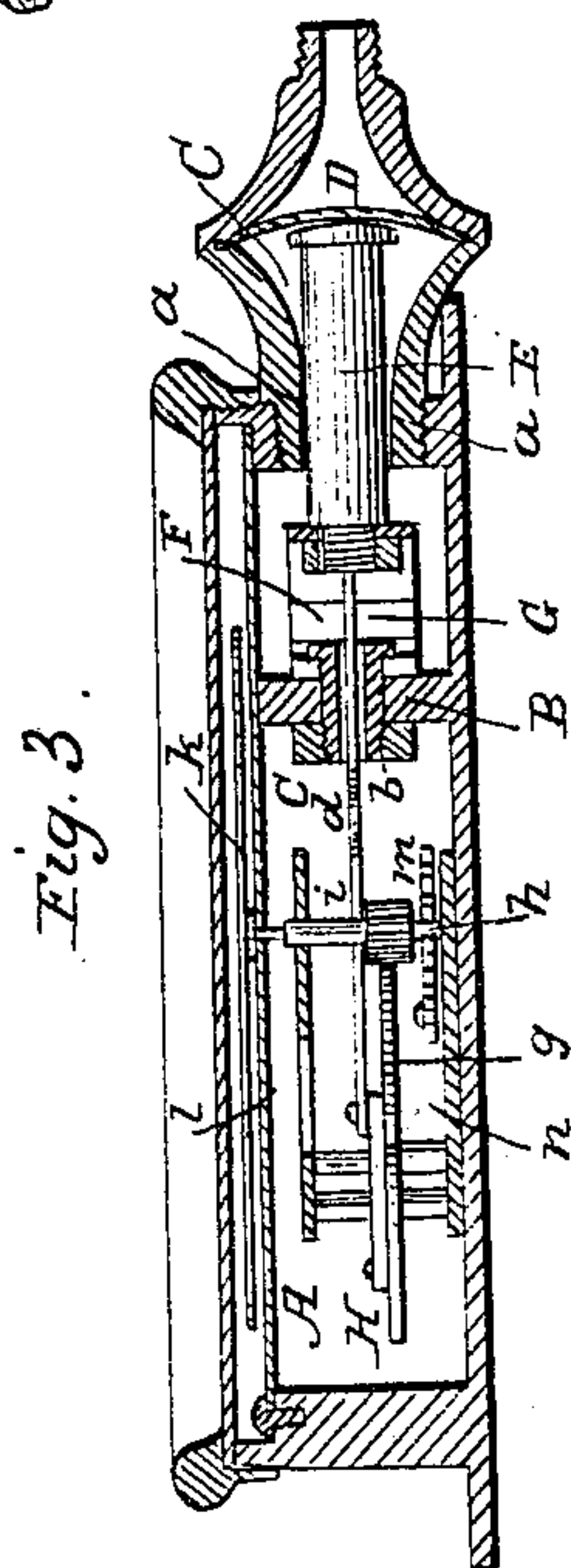
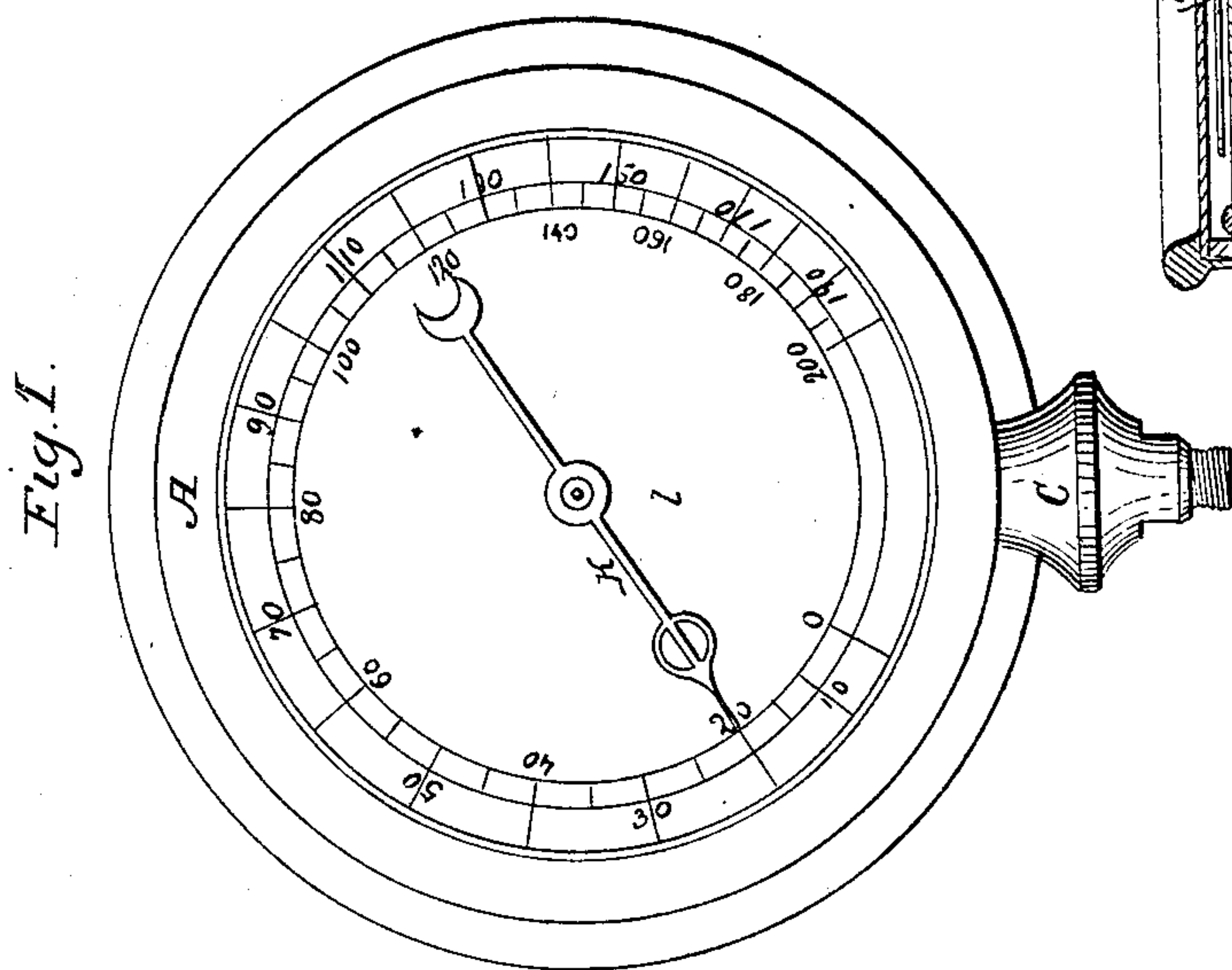
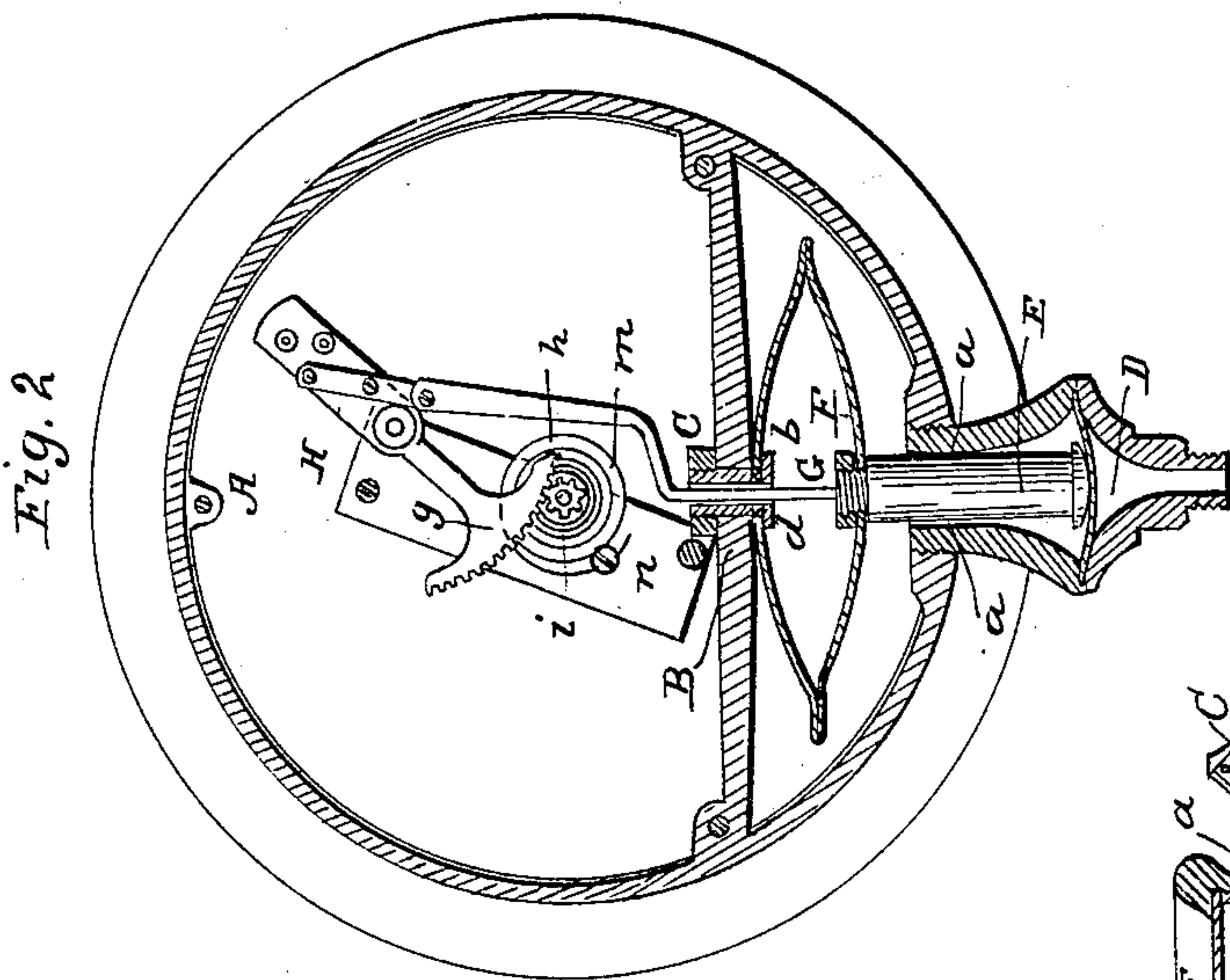


M. M. YOUNG.
Steam Pressure Gage.

No. 19,177.

Patented Jan. 9, 1858.



UNITED STATES PATENT OFFICE.

MOSES M. YOUNG, OF EAST BOSTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF, HARVEY T. LITCHFIELD, AND JOSEPH G. HAMBLIN, ALL OF SAME PLACE.

STEAM SPRING-PRESSURE GAGE.

Specification of Letters Patent No. 19,177, dated January 19, 1858.

To all whom it may concern:

Be it known that I, MOSES M. YOUNG, of East Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Spring-Pressure Gages 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 view of a gage constructed with my improvement. Fig. 2, a vertical and longitudinal section of it taken through its piston and spring and parallel to its dial plate. Fig. 3, a vertical, central and transverse section.

My invention has reference to what is usually termed, a "spring pressure gage", the nature of my improvement consisting in supporting the piston entirely by an elliptic spring sustained in position by a cross bar or partition or the equivalent of the same applied in the case of the instrument, the piston being made to rest in other respects only against the elastic diaphragm and to have no connection with the sides of the space within which it is situated and moves.

The great advantage resulting from my invention is that the piston is free to operate without friction and cannot have its movement retarded or impeded by oxidation or rust. Besides this, I am enabled to employ in support of said piston, what is usually termed an elliptic spring, which for certainty of operation and ability to maintain a constant elasticity is believed to be the best kind of spring which can be used.

In the drawings, A, exhibits the case of the pressure gage, such case having a bar or partition, B, extending across it, as shown in Fig. 2, and 3. Communicating with the said case, is a piston chamber C, whose bottom D, is composed of an elastic diaphragm made either of prepared gutta percha or vulcanized india rubber, or the equivalent thereof capable of withstanding a great degree of heat. When the pressure gage is in use, the steam of the boiler on which it may be placed is suffered to press directly against the underside of the elastic diaphragm so

as to force the diaphragm up against a rod or piston, E, projecting into the chamber C, from the lower leaf of an elliptic spring F, arranged as shown in the drawings, and having its upper leaf fastened at its middle part to the partition B. There is a clear space, *a*, entirely around the piston and between it and the inner surface of the chamber, C, the piston not being allowed to touch the inner surface of the chamber or have any direct connection whatever with it, the same being in order that the piston during its longitudinal movements may be entirely free from friction. The elliptic spring is confined to the partition B, by means of a screw, *b*, and a nut, *c*, arranged as shown in Figs 2, and 3. Through the said screw *b*, there is a cylindrical passage, *d*, through which a rod or connection bar G, extends upward from the piston and at its upper end is jointed to a lever, H, which carries a toothed sector, *g*. This toothed sector engages with a pinion *h*, on the arbor *i*, of the index pointer, *k*, of the dial plate, *l*. A coiled spring, *m*, arranged as shown in Figs. 2, and 3, has its inner end attached to the arbor while its outer end is secured to the case or the arbor frame, *n*, screwed thereto. The passage through the confining screw of the elliptic spring should be made of such diameter that the connection rod, G, during its movements may not touch against the sides of the passage whereby any friction on the rod may be generated.

From the above it will be seen that the spring will be free to operate without any impediment created by friction either of the piston against the sides of its chamber or of the connection rod against the inner surface of the passage through the confining screw of the spring.

The degree of pressure of the steam in the boiler will be indicated by the position of the index hand or pointer on the dial plate, provided the latter be properly graduated.

Having thus described my invention, what I claim is—

Supporting the piston entirely by an elliptic spring sustained in position by a cross bar or partition or the equivalent

thereof applied in the case, and making the piston to rest in other respects only against the elastic diaphragm, and have no connection with the sides of the space within
5 which such piston may move, the whole being productive of an advantage as above stated.

In testimony whereof I have hereunto set my signature this 4th day of November, 1857.

MOSES M. YOUNG.

Witnesses:

R. H. EDDY,
F. P. HALE, Jr.