WORTHINGTON & BAKER.

Water Gage.

No. 4,972. Patented Feb. 20, 1847.

FIG. 1.

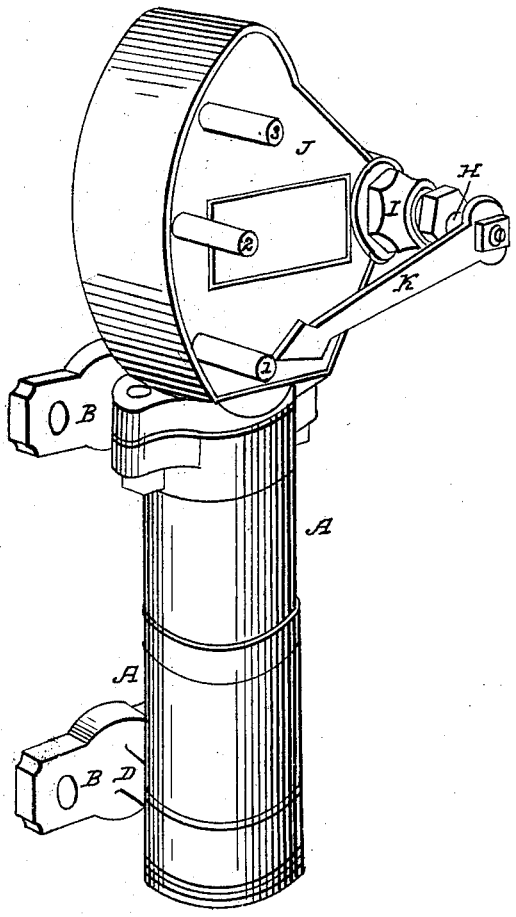
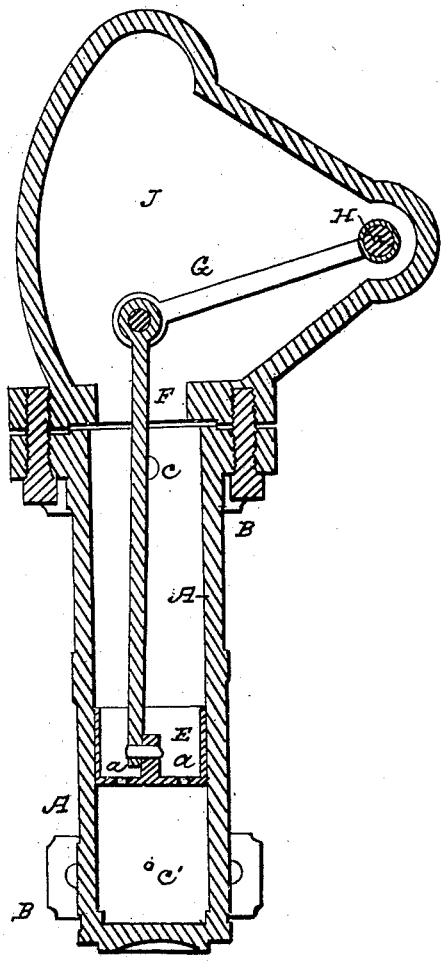


FIG. 2.



UNITED STATES PATENT OFFICE.

HENRY R. WORTHINGTON, OF NEW YORK, AND WILLIAM H. BAKER, OF WILLIAMSBURGH, NEW YORK.

APPARATUS FOR GAGING THE HEIGHT OF WATER IN BOILERS.

Specification of Letters Patent No. 4,972, dated February 20, 1847.

To all whom it may concern:

Be it known that we, HENRY R. WORTHINGTON, of the city of New York, in the State of New York, and WILLIAM H. BAKER, of Williamsburgh, in the county of Kings, in the same State, have invented a new and useful Manner of Constructing Apparatus for Ascertaining the height of Water in Steam-Boilers; and we do hereby declare that the following is a full and exact description thereof.

We denominate the instrument which we employ, a "percussion gage," the principle upon which its action is dependent being that of the percussive action of a flat surface acting horizontally upon a portion of the water, the height of which is to be gaged, which, as we verily believe has not heretofore been applied to this purpose.

The form of apparatus that we have used, and which has answered the purpose perfectly well, consists of a cylinder furnished with a loosely fitting piston, that may be suddenly brought down within said cylinder without any sensible resistance from friction or steam. Said cylinder is to be attached to the boiler in such manner as that its upper end shall communicate with the steam chamber and its lower part with the water contained in the boiler, it being provided with tubular openings through which the water and steam are allowed to flow into it. The cylinder is surmounted by a close quadrant formed case, within which an arm operates so as to raise and lower the piston, one end of which is attached by a joint pin to the piston rod, while the other end is furnished with a joint pin, or shaft, that passes through a stuffing box to the outside of the quadrant case, where a handle is attached to it, by which the piston is to be operated, and the height of the water indicated.

In the accompanying drawing, Figure 1, is a perspective representation of the instrument, and Fig. 2, a vertical section of it through the axis of the cylinder.

A, A, is the cylinder, which is furnished with ears, or flanges, B, B, by which it is to be bolted to the boiler head.

C, C′, are tubular openings which pass through the necks D, of the flanges, there being corresponding holes in the boiler head to admit steam through the opening C, and water through that marked C′. The piston E, fits loosely within the cylinder, and is surrounded by a rim to cause it to slide up and down vertically.

F, is the piston rod, that is attached at its upper end to an arm G, that is furnished with a joint pin H, which passes through a stuffing box I, in the inclosing case J, so as to receive on its outer end the handle K, by which the piston may be raised up and forced down. 1, 2, and 3, are numbers to which the handle K, may be made to point to indicate the height of water. When used, the piston after being raised is to be brought down by a rapid motion so as to act with percussive force on the surface of the water, by which it will be suddenly arrested, in a manner nearly the same as when striking on a solid body.

The openings C, C′, are made sufficiently large to allow the steam and water to pass through them, but no larger than is deemed necessary for the purpose. To prevent resistance from the piston passing through the steam, we usually make one or more holes through it as at *a*, *a*.

The cylinder A, is, it will be seen, removed from the direct action of the fire, and the water within it will not therefore be subjected to violent ebullition, or foaming, and the effect of any swelling up from these causes will have but little influence upon the piston, as this will practically pass down to the point of maximum resistance.

This apparatus has been attached to a boiler furnished with the ordinary try cocks, and has proved them to vary in some instances, four inches and a half from the truth, while the indications by percussion have been unvarying.

Having thus fully described the nature of our improvement in the manner of constructing the apparatus for indicating the height of water in a steam boiler, what we claim therein as new and desire to secure by Letters Patent is—

The application of the principle of percussion to that purpose, substantially in the

manner herein fully set forth, namely—by causing a piston, or other flat surface to strike horizontally, and with percussive force upon the surface of the water, within a cylinder or other suitable vessel, into which steam and water are admitted from the boiler whether under the precise arrangement herein described and represented, or under any other which is the same in principle and operation.

HENRY R. WORTHINGTON.
WILLIAM H. BAKER.

Witnesses:
J. W. CARRINGTON,
A. WORTHINGTON.