

W. Y. GILL.  
Steam Gage.

No. 23,166.

Patented March 8, 1859.

Fig. 1

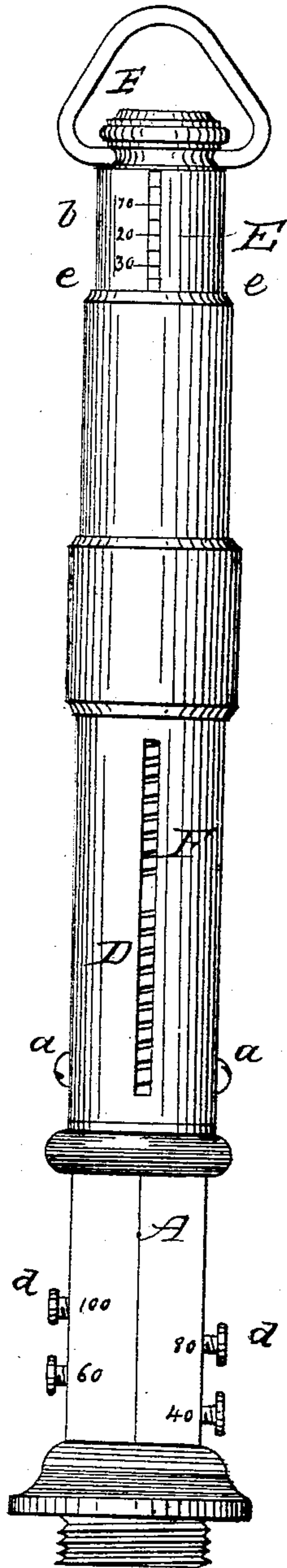
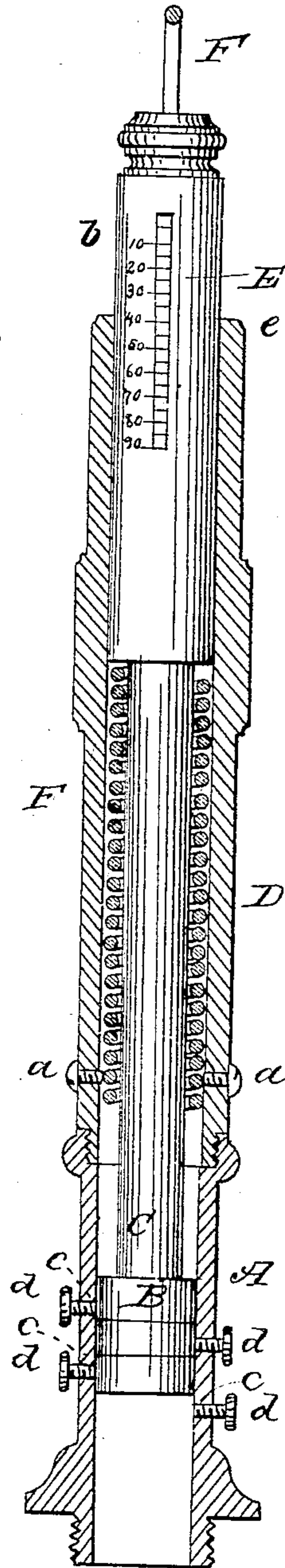


Fig. 2



WITNESSES.

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# UNITED STATES PATENT OFFICE.

W. Y. GILL, OF HENDERSON, KENTUCKY.

## STEAM-GAGE.

Specification of Letters Patent No. 23,166, dated March 8, 1859.

*To all whom it may concern:*

Be it known that I, W. Y. GILL, of Henderson, in the county of Henderson and State of Kentucky, have invented a new and Improved Steam-Gage; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, represents an elevation of my improved steam gage, and Fig. 2, is a longitudinal, vertical central section of the same.

Similar letters of reference indicate corresponding parts in the two figures.

This invention consists in arranging the piston of one of those steam gages in which a piston acts in opposition to a spring, in such a manner and in such relation to the spring, that the upper portion of the stem of the piston may be marked with an indication on one or more sides, while at the same time the lower part of the barrel is pierced with a number of openings which are closed by suitable plugs and which are so situated that they correspond each to a certain amount of pressure of steam and so that when one of these openings is left open, the steam escapes through the same, as soon as the piston has been forced up by the pressure of the steam beyond said opening, so that the attention of the person in attendance is called to the amount of pressure in the boiler.

My invention also consists in constructing that portion of the piston between the indicator and the packing rings, of a decreased diameter and arranging the weighing spring on said reduced portion and above the shoulder formed by the packing of the lower enlarged portion of the piston and thus place it beyond the attack of the steam and avoid inaccuracies in the measurement of the steam from the elasticity of the spring decreasing to a greater or less extent by the steam acting constantly upon it as in the gage of Faber patented September 1851.

To enable others skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A is a barrel into which a piston B, is made to fit nicely. The packing of the piston is made of metallic rings in a manner commonly used with steam pistons, but it may be constructed in any other manner which secures a good fit with as little fric-

tion as possible. The stem C, of the piston extends upward through a tube D, which screws into the upper end of the barrel A, and the upper portion E, of said stem is thick enough to serve as a guide to the piston without however impeding the up and down motion of the same in the least. A spiral spring F, is placed in the tube D, surrounding the stem C, and the lower end of this spring is rigidly attached to the sides of the tube by means of two screws *a, a*, and its upper end is fastened to the shoulder formed by the upper portion E, of the stem of the piston, so that this spring is extended when the piston is forced upward.

The upper portion E, of the stem of the piston is provided with an indication *b*, and similar indications may be marked on this part of the stem, on different sides so that the same are visible on all sides from which access can be had to the steam-gage, and the upper edge *e*, of the tube D, forms the common pointer or indicator for all the indications marked on the surface of the upper portion E, of the stem. These indications correspond to the number of pounds pressing on one square inch of the area of the piston, and if the piston be made of such a diameter that its area is exactly equal to one square inch, or to a certain known fraction of a square inch, the indication can be marked and tested by turning the gage upside down and by hanging weights on the ring F, which is attached to the upper end of the stem of the piston.

The lower end of the barrel A, is provided with a number of openings *c*, which are marked 40, 60, 80, 100, and so on, as represented in Fig. 1, and which are closed by plugs *d*. The position of these openings is such that when the pressure of the steam in the boiler reaches a certain point, say 40 or 60 lbs. to the square inch, the piston of the steam gage has just passed the opening marked 40 or 60. By this means this steam gage serves at the same time as an alarm gage. If one of the plugs *d*, be taken out, the steam will escape through the opening *c*, thus left open, in the barrel A, as soon as the pressure reaches the amount marked to the opening thus left open, and the person in attendance will know by the noise made by the escaping steam that the pressure has reached a certain point. If therefore it should not be desirable to have the pressure



of the steam in the boiler exceed 40 lbs. to the square inch, the plug at the opening marked 40, is taken out, and as soon as the piston rises high enough to pass this opening, as represented in Fig. 2, the steam will escape through the same and call the attention of everybody, who happens to be near enough, to the fact that the pressure has reached a point which it is not desirable to exceed.

I am well aware that steam gages have heretofore been constructed in which a piston acts in opposition to a spring but all which I have ever seen have a pointer attached to the stem of the piston, which, by sliding up and down over an indication marked on the outside of the tube shows the amount of pressure in the boiler, but with such the indication can be seen only from one side, and it would cause a considerable amount of labor to make more than one indication on the same; while it is quite easy with my arrangement to mark off as many indications on the upper part of the stem as is desirable, as the upper edge of the tube

D, forms a pointer for any number of indications marked on the stem.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is—

1. Constructing a steam gage in which a piston acts in opposition to a spring, in such a manner that the lower portion of the same acts as an alarm by means of openings *c*, and so that the indication may be marked on one or more sides of the upper portion E, of the stem, substantially as herein specified.

2. Constructing the portion C, of the piston of a smaller diameter than the lower and upper portions E, B, and arranging the spring F, on the portion C, above the lower packed portion B, and below the indicating portion E, substantially as and for the purposes set forth.

W. Y. GILL.

Witnesses:

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H. H. YOUNG.