T. F. Field,

Check Valve,

No 61,412, Patented Jan. 22, 1867.

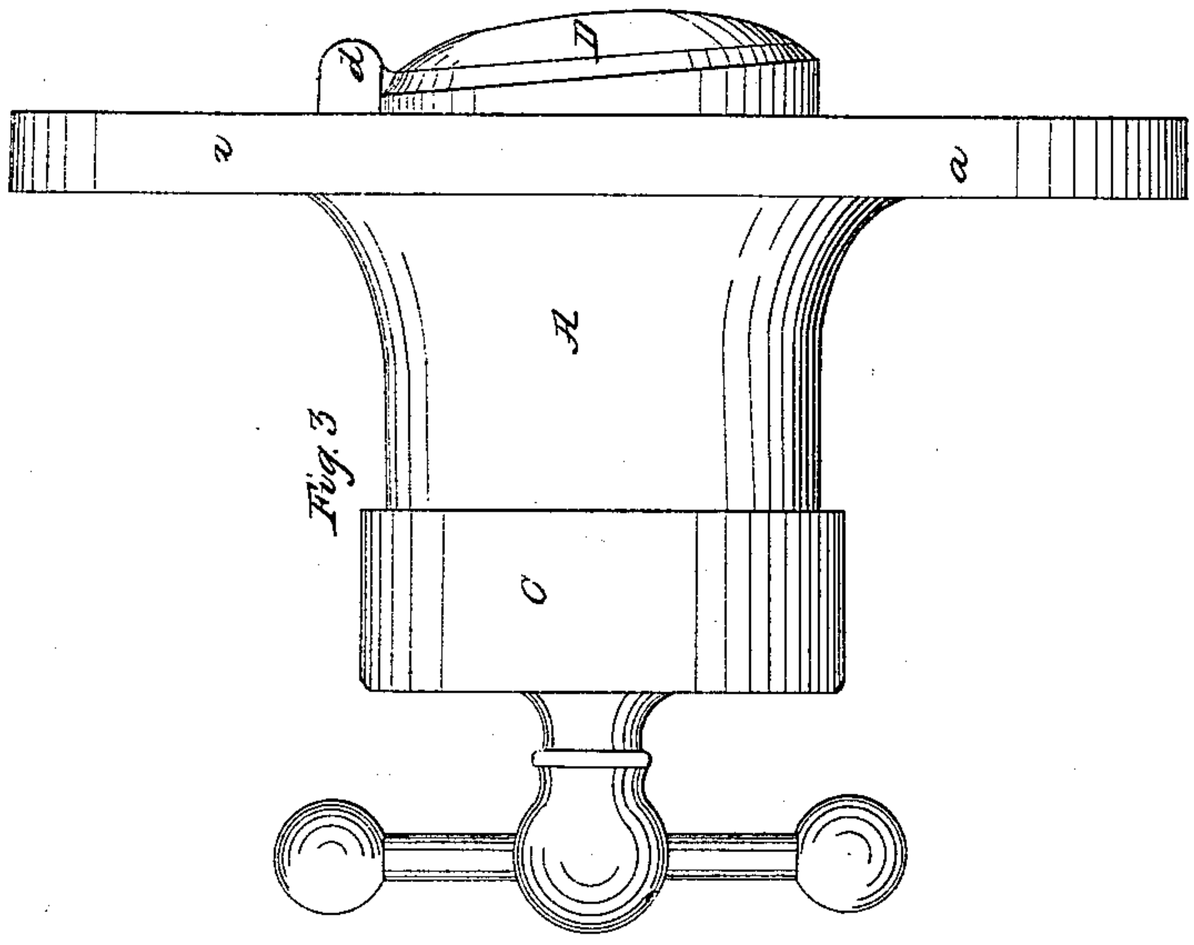

Fig. 3

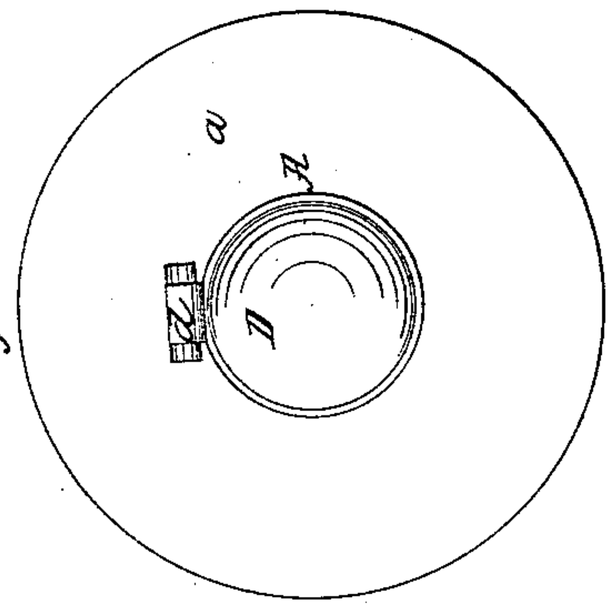

Fig. 2.

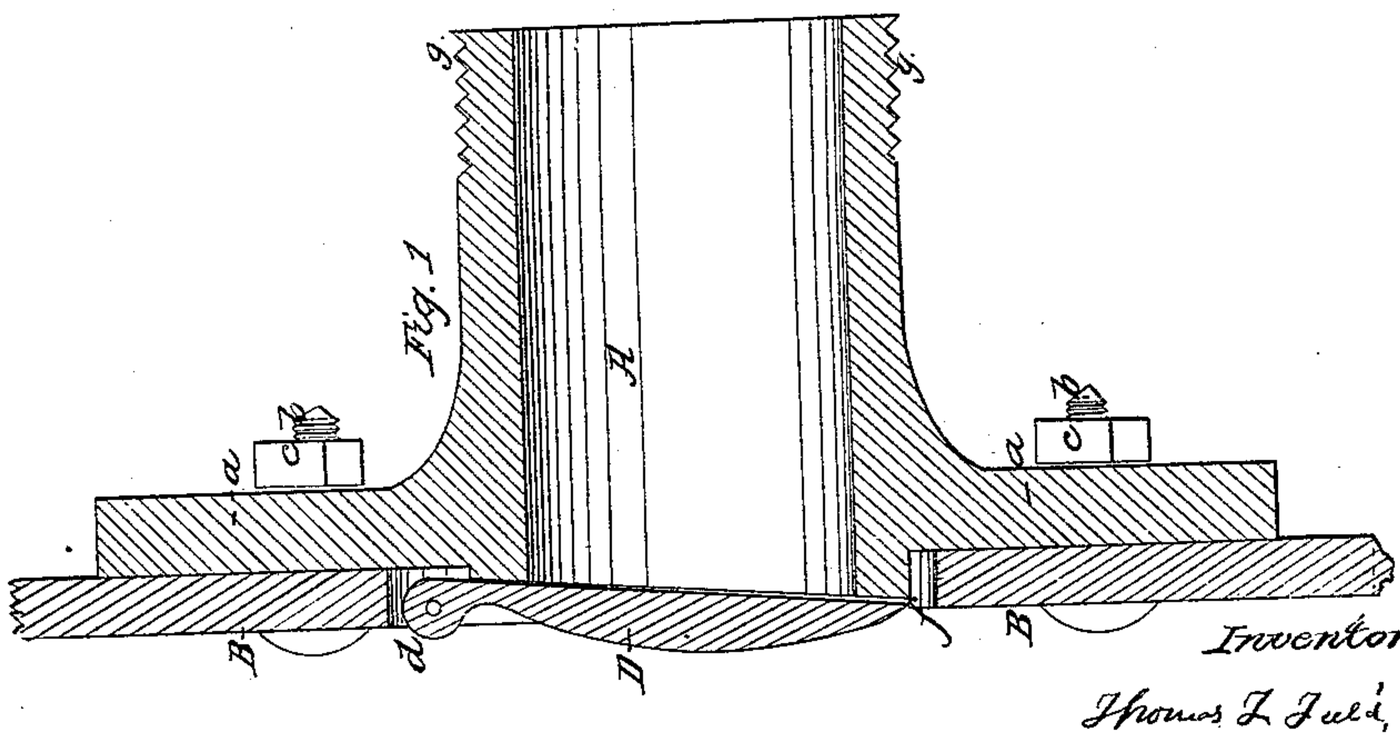

Fig. 1

Witnesses

L. Browne

R. D. Smith

Inventor:

Thomas T. Field,

By his atty.

J. L. Norris

United States Patent Office.

THOMAS F. FIELD, OF SAUGERTIES, NEW YORK.

Letters Patent No. 61,412, *dated January* 22, 1867.

IMPROVED DEVICE FOR CHANGING WATER IN STEAM GENERATORS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS F. FIELD, of Saugerties, in the county of Ulster, and State of New York, have invented an Improved Device for Changing the Water in Steam Boilers while still under pressure of steam; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a central vertical section of the device, as attached to the head of a steam boiler.

Figure 2, a view of the inner end thereof.

Figure 3, a side view of the same with its cap on, as when not in use.

Like letters designate corresponding parts in all of the figures.

The device consists of a short pipe or nozzle, A, which is provided with a flanch, *a*, by which it is secured to the head B of a steam boiler, above the water-line thereof, by means of bolts *b b* and nuts *e e*. The outer end is provided with a screw-thread, *g*, whereby the end of a hose is attached when water is to be let into the boiler, or on which a cap, C, (fig. 3,) is screwed to secure all when the engine is at work. Thus far, the invention does not differ from the ordinary construction. My invention consists in a valve, D, hinged to the inner end of the pipe A, so as to close the same outwardly, and to open of itself, under pressure, inwardly. The hinge *d* of the valve is at the top, so that the valve can close by its own weight, and the valve-seat is preferably a little inclined, as shown, so that the valve will close down more firmly by its own weight. The hole *f*, in the boiler head, is made large enough to allow the valve to play.

The use and advantages of this valve applied to the fixed nozzle or pipe are these: Ordinarily, when it is required to change the water in the boilers, (especially marine boilers,) to prevent incrustation by salt or the deposit of sediment from foul water, the fires must be put out, and the engine lie idle till the water cools down and the pressure of steam ceases, which usually requires from one-half to three-fourths of an hour delay; and if the steam has not wholly subsided, when the hose is attached it blows into the hose and scalds the leather, and thus destroys it—a frequent accident; and sometimes the sudden pressure of the steam let in bursts the hose. My invention obviates all of these objections; for when the hose is attached to the nozzle A, no steam can come out till the valve D opens, and this valve cannot open till the pressure of water in the hose (generally supplied under pressure from hydrants or force-pumps) overcomes the pressure of the steam inside and flows into the boiler and condenses the steam. If the pressure of water in the hose is greater than that of the steam in the boiler, then the water can be changed immediately on putting on the hose; but if it is not sufficient, the fire has only to be slackened somewhat till the pressure of the water becomes sufficient. By the use of this valve, also, there is no difficulty nor danger in attaching the hose to the nozzle on account of the steam blowing out.

Another advantage sometimes incident to the boilers of steamboats is, that the valve D (if the cap C is habitually left off, it not being a necessary part of the device) will prevent the collapse of the boiler, in case of the sudden sinking of the boat and condensation of the steam in the boiler. Such accidents are not uncommon with the old plan of feed nozzle, when gunboats or other war vessels are suddenly sunk by the enemy's fire. But they could not happen with any invention applied to the boiler.

What I claim as my invention, and desire to secure by Letters Patent, is—

The valve D applied to and in combination with the change-water feed nozzle of steam boilers, and operating in connection with a feed pipe or hose under pressure, substantially as and for the purposes herein set forth.

The above specification of my improved device for changing the water in steam boilers signed by me this 26th day of April, 1866.

THOS. F. FIELD.

Witnesses:

J. S. BROWN,

JOHN H. FIELD.