

No. 779,786.

PATENTED JAN. 10, 1905.

W. H. KILBOURN.
VALVE.

APPLICATION FILED FEB. 11, 1904.

Fig. 1.

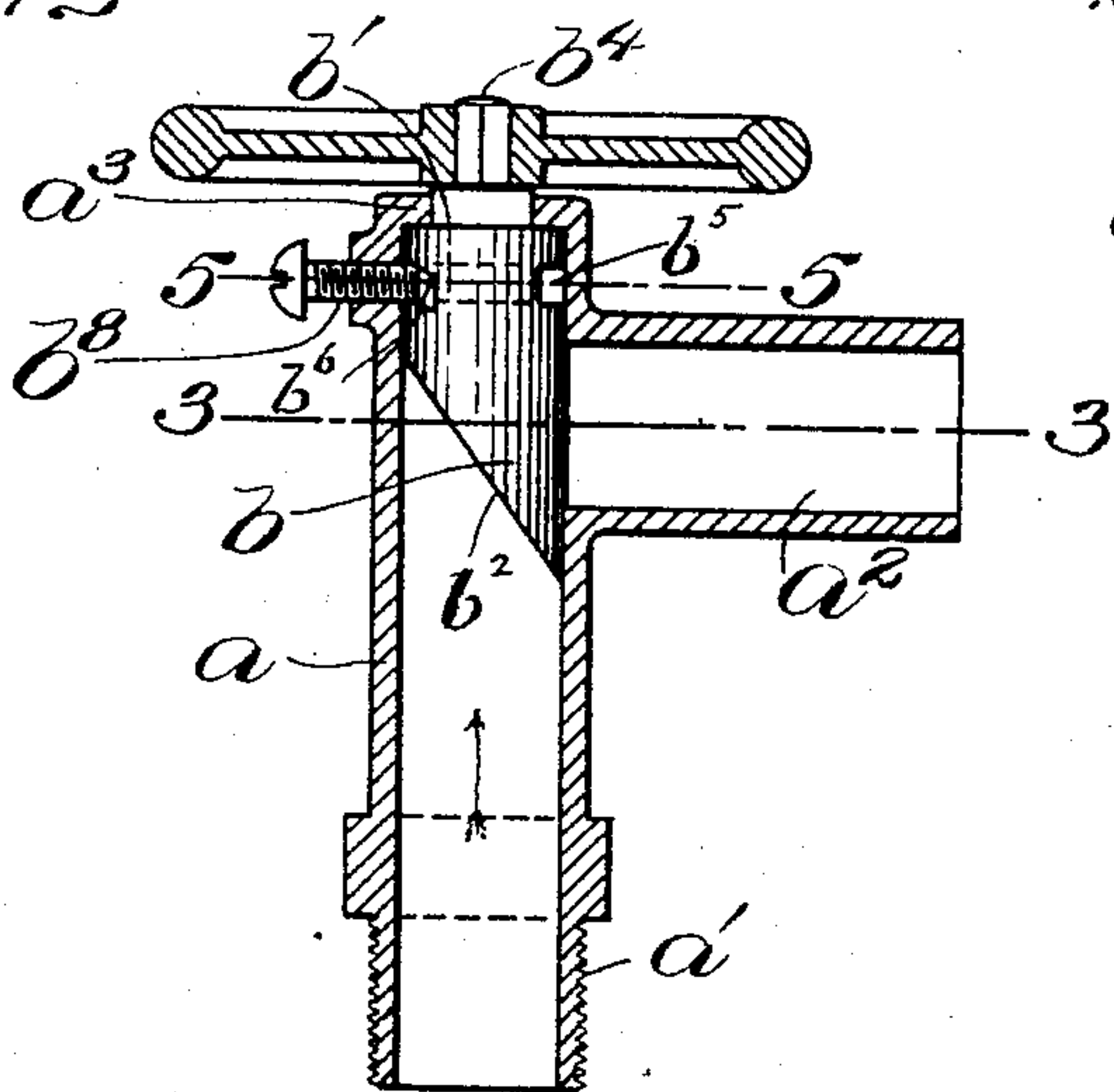


Fig. 2.

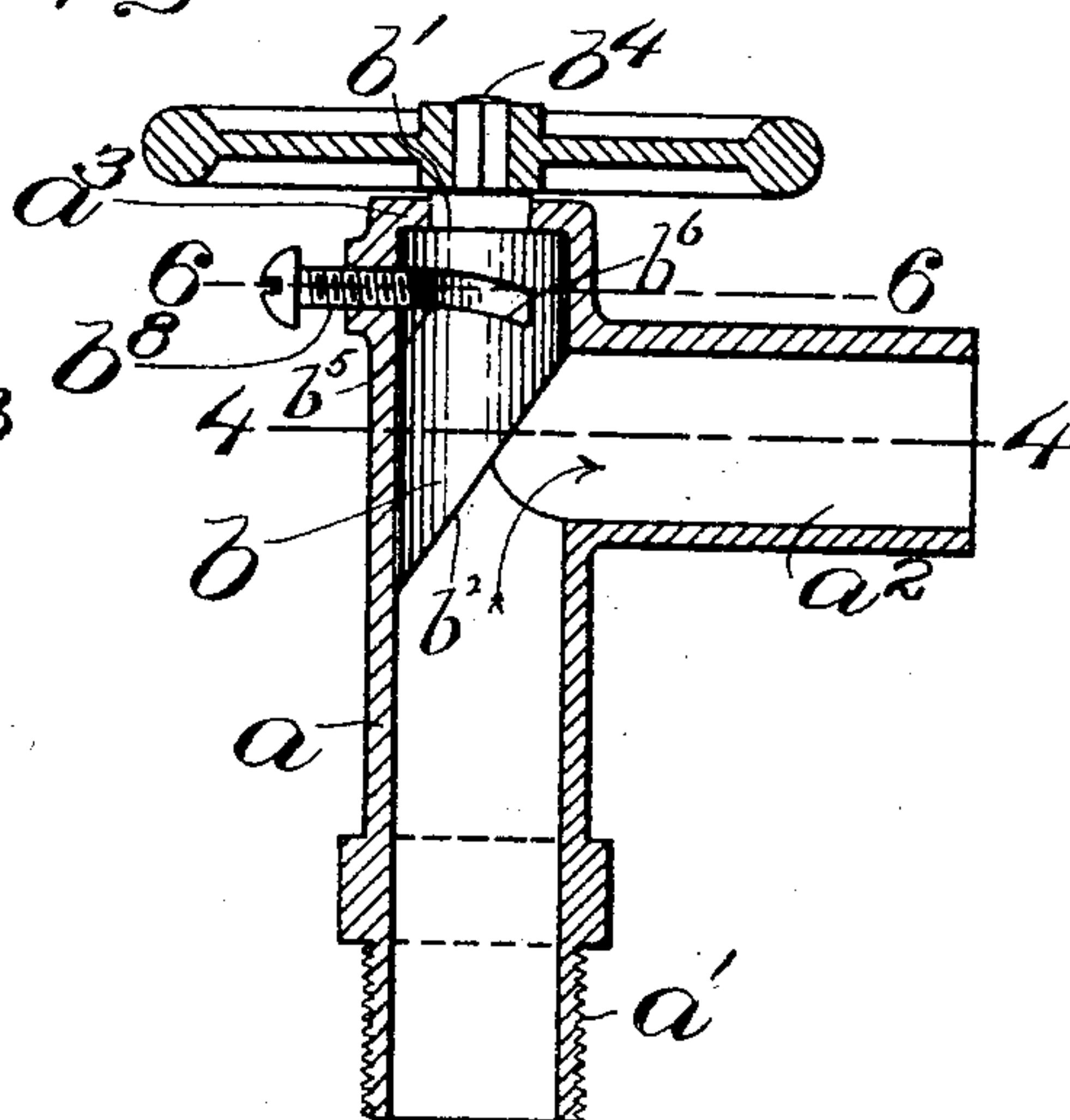


Fig. 3.

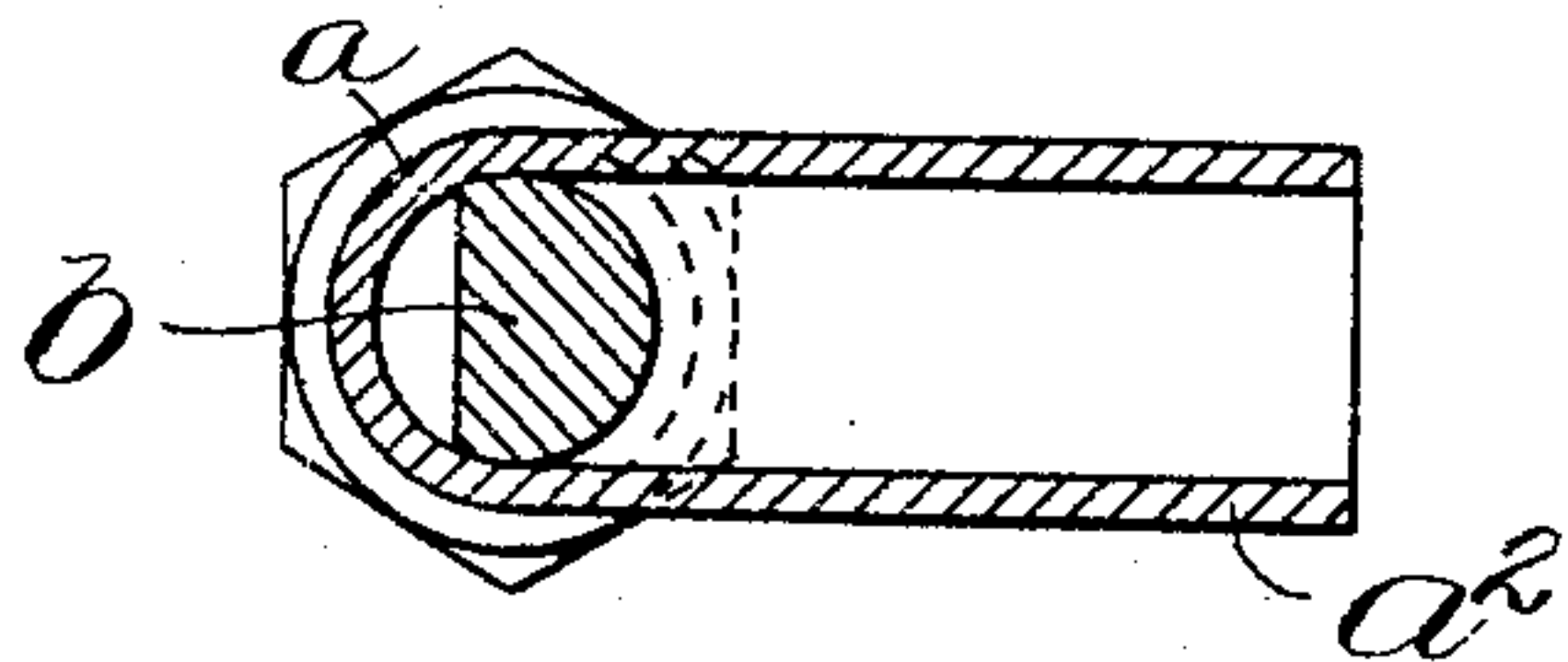


Fig. 4.

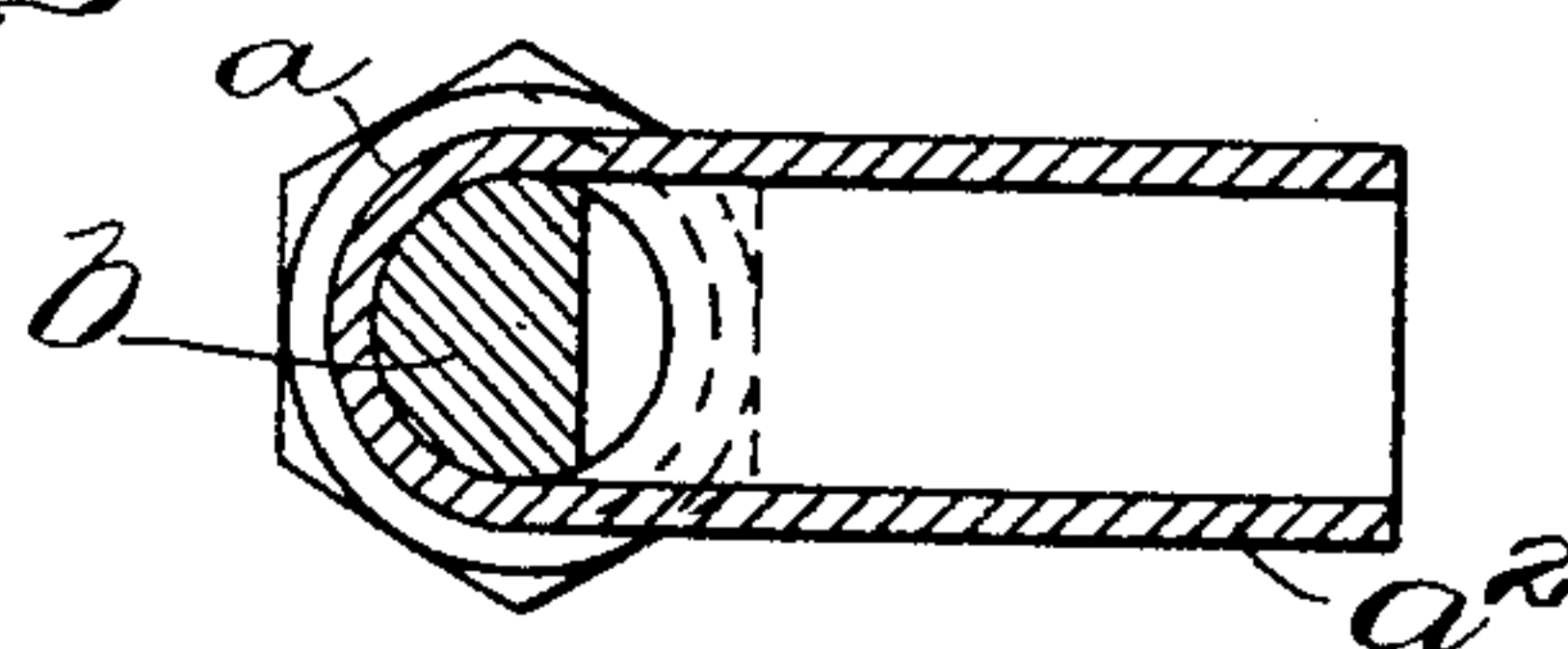


Fig. 5.

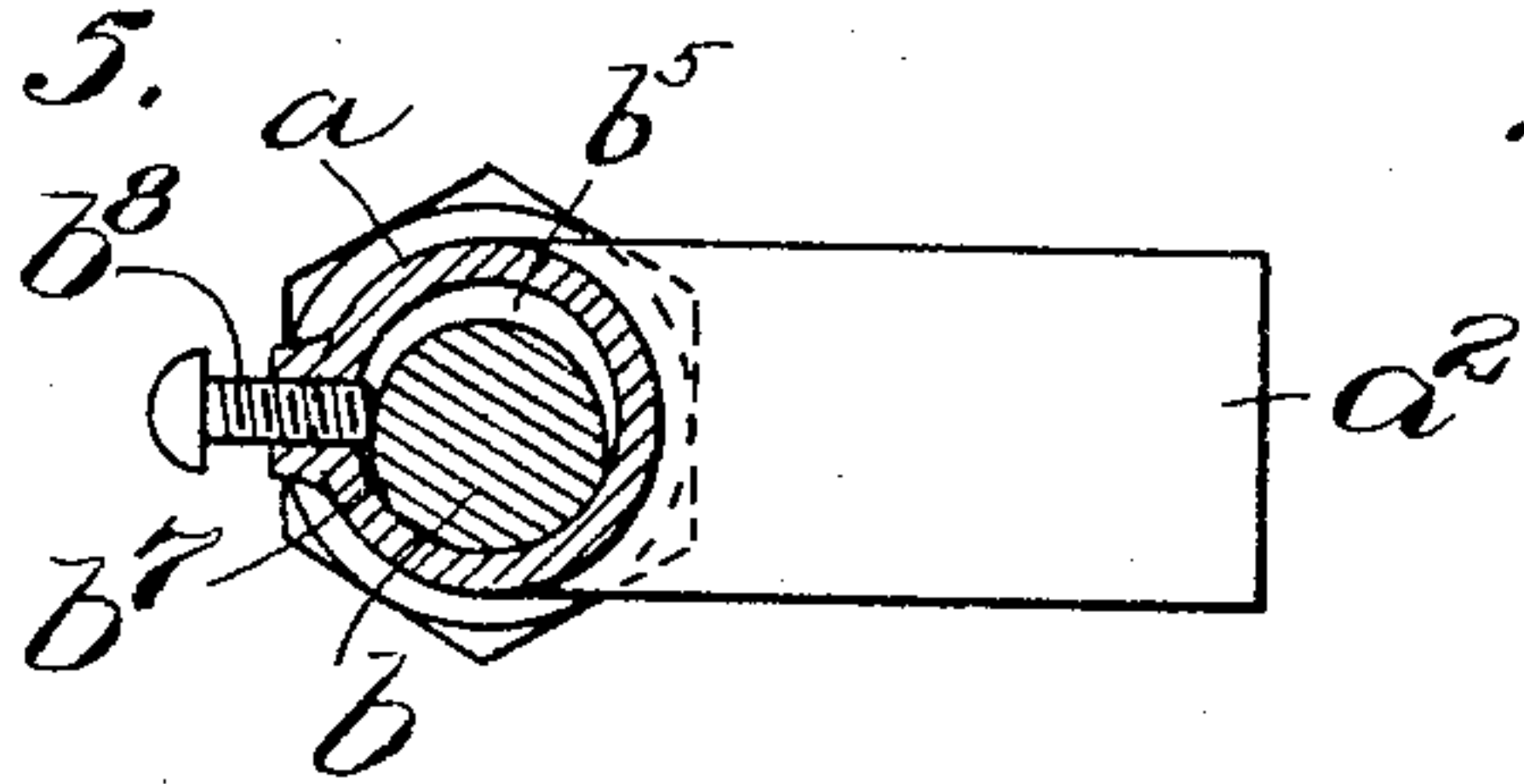
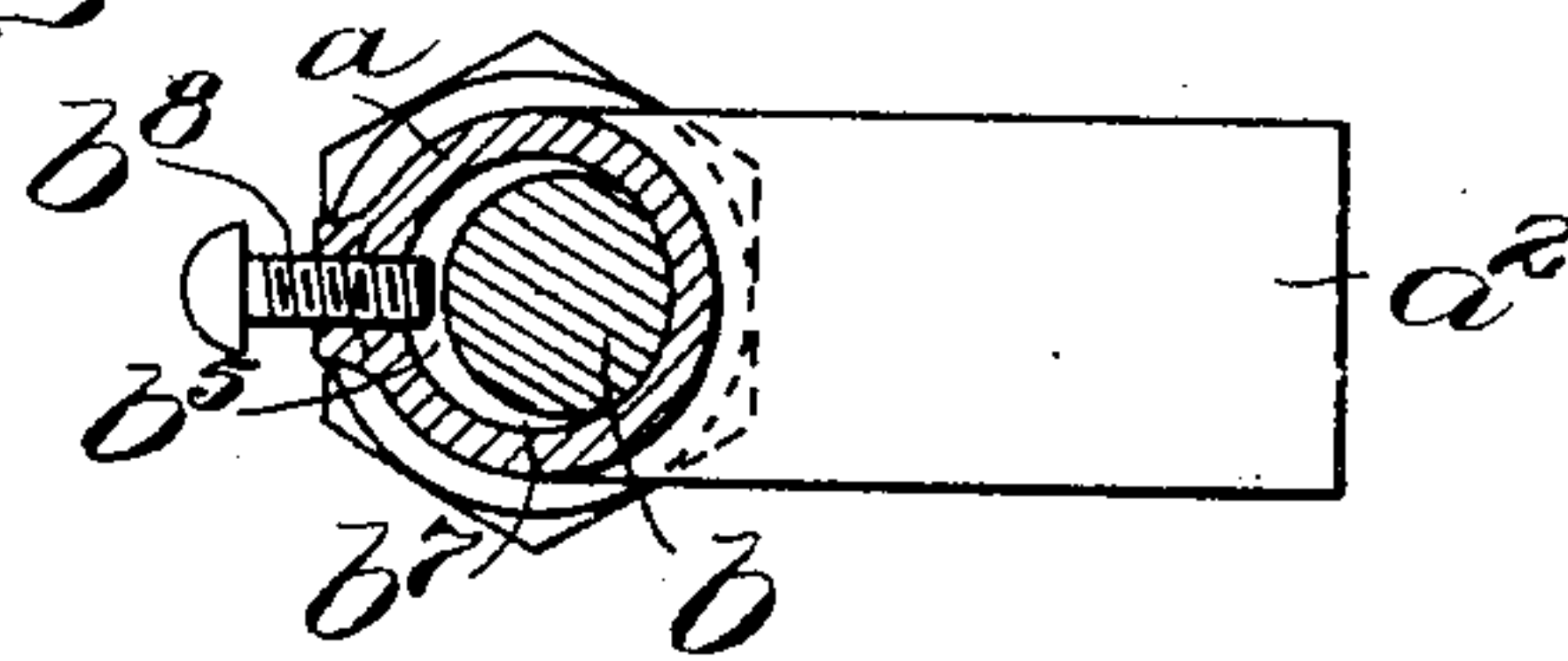


Fig. 6.



Witnesses:

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UNITED STATES PATENT OFFICE.

WASHINGTON H. KILBOURN, OF GREENFIELD, MASSACHUSETTS.

VALVE.

SPECIFICATION forming part of Letters Patent No. 779,786, dated January 10, 1905.

Application filed February 11, 1904. Serial No. 193,137.

To all whom it may concern:

Be it known that I, WASHINGTON H. KILBOURN, of Greenfield, in the county of Franklin and State of Massachusetts, have invented certain new and useful Improvements in Valves, of which the following is a specification.

This invention has for its object to provide a valve to control the passage of water, steam, or other fluid and comprising a casing and a movable valve-piece therein, the valve-piece being adapted to be held in close contact with the casing and maintain a tight joint by the pressure of the incoming fluid, so that no springs, packing, &c., are required.

The invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a longitudinal section of a valve embodying my invention, the valve-piece being shown in elevation and in its closed position. Fig. 2 represents a view similar to Fig. 1, showing the valve in its opened position. Fig. 3 represents a section on line 3 3 of Fig. 1. Fig. 4 represents a section on line 4 4 of Fig. 2. Fig. 5 represents a section on line 5 5 of Fig. 1. Fig. 6 represents a section on line 6 6 of Fig. 2.

The same reference characters indicate the same parts in all the figures.

In the drawings, a represents a valve-casing which is of angular form and has an inlet branch a' and an outlet branch a'' . The casing has also an end or head a^3 at the opposite side of the outlet branch from the inlet branch.

b represents a cylindrical valve-piece which is fitted to rotate in the casing a and has an end b' , formed to bear against the head a^3 of the casing, and an oblique or beveled end b^2 , the inclination of which is such that when the end b' bears against the head of the casing and the valve-piece is adjusted, as shown in Figs. 1 and 3, one side of the valve will cover the outlet branch a'' and the oblique face b^2 will be presented to the incoming fluid through the inlet branch a' . When the valve is turned to the position shown in Figs. 2 and 4, the

oblique face b^2 overhangs the outlet branch a'' , so that there is a free passage through the casing.

It will be seen by reference to Figs. 1 and 2 that the oblique face b^2 forms one side of a tapering space communicating with the inlet, the opposite side of said space being formed wholly by the casing. The fluid-pressure against the face b^2 is therefore exerted both sidewise and endwise of the valve and is at all times exerted on the said face in such direction as to hold the peripheral portion of the longer side of the valve against the casing and the end b' of the valve against the head a^3 of the casing. Hence when the valve-piece is in the position shown in Fig. 1 the pressure at the inlet side of the casing maintains a tight joint between the periphery of the valve-piece and the portion of the casing surrounding the outlet branch and also a tight joint between the end b' of the valve-piece and the head a^3 of the valve. When the valve-piece is in the position shown in Fig. 2, the pressure on the oblique face b^2 while reduced, owing to the fact that there is a free outlet through the outlet branch a'' , is still sufficient to hold the end b' of the valve against the head of the casing. A tight joint is thus maintained both between the valve and the outlet branch when the valve is closed and between the valve-stem b^4 and the orifice in the head a^3 , through which said stem passes. This improved valve does not require the use of packing material, springs, or other adjuncts to maintain a tight joint at the outlet and around the valve-stem.

To assist the fluid-pressure in maintaining a tight joint around the outlet branch and at the end or head of the casing, I provide the valve-piece b with a groove b^5 , which extends partly around the periphery of the valve-piece and is curved or cam-shaped at one end, as shown at b^6 , one of its end portions decreasing in depth, as shown at b^7 in Figs. 5 and 6. With this groove coöperates a stud or screw b^8 , engaged with the casing and entering the groove. The arrangement of the groove is such that when the valve is open the screw will occupy the deeper central portion of the groove b^5 . When the valve is closed, the

screw will come to a bearing on the shallower portion b^7 of the groove, as shown in Fig. 5, and thus exert pressure on the valve tending to force its periphery against the seat surrounding the outlet a^3 , this pressure being relieved when the valve is open. The grooved end b^6 of the groove is arranged to cooperate with the screw in forcing the valve endwise against the head a^3 when the valve is in its closed position.

I claim—

1. A valve comprising a casing having an inlet, a head, and an outlet between the inlet and the head, and a rotary valve-piece formed to be held against the head and against one side of the casing by fluid-pressure at the inlet side and formed also to open the outlet when turned to one position and to close the outlet when turned to another position, and means operated by movements of the valve-piece for increasing the end pressure of the

valve against the casing when the valve is in its closed position.

2. A valve comprising a casing having an inlet, a head, and an outlet between the inlet and the head, and a rotary valve-piece formed to be held against the head and against one side of the casing by fluid-pressure at the inlet side and formed also to open the outlet when turned to one position and to close the outlet when turned to another position, the said valve-piece having a groove which receives a stud on the casing, the groove being of varying depth and having a cam-shaped wall.

In testimony whereof I have affixed my signature in presence of two witnesses.

WASHINGTON H. KILBOURN.

Witnesses:

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E. BATCHELDER.