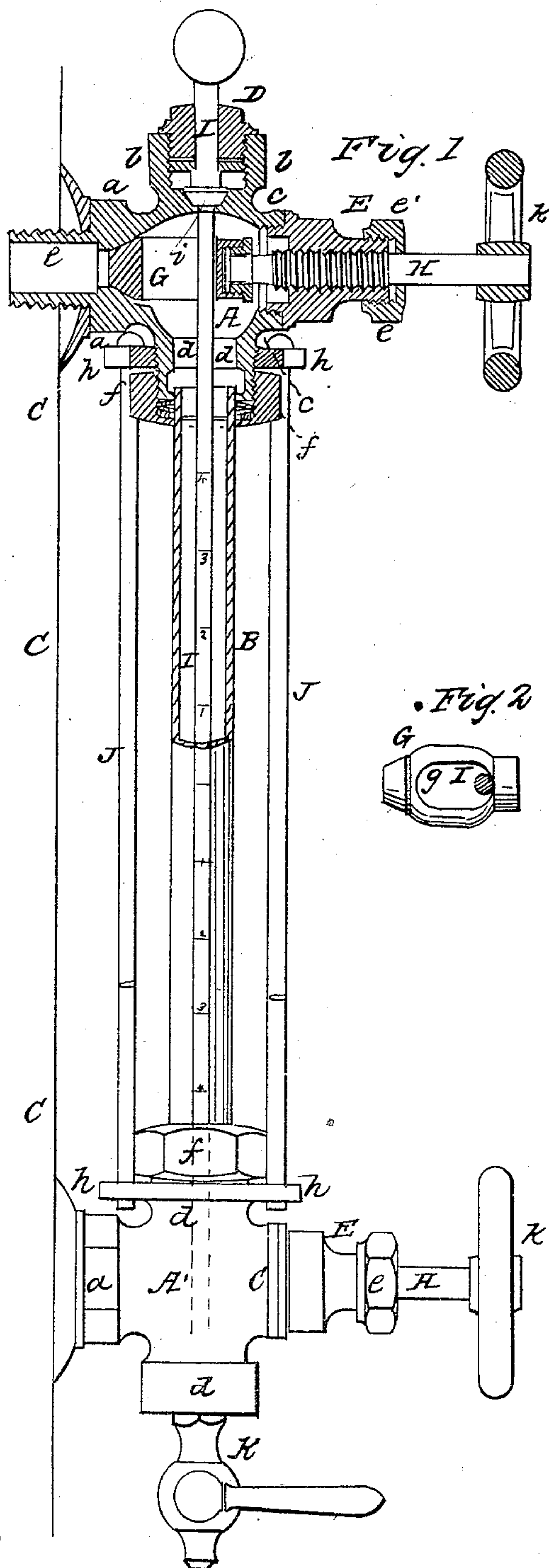


W. B. LE VAN.

Water Gage.

No. 32,775.

Patented July 9, 1861.



Witnesses
Chas. Brown
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UNITED STATES PATENT OFFICE.

W. BARNET LE VAN, OF PHILADELPHIA, PENNSYLVANIA.

WATER-GAGE FOR STEAM-BOILERS.

Specification of Letters Patent No. 32,775, dated July 9, 1861.

To all whom it may concern:

Be it known that I, W. BARNET LE VAN, of Philadelphia, Pennsylvania, have invented certain new and useful Improvements in Water-Gages; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My invention relates to water gages which have a metal rod situated within the glass tube, and my invention consists in arranging the valve of the gage in respect to the said internal rod, in such a manner, that the center line of the former, shall coincide with that of the latter, the rod or valve or both being so constructed that the valve can be operated without disturbing or being disturbed by the rod.

My invention also consists of improvements described hereafter, whereby facilities are afforded for readily cleansing the interior of the glass tube.

In order to enable others familiar with this class of instruments to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawing which forms a part of this specification, Figure 1 is a side view partly in section of my improved water gage, Fig. 2 a detached portion of the gage.

On reference to Fig. 1, A, and A', are the upper and lower valve chests or chambers of the water gage, to which is attached the usual glass tube B. The chest A has four hollow branches *a*, *b*, *c*, and *d*, the first of which has a stem *e* for screwing into the front of the boiler, the face of the latter being represented by the line C. The hollow branches *b* and *c* have internal screws, the former for receiving the cap D, and the latter for receiving a hub E, which is furnished at the end with a screwed cap *e'*; the branch *d* having an external screw for the reception of the nut *f* through which the upper end of the glass tube B passes into the interior of the branch, the lower end of the latter as well as the nut being so formed, that a suitable packing, bearing against the tube, is contained between them, thereby preventing all escape of steam at this point. In the interior of the branch *a* is formed a conical seat for the reception of the conical end of the valve G, to the outer end of which the

screw spindle H is so coupled, that the latter can turn freely but cannot move horizontally independently of the valve. This spindle, which has at the end a suitable hand wheel *k* screws into the hub E, and the plain portion of the spindle passes through the cap *e'* between which and the hub intervenes a suitable packing.

I is a metal rod furnished near the upper end with a conical valve *i* bearing in a conical seat formed at the bottom of the branch *b* where the latter communicates with the interior of the valve-chest. The rod passes upward through the cap D above which it may be furnished with a ball, as shown in the drawing or any other suitable termination. The underside of the cap D bears either directly, or indirectly through the intervention of a washer, on a collar formed on the rod and thus serves to maintain the latter in its proper position. Below the valve *i* the rod passes downward through an oblong opening *g* in the valve G, and thence through the glass tube and through the oblong opening of the valve of the lower valve chest A', the rod terminating at or near the point represented in dotted lines.

The branch *d* of each steam chest is furnished with a flange or lugs *h* to which are connected four vertical rods J, the latter being so situated as to protect the glass tube from external injury.

The valve chest A' is furnished with a valve, screwed spindle H, and is otherwise constructed in the same manner as the upper valve chest; into its branch *b* however is screwed an ordinary cock K furnished with a suitable handle.

The rod I is graduated and marked so as to indicate the level of the water in the boiler, the water, when the valves G of both valve chests are open, having a free communication with the interior of the tube B.

The glass tubes of ordinary water gages are liable to break, especially when steam and water are suddenly introduced after the tubes have been emptied by opening the lower cock and allowed to become partially cooled. I have found by repeated experiments that by the use of the internal metal rod I such accidents can be prevented for the reason, as I presume, that the metal has a greater affinity for heat than the glass, the sudden heat which under the circumstances above alluded to tends to break the glass,

being absorbed and carried off by the metal rod. It will be observed that this rod does not interfere with the proper working of the instrument owing to the peculiar construction of the valves G, through the oblong openings of which the rod passes, thereby allowing the valves to be freely opened and closed by the turning of the screwed spindles H.

10 The interior of the glass tubes of all water gages are apt to become foul by the collection of sediment from the water of the boiler, thereby rendering the glass so opaque that it is a difficult matter to distinguish the

15 level of the water. Water gages of the ordinary construction have no provision for cleansing the interior of the tubes other than that of opening the upper valve and lower cock and closing the lower valve, when the

20 steam will rush through the tube and partially cleanse the interior. In my improved water gage the tube may be readily and effectually cleansed by unscrewing the cap D, withdrawing the rod I, and inserting a

25 rod with a piece of sponge or a "swab" at the end; or the tube may be cleansed by first unscrewing the lower cock K and inserting the rod with its swab into the opening of the branch *b* of the lower valve chest, and

30 this cleansing can be effected while the valves are closed and both steam and water cut off from the tube, owing to the peculiar construction of the valves, the oblong opening

of which presents a clear passage for the cleansing rod.

I wish it to be understood that I do not claim broadly a metallic rod placed within the glass tube of a water gage, such an arrangement being shown in the patent of J. Whitmore, July 27th, 1858.

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

1. So arranging the valve in respect to the internal rod I, that the center line of one, shall coincide or nearly coincide with the center line of the other, when the rod or valve or both are so constructed that the valve can be operated without disturbing or being disturbed by the rod, as herein set forth.

2. So constructing the valves G in respect to the said internal rod, or the rods in respect to the valves, that the latter can be operated without disturbing the former as set forth.

3. The hollow branch *b* of the steam chest A combined and arranged in respect to the opening *g* of the valve G as set forth so as to afford ready access to the interior of the glass tube as specified.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

W. BARNET LE VAN.

Witnesses:

HENRY HOWSON,
CHAS. HOWSON.