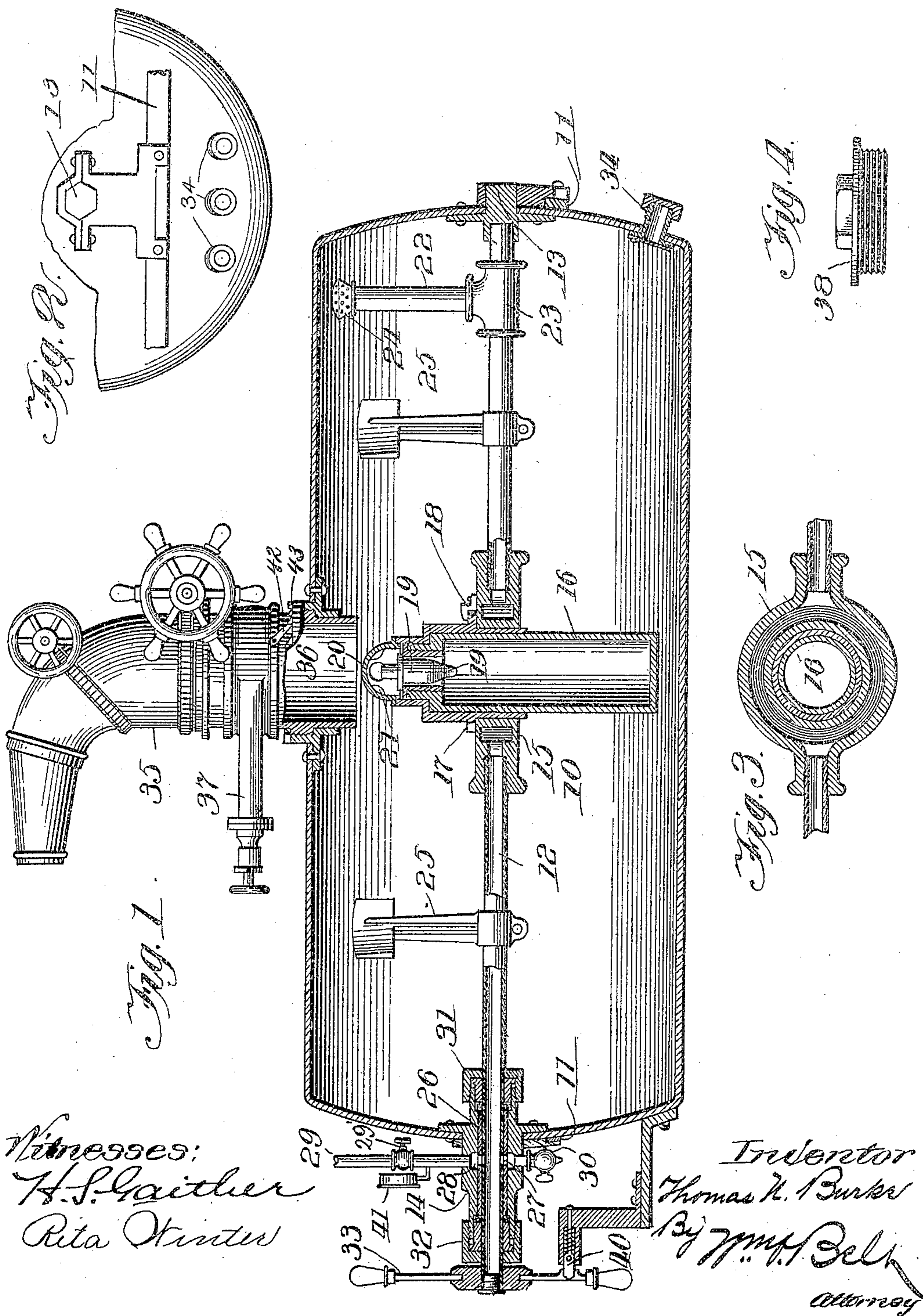


No. 821,780.

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T. N. BURKE.
FIRE EXTINGUISHER.
APPLICATION FILED DEC. 26, 1903.



Witnesses:
H. S. Gaither
Rita Skintus

Inventor
Thomas N. Burke
By J. M. Bell
attorney

UNITED STATES PATENT OFFICE.

THOMAS N. BURKE, OF CHICAGO, ILLINOIS.

FIRE-EXTINGUISHER.

No. 821,780.

Specification of Letters Patent.

Patented May 29, 1906.

Application filed December 26, 1903. Serial No. 186,613.

To all whom it may concern:

Be it known that I, THOMAS N. BURKE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fire-Extinguishers, of which the following is a specification.

This invention relates to improvements in fire-extinguishers; and its object is to provide a chemical extinguisher in which carbonic-acid gas is generated under sufficient pressure to throw a stream of liquid and which can be also used as a medium for connecting a turret-nozzle with a pipe leading to a street-hydrant or other source of water-supply.

A further object of the invention is to simplify and improve the construction of fire-extinguishers of this class and greatly facilitate the operation of producing pressure within the cylinder by overcoming the necessity of employing a tilting, oscillating, or pivoted cylinder and providing a stationary cylinder with interiorly-arranged movable parts for discharging the acid into the alkaline solution and producing the pressure; and further objects of the invention are to utilize the cylinder as a base for a turret-nozzle and to provide an air-cushion in the cylinder to produce a steady stream at the nozzle.

The invention has other objects in view which will be fully pointed out hereinafter in the detail description thereof, reference being had to the accompanying drawings, showing one embodiment of the invention, in which—

Figure 1 is a longitudinal sectional view. Fig. 2 shows a portion of one end of the cylinder in elevation. Fig. 3 is a horizontal sectional view of the support for the acid-receptacle. Fig. 4 is a detail view of the plug 38.

Like numerals of reference designate corresponding parts in the several figures of the drawings, and, referring thereto, 10 is a cylinder of suitable size and construction fixedly mounted upon a supporting-frame 11. A revoluble tubular shaft 12, closed at its ends, is located centrally within the cylinder and is mounted in bearings 13 and 14 at the ends thereof. This shaft is divided within the cylinder and connected by a hollow ring 15, Fig. 3, which constitutes a support for the acid-receptacle 16, which is provided with a shoulder 17 to rest upon the ring when in upright position and is held in place by a bayonet-lock 18 or other means. I do not re-

strict myself to an acid-receptacle of any particular construction and have shown one provided with a gravity-stopper 19, inclosed by a hood 20, provided with openings 21. A tubular pipe 22 is connected to the tubular shaft by a T-joint 23 or otherwise and carries at its upper end a strainer 24, which is normally above the level of the liquid in the cylinder. One or more paddles 25 are also carried by the shaft, and in the normal position of the parts these paddles project upward substantially parallel with the pipe 22. A sleeve 26 is shrunk upon or otherwise fastened to the shaft within the bearing 14, and both the shaft and sleeve are provided with registering openings 27 to communicate with a chamber 28 in the bearing when the shaft has been turned to discharge the acid in the receptacle. A valved discharge-pipe 29 and a valve 30 are connected with this chamber, the latter being provided to drain the shaft after the extinguisher has been used. Stuffing-boxes 31 32 are arranged at each end of the bearing 14, and a hand-wheel 33 is mounted on the shaft for operating it.

One or more valved pipe-fittings 34 is provided at one end of the cylinder, to which may be connected a pipe leading from a street-hydrant or other source of water-supply, and a turret-nozzle 35 is removably connected to a pipe-section 36, which is removably connected to the top of the cylinder and extends thereinto above the acid-receptacle. A valve 37 is provided in this pipe-section above the cylinder and is closed when the liquid within the cylinder is being forced out through the pipe 29 and opened when the cylinder is connected to a source of water-supply by means of the fitting 34. The turret-nozzle can be removed from the cylinder, if desired, and the opening closed by a plug 38, Fig. 4.

The receptacle 16, containing a suitable acid, is placed in upright position within the cylinder by first removing the turret-nozzle and the section 36 and inserting it through the opening therefor in the top of the cylinder, and the cylinder is filled with an alkaline solution to a level beneath the strainer, after which the pipe-section and preferably the turret-nozzle are replaced. To operate the extinguisher, the wheel 33 is manipulated to turn the shaft 12 until the acid-receptacle is inverted in the cylinder, and thereupon the stopper 19 is displaced by gravity and the acid in the receptacle 16 is emptied into the

alkaline solution, thereby liberating gases under high pressure and making the apparatus available for immediate use. By further manipulating the hand-wheel to rock the shaft 12 the paddles 25 will agitate the liquid and hasten the mixing of the acid with the alkaline solution in the cylinder. The pressure produced by the gases will be sufficient to force the liquid out through the strainer and the tubular shaft into the chamber 28 and the discharge-pipe 29, and this discharge-pipe may be provided with a valve 29', if desired. After the liquid in the cylinder has been entirely discharged the apparatus may be utilized as a medium for supplying water to the turret-nozzle by simply connecting it with a hydrant or other source of water-supply and opening the valve 37. The pipe-section 36 projects within the cylinder below the top thereof, sufficient room being provided to permit the acid-receptacle to swing with the shaft without touching said pipe-section. This provides for an air-space in the top of the cylinder above the bottom of the pipe-section, and the air therein will form a cushion for the water forced into the cylinder from the source of supply and enable a solid steady stream to be thrown from the nozzle. Gas remaining in the cylinder after the alkaline solution is discharged therefrom may be allowed to escape through the valve 30 or through the turret-nozzle or through the valved fittings 34. If it is desired to throw a stream of water through the discharge-pipe 29 to which a hose is connected at the same time that a stream is being discharged from the turret-nozzle, this can be accomplished by turning the shaft until the strainer is submerged in the water in the cylinder. It will be observed that I entirely avoid the necessity for turning or moving the cylinder to discharge the acid into the alkaline solution and that I accomplish this result in a very easy manner by simply turning the shaft to invert the acid-receptacle, at the same time submerging the strainer so that the liquid may be forced out through the strainer and the shaft, as heretofore described. I am thus able to apply the stationary cylinder as a fixed support for the turret-nozzle, which may be mounted in position on the cylinder at all times ready for instant use as soon as the liquid in the cylinder has been discharged. The invention can therefor be embodied in very simple form

and manufactured at comparatively low cost, and it eliminates entirely the liability of a premature discharge of the acid which may happen to revoluble cylinders by the release of the fastening means in running to a fire. I may also utilize a revoluble or tilting or oscillating cylinder in the same way as a base for the turret-nozzle; but in that case the nozzle would not generally be mounted in place on the cylinder until the solution therein had been exhausted and the cylinder locked in fixed position. I may lock the tubular shaft in any suitable way, as by the spring-bolt 40. A pressure-gage 41 is provided on the pipe 29 to indicate the pressure in the cylinder. In filling the cylinder with water initially the shaft may be turned sufficiently to permit the escape of surplus water through the strainer, shaft, and valve 30 to provide an air-space in the cylinder. The fitting 34 may be used as a wash-out opening as well as an inlet by simply lifting the valve by any means. To prevent the turret-nozzle from being unscrewed by the resistance of atmospheric pressure while the nozzle is in use, I provide a lock therefor, which may consist of a pawl 42 and ratchet 43 or other suitable device. By providing all the outlets, except for the turret-nozzle in the bearing 14, I avoid tapping the cylinder, which tends to weaken it.

Without limiting myself to the exact construction and arrangement of parts herein shown and described, what I claim, and desire to secure by Letters Patent, is—

1. In a fire-extinguisher, the combination of a fixed cylinder, a tubular shaft journaled in bearings at the ends of the cylinder, said shaft being divided within the cylinder and its ends connected by a tubular ring, an acid-receptacle supported in said ring, an outlet-pipe connected to the shaft, and means for turning the shaft.

2. The combination of a cylinder of a chemical fire-extinguisher, one or more valved inlet-fittings therein, a pipe-section in the top of said cylinder projecting down thereinto to permit an air-chamber to be formed above its lower end within the cylinder, and a turret-nozzle connected to said pipe-section.

THOMAS N. BURKE.

Witnesses:

WM. O. BELT,
RITA WINTER.