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PATENTED AUG. 14, 1906.

F. W. JACOB.
BOTTLING BEER AND OTHER LIQUIDS.

APPLICATION FILED JUNE 23, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

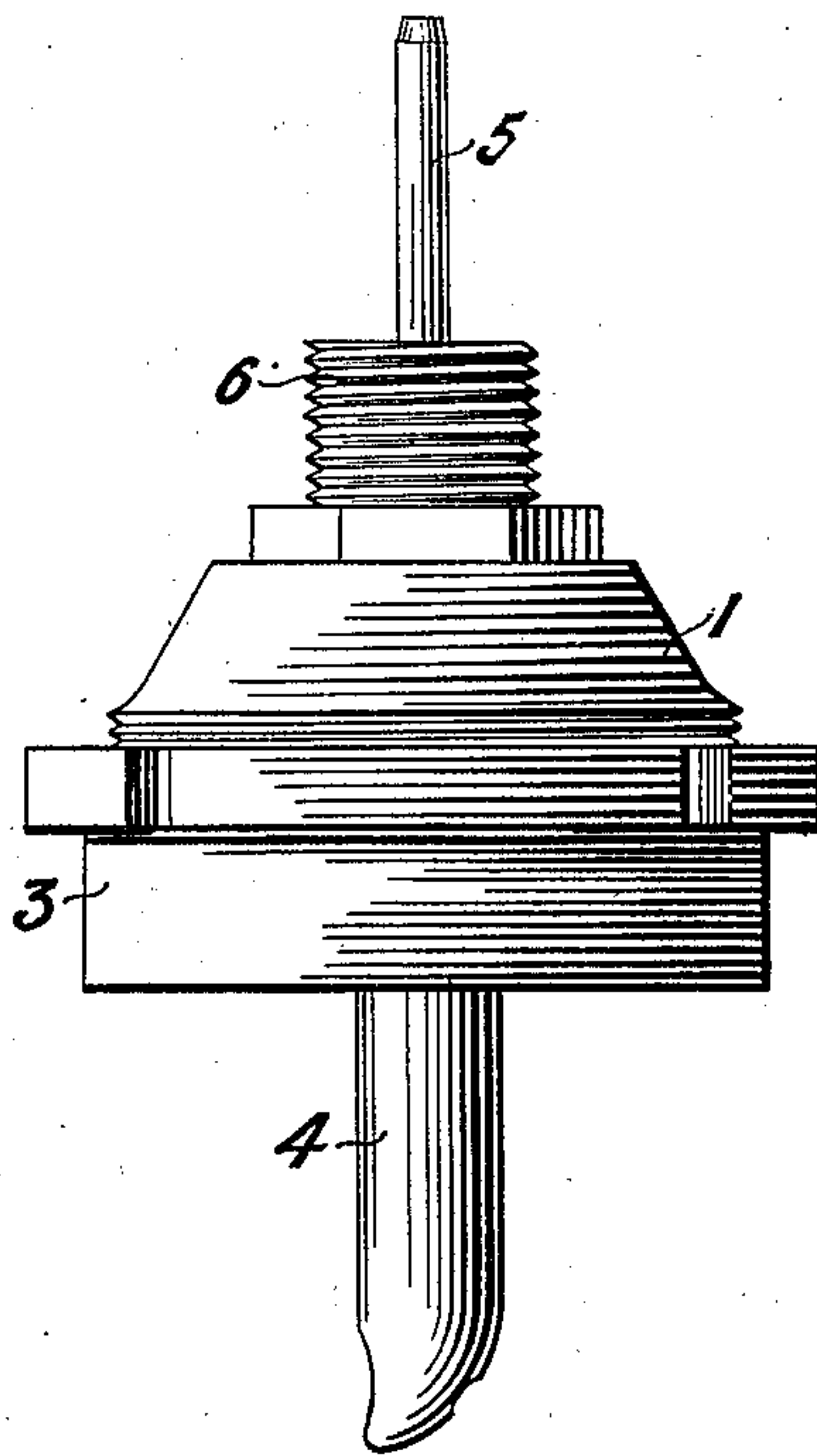
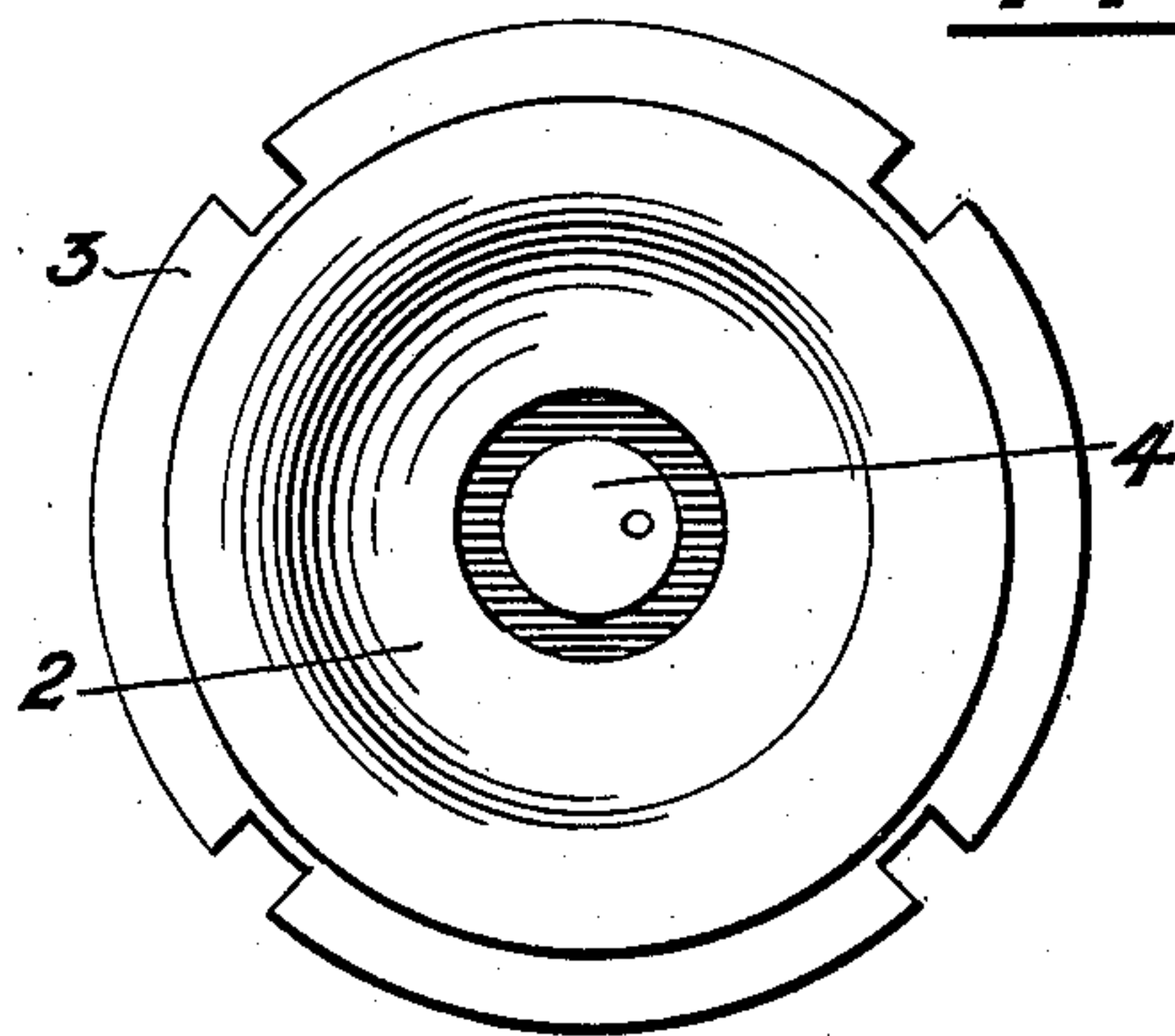


Fig. 2.

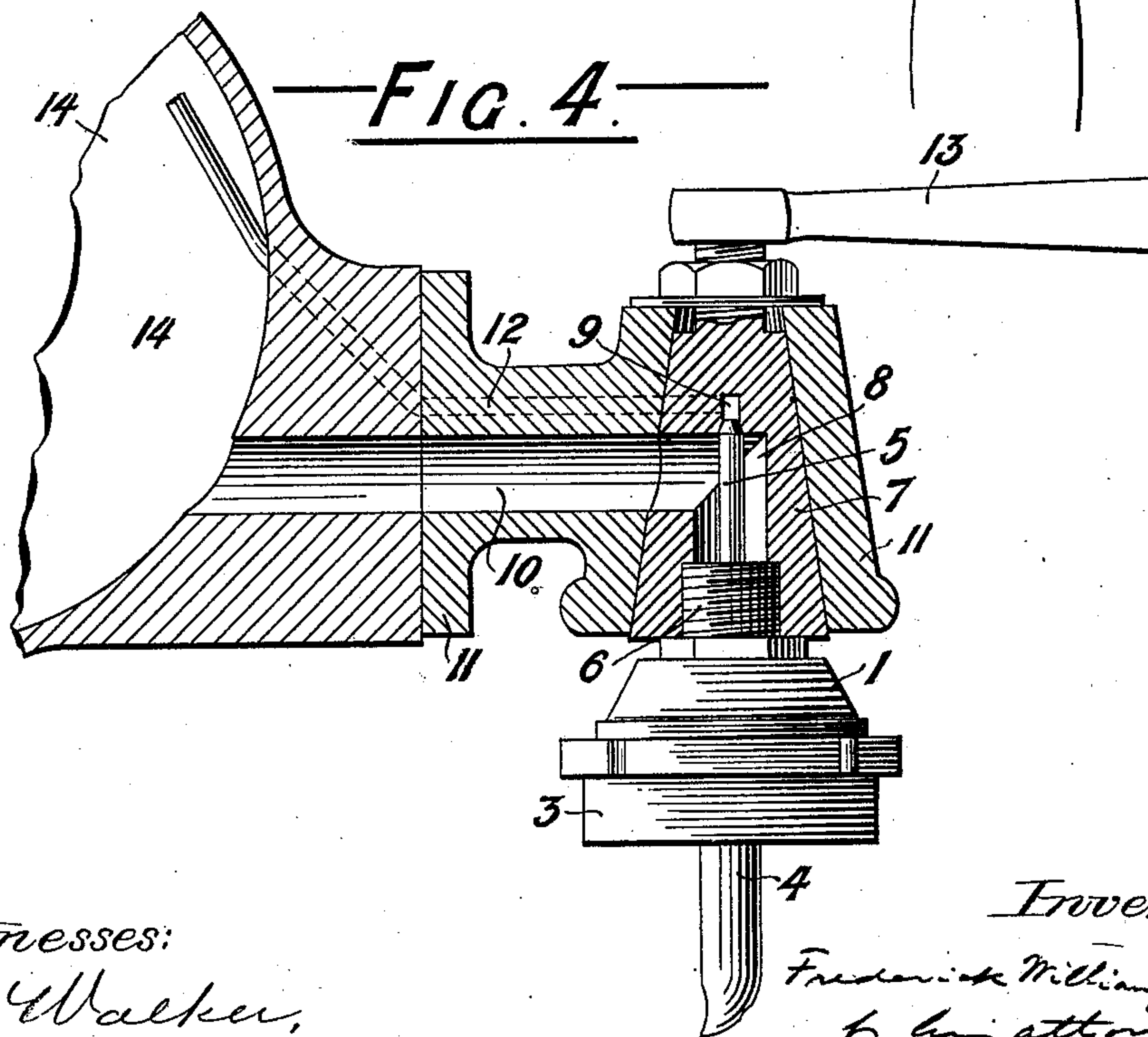
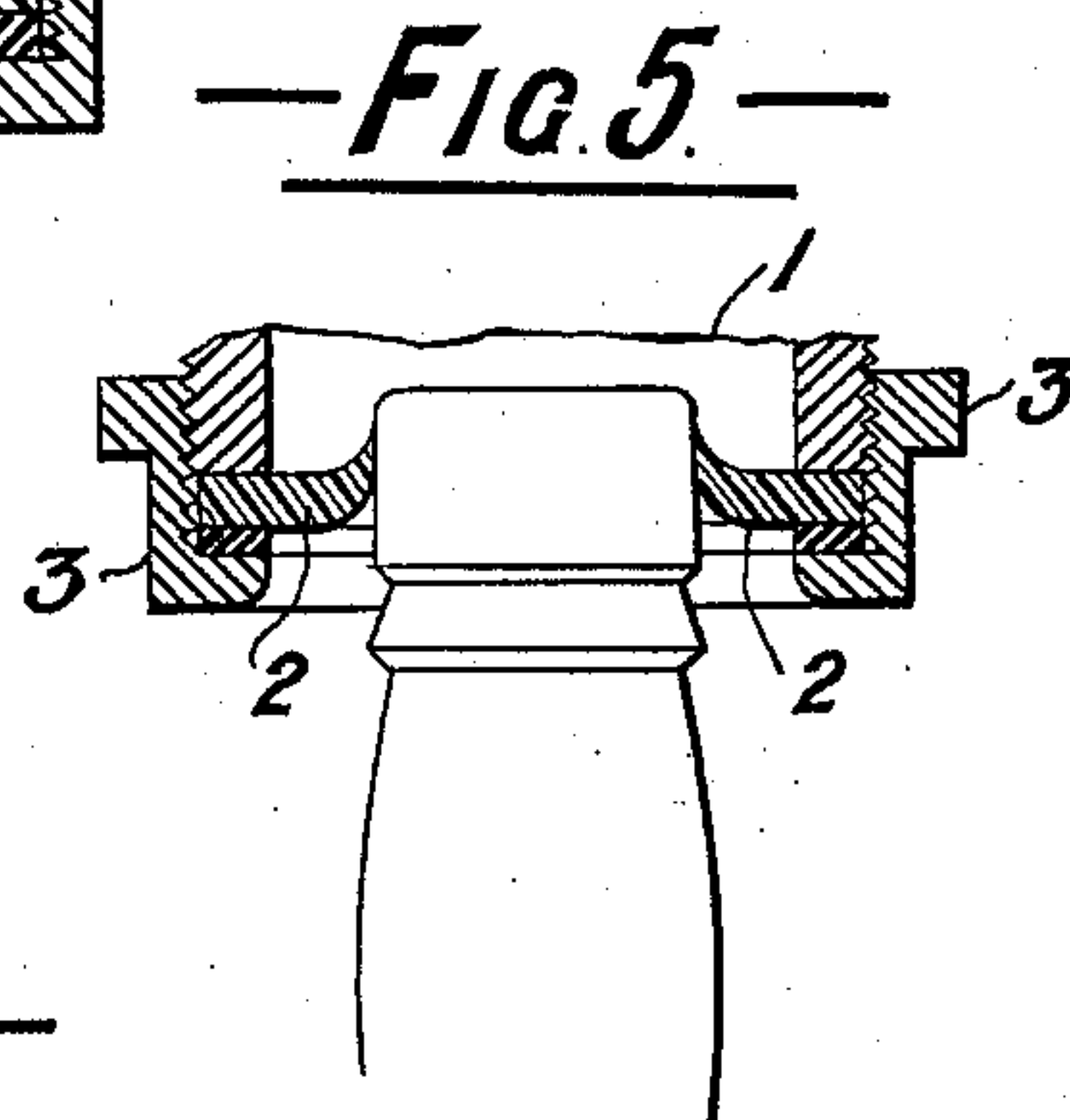
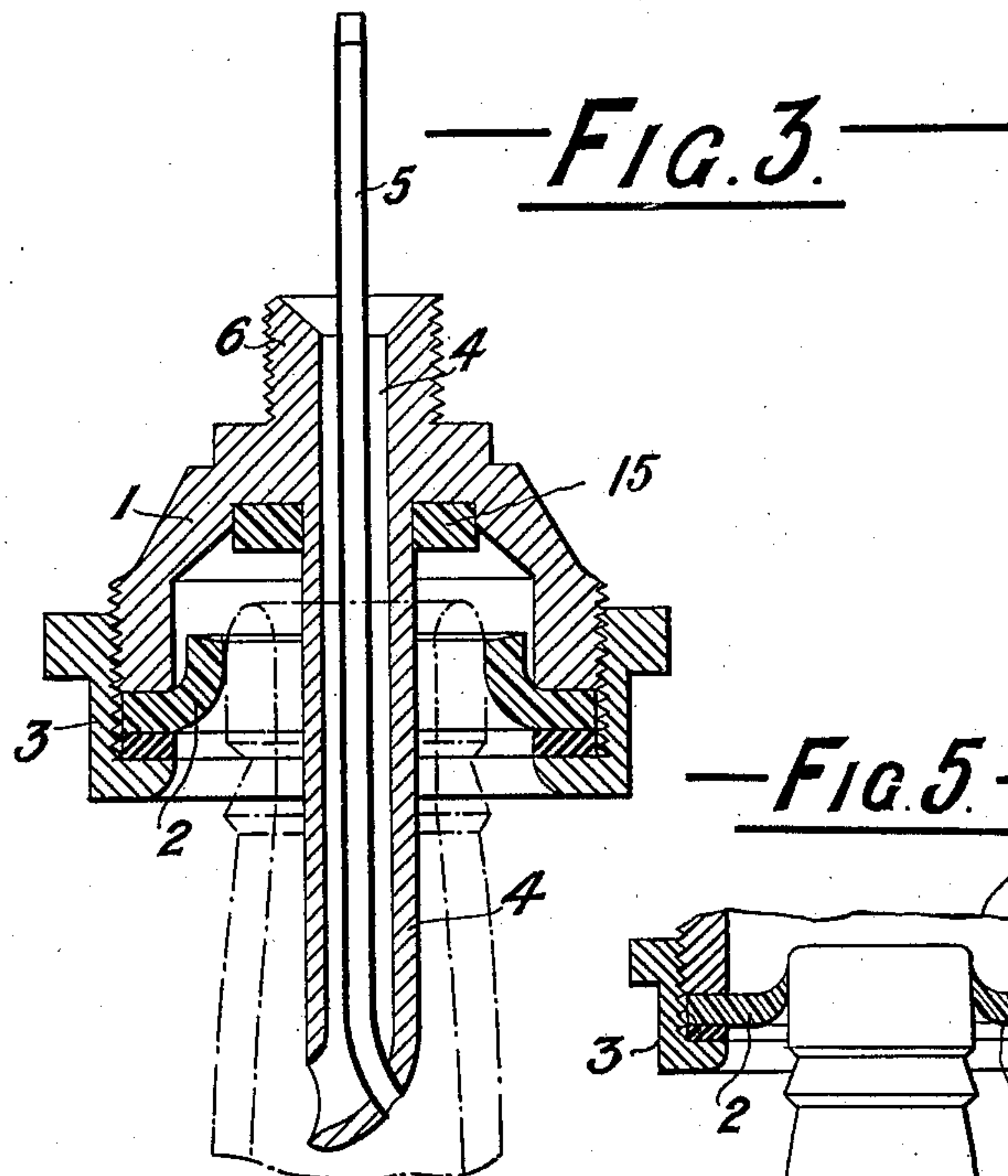


Witnesses:
C. H. Walker,
J. E. Lamb

Inventor.
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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BOTTLING BEER AND OTHER LIQUIDS.

No. 828,405.

Specification of Letters Patent.

Patented Aug. 14, 1906.

Application filed June 23, 1905. Serial No. 266,670.

To all whom it may concern:

Be it known that I, FREDERICK WILLIAM JACOB, a subject of the King of Great Britain, residing at London, England, have invented a certain new and useful Improvement in Bottling Beer and other Liquids, of which the following is a specification.

In bottling beer and carbonated liquids—such, for instance, as aerated waters and the like—it is common to press the neck of the bottle against an india-rubber ring or cone, so that the latter contacts interiorly or exteriorly of the said neck, the ring or cone being arranged around the channel or conduit through which the supply of liquid passes, the bottle being mechanically pressed upward against such ring by a treadle mechanism or the like, with the object of making a tight joint between such delivery-orifice and the neck of the bottle. Such a device requires not only that the bottle should be mechanically forced against the packing-ring, but that also the neck of the bottle should be of comparatively perfect contour—that is, that the extreme end of the neck should not be chipped or damaged, because if the neck was so damaged a perfect joint could not be made, and in bottling liquids which are served under pressure with such known apparatus bottles having chipped necks are commonly put to one side to be filled separately by hand, and therefore much time is lost.

Now the object of the present invention is to provide an improved joint between the bottle-neck and the supply-conduit, whereby after the bottle-neck has been applied and after the handle of the supply-cock has been partly turned the joint shall be automatically produced by interior gas-pressure and then the liquid admitted by a further operation of the supply-cock handle, while at the same time the apparatus shall permit of the application of bottle-necks the ends of which may be more or less chipped or broken.

With these ends in view a chamber or casing is provided the base of which is composed or constructed of flexible or elastic material, such as india-rubber, having a central aperture of such size as to just admit the extreme top of the bottle-neck, so that when the bottle is pressed upward (it may be by hand) into such aperture the elastic base or, as we term it, the “diaphragm,” will become slightly conical, and the edge around the aperture will lie closely around the top portion of the bottle-neck, while a supply-pipe hav-

ing two ways passes downward through the top of the said chamber through the aperture in the elastic diaphragm and into the bottle and affords means by which, first, upon the partial turning of the cock a supply of gas is admitted by one of the ways of the supply-pipe into the bottle, and consequently through the bottle-neck into the interior of the chamber, so acting on the upper surface of the elastic diaphragm and making or sealing the joint between the diaphragm and the neck of the bottle. Upon a further turning of the supply-cock the beer, which is under the same pressure as the gas, flows smoothly by gravity into the bottle, while the gas passes back through the gasway of the supply-pipe until the beer reaches such a height as to close the gas-admittance aperture to the supply-pipe, and then the supply of beer ceases. During this process the pressure within the chamber and upon the upper side of the elastic diaphragm makes a good and tight joint between the diaphragm and the bottle-neck, and since the elastic diaphragm contacts with the bottle-neck below the actual top of the same the joint is equally well made, whether the top of the said neck is chipped or not. The flow of beer into the bottle having ceased by reason of the gas-orifice in the supply-pipe having become covered by the rise of the liquid, the cock is turned off and the bottle withdrawn.

The invention therefore consists in the combination of parts as hereinafter claimed, composing the apparatus, including the chamber or casing with its base of flexible or elastic material, having an aperture for the bottle-neck and a two-way supply-pipe passing through the aperture and into the bottle for the conveyance of the gas and liquid, the invention not merely consisting, as should be well understood, of a flexible packing held up to its work by interior pressure, because such a packing is well known and has been used for many purposes, nor does it consist solely and alone in providing a double-way conduit for the admittance first of gas and then of beer, because such is a known mode of filling bottles with beer under pressure, it being common to first introduce gas into the bottle in order that the beer, which is under the same pressure as the gas, shall be allowed to flow smoothly into the bottle.

The invention will now be described with reference to the construction of example shown on the accompanying drawings.

Figure 1 is an elevation of what I have termed the "chamber" and the two-way supply-pipe; Fig. 2, a plan of the same; Fig. 3, a vertical section; Fig. 4, a sectional view showing the chamber fitted to a cock for admitting and controlling the gas-pressure and the flow of liquid, and Fig. 5 a vertical section showing a slightly modified formation of the elastic base of the chamber hereinafter described.

Referring to Figs. 1 to 3, 1 is the chamber or casing open at its base, and upon the edge of that base is fitted a flexible, preferably elastic, ring or washer 2, the external periphery of which is held by some suitable gripping device, such as the flanged metal ring 3, screw-threaded onto the chamber 1, so as to grip the elastic washer 2 between the periphery of the said chamber and the flange of the ring 3. The size of the central aperture of the washer is such that when the upper part of the neck of the bottle is forced through from below (supposing the washer to be arranged horizontally) the act of so forcing the neck of the bottle through the aperture of the washer 2 will cause the center part of the same to rise upward and lie closely against the circular surface of the neck of the bottle.

Through the top of the chamber 1 passes the two-way supply-pipe 4, continuing down into the bottle-neck for a proper distance, as shown at Fig. 3, where the neck of the bottle is indicated by dotted lines, and through the supply-pipe a gasway 5 passes, both the gasway 5 and the liquid-way 4 opening at the lower end of the supply-pipe into the bottle.

It will now be understood that the bottle-neck having been placed as indicated by dotted lines at Fig. 3 and the gas (or even air under pressure) being admitted by the gasway 5 the said pressure within the bottle will also act upon the upper surface of the washer, so making a good and tight joint, and upon the beer-supply being turned on, it being under the same pressure as the gas admitted by the gasway 5, the beer will flow evenly and smoothly by gravity down the liquid-way of the supply-pipe and fill the bottle until the level of beer rises above the outlet of the gasway 5, when the liquid-supply will automatically cease. The cock by which the beer and gas are admitted is then turned off and the filled bottle removed to be replaced by another bottle to be filled, and so on.

At Fig. 4 of the drawings the chamber 1 is shown applied to a cock, such as it is convenient to use for this apparatus. The chamber 1 is affixed by its screw-threaded neck 6 to the plug 7 of the said cock, 8 representing the beer-passage through the plug and 9 the gas-passage, the upper portion of which is shown in dotted lines, because its lateral extension does not lie in the same plane as the lateral extension of the beer-passage 8. The passage 8 communicates by a passage 10, ex-

tending through the body 11 of the cock, with the beer in a reservoir 14, while the gas-passage 9 in the plug 7 communicates by a passage 12 in the body 11 of the cock with the gas-space, which may be in the upper part of the same reservoir 14 containing the beer, so that the bottle having been placed in position upon the handle 13 of the cock being turned through a part of its travel the gas will pass by the gas-passage 9 through the gasway 5 into the bottle and into the chamber 1. Upon the handle 13 being further turned the beer will be permitted to flow by the passage 10 and way 4 by gravity into the bottle, all as previously described, while the gas passes away by the gas-passage.

In the constructional example shown in the drawings the diaphragm or washer 2 before the bottle-neck has been inserted is flat, forming, as it were, a flat base to the chamber 1, with a circular aperture in the said base; but it must be understood that, if so desired and as shown at Fig. 5, the edges around the central aperture in the diaphragm might be thinner than the remaining part of the said diaphragm, or the whole diaphragm might have a slightly-conical form extending upward into the casing even before the bottle is applied. Again, there may be instances where instead of the body of the chamber being composed of metal and the diaphragm separately attached thereto the said body of the casing might be composed of india-rubber of sufficient thickness and made sufficiently non-extensible, and then the diaphragm or base could be formed of india-rubber and in a piece therewith.

The casing 1 is provided internally at the top of its chamber with a cushioning-washer 15 (shown in Fig. 3) to contact with the extremity of the neck of the bottle when the latter is thrust into the casing. The contact between this washer and the neck of the bottle, however, forms no part of the provision for preventing leakage around the neck of the bottle; but instead, as illustrated in Fig. 3, the extremity of the neck of the bottle does not remain in contact with said washer, and the pressure-gas has free access to the upper surface of the elastic base or diaphragm 2 when the gas is admitted to the interior of the bottle and casing, as above described, so that the pressure of the gas may tighten the inner edges of said base or diaphragm around the neck of the bottle, and thus prevent leakage.

What I claim as my invention, and desire to secure by Letters Patent, is—

In apparatus for bottling liquids under gaseous pressure, the combination of a casing having a base of flexible and elastic material constructed with a central aperture of such size that the surrounding inner edge of the elastic base becomes deflected toward the interior of the casing by the upward insertion

of a bottle-neck, a supply-pipe passing
through the top of the casing and extending
through the aperture of the elastic base to
enter the bottle, said pipe having a passage-
5 way opening into the bottle for the supply of
gas and a passage-way for the supply of liq-
uid also opening into the bottle, and means
for controlling the supply so that the gas is
first admitted into the casing and bottle
10 through the gas-passage in the supply-pipe
and then the liquid through the liquid-pas-

sage in the supply-pipe, whereby said elastic
base is tightened around the neck of the bot-
tle by the gaseous pressure before the liquid
is admitted to the bottle, substantially as 15
hereinbefore specified.

In witness whereof I have hereunto set my
hand in the presence of two witnesses.

FREDERICK WILLIAM JACOB.

Witnesses:

THOMAS W. ROGERS,

WILLIAM A. MARSHALL.