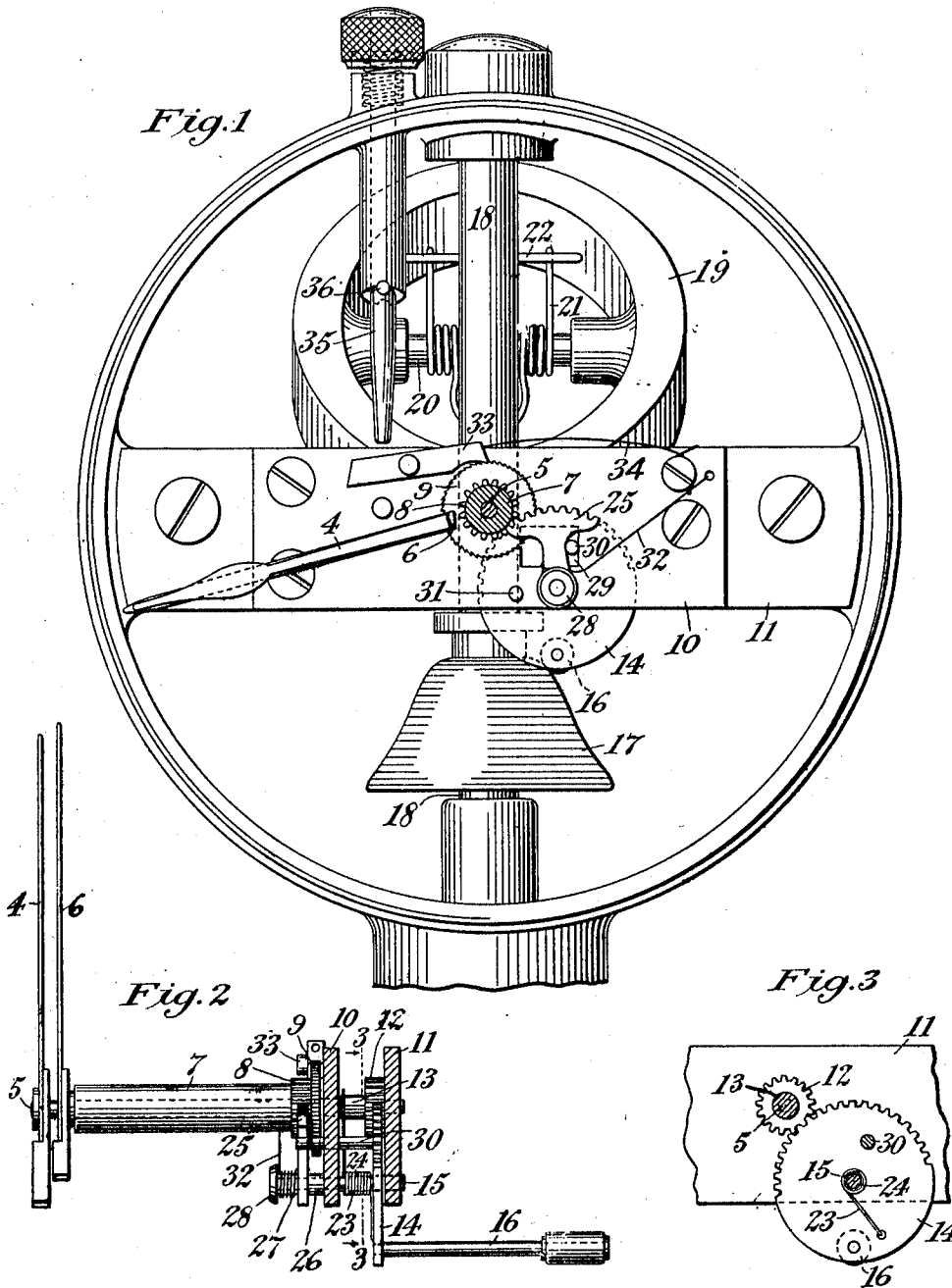


B. VOLKMAR.
 MAXIMUM HAND FOR INDICATING DEVICES.
 APPLICATION FILED OCT. 14, 1909.

989,088.

Patented Apr. 11, 1911.



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UNITED STATES PATENT OFFICE.

BERNHARD VOLKMAR, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO
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MAXIMUM-HAND FOR INDICATING DEVICES.

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Specification of Letters Patent. Patented Apr. 11, 1911.

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To all whom it may concern:

Be it known that I, BERNHARD VOLKMAR, a citizen of the United States, residing at the borough of the Bronx, city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Maximum-Hands for Indicating Devices, of which the following is a specification, reference being had therein to the accompanying drawings, forming part thereof.

My invention relates to indicating devices, particularly to speed-indicating devices or speedometers and has for an object to provide simple and reliable means for exhibiting the maximum indication of the device.

As a means for effecting this indication there is commonly employed, beside the usual index or indicating hand, an additional hand known as a maximum hand, which is advanced with the indicating hand to the maximum indications and remains there when the indicating hand recedes. To advance the maximum hand with the indicating hand, a lug or finger is commonly placed on the indicating hand adapted to catch the maximum hand and carry it along, but this method of advancing the maximum hand has been found to be disadvantageous and to cause a drag or retardation to the advance of the indicating hand. As a portion of the indications are given with the indicating hand in engagement with the maximum hand and the remainder of the indications are given with the indicating hand disengaged from the maximum hand, the retardation by the maximum hand produces an objectionable inaccuracy of indication.

One object of my invention is to so connect the maximum hand to the operating mechanism that its actuation will cause a minimum of retardation to the actuation of the indicating hand.

Other objects are simplicity of construction and firmness of connection and reliability of operation.

Other objects and advantages of my invention will appear from the following description.

I shall now describe my invention with reference to the accompanying drawings and shall thereafter point out my invention in claims.

Figure 1 is a front elevation, partly in section, of a complete device embodying my invention.

Fig. 2 is a detail in side elevation of the two hands and their driving mechanism, with the supporting plates in section. Fig. 3 is a sectional detail taken on the line 3—3 of Fig. 2 looking toward the right.

For a concrete illustration I have shown an embodiment of my invention in connection with a speed indicator such as is described in United States Letters Patent No. 813,185, granted to me February 20, 1906, though it is well adapted for use in connection with a great variety of constructions of speed indicators.

My invention broadly consists in driving the maximum hand directly from the operating mechanism of the indicator instead of indirectly through the indicating hand, thereby giving a maximum advantage in the application of the power; and I have proved by actual tests that this method of actuating the maximum hand produces negligible retardation to the advance of the indicating hand.

In the illustrated embodiment, I have shown an indicating hand 4 fixed on the outer end of a main arbor 5, and a maximum hand 6 pivoted on the arbor so as to move in a plane in rear of the indicating hand 4, and fixed on the outer end of a carrier or sleeve 7 on the arbor 5. Fastened on the inner end of the sleeve 7 and concentric therewith is a pinion 8 and a ratchet wheel 9, the latter in proximity to a plate 10, which is supported a slight distance in front of and parallel to another plate 11; and the arbor 5 extends through bearings in both the front and back plates. A pinion 12 is fastened on the arbor 5 concentric therewith between the plates 10 and 11, and bears against the front of the back plate 11, and a collar 13 on the arbor 5 bears against the rear side of the front plate 10 to hold the arbor against outward longitudinal movement.

To rotate the arbor 5 and hence the indicating hand 4, a gear wheel 14 meshes with the pinion 12 and is mounted on a stud 15 on the plate 11 which extends some distance through and in front of the plate 10, as shown. To rotate the gear wheel 14, a roller crank arm 16 is provided near the periphery of the gear wheel of sufficient length to bear upon the face of a cone 17. The cone 17 is mounted on a shaft 18 and is adapted to slide longitudinally of the shaft and is linked (the link not being shown) to a gov-

error ring 19, as in my patent above referred to. The shaft 18 passes centrally through the governor ring 19, and the governor ring is mounted on a diametral pivot pin 20 which passes through the shaft 18. A spring 21 is coiled around the pivot pin 20 and bears with one end against a pin 22 extending across the governor ring, and with the other against the shaft 18 and tends to hold the governor ring in an inclined position. The shaft 18 is rotated by the movement of the vehicle and the governor ring is rotated by the shaft, and the centrifugal force tends to cause the governor ring to assume a horizontal position. The lower end of the ring is thus raised and, being linked to the cone 17, carries the cone up with it. By this upward movement, the cone presses the crank arm 16 outwardly and rotates the gear wheel 14, which in turn rotates the pinion 12, and the hand 4 is thus swung over the dial of the indicator, its range of movement being from zero at the left to the maximum speed indication at the right. As the centrifugal force decreases with the speed, the spring 21 returns the governor ring to its original position, and to cause the crank arm 16 to follow up the face of the cone and rotate the gear wheel 14 back as the cone is moved down by the governor ring, a retractile spring 23 is coiled about a sleeve 24 on the stud 15, this sleeve being fastened to the gear wheel 14, one end of the spring bearing against the collar 13 on the arbor 5 and the other end fastened to the gear wheel. When the gear wheel is rotated to advance the indicating hand, the spring is wound up, and when the cone recedes, the spring unwinds and holds the arm 16 against the face of the cone. Thus the indicating hand is swung back in proportion to the decrease in speed.

As previously stated, my invention comprises means for driving the maximum hand directly from the operating mechanism, and as a means for doing this I have shown a segment or segmental gear wheel 25 also pivoted on the stud 15, but in front of the front plate 10, and adapted to mesh with the maximum hand pinion 8. To hold the segment in the plane of the pinion 8, a collar 26 is provided on the stud 15 back of the segment, and a sleeve 27 on the stud 15 in front of the segment is fastened to the segment and bears against a head 28 on the front end of the stud 15. To drive the segment 25 with the gear wheel 14, there is an elongated hole 29 in the front plate 10 between the segment 25 and the gear wheel 14, and an abutment pin 30 on the gear wheel extends forward through the hole 29 and engages the segment 25 on the right side as shown in Fig. 1. As the gear wheel 14 is rotated, therefore, in a counter-clock-wise direction as viewed in Fig. 1, by the raising

of the cone 17, the abutment pin 30 rotates the segment 25. The gear ratio between the pinions and driving gear wheels of the two hands is the same, and therefore the two hands are driven at exactly the same rate. A stop pin 31 on the plate 10 limits the rotation of the segment.

A retractile spring 32, coiled about the sleeve 27 and having one end bearing against the maximum hand sleeve 7 and the other fastened to the segment 25, tends to rotate the segment back and return the maximum hand to alinement with the indicating hand. To hold the maximum hand in any position to which it is advanced, when the speed is reduced and the gear wheel 14 carries a pin 30 away from the segment, a pawl 33 is pivoted on a lug on the plate 10 and held by a spring 34 in engagement with the ratchet 9. To release the pawl 33 and permit the maximum hand to be retracted into alinement with the indicating hand, a plunger 35 is provided, normally held by a spring out of contact with the rear end of the pawl, and adapted to be pressed down against the tension of the spring to release the pawl. The lower end of the sleeve in which the plunger slides is cam faced and a stop pin 36 on the plunger bears against the cam-face. Therefore a half turn of the plunger brings the pin 36 on the lowest part of the cam-face and holds the plunger against the pawl 33, thus providing a permanent hold-off for the pawl when it is desired to dispense with the indication of the maximum hand.

To easily distinguish the maximum hand, it may be made of some distinctive shape or color. Due to the rigidity of the abutment pin 30, the maximum hand is given a steady drive and, since the flexible indicating hand is relieved of its burden, the indications are made quickly and positively.

It is obvious that various modifications may be made in the construction shown and above particularly described within the principle and scope of my invention.

I claim:

1. In an indicating device, an indicating hand and a maximum hand mounted substantially co-axially, driving means for the indicating hand, separate driving means for the maximum hand, means for actuating the indicating-hand driving means, and means operated by said actuating means for actuating the maximum-hand driving means.

2. In an indicating device, an arbor, a carrier surrounding the arbor, an indicating hand and a maximum hand, one of the hands being mounted on the arbor and the other on the carrier surrounding the arbor, separate driving means for each hand, means for actuating the indicating-hand driving means, and means operated by said actuating means for actuating the maximum-hand driving means.

3. In an indicating device, an arbor, a carrier surrounding the arbor, an indicating hand and a maximum hand, one of the hands being mounted on the arbor and the other on the carrier surrounding the arbor, separate driving means for each hand, means for actuating the indicating-hand driving means, and means on said actuating means for actuating the maximum-hand driving means to drive the maximum hand only in the direction of movement from a lower to a higher denomination.

4. In an indicating device, in combination with operating mechanism, an indicating hand and a maximum hand, indicating hand driving means operatively connecting the indicating hand to the operating mechanism, and maximum hand driving means independent of the indicating hand driving means and operatively connecting the maximum hand to the operating mechanism, the maximum hand driving means being adapted to be operative when the two hands are giving like indications and to be inoperative when the maximum hand is in advance of the indicating hand.

5. In an indicating device, operating mechanism, an indicating hand actuated thereby, a maximum hand, means for transmitting motion directly from the operating mechanism to the maximum hand at the same rate as the indicating hand, but only in the direction of movement from a lower to a higher indication, means constantly tending to return the maximum hand, means for retaining the maximum hand in any position in advance of the indicating hand, and means

for releasing the retaining means to permit the maximum hand to return.

6. In an indicating device, operating mechanism, a main arbor, a carrier surrounding the main arbor, an indicating hand mounted on the main arbor, a maximum hand mounted on the carrier, a pinion having fixed connection with the carrier, a geared driving member coöperative with the pinion, an actuating member for the main arbor driven by the operating mechanism, and means on the actuating member for engaging and actuating the geared driving member.

7. In an indicating device, operating mechanism, a main arbor, a carrier surrounding the main arbor, an indicating hand mounted on the main arbor, a maximum hand mounted on the carrier, a pinion having fixed connection with the carrier, a geared driving member coöperative with the pinion, an actuating member for the main arbor driven by the operating mechanism, means on the actuating member for engaging and actuating the geared driving member only in the direction of movement from a lower to a higher indication, means constantly tending to return the maximum hand, means for retaining the maximum hand in any position in advance of the indicating hand, and means for releasing the retaining means to permit the maximum hand to return.

In testimony whereof I have affixed my signature in presence of two witnesses.

BERNHARD VOLKMAR.

Witnesses:

VICTOR D. BORSE,
BERNARD COWEN.