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M. L. HASELTON
ELECTRICAL SIGNALING
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Fig. 1.

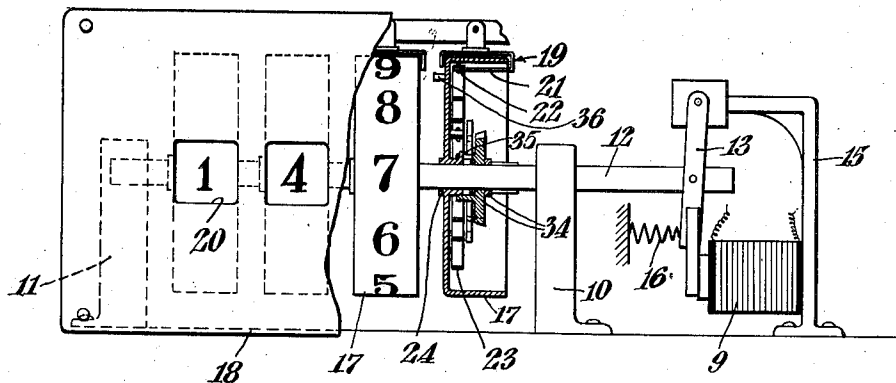


Fig. 2.

Fig. 5

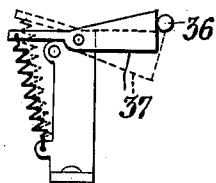
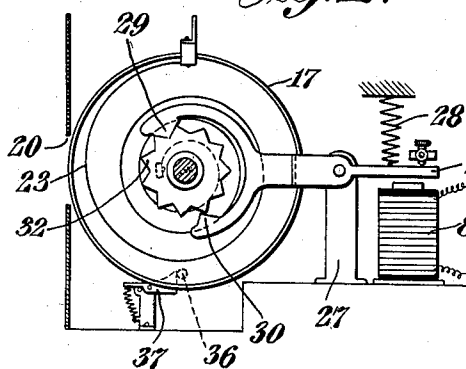


Fig. 3.

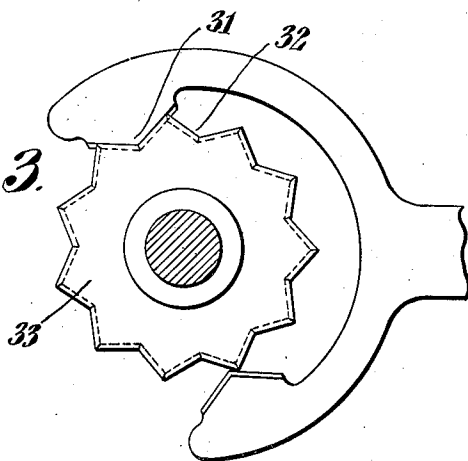
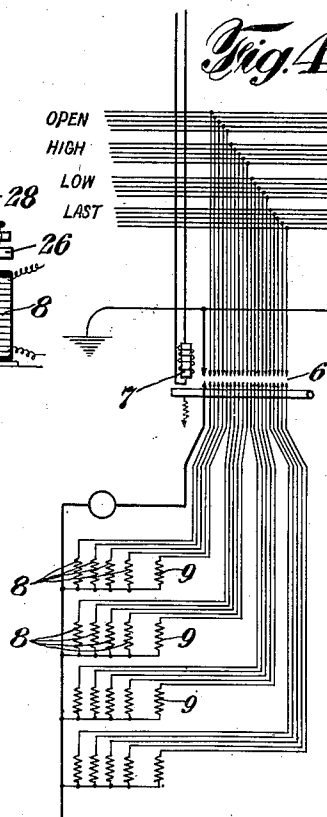


Fig. 4.



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ELECTRICAL SIGNALING

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8 Claims. (Cl. 177—328)

This invention relates to electrical signaling and more particularly to indicators such as one of the forms of indicators shown in my application Serial No. 244,873, now Patent No. 1,890,876 issued December 13, 1932, filed January 6, 1928, of which this application is a continuation in part.

The object of this invention includes the provision of an indicator unit which is compact, easy to manufacture, and certain in operation, and which is adapted to be restored by a single electrical impulse prior to its setting-up actuation and in which the parts that effect release may with certainty be restored to normal position.

Other objects will be apparent from the following description taken in connection with the drawing, in which

Fig. 1 is a front view partly broken away of an indicator unit;

Fig. 2 is an edge view taken along the right edge of an indicator drum;

Fig. 3 shows the interengaging surfaces of an actuating pawl and a ratchet disk driving an indicator drum;

Fig. 4 shows a wiring diagram of one group of indicator units; and Fig. 5 shows the several positions of the zero stop pawl.

In an electrical signaling mechanism of the type described in the parent application, it is desirable to restore the indicators to zero before each market quotation is set up and in order to speed up the operation it is essential that this be done in the shortest possible time.

Referring to Fig. 4 which shows a wiring diagram for one group of indicator units, the main "open", "high", "low" and "last" bus lines have parallel branches adapted to be connected by switches 6 operated by selector controlled magnets 7 to all the indicator units of one group of indicators to actuate one or more of the indicator units to display items of information as described in the parent application. Each of these units as shown may comprise an actuating magnet 8 for each indicator element and a restoring magnet 9 for each indicator unit energized through a line in the corresponding bus line. The restoring magnet is energized as disclosed in the parent application immediately after the switch 6 closes the restoring circuit at this point.

The indicator unit shown in Fig. 1 comprises a pair of supports 10 and 11 in which is slidably supported a shaft 12 whose right hand end extends through and beyond the support 10 and is connected to the movable armature 13 of the restoring magnet 9 supported on a suitable bracket

15 on which the armature is pivoted. The magnet in Fig. 1 is shown as having attracted its armature which has shifted the shaft 12 to its right hand position. The shaft 12 will be restored by a spring 16 upon de-energization of the magnet 9.

The indicator unit may comprise four indicia carrying drums 17 mounted on the shaft 12 side by side to display numbers having four digits, or a larger or smaller number of drums may be used. Each drum is rotatably mounted on the shaft, to permit rotation with respect to the shaft and to permit the shaft to be shifted axially.

Each indicator carries the indicia 1 to 9 and 0 and is provided with a blank space between the 0 and 1. In the system described in the parent application, a selected indicator is first restored to zero, it is then rotated forwardly one step for each of the units of the digit to be displayed except in the case of zero it is moved forwardly ten steps, and then finally as the potential is taken off from the main lines, it is moved another step. It is because of this latter actuation that a blank space between 0 and 1 is used. It will be obvious that insofar as certain of features of construction hereinafter described are concerned, that the blank space may be omitted and also that other than numerical indicia could be used.

The unit may be enclosed in a suitable casing 18 to which or to brackets on a base, if a separate base is used, are secured indicator drum aliners 19 which aline the rollers horizontally with respect to openings 20 in the casing and hold them in alinement during movement of the shaft 12.

These aliners are inverted generally U-shaped members 21, the right leg of the U being extended to the left as indicated at 22 to act as a support for one end of a spiral spring 23 coiled about and suitably anchored at its other end to the hub 24 of the drum. The spring is mounted so as to be tensioned by a counter-clockwise movement, (Fig. 2), of the drum and consequently when released to rotate the drum clockwise to zero.

Each indicator drum is actuated forwardly by energization of its magnet 8 (Fig. 2) which rocks its armature 26 downwardly about a pivot supported in a bracket 27. After de-energization of the magnet, the armature is returned by a spring 28.

The free end of the armature constitutes a pawl having two prongs 29 and 30 each provided with a wedge-shaped tooth 31 cooperating with correspondingly shaped teeth 32 (Figs. 2 and 3) on a ratchet disk 33 rotatably mounted on the shaft 12 but made movable therewith axially by a pair of collars 34. The ratchet disk is connected by a

pin and slot connection 35 with the hub 24 of its cooperating drum 17, to transmit rotating movement to the drum and to permit it to be withdrawn from cooperating engagement with the prongs 29 and 30 as shown in Fig. 1 to permit the spring 23 to return the drum from a position of adjustment such as shown in Fig. 1 to zero. Each drum carries a pin 36 to contact with a zero stop 37 to stop the drum in zero position when it is restored by the spring 23.

The stop 37 is yieldingly held in the position shown by a spring so that it may yield as a zero is set up on the drum by forward actuation of the drum as before stated. The construction of the stop 37 is such that the stop will be held depressed by the pin 36 while the indicator is in the zero position after having been moved forwardly into this position. The several positions of the zero stop pawl 37 are indicated in Fig. 5. Normally the pawl is in the position shown in full lines and functions to arrest the drum in the zero position as it is returned to this position under the influence of the spring 23. When the drum 17 is moved forwardly into the zero position the pin 36 occupies the same position as when the drum is returned into zero position. The relation of this pin to the pawl is clearly indicated in Fig. 5, which permits the drum to be returned from zero position to zero position during normalizing operations.

The spring 28 is of sufficient strength to prevent the spiral spring 23 from returning the drum as long as the prongs 29 and 30 are in mesh with the teeth on the ratchet disk.

To facilitate disengagement of the ratchet disks from the prongs between which friction exists due to the springs 23, and to facilitate re-engagement, the teeth of the prongs and disks are tapered constituting transverse sections of a plural sided cone. This permits ready disengagement and during re-engagement these surfaces will cooperate to slightly rotate the disk and to elevate or lower the prongs to take care of slight variations in manufacture.

The indicator described is moved forwardly step-by-step, each step of movement comprising two movements effected by a back and forth rocking movement of the pawl upon energization and de-energization of the actuating magnet. The prongs 29 and 30 operate as combined actuating and holding pawls and overthrow preventing means. The drum returning springs are tensioned in proportion to the amount of movement necessary to return the drums to zero. The cooperating surfaces on the prongs and disks lessen the work required to be done by the restoring magnet and facilitate the proper reengagement of the prongs and disks and properly aline the indicia at the windows of the casing.

While the description relates to the single embodiment illustrated for purposes of disclosure, it is to be understood that this invention is not limited thereto and that other forms or embodiments of this invention may be obvious to those skilled in this art.

What is claimed is:

1. In an indicating mechanism comprising a plurality of associated drum indicators, a ratchet disk connected to each indicator for driving the indicator, a ratchet pawl normally cooperating with said ratchet disk, and mechanically interconnecting means for simultaneously moving said ratchet disks and pawls relatively to each other in a direction at right angles to the actuating movement of the pawls.

2. In an indicating mechanism comprising a plurality of associated drum indicators, a ratchet disk connected to each indicator and provided with a set of ratchet teeth on its periphery, an actuating pawl cooperating with said teeth, and mechanically interconnecting means for simultaneously moving said disks and pawls relatively laterally to effect disengagement between the pawls and disks.

3. In an indicating mechanism comprising a drum indicator, a ratchet disk connected thereto and provided with a set of ratchet teeth on its periphery, an actuating pawl cooperating with said teeth, and means for moving said disk and pawl relatively laterally to effect disengagement between the pawl and disk, the engaging portions of the teeth and pawl being shaped as parts of similar truncated cones to facilitate disengagement and reengagement of the teeth and pawl.

4. The combination in an indicator unit, of a plurality of rotatable indicators, a slidable shaft rotatably supporting said indicators, a ratchet disk and driving pawl for each indicator, a driving connection between each disk and its corresponding indicator, means connecting said disks to said slidable shaft for lateral movement upon the axial movement of said shaft, and means for sliding said shaft to disconnect all of said disks from their cooperating pawls simultaneously.

5. In an indicating mechanism of the character described, the combination of drum indicators, a longitudinally slidable non-rotatable shaft rotatably supporting said drums, a ratchet driving disk for each drum, means connecting the ratchet disk to the drum for rotating the same and permitting lateral movement of the ratchet disk with respect to the drum, means supporting said ratchet disk for lateral movement with said shaft, a ratchet element cooperating with said ratchet disk when in normal position for actuating said drum, means for moving said shaft axially to disengage the ratchet disks from said ratchet elements, and spring means for returning said drum to home position upon axial movement of said shaft from normal.

6. In an indicating mechanism of the character described, the combination of drum indicators, a longitudinally slidable shaft rotatably supporting said drums, a ratchet driving disk for each drum, means connecting the ratchet disk to the drum for rotating the same and permitting lateral movement of the ratchet disk with respect to the drum, means supporting said ratchet disk for lateral movement with said shaft, a ratchet element cooperating with said ratchet disk when in normal position for actuating said drum, means for moving said shaft axially for disengaging the ratchet disks from their cooperating ratchet elements, spring means for returning said drum to home position upon axial movement of said shaft from normal comprising a convolute spring coiled about said shaft and anchored at one end to said drum, and a fixed anchoring means for the other end of said spring, having provision constituting means for holding said drum as said shaft is shifted axially.

7. In an indicating mechanism of the character described, the combination of drum indicators, a longitudinally slidable shaft rotatably supporting said drums, a ratchet driving disk for each drum, means connecting the ratchet disk to the drum for rotating the same and permitting lateral movement of the ratchet disk with respect to the drum, means supporting said ratchet disk for

lateral movement with said shaft, a ratchet element cooperating with said ratchet disk when in normal position for actuating said drum, means for moving said shaft axially to disengage the ratchet disks from their cooperating ratchet elements, spring means for returning said drum to home position upon axial movement of said shaft from normal comprising a convolute spring coiled about said shaft and anchored at one end to said roller, a fixed U-shaped anchoring means for the other end of said spring, the legs of said U constituting means for holding said drum as said shaft is shifted axially, said drum comprising a disk and an outer indicia bearing flange, and a lateral extension on one of the legs of the U provided at its free end with anchoring means for said spring.

8. The combination of a rotatable indicator, a return spring, means for driving the indicator

forwardly against the tension of the return spring, means for disconnecting the driving means so that the return spring may return the indicator to its zero position, and means for stopping said indicator in its zero position when returned but permitting its movement in a forward direction into zero position, comprising a pin on said indicator and a one way spring-actuated pawl pivoted on a fixed support and having its end projecting into the path of the movement of said pin and located to stop said indicator in its zero position, said pawl being provided with a portion with which the pin cooperates as the rotatable indicator is moved forwardly into zero position to depress the pawl and to prevent the pawl from moving into cooperative arresting position with respect to said pin.

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