

F. B. LEOPOLD.

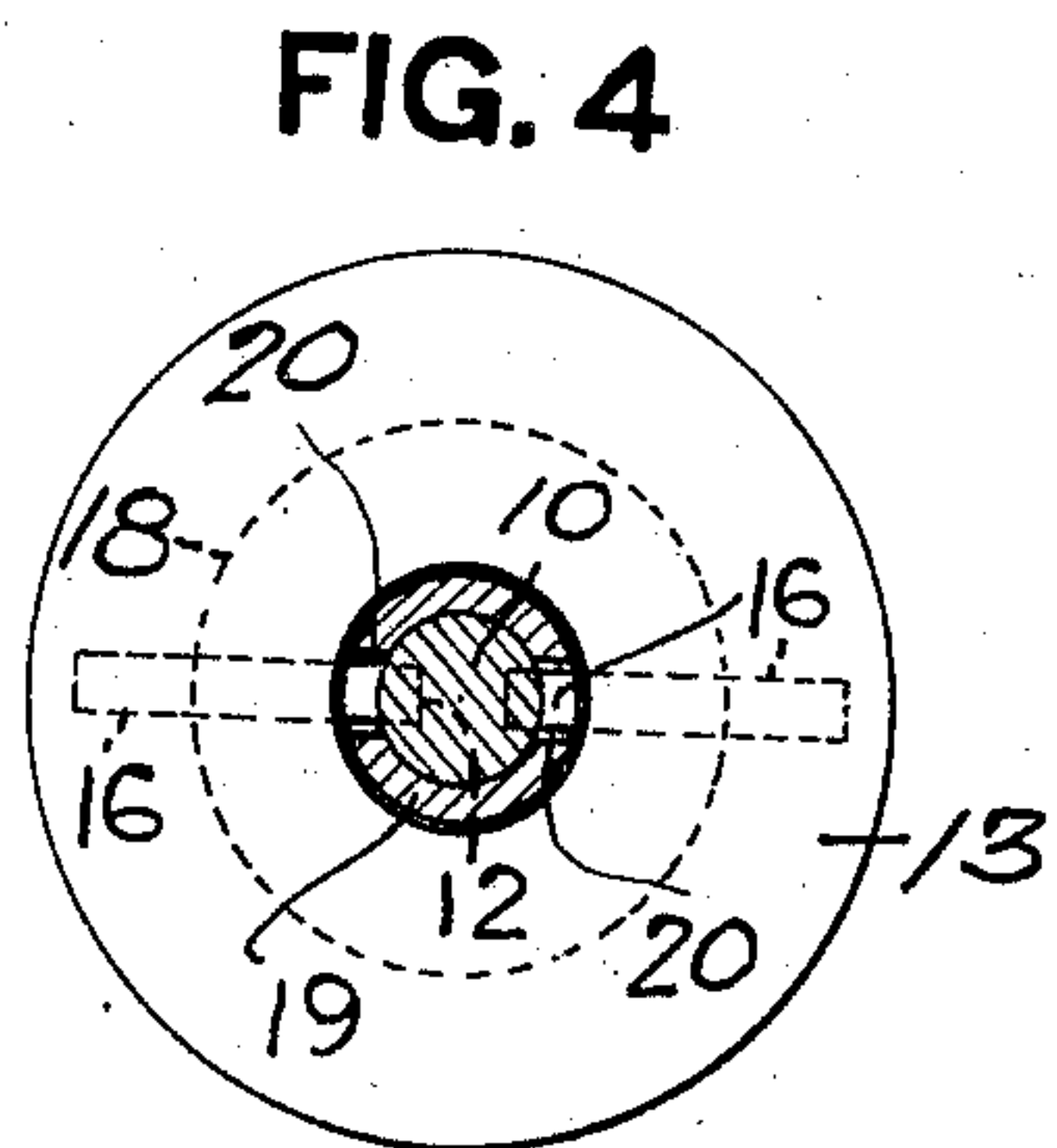
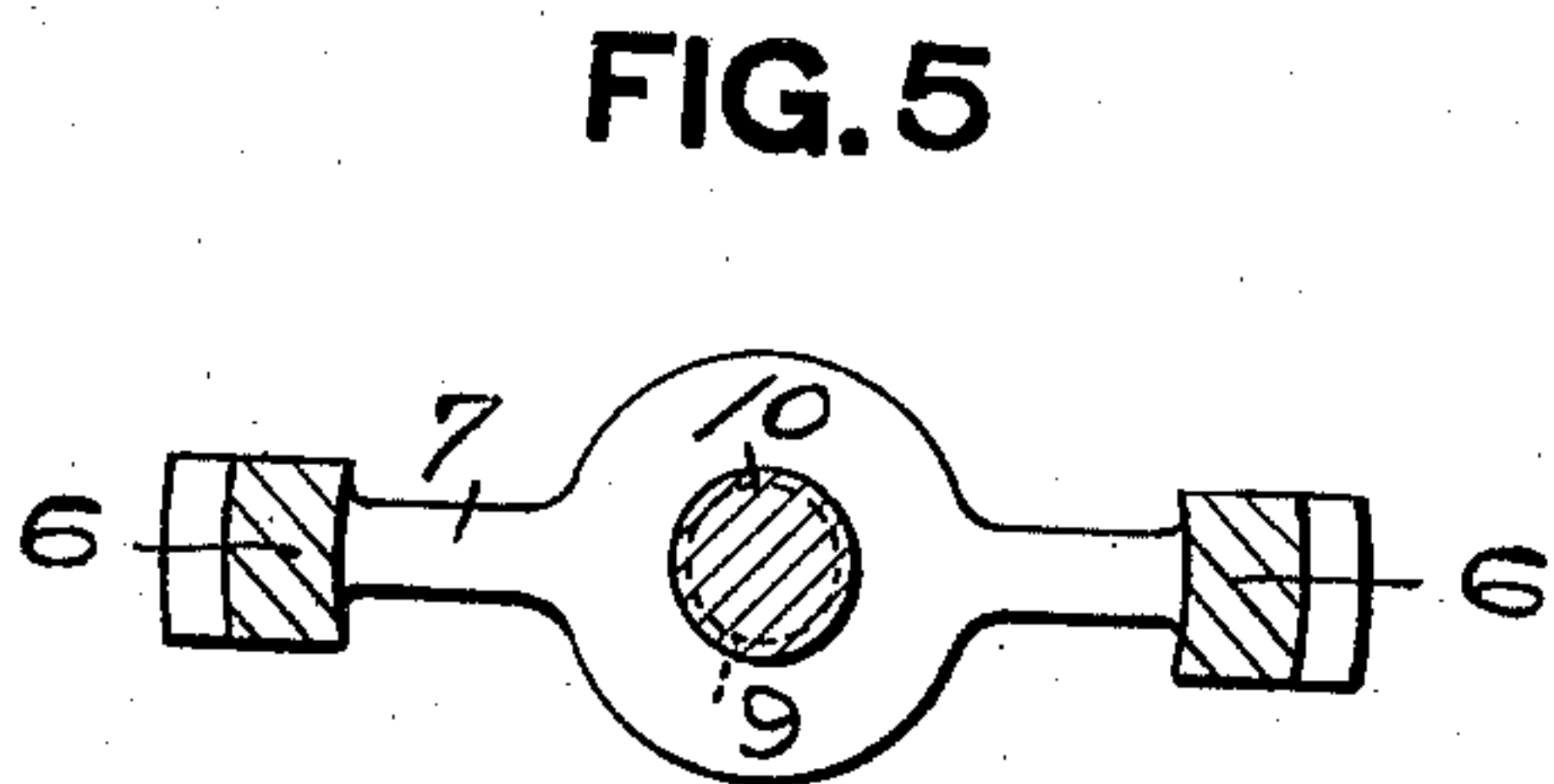
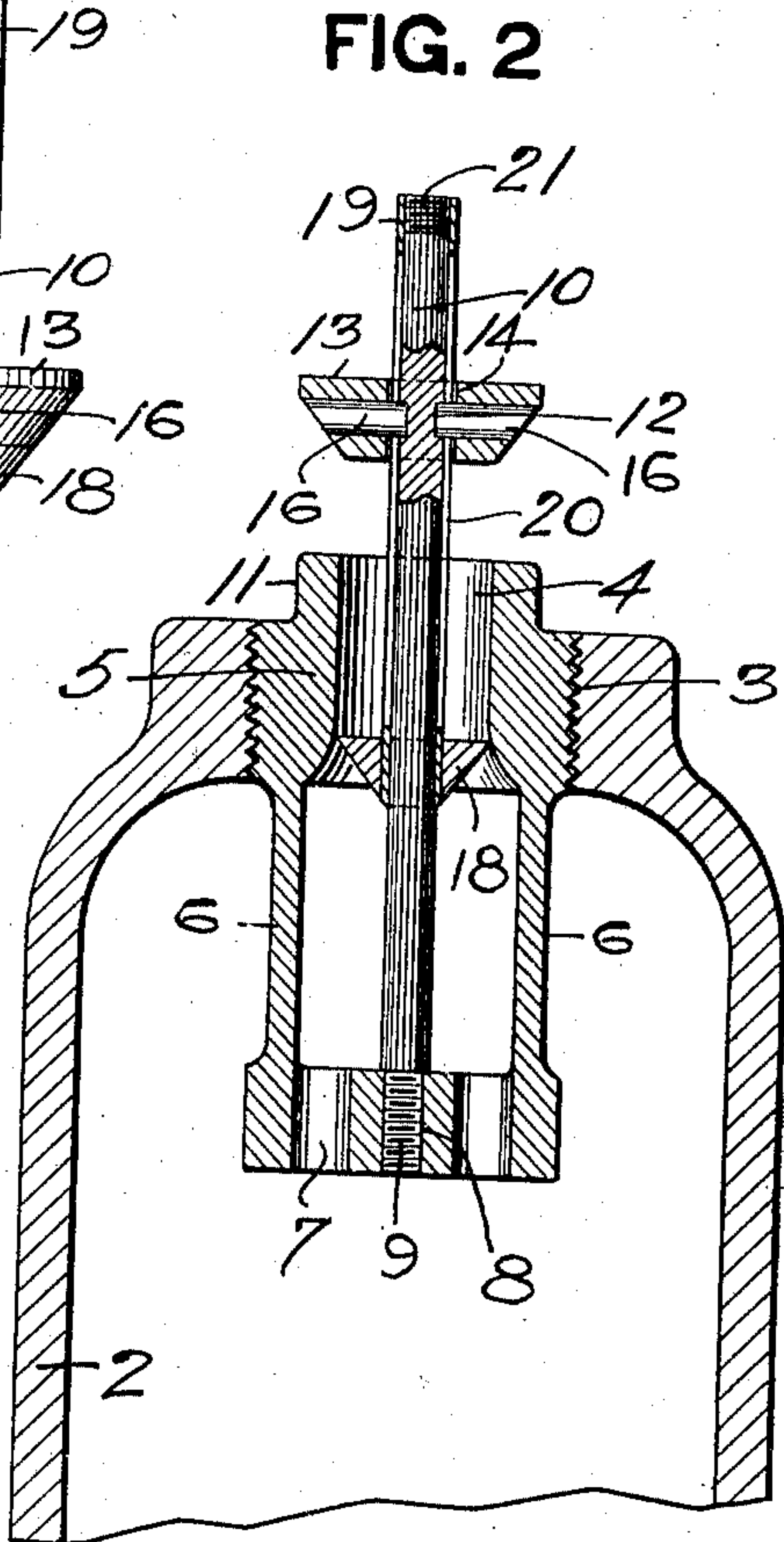
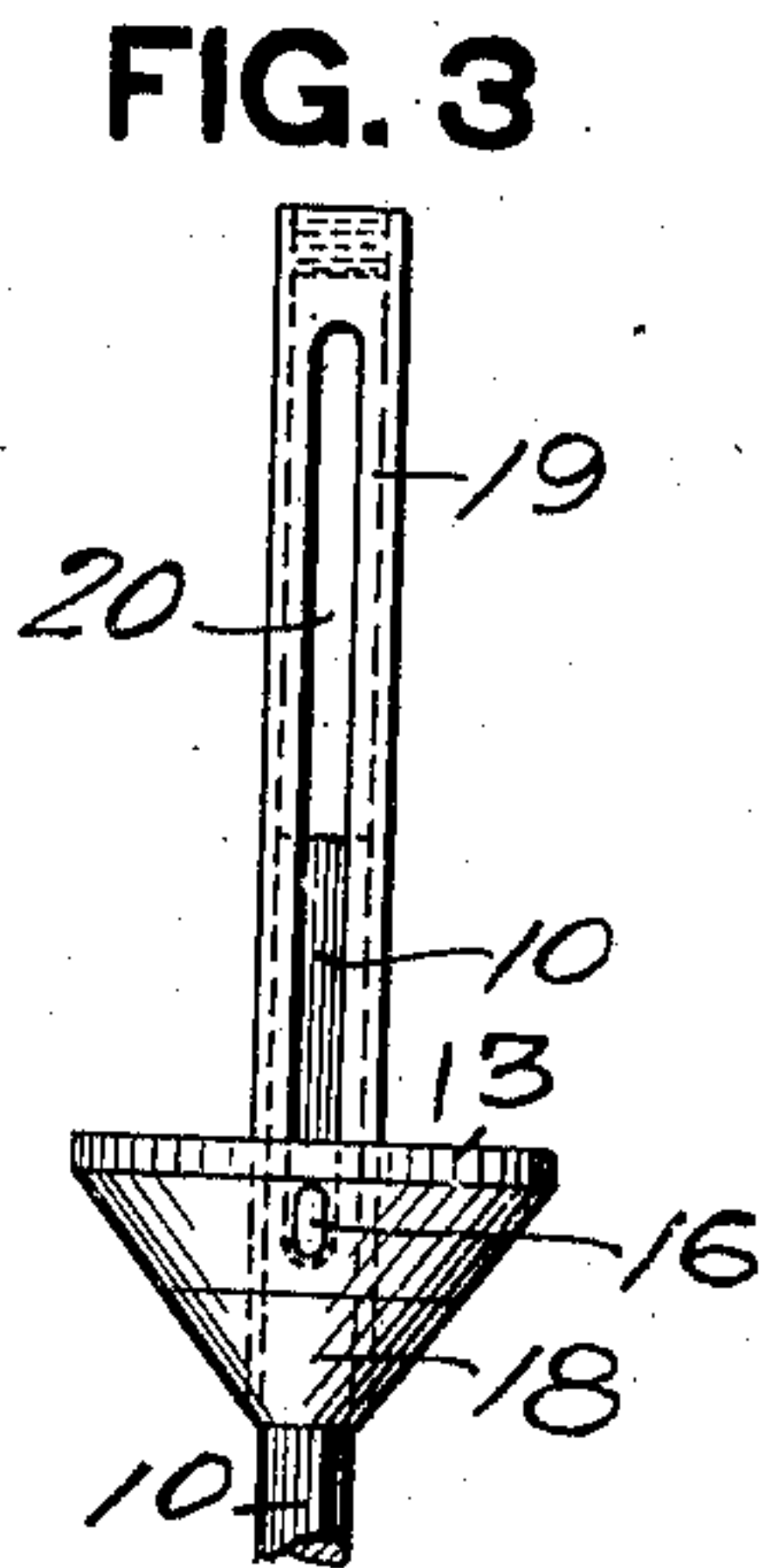
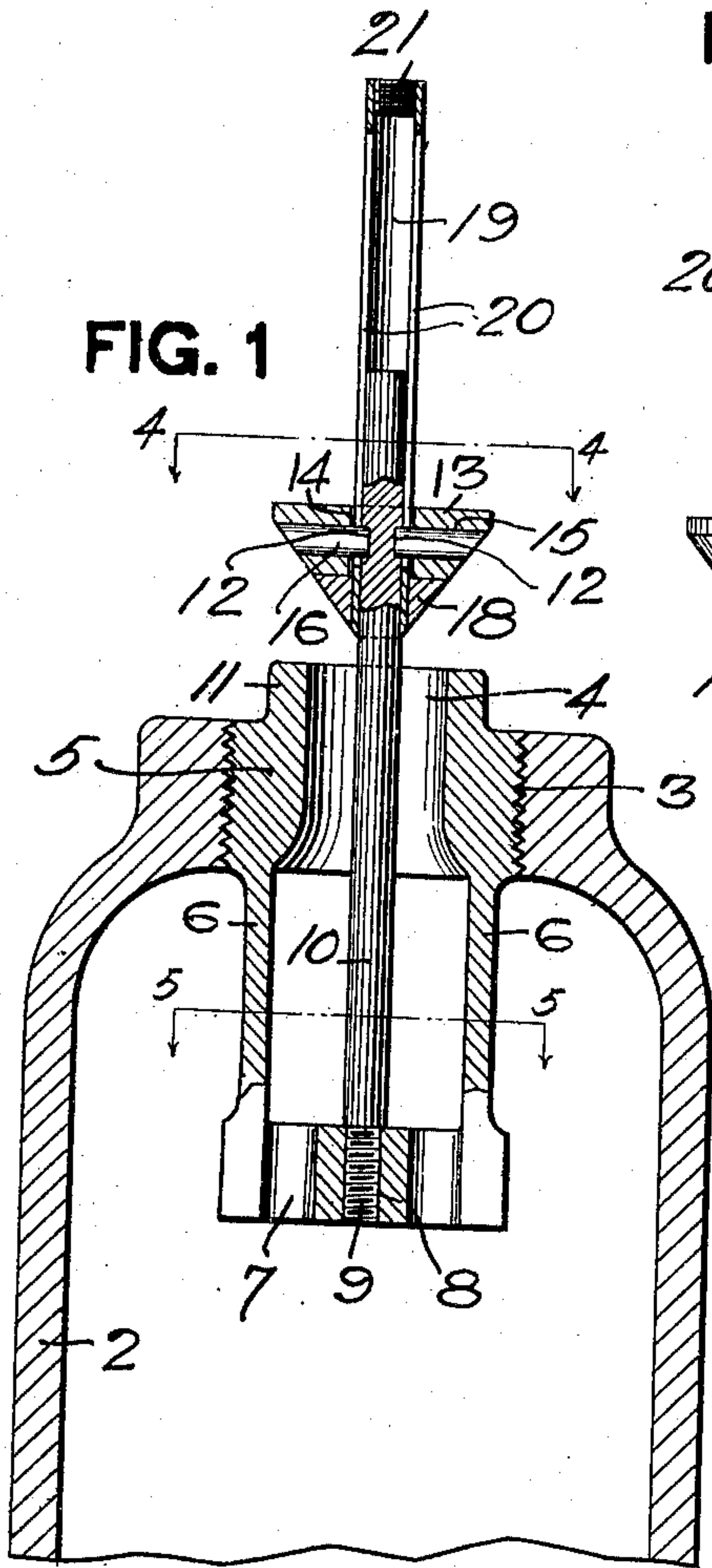
NOZZLE.

APPLICATION FILED JUNE 28, 1909.

980,538.

Patented Jan. 3, 1911.

2 SHEETS—SHEET 1.



WITNESSES.

J. R. Keller  
Robert C. Follen

INVENTOR.

Frederick B. Leopold  
By Kurt Follen  
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F. B. LEOPOLD.

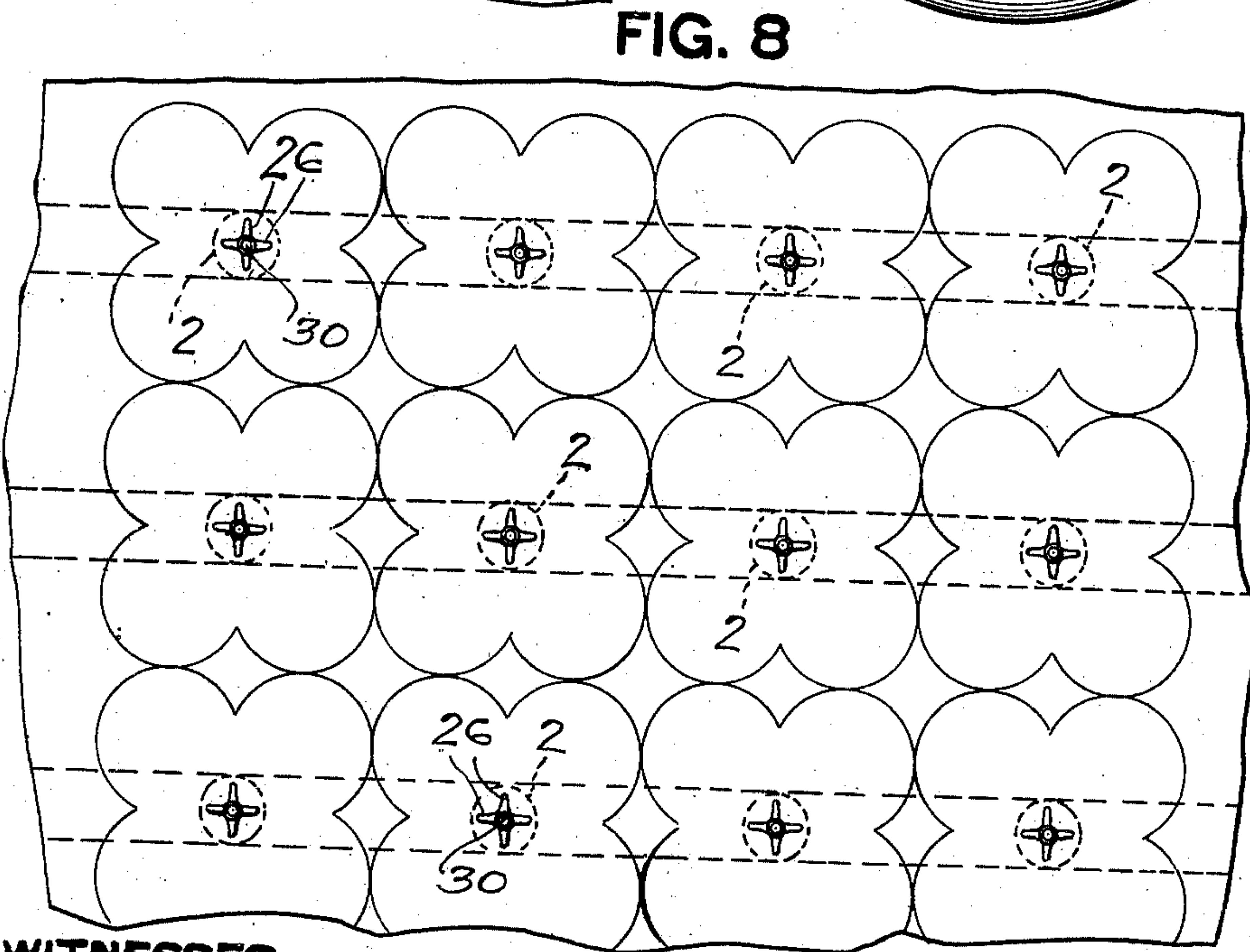
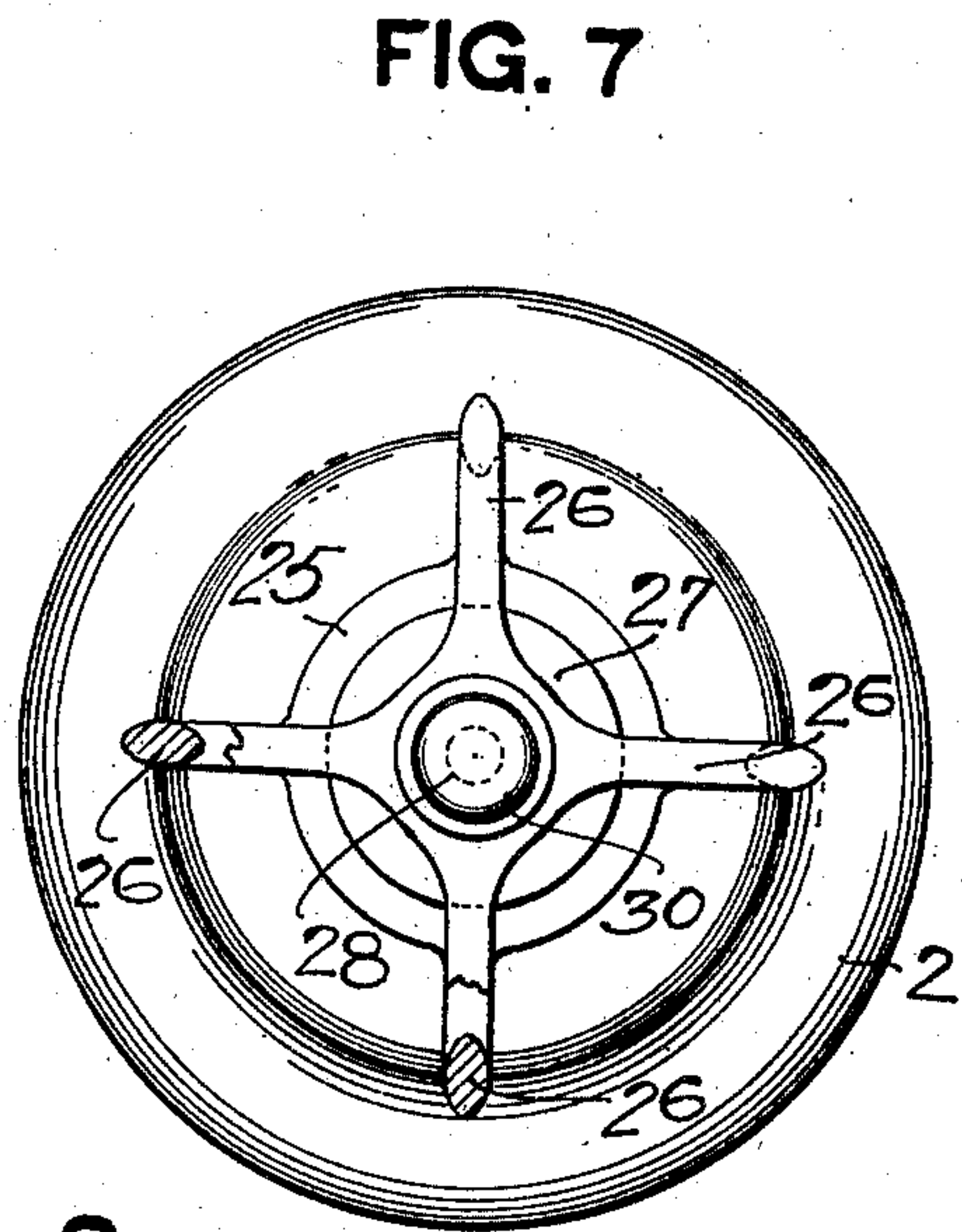
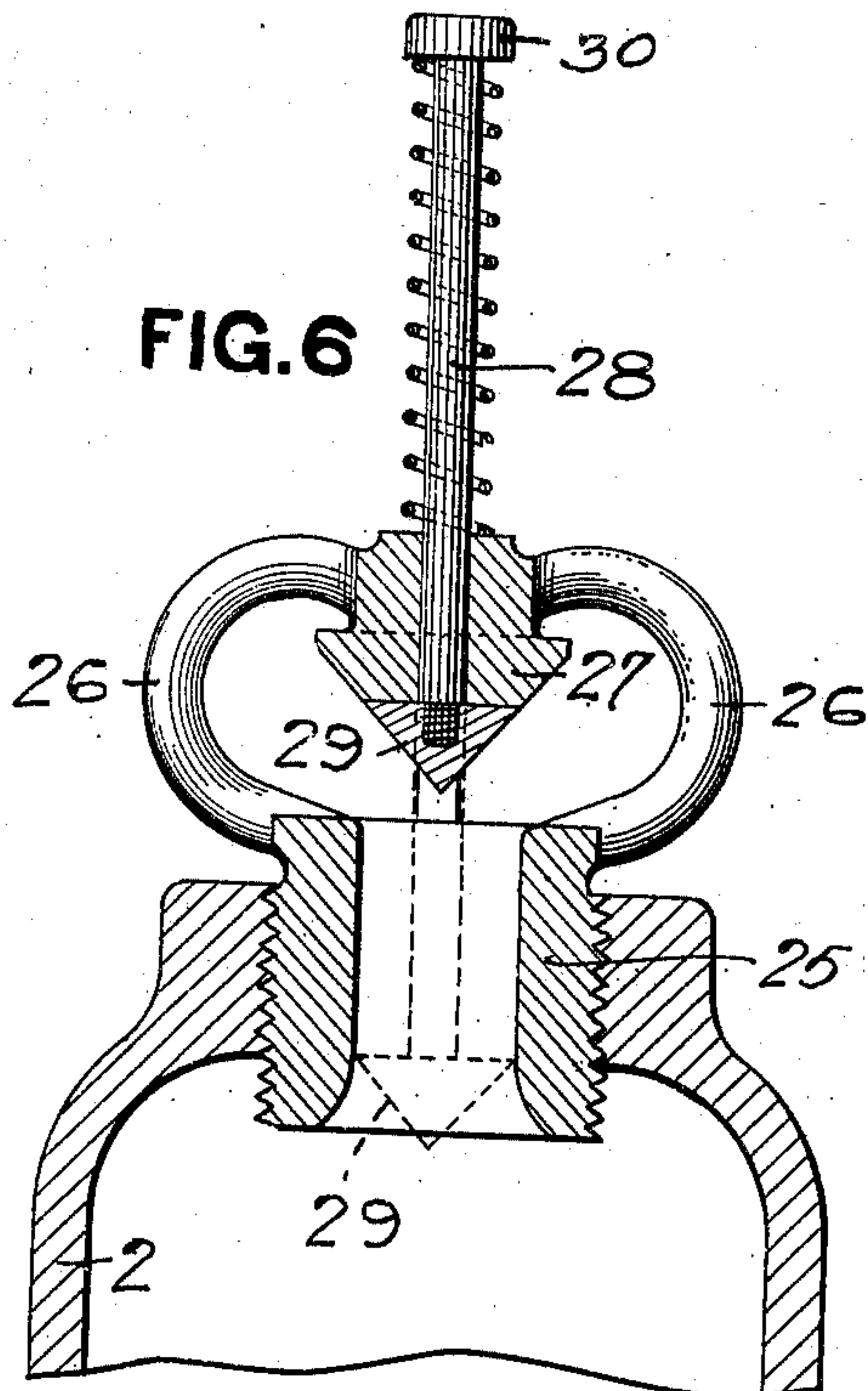
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*J. R. Keller*  
*Robert C. Follen*

**INVENTOR.**

*Fredrick B. Leopold*  
*By Ray F. Follen*  
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# UNITED STATES PATENT OFFICE.

FREDERICK B. LEOPOLD, OF SEWICKLEY, PENNSYLVANIA.

## NOZZLE.

980,538.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed June 28, 1909. Serial No. 504,826.

*To all whom it may concern:*

Be it known that I, FREDERICK B. LEOPOLD, a resident of Sewickley, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Nozzles; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an automatic cleaning nozzle.

The object of my invention is to provide a nozzle of this character which is simple in construction and quickly and conveniently operated, thereby doing away with the time and labor ordinarily required for the operation of such nozzles.

My invention is particularly applicable for use in connection with sewage disposal plants in which the nozzles are arranged at intervals over the filter bed, the sewage being dispersed radially by the nozzles as it passes up through the same from the riser pipe. These nozzles are liable to become clogged up by the solid matter of the sewage and it is necessary from time to time to remove the obstructions in order to have the sewage plant operate to its full capacity.

To these ends my invention comprises, generally stated, in connection with the riser pipe having an opening therein, a nozzle engaging said opening, said nozzle having an outlet, a deflector head and a movable section on said deflector head adapted to be lowered into the outlet of said nozzle to remove any obstructions therein and clean the same thoroughly.

In the drawings Figure 1 is a sectional elevation of my improved nozzles in connection with a riser pipe; Fig. 2 is a like view showing the same in position for cleaning; Fig. 3 is a detail of the deflector and stem; Fig. 4 is a section on the line 4—4, Fig. 1; Fig. 5 is a section on the line 5—5, Fig. 1; Figs. 6 and 7 show modified forms of my invention; and Fig. 8 is a diagrammatic view showing the manner in which the sewage is scattered.

In the drawings the numeral 2 designates a suitable riser pipe which has the threaded opening 3. The nozzle 4 comprises the threaded collar 5 which is adapted to engage the threaded seat 3 of the riser pipe. Extending down from the collar 5 are the arms 6 which are connected at their lower ends

by the cross piece 7. This cross piece 7 is provided with the threaded aperture 8 which is adapted to receive the threaded end 9 of the stem 10. The stem 10 passes up through the collar 5. The upper end of the collar 5 has the hexagonal nut portion 11 for the application of a wrench for the insertion or removal of the nozzle from the riser pipe. The stem 10 is provided with the seats 12 at opposite sides thereof. A deflector head 13 is carried by the stem 10 and said deflector head has the opening 14 through which the stem passes. Openings 15 are formed in the deflector head 13 to receive the keys 16 which are driven into said openings and the inner ends of said keys enter the seats 12 in the stem 10. In this manner the deflector head is securely attached to the stem. The deflector head is formed of two sections, the lower section 18 being movable with reference to the upper section and the greatest diameter of the lower section 18 is equal, or substantially equal, to the size of the opening in the nozzle so that said cleaning section 18 may pass down into the nozzle, as clearly indicated in Fig. 2. To provide for this movement of the cleaning section 18 of the deflector head, said cleaning section is provided with the hollow extension 19 which surrounds the stem 10. This hollow extension 19 is provided with the slots 20 at opposite sides thereof with which the keys 17 engage and which permit of the vertical movement of the extension 19 with reference to the stationary stem 10. At the upper end of the tubular extension 19 is the plug 21.

When my improved nozzle as above described is in use and it is desired to clean out the outlet of the said nozzle the operator, by applying downward pressure to the tubular extension 19, either by applying his foot or otherwise, lowers said extension and thereby carries down the cleaning section 18 which passes through the outlet of the nozzle and as said cleaning section forms a neat fit with the outlet of said nozzle, any material obstructing the passageway of the nozzle is removed and the nozzle thoroughly cleaned. The cleaning section under these circumstances takes the position clearly indicated in Fig. 2. When the cleaning section has been lowered in this manner until the nozzle has been cleaned the tubular extension 19 will be forced to its



normal position by the action of the fluid in the riser pipe and said cleaning section will assume its normal position, as indicated in Fig. 1, and form a part of the deflecting head.

In this manner I provide a simple construction which will operate very effectively to clean the nozzle and at the same time is automatic, so that it is only necessary to apply pressure to the upper end of the tubular extension and lower the section down into the nozzle, the return of the cleaning section being effected by the pressure of the fluid in the riser pipe. A spring may be employed if desired to assist in the return of said cleaning section.

In Figs. 6 and 7 I have illustrated a modified form of my invention in which the nozzle body 25 has the arms 26 which support the deflector 27. These arms are preferably four in number and arranged at equal or substantially equal distances apart for the purpose more fully hereinafter set forth. The stem 28 passes down through an opening in the deflector and secured to the lower end of said stem is the movable deflector section 29. At the upper end of the stem 28 is the head or enlargement 30. When the sewage passes up through the riser pipe and out through the nozzle the sewage will be deflected by the deflector and scattered thereby over a certain area of the filter bed. The arms 26 arranged in the manner shown will be in the path of the sewage so deflected and will tend to disturb the natural radial flow of the sewage upon striking the conical deflector. Accordingly the area over which the sewage will be scattered will correspond substantially to the diagrammatic view shown in Fig. 8. It will be observed that by directing the discharge of the sewage in this way from the nozzle the area covered will correspond more nearly to a rectangular figure and accordingly a greater area of the filter bed may be employed or brought into play than where the sewage is simply distributed in circular areas. As indicated in Fig. 8 by arranging the nozzles at a proper distance apart the portions of the filter bed not sprayed by the nozzles is very small and practically all of the filter bed is made available for use. This is due to the use of

the four arms on the nozzle arranged to be substantially equal distances apart.

What I claim is:

1. A nozzle comprising a body portion having an outlet passage, a deflector supported from a point above and outside of said passage, said deflector comprising a stationary upper portion and a movable lower portion, and means for advancing and withdrawing said lower portion.

2. A nozzle comprising a body portion having an outlet passage, a deflector supported from a point above and outside of said passage, said deflector comprising a stationary upper portion and a movable lower portion, and a stem connected to said movable portion, and movable through said stationary portion.

3. A nozzle comprising a body portion having an outlet passage, a deflector supported from a point above and outside of said passage, said deflector comprising a stationary upper portion and a movable lower portion, being of substantially the same size as said passage, and means for advancing and withdrawing said lower portion.

4. A nozzle comprising a body portion having an outlet passage, a vertically movable deflector supported from a point outside of said passage, and means for moving said deflector into said passage.

5. A nozzle comprising a body portion having an outlet passage, arms extending up from said body portion, a deflector supported by said arms, and a movable section on said deflector adapted to be lowered into the outlet passage of said body portion.

6. A nozzle comprising a body portion having an outlet passage, arms extending up from said body portion, a deflector carried by said arms, a movable stem passing through said deflector, and a deflector section carried by said stem adapted to enter said passage.

In testimony whereof, I the said FREDERICK B. LEOPOLD have hereunto set my hand.

FREDERICK B. LEOPOLD.

Witnesses:

ROBERT C. TOTTEN,  
JOHN F. WILL.