

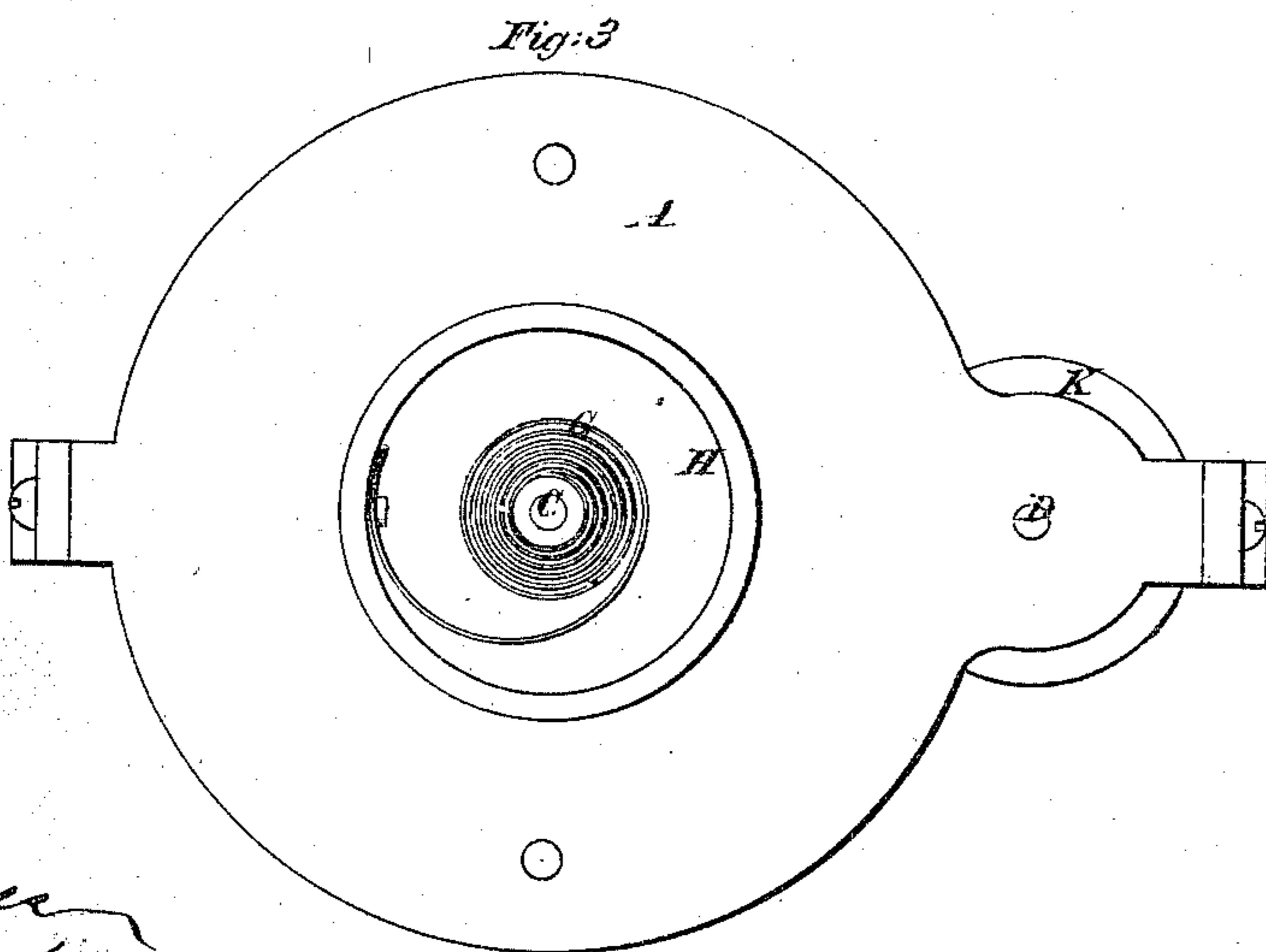
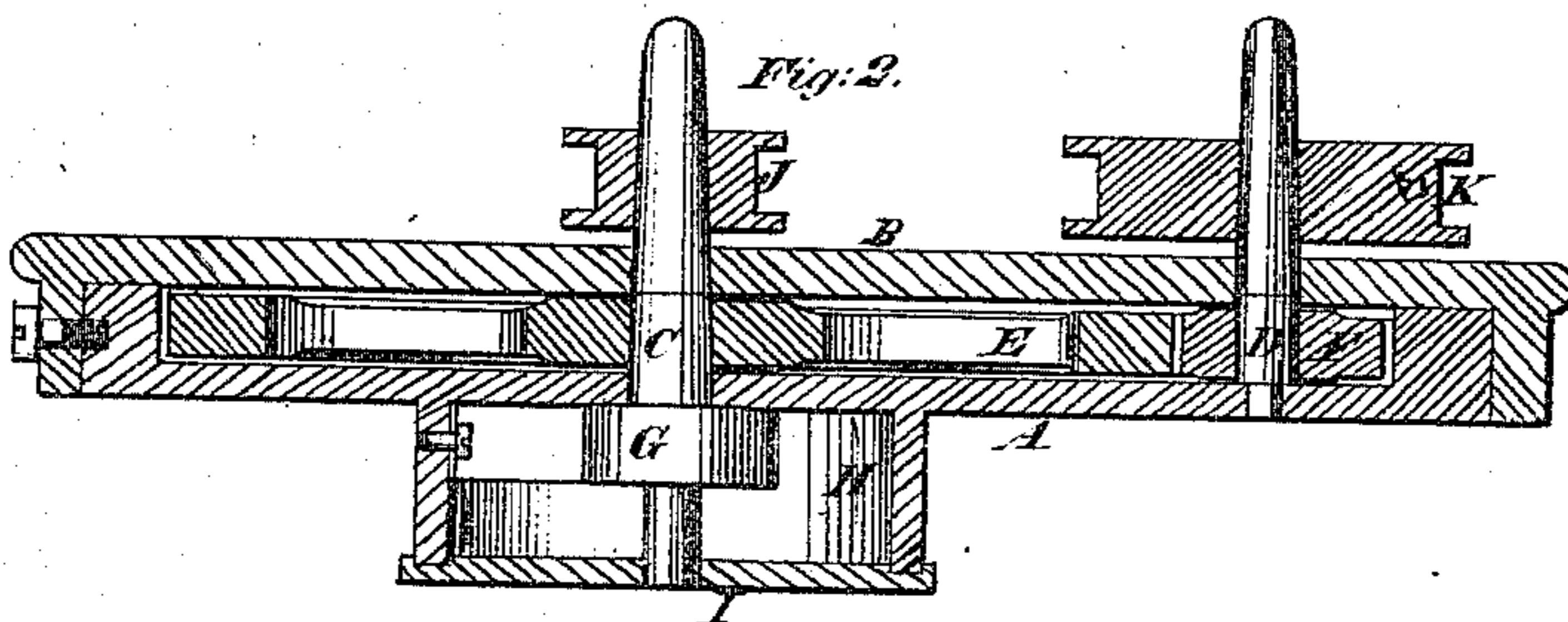
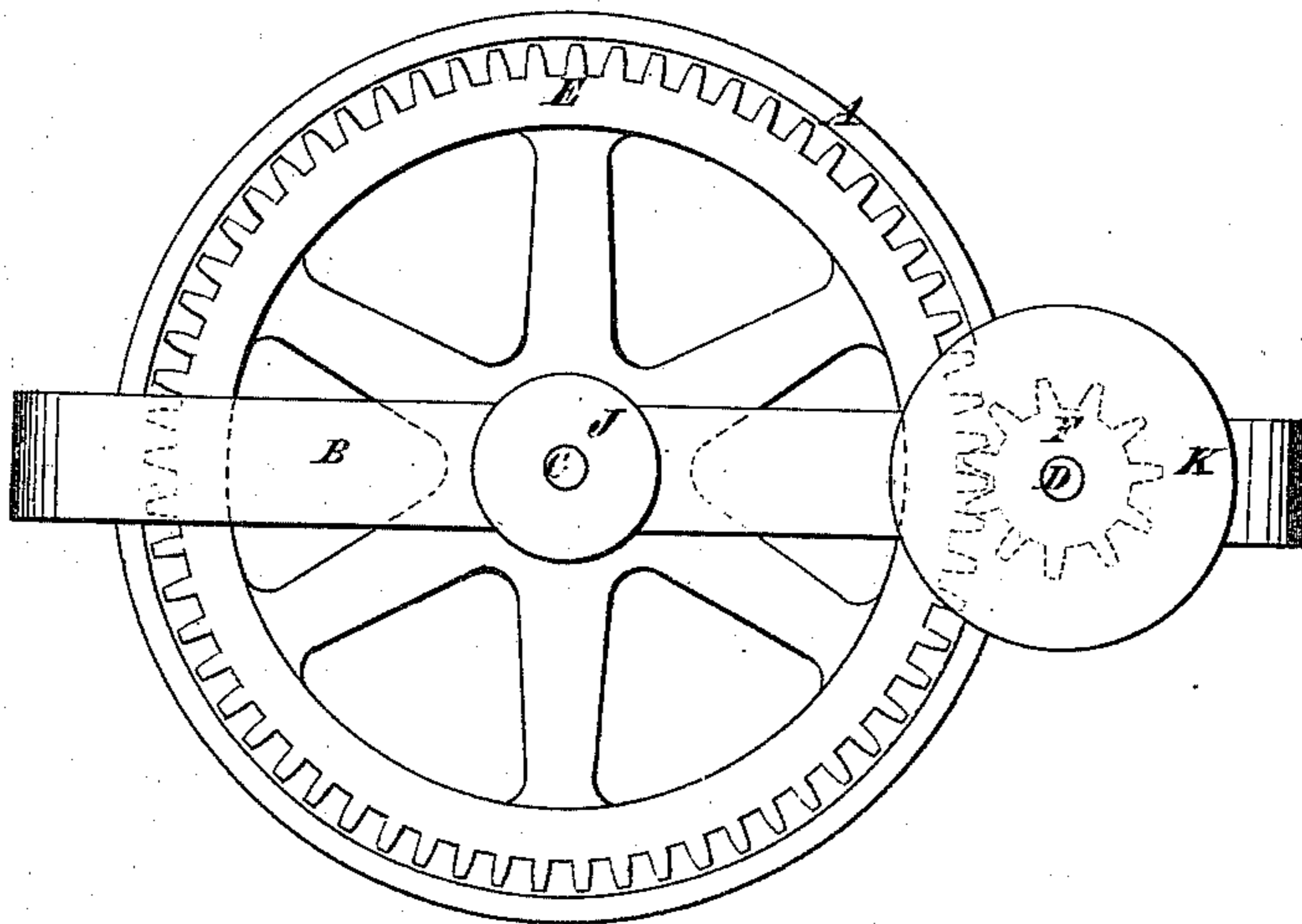
H. I. Brevort,

Mechanical Gearing.

No. 100,592.

Fig: 1.

Patented Mar. 8. 1870.



Witnesses:
Thos. Haynes
Herb. French

Henry L. Brevort

United States Patent Office.

HENRY L. BREVOORT, OF BROOKLYN, NEW YORK.

Letters Patent No. 100,592, dated March 8, 1870.

IMPROVEMENT IN REDUCING-GEAR FOR STEAM-ENGINE INDICATORS.

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, HENRY L. BREVOORT, of Brooklyn, in the county of Kings, and State of New York, have invented a new and improved Reducing-Gear for Steam-Engine Indicators; and I do hereby declare that the following is a full, clear, and exact description, reference being had to the accompanying drawing.

In the application of the steam-engine indicator, the want of some convenient and universally applicable means of transmitting motion from the piston of the engine to the card-barrel of the indicator has been very much felt. It has been customary to rig up temporarily, to suit each particular case, a lever which, by means of connecting cords, would produce a suitably reduced movement of the card-barrel, and which, after it has been used, has been thrown aside.

This invention consists in a portable reducing-gear of novel construction, provided with pulleys, and which can be conveniently changed to suit engines of different strokes of piston.

To enable others skilled in the art to make and use my invention, I will proceed to describe it, with reference to the accompanying drawings, in which—

Figure 1 is a front view of my improved reducing gear.

Figure 2 is a central section of the same, perpendicular to fig. 1.

Figure 3 is a back view of the same with its back cover removed.

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

A is a plate or open box, having arranged across and parallel with its face, and firmly secured to it by screws *a a* or otherwise a bar, B. This plate or box and bar constitute the framing or case of the apparatus.

C and D are two spindles fitted to turn freely in bearings in the plate A and bar B, the spindle C having firmly secured to it, between the said plate and bar, a spur-gear, E, and the spindle D having firmly secured to it, between the said plate and bar, a much smaller spur-gear or pinion, F, gearing with E.

Attached to the rear end of the spindle C is a spring, G, which is coiled up within and attached to the inside of a box, H, provided on the back of the plate A.

This box is provided with a lid or cover, I, which is omitted in fig. 3, to expose the spring to view. The turning of the gear E in one direction produces such a tension on the spring G as will cause it to turn back the said gear in the opposite direction, when the latter is liberated.

The spindles C and D protrude some distance through the bar B, and the parts so protruding are made of taper form or otherwise, so formed as to provide for the ready attachment to or detachment from them of

two flanged pulleys J and K. Several such pulleys of different sizes are provided, which may be readily changed on each spindle at pleasure; and to facilitate the changing of the pulleys and allow a greater number of changes to be made with a given number of pulleys, the two spindles C and D should have those portions which receive the pulleys made of uniform size, that either pulley may be placed on either spindle.

To apply the reducing-gear to make this connection between the steam-engine piston and the card-barrel of the indicator, for the purpose of transmitting motion to the latter from the former, the plate A is attached to any convenient fixed support, permanent or temporary, by screws or otherwise, in such position that a cord attached to and wound upon the pulley K may be attached to the piston-rod of the engine, and that a cord wound upon the pulley J may be attached to the pulley on the card-barrel of the indicator. The movement of the engine piston then, by means of the cord attached to and wound on the pulley K, turns the said pulley and its spindle D and pinion F, and the said pinion communicates rotary motion to the gear E and its spindle C and pulley J, and the cord attached to the latter pulley turns the card-barrel of the indicator.

In this operation the greater circumference of the gear E, as compared with that of the pinion F, causes the movement of the cord connecting the pulley J with the pulley on the card-barrel to be much reduced, as compared with the movement of the cord connecting the pulley K with the piston-rod, and hence, with a proper relation between the sizes of the two pulleys J and K, a piston of long stroke will not produce more than a sufficient portion of a single revolution of the card cylinder to enable the "card" to be obtained.

The relative circumferences of the pinion F and gear E, and the length of stroke of the engine piston, and circumference of the card-barrel being known, it will be a matter of easy calculation for the engineer to apply to the spindles C and D pulleys J and K, of proper relative sizes to obtain from the piston of the engine a proper movement of the card-barrel to obtain "cards" of the requisite length.

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

A reducing gear for steam-engine indicators, consisting of a gear, E, and pinion, F, spindles C and D, and pulleys J and K, the whole arranged and applied in a suitable framing or case, to operate substantially as herein described.

HENRY L. BREVOORT.

Witnesses:

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