

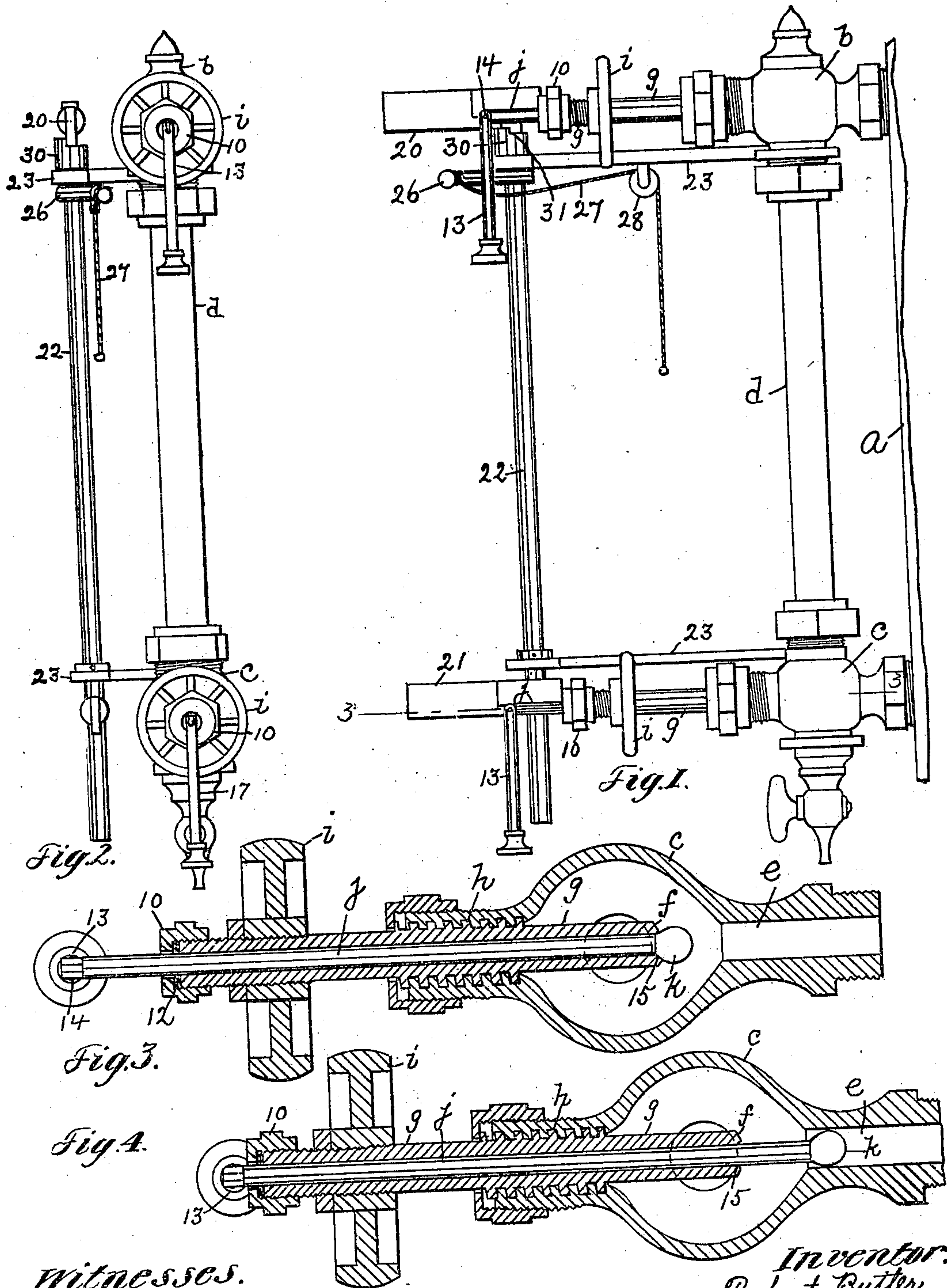
No. 837,035.

PATENTED NOV. 27, 1906.

R. BUTLER.
CLEANING DEVICE FOR FITTINGS.

APPLICATION FILED SEPT. 30, 1905.

2 SHEETS—SHEET 1.



Witnesses.
C. H. Barnett
J. Murphy

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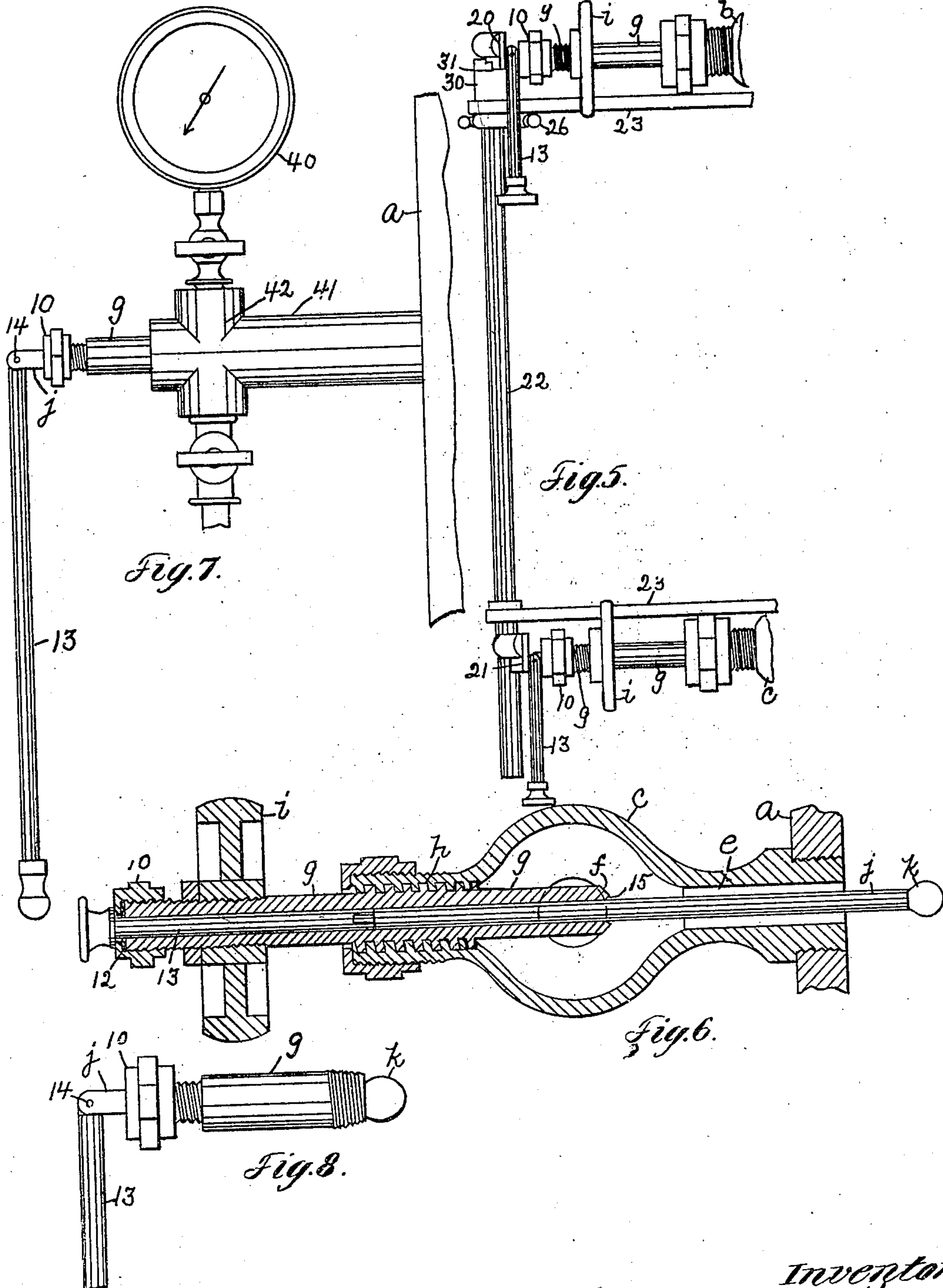
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ROBERT BUTLER, OF BOSTON, MASSACHUSETTS.

CLEANING DEVICE FOR FITTINGS.

No. 837,035.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed September 30, 1905. Serial No. 280,774.

To all whom it may concern:

Be it known that I, ROBERT BUTLER, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Cleaning Devices for Fittings, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to a clean-out device or apparatus for passages containing fluid, and is especially designed and adapted for use on boilers, pumps, and like apparatus containing fluid under pressure, and particularly in connection with gages, valves, crosses, T's, and like fittings. For this purpose I employ a plunger or rod extended through a sleeve adapted to be connected with a fitting and means for rendering a fluid-tight joint about the plunger-rod, as will be described.

The plunger-rod may and preferably will be made in two parts hinged together for a purpose as will be described. When the clean-out device is applied to the gage-cock of a boiler containing pressure—such, for instance, as a steam-boiler—the valve-stem for the gage-cock may be employed as the plunger-carrying sleeve, and the plunger may and preferably will be provided with an enlargement or head on its end constituting a valve, which coöperates with the sleeve and with the passage in the valve-fitting which communicates with the boiler, so that when the plunger-rod is moved into its operative position the head or valve on the end of the rod fits the passage substantially close. The plunger-rod or stem is made of sufficient length to extend through the passage and into the boiler, so as to free the passage from any sediment which may have accumulated within the same or at its inlet-mouth. Provision may also be made for simultaneously operating both the upper and lower plunger-rods coöperating with the upper and lower gage-cocks, so that in case the gage-glass should break the upper and lower passages in the upper and lower cocks may be practically closed substantially in an instant, whereby danger of scalding or otherwise injuring the engineer may be reduced to a minimum.

These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a side elevation of a sufficient portion of a boiler or other apparatus provided with steam-gages having my improved cleaning device attached thereto. Fig. 2 is an end elevation of the apparatus shown in Fig. 1 looking toward the right. Fig. 3 is a horizontal section on the line 3 3, Fig. 1, showing the plunger-rod in its withdrawn position; Fig. 4, a view similar to Fig. 3, showing the plunger-rod partially moved into the outlet-passage from the boiler; Fig. 5, a detail in side elevation, showing the plunger-rods in the position represented in Fig. 4. Fig. 6 is a horizontal section through one of the fittings, showing the plunger-rod as inserted through the passage and into the boiler. Fig. 7 shows the device applied to a modified form of steam-gage, and Fig. 8 a detail of the device shown in Fig. 7.

Referring to Fig. 1, *a* represents a steam-boiler, pump, or other apparatus or receptacle containing fluid, *b* an upper gage-fitting, *c* a lower gage, and *d* a glass connecting the gage-fittings *b* and *c*, all of which are of any usual or suitable construction. Each gage-fitting *b* and *c* is provided with a passage *e*, (see Fig. 3,) communicating with the boiler *a*, and is further provided with a valve *f*, having its stem *g* provided with screw-threads *h* and with the usual handle *i*, by turning which the valve *f* may be brought to its seat, so as to close the passage *e*.

In accordance with this invention the valve-stem *g* is made hollow and has extended through it a plunger or rod *j*, provided at its end with an enlargement or head *k*, which is of substantially the same size as the passage *e*, so as to permit the head *k* to pass freely through the passage *e*, yet fit the same substantially tight to throttle or reduce the amount of steam or other fluid which might escape through the passage *e* in case the glass tube *d* should break.

The hollow valve-stem *g* constitutes a plunger-carrying sleeve and is provided at its outer end with screw-threads which are engaged by a stuffing-box 10, containing suitable packing 12, whereby a fluid-tight joint is effected about the plunger-rod *j*.

The plunger-rod *j* may be made in a single piece; but I may prefer to make it in two pieces, one of which, as 13, is pivoted or hinged at 14 to the main rod *j* for a purpose as will be described. The head *k* may be made substantially round, so as to constitute a valve and coöperate with a seat 15 at the

end of the hollow stem or sleeve *g* when the cleaning-rod *j* is in its inoperative position. (Represented in Fig. 3.)

By reference to Fig. 3 it will be seen that in the normal or inoperative position of the cleaning-rod *j* the latter is withdrawn from the passage *e*, and the gage operates in the usual or well-known manner.

In case it is desired to clean the passage *e* from sediment the member or part 13 is turned up, so as to bring it into line with the plunger-rod *j*, and the latter is then forced into the passage *e* and through the same into the boiler, pump, or other structure, as represented in Fig. 6, thereby removing from the passage *e* and its inlet-mouth any sediment which would otherwise impede the flow of fluid through the said passage.

The cleaning device for both gage-fittings *b* and *c* are the same, and in case the gage-glass *d* should break the cleaning-rod *j* may have the function of a throttle-valve and may be moved into the passage *e*, so as to practically throttle the escape of fluid, or at least reduce the volume of fluid escaping through the passage *e* to such extent as to enable the engineer to turn the valve-stem or sleeve *g* by means of the hand-wheel *j* without danger of being scalded.

Provision may be made for simultaneously moving the plunger-rods *j* into the passages *e*, so as to throttle the fluid escaping therefrom, and one form of device for accomplishing this purpose is herein shown, the same consisting of two arms 20 and 21, fast on a vertically-arranged rod 22, mounted to turn in suitable brackets 23, attached to the fittings *b* and *c*, or it may be any other suitable support.

The rod 22 is provided with a crank or arm 26, having attached to it a chain or cord 27, shown in the present instance as leading over a pulley 28 and having its lower end placed within convenient reach of the engineer or other operator, so that the latter may by drawing down upon the cord 27 turn the rod 22 so as to cause the arms 20 and 21 to strike against the end of the clean-out rods *j*, and thereby move them a sufficient distance to carry the head *k* into the passage *e* of the gage-fittings *b* and *c*. Provision may also be made for retaining the cleaning-rods in this position against the pressure of the fluid, and for this purpose the upper bracket 23 is provided with a sleeve 30, through which the rod 22 extends, said sleeve having a stop or notch 31, with which the arm 20 cooperates when the said arms are turned to move the clean-out rods into their throttling position, as represented in Fig. 5, the upright portion of the notch 31 acting as a back-stop to prevent backward movement of the arm 20 and the rod 22, thereby retaining the clean-out rods in their operative position against the action of the

fluid-pressure upon the ball or head *k* and enabling the engineer to completely throttle the passages *e* by means of the valve *f*.

In Fig. 1 the device is shown as applied to a water-gage; but I do not desire to limit my invention in this respect, as the said device may also be applied to other forms of gages—as, for instance, as shown in Fig. 7, wherein the steam-gage 40 is connected with the boiler *a* by means of a pipe 41, having a cross connection 42, to one port of which, in line with the pipe 41, is attached the plunger-containing sleeve *g*, provided with the stuffing-box 10, the plunger having the jointed part 13.

So, also, I do not desire to limit my invention to the particular structures shown, as the plunger-containing sleeve *g*, the plunger *j* therein, and the stuffing-box 10 may be utilized in conjunction with a straight pipe leading from the boiler or other apparatus containing fluid.

It will be noticed that the plunger-rod *j* is extended through the sleeve *g* and is accessible from outside thereof, so that it can be positively moved by the operator in opposite directions in the passage *e*, thereby enabling the said rod to be worked or moved back and forth by hand in the passage and in this manner removing from said passage any sediment which may accumulate therein. It will also be noticed that the cleaning-rod is freely movable, and as a result the passage *e* can be substantially closed in an instant to throttle the steam in case the glass *d* should break. Furthermore, the rod *j* is limited in its movement in one direction by the head *k* and in the other by the thumb-piece or handle on the rod 13.

I claim—

1. The combination with a boiler, gage-fittings provided with passages communicating with said boiler, a gage-tube connecting said fittings, hollow valve-stems extended into the said fittings and cooperating with passages leading to the boiler, plunger-rods movable in said hollow stems, arms cooperating with said plunger-rods, a support for said arms, and means to move said support to cause the said arms to operate the said plunger-rods substantially simultaneously, for the purpose specified.

2. The combination with a fitting provided with a passage, a hollow stem or sleeve arranged in line with said passage, a rod extended through said sleeve and capable of being positively moved in both directions longitudinally in said sleeve or hollow stem and provided at one end with an enlargement or head of smaller diameter than said passage to permit said rod to be moved through said passage and to enable said sleeve and rod to be removed from the fitting without removal of the latter from the boiler, and means at the opposite end of said rod to limit the in-

ward movement of the same in said sleeve, substantially as described.

3. The combination with a fitting provided with a passage and with a hollow valve-stem in line with said passage and cooperating therewith, a rod extended through said hollow valve-stem and positively movable into and out of the said passage in opposite directions to permit it to be removed from said fitting with said sleeve without movement of the fitting, a stuffing-box attached to the hollow valve-stem and through which the said rod is extended, and means on said rod to limit the movement of said rod in said sleeve, substantially as described.

4. The combination with a fitting provided with a passage and with a hollow valve-stem in line with the said passage and cooperating therewith, a rod extended through said hollow valve-stem and movable into the said passage, a stuffing-box attached to the hollow valve-stem to effect a fluid-tight joint about the longitudinally-movable rod, and a second rod or stem pivotally connected to the longitudinally-movable rod or stem, substantially as described.

5. The combination with a boiler, of valve-fittings provided with passages leading thereto, a water-tube connecting said fittings, hollow valve-stems movable in said fittings and cooperating with said passages, plunger-rods movable in said hollow valve-stems and adapted to enter the said passages, and means to move said plunger-rods toward said passages substantially simultaneously, for the purpose specified.

6. In a clean-out device of the character described, in combination, a structure containing a fluid, a fitting having a passage communicating with said structure, a sleeve removably secured to said fitting in line with the said passage, a plunger-rod extended through said sleeve and adapted to be actuated from outside of the said sleeve to be entered into and withdrawn from the said passage, a device on the inner end of said plunger cooperating with the end of said sleeve to limit the outward movement of said

plunger-rod after the latter has been withdrawn from said passage, said device being smaller than the diameter of said passage, and means to effect a fluid-tight joint between the said plunger and said sleeve, substantially as described.

7. The combination with a fitting provided with a passage, of a sleeve connected with said fitting substantially in line with said passage, a rod extended through said sleeve and provided at its inner end with an enlargement of smaller diameter than said passage to form a valve to close the inner end of said sleeve, and at its end outside of the said sleeve with means to limit the inward movement of said rod, and means for effecting a pressure-tight joint between the said rod and said sleeve, substantially as described.

8. The combination with a fitting having a passage, of a sleeve removably connected with said fitting substantially in line with said passage, a rod extended through said sleeve and adapted to be entered into and withdrawn from said passage, and means for effecting a fluid-tight joint between said rod and sleeve, and means on said rod to limit its movement in opposite directions, the means on one end cooperating with said sleeve to close the inner end of the same, substantially as described.

9. The combination with a fitting having a passage, of a sleeve removably connected with said fitting substantially in line with said passage, a rod extended through said sleeve and provided with a head which is movable through said passage, said rod being capable of being withdrawn from said fitting simultaneously with said sleeve without removal of said fitting, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT BUTLER.

Witnesses:

JAS. H. CHURCHILL,
J. MURPHY.