

J. P. Holt.

Steam Gauge.

No 70,213.

Patented Oct 29. 1867.

Fig: 1

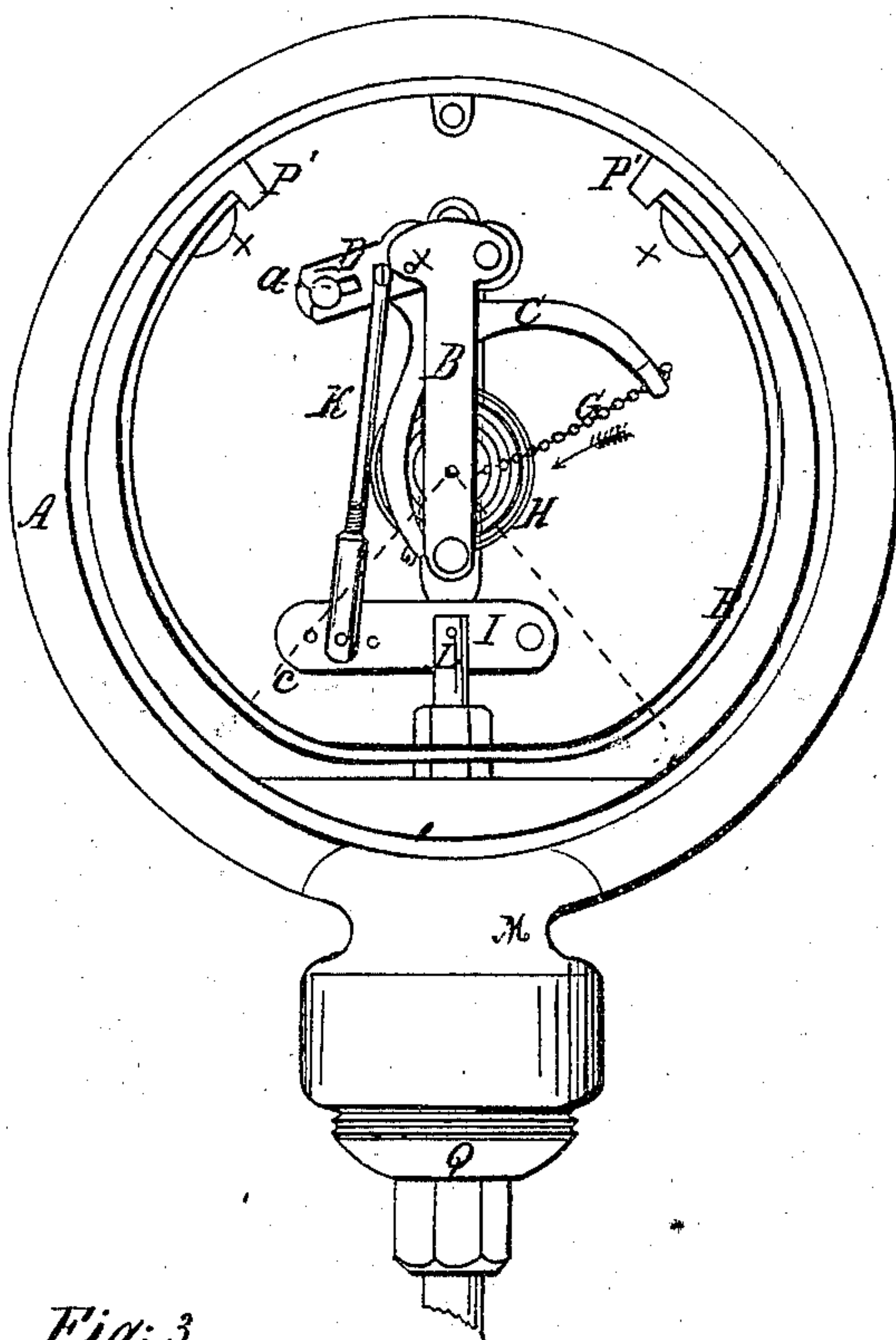


Fig: 3

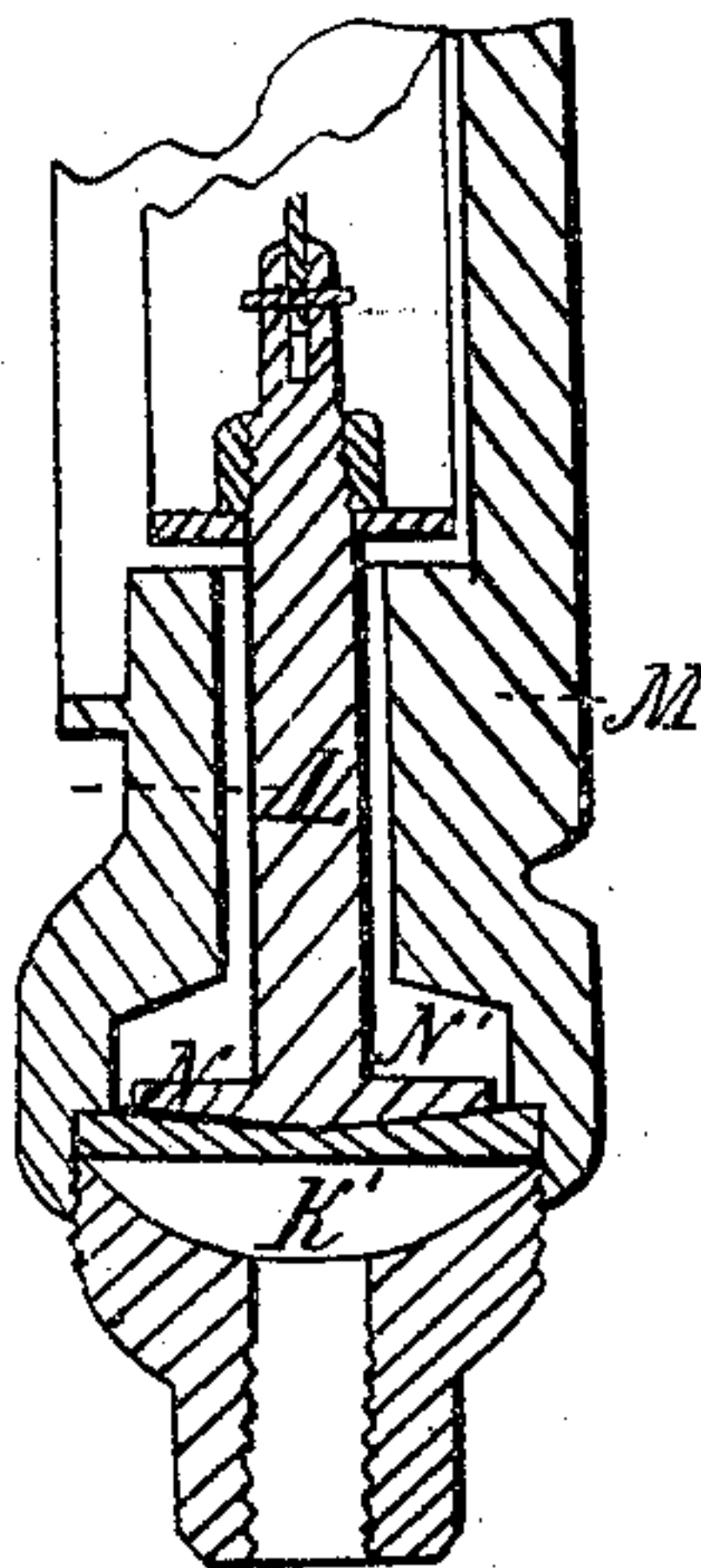


Fig: 2

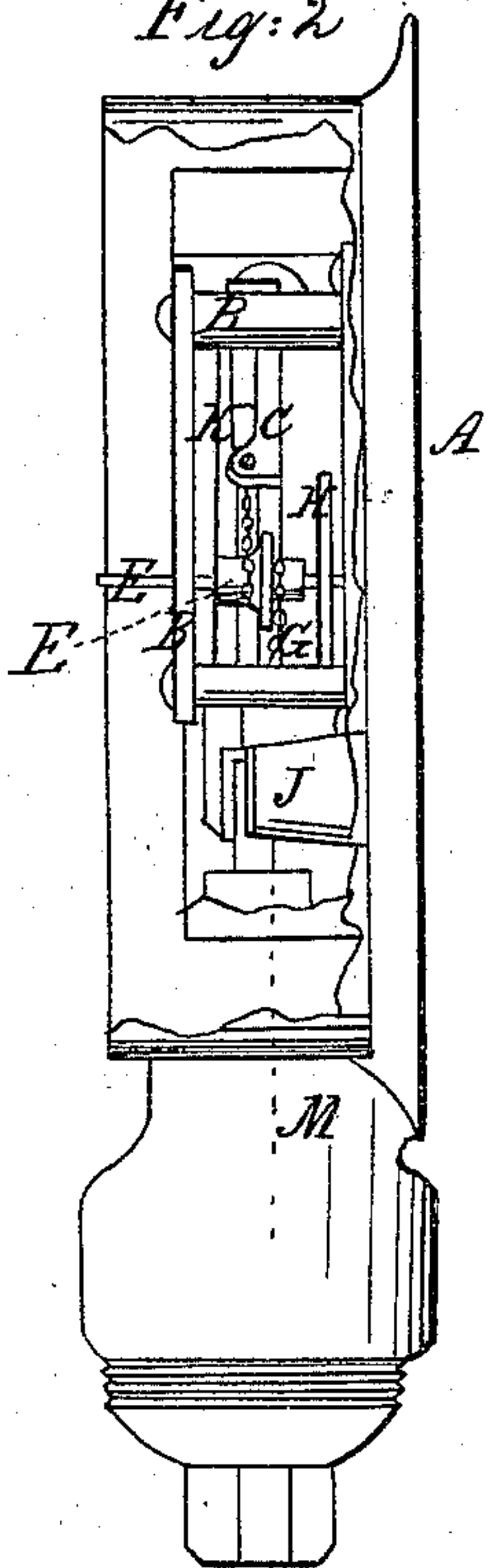
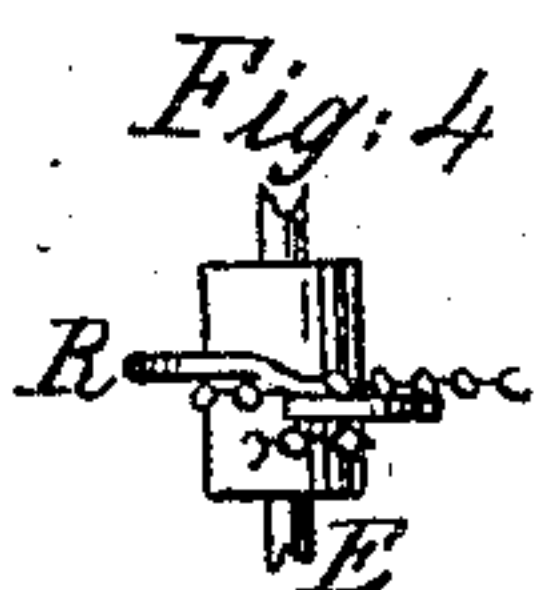


Fig: 4



Witnesses

J. B. Burridge
Frank S. Alden

Inventor.

John P. Holt

United States Patent Office.

JOHN P. HOLT, OF CLEVELAND, OHIO.

Letters Patent No. 70,213, dated October 29, 1867.

IMPROVEMENT IN STEAM-GAUGES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN P. HOLT, of Cleveland, in the county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Steam-Gauge; and I do hereby declare that the following is a full and complete description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front view of the gauge with the dial-plate detached.

Figure 2 is a side view.

Figure 3, a vertical transverse section.

Figure 4, a detached section.

Like letters of reference refer to like parts in the views.

A, fig. 1, is a metallic shell, in which is secured a small frame, B. In this frame is pivoted a bow, C, at the point X. From the crown of this bow proceeds an arm, D, which is attached to the bow by set-screws *a*, inserted in slots so that the arm may be shortened or extended as circumstances may require. The bow C may be constructed with one arm, and chain E, fig. 2, is a shaft on which is keyed a spiral pulley, F, to which is attached in the middle the chains G, the ends being fastened to the extreme ends of the bow, as shown in fig. 1. Also secured to this shaft is one end of a coiled spring, H, whereas the other end is secured to the frame, the purpose of which will presently be shown. I is a lever, having one end pivoted to a post, J, fig. 2, and the other connected to the arm D by means of a link, K. This lever is also connected to a stem or rod, L, fig. 3, fitted loosely in the neck M, and terminated with a button, N, fig. 3, covered with an elastic disk, K'. This button is also fitted loosely in the chamber N', formed by the enlargement or collar of the joint by which the apparatus is connected to the steam pipe or boiler. P, fig. 1, is a stout spring, the ends of which are bolted to the sides of the shell at the point X, and supported endwise by the stays or abutment P', which receive and sustain the end pressure of the spring. Through the lower side of this spring passes the stem L to a shoulder, against which the under side of the spring rests. On the protruded end of the stem is a nut, M, which, on being screwed down, confines the spring between the nut and shoulder; hence the weight of the stem and button is supported by the spring, and consequently does not hang upon the lever.

Having thus described the several parts of the apparatus, and their arrangement, the operation of the same is as follows:

The gauge is attached to the boiler by means of a steam pipe and nut-joint, Q. The pressure of the steam is thereby brought to act directly on the button N, which forces it upward, more or less, according to the number of pounds of steam carried. The spring at the same time reacting or resisting this pressure will be forced up by the steam proportionately, and the stem being attached to the lever I, and the lever to the arm D, will, as a consequence, cause the bow to move in the direction of the arrow, and thereby turn the shaft E by means of the chain G wound partially around the pulley, but which will immediately unwind by the reaction of the spring H, as the pressure of the steam may diminish. Now, a pointer fixed to the shaft, and which is indicated by the red line, will turn with the shaft, and indicate on a dial, by which the face of the gauge is covered, the amount of pressure exerted on the button, which will be that on the boiler. The peculiar construction of the mechanism is such that a very slight compression of the spring will produce a movement of the pointer to such a degree as to be very obvious to the eye; thus the inward compression of the spring, if not more than one-sixtieth of an inch, will cause the pointer to move several inches around the index, and a complete revolution of the same around the dial will take place on forcing the spring upward not more than one-sixteenth of an inch; hence every degree of pressure is accurately noted on the dial from 0, or no pressure, as indicated by the red line *c*, to one hundred and seventy pounds, the highest that the boiler can carry with safety. The stem and button being fitted loosely in each of their respective places, allows them to act freely and without the least possible restraint, so that the full effective pressure of the steam is free to act on the gauge, and thereby note every change that may take place in the pressure of the steam. The manner of fastening the chain G to the pulley is shown in fig. 4. This pulley is provided with a spiral flange, R, surrounding the middle, and by which the chain is kept from abrading upon itself as it is wound and unwound upon it. This flange is cut through from the periphery to the base, and in which cut is placed the chain. The ends of the cut are then closed upon it, which holds the chain securely from being displaced.

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

1. The arrangement of the lever I, link K, and adjusting-arm D with the bow C, chain G, and spindle E, substantially as set forth.
2. The combination of the abutments P' with the case A and spring R, substantially as herein set forth.

Witnesses:

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