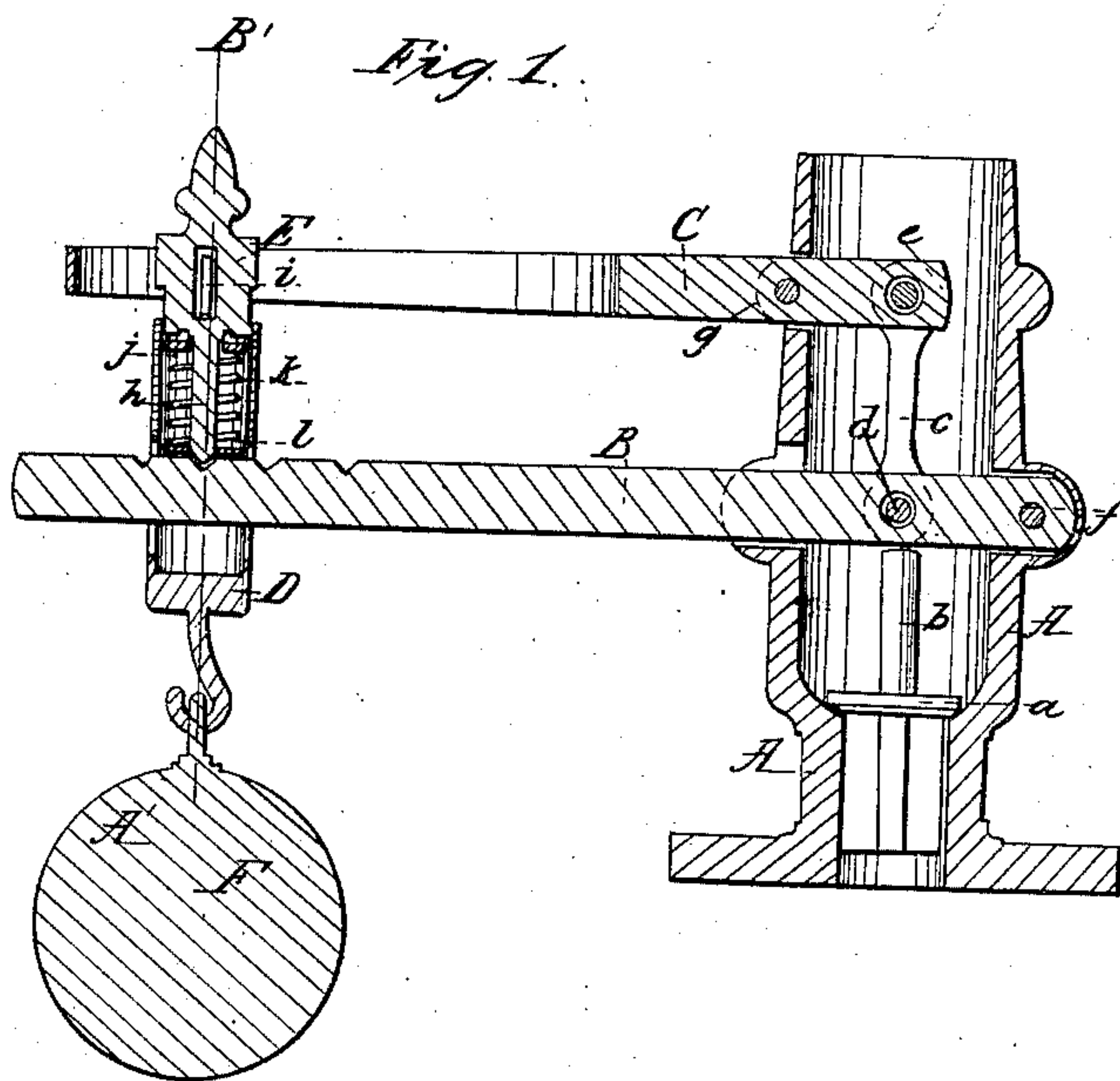
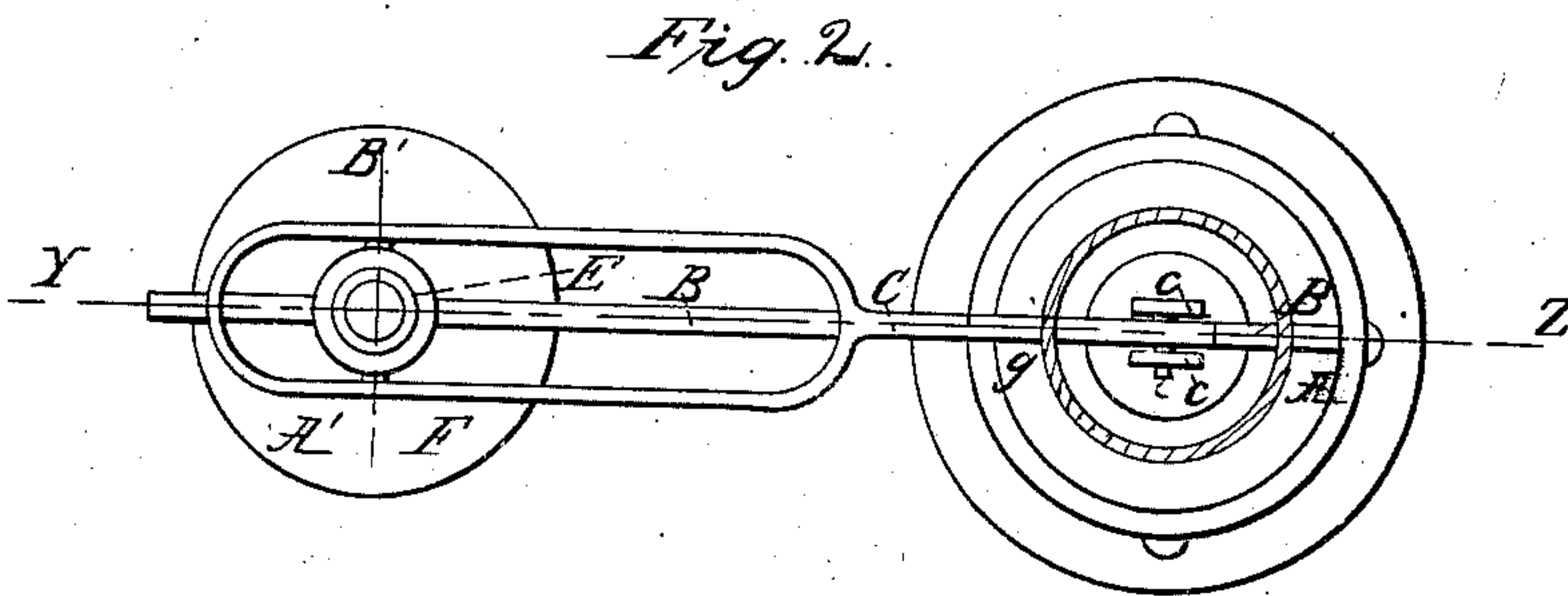
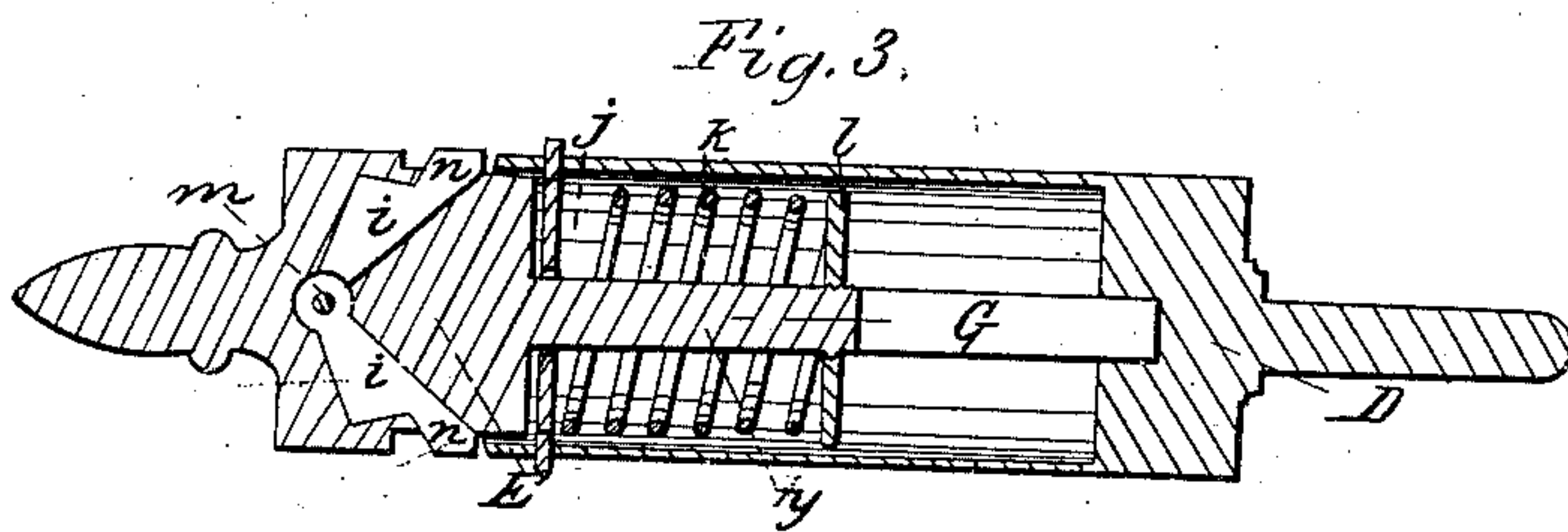


C. MASON.
SAFETY VALVE FOR STEAM GENERATORS.

No. 65,409.

Patented June 4, 1867.



Witnesses:
E. A. West
J. A. M. Causland

Inventor:
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United States Patent Office.

CARLILE MASON, OF CHICAGO, ILLINOIS.

Letters Patent No. 65,409, dated June 4, 1867.

IMPROVEMENT IN SAFETY-VALVES FOR STEAM GENERATORS.

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, CARLILE MASON, of the city of Chicago, in the county of Cook, and State of Illinois, have invented certain new and useful Improvements in Safety-Valves; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a longitudinal vertical section.

Figure 2, a top view; and

Figure 3, a vertical section of the weight-supporter.

The nature of my invention consists in providing a safety-valve with an additional lever, so connected with or attached to the valve proper, that whenever, by any motion or jar, the weight is deranged or lifted, such weight, or so much of the pressure thereof as is taken from the main lever, will be immediately received by the additional lever, and by it be transmitted to the valve, so that the pressure upon the valve will remain the same, or nearly the same, however much the weight may be disturbed; in providing the weight-supporter with spring and catches, so arranged that the spring will balance the weight; in providing such supporter with catches, so arranged that when the weight rests upon the spring, the main lever can be elevated or depressed without being interfered with in its operations by the additional lever, and in the several combinations hereinafter set forth and claimed, the object being to so construct a safety-valve for marine purposes, locomotives, and other movable engines, that whenever a motion is given which affects or disturbs the weight independently, or in a measure independent from the main lever, the force or portion of the weight so disturbed and taken from the main lever will react upon an additional lever so located as to bear upon the valve in the same direction as the main lever, and thereby keep the pressure upon the valve uniform; and also so that whenever any motion or jar which affects them all similarly, or whenever the valve is lifted by pressure from the steam, the additional lever will not interfere with the operation of the main lever or the valve.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The valve-cylinder or chest A, with the valve *a*, valve-seat and lever B, are constructed in any of the known forms, and are of the usual sizes and material. The weight F is attached and suspended by a weight-supporter, constructed substantially as shown at figs. 1 and 3, the lower portion D being a cylinder provided with a hook at the lower end and open at the upper. Into the upper end I insert the part E, which has about one-half of the length of its largest diameter fitted to the interior diameter of the cylinder D, and is provided with an extension or rod, *h*, which is bevelled at its lower end so as to fit the notches or catches of the lever B. Around this bar or rod I place the spring *k*, which spring at its upper end presses against the rods *j*, which pass around the bar *h*, and are attached to or pass through the cylinder D, and at its lower end rests upon or presses against the plate *l*, which plate or projection is attached to the rod *h* near its lower end. The elasticity of this spring will be adjusted so as to balance the weight F. Near the upper end of the part E, I insert into a cavity or slot prepared for that purpose, the catches *i*, which are hinged or pivoted at *m*, and so cut away at *n* as to present a square shoulder when elevated so as to strike the lever C. In length, they should not project beyond the cylinder D when resting at their lowest point. The lever C, in the form shown, is forked so far as it extends over the portion of B, which is provided with catches or stops, and may be brought together at the outer end, as shown, or left open, as shall be desired. The prongs or arms of the fork are spread sufficiently to receive the weight-supporter between them; but I do not confine myself to any particular form or location of this additional lever, as, with a slight change of the supporter, it may be made of a single bar, either straight or bent, and, by a slight modification of the weight-supporter, may be placed below the main lever, and, with the necessary changes of the pivotal points, be made to operate successfully. This lever C is pivoted to the valve-cylinder on the side opposite to the pivot *f* of the lever B, as shown at *g*, and is extended into the cylinder A a little more than half of its diameter. To its inner end, at the centre of the cylinder A, I attach two rods or bars *e*, which extend down to the lever B, and are pivoted to it at *d*, as shown in fig. 1, or may be made to bear directly upon the valve-stem *b*, or the valve *a*; but when the lever C is located above the lever B, I prefer the connection of these rods *e* as shown. The weight F may be made in any of the usual forms, and attached to the cylinder D

n any convenient manner. The slots G, for the passage of the lever B through the cylinder D, will usually be made in length about twice the width of the lever. As valves are made of many sizes, no definite sizes or proportions will be necessary in this description, as they will readily suggest themselves to those skilled in their construction.

In operation, whenever the weight is lifted by the pressure of the steam, the additional lever does not affect or interfere with the movement of the main lever, as the lifting force is communicated to the weight-supporter through the rod *h*, so that catches *i* are not projected or disturbed. When the weight is disturbed by any rolling or other motion, or by any sudden jar, if not too severe or prolonged, the reaction of the spring—it being so gauged as to counterbalance the weight—will keep the pressure uniform upon the main lever; and if it is severe or prolonged, then the spring will cause the cylinder to rise upon the head E, so as to project the catches *i* under the additional lever C, and the proportion of the weight which is relieved from its direct operation upon the main lever will be transmitted by the spring to the additional lever, and thereby keep the pressure upon the valve uniform, so that by means of the spring, whatever the motion of weight may be, its force will be exerted upon one or both of the levers, and be adjusted between them, so as to produce, for all practical proposes, a uniform pressure upon the valve.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The lever C, arranged substantially as and for the purposes specified.
2. The weight-supporter D E, provided with a spring, *k*, substantially as specified.
3. The catches *i*, when so constructed or attached as to remain in position when the weight is elevated by the main lever, and to project when the weight is elevated from any external disturbance, substantially as specified.
4. The arrangement of the spring *k*, with the lever C, or their equivalents, so as to prevent the escape of steam whenever the weight is agitated from any cause, such arrangement being substantially as specified.
5. The combination of the lever C and spring *k* with the lever B and weight F, substantially as specified.
6. The combination of the lever C, rod or rods *e*, and lever B, with the valve *a*, substantially as specified.
7. The combination of the cylinder D, cap E, with the spring *k* and rod *h*, substantially as set forth.
8. The combination of the weight-supporter D E, provided with a spring, *k*, and catches *i*, lever C, and rod *e*, with the lever B, cylinder A, valve *a*, and weight F, substantially as and for the purposes specified.

CARLILE MASON.

Witnesses:

E. A. WEST,

J. H. McCausland.