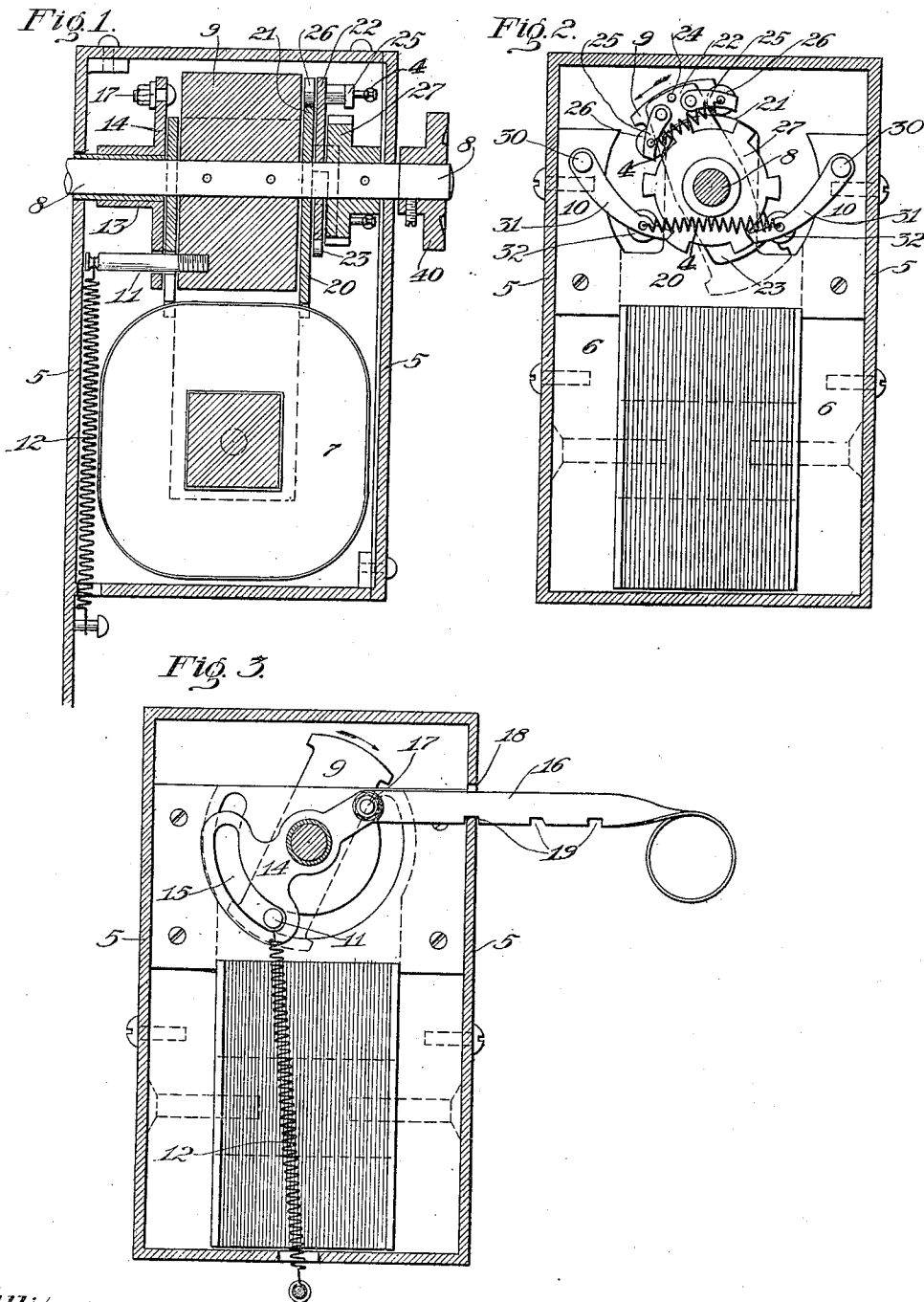


O. E. KELLUM.
INDICATOR ACTUATING MECHANISM.
APPLICATION FILED JUNE 16, 1911.

1,069,881.

Patented Aug. 12, 1913.



Witnesses
Elwood H. Borker
B. M. Woodie

Inventor
Orlando E. Kellum
by
James T. Borker
Attorney

UNITED STATES PATENT OFFICE.

ORLANDO E. KELLUM, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO NATIONAL STREET AND STATION INDICATOR COMPANY, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

INDICATOR-ACTUATING MECHANISM.

1,069,881.

Specification of Letters Patent.

Patented Aug. 12, 1913.

Application filed June 15, 1911. Serial No. 633,360.

To all whom it may concern:

Be it known that I, ORLANDO E. KELLUM, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles, State of California, have invented new and useful Improvements in Indicator-Actuating Mechanisms, of which the following is a specification.

This invention relates to an electrically operated magnetic mechanism for producing a step by step movement for an indicator such as a station indicator for railways; and it consists particularly in certain improvements of mechanism and arrangement over my invention entitled "indicator actuating mechanisms" for which application for Letters Patent was filed by me on November 23rd, 1910, bearing S. N. 593,831.

The present invention has to do particularly with certain improved arrangement of pawls and pawl actuating mechanism for starting and stopping the action of the indicator in precise position. In my former invention there were certain defects of operation caused by the engagement of the stop pawls being momentary and not continuous while the mechanism was at rest. In the old mechanism the stop pawls do not engage with the ratchet wheel when the device is in its normal position, being only momentarily engaged when the device comes to a stop. In my present invention the device is held immovable at all times except when acted electrically or when, by special manipulation of the reversing and controlling handle, the device may be moved by hand.

In the accompanying drawings I have shown my improved form of mechanism, in which drawings:

Figure 1 is a longitudinal vertical section of the mechanism. Fig. 2 is an end elevation of the same. Fig. 3 is an opposite end elevation of the same.

In the drawings I have shown the mechanism inclosed within a suitable case 5. I now utilize an electro-magnetic field piece 6

provided with winding 7 and arranged in the ordinary U-shaped single winding arrangement. A shaft 8 supports armature 9 adapted to oscillate between the two pole pieces 10. Armature 9 is rigidly secured to shaft 8 and is provided with a pin 11 which projects back from the armature and has its end connected to a coiled spring 12 which always tends to pull the armature to a vertical position. Arranged with a bearing sleeve around shaft 8 is a sector 14 having a circumferential slot 15 through which pin 11 projects. A control handle 16 is pivoted to sector 14 at 17 and projects out through a slot 18 in the side of case 5. The lower edge of handle 16 is provided with notches 19 which are engageable with the wall of case 5 to hold sector 14 either in the position shown, or in an upright position, or in a position opposite to that shown. In the position shown the armature 9 will only be attracted in the direction indicated when the field is magnetized; in the opposite position the armature will be attracted in the opposite direction.

Mounted on the front faces of pole pieces 10 is a bearing plate 20 which carries a stationary cam 21 on its upper end. Immediately in front of stationary cam 21 is mounted a movable cam plate 22 which has cam 23 on its lower end. Cam plate 22 is connected to armature 9 by a pin 24 so as to always rotate therewith. On plate 22 are mounted two pawls 25 which have rollers 26 running over the face of cam 21 so as to be lifted out of engagement with the teeth of ratchet wheel 27 during a portion of their movements. Ratchet wheel 27 is rigidly mounted on shaft 8 and the engagement of pawls 25 with the teeth of this ratchet wheel is designed to rotate the shaft. Pivotaly mounted at 30 on the pole pieces 10 are two stationary pawls 31 adapted to engage with the teeth of the ratchet wheel when the ratchet wheel is stationary and to hold it from movement in either direction. These pawls have rollers 32 which engage with the

face of cam 23 and are adapted to move the pawls out of engagement with the ratchet teeth at appropriate times.

With the mechanism in the position shown in Fig. 2, when the current is supplied to winding 7, the armature is attracted in the direction indicated and left-hand pawl 25 engages with the ratchet tooth immediately beneath it and the rotation of the armature then forces the ratchet wheel and shaft to rotate. At the same time and before the pawl engages with the ratchet tooth, cam 23 is moved so as to lift right-hand pawl 31 entirely out of engagement with the ratchet tooth with which it is now shown in engagement. The ratchet wheel is thus free to move and will move until it is moved through a sixth of a revolution. When the next ratchet tooth reaches a position near the end of right-hand pawl 31, cam 23 is moved far enough around to allow roller 32 to drop back toward the position shown and to allow the end of pawl 31 to catch the next ratchet tooth. Left-hand pawl 31 merely drags over the tooth and notches behind the next ratchet tooth. Springs 4 are placed to pull between the pawls of each pair to hold them normally in position. The armature then moves back to its original position under the impulse of spring 12 and right-hand pawl 25 is kept from engaging with any of the ratchet teeth by reason of engagement with cam 21.

It will be seen that the main operations of the device are now practically the same as before. I have made some changes of proportions and of general arrangement, notably of the magnetic field and of the general design of the pawls and ratchet wheel; but the main changes on which I base this present invention reside in the new arrangement of pawls 31 and their actuating cam. This new arrangement holds the ratchet wheel and the shaft stationary and impossible of movement under ordinary normal conditions. If it is desired to rotate the mechanism by hand, this may be done through the medium of a hand wheel 40 on the outer end of shaft 8 after handle 16 has been lifted and pulled farther outwardly so as to rotate the armature and cam 23 far enough to lift right-hand pawl 31 entirely out of engagement with the ratchet wheel (or the opposite operation if the mechanism is arranged to operate in the opposite direction.)

Having described my invention, I claim:

1. A mechanism of the class described, comprising an oscillating member, means to oscillate the said member in either direction, a ratchet wheel mounted concentrically with the oscillating member, a pair of pawls on the oscillating member and adapted by the movement of the same to engage with the teeth of the ratchet wheel to each move the

ratchet wheel in one direction, a cam adapted to lift the said pawls out of engagement with the ratchet wheel during portions of their movements, a pair of stationary pawls adapted to engage the teeth of the ratchet wheel to stop the same, the stationary pawls being normally in engagement with the ratchet wheel, and a cam connected with the oscillating member and moving therewith to directly engage and raise one of the stationary pawls out of engagement with the ratchet wheel during the movement of the oscillating member which engages the pawl carried thereby with the teeth of the ratchet wheel.

2. A mechanism of the class described, comprising an oscillating member, means for oscillating said member in either direction, a ratchet wheel mounted concentrically with the oscillating member, a pair of pawls on the oscillating member and each adapted by movement of the same in one direction to be first moved into engagement with the teeth of the ratchet wheel and then to cause the movement of the ratchet wheel in that direction, each pawl dragging over the teeth of the ratchet wheel in the opposite direction, a stationary cam with which said pawls engage to be lifted out of engagement with the ratchet wheel during portions of their movements, a pair of stationary pawls adapted to engage the teeth of the ratchet wheel to stop the same, the stationary pawls being normally in engagement with the ratchet wheel, and a cam connected with the oscillating member and moving therewith to engage and raise one of the stationary pawls out of engagement with the ratchet wheel by virtue of the movement of the oscillating member which engages the pawl carried thereby with the teeth of the ratchet wheel.

3. A mechanism of the class described, comprising an oscillating member, means for oscillating said member in either direction, a ratchet wheel mounted concentrically with the oscillating member, a pair of pawls on the oscillating member and each adapted by movement of the same in one direction to be first moved into engagement with the teeth of the ratchet wheel and then to cause the movement of the ratchet wheel in that direction, dragging over the ratchet wheel upon opposite movement, a stationary cam with which said pawls engage to be lifted out of engagement with the ratchet wheel during portions of their movements, a pair of stationary pawls adapted to engage the teeth of the ratchet wheel to stop the same, the stationary pawls being normally in engagement with the ratchet wheel, and a cam connected with the oscillating member and moving therewith to engage and raise one of the stationary pawls out of engagement with the ratchet wheel by virtue of the movement of the oscillating member which engages the

5 pawl carried thereby with the teeth of the ratchet wheel, said moving cam being of such extent as to allow the stationary pawl lifted thereby to drop back into engagement with the ratchet wheel in front of the ratchet tooth adjacent that previously engaged by said pawl.

In witness that I claim the foregoing I have hereunto subscribed my name this 9th day of June 1911.

ORLANDO E. KELLUM.

Witnesses:

L. P. SARGENT,
JAMES T. BARKERLEW.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."