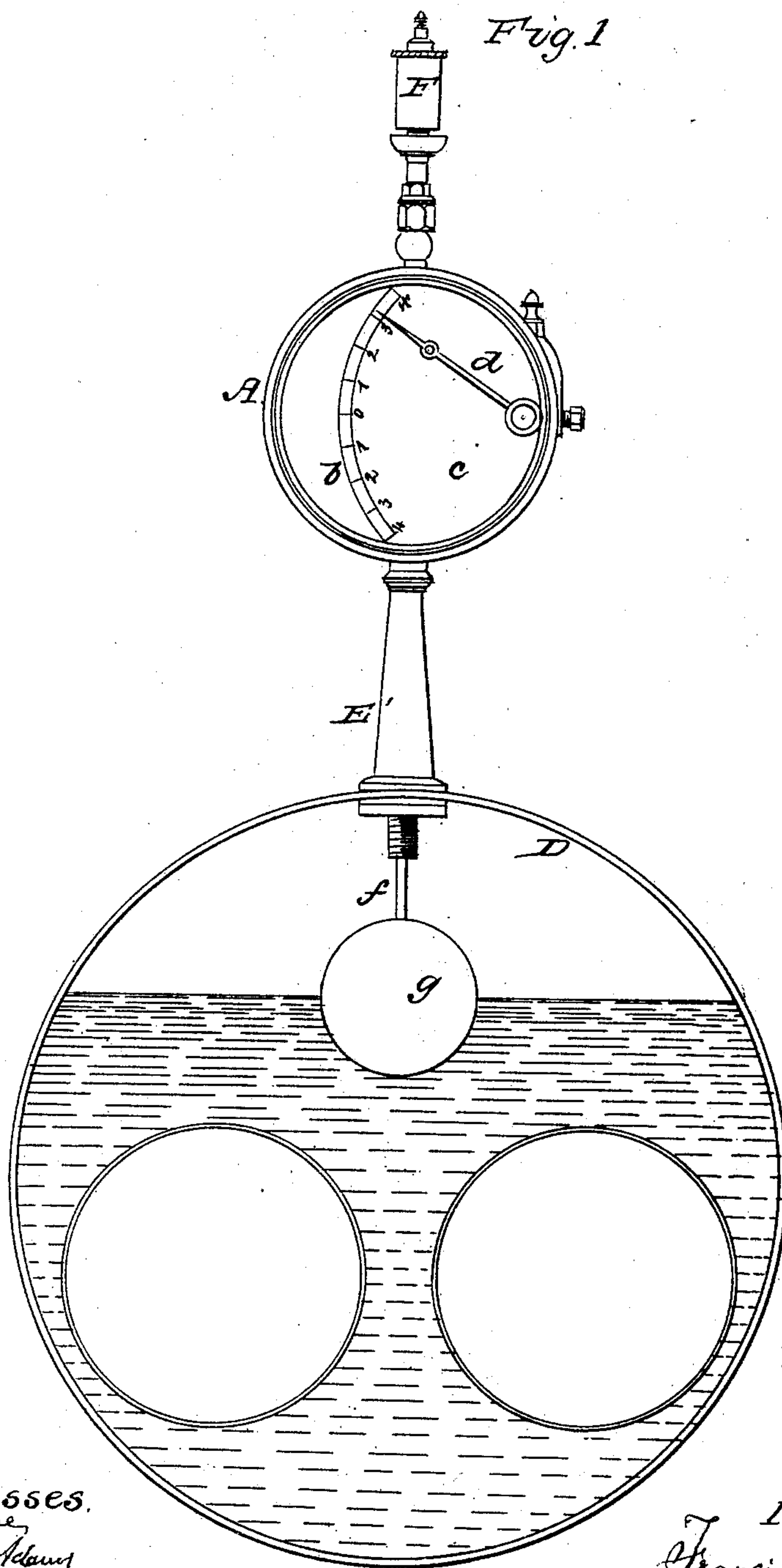


F. A. HOYT.

Water Indicator and Alarm.

No. 24,874.

Patented July 26, 1859.



Witnesses.
Wm. H. Kane,
Alfred W. Adams

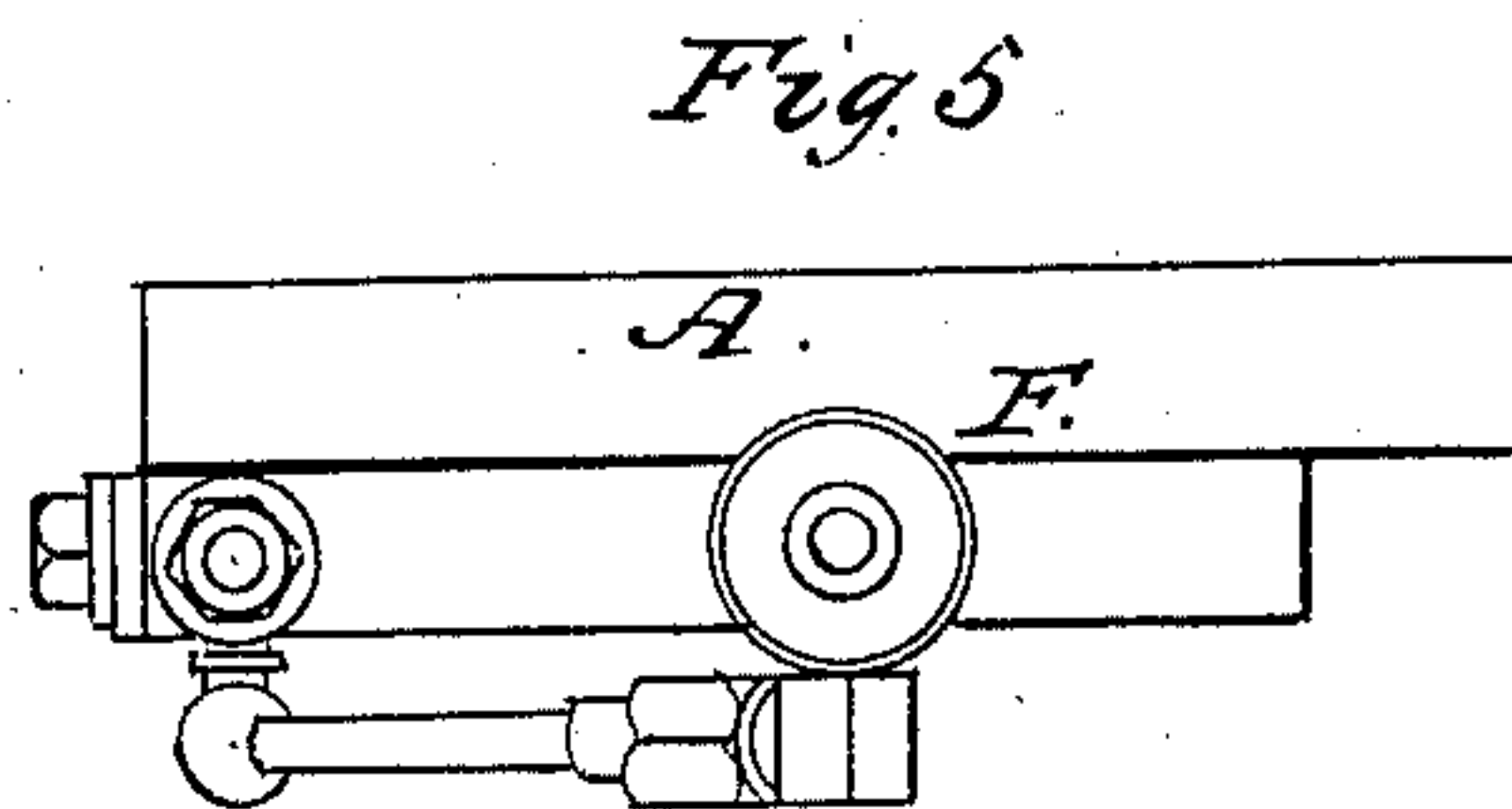
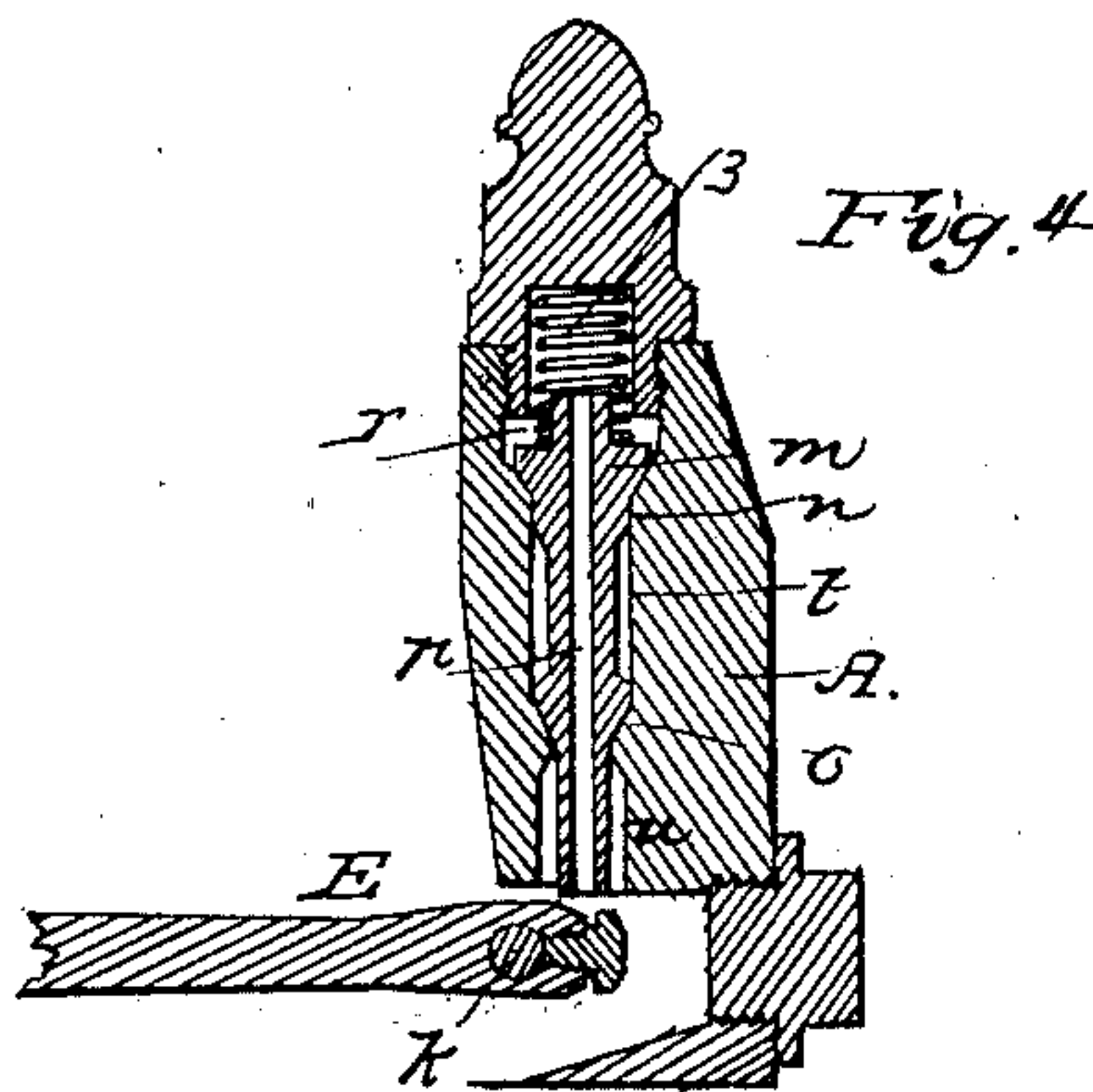
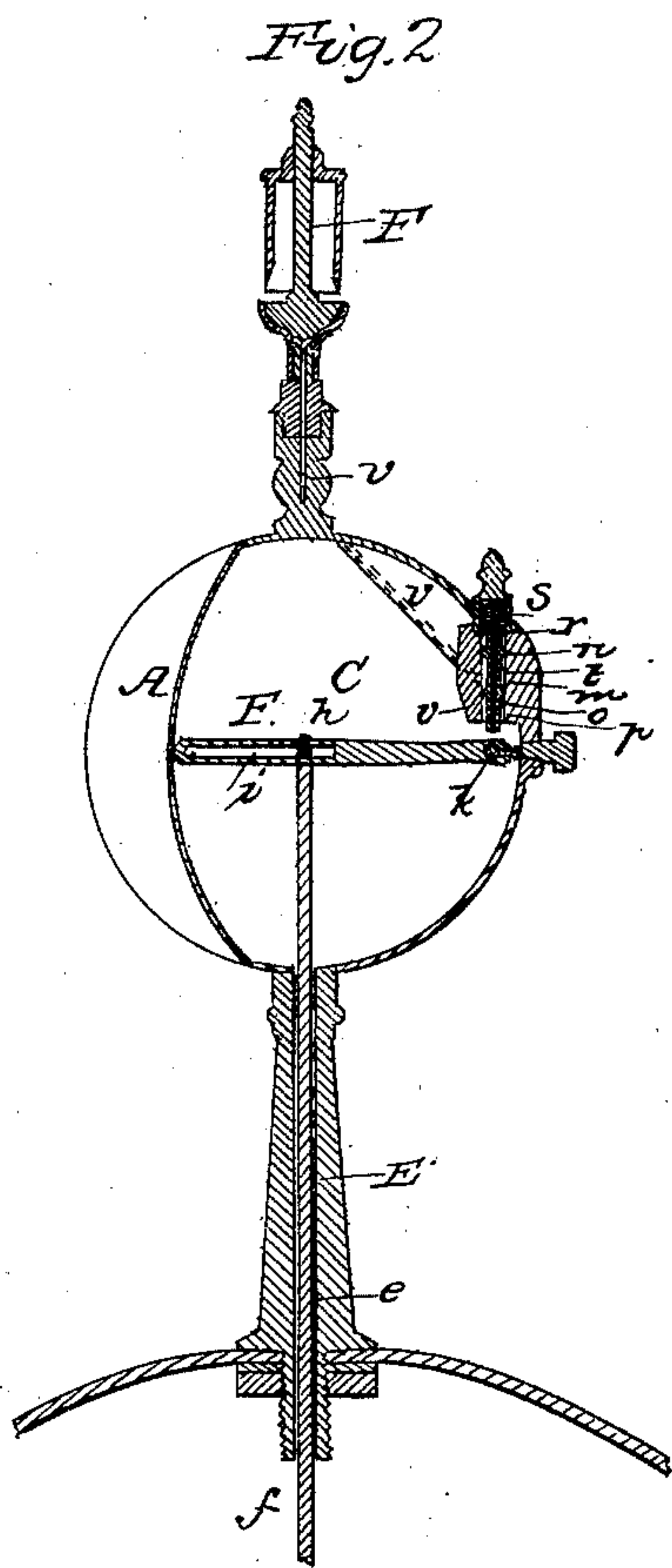
Inventor
Francis A. Hoyt.

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Witnesses
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UNITED STATES PATENT OFFICE.

FRANCIS A. HOYT, OF BOSTON, MASSACHUSETTS.

WATER AND ALARM GAGE FOR STEAM-BOILERS.

Specification of Letters Patent No. 24,874, dated July 26, 1859.

To all whom it may concern:

Be it known that I, FRANCIS A. HOYT, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Water and Alarm Gage for Steam-Boilers; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1, denotes a front elevation of the said gage as applied to a steam boiler; Fig. 2, a vertical and longitudinal section of it; Fig. 3, a horizontal section of it; Fig. 4, a vertical section of the valve and valve chambers of the steam whistle; Fig. 5, a top view of the gage.

The nature of my invention consists in the arrangement of the balanced valve chamber and valve, the leading pipe thereof and the whistle with reference to the dry steam chamber C, the indicator chamber B, and the valve lever and the indicating hand connected together and arranged in the two chambers B, and C, as hereinafter specified.

In the United States Patent numbered 16182, and granted to me I have described an apparatus for indicating the level of the water in a steam boiler. The said apparatus or water gage has a separate dry steam chamber arranged outside of the boiler and upon a detached vessel communicating with one end of the water and steam spaces in the said boiler by means of two pipes.

In the drawings, A, exhibits the case or body of the instrument as constructed of a cylindrical form and divided by a vertical partition *a*, into an indicator chamber B, and a dry steam chamber, C. The indicator chamber is furnished with a transparent glass face *c*, an index or divided arc, *b*, and an index pointer *d*, arranged thereon as shown in the drawings. Furthermore, the box or case, A, is supported above and on the top of the boiler D, by means of a column or pillar, E', which in practice ought to be six inches or greater in length, a greater length however being preferable. Through this column a valve stem passage is formed vertically or nearly so and so as to open a communication between the dry steam chamber C, and the interior of the boiler. Through the said passage, *e*, the stem, *f*, of a float, *g*, extends and has a diameter about one sixteenth of an inch less than that of the passage. The float *g* is to rest in the water of the boiler. At the top of the stem of the

float a stud, *h*, projects into a long slot *i*, of a lever, E, turning on a fulcrum, *k*, arranged at a short distance from one end of the said lever, so that a small portion of the said lever shall project from the fulcrum and constitute a short arm directly over which it placed a balanced valve, *m*, formed with two seats *n*, *o*, arranged in the case, A, as shown in the drawings. The said valve *m*, is furnished with a steam passage *p*, extending longitudinally through it and so as to open a free communication between the dry steam chamber, C, and a small chamber, *r*, situated directly over the top of the valve and containing a spring *s*, for pressing the valve upon its seats. Between the two seats, *n*, *o*, there is a chamber, *t*, around the valve. There is also another chamber, *u*, arranged around the valve stem and below the seat, *o* and made to open at its lower end into the dry stem chamber, C. Out of the chamber, *t*, a passage *v*, leads to a steam whistle, F, arranged on the top of the case, A. The index pointer, *d*, is placed on one end of a small shaft, *h*, which extends through the partition, *a*, and constitutes the fulcrum of the lever, E.

In the operation of the above described apparatus, the float, *g*, by either rising or falling will give motion to the rod, *f*, which in its turn will move the lever E, and of course the index pointer, the index arc serving to measure the amount of movement of the float.

The combination of the water indicator apparatus (that is, the float, its stem, the lever thereof, the index arc, and index pointer) the steam whistle or alarm apparatus and a dry steam chamber, as described not only enables a person to inform himself of the height of water in the boiler, but when such water may get too low therein or go below the safety level, the lever, E, will be forced against the balanced valve *m*, and will raise it off its seat or seats so as to allow steam to pass from the dry steam chamber into the whistle and sound an alarm. Thus the dry steam chamber operates to protect the whistle and its valve as well as the water indicator or gage.

I do not claim a dry steam chamber such being shown in my said Patent numbered 16,182; nor do I claim a balanced valve; nor do I claim a glass tube water gage applied to the end of a boiler so as to indicate by the level of water in such tube that of the

fluid within the boiler; nor do I claim a glass tube or steam chamber placed on top of a boiler and containing the stem of a float and communicating with the boiler by
5 an opening through which the water during ebullition or swash can easily pass into the said chamber; nor do I claim the combination of a float, a water indicator and an alarm whistle; nor do I claim independently
10 of its application in manner as specified, a hollow column; nor do I claim a valve rod chamber arranged above a boiler and connected with it by a tube of a diameter or width not only greater than necessary for
15 guiding the float rod, but as will not prevent the swash or ebullition of the contents of the boiler from causing water otherwise than in

the state of steam to pass from the boiler into the dry steam chamber.

I claim—

The arrangement of the balanced valve chamber and valve, the leading pipe thereof and the whistle with reference to the dry steam chamber C, the indicator chamber B, and the valve lever and the indicator hand
20 connected together and arranged in the two chambers B and C, as specified. 25

In testimony whereof I have hereunto set my signature.

FRANCIS A. HOYT.

Witnesses:

WM. G. HOWE,
ALFRED W. ADAMS.