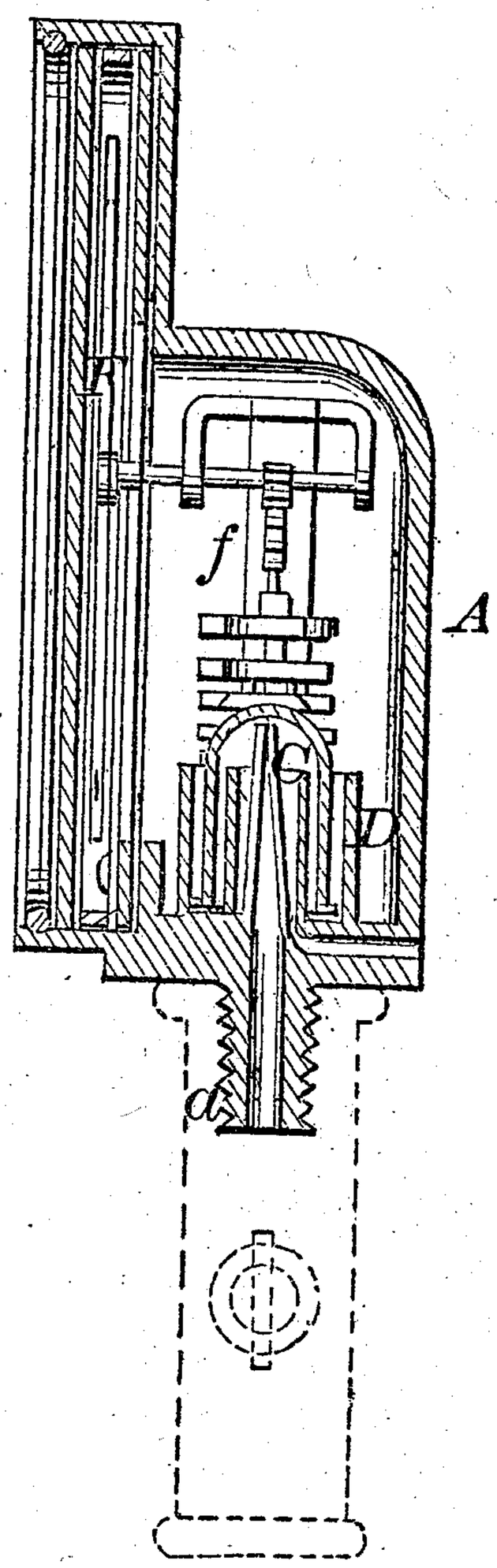
J. LOWE.

STEAM GAGES.

No. 56,070 PATENTED JULY 3, 1866.

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# UNITED STATES PATENT OFFICE.

JOSHUA LOWE, OF NEW YORK, N. Y.

## IMPROVEMENT IN STEAM-GAGES.

Specification forming part of Letters Patent No. **56,070**, dated July 3, 1866.

*To all whom it may concern:*

Be it known that I, JOSHUA LOWE, of the city and county and State of New York, have invented a new and useful Improvement in Steam-Gages; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a face view of this invention. Fig. 2 is a transverse section of the same. Figs. 3 and 4 are details which will be referred to as the description progresses. Fig. 5 is a sectional view of a modification thereof.

Similar letters of reference indicate corresponding parts.

This invention relates to a steam-gage in which the pressure of the steam is counteracted by a series of weights of gradually-increasing size, which are sustained one above the other and taken up one after the other by an inverted cup or plunger, which rises by the pressure of the steam acting on its interior.

A represents a case, made of brass or any other suitable material, which is provided with a screw-shank, *a*, by which it can be attached to a pipe which connects with the steam-space of the boiler, or with the reservoirs containing the steam to be gaged. The screw-shank is perforated and connects with a conical channel, *c*, which rises in the interior of the case A, and through which steam, or condensed water resulting from the steam, is admitted under the inverted cup C, as clearly shown in Fig. 2 of the drawings. This cup is placed in an annular chamber, D, which is open on the top, and the inner wall of which is lower than the outer, so that water accumulating in said chamber will overflow on the inner edge thereof and pass off through the waste-channel *d*.

From the outer wall of the annular chamber D rise two guide-bars, *e*, which are provided with a series of steps, as shown in Figs. 1 and 3, and on the steps are placed the weights E. These weights are of gradually-increasing size, and they are perforated each with a central hole to admit the rod *e'*, which connects with the toothed rack *f*, and this rack engages with a pinion, *g*, mounted on the arbor *h*. This arbor extends through the front plate of the case A, and on its outer end is secured an index, F, which traverses over a scale marked on the face-plate of the case, as shown in Fig. 1.

When the pressure of the steam acts on the cup C it rises, and first comes in contact with the lowest and smallest weight, and as the pressure increases one of the weights after the other is taken up, and a steam-gage is obtained which is absolutely sure, not dependent upon springs, and therefore not liable to get out of order.

By making the weights of gradually-increasing size I am enabled to obtain a scale on the face-plate of uniform width, so that the pressure of steam existing in the boiler can be read off with ease and facility to whatever spot of the scale the index may point; and, furthermore, by changing the size of the weights I am enabled to make the scale more open at the beginning or toward the end, according to the mean pressure for which it is to be used.

The weights, instead of being supported by steps, as shown in Figs. 1 and 3, may be made in the form of cylinders of gradually-increasing size, open at the bottom and placed one over the other, as shown in Fig. 5 of the drawings. In this case a suitable flange on the vertical edge of the chamber D would be made to support the cylinder-weights, which would be gradually taken up by the rising cup C. A suitable stop-cock in the pipe which connects the gage with the boiler allows of shutting off the communication after every observation, and by doing this no part of the gage is liable to stick or clog up, and the gage is sure to indicate the correct pressure whenever the stop-cock is open.

What I claim as new, and desire to secure by Letters Patent, is—

1. The inverted cup C, working in the annular chamber D, in combination with a series of weights of gradually-increasing size, and with a suitable index, all constructed and operating substantially as and for the purpose described.

2. Arranging the walls of the annular chamber D as and for the purpose set forth.

The above specification of my invention signed by me this 27th day of March, 1866.

JOSHUA LOWE.

Witnesses:

WM. F. MCNAMARA,

W. HAUFF.