

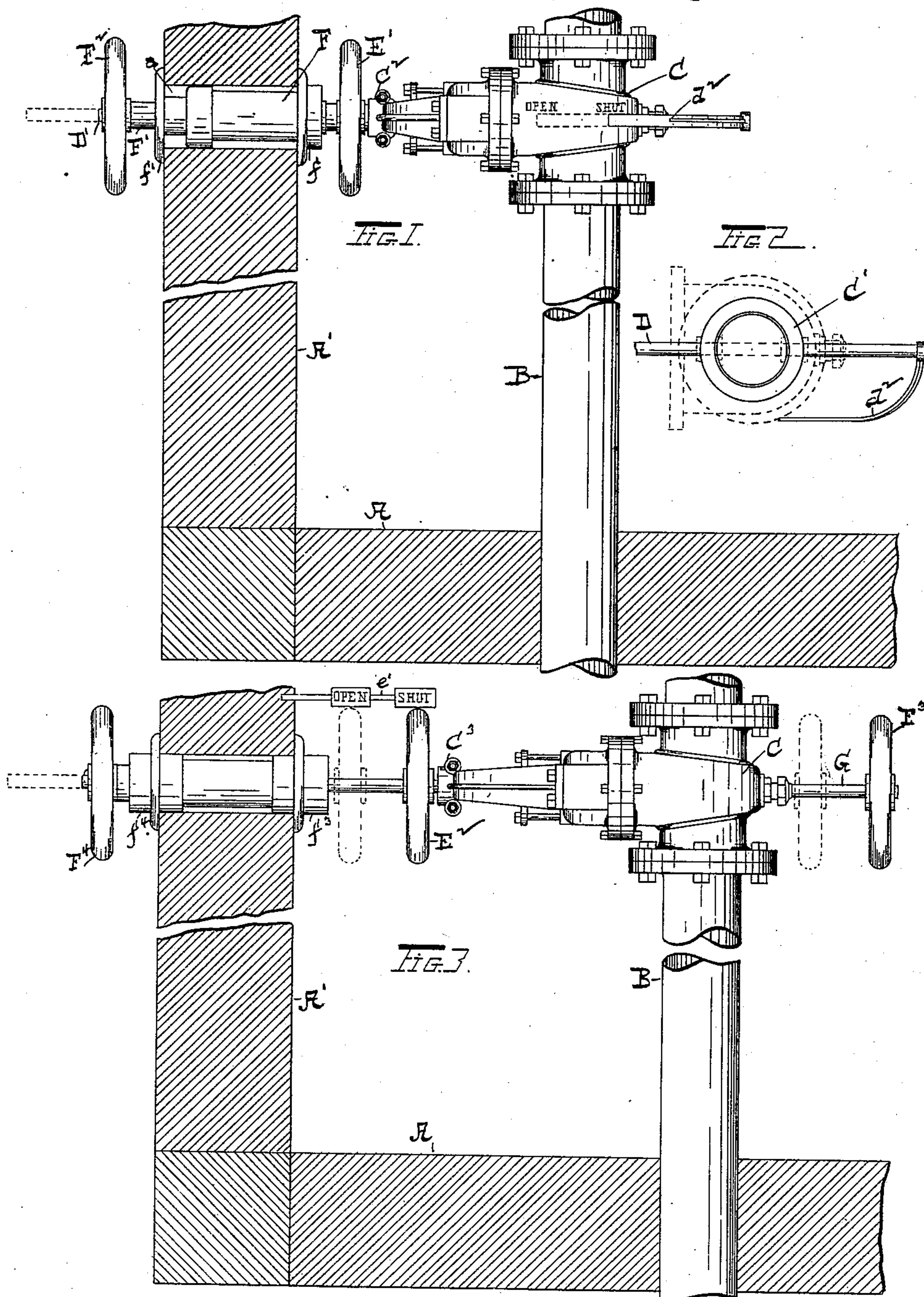
(No Model.)

2 Sheets—Sheet 1.

J. GILES.
INDICATOR VALVE FOR STAND PIPES.

No. 437,489.

Patented Sept. 30, 1890.



Witnesses
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J. C. Chapman,

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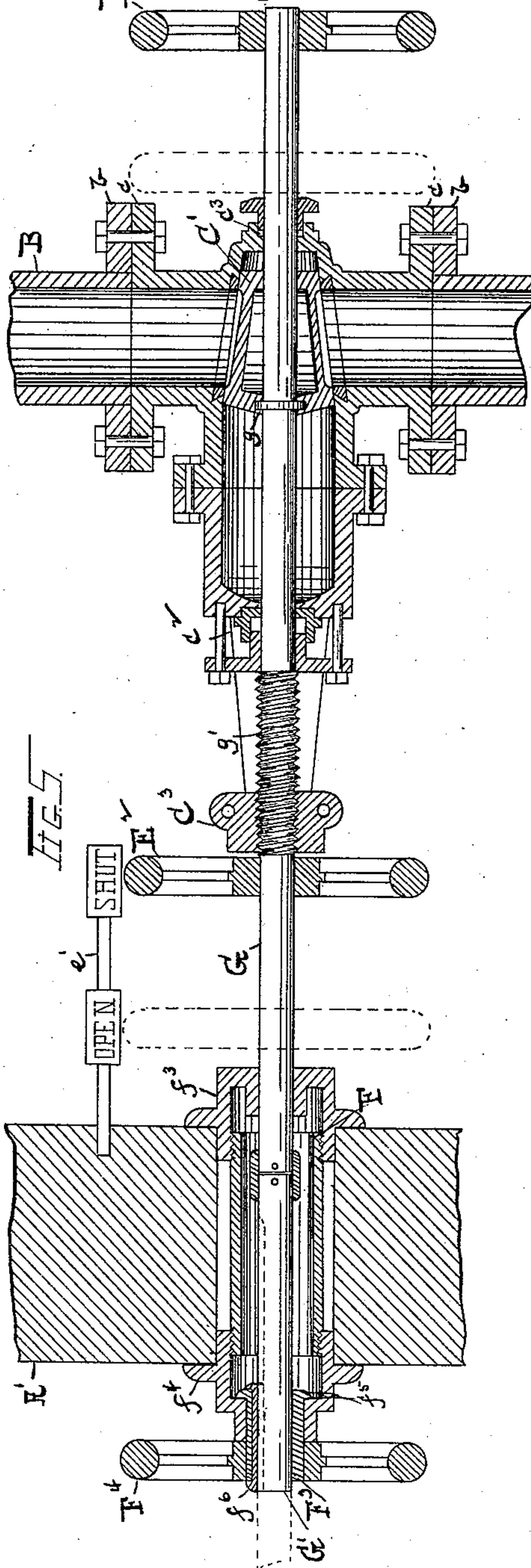
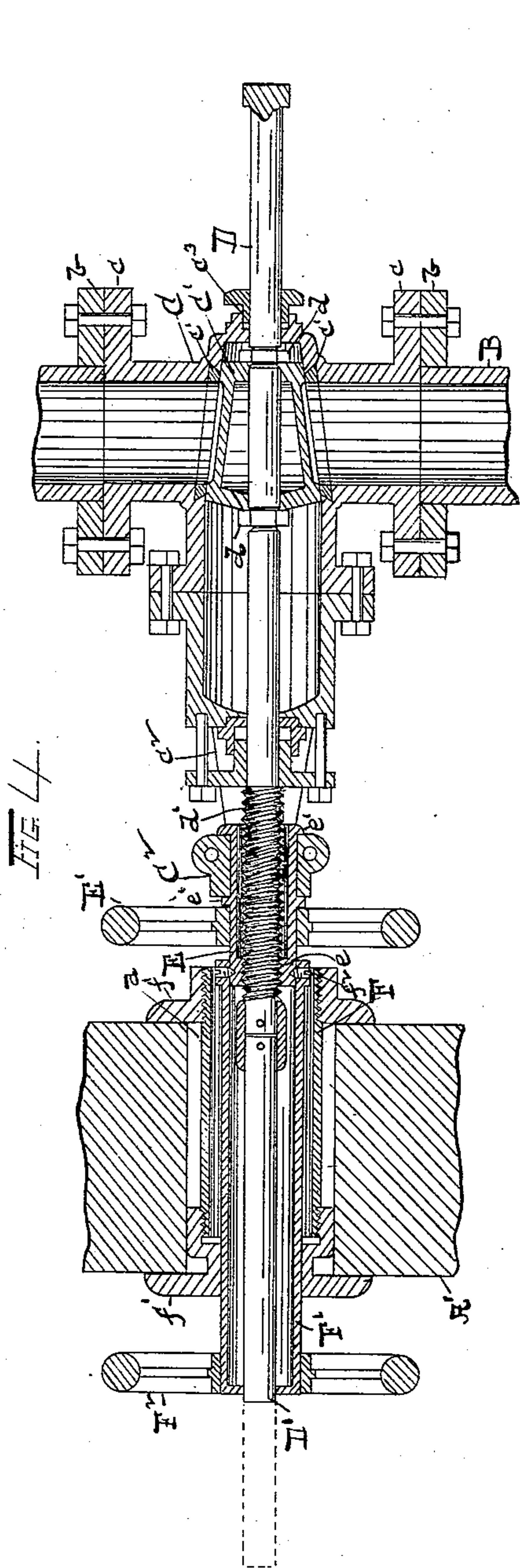
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UNITED STATES PATENT OFFICE.

JASON GILES, OF INDIAN ORCHARD, MASSACHUSETTS.

INDICATOR-VALVE FOR STAND-PIPES.

SPECIFICATION forming part of Letters Patent No. 437,489, dated September 30, 1890.

Application filed August 13, 1888. Serial No. 282,672. (No model.)

To all whom it may concern:

Be it known that I, JASON GILES, of Indian Orchard, in the county of Hampden and Commonwealth of Massachusetts, have invented a new and useful Improvement in Indicator-Valves for Stand-Pipes, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

As is well known, it is customary to provide cotton-mills and various other buildings devoted to manufacture with stand-pipes located within the building and extending upwardly through the several floors thereof, and to connect said stand-pipes upon each floor with "automatic sprinklers," as they are called, or with lines of hose, or both, as a means for quickly extinguishing fire within the building. These stand-pipes at their lower ends are connected to the street-main or other source of water-supply, and the passage of the water from the latter through the former is governed by a valve usually located in the stand-pipe at a convenient distance above the ground-floor of the building to enable it to be operated by a person standing upon said floor. It is important that this valve be retained in its open position to enable the water to rise to the top of the stand-pipe at all times, except when by reason of a leakage in some part of the building it becomes necessary to shut off the water temporarily to enable the necessary repairs to be made. The normal position of said valve being its open one, therefore, and involving, as it does, the possible destruction of the building by fire, it becomes of the utmost importance that means for preventing the closure of the valve by inadvertence be provided. It has been found to be utterly unsafe to depend upon the memory as to the open and closed position of the valve-spindle or its operating-lever to secure this result, for even if the valve be open and a fire occurs in the building the excitement caused thereby is liable to cause the two positions of the valve to become confused in the mind, and an employé has been known to close the valve under such circumstances even when he was obliged to cut a strap which had been employed to retain the operating-lever in its open position. Again, it is very desir-

able that means for indicating the position of the valve gate or plug and for operating it should be accessible to a person upon the outside of the building, inasmuch as a fire is liable to occur at night or when the employés are temporarily out of the building and to cut off communication with the valve within the building, so that if the latter should be closed it would be impossible to open it.

It is the object of my invention to provide a valve for such stand-pipes which will indicate positively the position of its gate or plug within the building, and to combine therewith means for indicating the position of said gate or plug, and also for operating the same, located outside of the building.

To this end my invention consists in the valve constructed and operating as herein-after fully described, and particularly pointed out in the claims.

Referring to the drawings, in which like letters designate like parts in the several figures, Figure 1 is a side elevation of a portion of a stand-pipe and of the valve located therein, a portion of the ground floor and wall of the building being shown in section. Fig. 2 is a plan view of the valve-gate and a portion of its spindle, the valve-body being represented by broken lines. Fig. 3 is a view similar to Fig. 1, showing a slightly-modified form of the valve. Figs. 4 and 5 are longitudinal sectional views, upon a slightly larger scale, of the valves shown in Figs. 1 and 3, respectively.

The letter A designates a portion of the ground floor, and A' a portion of the side wall of a building.

B designates the stand-pipe, which, being connected at its lower end with the main source of water-supply, extends upwardly through the several floors of the building, adjacent to one of the walls of the latter, and is connected upon each floor with automatic sprinklers or other usual devices for extinguishing fire. I have not shown such devices in the drawings, for the reason that their construction and method of operation are well known, and because my invention relates solely to the main valve in the stand-pipe which governs the passage of water through the latter to all of the floors.

For the purpose of illustrating the application of my invention to gate-valves generally, I have selected as an example of such valves the well-known "Chapman gate-valve," and have shown two forms of the same, in one of which, as shown in Figs. 1 and 4, the hand-wheel which turns the spindle is stationary—that is to say, has no bodily lateral movement—and in the other of which the hand-wheel partakes of the endwise movement of the spindle, as shown in Figs. 3 and 5, the spindle in both cases being what is known as a "rising" spindle.

The form of the valve-body C is or may be the same in both instances, said body having flanges c by means of which it is connected to similar flanges b upon the stand-pipe, and having a water-way therethrough corresponding in diameter to the inner diameter of the stand-pipe, as shown. The gate or plug C' is slightly wedge-shaped in vertical section, and coacts with similarly-inclined seats c' within the valve-body to tightly close the water-way through the latter when in its closed position.

As shown in Figs. 1 and 4, the spindle D passes through stuffing-box c² of the body C and through the gate C', to which it is rigidly secured by nuts d on said spindle, located at opposite ends of said gate, and thence through stuffing-box c³ at the opposite end of body C. Said spindle D is screw-threaded for a portion of its length, as shown at d', and a nut e, secured to or forming part of a sleeve E, embraces such threaded portion of the spindle. Sleeve E is mounted within a hub C², secured to the valve-body in such manner as to revolve freely therein, while flanges e' on said sleeve at either end of said hub prevent endwise movement of the sleeve and nut e. A hand-wheel E', rigidly secured to sleeve E, enables the latter to be easily revolved in either direction, and as said sleeve and nut are revolved in one or the other direction the action of the latter upon the threaded portion of the spindle produces an endwise movement of said spindle and gate C' to open and close the water-way through the valve. In order to positively indicate the position of the gate C' at all times, I continue the opposite end of the spindle through stuffing-box c³ of the valve-body, as previously described, and connect to the said projecting end thereof a finger d², which, as shown in Figs. 1 and 2, is curved sufficiently to cause it to overlap the valve-body and then extends for a short distance parallel with the spindle in such manner that as it follows the endwise movements of the spindle said finger moves back and forth over the outer surface of the valve-body. Upon said outer surface of the valve-body and adjacent to the position occupied by the end of finger d² when the valve is closed I place the word "Shut" or "Closed," or some other symbol to indicate that the valve is closed, and adjacent to the point occupied by the end of said finger in the open position of the

valve I place the word "Open" or other symbol to indicate that the valve is open. By means of said symbols and the position of the end of finger d² relatively thereto a positive indication of the position of the valve-gate is afforded at all times and in such manner that no mistake regarding such position can be made in times of confusion and excitement.

As thus far described the valve is adapted to be operated within the building and to indicate the position of its gate to persons within the building; but, as hereinbefore stated, it is very desirable that a person upon the outside of the building should be able to ascertain the position of the valve-gate and to open or close the valve when, as frequently happens, communication with the latter within the building is cut off. In order to accomplish this result in existing buildings, I make an opening a in the wall in the plane of spindle D of the valve, and within said opening I insert a cylinder F, preferably made of cast-iron, which cylinder is exteriorly screw-threaded at each end to receive nuts f f', located upon the inside and outside of the wall, respectively, and projecting beyond the edges of opening a. Nut f' preferably projects within the opening a, as shown in Fig. 4, and between its threaded portion and its head is provided with an inwardly-projecting annular shoulder, whereby a central opening of less diameter than that of cylinder F is formed. When said cylinder is inserted in said opening and nuts f f' are applied thereto and tightened against the opposite faces of the wall, the cylinder is securely held in position, and the ends of the opening are tightly closed by the projecting heads of the nuts. A sleeve F' is located within said cylinder F, the outer diameter of which sleeve is slightly less than the diameter of the central opening in nut f', whereby said nut forms a bearing in which the sleeve is free to revolve. At its inner end said sleeve F' embraces nut e and is rigidly secured to the latter by screws f², as shown, or in any other convenient manner, whereby said nut and sleeve are compelled to revolve in unison. At its outer end said sleeve F' projects beyond the outer face of nut f' a sufficient distance to enable hand-wheel F², which is secured thereto, to be revolved manually without danger of contact between the hands of the person turning it and said nut or the wall. At its extreme outer end said sleeve is provided with an internal annular flange, leaving a central opening in said end of slightly greater diameter than that of spindle D, which opening forms a bearing for the outer end of an extension D' of spindle D, which is connected to the outer end of the latter by a coupling-ring, as shown, or in any suitable manner. Said extension D' is of such length that when gate C' of the valve is in position to close the latter, as shown in Fig. 4, the outer end of said extension projects but slightly beyond the end of sleeve

F'; but when said gate is moved to its open position the end of said extension is moved to the position indicated by broken lines in said Fig. 4. The position occupied by the outer end of said extension D' therefore indicates to a person upon the outside of the building the exact position of the valve-gate, not only in the day-time, when said extension can be seen, but also at night, when its position can be ascertained by the sense of touch. By turning wheel F², moreover, and with it sleeve F' and nut e, the valve can be operated from the outside of the building as readily as from the inside.

It will be observed that in the form of valve thus far described the spindle D D' moves in the direction of its length, but does not revolve. In the form shown in Figs. 3 and 5 the spindle has both a lengthwise and revolving movement, and therefore said spindle, designated by the letter G, is connected to the gate C' by means of a collar g upon said spindle, which, being received within a corresponding recess in said gate, compels the latter to follow the endwise movements of the spindle, while permitting an independent revolving movement of the spindle. The threaded portion g' of the spindle G is received within a nut C³, rigidly secured to or forming part of the valve-body, and therefore revolution of the spindle will produce endwise movement thereof through said nut. Hand-wheel E² is rigidly secured to spindle G, and partakes of its endwise movement. I prefer in this form of the invention to utilize said hand-wheel as a part of the indicating means, and therefore I locate adjacent thereto a bracket e', projecting from wall A' or otherwise suitably supported, said bracket serving to support two targets placed opposite the two extremities of the lateral movement of said wheel, and containing symbols similar to those previously described to indicate positively that when said wheel is opposite one of said targets the valve is open, and when it is opposite the other target the valve is closed, as clearly shown in Figs. 3 and 5. I also prefer in this form of the invention to secure a hand-wheel E³ to the inner end of spindle G to enable the valve to be operated from that side of the stand-pipe, if desired, and as this wheel also partakes of the endwise movements of the spindle additional targets containing symbols can be located adjacent to it, if desired. In this form of the invention sleeve F' being omitted, cylinder F is or may be reduced in diameter, but is held in position by two nuts f³ f⁴, in the same manner as in the form first described. Said nuts f³ f⁴, however, differ somewhat in form from nuts f f', previously described. Nut f³ is composed of two hubs, of which one projects within the other, the outer hub being internally threaded to receive the end of cylinder F, and the inner hub having a smooth bore to form a bearing for spindle G. Nut f⁴ is likewise composed of two hubs; but the smaller one, instead of extending within the

larger, projects outwardly and concentrically from the latter and forms a bearing for a short sleeve F³, which is free to revolve therein, and which is provided with an annular flange f⁵ to prevent outward endwise movement thereof. A hand-wheel F⁴ is secured upon said sleeve at its outer end. Extension G' of spindle G projects through said sleeve F³, and the key f⁶, located in a longitudinal groove in said extension, compels the latter to follow the revolving movements of the sleeve and hand-wheel, but permits the extension to move longitudinally independently of said sleeve and hand-wheel. The operation of wheel F⁴ and extension G' as a means for operating the valve and indicating the position of its gate upon the outside of the building is identical with that of wheel F² and extension D', previously described.

In both forms of the invention herein shown a valve which can be operated and which will positively indicate the position of its gate both inside and outside the building is provided.

The operation and great utility of the valve will be fully apparent from the foregoing description.

As hereinbefore stated, the particular form of gate-valve shown is selected as one example merely of gate-valves generally, and I do not wish to limit my invention to its application to such valve alone. Neither do I wish to limit myself to the exact construction of the devices for making the connection between the valve-spindle and the outside operating and indicating mechanism, as herein shown and described, as it is obvious that various modifications therein can be made within the spirit of my invention.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a stand-pipe located within a building, of a valve located in said stand-pipe, said valve having its gate or plug operated by a spindle which partakes of the movement of said gate or plug, which spindle is extended through the wall of said building, an indicating device connected to and moving with said spindle within the building, symbols—such as the words "Open," "Shut"—located, respectively, adjacent to the two extremities of the movement of said indicating device, and hand-wheels or their equivalent operatively connected to said spindle both inside and outside of said building, arranged and operating substantially as set forth.

2. The combination, with stand-pipe B, of an indicator-valve located in said pipe, said valve consisting of valve-body C, having stuffing-boxes c² c³ located at opposite ends thereof and having seats c' therein, gate C', having bearing-faces corresponding to said seats, spindle D, operatively connected to said gate and extended through said stuffing-boxes, said spindle being provided with the screw-threaded portion d', hub C², rigidly se-

cured to said valve-body, sleeve E, having a revolving movement within said hub and carrying nut *e*, which receives the threaded portion of said spindle, means—such as hand-wheel E'—for revolving said sleeve, and finger *d*², secured to the opposite end of said spindle and overlapping the valve-body, substantially as and for the purpose described.

3. The combination, with stand-pipe B, located within a building adjacent to wall A' of the latter, of a gate-valve located in said pipe, cylinder F, inserted within an opening *a* in said wall A', said cylinder being exteriorly screw-threaded at each end to receive a nut upon each side of said wall, whereby said cylinder is securely held in its position, a spindle operatively connected to the gate of said valve and extending through said cylinder, and hand-wheels or equivalent devices for operating said spindle, connected to the latter upon both sides of said wall, whereby said spindle can be operated either from the inside or upon the outside of said building, substantially as and for the purpose set forth.

4. The combination, with stand-pipe B, located within and adjacent to wall A' of a building, of a valve located in said pipe, said valve comprising the body C, gate C', and spindle D for operating said gate, sleeve E, nut *e*, and hand-wheel E', mounted substantially as described, and serving to operate said spindle within the building, cylinder F, inserted within opening *a* in said wall A', nuts *f f'* for retaining said cylinder in its position, sleeve F', extending through said wall within said cylinder, said sleeve being connected at its inner end to nut *e* and carrying at its outer end hand-wheel F², and extension D' of spindle D, extending through said wall within said sleeve, arranged and operating substantially as and for the purpose described.

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