(No Model.) 2 Sheets—Sheet 1.

A. P. SMITH.

TAPPING APPARATUS.

No. 485,717. Patented Nov. 8, 1892.

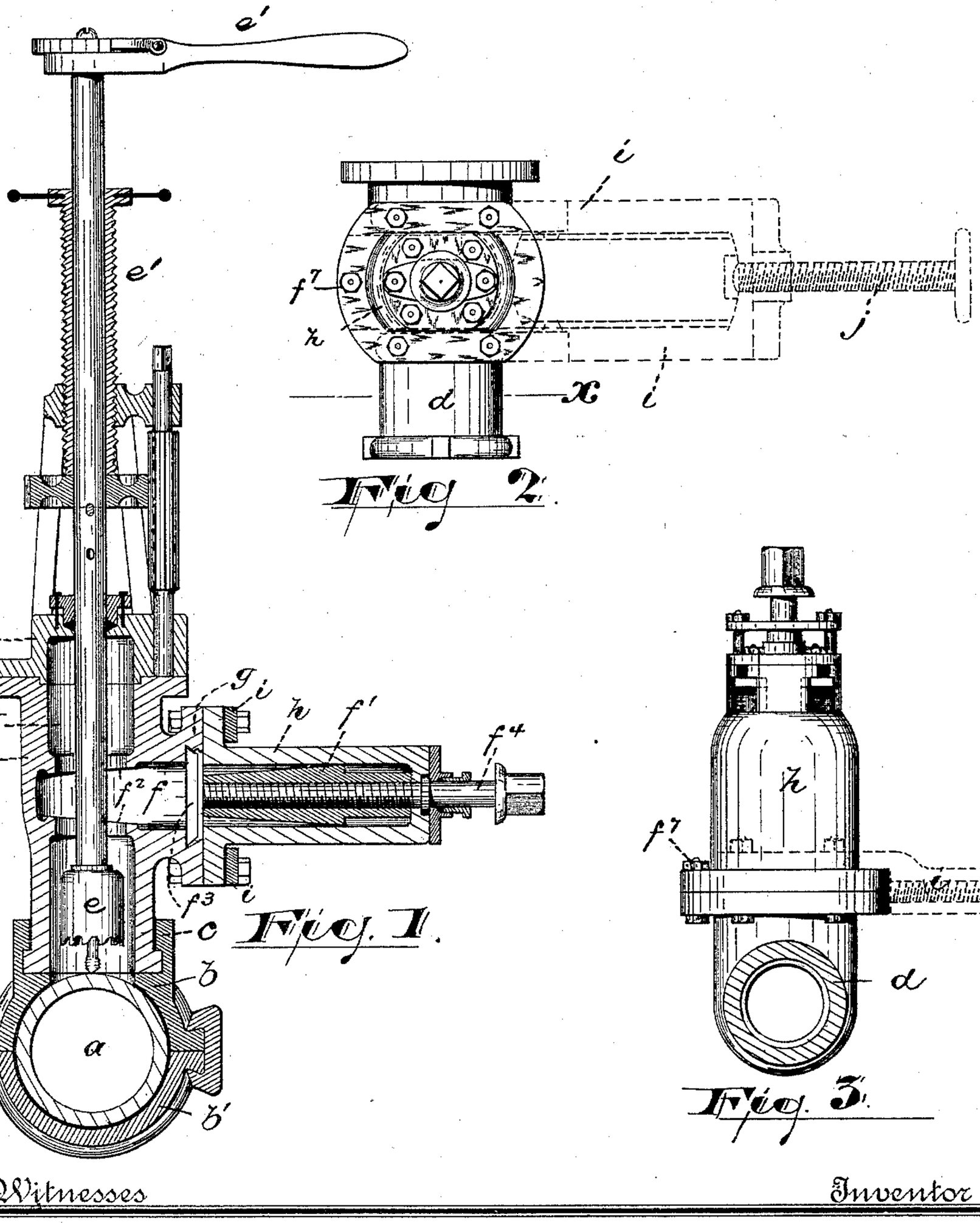

Fig. 1.

Fig 2.

Fig. 3.

Witnesses

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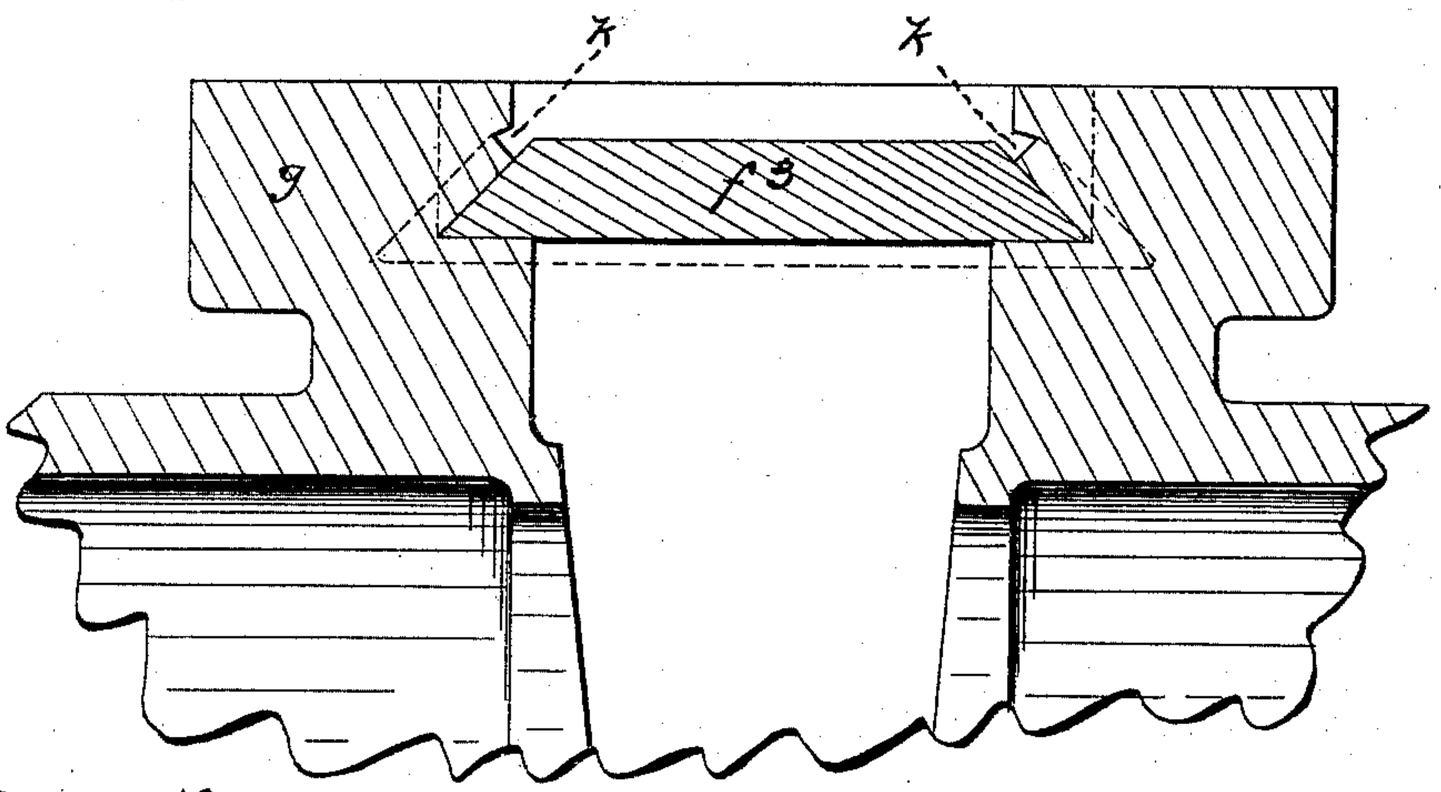

Fig. 4.

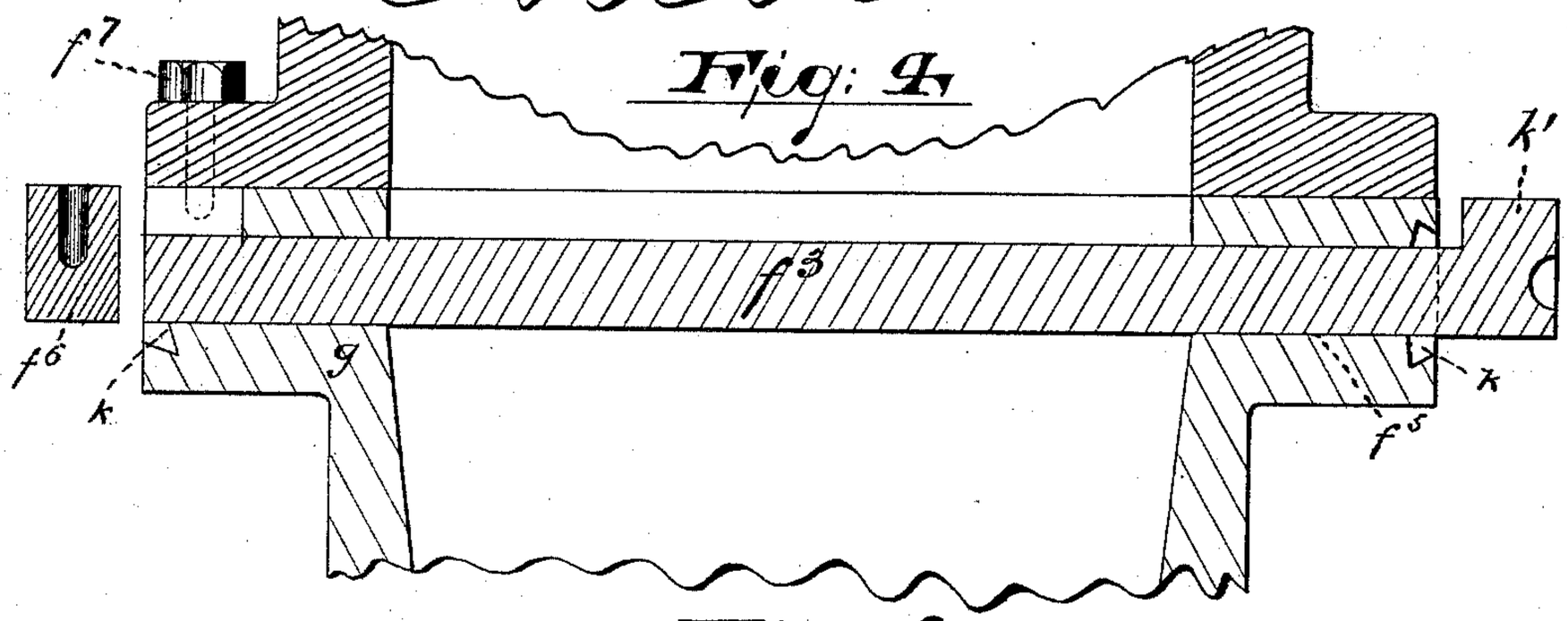

Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

ANTHONY P. SMITH, OF NEWARK, NEW JERSEY.

TAPPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 485,717, dated November 8, 1892.

Application filed January 8, 1892. Serial No. 417,360. (No model.)

To all whom it may concern:

Be it known that I, ANTHONY P. SMITH, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Tapping Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to effect a saving in making branch connection in water or other fluid supply systems by dispensing with costly parts necessary in the constructions and systems heretofore employed. When employed in water-supply systems of cities in connection with the street-mains or plugged or capped branches, the objects are to simplify the methods employed in making connections, to enable connections to be made without the employment of special gates at each connection, and to enable my improved system to be accommodated to the systems already adopted by the water department of the city or community without material loss or additional expense, as will be hereinafter more particularly described.

The invention consists in the improved apparatus and in the peculiar arrangements and combinations of parts thereof, substantially as will be hereinafter set forth, and finally be embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters indicate corresponding parts in each of the views, Figure 1 is a central longitudinal section showing the arrangements and relations of the parts generally. Fig. 2 is a plan of a gate and valve; and Fig. 3 is a section of the same, taken on line *x*. Figs. 4 and 5 are sectional details showing the construction of the valve for closing the gate-aperture and the method of calking the same to obtain a tight and close joint.

In said drawings, *a* indicates a main or other pipe or connection for conducting water, gas, or other fluid.

b b' are sleeve-sections of the tapping apparatus suitably held together, the said sections hugging the pipe or main in the ordinary manner. One or both of said sections is provided with a hub or branch *c*, in which is secured a branch pipe *d* of peculiar construction, and which is to form a permanent connection with the main. Said branch pipe *d* is open at its opposite ends to allow the passage of fluid and of the operation of a drilling, boring, or cutting tool *e*, by means of which the side of the main or the face of a plug or cap or the "dead end" of a branch is opened or perforated to allow an outflow therefrom. The said cutting, boring, or drilling tool *e* and the means *e'* for operating the same are preferably of the construction shown and described in my prior patents, Nos. 419,974 and 455,890, and need no particular description here. The said tool and operating means may be of any other desirable construction than that before referred to in said patents.

The branch pipe provides at its end opposite its connection with the main a seat *d'*, upon which the bed-plate *e'* of the cutting-tool is secured. At one side of said branch pipe is another hub and opening *f*, adapted to allow the entrance of a gate *f'*, and adjacent to said opening within the branch pipe I form a seat f^2 for said gate, so that when the latter is closed against said seat the longitudinal passage through the branch will be shut to allow the removal of the boring-tool and admit of the operation of making the connections with other pipe-sections of the branch line, as will be understood.

Upon the lateral seat *g* of the branch pipe is secured a bonnet or hood *h* of the gate, having bearings for the gate proper *f'* and means for opening and closing the same. Said bonnet or hood closes the side opening *f*, and is preferably of the construction shown in my prior patents, with certain exceptions. In said prior constructions the said gate was intended to be a permanent attachment to the branch pipe, and could not be wholly withdrawn from the branch pipe without allowing the free escape of water; but in the present construction provision is made for withdrawing and detaching the said gate after the branch connections are completed and the aperture or opening *f* has been closed. The means employed for closing said opening *f* consists of a valve of any appropriate con-

struction, the one preferred being shown in the drawings and consisting of a sliding plate f^3, having beveled edges, which work in slideways formed in the branch. This said valve may be operated by hand or by any mechanical means; but the preferred appliances for operating said valve are shown in Fig. 2, where i indicates a yoke bolted or otherwise secured or formed upon the bonnet or hood and extending laterally therefrom and providing at its outer end bearings for a hand-screw j, which latter engages and operates the slide-valve, so that by simply turning the hand-piece the valve is forced inward across said opening f, and said opening is more or less perfectly sealed or rendered impervious to the fluid. To secure a more perfect and durable sealing of the opening, I may form a groove or recess k, as shown in Figs. 4 and 5, which extends around the said slideways, both at the sides and ends of the valve, which said groove or recess is filled with lead and calked to prevent leakage.

The outer end of the valve may be provided with a lateral bend k', (shown in Fig. 5,) by means of which the valve may be forced open by wedges or other means with convenience. The bonnet or hood h, which in my prior patents was made low and incapable of wholly containing the gate, is in the present case made deeper, as shown in Figs. 1 and 2, and thus the said gate may be drawn back by the screw f^4 entirely out of the side passage or opening f, or, at any rate, to a point back from the valve f^3, so that the latter may be operated, as described.

In operating the device the parts are arranged and adjusted in relation to one another, substantially as shown in Fig. 1, the slide-valve f^3 being partly withdrawn from its seat or slideway, as indicated in Fig. 2, closing the opening f^5, Fig. 5, and the opposite opening being closed by a removable plug f^6, Fig. 6, which may be held in place by the bolt or screw f^7 or other suitable means. The cutting, boring, or drilling tool is then operated and a perforation effected in the main. The cutting-tool is then drawn back from the main and the gate f' closed across the longitudinal passage d^2, closing the same. The cutting-tool may then be detached from its seat and branch pipes continuing the line be connected. These preparations having been made, the gate f' is drawn into the bonnet or out of the way of the valve f^3, and finally the said valve is closed across the opening f and sealed and the gate removed for future use in connection with other taps.

Where the water department has arbitrary rules and regulations respecting the location of gates beneath the streets, the devices above described admit of a conformity thereto, and in this connection I may run a line of pipes from the hub or bell end of the pipe d to the location required under such rules and regulations and there attach a suitable gate, close the same, and then continue the line to where desired, then close the valve f^3 and remove the gate f' and its bonnet and other connections from said branch.

Having thus described the invention, what I claim as new is—

1. The combination, with the main pipe a and branch pipe d, having a longitudinal water-way d^2, a seat d' for the cutting-tool, an interior seat for a gate, a lateral passage and seat for the gate, and a valve-seat adjacent to said passage, the said valve closing the lateral passage to admit of the removal of the gate, of a gate and valve for closing the longitudinal and lateral passages, substantially as set forth.

2. In combination with the branch having a longitudinal passage d^2 and side passage f, a hood h, gate f' for closing said longitudinal passage, and a valve for closing said side passage and admitting of the removal of said closing means, substantially as set forth.

3. In combination with the branch having the longitudinal and side passages, a hood separable from said branch and having a gate, the capacity of the hood being equal to or greater than the dimensions of the gate, a screw having bearings in said hood and operating said gate to close the longitudinal passage, and a valve for closing the side passage when said gate is drawn into said hood, substantially as shown and described, for the purposes stated.

4. In combination with the main and branch pipes, the latter having the longitudinal and side passages and valve-seat, of a hood removably secured upon said branch and having bearings for a gate and a capacity to contain the gate as a whole, said gate arranged to enter through the side passage and close the longitudinal passage, means for operating said gate, a valve arranged in said valve-seat and adapted to close the side passage upon the withdrawal of the gate, and a tapping tool, all said parts being arranged and adapted to operate substantially as and for the purpose set forth.

5. In combination with the main and branch pipe, the latter having one of its longitudinal ends secured to the main and the other being provided with a tapping-tool, said branch pipe being also provided with a side opening and seat for a removable gate, and a valve-seat adjacent to said side opening, a hood removably secured over said side opening and provided with a gate adapted to close the longitudinal passage through the branch, means for operating said gate, a valve for closing the side opening, and mechanical means for closing said valve across the side opening, substantially as set forth.

6. In combination, the branch having a side opening, a valve-seat and bearings for a gate, said gate and a tapping apparatus secured on said branch, and a sliding plate serving as a valve to close the side opening and adapted to be interposed between the longitudinal passage of the branch and the inner end of

the withdrawn gate, substantially as and for the purposes set forth.

7. In combination with the branch having a side opening and bearings for a gate and bearings for a yoke or frame providing bearings for means for operating a valve, and also having a slideway for said valve, of a tapping apparatus, a gate, and a slide-valve adapted to be interposed between the longitudinal passage of the branch and the inner end of the withdrawn gate, a yoke or frame providing bearings for means for operating the said slide-valve, and said means for operating the slide-valve, all substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 30th day of December, 1891.

ANTHONY P. SMITH.

Witnesses:

CHARLES H. PELL,

OSCAR A. MICHEL.