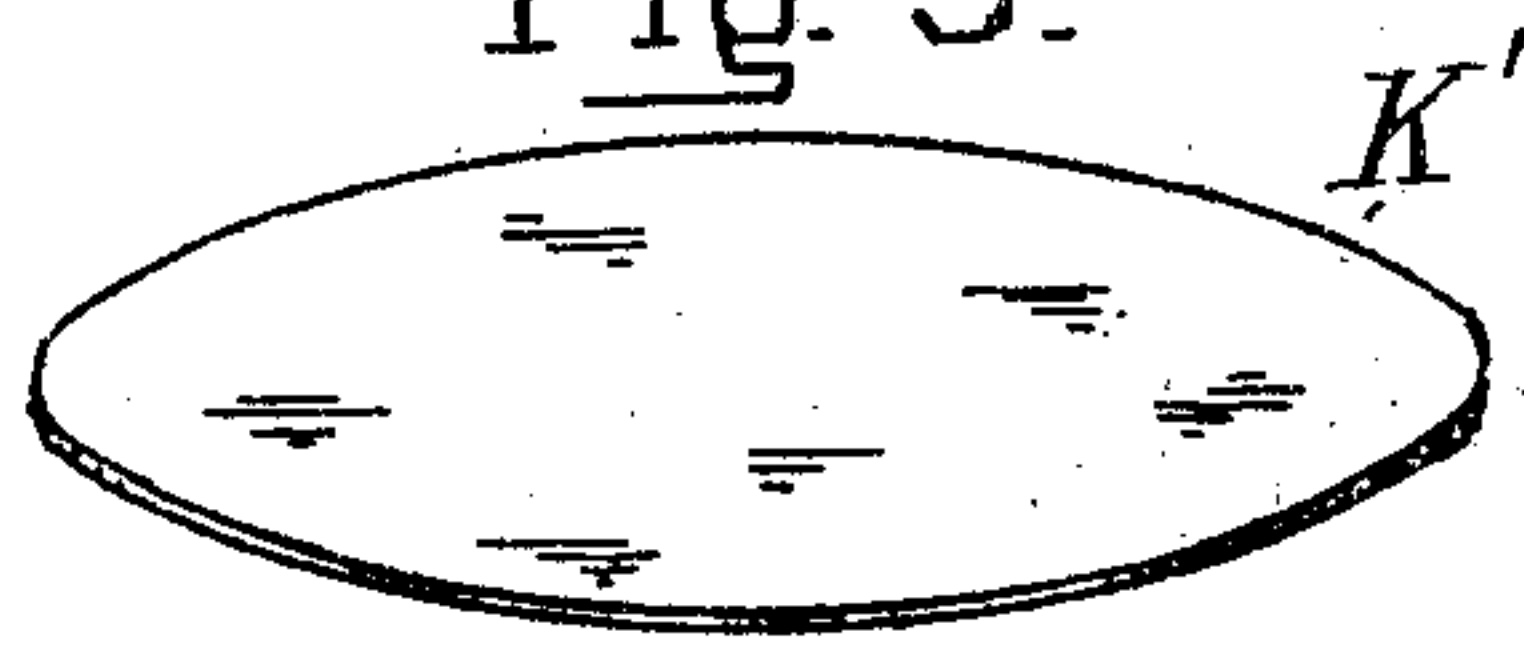


Fig. 6.

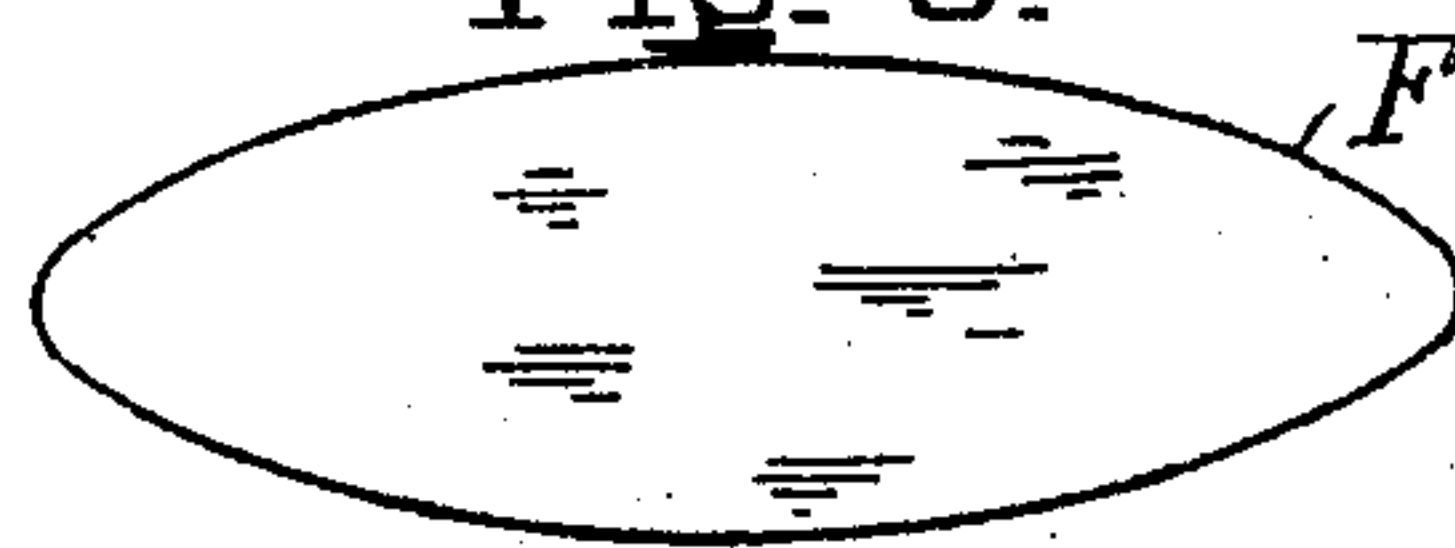
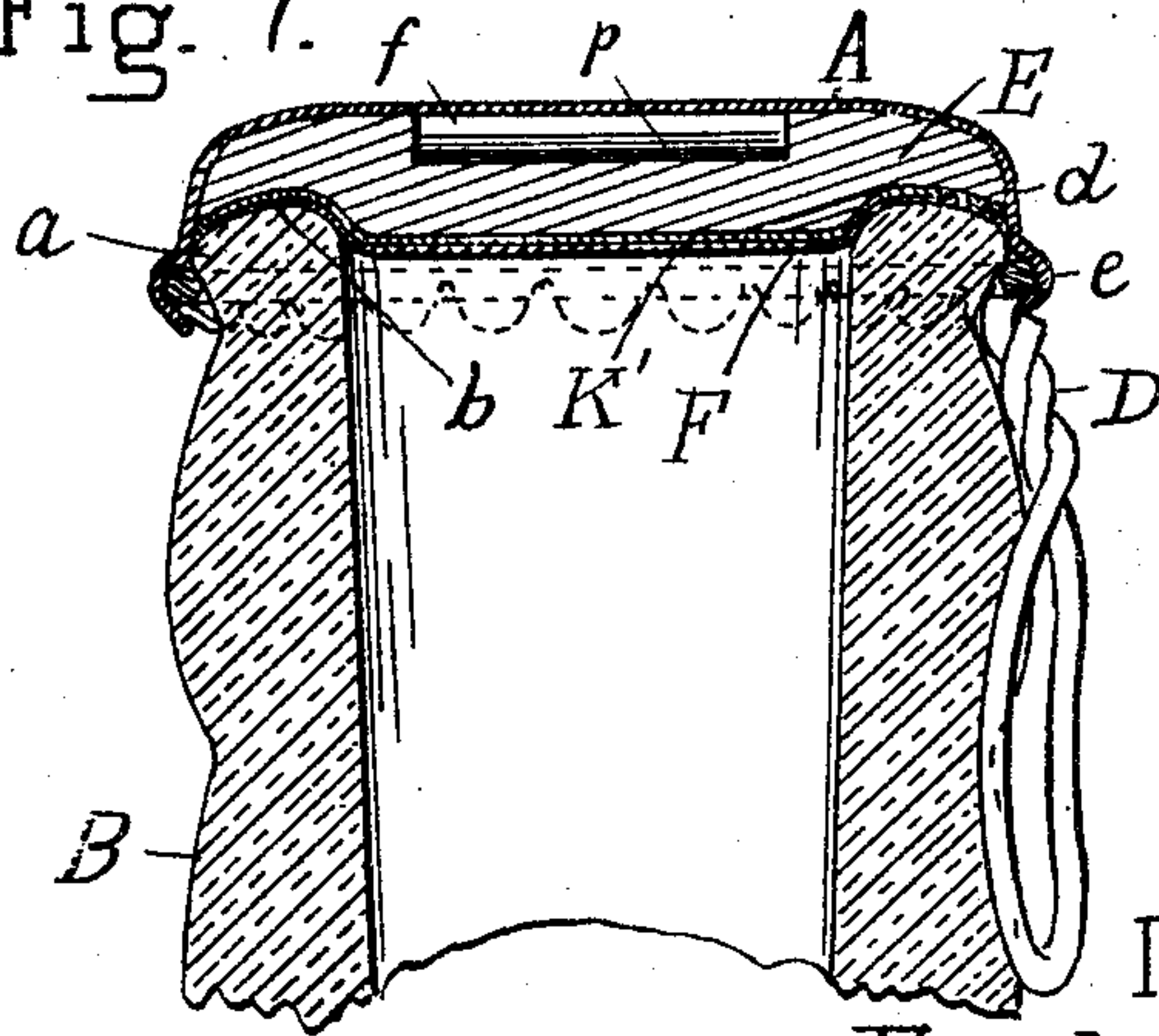


Fig. 7.



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# UNITED STATES PATENT OFFICE.

FREDERICK RECHT, OF NEW YORK, N. Y., ASSIGNOR TO REX CAP AND CORK COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

## CAP FOR BOTTLES.

No. 796,356

Specification of Letters Patent.

Patented Aug. 1, 1905.

Application filed March 23, 1905. Serial No. 251,697.

*To all whom it may concern:*

Be it known that I, FREDERICK RECHT, a citizen of the United States of America, and a resident of the borough of Brooklyn, in the city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Caps for Bottles, of which the following is a specification.

This invention is an improvement upon that class of bottle-sealing devices wherein one side of a suitable sealing medium in the form of a flat disk is held in sealing contact with the mouth of a bottle by means of pressure which is maintained against the opposite side of the disk. This pressure is maintained, preferably, by a metal cap, which is locked to the bottle in some suitable manner. The cap is usually formed of tinned iron, commonly known as "sheet-tin," as this possesses the requisite strength, can be readily formed to the required shape, provided with suitable locking devices, and is the least expensive material which possesses these properties to the required degree. The disk, which is the sealing medium and has heretofore usually been of cork, must have several properties—namely, first, compressibility and elasticity—that is to say, elasticity of volume—so that it will readily conform to the mouth of the bottle and maintain a sealing contact; second, tenacity and a sufficiently-uniform structure without exceptionally hard or soft spots and free from cracks or pores; third, resistance to solubility or chemical reaction, which would cause it to taint such liquids as are to be placed in the bottle. These are properties which are present to a sufficient degree in cork only in carefully-selected cork disks and then but partially.

The object of this invention is to secure these properties in whole or in part by suitable substitutes for cork, which possess the above-recited properties in a greater degree and are less expensive. These properties are embodied in a composite disk, wherein the first-named property (elasticity of volume) is provided by a disk, preferably of wood. The second-named property (tenacity) is embodied in a metal having the requisite tenacity and uniform structure, and the third-named property (insolubility) requisite in the material which makes the actual sealing contact with the mouth of the bottle is provided in the section of the tenacious metal when this is

practicable and when not practicable or economical by a facing of foil, which for economy must be used in such thin sheets that it is wanting in the necessary tenacity.

Suitable compressible material, such as vegetable fiber, as cork or wood, is employed as a part of the structure to enable the cap to conform with more certainty to the mouth of the bottle, as such substances possess the required property of elasticity of volume; but they possess this property to the desired degree usually only when saturated with some moistening material the presence of which causes the fiber to swell and the withdrawal of which results in a shrinkage of the fiber. As the latter, if taking place after a cap has been attached to a bottle, would cause the cap to leak, provision for the prevention of such drying is desirable; and it is a further object of my invention to prevent such drying by so constructing the cap that the compressible material is wholly inclosed by metal by reason of the tenacious metal disk being made of such diameter that its periphery will lie in contact with the flange of the cap.

It is also an object of my invention to provide for the further moistening of the compressible material after the application of the cap by the provision of a recess in the compressible material, within which a suitable moistening material in solid form is contained and which will be fused and be absorbed by the compressible material when the bottle is steamed.

In the accompanying sheet of drawings, which forms a part of this application, Figure 1 is a vertical section through a cap in which the disk of metal which affords the requisite tenacity is also the sealing-disk in contact with the mouth of the bottle. Fig. 2 is a vertical section through a cap in which the disk of tenacious material is faced with foil and the foil makes the sealing contact with the mouth of the bottle. Fig. 3 is a perspective view of a disk of wood, which is the disk of compressible and absorbent material preferably employed in the cap. Fig. 4 is a perspective view of the disk of tenacious and insoluble metal employed in the form of caps shown in Fig. 1. Fig. 5 is a perspective view of the disk of tenacious metal employed in the form of caps shown in Fig. 2. Fig. 6 is a perspective view of the disk of foil employed in the form of caps shown in Fig. 2. Fig.



7 is a vertical section through a cap and the mouth of a bottle to which the cap is applied.

The invention is illustrated in connection with a bottle-cap of the general type heretofore patented by me in United States Letters Patent No. 646,627, dated April 3, 1900, and modified as set forth in my pending application for Letters Patent of the United States, Serial No. 223,087, filed September 2, 1904.

The cap A is formed conveniently of tinned iron, preferably of a thickness of about twelve thousandths of an inch for ordinary bottles requiring a cap of about one and one-eighth inches in diameter and applied to the mouth *b* of a bottle B. The bottle-mouth is formed with an outwardly-projecting lip *a*, which surrounds the outer periphery of the mouth of the bottle. The cap has a depending flange *d* and a bead *e*, with an inwardly-facing annular groove formed around the lower margin of the depending flange. A wire D is placed in the groove, and when the cap is placed on the bottle the wire partly underlies the lip of the bottle, and the consequent engagement of the bead with the lip of the bottle, preferably through the interposed wire, securely holds the cap over the mouth of the bottle.

In the form shown in Fig. 1 two disks are employed within the metal cap, so that when the cap is placed over the mouth of a bottle they will be interposed between the cap and the mouth of the bottle. One of the disks is of an absorbent compressible material E, for which I find a soft close-grained wood, such as basswood, well adapted. This wood is preferably employed in a moist form, being saturated with melted paraffin, glycerin, or a heavy oil or other substance which is comparatively non-drying, lubricating in character, and not destructive of the fiber. A recess *f* is shown in the disk in which a reserve supply of the moistening material, preferably in solid form, as paraffin *p*, is placed, where it will be melted and absorbed by the wood after the cap has been placed on the bottle during the usual process of steaming the bottle. The disk of compressible material may be of other substance than of wood, as good sealing can be effected when the disk is of ground-cork sheeting, as linoleum, or thick pasteboard or rubber. The other disk K within the metal cap is of a suitable metal—as zinc, aluminium, tin, or alloy—which will not be attacked or dissolved or noticeably taint the contents of the bottle. It is of such thickness, usually three to five thousandths of an inch, and of such tenacity that when the requisite pressure is applied for affixing the cap and the metal disk is clamped between the wood disk and the mouth of the bottle the metal disk will properly fold and adjust itself to the mouth of the bottle without tearing and effect a proper sealing contact. The metal disk is of greater diameter when flat than the inside of the vertical part of the

flange of the cap, and its entire periphery is in contact with the flange, so that when the cap is placed on the bottle and the disk somewhat corrugated in conforming to the mouth of the bottle and driven within the vertical part of the flange of the cap the periphery of the disk will still be in contact with the flange, thereby sealing the disk of wood in the cap so that no part of the wood will be exposed to changing air, and drying of the wood will thereby be prevented. The disk also prevents the ingress and egress of water, which would otherwise gain access in the process of steaming, for water by reason of the readiness with which it evaporates and the difficulty of retaining it in uniform amount in the fibers of the wood is less suited than other substances above named as a moistening material.

In the form shown in Fig. 2 a tenacious metal disk K', which in this form need not be of an insoluble material, is faced with foil F, preferably of pure tin or tin alloy, which is not attacked or dissolved by the contents of the bottle. In this structure the tenacious metal disk is of importance, as it supports the foil and relieves the foil of such strain as would cause it to tear if it were in direct contact with the wood. The unqualified expression "a tenacious metal disk" is therefore to be understood, broadly, as inclusive both of the structure of Fig. 1, wherein the property of tenacity is present in a metal suited for direct sealing contact and exposure to the bottle contents, and in the structure of Fig. 2, wherein the tenacious metal disk is composite and consists of two metals, one of which imparts to the disk the requisite tenacity and the other of which has properties which render it suitable for direct sealing contact.

As compared with bottle-caps in which well-selected cork is the sealing medium a somewhat greater pressure is requisite in capping bottles with caps constructed in accordance with this invention to make the aluminium disk conform to the irregularities of the bottle-mouth and be brought into proper sealing contact therewith. However, this pressure is no greater than is required in effecting the locking engagement of the cap and bottle with the form of lock herein set forth by the method of applying pressure to the bead for the double purpose of first effecting the sealing engagement and then turning the bead inwardly to carry it and the locking-wire into engagement with the lip of the bottle, as set forth in my application for Letters Patent of the United States, Serial No. 223,088, filed September 2, 1904, for a machine for applying caps to bottles. The strain of this pressure is transmitted through the flange, which is a separate element from the sealing-disk, of greater tensile strength by reason of the employment of a metal either of greater unit strength or greater thickness, or both.



The tin cap and the interposed disk of compressible material have a further function in shielding the sealing-disk when on the bottle.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination with a metal cap adapted to be locked over the mouth of a bottle, of a tenacious metal disk contained within the cap, and a disk of compressible material interposed between the cap and metal disk, the whole organized to effect a sealing contact between the metal contained in the cap and the mouth of the bottle.

2. The combination with a metal cap adapted to be locked over the mouth of a bottle, of a tenacious metal disk contained within the cap, a facing of foil for the disk, and a disk of compressible material interposed between the cap and tenacious metal disk, the whole organized to effect a sealing contact between the foil and the mouth of the bottle.

3. The combination with a metal cap adapted to be locked over the mouth of a bottle, of a metal disk the periphery of which is in contact with the flange of the cap, a disk of absorbent compressible material and a suitable moistening material, the disk of the compressible material and moistening material being wholly inclosed by the cap and metal disk.

4. The combination with a metal cap adapted to be locked over the mouth of a bottle, of a metal disk contained within the cap, a disk of absorbent compressible material provided with a recess and a suitable moistening material in solid form but fusible at a low temperature contained within the recess, the disk of compressible material and moistening material being wholly inclosed by the cap and metal disk.

5. The combination with a bottle, of a metal

cap adapted to be locked over the mouth of the bottle, a tenacious metal disk contained within the cap, and a disk of compressible material interposed between the cap and metal disk, the whole organized to effect a sealing contact between the metal contained in the cap and the mouth of the bottle.

6. The combination with a bottle, of a metal cap adapted to be locked over the mouth of the bottle, a tenacious metal disk contained within the cap, a facing of foil for the disk, and a disk of compressible material interposed between the cap and tenacious metal disk, the whole organized to effect a sealing contact between the foil and the mouth of the bottle.

7. The combination with a bottle, of a metal cap adapted to be locked over the mouth of the bottle, a metal disk the periphery of which is in contact with the flange of the cap, a disk of absorbent compressible material and a suitable moistening material, the disk of the compressible material and moistening material being wholly inclosed by the cap and metal disk.

8. The combination with a bottle, of a metal cap adapted to be locked over the mouth of the bottle, a metal disk contained within the cap, a disk of absorbent compressible material provided with a recess and a suitable moistening material in solid form but fusible at a low temperature contained within the recess, the disk of compressible material and moistening material being wholly inclosed by the cap and metal disk.

Signed by me at New York, N. Y., the 21st day of March, 1905.

FREDERICK RECHT.

Witnesses:

SAMUEL W. BALCH,

CHARLES H. O. JACKSON.