A. M. HOUSER AND W. B. MORRIS.

VALVE OPERATING MECHANISM.

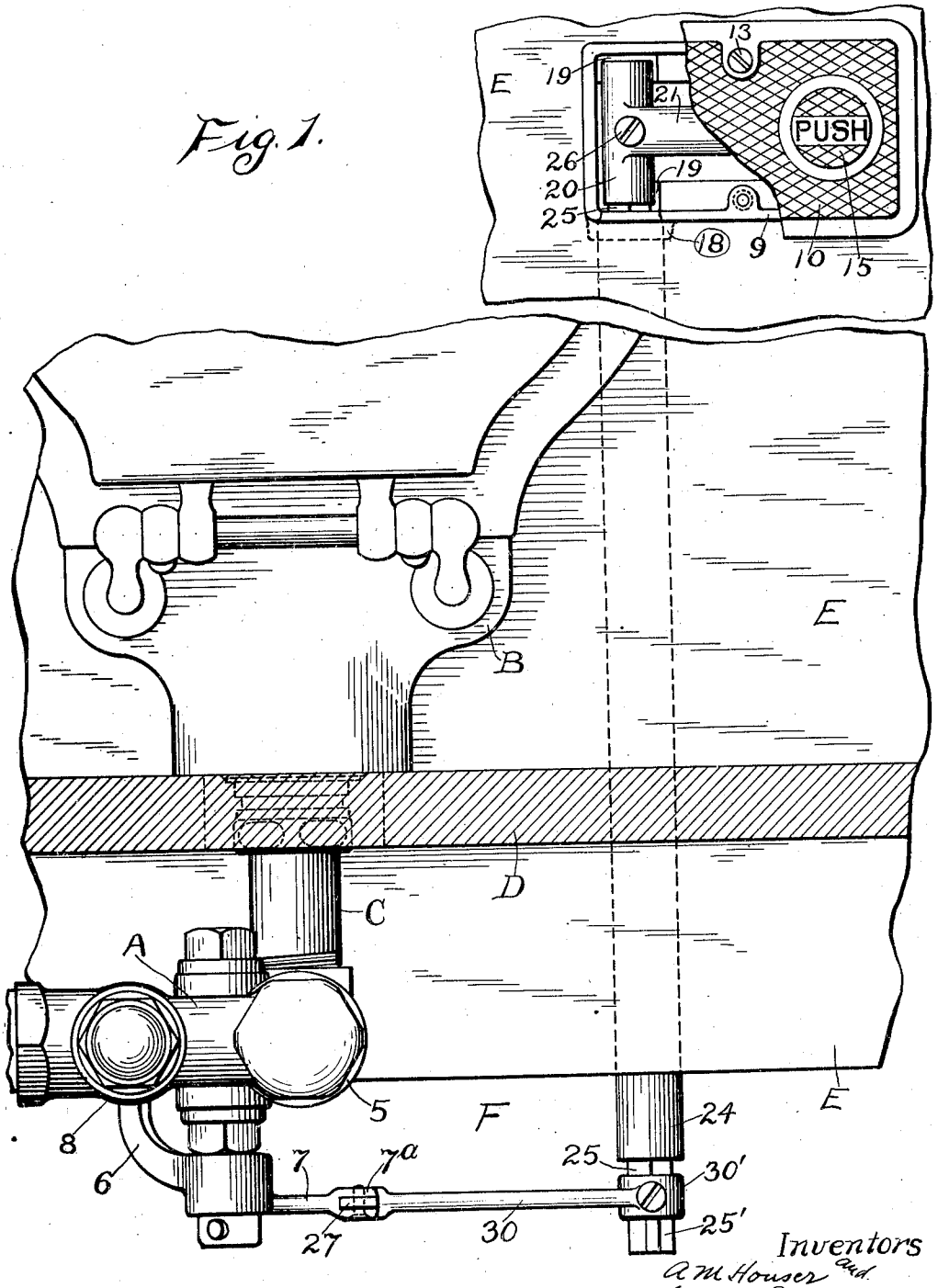
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1,361,060.

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3 SHEETS—SHEET 1.

Fig. 1.



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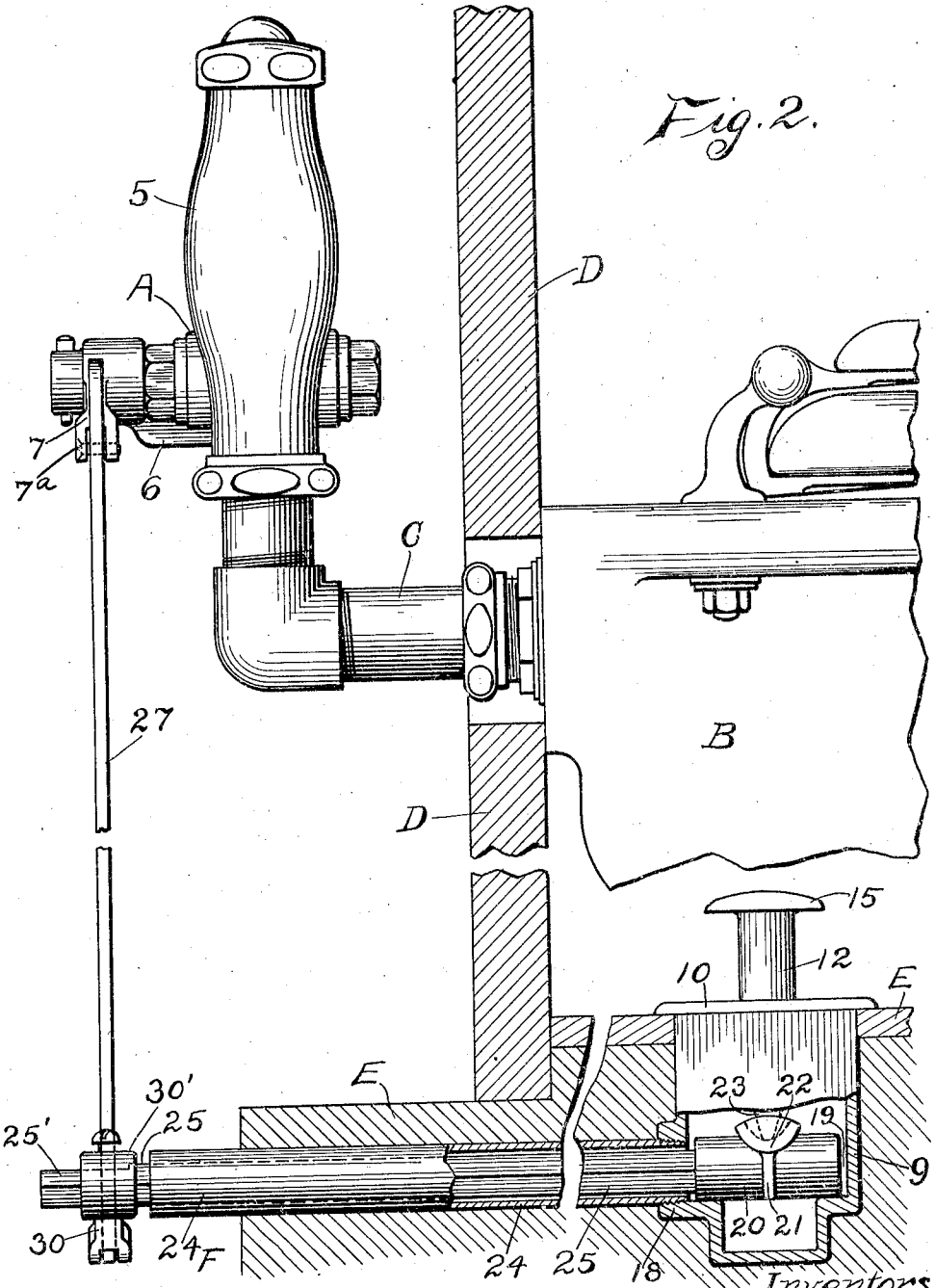
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3 SHEETS—SHEET 2.

Fig. 2.



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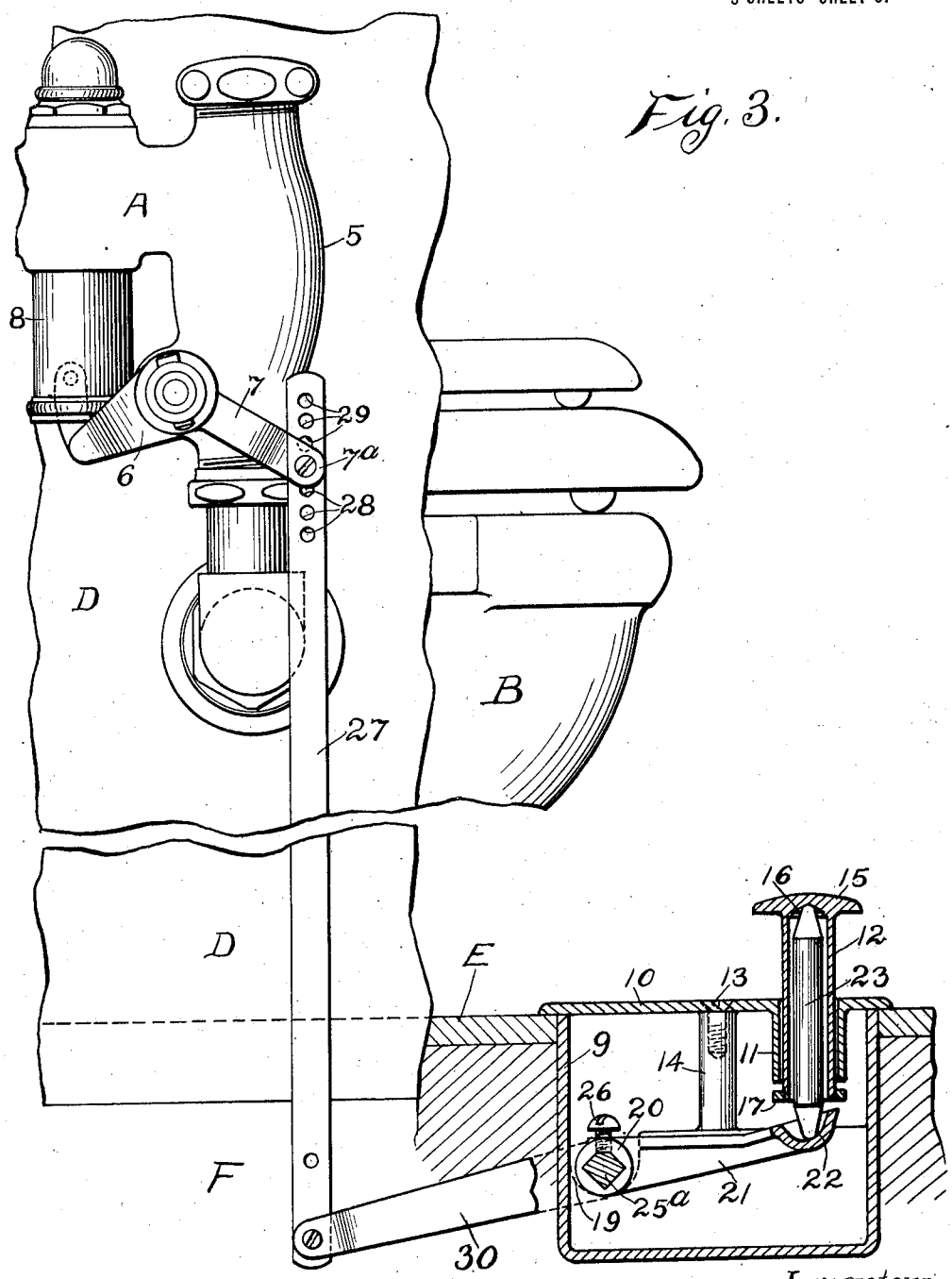
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3 SHEETS—SHEET 3.

Fig. 3.



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VALVE-OPERATING MECHANISM.

1,361,060. Specification of Letters Patent. Patented Dec. 7, 1920.

Application filed December 21, 1917. Serial No. 208,204.

To all whom it may concern:

Be it known that we, ARTHUR M. HOUSER and WILLIAM B. MORRIS, citizens of the United States, and residents of Chicago, Illinois, and of Philadelphia, Pennsylvania, respectively, have invented certain new and useful Improvements in Valve-Operating Mechanism, of which the following is a full, clear, and exact description, reference being had to the drawings annexed hereto.

Our invention relates in general to valve operating mechanism, and has reference more particularly to foot actuated mechanism designed to operate a closet bowl flushing valve. The principal objects of the invention are, to improve the construction, and increase the efficiency and utility of mechanism of this character; and to provide means whereby all parts of the improved mechanism are readily accessible and removable for purposes of repair, replacement, or inspection, and without in any way disturbing the floor in which it may be located.

The invention also contemplates the provision of certain novel details of construction, combination and arrangement of parts, whereby the mechanical integrity of the mechanism is at all times maintained.

These, together with such other objects as may hereinafter appear, or are incident to our invention, we obtain by means of a construction illustrated in a preferred form in the accompanying drawings, wherein:—

Figure 1 represents a plan view of one embodiment of our invention; and Figs. 2 and 3 are respectively side and rear views in elevation of the same.

One desirable form of valve with which our actuating mechanism is organized, as shown in the drawings, is designated by the reference letter A, and is of the type known as the Phillips flushing valve. The structure is disclosed in the Phillips Letters Patent, #929,007 and #1,102,543, to which reference may be made in point of detail, if desired. Any suitable outlet connections may be provided between the valve A and bowl B, such as the pipe C which passes through the partition or wall D, behind which latter the valve is mounted and connected to any desired source of service water supply above the level of the floor E. Mounted on the valve casing 5 is a lever 6 whose arm 7 when raised opens the valve and brings the air check, (not shown) and which is carried within the cylinder 8, into a position where the subsequent discharge of the water toward the bowl is controlled in the customary manner, until the valve closes whereupon the arm 7 is returned by water pressure to normal position, as shown in Fig. 3 of the drawings.

As already indicated, our invention more particularly resides in the foot actuated mechanisms which extends from a point in front of the partition D to the valve A behind it, and is designed to actuate the arm 7 to open the valve without any possibility of adventitious derangement to any of its component elements, even under the hardest conditions of use.

In carrying out our invention, which as intended may be organized with flushing valves other than that of the Phillips type shown, a floor box 9 is set into the floor close to and at a convenient distance from the side of the bowl B, and in advance of the partition D. The open top of the box is closed by a plate 10 which is secured by fastening elements 13 to the side lugs 14, and at one end thereof is formed with a depending guide sleeve 11 for the reception and guidance of a pedal push button 12. The latter at its upper end has an index cap 15 interiorly formed with an upwardly extending conical recess 16, and at its lower end has a stop ring 17 externally screw-threaded to it which serves to limit upward movement of the button by contactual relation with the lower terminal of the guide sleeve. At the other end of the box and on the side wall nearest the partition is a hub 18 formed with a screw threaded passage or opening disposed to have axial co-incidence with the side wall sockets 19, and in which latter the hub 20 of the pedal lever 21 is designed to be journaled. The free end of the lever is terminally formed with a cap-like depression 22 situated directly under the button 12 to support and receive the lower pointed end of the push rod pin 23, whose similarly formed upper end seats in the conical recess 16 of the button index cap 15. This method of supporting the pedal button 12 com-

prises a useful feature of our invention, since the pin 23 can always find and maintain its own bearing and thereby center itself with reference to the cupped end of the lever 21.

The numeral 24 indicates a tubular member whose forward end has a threaded engagement with the aforesaid threaded opening in the hub 18, said member being immovably set into the concrete floor so as to have a common axis with the hub 20 of the lever 21, and extends rearwardly from the hub 18 beyond the floor into the utility corridor F behind the partition. Rotatably mounted in said tubular member, and free of the floor, is a fulcrum rod 25 whose squared ends project terminally therefrom, the forward end 25^a of which passing into the box snugly seats in a similarly shaped opening in the hub 20, and is secured therein by means of a clamping screw 26.

From an inspection of the drawings it will be seen that the arm 7 of the valve controlling lever is terminally forked at 7^a for attachment to a connecting rod 27, whose upper end is provided with a series of holes 28, 29, for the purpose of obtaining adjustment with the fulcrum rod, and whose lower end is pivotally connected to a connecting rod lever 30 which in turn has its hub 30′ rigidly mounted on the rearward squared end 25′ of the fulcrum rod 25.

With the parts positioned as described and illustrated, it will be apparent that upon depression of the lever 21 when foot pressure is applied to the button 12, the fulcrum rod has a measure of rotary movement in its bearing member 24 so as to elevate the lever 7 through the instrumentality of the interposed lever 30 and rod 27, and thereby open the valve to flush the bowl, the parts returning to normal position by water pressure upon the closing of the valve.

With the floor box and tubular bearing member solidly set into the floor, and the latter also anchored to the former against any possible dissociation, it will be obvious that protection against interference with the normal functioning of the movable parts is afforded in a very complete manner; and that not only are they efficiently arranged and combined to stand up against continuous hard usage, but are also, mainly in view of the provision of the closure and bearing members 9 and 24, each and all of them freely accessible for purposes of repair, replacement or inspection, and without disturbing the floor, partition, valve or bowl.

From the foregoing, the essential features, elements and operation of the mechanism, together with its simplicity and other advantages thereof, will be clearly apparent to those skilled in the art.

We do not desire to be understood as limiting ourselves to the precise details of construction, or to the exact arrangement of certain parts as shown, as it is manifest that variations and modifications thereof may be made in the adaptation of the invention to various conditions of use without departing from the spirit and scope of our invention and improvements. We therefore reserve the right to all such variations and modifications as properly fall within the scope of the invention and the terms of the following claims.

What we claim is:

1. In a device of the character described, the combination of a housing having a top plate and an inner bearing, a lever journaled in said bearing, said top plate provided with a depressible pedal member comprising a tubular member extending above the plane of the plate and closed at its upper end, and a self-centering thrust pin loosely housed in said tubular member and interposed between the free end of said lever and the closed upper end of said member.

2. In a device of the character described, the combination of a housing having a top closure plate, an operating lever in said housing, and a pedal member having a sleeve bearing in said plate above the free end of said lever and having a portion of said sleeve normally projecting above the plane of said plate, said sleeve provided with a thrust pin whose lower end engages said free end whereby to actuate said lever.

3. In a device of the character described, the combination of a support having an upper plate, an operating lever in said support, a pedal member embodying a housing sleeved in said plate and provided above said plate with a head, and a thrust pin in said housing operatively interposed between said head and said lever.

4. In a device of the character described the combination of a housing having an upper closure plate, an operating lever journaled in said housing and formed with a bearing near its free end, a depressible pedal member vertically mounted in said plate and integrally comprising a sleeve and a head having a bearing within the sleeve, and a self-centering thrust pin connection terminally engaging said bearings and having its intermediate portion housed in said sleeve.

In testimony whereof we have hereunto set our hands to this specification.

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