N. H. Bundy.

Boiler Water-Gauge.

No. 72793 Patented Dec. 31, 1867.

Fig. 1

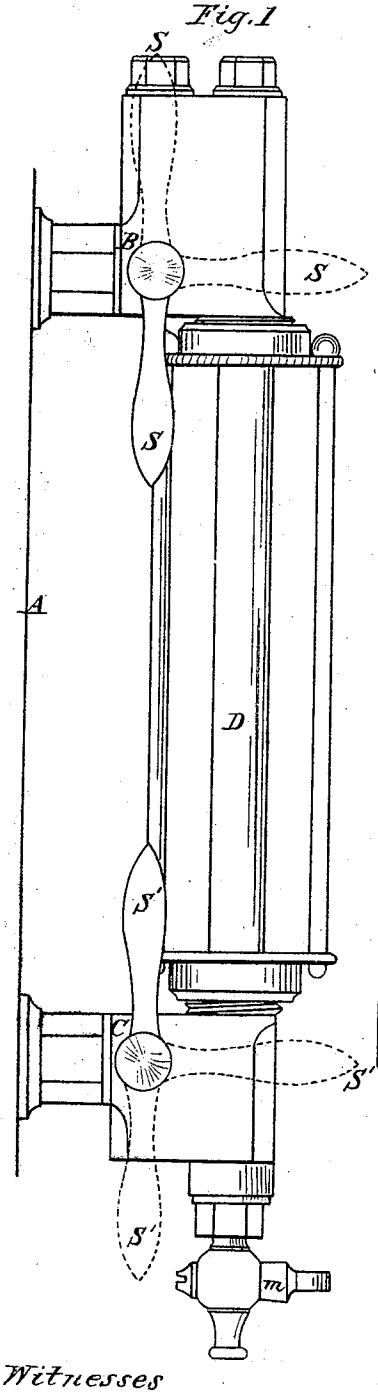
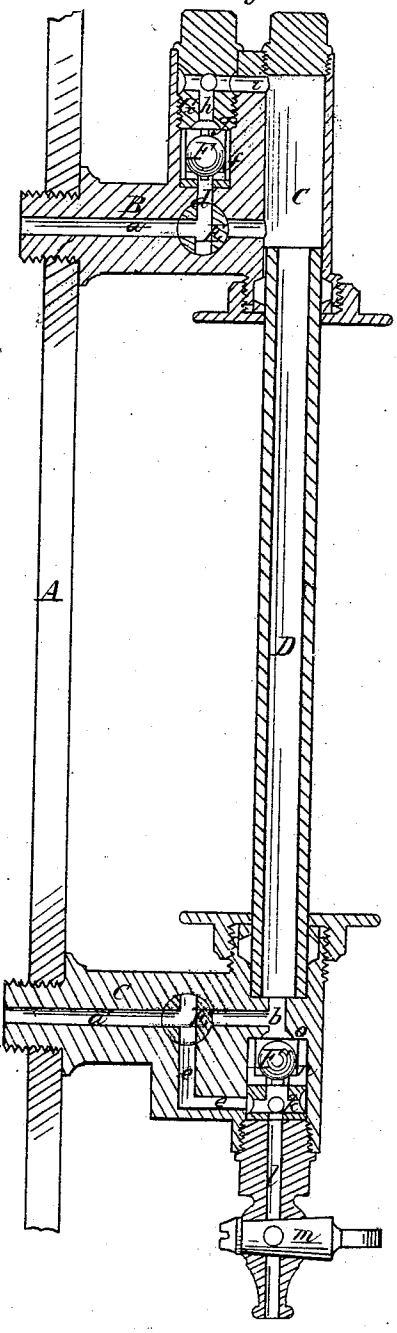


Fig. 2



Witnesses

A. Keller

D. Brenan

Inventor

Nelson H. Bundy

United States Patent Office

NELSON H. BUNDY, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND E. PHILBRICK, OF SAME PLACE.

Letters Patent No. 72,793, *dated December* 31, 1867.

IMPROVEMENT IN BOILER WATER-GAUGES.

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, NELSON H. BUNDY, of the city, county, and State of New York, have invented a new and useful Improvement on Water-Gauges, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming a part of this specification, and in which—

Figure 1 represents a side view of a water-gauge constructed according to my improvement, and

Figure 2 a sectional elevation of the same, also viewed from the side.

Similar letters of reference indicate corresponding parts.

My improvement in water-gauges for steam-boilers consists, in combination with an automatic valve-arrangement, of a three-way cock, and novel arrangement of passages at opposite ends of the gauge, for facilitating blowing off through the gauge-tube, preventing escape of water or steam when required to remove the tube, or, where required, to remove the automatic valves, working the gauge independently of them.

Referring to the accompanying drawing, A represents the end, or, it may be, side plate of a boiler, and B C the upper and lower or steam and water-connections or branches of the gauge with the boiler. D is the ordinary glass gauge-tube, connecting the steam and water-branches B C. These branches have each a direct passage, *a a'*, running through them, from the boiler to, in case of the lower branch, C, a passage, *b*, in communication with the lower end of the tube D, and in case of the upper branch, B, to a chamber, *c*, in communication with the upper end of the said tube, said passages *a a'*, however, being intercepted or controlled by three-way cocks E E', which also serve to control passages *d e*, the one (*d*) of which passages is in communication with a cage, *f*, containing a ball or other suitable valve, F, that, dropping by its gravity, leaves open the aperture *d*, but, closing by the pressure of steam against a seat, *g*, shuts off egress through a passage, *h*, of a suitably-perforated and grooved cap or plug, G, which connects, by a passage, *i*, with the chamber *c*, while the lower passage *e*, by a right-angled or other bend, connects, through a grooved and perforated disk, *k*, with a discharge-passage, *l*, controlled by a stop-cock, *m*, and further connects with a cage, *n*, which is in communication with the passage *b*, that is controlled by a ball or other suitable valve, F', opening by its own gravity, or it may be (as also may be the case with the other valve, F) by the action of a spring, and closing against a seat, *o*.

From this description, it will be seen that supposing the cocks E E' to be in the position represented for them in fig. 2, when the handles S S', controlling them, are in the position represented by black lines in fig. 1, then the valves F F' will remain open, and steam flow, by the passages *a*, *d*, *h*, and *i*, to the chamber *c*, communicating with the upper end of the tube D, while water will flow from the boiler by the passages *a' e*, disk *k*, cage *n*, and aperture *b*, up into the lower end or portion of the tube D, the valves F F' remaining open as long as such an equilibrium of pressure is established. Supposing, however, the tube D to be accidentally broken, and the cocks E E' to be in the same position, then the flow of water will close up the valve F' against the seat *o*, and the steam shut the valve F against the seat *g*, thus preventing escape of both steam and water in an automatic and effectual manner.

Where it is required to blow out the tube D, then the cock E should be turned, to close the aperture *d*, to prevent the valve F closing, or establishing the current to effect the blowing out, and serving to open a direct steam communication with the chamber *c* by the passage *a*, and at the same time the cock E' be similarly turned, the handles S S' being set to the position shown on red lines, to shut off communication with the passage *e*, and open the direct passage *a'*, through the aperture *b*, into the cage *n*, through the disk *k*, into the passage *l*, when, by opening the cock *m*, the blowing out of the tube D will be effected. In case of it being necessary to shut off communication of the gauge with the boiler by hand, to insert a fresh tube, D, repair or clean the valves F F', or for any other purpose, then the handles S S' may be turned to the position shown in blue lines, when the cocks E E' will close the portions of the passages *a a'* lying between said cocks and the boiler. When the cocks E E' establish direct communication, by the passages *a a'*, with the upper and lower ends of the tube D, then the gauge may be worked as an ordinary gauge, independently of the valves F F'.

What I here claim, and desire to secure by Letters Patent, is—

The combination of the automatic valves F F', constructed and operating substantially as described, with the three-way cocks or valves E E', controlling passages arranged substantially as decribed, for action in concert, when required, with a blow-off cock, *m*, essentially as herein set forth.

N. H. BUNDY.

Witnesses:

A. LE CLERC,

W. K. THOMAS.