

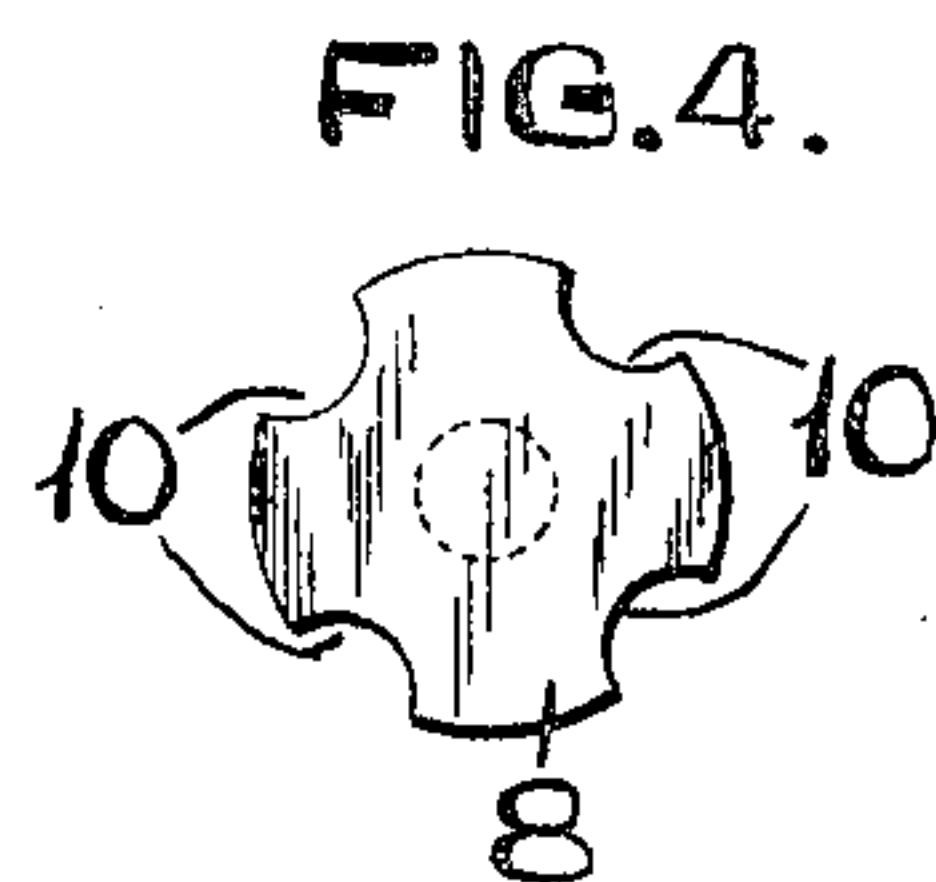
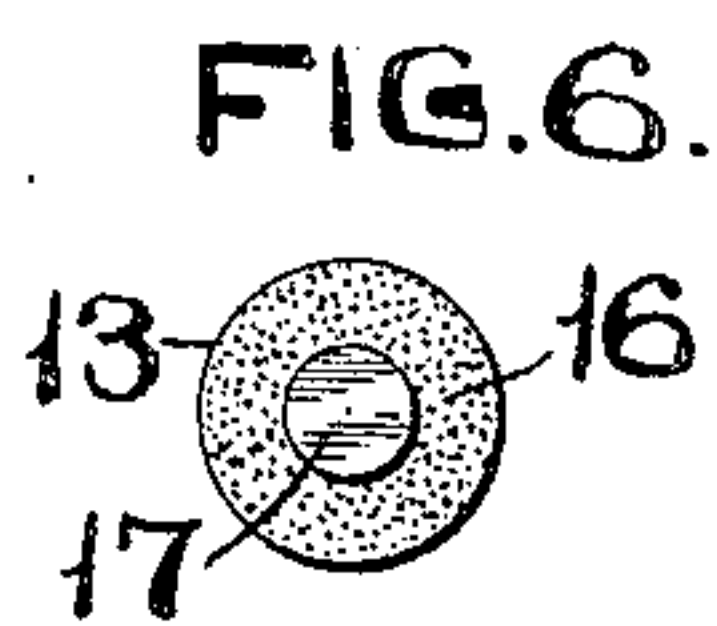
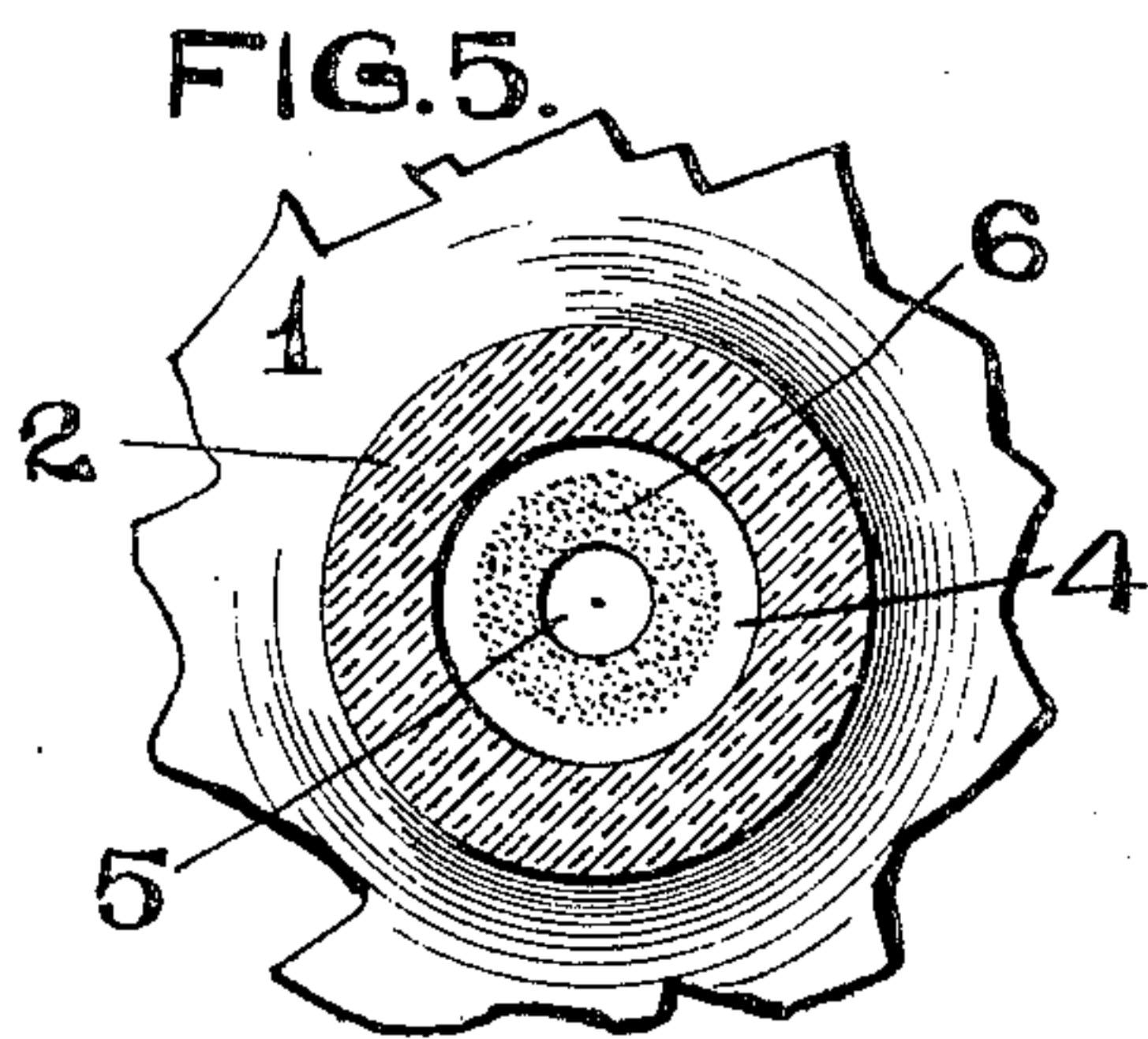
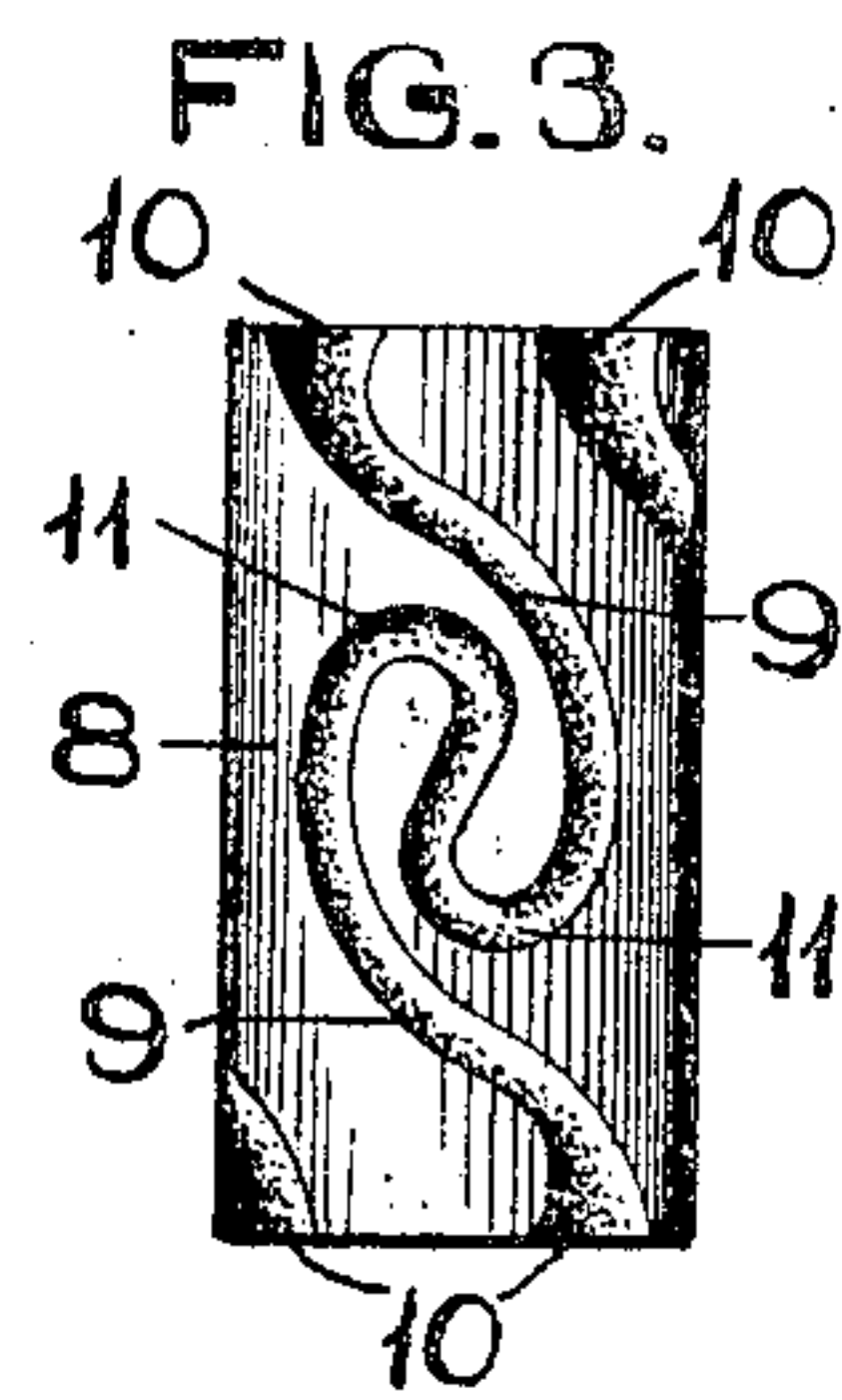
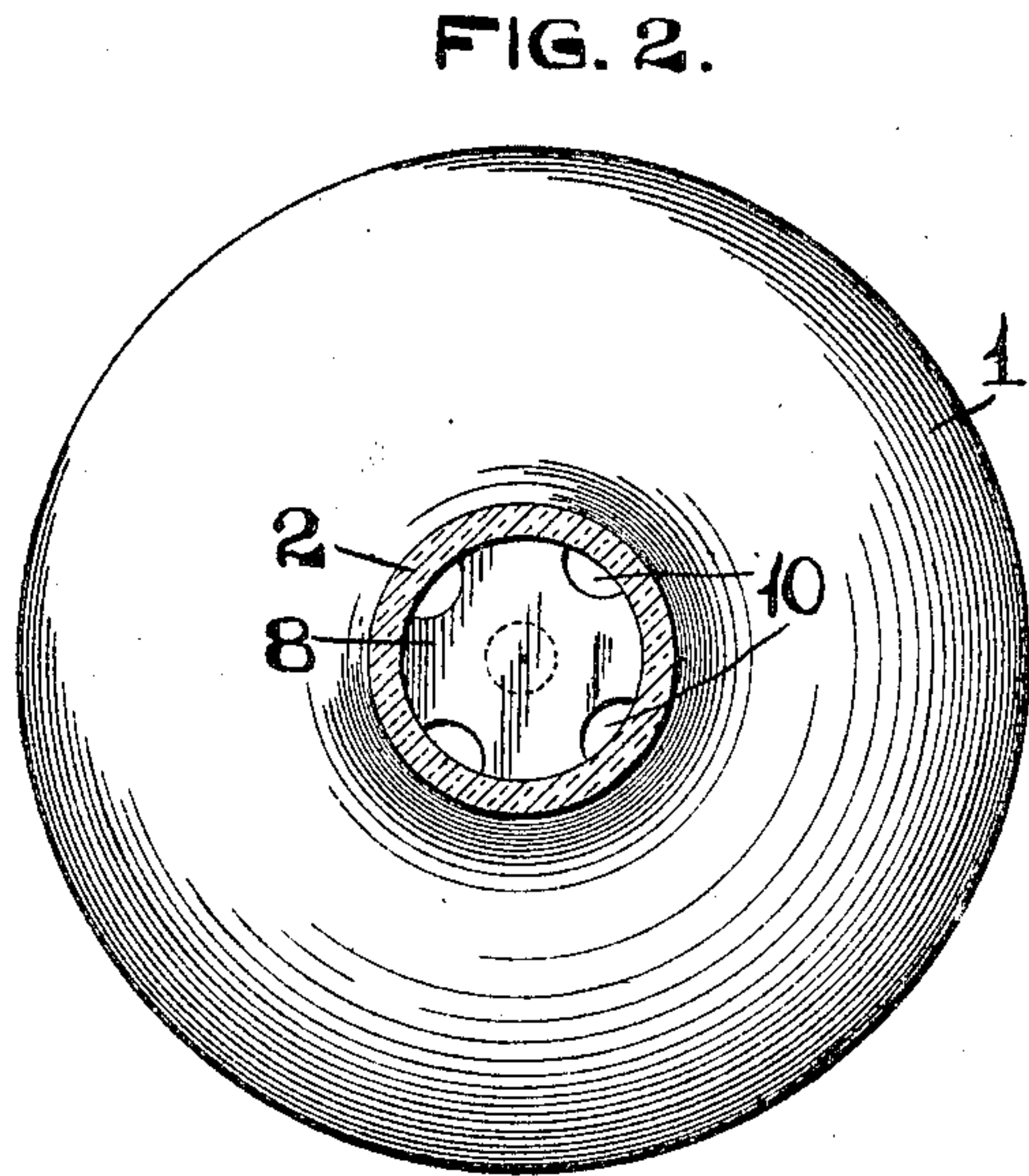
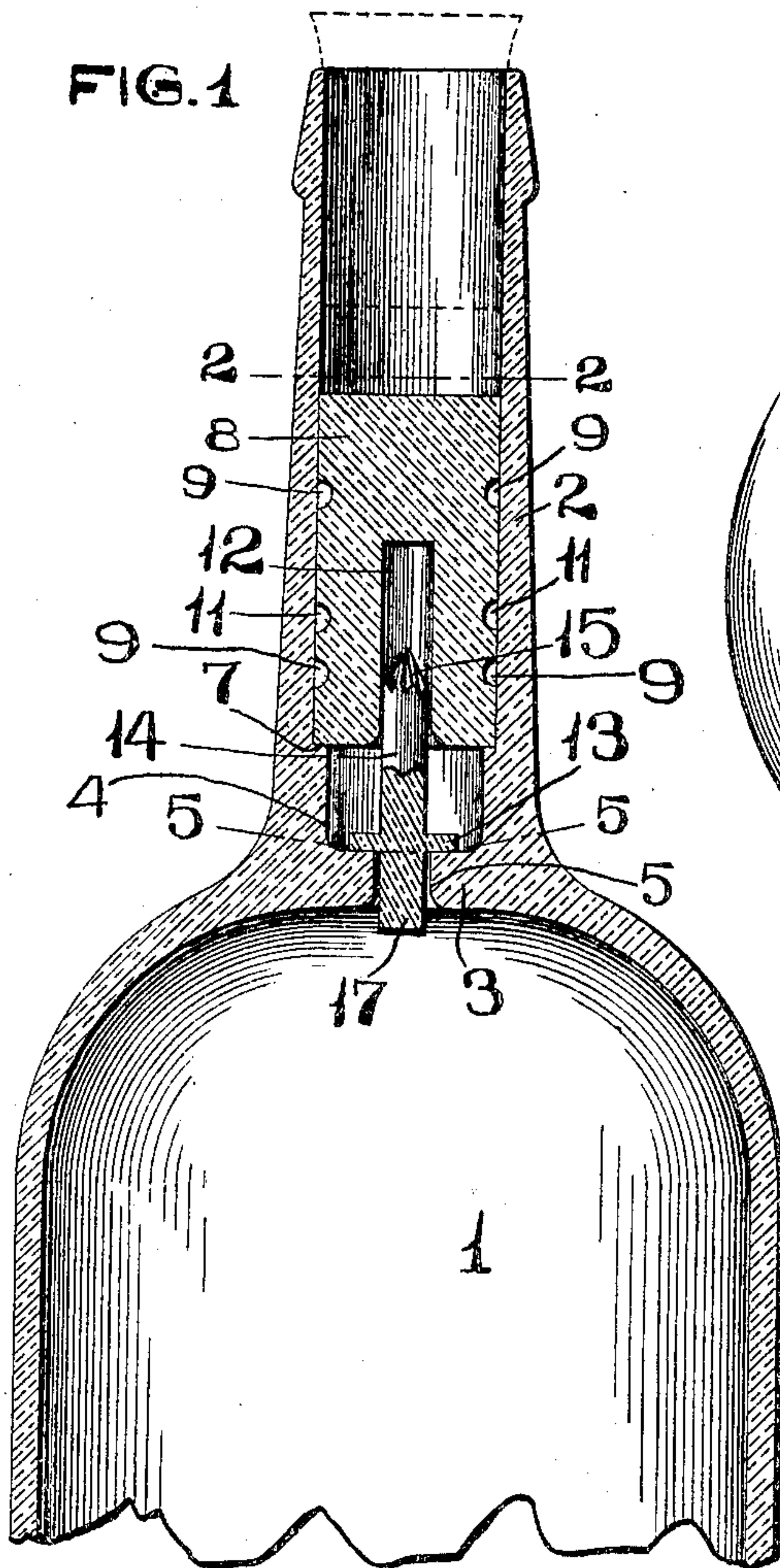
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PATENTED FEB. 13, 1906.

W. E. KNOLLENBERG & J. A. FREY.

NON-REFILLABLE BOTTLE.

APPLICATION FILED JULY 14, 1905.



ATTEST.

H. G. Fletcher,
M. P. Smith

INVENTORS.
WILLIAM E. KNOLLENBERG.
JACOB A. FREY.
BY *Nigdon & Langau.*
ATTY'S.

UNITED STATES PATENT OFFICE.

WILLIAM E. KNOLLENBERG AND JACOB A. FREY, OF ST. LOUIS,
MISSOURI.

NON-REFILLABLE BOTTLE.

No. 812,751.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, WILLIAM E. KNOLLENBERG and JACOB A. FREY, citizens of the United States, and residents of St. Louis, Missouri, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to a non-refillable bottle; and the object of our invention is to produce a simple and durable bottle that can be practically manufactured at a minimum cost and which comprises a minimum number of parts and which will very effectually prevent the bottle from being refilled after its original contents have been removed.

Our invention consists in a bottle having a shoulder formed on the inside of the neck, a solid cylinder placed in the neck of the bottle above the shoulder, and a gravity-valve operating between the cylinder and the shoulder and adapted to seat on said shoulder and close the passage-way between the neck of the bottle and the interior of the body thereof.

Our invention further consists in certain new and novel features of construction and arrangement of parts, that will hereinafter be more fully set forth, pointed out in the claim, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the upper portion of a bottle of our improved construction. Fig. 2 is a horizontal section taken on the line 2 2 of Fig. 1. Fig. 3 is a side elevation of the cylinder that is positioned in the neck of the bottle. Fig. 4 is a plan view of the cylinder. Fig. 5 is a horizontal section taken on the line 5 5 of Fig. 1. Fig. 6 is a view looking at the under side of the valve of our improved bottle.

Referring by numerals to the accompanying drawings, 1 indicates the body of the bottle, which is of the usual form and construction, and 2 the neck of said bottle. Formed integral with the neck of the bottle, at a point where it joins with the body 1, is an inwardly-projecting flange 3, that forms a flat shoulder or valve-seat 4, and the top surface of this shoulder or seat around the centrally-arranged aperture 5 therein is ground, as indicated by 6. Formed on the interior of the neck 2, a

short distance above the flange 3, is a narrow shoulder 7.

8 indicates a cylinder of glass or suitable non-corrosive material, which cylinder is of such diameter as that it snugly fits the interior of the neck of the bottle, and its lower end rests upon the shoulder 7. This cylinder is preferably held in position by means of cement, or it may be held by any practical means. Formed in the exterior surface of this cylinder is a plurality of grooves 9, the ends of which are preferably widened, as indicated by 10, and which terminate at the top and bottom ends of said cylinder. These grooves are curved as they extend from one end of the cylinder to the other, and said grooves at the center of the cylinder are formed into the oppositely-arranged U-shaped loops, such as 11, in order to form a tortuous passage for the liquid that flows through said grooves. When the cylinder is properly positioned in the neck of the bottle, the body of the neck of said bottle covers the grooves 9, and thus a series of tortuous ducts or passages are formed from the lower end of the neck of the bottle to the mouth thereof. Centrally arranged in the under side of the cylinder 8 is a recess 12, that extends upwardly to a point adjacent the center of the cylinder. This recess is in direct vertical alinement with the aperture 5 in the center of the flange 3.

The valve of our improved non-refillable bottle comprises a disk 13 of glass or analogous non-corrosive material, with which disk is formed integral a stem 14, that projects upwardly into the recess 12 and its upper end being pointed, as indicated by 15. The under side of the disk 13 is ground, as indicated by 16, which ground surface normally rests directly on the ground surface 6 of the valve-seat 4, and formed integral with the under side of the disk 13 is a stem 17, that normally projects downwardly through the aperture 5. The stems 14 and 17 are of such size as that they will readily pass through the recess 12 and aperture 5, and the space between the lower end of the cylinder 8 and the top of the flange 3 is such that when the top of the valve 13 bears against the under side of the cylinder 8 the lower end of the stem 17 is just clear of the top of the valve-seat 4.

In the practical use of our improved non-

refillable bottle the product to be bottled is discharged into the bottle, after which the valve 13 is placed in position so that it seats upon the top of the shoulder 3, after which the cylinder 8 is positioned on the shoulder 7 within the neck 2, and said cylinder is fixed in proper position by means of cement or in any suitable manner. The mouth of the bottle above the cylinder 8 may be closed by a cork, as seen in dotted lines, Fig. 1, or other closure. When it is desired to discharge the contents from one of our improved bottles, the bottle is tilted so that the valve 13 will unseat from the top of the flange 3 and the stem 14 will pass downwardly into the recess 12. The contents of the bottle 1 will now discharge through the aperture 5 in the chamber between the flange 3 and the lower end of the shoulder 8 and from there will pass through the tortuous passages formed by the plurality of curved grooves 9 and will discharge from the upper ends thereof out through the mouth of the bottle. As soon as the bottle is moved into a vertical position the valve 13, together with the stems 14 and 17, will by gravity reseat upon the top of the flange 3, and as the top surface of this flange, together with the under side of the valve 13, is ground, said valve will fit very closely upon its seat, and thus evaporation of the contents of the bottle is prevented, and air is effectually prevented from entering the bottle to weaken or cause the contents of the bottle to lose strength. The valve cannot be elevated while the bottle is in a vertical position, as the tortuous passages formed by the curved grooves very effectually prevent the introduction of wires or similar devices to unseat the valve.

Our improved bottle can be very easily and

cheaply manufactured, inasmuch as the body of the bottle can be readily formed in the bottle-molds as used at the present time, and the valves and stems and the cylinders with the grooves in the exterior thereof can be readily and cheaply produced.

A non-refillable bottle of our improved construction comprises a minimum number of parts, is adapted for holding all manner of liquids, and very effectually prevents the refilling of the bottle with spurious goods after the original contents thereof have been discharged.

We claim—

The combination with a bottle, provided with an interior shoulder at the point where the neck joins the body of the bottle, of a disk valve arranged to seat upon said shoulder, valve-stems integral with and projecting upwardly and downwardly from the center of the disk valve, and a solid cylinder of non-corrosive material seated in the neck of the bottle above the shoulder, which cylinder is provided in its under side with a recess to receive the upper valve-stem, there being a plurality of grooves formed in the surface of the cylinder, the central portions of which grooves are formed in oppositely-disposed U-shaped loops and which grooves extend to the top and bottom of the cylinder, and the ends of said grooves being widened; substantially as specified.

In testimony whereof we have signed our names to this specification in presence of two subscribing witnesses.

WILLIAM E. KNOLLENBERG.

JACOB A. FREY.

Witnesses:

M. P. SMITH,

E. M. HARRINGTON.