No. 627,394. **Patented June 20, 1899.**

W. E. CRIST.
GATE VALVE.

(Application filed Oct. 19, 1898.)

(No Model.) **2 Sheets—Sheet I.**

FIG. 1.

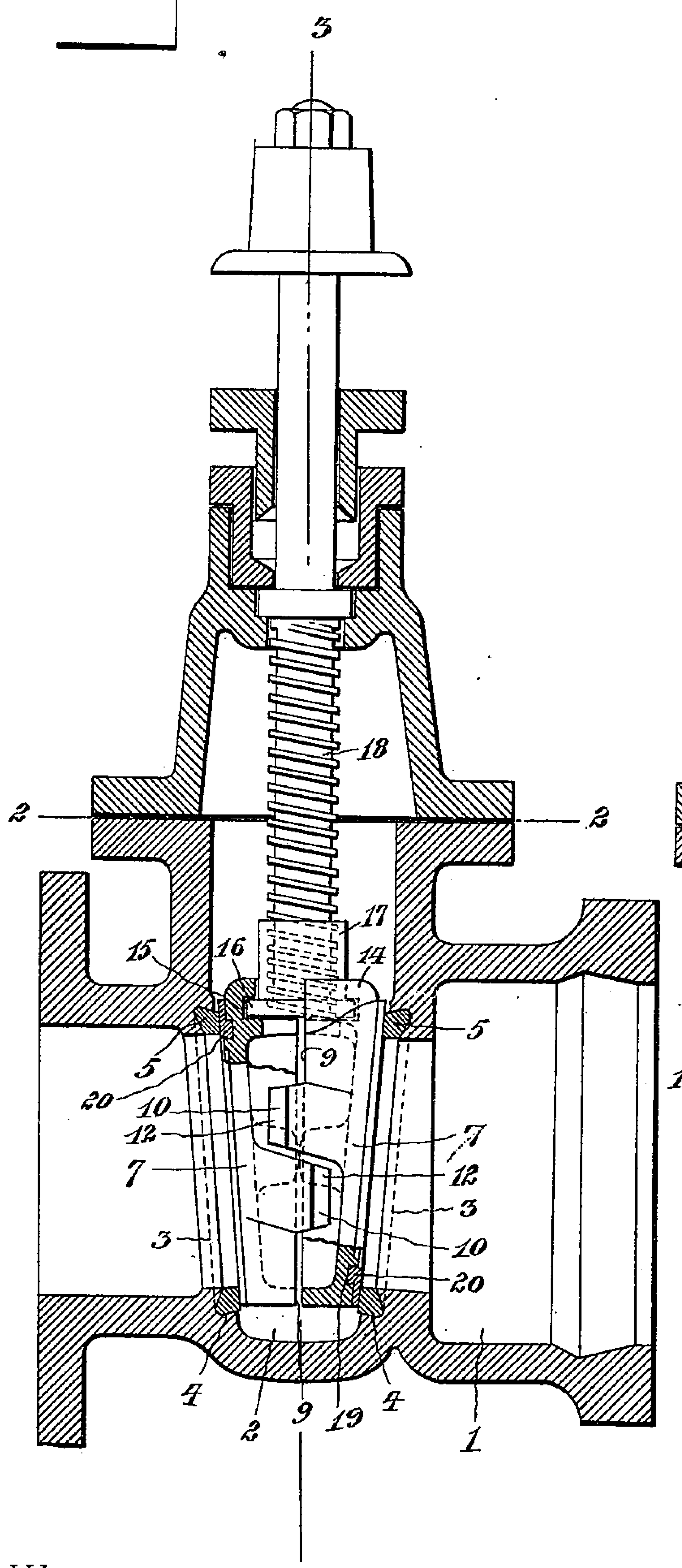
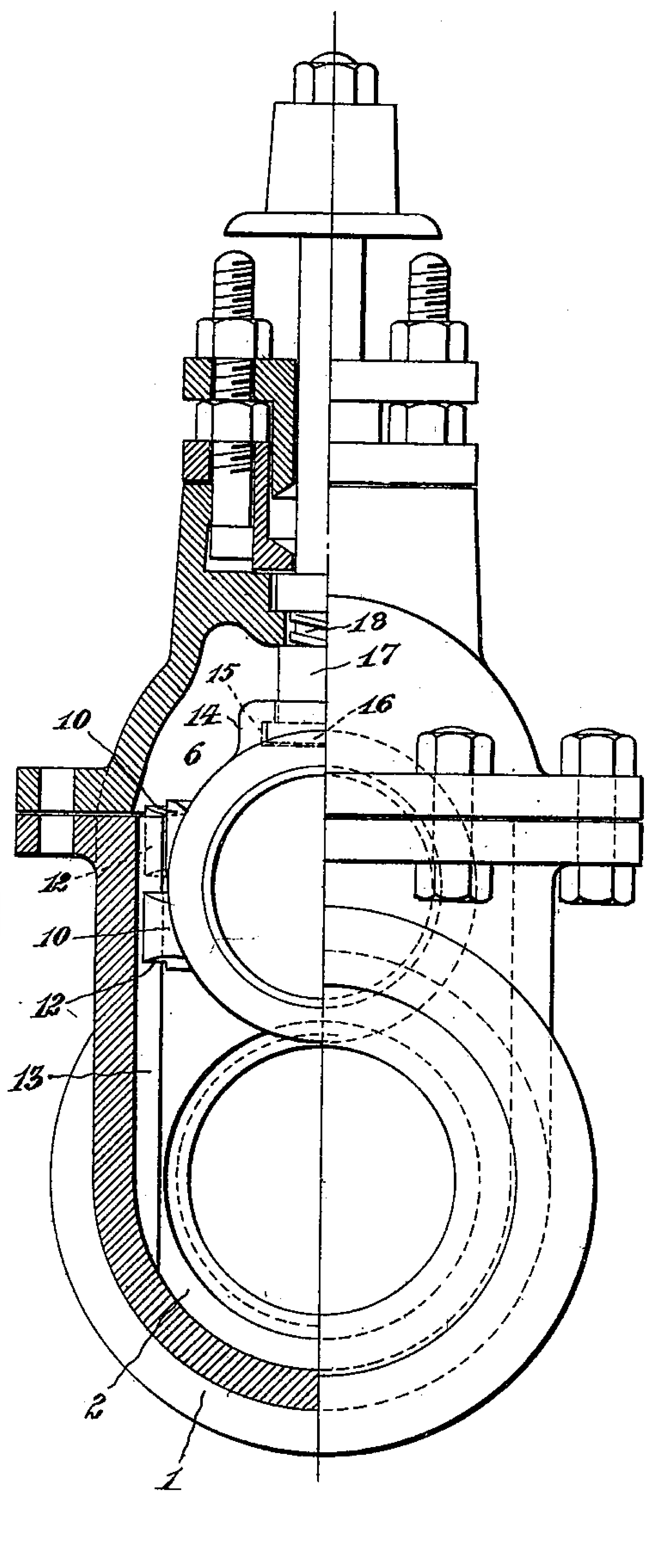


FIG. 3.



Witnesses

William E. Crist, Inventor

By *his* Attorneys,

C. A. Snow & Co.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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2 Sheets—Sheet 2.

FIG. 2.

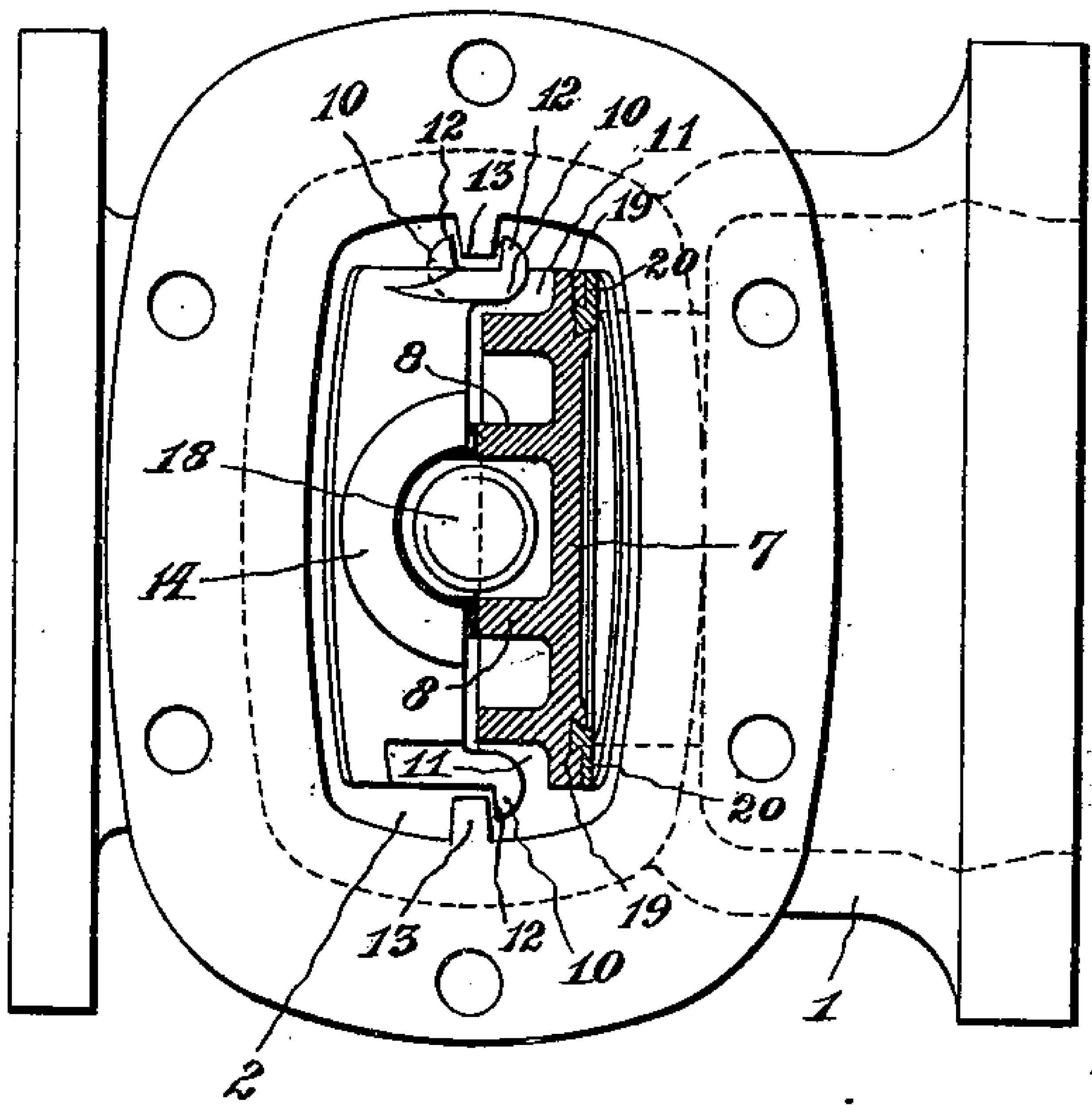


FIG. 4.

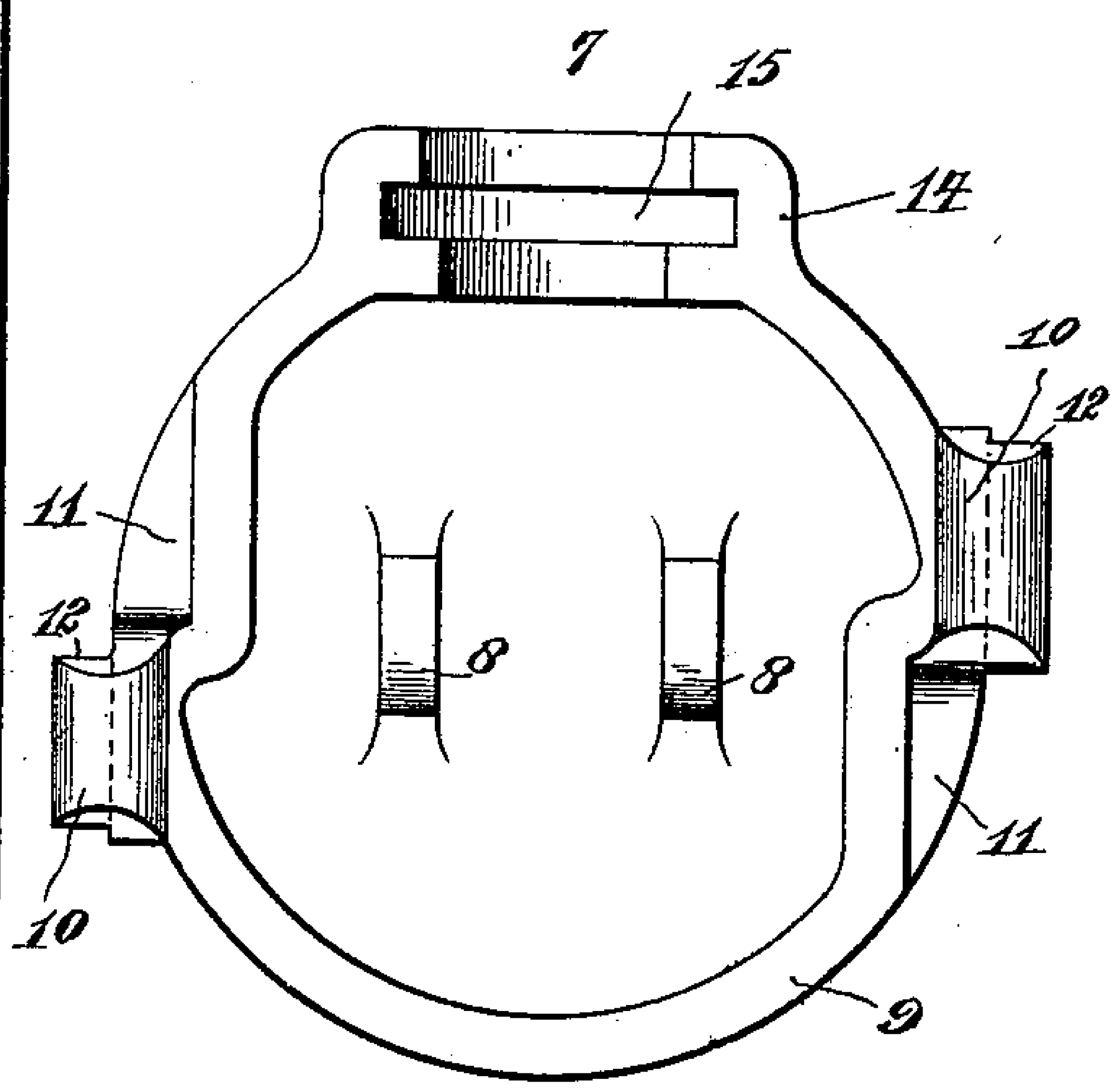
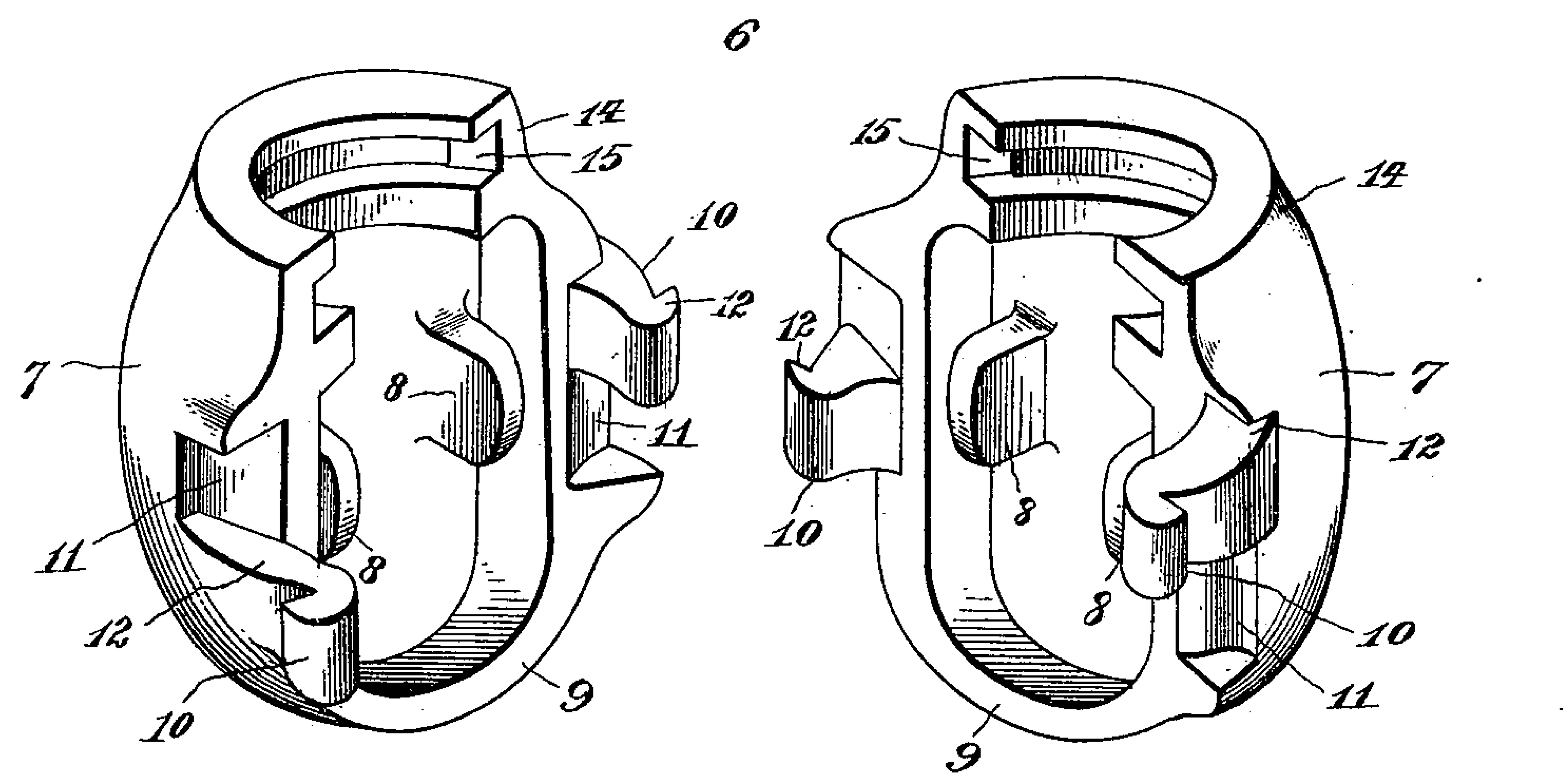


FIG. 5.



Witnesses
John F. Deufferwiel
D. P. Wolhaupter

William E. Crist, Inventor
By his Attorneys.
C. A. Snow & Co.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON D. C.

UNITED STATES PATENT OFFICE.

WILLIAM EDWARD CRIST, OF LYNCHBURG, VIRGINIA, ASSIGNOR TO THE GLAMORGAN PIPE AND FOUNDRY COMPANY, OF SAME PLACE.

GATE-VALVE.

SPECIFICATION forming part of Letters Patent No. 627,394, dated June 20, 1899.

Application filed October 19, 1898. Serial No. 693,994. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM EDWARD CRIST, a citizen of the United States, residing at Lynchburg, in the county of Campbell and State of Virginia, have invented a new and useful Gate-Valve, of which the following is a specification.

This invention relates to valves, and more particularly to that type of valves which are termed "gate-valves" and are used in water mains or piping for carrying the fluid under a strong head or pressure.

The invention has for its primary object a general improvement in the construction of the valve-disk of a gate-valve, whereby the same will more readily seat itself within the casing, while at the same time being capable of easy manipulation.

To this end the invention has particularly in view the formation of the disk or valve proper of a gate-valve in sections so constructed and relatively arranged together as to insure a tight uniform seating of the valve against the oppositely-located valve-seats. In other words, the invention contemplates a sectional construction of valve-disk, the sections of which will accurately adjust themselves with reference to the valve-seats, so as to afford a very tight connection.

A further object of the invention is to provide new and useful means for guiding the valve-disk, which means shall also serve the function of fastening the sections of the valve-disk together.

Another object of the invention is to provide an improved construction of valve-disk which prevents the water-pressure from wedging the valve against the opposite valve-seat, while at the same time dispensing with the use of all cams or wedges.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

While the invention is necessarily susceptible to modification, still the preferred embodiment thereof is shown in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a gate-valve embodying the improvements contemplated by the present invention. Fig. 2 is a horizontal sectional view on the line 2 2 of Fig. 1. Fig. 3 is a vertical sectional view on the line 3 3 of Fig. 1, showing the valve partly raised. Fig. 4 is an inner side elevation of one of the valve-disk sections. Fig. 5 is a perspective view of the valve-disk, showing the two sections thereof separated.

Referring to the accompanying drawings, 1 designates the valve-casing, having the usual inlet and outlet ports and provided between such ports with the upright valve-chamber 2, the lower portion of which is downwardly convergent and is provided with the oppositely-located inclined valve-seat walls 3, provided in their opposing faces with the annular substantially V-shaped grooves 4, in which are fitted the valve-seat rings 5, which form the valve-seat faces for the circular tapering valve-disk 6, which is arranged to work vertically within the valve-chamber 2 in the usual manner and to have a wedging fit against the oppositely-located inclined valve-seats 5.

In the present invention the circular valve-disk 6 is made in two sections or halves 7 7, which have a matching interlocking connection to form the complete valve or valve-disk. Each valve-disk section 7 is formed of a hollow circular body of a downwardly-tapering outline and which is open at its inner side and closed at its outer side, the outer closed side of each valve-disk section covering the passage through the valve-seat against which it fits. The hollow circular body of each valve-disk 7 is provided therein with a pair of interior spacing-lugs 8, projecting outwardly from the cavity within the body and a slight distance beyond the plane of the inner circular edge 9 of the section, said spacing-lugs 8 being provided with rounded ends. The said interior outwardly-projecting spacing-lugs 8 of each disk-section are designed to aline with and abut against the projecting ends of the corresponding lugs in the other section, whereby when the two sections of the disk are matched the inner circular edges 9 of such disks will be held spaced apart, so that the sections are capable of a rocking movement on the lugs 8, so as to adjust themselves with reference to the valve-seats as the valve-disk is forced to its closed position.

In addition to the interior spacing-lugs 8 each valve-disk section 7 is provided at its

opposite side edges with forwardly-extending ears 10 of a tapering or wedge form and at one side of the plane of such ears with mortise recesses or notches 11. The ears 10 and the mortises 11 at opposite side edges of each disk-section are arranged in different horizontal planes or diagonally opposite each other, so that when the two sections of the valve-disk are matched the forwardly-extending tapering ears 10 overlap one above the other and form an interlocking connection between the two sections of the valve-disk to prevent relative displacement thereof, it being observed that the mortise-recesses 11 of one disk-section receive therein the diagonally opposite ears 10 of the other disk-section in order to form a flush interlocking joint.

The ears 10 of each disk-section are formed at their outer terminals with the outturned engaging lips 12, which slidably embrace the vertical guide-ribs 13, formed at opposite inner sides of the upright valve-chamber 2, within which the valve-disk works. It will be observed that the engaging lips 12 of the two valve-disk sections respectively engage at opposite sides of the guide-ribs 13, so that these guide-ribs not only serve to guide the valve-disk in its vertical movement, but at the same time serve to fasten the two sections together by preventing displacement in a direction away from each other. The valve-disk sections 7 are provided at their upper edges with circular neck portions 14, having formed therein the interior annular groove 15, which receives the flange 16 of the sleeve-nut 17, in which works the threaded stem 18 for raising and lowering the valve. This threaded stem 18 is swiveled at the top of the valve-casing in the usual way, and by being turned to the right or left provides for raising and lowering the valve-disk, it being noted that the said stem is free to work into the valve-disk between the interior spacing-lugs thereof.

The outer faces of the valve-disk sections have preferably formed therein the annular grooves 19, in which are fitted the facing plates or rings 20, which form the seating-surfaces of the valve that fit against the valve-seats 5.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described improvements to the gate-valve will be readily apparent to those skilled in the art without further description, and it will be understood that changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a gate-valve, a valve-disk composed of two separable twin sections, each section being formed of a circular body provided at its opposite side edges with forwardly-extending ears, and at one side of the plane of said ears with mortise-recesses to receive the ears of the opposite sections, the opposite forwardly-extending ears of each section being disalined, substantially as set forth.

2. In a gate-valve, the casing having a single vertical guide-rib at diametrically opposite sides thereof, and a valve-disk composed of separable twin sections, each having a slidable interlocking engagement with each of the opposite guide-ribs, substantially as set forth.

3. In a gate-valve, the casing having oppositely-located vertical guide-ribs, and a valve-disk composed of separable twin sections, each having a slidable engagement with the sides of the ribs remote or farthest therefrom, whereby the ribs serve to guide the valve-disk, and also fasten the two sections thereof together, substantially as set forth.

4. In a gate-valve, a valve-disk composed of two separable twin sections, each of said sections having rigid abutments projecting outwardly from the cavity therein and having rounded ends which project a slight distance beyond the plane of the inner edge of the section, the contiguous rounded ends of the abutments having a direct contact and permitting of a relative rocking movement for the sections, substantially as set forth.

5. In a gate-valve, the casing having oppositely-located vertical guide-ribs, and a valve-disk composed of two separable sections provided at their edges with outturned engaging lips respectively engaging at opposite sides of said ribs, whereby the latter serve to guide the valve-disk and also fasten the two sections thereof together, substantially as set forth.

6. In a gate-valve, the casing having oppositely-located vertical guide-ribs, and a valve-disk composed of two separable sections, each valve-disk section being formed of a circular body provided at its opposite side edges with forwardly-extending ears terminating in outturned engaging lips and at one side of the plane of such ears with mortise-recesses to receive the ears of the opposite section, said outturned engaging lips respectively engaging at opposite sides of said ribs, substantially as set forth.

7. In a gate-valve, the valve-casing having inclined valve-seats, and the valve-disk composed of two separable sections, each valve-disk section having interior spacing-lugs projecting beyond the inner edge of the section and abutting against the corresponding lugs in the other section, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM EDWARD CRIST.

Witnesses:
R. C. BLACKFORD,
W. D. CAMPBELL.