

No. 667,247.

Patented Feb. 5, 1901.

J. O'BRIEN.
WATER GAGE.

(Application filed May 12, 1900.)

(No Model.)

Fig. 1.

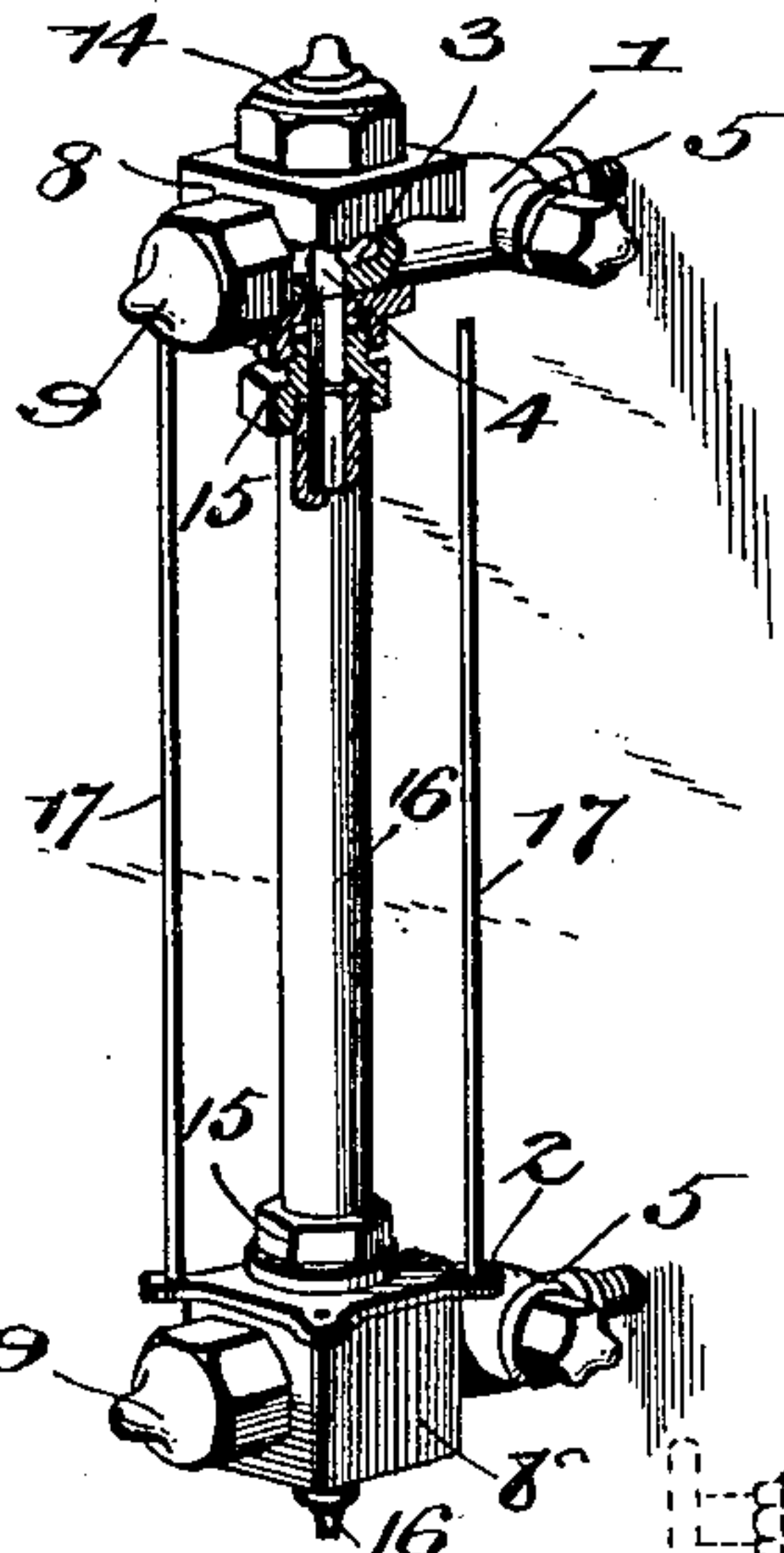


Fig. 2.

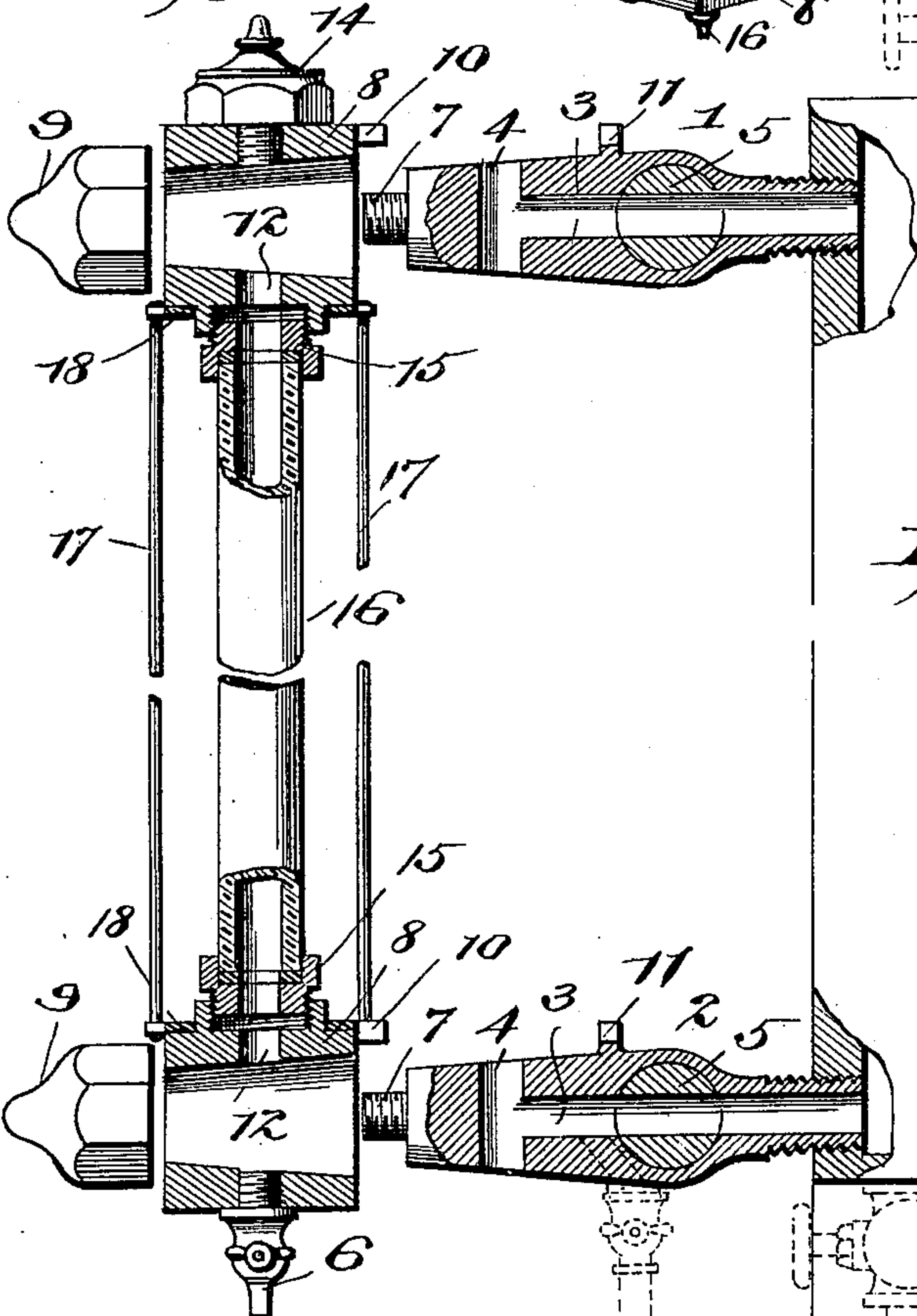


Fig. 3.

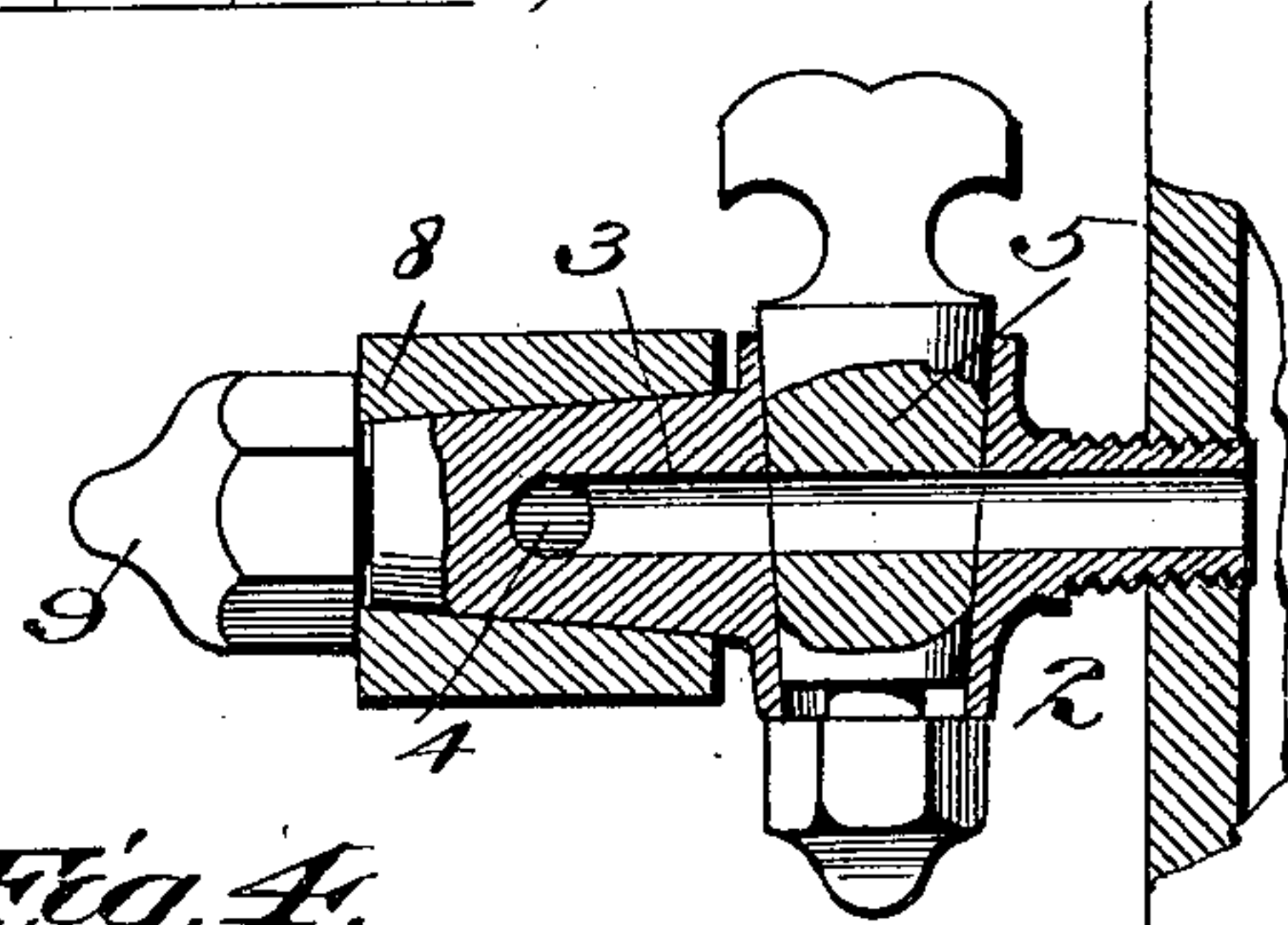
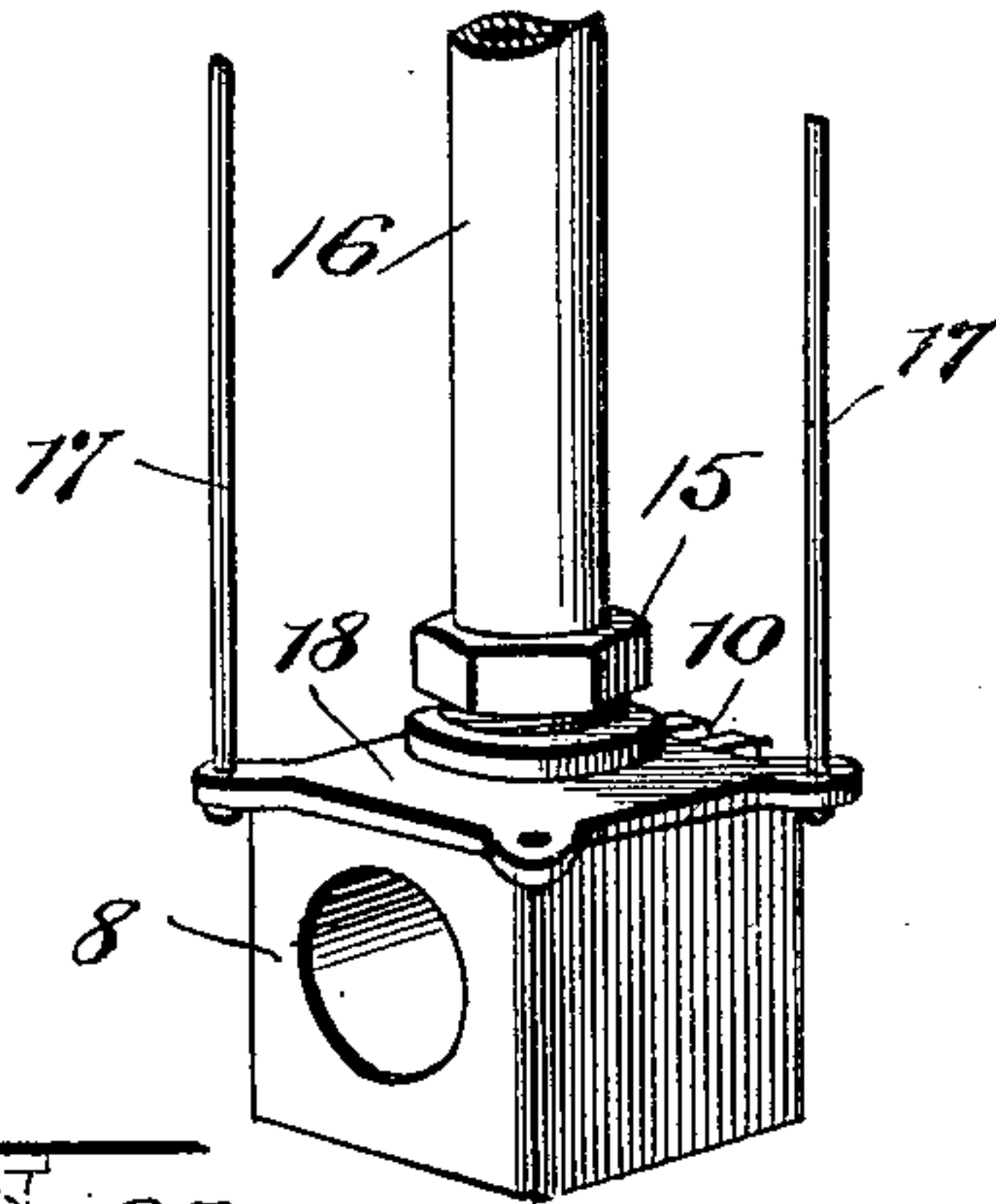


Fig. 4.



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WATER-GAGE.

SPECIFICATION forming part of Letters Patent No. 667,247, dated February 5, 1901.

Application filed May 12, 1900. Serial No. 16,482. (No model.)

To all whom it may concern:

Be it known that I, JAMES O'BRIEN, a citizen of the United States, residing at New York, in the State of New York, have invented a new and useful Improvement in Water-Gages, of which the following is a specification.

My invention relates to water-gages, and has for its object to produce a device of this kind which can be easily detached from the valves or cocks projecting from the head of the boiler and which may be provided with a new glass and quickly returned to its place, thereby avoiding the necessity of the engineer remaining very long in an inconvenient position in an overheated atmosphere. With the ordinary gages the engineer is compelled to stand upon a ladder at the head of the boiler in a temperature ranging from 100° to 150° while he removes the broken glass and puts the new glass in its place. On board vessels, with the ship rolling from side to side, the position is very trying and insecure, and on locomotives the jar and lurching of the engine from side to side renders the operation of removing the broken glass an inconvenient and disagreeable operation. When the ordinary valves are leaking steam or water, the task is rendered the more difficult and objectionable, and especially where there is a valve-stem projecting entirely across the path of the tube, which must be removed before the new glass can be inserted. By constructing the stuffing-boxes at the ends of the glass removable from the valves they may be removed and the glass inserted and the stuffing-boxes returned to their places much more readily than the new glass can be inserted in the stationary stuffing-boxes.

My invention consists in the improved construction and novel combination or arrangement of parts of a water-gage, by means of which the stuffing-boxes are removable, as will be hereinafter more fully set forth.

In the accompanying drawings, in which the same reference-numerals indicate corresponding parts in each of the views in which they occur, Figure 1 is a perspective view of my improved water-gage in position, one of the ends being partly broken away to show the parts in section. Fig. 2 is a longitudinal sectional view of the parts of my improved gage separated. Fig. 3 is a horizontal sec-

tional view of one of the valves, and Fig. 4 is a perspective detail view of one of the stuffing-boxes.

Referring more particularly to the drawings, 1 and 2 indicate the valves or cocks of my improved water-gage, which may be secured to the head of the boiler or to the water-column in the ordinary manner.

Each of the valves is provided with a longitudinal bore or passage-way 3 and a cross-passage 4 near the outer end. The inner portion of the passage 3 is enlarged to form a seat for the stop-cock 5, by means of which the passage may be closed or opened, as desired. The lower valve is provided with the usual drip-cock 6 for permitting the escape of sediment or other foreign substances which may collect in the bottom of the tube or in the valve.

The outer portion of each of the valves is tapered and provided at its ends with a screw-threaded projection 7. Fitted upon the screw-threaded portion of each of the valves is a stuffing-box 8, which is bored out to correspond with the taper of the valve and is secured in position by means of the nut 9, which fits upon the projection 7. If desired, the inner face of the stuffing-boxes may be provided with a projection 10, which engages with the corresponding projection 11 of the valve to hold the stuffing-box from rotating or turning around when setting up or assembling the parts.

Each of the stuffing-boxes is provided with a cross-perforation 12, which registers with the passage 4 in the valve when the stuffing-box is in position, and the drip-cock 6 is preferably secured in the outer end of the perforation of the lower box, while the upper end of the perforation of the upper box may be closed by a suitable nut 14, or the box may be provided with a projection and the cross-perforation may be terminated in said projection. Secured to the stuffing-box so as to face each other when in position are two glands 15, which register with the cross-perforation in the valve. These glands are screwed into the stuffing portion so as to be adjustable, and are adapted to receive and hold the glass 16 in position. The usual guard-rods 17 are secured at their ends to the plates 18 in the usual manner.

In using my improved water-gage the valves are secured in position with the cross-perforations at their outer ends in alinement with each other. The glass is then secured between the glands of the two stuffing portions, and the boxes are held in such position relatively to each other by means of the guard-rods that they can be slipped over the ends of the valves and secured thereon by means of the nuts on the outer ends of the valves.

In replacing the broken glass the cocks are turned so as to shut off the steam and water from the top and bottom valves, respectively. The nuts upon the outer ends of the valves are removed and the stuffing-boxes withdrawn from the valves and separated a sufficient distance to permit of the new glass being inserted between the glands in place of the one that has been broken. The stuffing-boxes are then returned to their normal positions and replaced upon the valves and secured there by replacing the nuts at the outer ends. Should there be any leakage in the cocks within the valves, the steam or water will be deflected into a vertical direction by the cross-perforations in the ends of the valve, and thereby prevented from burning the engineer or interfering with the manipulation of the parts. In addition to this the escaping steam or water will be thrown into the glass as soon as the stuffing-boxes are in place, thereby gradually heating it and avoiding the danger of breaking it by the entrance of the full volume of steam or water. The steam or water can be permitted to enter gradually by partially rotating the cocks in the valves, if desired.

By the use of my improved gage it is evident that the replacing of a broken glass can be performed much more conveniently than with the ordinary construction, as the stuffing-box may be quickly removed by unscrewing the two ends and the parts can then be cooled gradually or quickly by plunging them into cold water and the glass can be inserted and gradually warmed without danger of breaking.

After the glass has been secured in the glands between the stuffing-boxes the engineer can return to his position and quickly replace the stuffing-boxes upon the ends of the valves, turn the cocks in the valves, and the work is done.

Although I have shown what I consider the most desirable means of constructing my improved gage, yet I reserve the right to make such changes and alterations therein as will come within the scope of my invention—as, for instance, the valves may be connected with a water-column, which is connected with the head of the boiler by the valved pipes in the usual manner, and the drip-cock could be connected with the valve 2 adjacent to the cock 5 and lead from there to the ash-

pit or other convenient point, as shown in dotted lines in Fig. 2.

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

1. In a water and steam gage for boilers, the combination, with two valves, provided with means for closing the same, the outer portion of each of which is tapered and provided with a screw-threaded projection and the intermediate portion with a projection, of stuffing-boxes for said valves, each of which is provided with a projection for engaging with the projection of the valve, and with means for holding the glass, and nuts upon the outer ends of said valves for holding the stuffing-boxes in position, substantially as described.

2. In a steam and water gage for boilers, the combination, with two valves, each of which is bored longitudinally and provided near its outer end with a cross-perforation, of a cock located transversely of the bore, of stuffing-boxes, on the outer ends of said valves, each of which is provided with a transverse perforation to register with the cross-perforation of the valves, a gland in each stuffing-box, guard-rods for holding the stuffing-boxes apart, and means for holding the boxes upon the valves, substantially as described.

3. In a steam and water gage for boilers, the combination, with two valves, each of which is bored longitudinally and provided with a cross-perforation at its outer end, the outer end of the valve being tapered and provided with a screw-threaded projection, a cock seated across the longitudinal bore, a stuffing-box on the outer portion of each valve, provided with a cross-perforation to register with the cross-perforation of the valve, a drip-cock in one end of the cross-perforation of the lower stuffing-box, a screw in the end of the cross-perforation of the upper box, a screw-threaded gland at the opposite end of each of said cross-perforations, and guard rods and plates for securing said stuffing-boxes in their relative positions, and a nut upon the screw-threaded projection of each valve, substantially as described.

4. In a steam and water gage for boilers, the combination, with two valves, each of which is perforated longitudinally and transversely and provided with a bead near its inner end, of a cock arranged transversely of the longitudinal perforation, a stuffing-box removably secured upon the outer portion of each valve and provided with a projection for engaging with the bead on the valve, and a glass secured between the stuffing-boxes, substantially as described.

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