

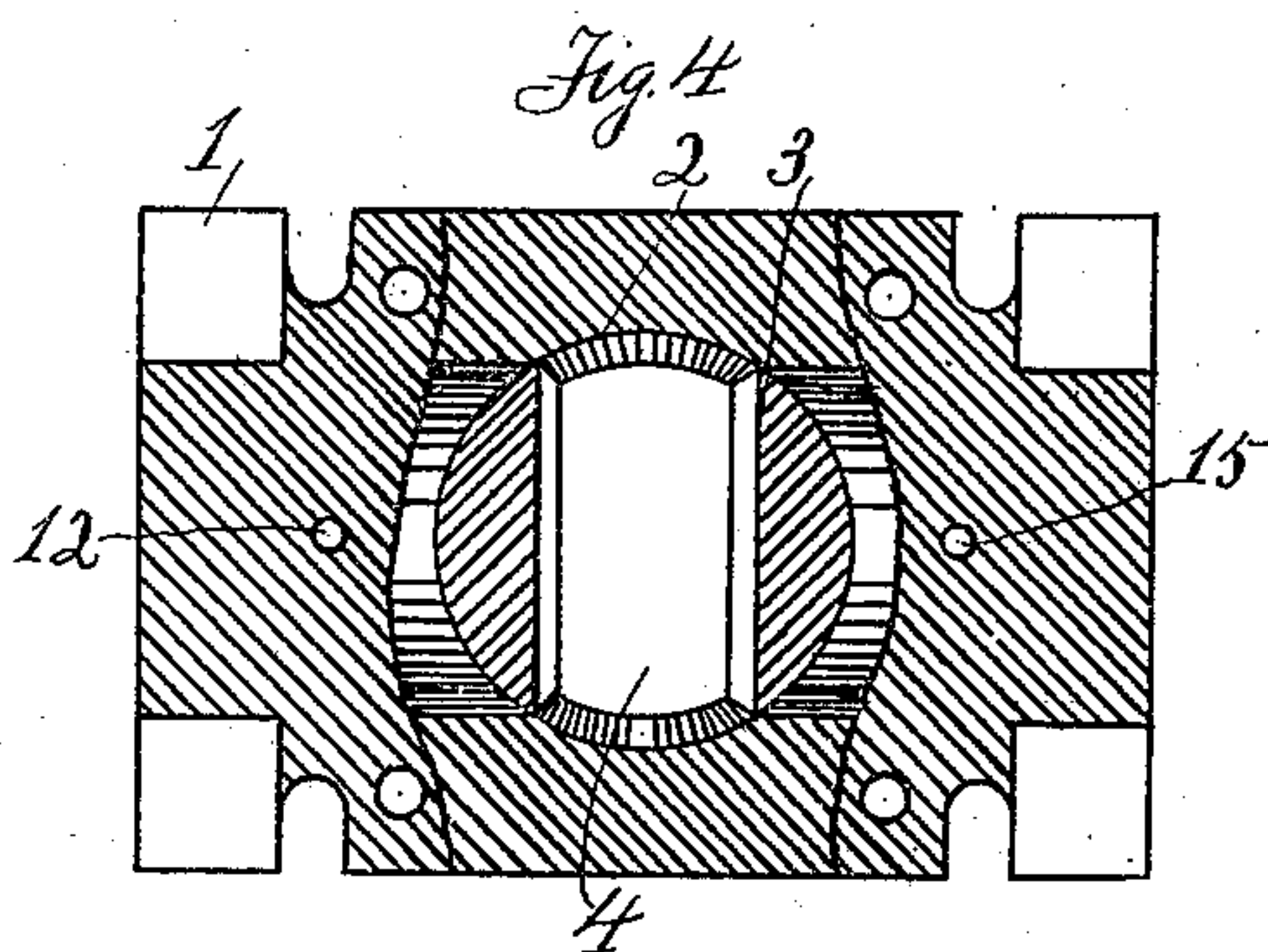
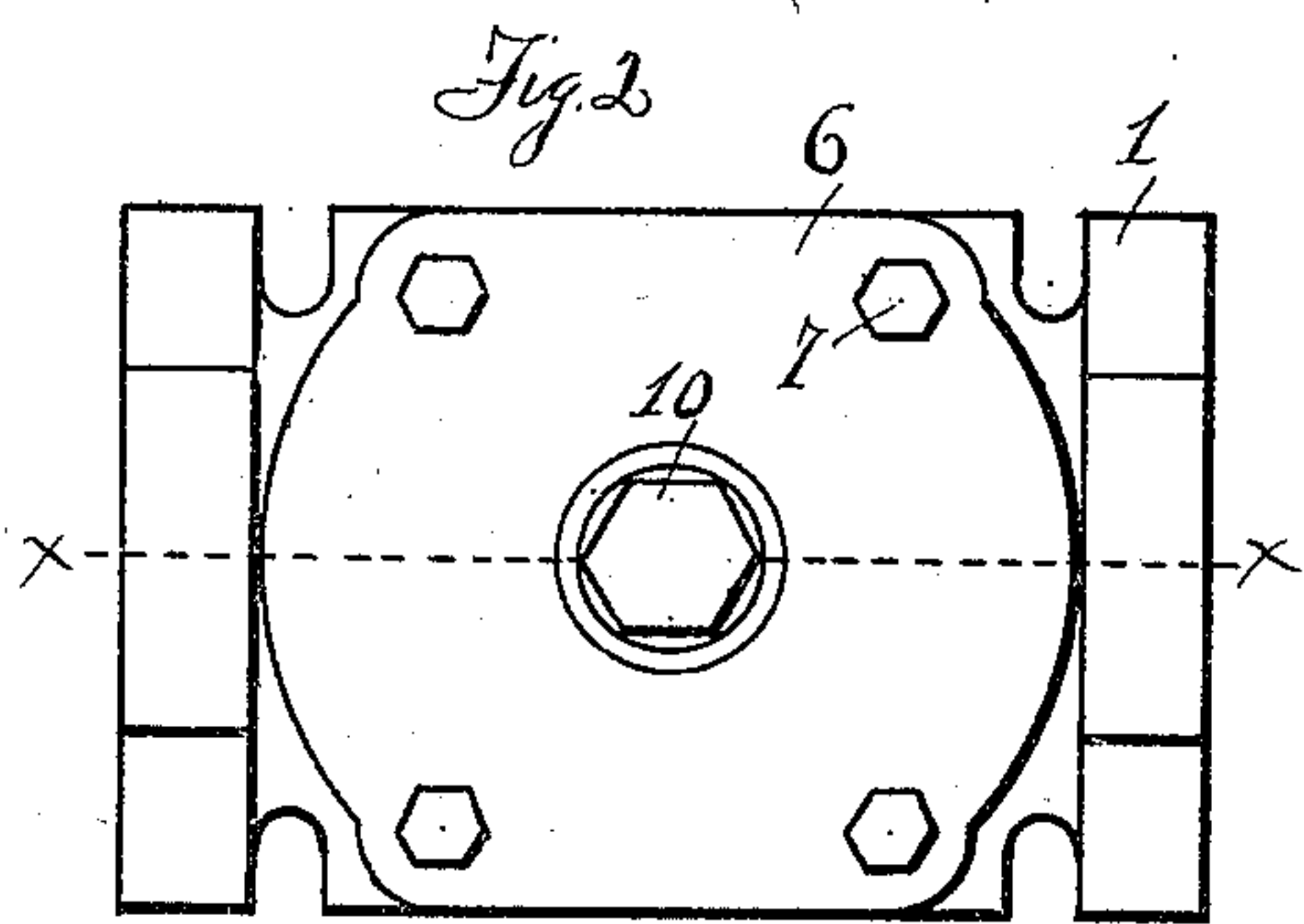
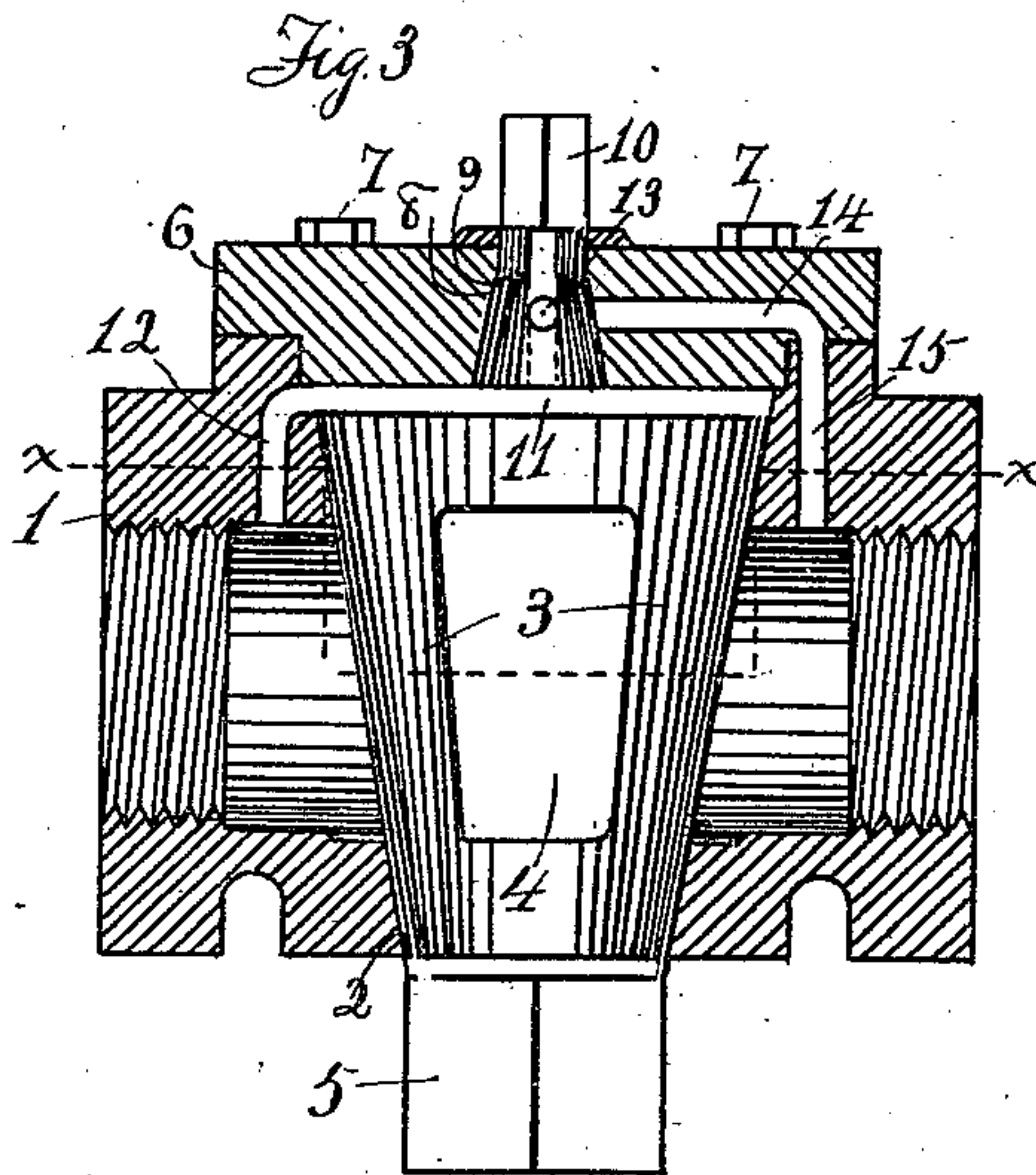
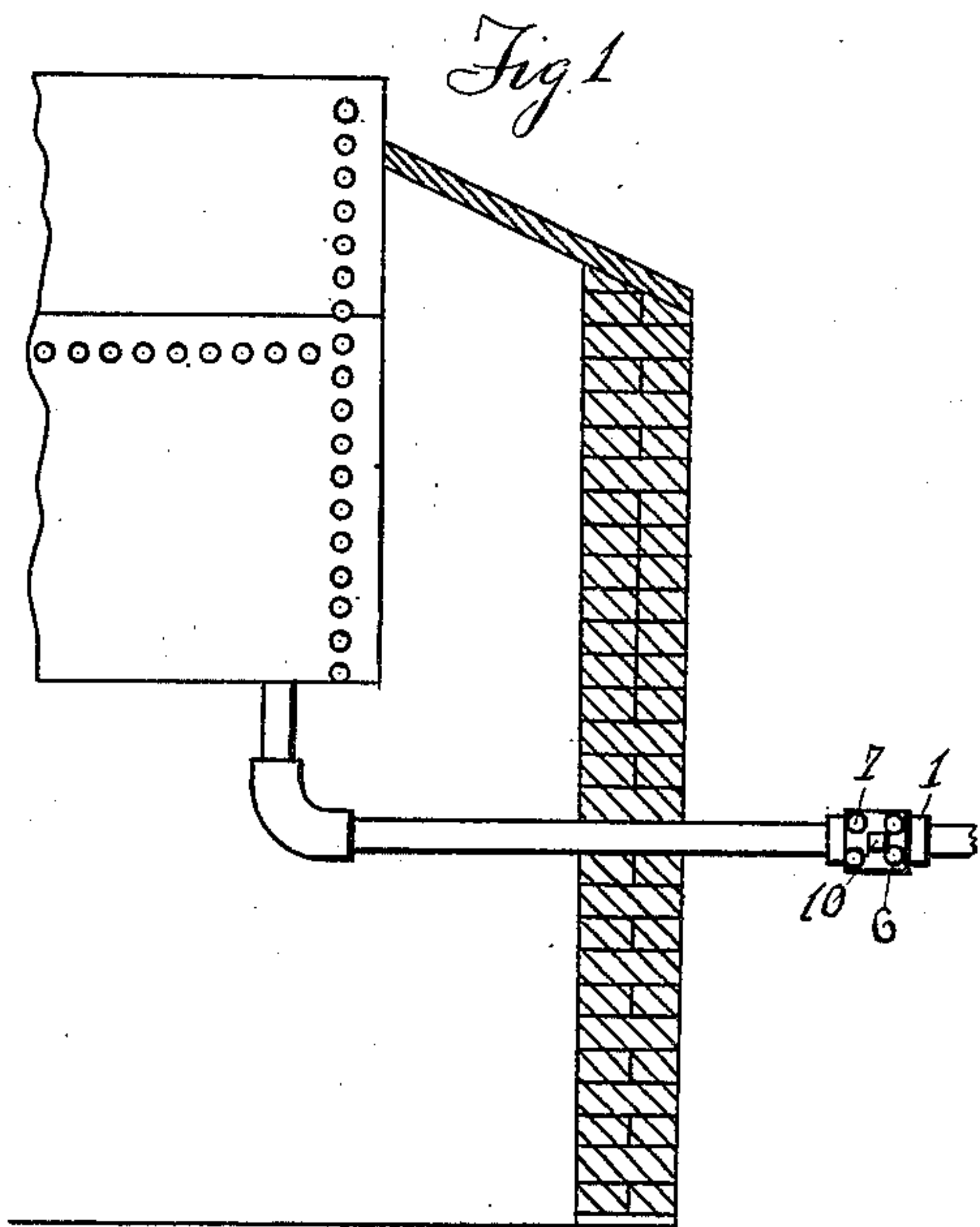
No. 684,042.

Patented Oct. 8, 1901.

W. F. BRADBURY.  
STOP VALVE.

(Application filed Feb. 5, 1900.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

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## STOP-VALVE.

SPECIFICATION forming part of Letters Patent No. 684,042, dated October 8, 1901.

Application filed February 5, 1900. Serial No. 3,941. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM F. BRADBURY, a citizen of the United States, residing at Kansas City, in the county of Wyandotte, in the State of Kansas, have invented certain new and useful Improvements in Stop-Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in stop-valves, having more particular reference to improvements in the type known as "plug-valves." In the valves of this type now in use there are met a number of difficulties and objections well recognized, among the more serious of which may be mentioned, first, in opening the valve the plug is raised from its seat before it is turned to open the valve, and when thus raised grit and dirt will enter between the plug and seat, preventing the closing of the valve sufficiently tight to prevent leaking, while in the attempt to screw down the plug upon the grit and dirt the face of the seat and of the plug are roughened and ground out and the valve ruined, and, second, a more serious objection is that when the plug is forced down in its seat in the effort to close it upon the grit and dirt, or even if the faces be clean and the valve be cold when the plug is forced down and afterward heated, the expansion of the parts will be such that it will be practically impossible to open the valve, and broken wrenches, broken pipes, and scalded operatives will be the result—a result of not at all uncommon experience.

To obviate these difficulties and objections and provide a valve simple and of few parts and always reliable and easily operated, my invention consists in certain features of novelty hereinafter described, and pointed out in the claims.

Figure 1 represents an elevation of the rear portion of a boiler provided with my improved valve as a blow-off valve. Fig. 2 represents a top plan view of the valve. Fig. 3 represents a view partly in cross-section on the line X X of Fig. 2. Fig. 4 represents a cross-section on the line X X of Fig. 3.

Similar numerals refer to similar parts throughout the several views.

1 represents the valve casting or body of

the valve, in which is provided a conical valve-seat 2.

3 represents a conical plug arranged to be seated in said valve-seat, the face of the seat and of the plug being ground to form a perfect steam and water tight fit. Said plug is provided with a passage 4 through the same of area equal to that of the passage through the valve-casting, so that when open the steam or water may flow freely through the valve. On said plug is provided a head 5 for the application of a wrench with which to turn the plug. It will be observed that when closed a quarter-turn of the plug will bring the passage through the plug to register with the passage through the valve-casting and the valve will be open, and likewise when open a quarter-turn of the plug will close the valve.

6 represents the bonnet secured upon the valve-casting by the bolts 7. In said bonnet is provided a seat 8 for an auxiliary plug 9, which is provided with a head 10 for the application of a wrench to turn the same. Between said bonnet and said plug 3 is provided a pressure-chamber 11, which communicates with the inlet end of the valve-passage through the duct 12. In said auxiliary plug 9 is provided a duct 13, and in said bonnet is provided a duct 14, registering with a duct 15 in the valve-casting, so that when the duct 12 in said auxiliary plug registers with the duct 13 in the bonnet the pressure-chamber 11 will be in communication with the outlet end of the valve-passage. Now when the valve is closed—that is, when the plug 3 is turned so as to close the passage through the valve-casting—it is obvious that the pressure in the passage through the duct 12 will hold the plug to its seat, and when the auxiliary plug 9 is turned so that the duct 13 does not register with duct 14, and consequently the pressure-chamber 11 does not communicate with the outlet end of the valve-passage, the pressure in the pressure-chamber 11 and upon the plug 3 will be equal to the entire boiler-pressure. The valve is thus adapted to and may be used under any, either high or low, pressure.

It is obvious that under boiler-pressure the plug 3 will be held firmly and securely to its seat and with such force that it can with the



utmost difficulty be turned. The auxiliary plug 9 is also held to its seat by the pressure in the pressure-chamber 11; but, presenting a comparatively small pressure area even under the highest boiler-pressure, it may be turned with ease. Then to open the valve the auxiliary plug is turned until the duct 13 registers with the duct 14, and thereby communication opened between the pressure-chamber 11 and the outlet end of the valve-passage. This relieves the pressure upon the plug 3, and it may now be turned with ease and the valve opened. It is manifest that in this construction and operation the plug is never raised sufficiently from its seat to permit the admission of grit and dirt to destroy the integrity of the seating, and the plug is not forced into its seat in such wise as to injure it or interfere with its operation.

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

1. A stop-valve consisting of a valve-casting provided with a conical valve-seat, a conical plug provided with a suitable passage seated therein and having an external head for operating the same, a bonnet secured upon

said valve-casting, a pressure-chamber between said bonnet and said plug communicating with a source of pressure, a duct communicating with said pressure-chamber and with the outlet-valve passage, and a plug seated in said bonnet controlling the pressure in said chamber; substantially as set forth.

2. A stop-valve consisting of a valve-casting provided with a conical valve-seat, a conical plug provided with a suitable passage seated therein and having an external head for operating the same, a bonnet secured upon said valve-casting, a pressure-chamber between said bonnet and said plug, an inlet-duct in the valve-casting communicating with said chamber and with the inlet-valve passage, an outlet-duct communicating with the outlet-valve passage, and a plug seated in said bonnet provided with a duct for controlling communication between said pressure-chamber and said outlet-duct; substantially as set forth.

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