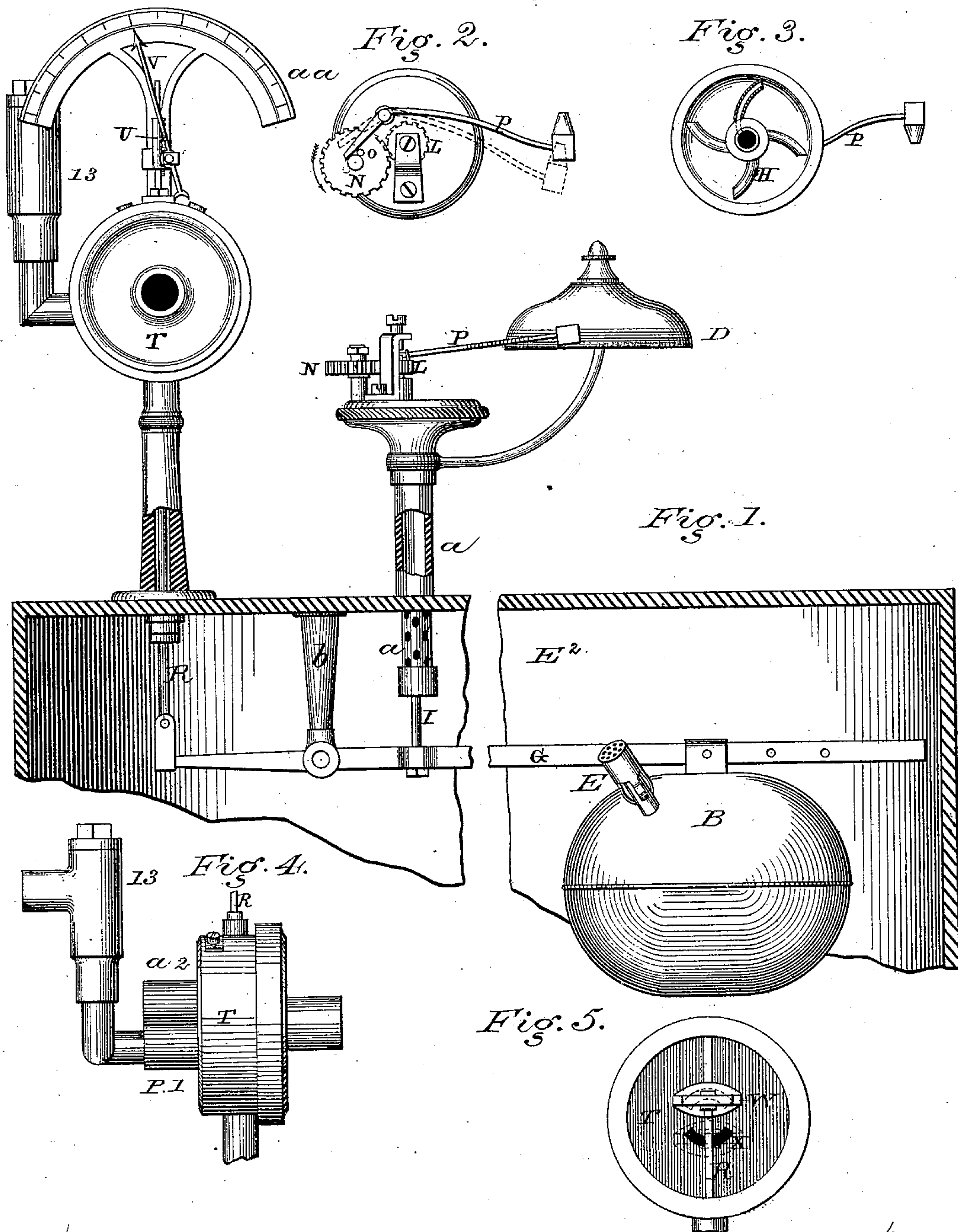


H. & O. AMÜNDSEN.
Supplying Water to Steam-Boilers.

No. 227,145.

Patented May 4, 1880.



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UNITED STATES PATENT OFFICE.

HANS AMUNDSEN AND OLE AMUNDSEN, OF LITTLE FALLS, WISCONSIN.

SUPPLYING WATER TO STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 227,145, dated May 4, 1880.

Application filed October 17, 1879.

To all whom it may concern:

Be it known that we, HANS AMUNDSEN and OLE AMUNDSEN, of Little Falls, Polk county, Wisconsin, have invented a Machine to Supply Water in Steam-Boilers and Regulate the Right Quantity of Water Therein, so that steam-boilers will never burst or explode, of which the following is a specification.

Our invention relates to an improvement in low-water indicators for steam-boilers; and it consists in the combination of a perforated pipe having a valve placed in its lower end with a revolving wheel which operates an alarm mechanism, so as to give alarm when the water is low.

It also consists in attaching to the rod which operates the low-water indicator a valve for controlling the inlet of water, whereby the rod is made to perform a double function, as will be more fully described hereinafter.

Figure 1 is a side elevation of our invention, partly in section. Fig. 2 is a plan view of the alarm mechanism by itself. Fig. 3 is a longitudinal section of the same, showing the wheel. Figs. 4 and 5 are detail views of the low-water indicator and the connecting parts.

E² represents a steam-boiler, of any desired shape, size, or construction, and which has the hanger *b* projecting down from its top, and in the lower end of which hanger is pivoted the lever *G*, upon which the float *B* is placed. This float may be of any desired construction, and is adjustable back and forth upon the lever according to the height to which it is desired the water in the boiler shall rise. Projecting from the top of this float is a short pipe, which has a strainer, *E*, placed upon its top. This pipe extends up to near the top of the boiler, and is provided with a strainer, so as to prevent any dirt or impurities from getting into the float.

Passing down through the top of the boiler is a perforated pipe, *a*, which has a valve placed in its lower end, and which valve is connected with the lever *G* by the rod *I*. Under this valve is placed a spring, for the purpose of throwing the valve back into position again

as soon as the lever leaves it free to move. In the top of this pipe *a*, which is enlarged for the purpose, is placed a small turbine wheel, *H*, the shaft of which extends up through the enlarged part of the pipe *a*, and has a pinion, *L*, secured to it. This pinion *L* meshes with the wheel *N*, which has a stud or projection, *O*, extending above its top, for the purpose of operating the bell-lever *P*.

As soon as the water falls below a certain level the lever *G* draws the valve in the pipe *a* down below the top perforations, when the steam at once rushes up into the pipe and through the arms of the wheel *H*, causing the wheel to revolve, and thereby communicate motion to the wheels *L* *N*, causing the bell-lever *P* to strike constantly against the bell *D*, and give alarm and call attention to the fact that the water is below the safety-level.

To the short end of the lever *G* is connected a rod, *R*, which passes up through the cylinder *T*, and has the rack *U* secured to its upper end. This rack *U* meshes with a small pinion on the same shaft as the indicator *B*, which shows the height of the water in the boiler. Through the rear side of this cylinder *T* is made an opening, *X*, and secured to the rod *R* is a valve, *W*, which, when the rod *R* moves up and down, opens or closes the valve to admit or shut off the supply of water to the boiler.

The feed-water is fed to the cylinder through pipe *13*. From the pipe *13* it passes through the short pipe *P'* into the cylinder *T*. In case there is sufficient water in the boiler, and the valve *W* has closed the opening *X*, the water passes out through the pipe *a*², back to the supply-source.

By thus placing the valve *W* upon the rod *R*, the rod is made to perform the double function of operating the indicator which shows the height of the water in the boiler and of operating the valve which controls the feed-water supply.

Having thus described our invention, we claim—

1. In a low-water indicator for boilers, a

wheel, H, having hollow arms, through which the steam escapes, and which, in revolving, operates the wheels L N and lever P, substantially as described.

- 5 2. In a low-water indicator for boilers, the combination of the lever G and float B with the rod R, provided with the valve W and rack U, whereby it is made to control both the indicator and the supply of feed - water, all

constructed and arranged substantially as set forth.

Signed this 7th day of March.

HANS AMUNDSEN.

OLE AMUNDSEN.

In presence of—

NELS OTTERSON,
SEVERINE BABCOCK,
V. M. BABCOCK.