

F. C. BLANCHARD & E. B. CROCKER.
GAGE MOVEMENT.
APPLICATION FILED JULY 13, 1910.

980,403.

Patented Jan. 3, 1911.

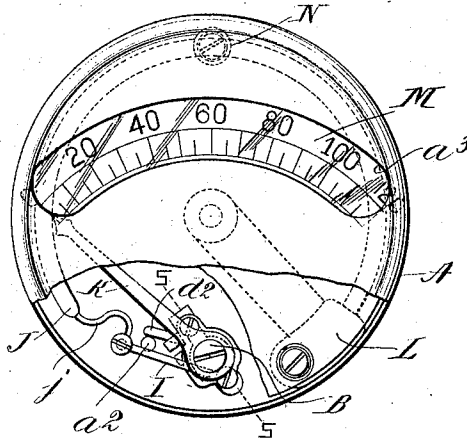


Fig. 1.

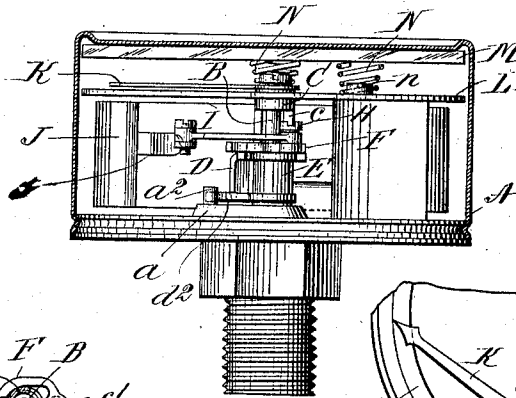


FIG. 2.

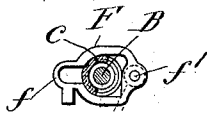


FIG. 3.

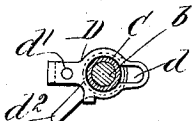


FIG. 4.

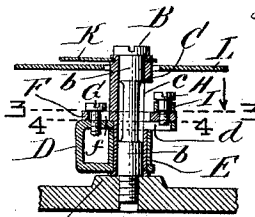


FIG. 5.

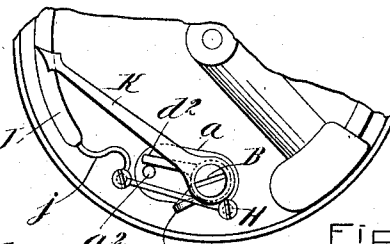


FIG. 6.

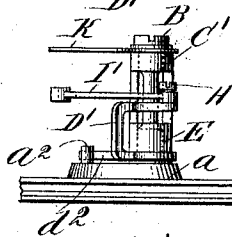


FIG. 7.

WITNESSES:

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UNITED STATES PATENT OFFICE.

FREDERICK C. BLANCHARD AND ERNEST B. CROCKER, OF BRIDGEPORT, CONNECTICUT,
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GAGE-MOVEMENT.

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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.

Heretofore in gages of this character the movement has been commonly constructed with a toothed sector which actuates a pinion to which the index hand is attached. Gage movements of this construction have proved unsatisfactory in use especially under conditions where there is either external mechanical vibration or internal pressure vibration; for as the bearing surfaces between the sector and pinion are small, vibration causes a rapid wearing of the gears resulting in progressively increasing inaccuracy. Moreover, movements of the segment and pinion type cannot well be made small enough for use in the small gages now commonly used on automobiles, steam turbines, etc., and in which the conditions as regards external and internal vibration are very severe. Attempts have heretofore been made to eliminate the objectionable features of movements of the segment and pinion type by the substitution of levers for the segment and pinion. These lever movements heretofore provided while commercially more satisfactory than the segment and pinion movements, have been constructed with comparatively heavy parts and have considerable gravity effect because of their unbalanced arrangement, the results being that when used under conditions where there is either internal or external 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 which may be very economically manufactured, and wherein the moving parts are so light and well balanced as not to be injuriously affected by vibration either internal or external.

Other features of novelty and improvement will be hereinafter described and particularly pointed out in the claims.

Referring to the drawings which illustrate 55
embodiments of our invention,—Figure 1 is a plan view of our improved gage the casing or jacket being partially broken away; Fig. 2 is a sectional view of the same; Fig. 3 is a sectional view on line 3—3 Fig. 60
5; Fig. 4 is a sectional view on line 4—4 Fig. 5; Fig. 5 is a sectional view on line 5—5 Fig. 1; Fig. 6 is a plan view of a modified form of our invention; and Fig. 7 is a sectional view of the same. 65

A is the casing having a shoulder *a* into which is screwed the arbor B which carries the sleeve C and provides two large cylindrical bearings *b, b*, therefor. The arbor B is cut away between the bearings, *b, b*, and the sleeve C is slotted at *c* for the purpose presently to be described. D is the crank secured upon the sleeve C; and E is a spacing collar surrounding the arbor and filling the space between the arms of the crank D. 75
The crank is preferably secured to the sleeve by slipping it over the lower end thereof and then spinning the sleeve over so that the crank is riveted and held in proper rotative relation to the slot *c* of the sleeve C. 80
As best shown in Fig. 4, the crank D is provided with a slot *d*, a screw hole *d'* and a tail piece *d''*.

Upon the crank D there is mounted a slide F (Fig. 3) having a slot *f* adapted to 85
register with the screw hole *d'*, and a screw hole *f'* adapted to register with the slot *d*. A screw G passes through the slot *f* into the screw hole *d'* and a crank screw H passes through the screw hole *f'* and the slot *d*. 90
Said crank screw H also secures one end of the link I the other end being secured to a flexible tip *j* on the actuating member J, shown in the drawings as a Bourdon tube spring. It will be clear that the slots *f* and 95
d permit the slide F to be adjusted to give the proper throw to the crank, and that by reason of the slot *c* in the sleeve C, and the cut away portion of the arbor, the slide may be brought in very close to the arbor and 100
adjusted so as to give a very short throw to the crank.

The index hand K, preferably made of aluminum for lightness, and embossed for stiffness, is secured to the top end of the 105
sleeve C in the same manner that the gage crank is secured to the bottom end, and is spun thereon so that its proper position with

relation to the other parts of the movement cannot be disturbed.

To provide for variations in the position of the end of the actuating member J, there is provided a flexible tip *j* which can readily be bent by any suitable tool into proper position to be secured to the link I without disturbing the rest of the movement. This permits the links I to be made of standard size so that they can be furnished to users as spare parts.

Referring now to Figs. 6 and 7, which show a modified form of our invention; the crank D' is made of flexible material and secured to the bottom end of the sleeve C' in the manner already described. The opposite end of the crank is connected to the actuating member by the link I'. In this form of our invention the adjustable slide is dispensed with, and the desired throw of the crank is obtained by bending the crank itself with any suitable tool.

It is well known that a stop pin upon the face of the gage dial to hold the index hand at zero, is not only unsightly, but also frequently causes the gage to become inaccurate and even inoperative, this result being brought about by the loosening of the index hand from frequent and sudden contact with the pin. In our improved gage this difficulty is overcome by locating the stop or pin *a*² upon the gage back in the path of the tail piece *a*² of the crank D.

By this construction a gage movement is provided which is simple and strong, and wherein the moving parts are so light and well balanced that they are not injuriously affected by the vibration to which the instrument is subjected in service.

We claim:

1. In a gage, the combination with an actuating member and an index hand, of an arbor having a cut away portion, a slotted sleeve carried by said arbor, a crank fast on said sleeve, a slide adjustably mounted on said crank, and a connection between said actuating member and said slide.

2. In a gage, the combination with an actuating member and an index hand, of an arbor having a cut away portion, a slotted sleeve carried by said arbor, a crank fast on said sleeve, a slide adjustably mounted on said crank, said crank having a slot registering with a hole in said slide and said slide having a slot registering with a hole in said crank, means to retain said slide in adjusted position, and a connection between said actuating member and said slide.

3. In a gage, the combination with an actuating member and an index hand, of an arbor having a cut away portion, a slotted sleeve carried by said arbor, a crank fast on said sleeve and provided with a tail piece, a stop in the path of said tail piece, a slide adjustably mounted on said crank, said crank having a slot registering with a hole in said slide, and said slide having a slot registering with a hole in said crank, means to retain said slide in adjusted position, and a connection between said actuating member and said slide.

Signed by us at Bridgeport, Connecticut, this 8th day of July 1910.

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Witnesses:

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