

No. 656,420.

Patented Aug. 21, 1900.

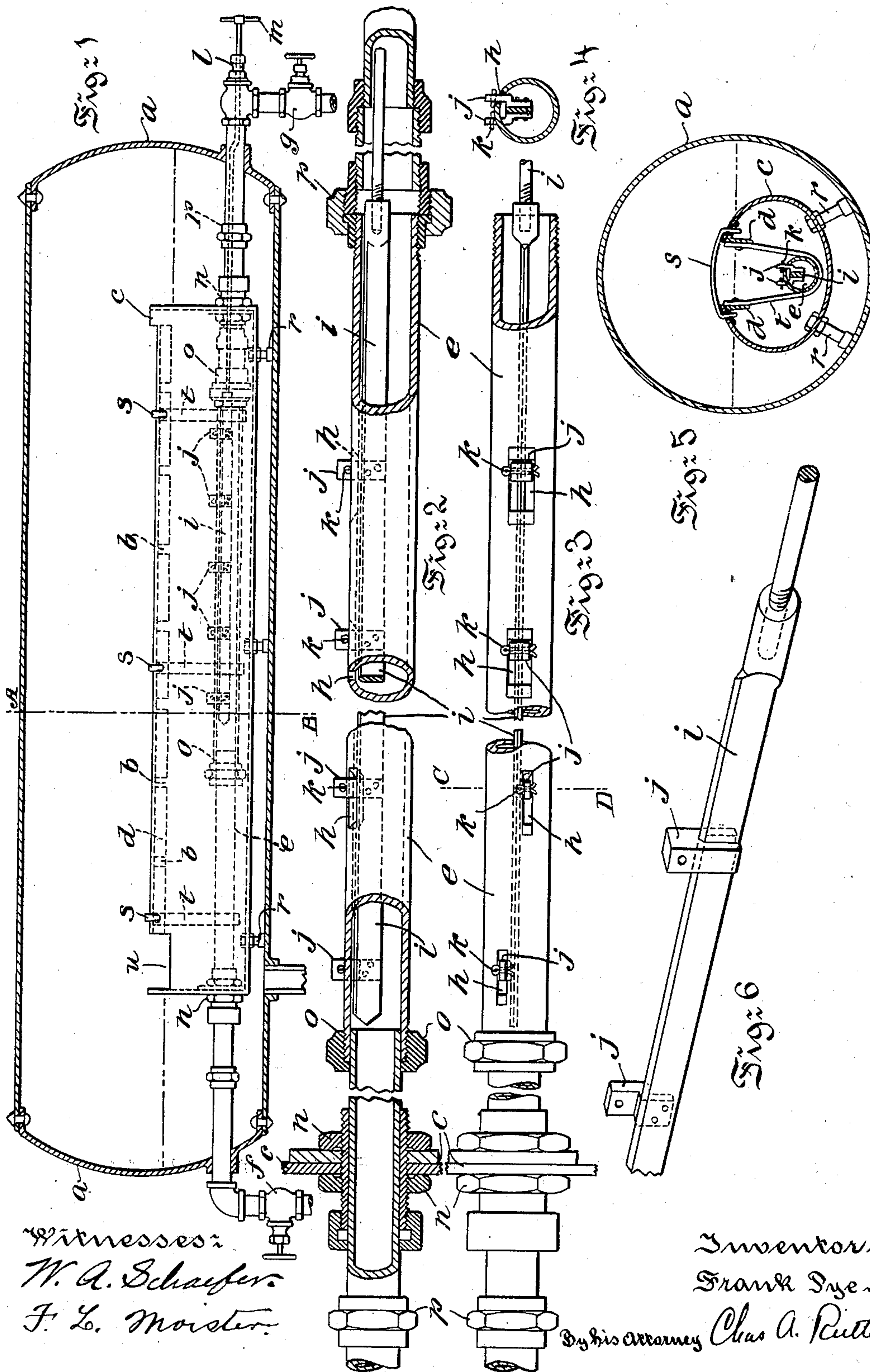
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WATER PURIFIER FOR STEAM BOILERS.

(Application filed Jan. 2, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
W. A. Schaefer.
F. L. Moister.

Inventor.
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By his attorney Chas. A. Rutter

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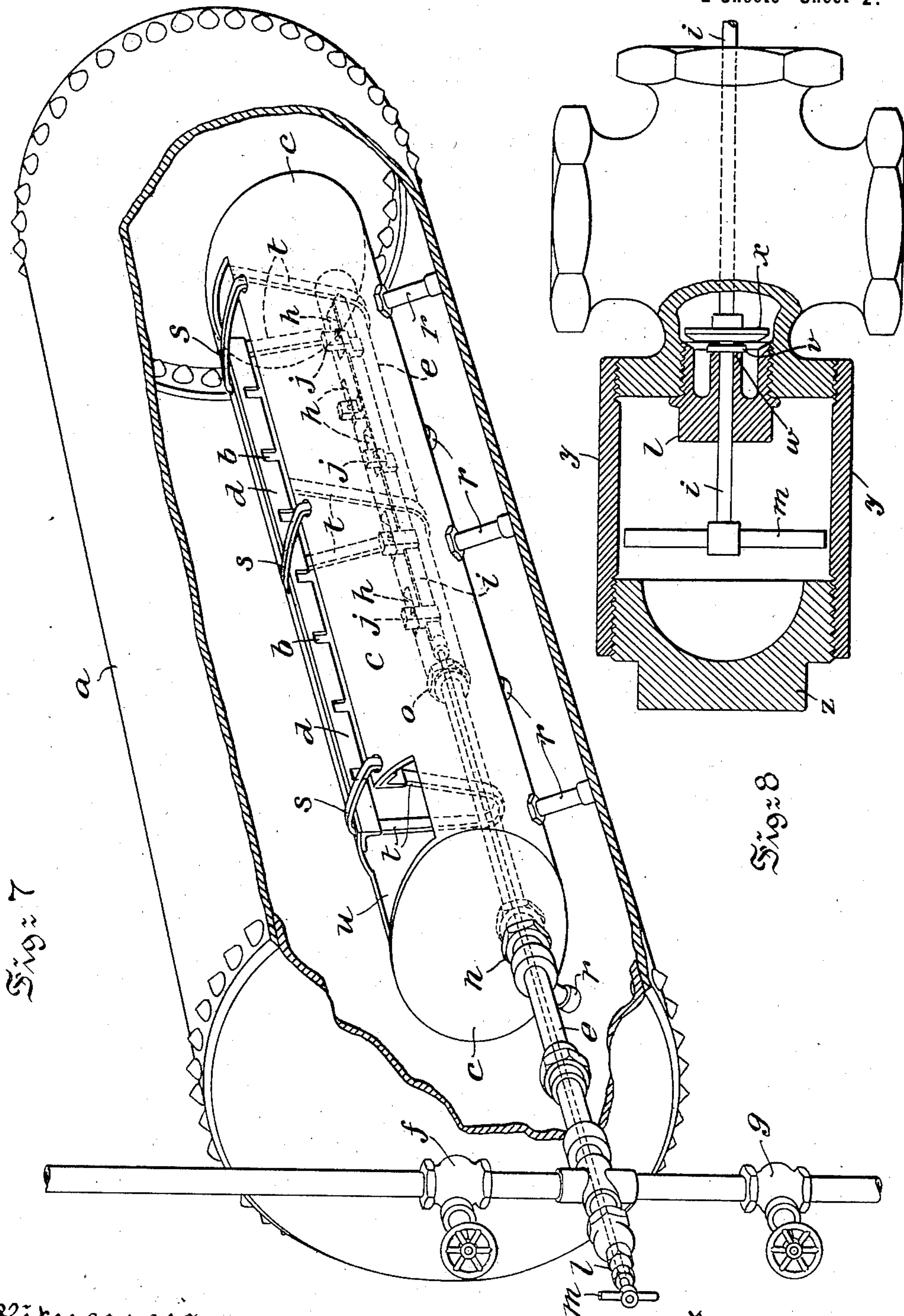
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UNITED STATES PATENT OFFICE.

FRANK PYE, OF PHILADELPHIA, PENNSYLVANIA.

WATER-PURIFIER FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 656,420, dated August 21, 1900.

Application filed January 2, 1900. Serial No. 49. (No model.)

To all whom it may concern:

Be it known that I, FRANK PYE, a subject of the Queen of Great Britain, and a resident of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Water-Purifiers for Steam-Boilers, of which the following is a specification.

My invention relates to improvements in overhead boiler-feeding devices, and more particularly to improvements in the device for which Letters Patent of the United States were issued to me on October 3, 1899, No. 634,272, the object of my present invention being to improve the details of my apparatus, as hereinafter fully described.

In the accompanying drawings, forming part of this specification, and in which similar letters of reference indicate similar parts throughout the several views, Figure 1 is a central sectional elevation of the upper drum of a water-tube boiler fitted with my water-feeding and sediment-collecting device, the latter being shown in side elevation; Fig. 2, a side elevation, partly broken away and partly in section, of my water-feeding and blow-off tube and connected parts; Fig. 3, a plan of Fig. 2; Fig. 4, a section of Fig. 2 on line C D; Fig. 5, a section of Fig. 1 on line A B; Fig. 6, a perspective view of part of rod carrying cleaning projections adapted to enter water-passages in feeding and blow-off tube; Fig. 7, a perspective view, partly broken away, of the upper drum of a boiler and of a modification of my sediment-collecting box and water-feeding and blow-off tube; Fig. 8, a central sectional elevation through the gland through which the outer end of cleaning-rod passes.

a is a steam-boiler, in the drawings shown as the upper drum of a water-tube boiler; *c*, a metal box open at the top and furnished along the sides of the opening with downwardly-projecting flanges *d*, which are furnished at intervals with openings *b*. The box *c* is placed in the boiler, the water-line in the latter reaching slightly above the bottom of the flanges *d*.

e is a feed-water pipe passing into the boiler and thence into box *c*. In Fig. 1 the pipe *e* passes completely through the boiler and box

and is furnished at opposite ends of the boiler with stop-cocks *f g*. In Fig. 7 the rear end of pipe *e* is plugged and terminates within box *c*, the stop-cocks *f g* both being at the front end of the boiler.

h shows openings in the top of pipe *e*. The ends of these openings are beveled from the top downward, as shown in the drawings. One or two of the rear openings are placed on top of the pipe—that is, along its central line. The other openings are placed one to one side of the central line, the next to the other side of this line, and so on, and each opening is preferably somewhat larger than the one directly in front of it, as shown best in Fig. 2.

i is a rod passing through pipe *e* and furnished with upwardly-projecting fingers *j*, which pass through the openings *h* in pipe *e*, and which are furnished with cotter-pins *k*, which engage top of pipe *e* and hold the rod in place. An extension of rod *i* passes out of pipe *e* through a gland *l* and is furnished with an operating-handle *m*. The rod *i*, with its fingers *j*, can be moved back and forth in order to clear the openings *h* of sediment, which without some such arrangement would quickly close up the latter. The holes *h* in the forward end of the pipe *e* are staggered, as shown, so that there will be no tendency of the rod to turn upon its axis, and the rear holes are larger than the forward ones in order to equalize the flow of water at the forward and rear portions of the pipe. The pipe *e* passes through glands *n*, carried by the forward and rear ends of the box *c* in order to permit expansion without dangerous results. For the same reason the pipe *e* is made in two or more pieces of different diameters, which are united by glands *o*, the smaller piece being adapted to slide backward or forward within the larger. For purposes of construction the rear ends of pipe *e* are secured by a union *p*, Figs. 1 and 2.

r represents legs carried by box *c*, which hold this box clear of the bottom of boiler *a*.

s represents removable stays passing from one side to the other of the opening in the top of box *c*, which prevent the sides of this opening from spreading.

t represents straps the upper ends of which

are secured to the sides of the openings in box *c* and the lower ends of which support the pipe *e*.

5 *u*, Figs. 1 and 7, is an opening in the forward end of box *c*, deeper than the longitudinal opening in the top of the box and connected therewith, through which the water passing to this box from pipe *e* escapes to the boiler.

10 In operation water is admitted to the pipe *e* from any suitable source of supply and escapes through openings *h* to the interior of box *c*, within which the water lies comparatively still and in which all or a greater part
15 of the sediment carried by the water is deposited. From box *c* the water escapes through opening *u* to the boiler. Any tendency of the water to surge across the top of the box is checked by the flanges *d*. The box
20 is preferably made oval in cross-section to correspond with the usual shape and size of the manhole in the boiler end, and it is placed in the boiler by being passed through this hole.

25 In Fig. 1 the pipe *e* is shown passing clear through the boiler. To admit feed-water in this construction, the stop-cock *f* is opened, while the stop-cock *g* is closed. In order to blow out the boiler, the cock *f* is closed and
30 the cock *g* opened.

In Fig. 7 both the feed and blow-off cocks are at the forward end of the boiler and the rear end of pipe *e* is plugged, both the feed and discharge taking place through the forward
35 end of this pipe, as will be readily understood from the drawings.

In Fig. 8 the construction of the outer end of the cleaning-rod *i* is shown as well as the interior of the gland through which this rod
40 passes. *v* is a disk upon rod *i*, which when the rod is not in use is adapted to rest against a seat *w* on the interior of the gland. *x* is a disk carried by rod *i* inside of disk *v* and of greater diameter than this disk, but which
45 does not come to a seat, the purpose of which is when the boiler is being blown out to direct a current of water against the seat *w* in order to keep it clean. *y* is a short section of pipe which may be screwed on gland *l* in order to
50 cover and protect the operating-handle *m* and to protect the packing from the heat of the fire-box. *z* is a plug closing the outer end of cover *y*.

Having thus described my invention, I
55 claim—

1. In a boiler feeder and purifier, in combination, a boiler, a sediment-collecting box within said boiler open at the top, a feed-wa-

ter pipe within said box furnished with openings along its top, and means carried by said 60 pipe and operated from without said boiler whereby said openings may be freed from obstructions at will.

2. In combination a boiler, a sediment-collecting box, within said boiler, open at its 65 top, a feed-water pipe within said box furnished with openings on its top, a rod within said box, extending out of said boiler and fingers carried by said rod entering the holes in said feed-pipe. 70

3. In combination, a boiler, a sediment-collecting box within said boiler and open at its 75 top, a feed-water pipe within said box furnished with openings on its top, some of which are staggered, a gland on said pipe without the boiler, a rod passing through said gland, fingers carried by said rod and passing through said openings in said pipe, and pins passing through said fingers and resting on top of said pipe. 80

4. In a water-purifier for steam-boilers the combination with the finger-carrying rod, the perforated feed-pipe, and the gland on said pipe through which said rod passes, of a seat 85 on said gland, a disk carried by said rod adapted to rest on said seat, and a disk on said rod separate from and inside said first disk, all substantially as and for the purposes set forth.

5. In combination, a boiler, a sediment-col- 90 lecting box within said boiler open at its top, notched flanges secured along the sides of said opening, movable stays passing across and secured to the sides of said opening, and a feed-pipe within said box furnished with a 95 telescopic joint to permit expansion and contraction.

6. In combination, a boiler, a sediment-col- 100 lecting box, oval in cross-section, within said boiler and furnished with a longitudinal opening along its top and with an opening connected with, but lower than said longitudinal opening, legs supporting said box, a feed-pipe within said box furnished with openings along 105 its top, a rod passing from the outside of said boiler into said feed-pipe, fingers on said rod passing through the openings in said pipe, glands carried by the ends of said box through which said pipe passes and telescopic joints on said pipe to permit expansion and con- 110 traction.

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Witnesses:

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