

J. E. FLITCROFT.

BURNER.

APPLICATION FILED OCT. 13, 1908.

975,518.

Patented Nov. 15, 1910.

2 SHEETS—SHEET 1.

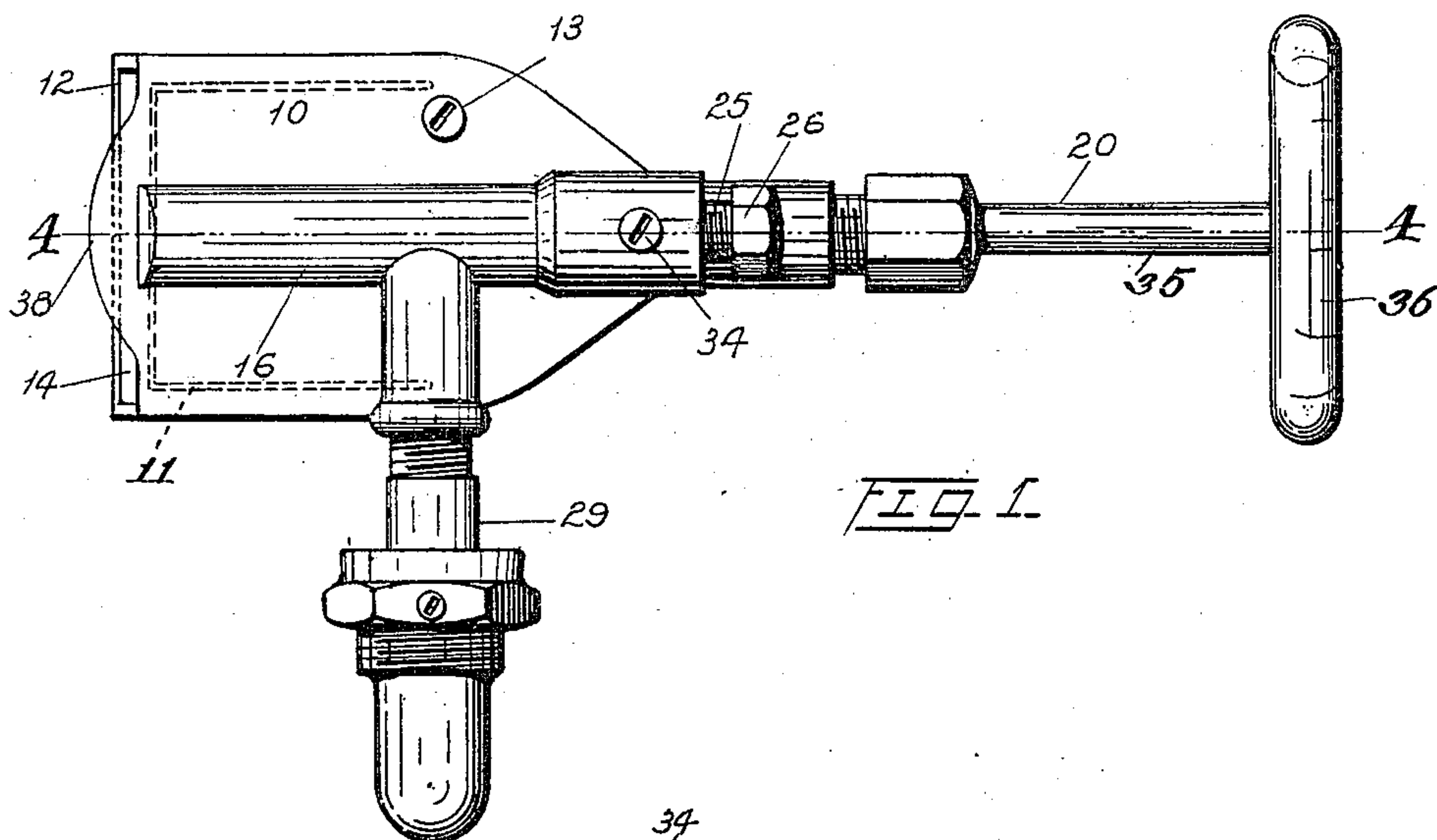


FIG. 1.

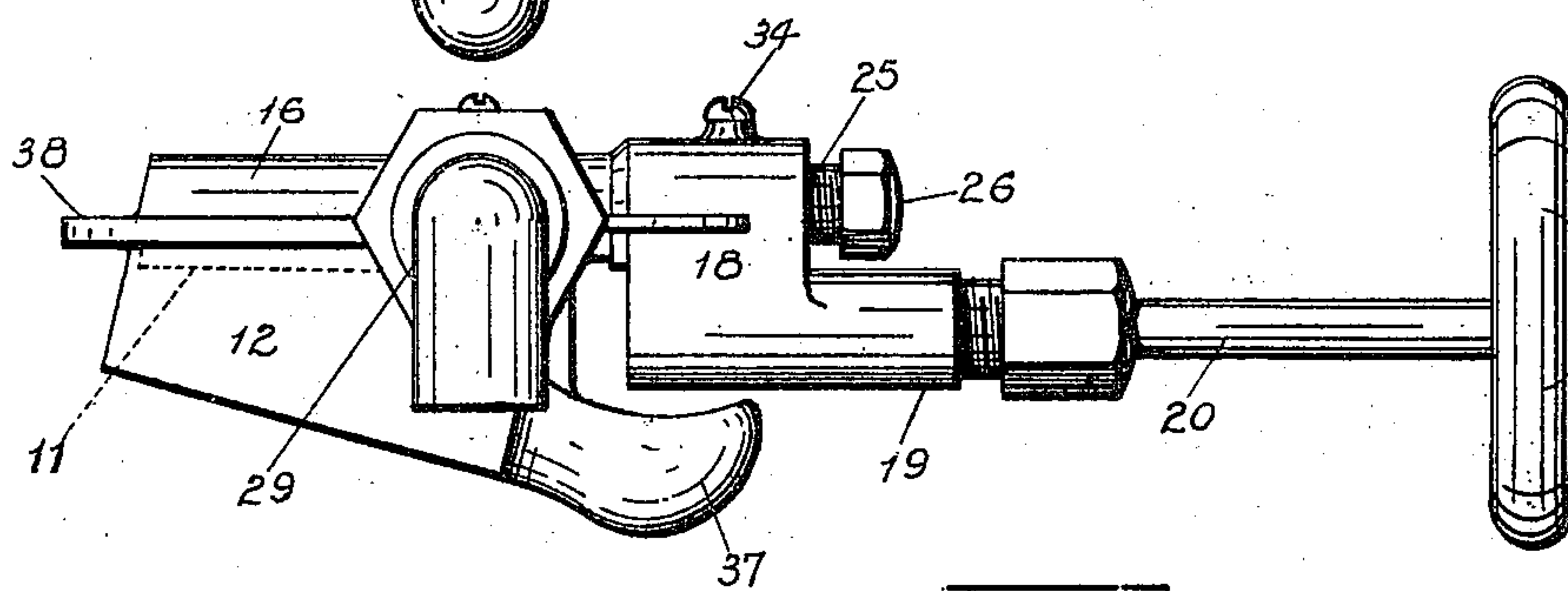


FIG. 2.

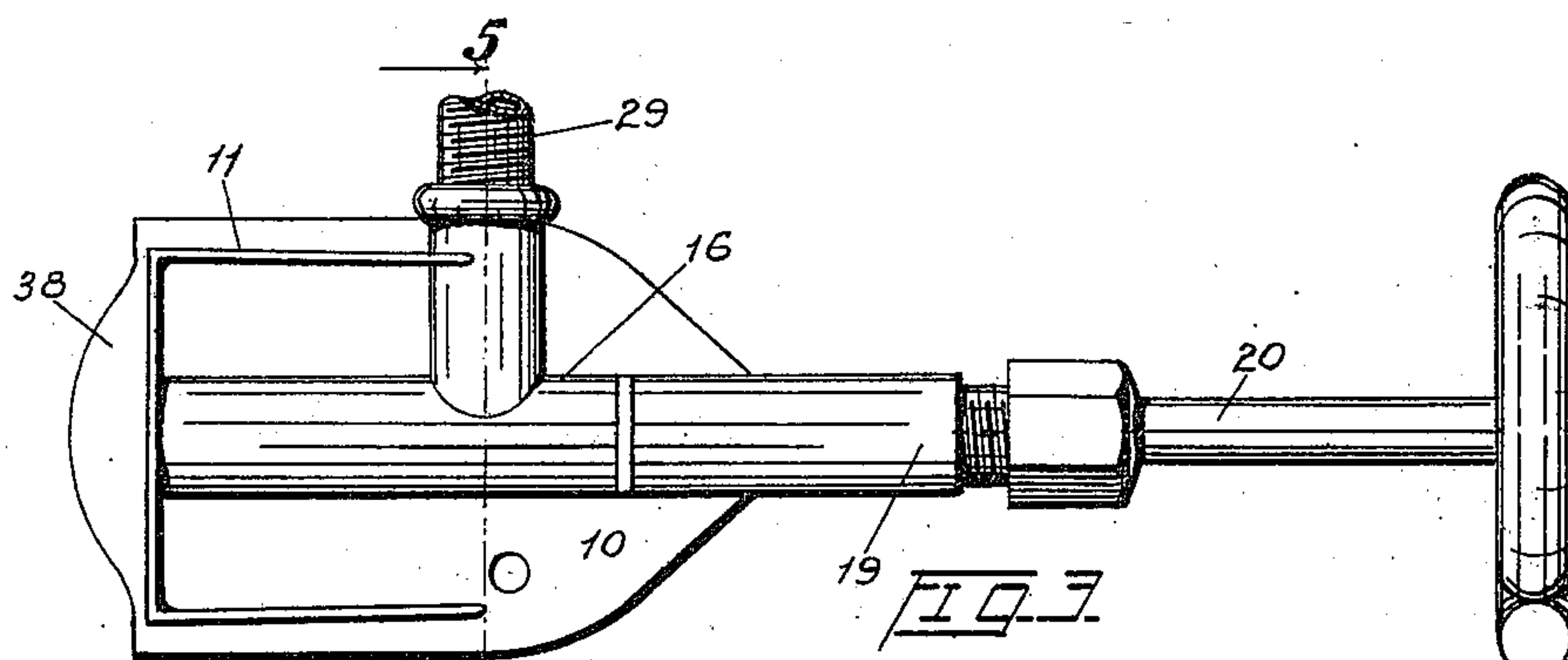


FIG. 3.

WITNESSES

Frederick Germann
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INVENTOR

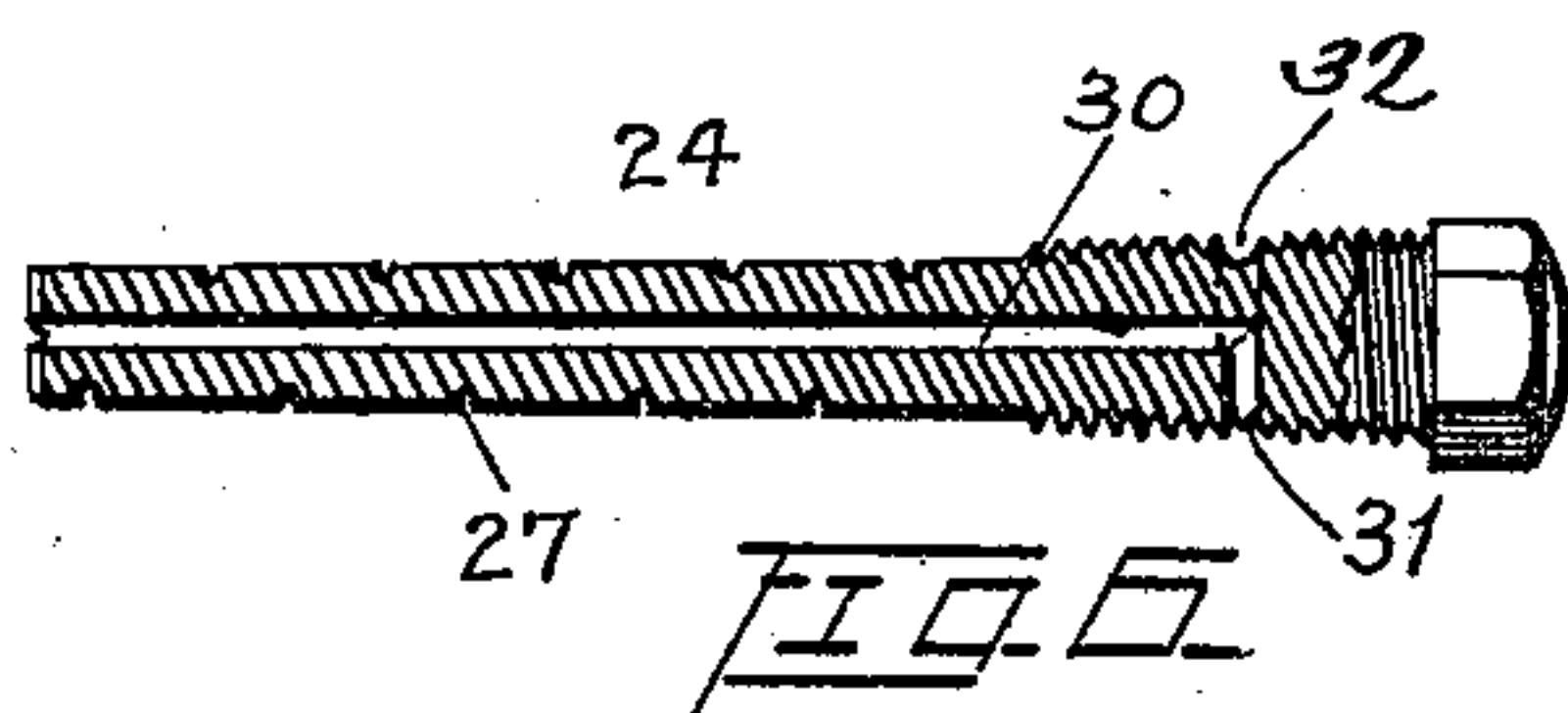
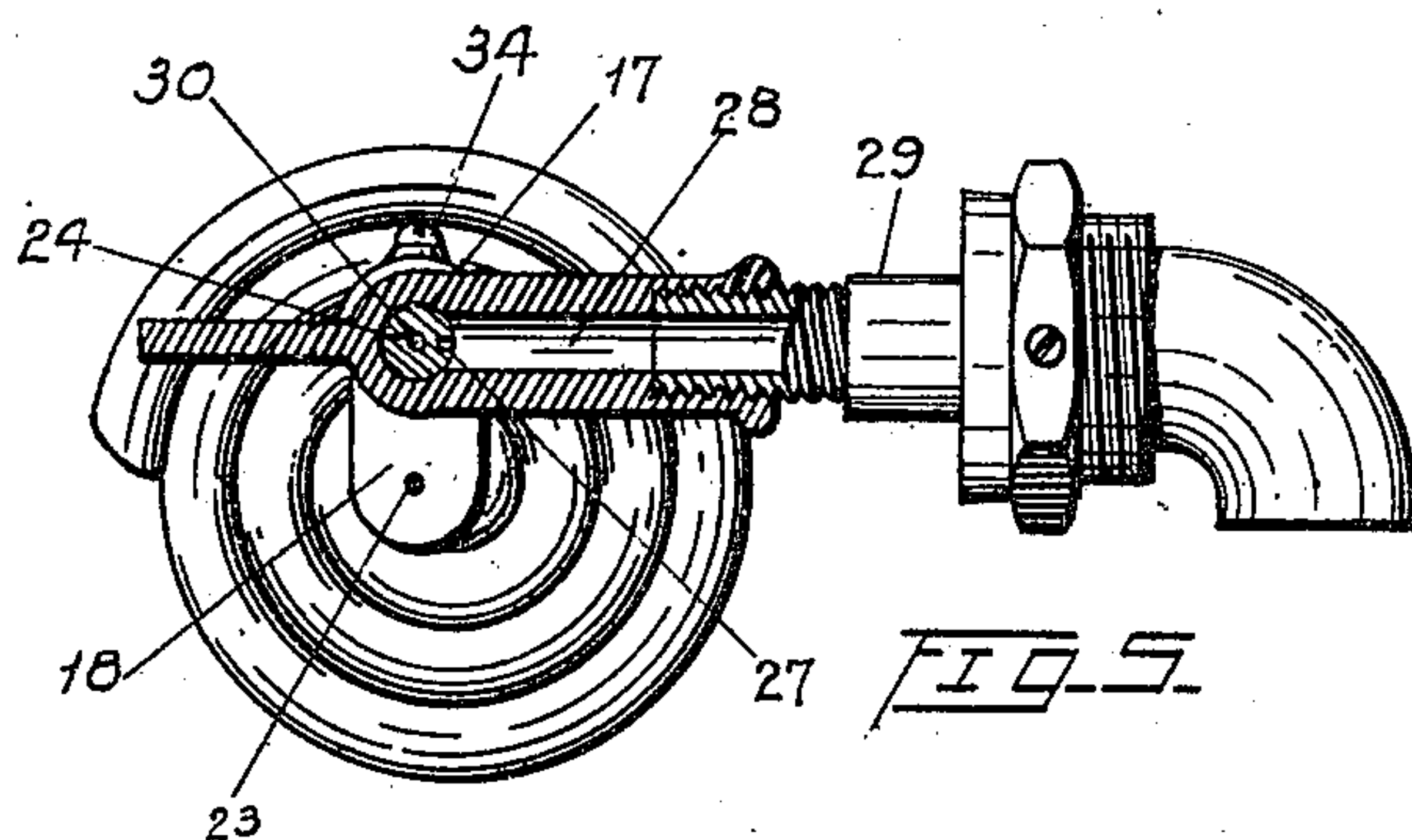
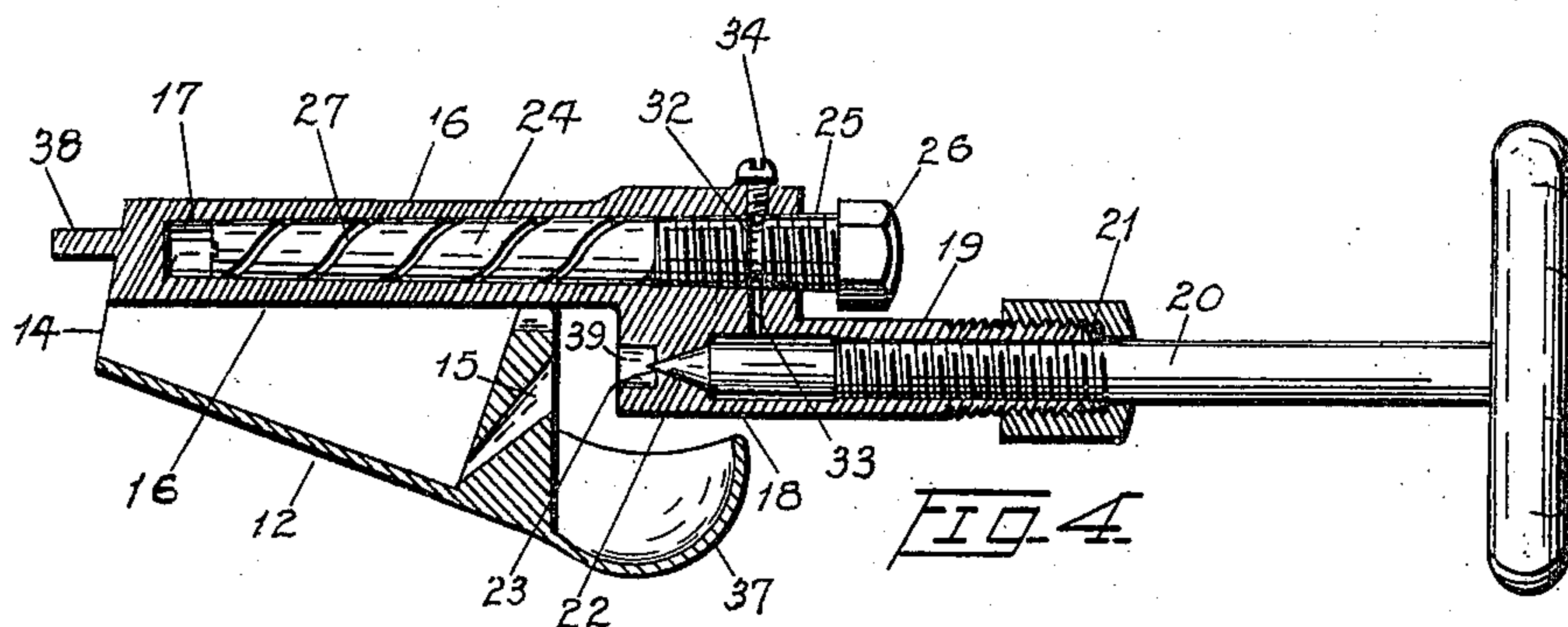
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WITNESSES

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JAMES EDWARD FLITCROFT, OF OCEAN GROVE, NEW JERSEY, ASSIGNOR TO OTTO
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BURNER.

975,518.

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To all whom it may concern:

Be it known that I, JAMES EDWARD FLITCROFT, a citizen of the United States, residing at Ocean Grove, in the county of Monmouth and State of New Jersey, have invented certain new and useful Improvements in Burners, of which the following is a specification.

This invention relates more particularly to such burners as are designed to vaporize hydrocarbon liquids, and are commonly employed in plumbers' furnaces, torches and the like.

The objects of the invention are to provide such a burner which shall be effectively heated, and thus to completely vaporize the fuel; to secure a simple construction, and to provide ready access to the fuel passages; to thus avoid liability of the burner becoming clogged and useless, and to obtain other advantages and results as may be brought out in the following description.

Referring to the accompanying drawings, in which like numerals of reference indicate the same parts in the several figures, Figure 1 is a plan of a burner of my improved construction, and Fig. 2 is a side view of the same; Fig. 3 is an underneath view of the burner plate detached from the other parts; Fig. 4 is a vertical section taken on line 4, 4 of Fig. 1; Fig. 5 is a transverse vertical section taken on line 5, 5, Fig. 3, looking in the direction indicated by the arrow, and Fig. 6 is a central longitudinal section of a certain spirally grooved tubular plug.

In said drawings, 10 indicates the burner plate, whose body portion consists of a solid metal plate of elongated shape and flat. This plate 10 has at its under side a rib 11 which is adapted to fit into the open top of a hood or box 12 of cast metal and which thus lies beneath the burner plate, as shown in the drawings, to receive the flame, and is secured to said burner plate by a screw 13 passing downward therethrough. This box 12 has its bottom slanting upwardly forward to provide a narrow end opening 14 for the flame to issue from the burner. The rear end of the box 12 is closed except for an opening 15 therein which leads to the chamber and provides an inlet for the mixture of gas and air, which mixture burns within the box 12 so as to heat the burner plate 10. The said burner plate 10 is thickened along

its central longitudinal line, as at 16, both above and below the body portion of the burner plate, and the rib thus formed is bored or hollowed out to form a channel 17 which opens at its rear end. At this rear end of the burner plate which projects beyond the box 12 is a downwardly extending offset 18, which at its lower part is extended rearwardly as at 19 and bored out parallel to the channel 17 to receive a needle valve 20. This needle valve is screwed into the rear end of the extension 19, being provided with a suitable packing 21, and at its forward end 22 controls a duct 23 leading from the valve-chamber out through the front wall of the offset 18 at a point adapted to discharge vapor directly into the rear inlet-opening 15 of the box 12. Within the said channel 17 is placed a plug or cylinder 24, which terminates short of the inner end of said channel and near its outer end is screw-threaded, as at 25, to screw into the channel 17, being provided with an angular outer head 26 for turning. The outer walls of the inner end portion of the plug 24 fit against the walls of the channel nicely, and in the said exterior of the plug is formed a spiral groove 27 which extends clear to the inner end of the plug and far enough toward its outer end to open into a lateral duct 28 which receives the liquid hydrocarbon fuel through pipe connections 29 of any suitable form. This spiral passage 27 conducts the fuel to the extreme forward end of the channel 17 and burner plate 10, and for its further passage from this point the plug 24 is simply bored or channeled as at 30, said channel opening laterally through the plug at or adjacent to its threaded portion 25, as at 31, and said lateral opening being preferably into an annular exterior groove 32 of the plug. This annular groove 32 is adapted when the plug is screwed into place to register with a duct or passage 33, leading through the offset 18 from the channel 17 of the burner plate into the needle valve chamber, and thus the vaporized fuel is led to said chamber.

A set screw 34 is arranged in the top of the burner plate or rib 16 thereof to clamp into the annular groove 32 of the plug 24, and hold the latter in place. The end of the needle valve stem or rod 35 is bent at right angles and curled as at 36 to form a handle for operating the valve. A drip-cup

37 is formed on the rear end of the box or hood 12, and lies directly beneath the needle valve opening 23. Furthermore, a lip 38 is provided at the forward end of the burner plate to project outwardly beyond the extremity of the rib 16.

In operation, the needle valve is opened slightly, and the liquid hydrocarbon flows through the pipe connections 29, spiral groove 27, central passage 30 of the plug and its lateral branch 31, and annular groove 32, through the passage 33 of the offset 18, into the chamber of the needle valve 20 and from thence through the duct 23 and into the drip-cup 37. The fuel is then ignited in said drip-cup and heats the lower part of the burner sufficiently to vaporize succeeding fuel before it escapes from said needle valve duct 23. The issuing gas, under pressure, then enters the hood or box 12 through the opening 15 thereof and burns in said box or hood. The heat of the flame in said box or hood heats the burner plate 10, and particularly its rib 16 and the plug 24 therein, so that the entire course of the liquid fuel from the time it passes the lateral duct 28 is intensely heated and thus conduces to a most perfect and complete vaporization.

Preferably, the front of the downward offset 18 is recessed as at 39, where the opening 23 is, so that the point of the needle valve cannot be damaged when projecting, either in assembling the burner or in its subsequent use.

Having thus described the invention, what I claim is:

1. In a hydrocarbon burner, the combination of an elongated burner plate having an interior channel closed at its front end and open at its rear, a plug in said channel having in its outer surface a winding groove opening at the inner end of the plug into said channel and said plug having also an interior passage leading from its inner end to the rear of the burner plate channel, a valve beneath the burner plate for controlling the fuel discharge and directing it beneath said burner plate, means connecting the chamber of said valve with one end of the duct formed by said winding groove and interior passage of the plug, and fuel supply means leading to the other end of said duct.

2. In a hydrocarbon burner, the combination of a burner plate having a longitudinal interior channel closed at the front end and open at the rear, a plug screwed into the mouth of said channel and having an annular groove therein and an inner end portion terminating short of the forward end of the channel and provided with an exterior winding groove opening at the forward

end of the plug into said channel, said plug also having an interior passage leading from its forward end rearwardly to said annular groove, a valve beneath the burner plate for controlling the fuel discharge and directing it against said burner plate, means placing the chamber of said valve in communication with said annular groove of the plug, and fuel supply means leading to the rearward end of the winding groove of the plug.

3. In a hydrocarbon burner, the combination of a burner plate having a longitudinal interior channel closed at the front end and open at the rear, a plug fitted tightly into the mouth of said channel and having thereat an annular groove, said plug terminating short of the inner end of the channel and having an exterior winding groove opening into said channel and an interior passage leading from its front end to said annular groove, an integral offset extending downwardly at the rear end of the burner plate, a needle valve casing supported by said offset substantially parallel to the burner plate, a needle valve in said casing, said casing having a discharge outlet at its front end and said casing and offset having a duct connecting the valve chamber with the annular groove of the plug, and fuel supply means leading to the rearward end of the winding groove of the plug.

4. In a hydrocarbon burner, the combination with a body portion having ignition chamber and adjacent to said ignition chamber an interior channel closed at its front end and open at its rear, said channel being interiorly threaded adjacent to its rear end, a plug exteriorly threaded at its rear end to engage said interior threads of the channel and slidably fitting at the outer surface of its forward portion against the interior surface of the unthreaded inner portion of said channel, said plug having an axial central passage with a lateral outlet adjacent the rear end of the plug and a winding groove in the outer surface of its slidably fitting portion forward of the screw threads, said passage and groove both opening at the inner end of the plug into the said channel of the body portion and forming together a vaporizing duct, a valve for controlling the fuel discharge and directing it into said ignition chamber, means connecting the chamber of said valve with one end of said vaporizing duct, and fuel supply means leading to the other end of said duct.

JAMES E. FLITCROFT.

In the presence of—

FRANCES E. BLODGETT,
ETHEL B. REED.