

Andrews & Oswald,
 Steam-Boiler Indicator.
 N^o 23,816. Patented May 3, 1859.

Fig. 1.

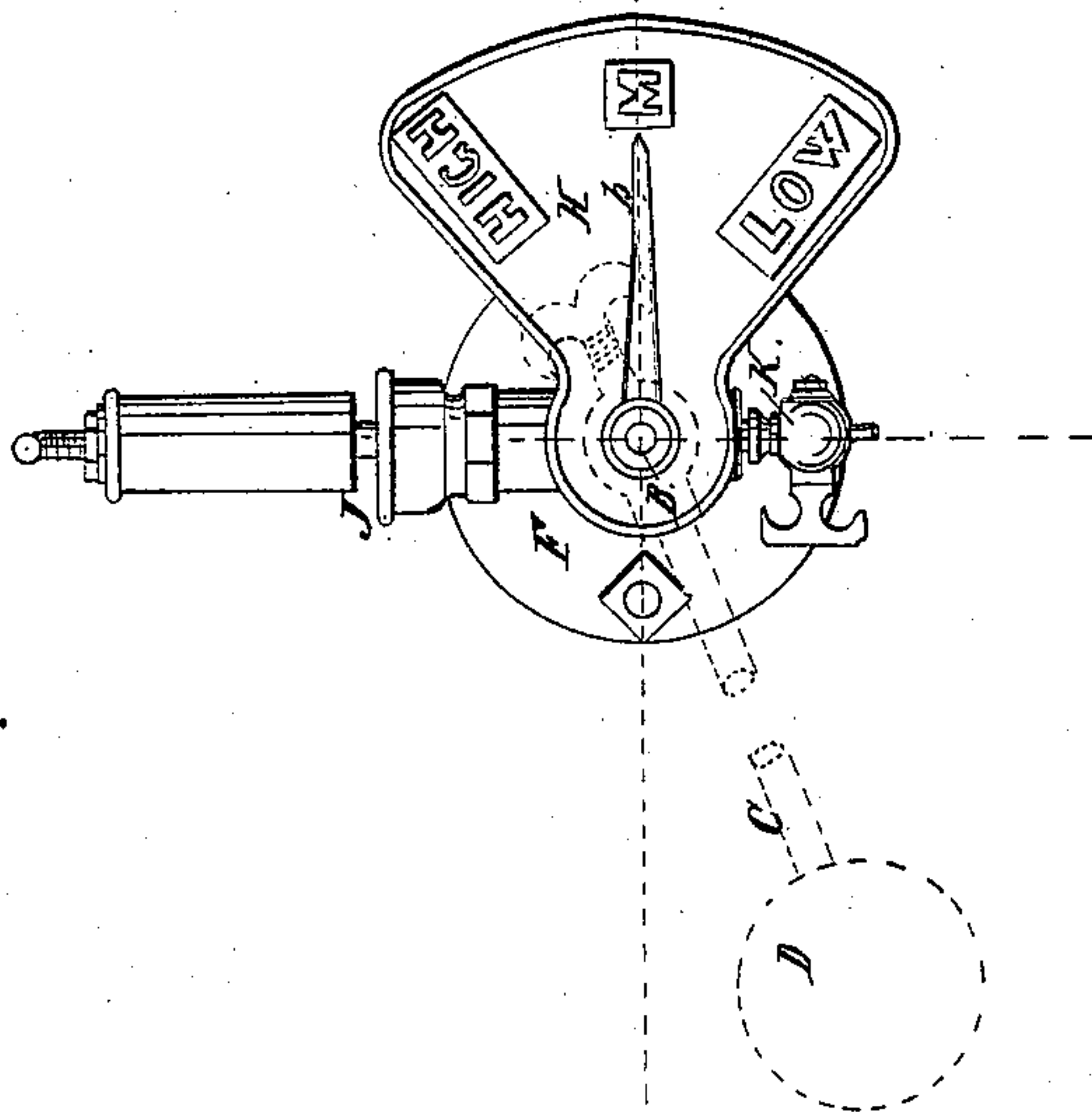


Fig. 2.

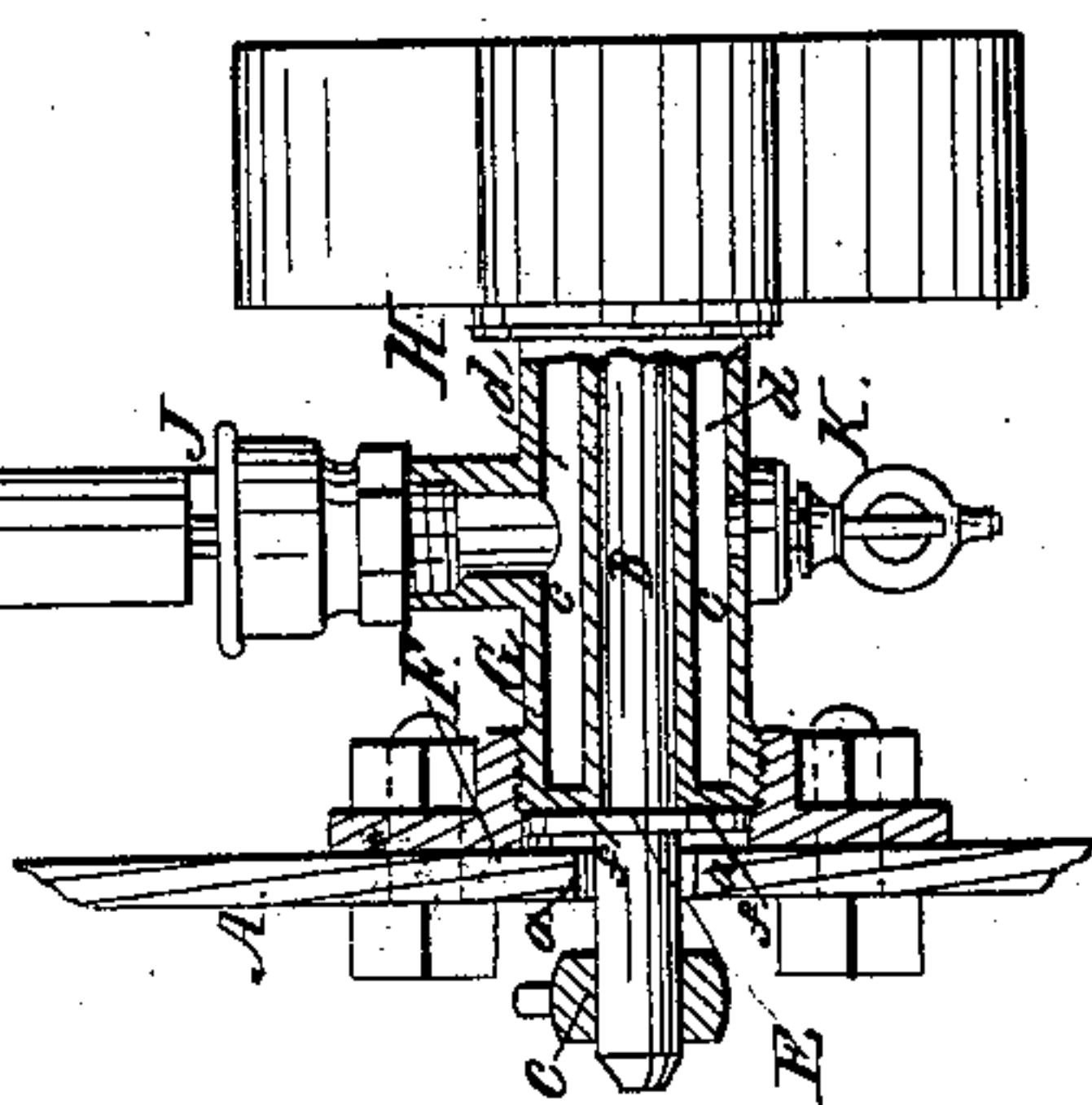
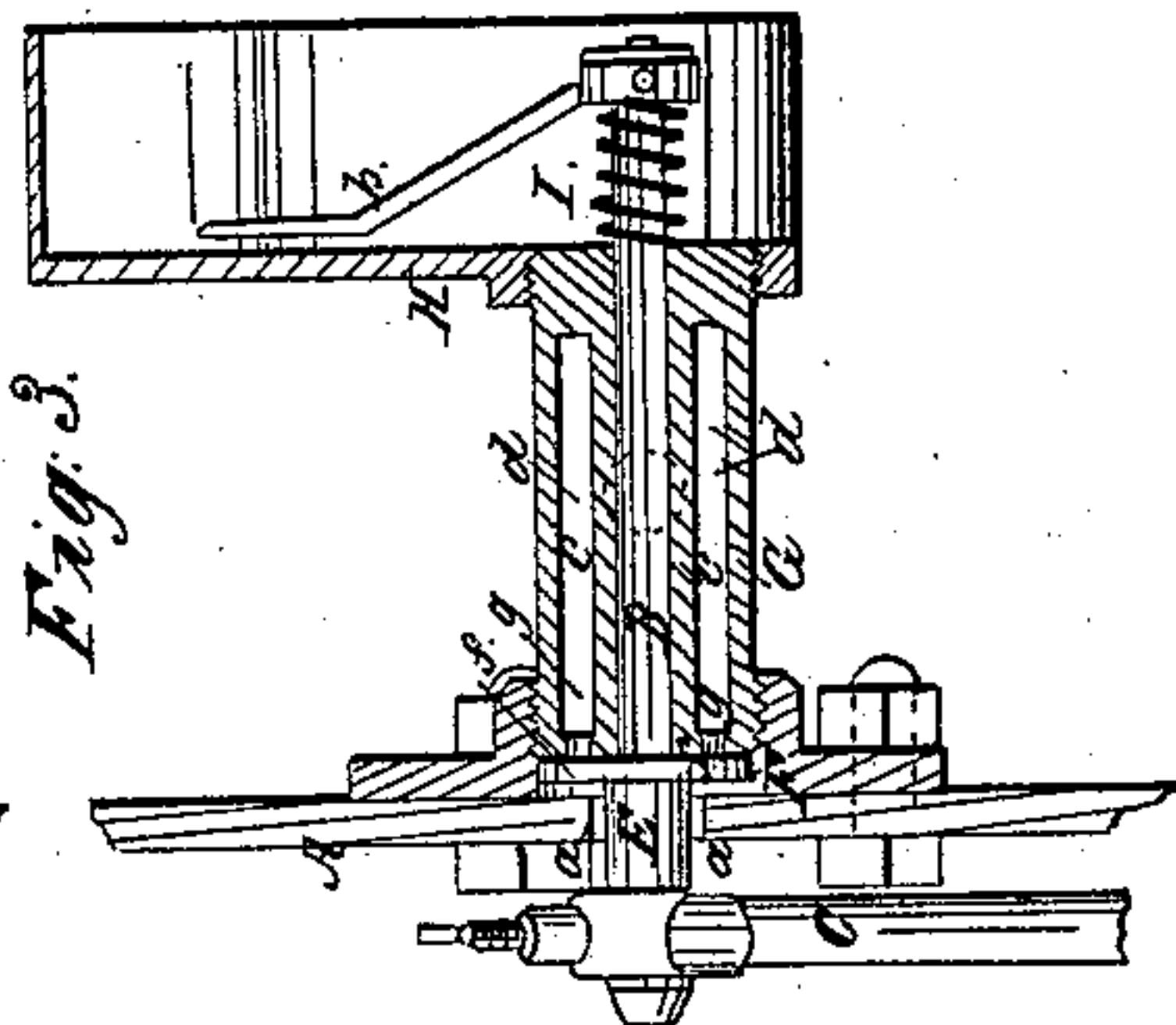
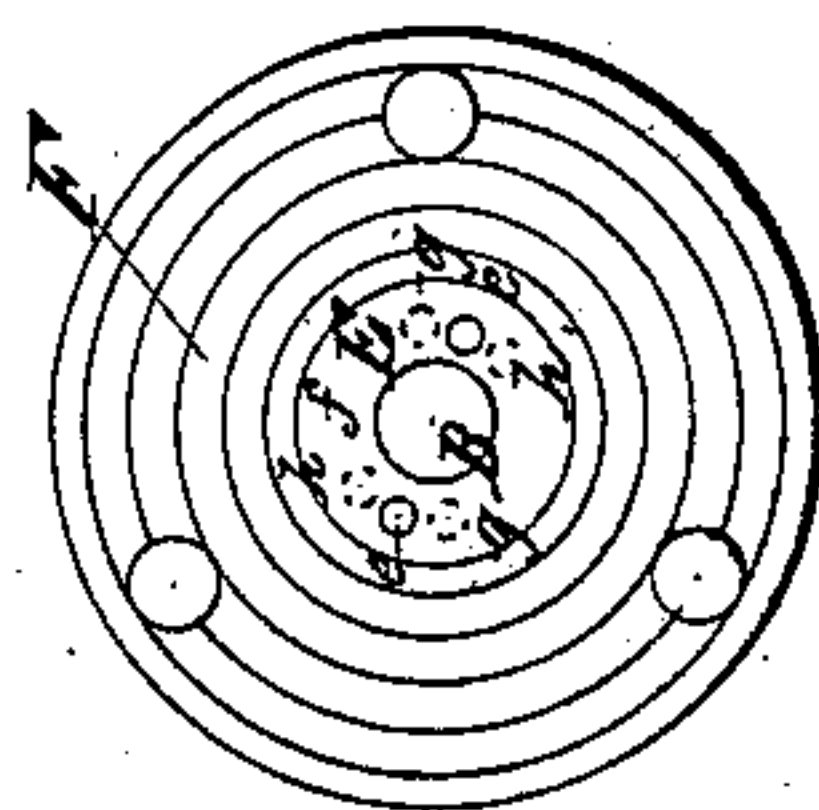


Fig. 3.



Witnesses:
 James Fleming
 George Oswald

Fig. 4.



Inventor:

W. B. Andrews
 John Oswald

UNITED STATES PATENT OFFICE.

W. R. ANDREWS AND JOHN OSWALD, OF CHICAGO, ILLINOIS.

ALARM WATER-GAGE.

Specification of Letters Patent No. 23,816, dated May 3, 1859.

To all whom it may concern:

Be it known that we, W. R. ANDREWS and JOHN OSWALD, both of Chicago, in the county of Cook and State of Illinois, have
5 invented certain new and useful Improvements in Alarm Water-Gages for Steam-Boilers; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the
10 accompanying drawings, forming part of this specification, in which—

Figure 1, is a front view of the gage. Fig. 2, is a side view of the same partly in section. Fig. 3, is a horizontal section of the
15 same. Fig. 4, exhibits a back view of the alarm valve seat and valve.

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

Our invention consists in a novel arrangement of steam passages, in combination
20 with a steam whistle and a valve attached to the index spindle of a float which rests upon the surface of the water in the steam boiler for the purpose of sounding an alarm
25 when the water in the boiler gets below or above certain levels.

It also consists in a certain mode of applying a spring in combination with the spindle of the float and index, for the purpose of preventing any solid matter getting
30 between the valve and seat when there is no pressure of steam within the boiler, and it further consists in a certain arrangement of an escape cock in the steam passages for
35 letting out the water of condensation therefrom.

To enable others skilled in the art to make and use our invention we will proceed to describe its construction and operation.

40 A, represents part of the head of a steam boiler having a hole *a*, drilled through it about an eighth of an inch larger in diameter than the horizontal spindle B to which are attached the arm C, of the float D, the
45 index *b*, and the disk valve E.

F, is a circular socket bolted to the exterior of the boiler head in a position concentric with the opening *a*, *a*, and having
50 screwed into it a cylindrical piece G, which has a central tube *c* through which the spindle B, passes, and an annular passage *d*, surrounding the said central tube, the said passage being closed at each end and having
55 two orifices *g*, *g*, and two *h*, *h*, in the inner end which terminate in the face *f*, which surrounds the inner end of the tube

and constitutes the seat for the valve E, which has two orifices *e*, *e*, which are capable in one position of the valve, of registering with the orifice *g*, *g*, in the seat *f* and
60 in another position of registering with those *h*, *h*.

H, is a plate screwed on to the outer end of the socket G, and suitably marked or graduated for the index to show upon it
65 the level of the water in the boiler. I, is a spiral spring coiled around the spindle B, between the index and the front of the socket G, and exerting its tension in a direction to draw the valve to its seat. This
70 spring being outside is not likely to become corroded.

J is the whistle placed on the top of the socket G, to receive steam from the annular passage *d*, when any is admitted to the said
75 passage through the valve F. K, is a cock in the bottom of the socket G, to let out water from the annular passage *d*.

The operation is as follows: The float operating upon the spindle B, turns the index *b*, as the level of the water varies, and causes the latter to indicate the true level on the plate H. In turning the spindle the float turns the valve E, also but so long as the height of water is between certain levels,
80 the orifices *e*, *e*, in the valve do not communicate either with the orifices *g*, *g*, or those *h*, *h*, in the seat, and the valve prevents the entrance of steam to the passage *d*. When however, the water gets below a certain
85 level, the orifices *e*, *e*, in the valve arrive opposite to those *h*, *h*, in the seat and permit the entrance of steam from the boiler to the passage *d*, and its escape from thence through the whistle to sound an alarm. In
90 like manner also when the level gets above a certain point the said orifices *e*, *e*, arrive opposite to those *g*, *g*, in the seat and admit water through the latter orifices into the
95 passage *d*, and sound the alarm. 100

The valve is kept close to its seat by the pressure of the steam while the pressure in the boiler is above that of the atmosphere and so render a stuffing box around the spindle B, unnecessary, and when there is no
105 pressure on the boiler the spring I, keeps the valve closed and prevents any solid matter that might be deposited near the valve from getting between it and its seat. The cock K, is only opened from time to time to
110 let out from the passage *d*, any water that may be condensed therein from steam pass-

ing through the orifices *e*, *e*, or leaking around the valve.

What we claim in our invention and desire to secure by Letters Patent is—

5 The disk valve E, its stem B, and spring I, applied in combination with the inclosing sockets F, and G, the latter of which contains an annular passage *d*, communicating

with a whistle, the whole being arranged and operating as herein set forth.

W. R. ANDREWS.
JOHN OSWALD.

Witnesses:

JAMES FLEMING,
GEORGE OSWALD.