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GAGE MOVEMENT.

APPLICATION FILED FEB. 21, 1910.

987,039.

Patented Mar. 14, 1911.

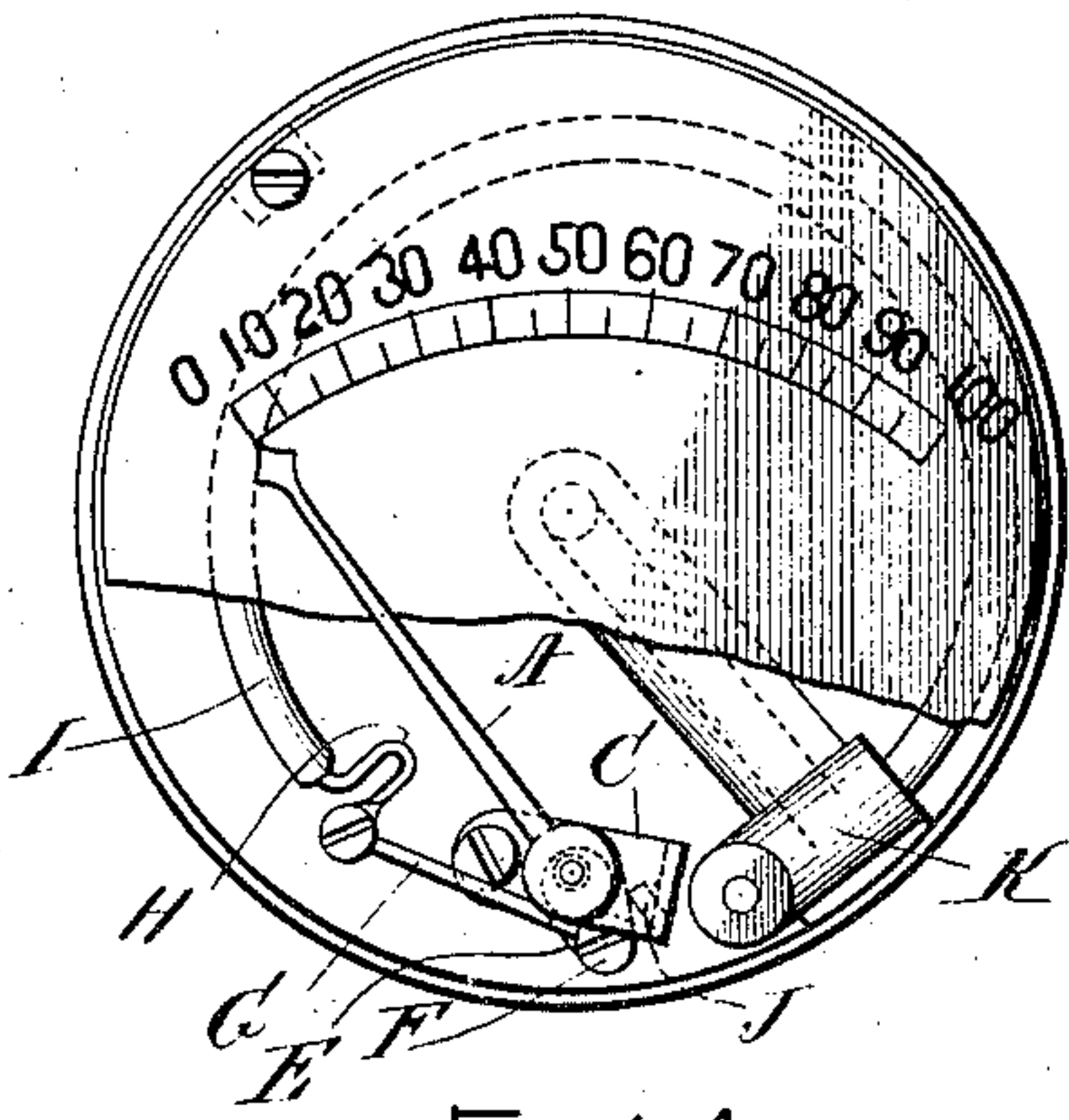


Fig. 1.

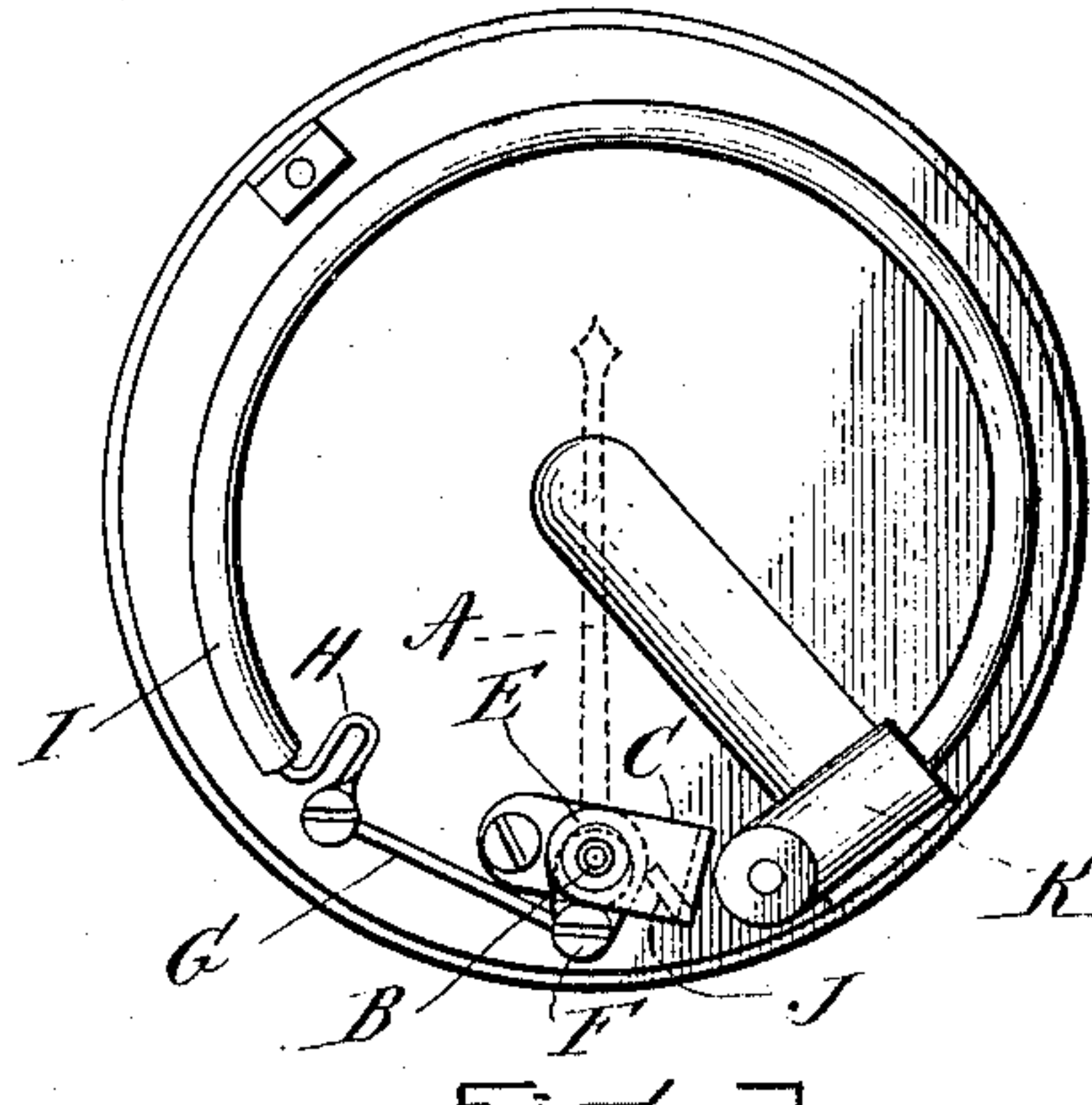


Fig. 2.

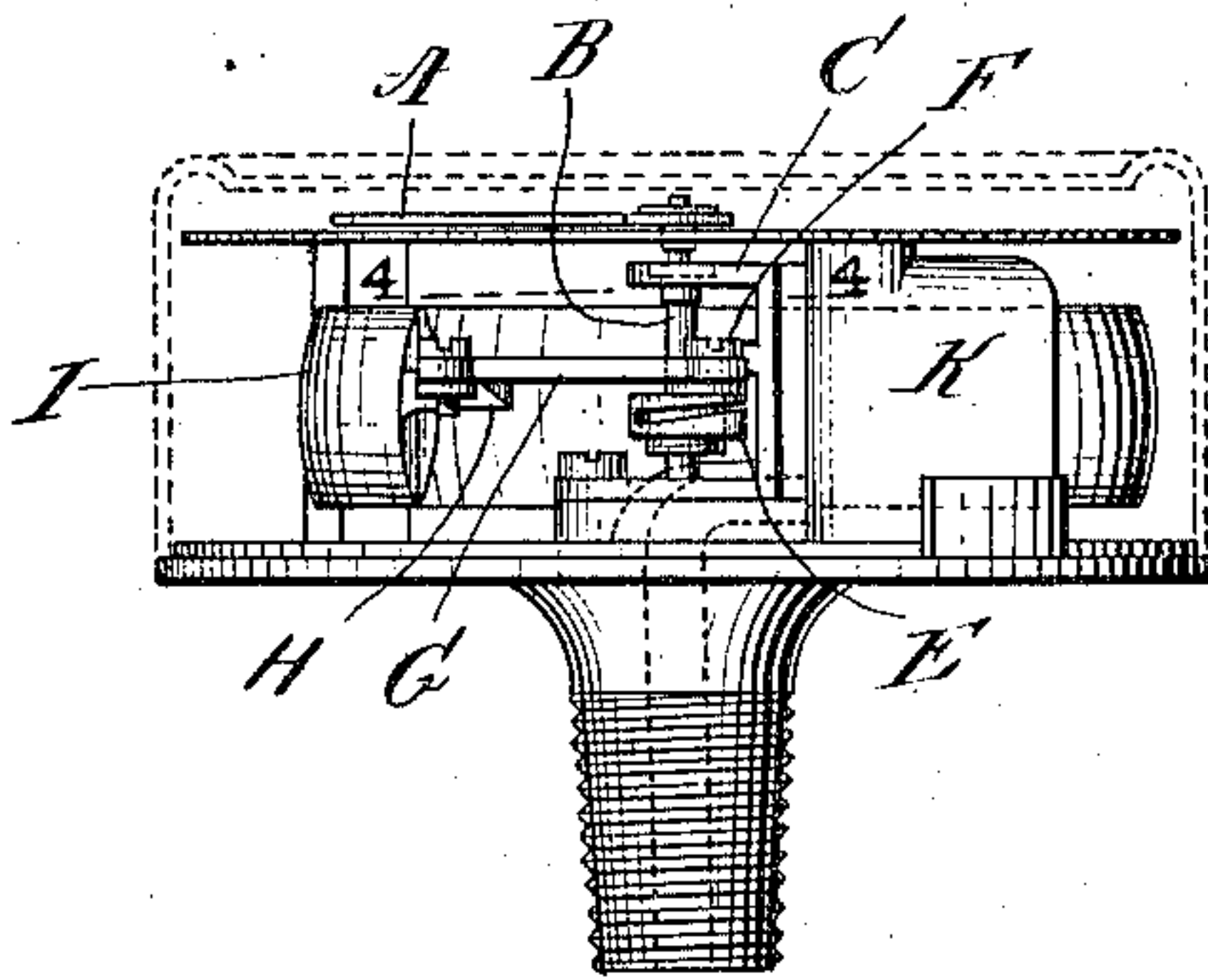


Fig. 3.

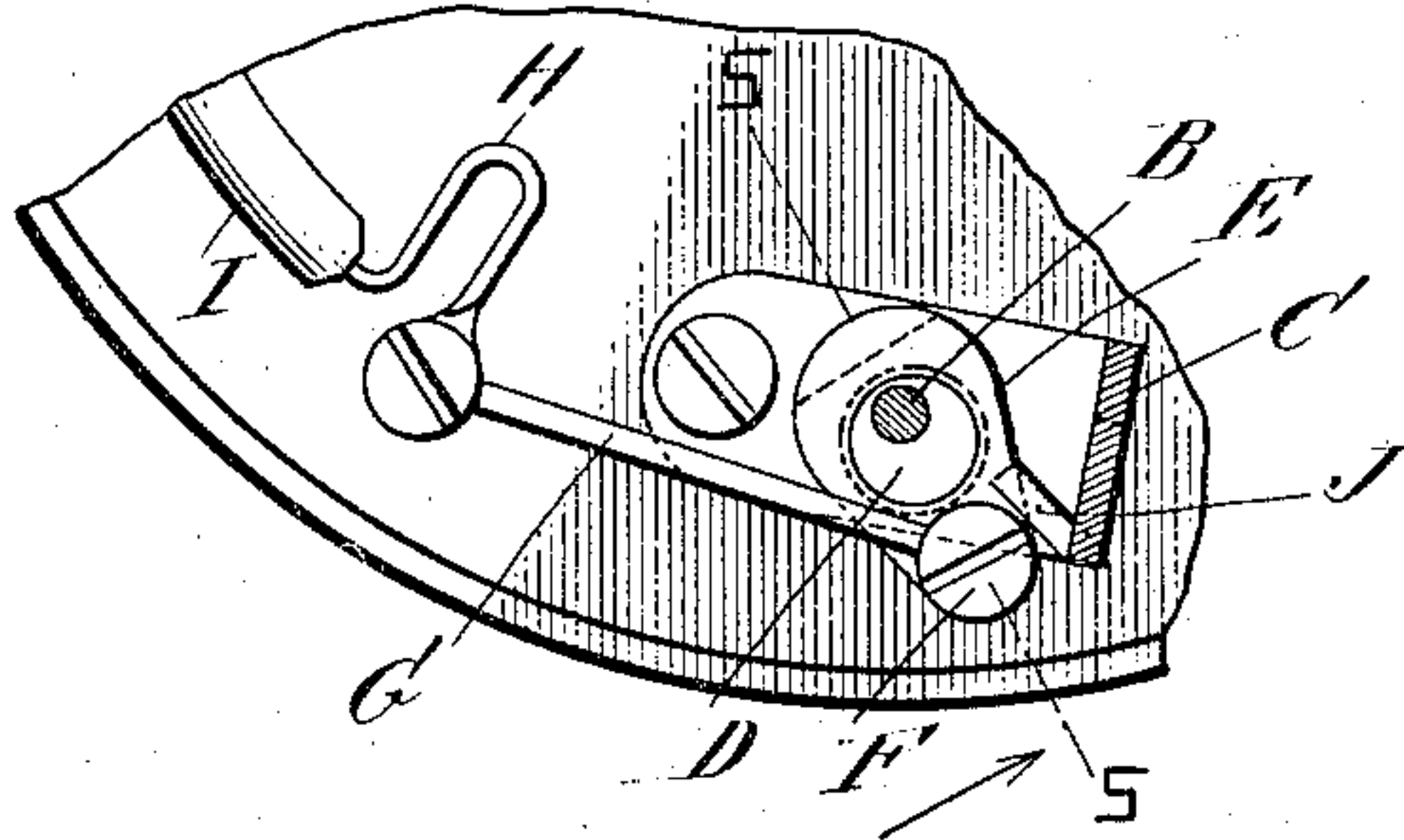


Fig. 4.

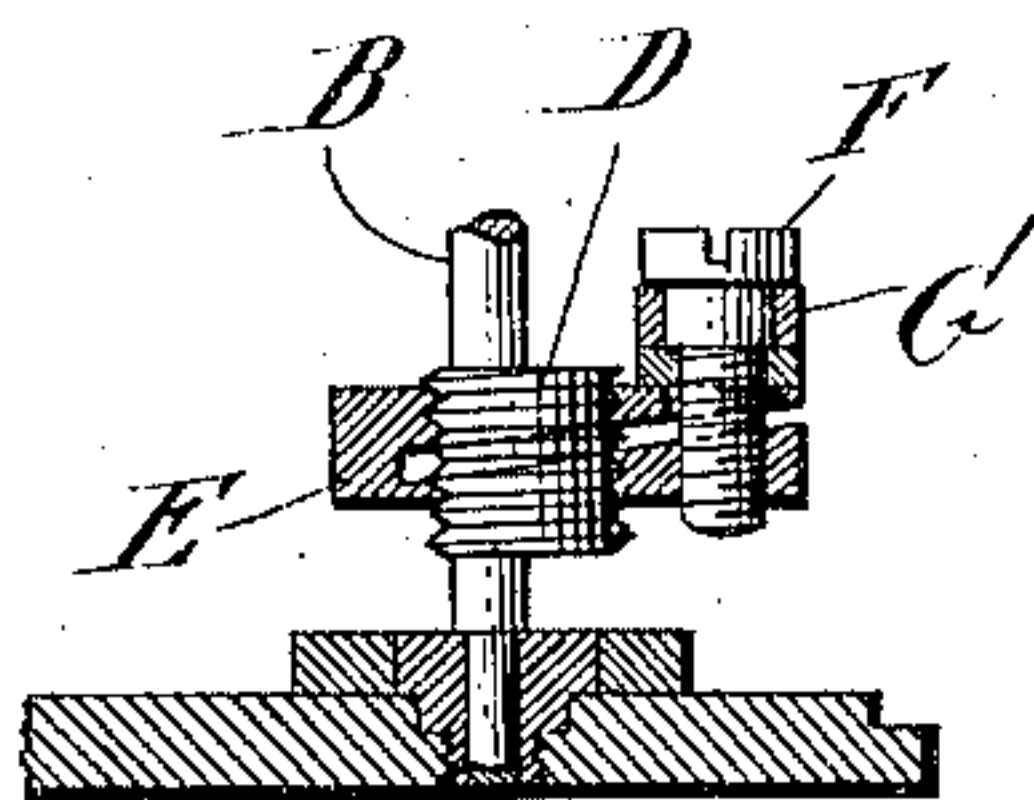


Fig. 5.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## GAGE-MOVEMENT.

987,039.

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*To all whom it may concern:*

Be it known that we, FREDERICK C. BLANCHARD and ERNEST B. CROCKER, citizens of the United States, and residents of Bridgeport, in the county of Fairfield and State of Connecticut, have invented new and useful Improvements in Gage-Movements, of which the following is a specification.

Our invention relates to pressure or vacuum gages and more particularly to the movement employed in such gages to actuate the gage or index hand. The movement in gages of this character is commonly constructed with a toothed sector which actuates a pinion to which the index hand is attached. This construction has proved most unsatisfactory in gages where there is either external mechanical vibration or internal pressure vibration; for, because of the small bearing surface between the sector and the pinion, vibration causes a rapid wearing away of the gears resulting in progressively increasing inaccuracy. A less common type of gage movement is that wherein levers are substituted for the segment and pinion. These lever movements, while commercially more satisfactory than the sector and pinion movement, are of necessity constructed with comparatively heavy parts with the result that when used under conditions where there is external or internal vibration they acquire considerable momentum and tend to rack themselves to pieces.

It is the principal object of this invention to provide a simple gage movement wherein the moving parts are few in number, and so light as not to be injuriously affected by vibration.

A further object of this invention is to provide means whereby the link which connects the actuating member with the movement may be made of uniform or standard size; and a further object is to provide a zero stop in the movement itself, thus eliminating the necessity of placing the objectionable stop pin upon the gage dial.

Referring to the drawings which illustrate an embodiment of our invention,—  
Figure 1 is a front elevation of our improved gage movement, showing the parts in normal position; Fig. 2 is a similar view showing the position of the parts after pressure has been applied; Fig. 3 is an end

elevation of the movement, the parts being in the position shown in Fig. 1; Fig. 4 is a sectional view on the line 4—4, Fig. 3; and Fig. 5 is a sectional view on the line 5—5, Fig. 4.

A is the gage or index hand mounted in the usual manner on the hand staff B, pivoted in the frame C. At or about the center of the hand staff B there is provided an eccentric cylindrical section D having external threads, said section being secured to said hand staff in any suitable manner, as by being formed integral therewith.

E is a crank threaded through its hub and adapted to fit onto the threaded portion of the section D. The crank E is slotted, and the screw F which connects said crank E with the link G is cleared through the metal on the top side of said slot, and tapped into the metal below the slot, so that when the screw F is tightened the slotted crank E is clamped together and locked in position on the eccentric threaded section D.

H is a pliable tip, preferably blanked from sheet metal and twisted and bent into the hooked shape shown in the drawings. The tip H is secured in any suitable manner to the actuating member, shown in the drawings as a Bourdon tube spring I. The link G is secured at one end to the crank E as above described and at the other end to the pliable tip H.

The frame C is provided with a stop J, preferably formed integral therewith, and located in the path of the crank E, or the parts carried thereby, and adapted to limit the movement of said crank.

Because of the fact that Bourdon tube springs of the same lot, made at the same time, vary in stiffness, it is essential in all practical gage construction to provide for purposes of calibration, an adjustment in the movement itself so that the gage or index hand will record accurately upon the dial. This adjustment is attained in our improved movement by setting the crank E in its starting position on the eccentric section D and changing its throw by turning the hand staff B within said crank until the desired throw is obtained. When the desired adjustment has been thus obtained, the crank is securely locked in adjusted position upon the section D by means of the screw F as already described.



In practice when the Bourdon tube spring I is soldered or otherwise secured to its base K, its free end is in a slightly different position with relation to the movement in practically every gage. Therefore, unless some means are provided to compensate for this difference in position, a connecting link of special length must be made for each individual gage. To overcome this difficulty we provide the pliable tip H, which is secured to the end of the spring I, and can be bent by any suitable tool and brought into proper position to be secured to the link G without disturbing the adjustment of the movement. This construction permits the employment for this purpose of a connecting link of uniform or standard size, thus resulting in a saving in the cost of manufacturing and assembling the parts, and also permits the links to be furnished to users as spare parts.

As is well known, the stop pin commonly placed upon the dial of gages to hold the gage or index hand at zero, is a fruitful source of difficulty and frequently causes the gage to become inaccurate, if not indeed inoperative. This result comes about by reason of the loosening of the hand which is commonly caused by the hand pressing hard against the pin or being snapped violently back against it. To overcome this difficulty we provide the stop J on the frame C located in the path of the crank E, or the parts carried thereby, and against which said crank or parts rest when the hand is at zero. In this construction the stop is located where it serves as an abutment for a part of the movement itself and as these members

are sufficiently stout to withstand any possible shock or strain to which the gage movement may be subjected, danger of loss of adjustment or of displacement of the hand, is removed.

We claim:

1. In a gage, the combination with an actuating member and an index hand, of a hand staff provided with an eccentric cylindrical section, a crank adjustably mounted on said section, and an articulated connection between said actuating member and said crank.

2. In a gage, the combination with an actuating member and an index hand, of a hand staff provided with an externally threaded eccentric cylindrical section, a slotted crank threaded onto said section and adjustably mounted thereon, and an articulated connection between said actuating member and said crank.

3. In a gage the combination with an actuating member and an index hand, of a hand staff provided with an externally threaded eccentric cylindrical section, a slotted crank threaded onto said section and adjustably mounted thereon, a screw adapted to clamp and hold said crank in adjusted position and an articulated connection between said actuating member and said crank.

Signed by us at Bridgeport, Connecticut, this 18th day of February, 1910.

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ERNEST B. CROCKER.

Witnesses:

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