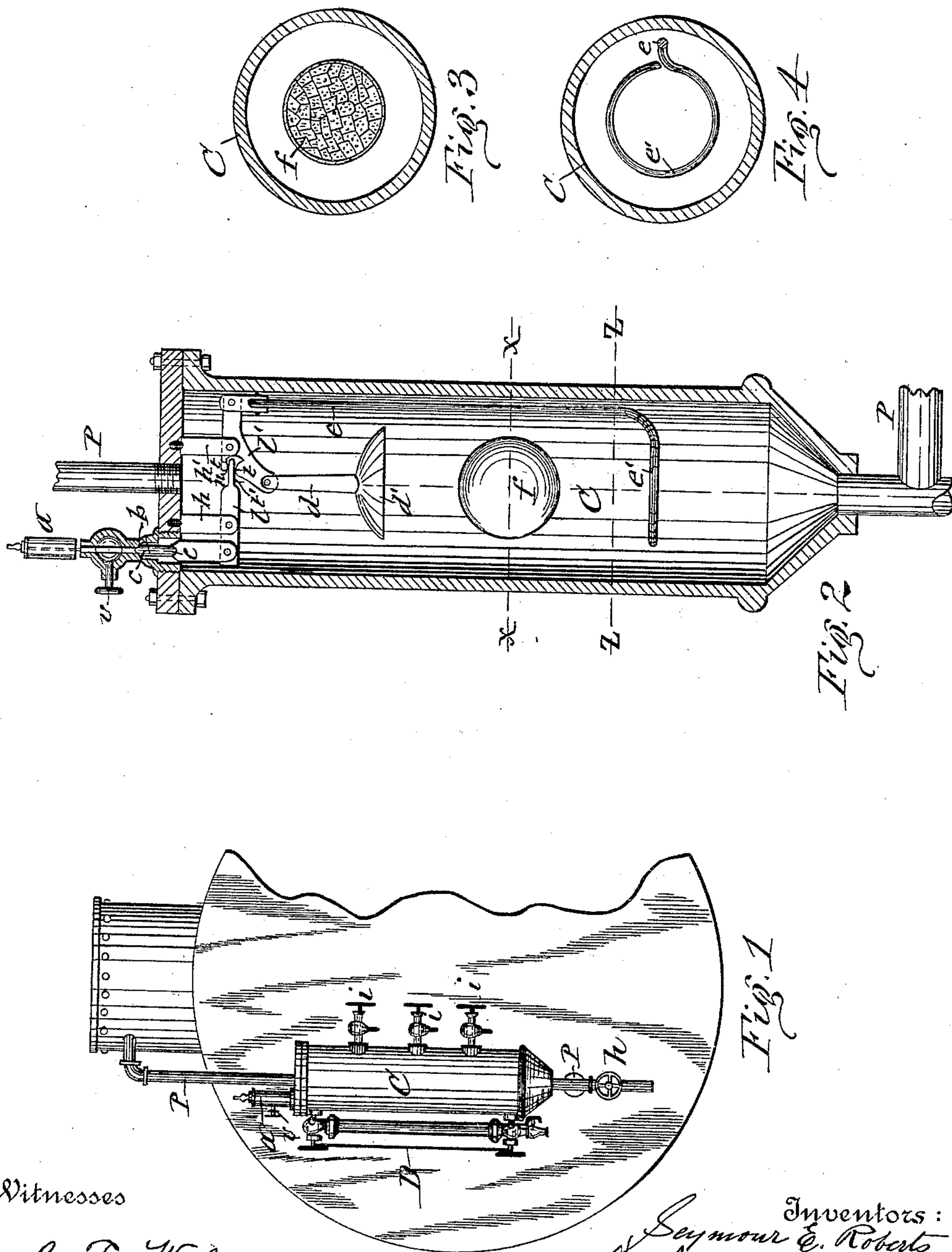


(No Model.)

S. E. ROBERTS & J. E. LATHE.
WATER ALARM FOR STEAM BOILERS.

No. 444,713.

Patented Jan. 13, 1891.



Witnesses

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UNITED STATES PATENT OFFICE.

SEYMOUR E. ROBERTS, OF ONEIDA, AND JAMES E. LATHE, OF VERNON,
NEW YORK.

WATER-ALARM FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 444,713, dated January 13, 1891.

Application filed September 26, 1890. Serial No. 366,212. (No model.)

To all whom it may concern:

Be it known that we, SEYMOUR E. ROBERTS, of Oneida, in the county of Madison, in the State of New York, and JAMES E. LATHE, of Vernon, in the county of Oneida, in the State of New York, have invented new and useful Improvements in High and Low Water Alarms for Steam-Boilers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of high and low water alarms of steam-boilers in which a float is located in a case connected to the exterior of the boiler at the steam and water spaces thereof, and in rising and falling with the water in the case said float actuates the valve of the alarm-whistle connected to the said case.

Our present invention consists in an improved construction and combination of parts constituting a high and low water alarm which is simple, inexpensive, and reliable in its operation, as hereinafter fully described, and specifically set forth in the claim.

In the annexed drawings, Figure 1 is an exterior view of the high and low water alarm and its attachment to the boiler. Fig. 2 is an enlarged vertical transverse section of a high and low water alarm embodying our improvements; and Figs. 3 and 4 are horizontal transverse sections respectively on lines $x x$ and $z z$, Fig. 1.

Similar letters of reference indicate corresponding parts.

C represents a cylindrical case placed erect near the exterior of the boiler and extending above and below the high and low water lines thereof and communicating therewith by pipes P P, connected to the upper and lower portions of the case.

To the top of the case C, at one side thereof, is attached a steam-whistle a , the valve b of which is directly over a vertical channel in the top plate or cap of the case C, and through said channel is extended the valve-stem c , which opens and closes the valve b .

To the under side of the cap of the case, at opposite sides, at the axial center thereof, are secured two hangers h and h' , and to said hangers are pivoted, respectively, the levers

l and l' , which together extend across the interior of the case and are coupled or hinged to each other between the hangers. In order to allow said lever to oscillate freely vertically, we make their connection by providing the end of the lever l' with a notch n , which is widened vertically at each end and formed with intermediate bearing-points $t t$, and by forming the lever l with a tongue t' , which extends into the notch n and between the bearing-points $t t$, as shown in Fig. 2 of the drawings. The outer end of the lever l is connected to the valve-stem c , and to the outer end of the lever l' is connected a pendent rod e , which is extended to the lower portion of the case and terminates with a horizontal ring or other suitable annular catch e' near the low-water line and concentric with the case. From the inner end of one of the levers, preferably the lever l' , is suspended a push-bar d , which terminates at its lower end with a suitable horizontal annular enlargement d' , concentric with the case, to properly receive the upward pressure of the float f , which is preferably of globular shape and allowed to play freely between the catch or ring e' and annular enlargement d' . This arrangement of the annular parts d' and e' , concentric with the case, insures central bearings of the float on said parts, and thus obviates lateral strain on the same. We prefer to form the float of a thin metallic shell packed with cork, so as to prevent said shell becoming charged with water in case the shell should leak.

The described high and low water alarm operates as follows: When the water in the boiler is reduced to the low-water line, the float f , having descended correspondingly, is brought to rest upon the catch e' , and the weight of said float draws down the rod e , and thereby actuates the levers l' and l , so as to draw down the valve-stem c , and thereby allow steam to escape from the case to the whistle to sound the same. As soon as sufficient water is forced into the boiler to raise the water above the low-water line the float f is lifted from the catch e' . The lever l' , being thus relieved of the weight of the float, allows the push-bar d to draw down the end of the lever l' , to which it is connected, and thereby causes the other lever l to push up

the valve-stem *c* and close the valve of the whistle. The two levers *l l'* are nearly balanced. The inner ends of said levers, with the push-bar connected thereto, are only
 5 weighted sufficiently to overbalance the outer ends of said lever when relieved of the weight of the float *f*, as before stated, and the addition of the weight of the float to the outer
 10 ends of the lever *l'* overbalances the inner ends of the levers. When the water in the boiler rises above the high-water line, the float *f* forces the push-bar *d* upward, and thereby tilts the levers *l l'*, so as to draw down
 15 the valve-stem *c*, and thus sounds the alarm-whistle *a*. Said whistle may be provided with an extra valve *v*, by which to prevent the whistle from sounding while blowing off the boiler. To the lower end of the case *C* we
 20 connect a blow-off cock *h* to allow the water to be blown out of the case when required to clean the same.

The usual water-glass *D* and gage-cocks *i i* may be attached to the case as in similar apparatus.

25 What we claim as our invention is—

In combination with the boiler, the upright cylindrical case *C*, connected to the exterior

of said boiler and extending above and below the high and low water line thereof, the whistle
 30 *a*, connected to the top of said case at one side thereof and provided with the valve *b*, the hangers *h h'* at opposite sides of the axial center of the case, the levers *l l'*, fulcrumed on said hangers and coupled together between the same, the valve-stem *c*, connected
 35 to the outer end of the lever *l*, the push-bar *d*, suspended from the coupled end of one of said levers and terminated with a horizontal annular enlargement *d'*, concentric with the case, the horizontal annular catch *e'*, sus-
 40 pended from the opposite end of the lever *l'* and also concentric with the case, and the float *f*, disposed between said push-bar and catch and adapted to play freely between the same, substantially as described and shown. 45

In testimony whereof we have hereunto signed our names this 16th day of September, 1890.

SEYMOUR E. ROBERTS. [L. S.]
 JAMES E. LATHE. [L. S.]

Witnesses:

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