Nov. 12, 1940. H. MACHINIST 2,220,937

TOUR KEY FOR WATCHMEN'S SIGNAL SYSTEMS

Filed Feb. 18, 1939

Fig. 1.

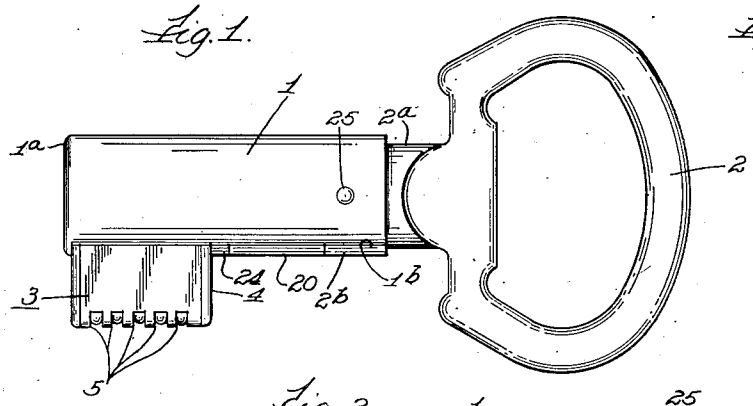


Fig. 3.

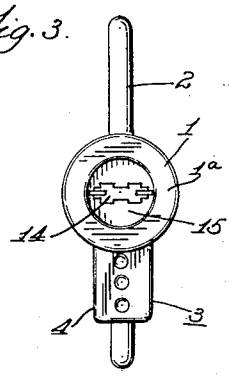


Fig. 2.

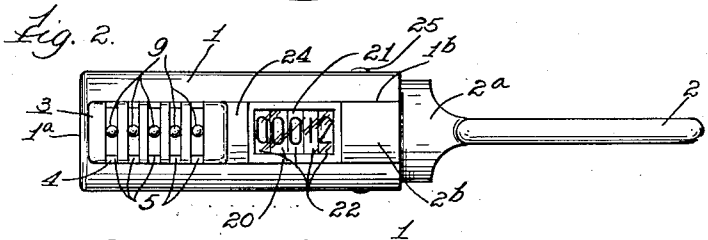


Fig. 4.

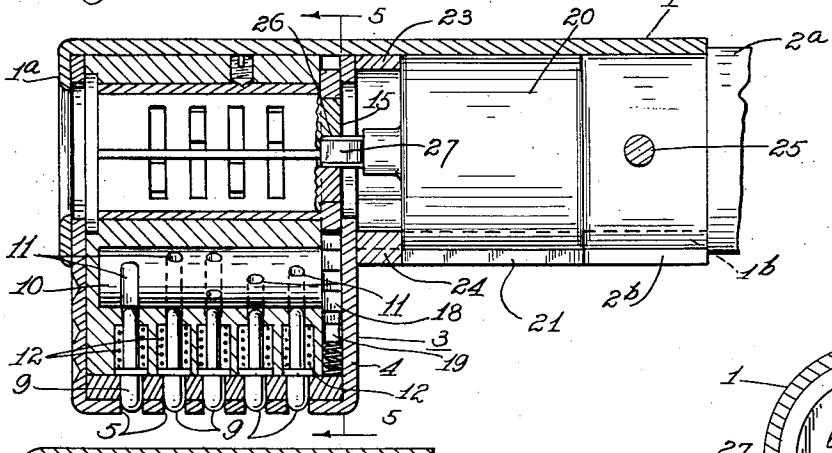


Fig. 5.

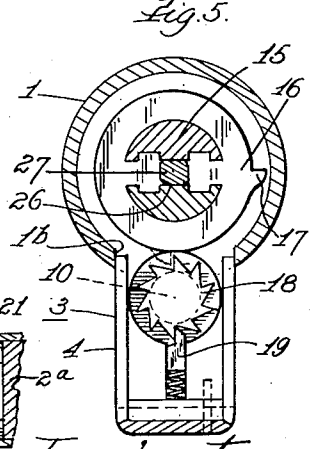
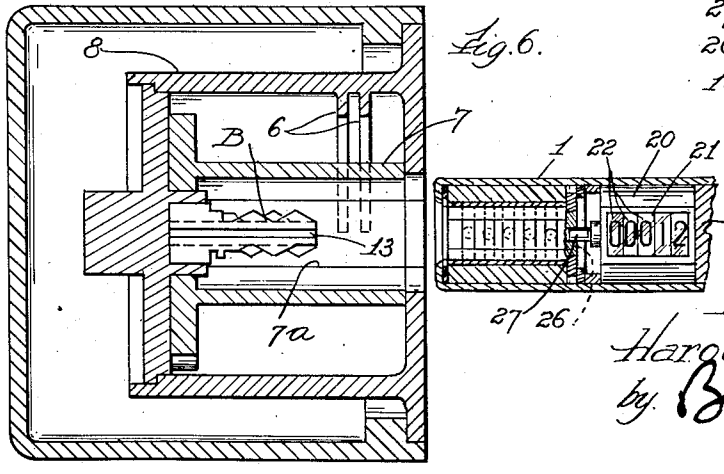


Fig. 6.



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2,220,937

TOUR KEY FOR WATCHMEN'S SIGNAL SYSTEMS

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Application February 18, 1939, Serial No. 257,074

7 Claims. (Cl. 235—1)

This invention relates to a watchman's signal system of the type in which the watchman is provided with an implement, sometimes called a tour key, which he carries on his rounds, and which is designed to fit into a series of devices in the nature of signal boxes, and to be operated in each of them in a certain order for making a suitable record of the watchman's activities. Usually, one or more of the boxes in the system is connected electrically with a central station so that a time record is provided for indicating the arrival of the watchman at certain points on his route through the premises under his supervision. One object of the invention is to make a supplemental indication of the watchman's movements by providing a registering device in the tour key itself which shall respond to the operation of the key each time it is inserted in one of the boxes of the series. Preferably, this device may be in the nature of an ordinary counter mechanism, and it is sealed into operative relation with the mechanism of the tour key to avoid the possibility of tampering with it. The invention thus consists in certain features and elements of construction in combination as herein shown and described and as indicated by the claims.

In the drawing:

Fig. 1 is a side view of a tour key embodying this invention.

Fig. 2 is an edge view of the same.

Fig. 3 is an end view of the key.

Fig. 4 is a sectional view on a larger scale showing the mechanism of the tour key and the connection of the counter mechanism therewith, the handle of the key being omitted.

Fig. 5 is a transverse section taken as indicated at line 5—5 on Fig. 4.

Fig. 6 is a sectional view showing one of the boxes of the system and showing partly in section a portion of the tour key in position for insertion in the box in accordance with its intended mode of operation.

The tour key illustrated herein is similar in most respects to that shown in my co-pending application Serial No. 245,461, filed December 13, 1938, and is designed to operate with the other mechanisms of the system described in that application. The system may be understood as including at least one signal box having a mechanism adapted to be operated by the watchman's tour key for turning in a signal to a central station, or making a permanent time record. Other boxes located along the route which the watchman is expected to travel need not include the signal mechanism, but each of the boxes is provided with features in the nature of wards, the wards of each box differing from those of the others. The tour key is provided with parts which are inter-engageable with the wards, but which must be differently arranged to adapt the key for use in each of the boxes. In accordance with the invention disclosed in my said co-pending application the key and the box are provided with cooperating means whereby the use of the key in any one box automatically adapts it for use in the next box and makes it unsuitable for repeated use in a previous box of the series until it has been inserted and operated in each box along the watchman's route. Thus the watchman is forced to travel his entire route before be can again turn in a signal by the use of his tour key in the signal box of the series.

As shown in the drawing, the tour key includes a cylindrical body 1 having a bow or handle 2 and a bit 3, which includes a casing 4 having a series of slots or notches 5 in its outer edge. These notches are positioned to register with wards 6 in the form of ribs provided in each of the boxes, such as that shown in Fig. 6. The box includes a rotatable central member 7 designed to receive the cylindrical body 1 of the key, with its bit projecting through a slot 7a for sweeping around the interior of the inner casing 8. If the proper notches 5 of the bit 3 are clear, the tour key may be thus turned with those notches 5 in registration with the wards 6. But each of the notches 5 is normally ocupied by a pin or plunger 9 which would ordinarily prevent engagement of the wards 6 in the notches 5. The inner ends of the plungers 9 engage the surface of a cylinder 10, but this cylinder is formed with variously located holes 11 in which the inner ends of the plungers 9 may be accommodated if the holes are registered therewith. The holes 11 are arranged to be so registered in groups of two or three by rotative adjustment of the cylinder 10. The plungers 9 are all projected into the notches 5 by springs 12, but if the cylinder 10 is so adjusted that the proper plungers 9 may enter holes 11 therein then these plungers will be pressed back upon engaging the wards 6 of the housing 8 and the tour key will be permitted to turn in the housing.

The cylindrical body 1 of the tour key contains a cylinder lock which is rotatable therein by means of a suitable key, in a well-known manner. Such a key B is fixedly anchored in each box of the system, as seen in Fig. 6 so that when the body 1 of the tour key enters the box

the key 13 becomes engaged in the key slot 14 of the cylinder lock 15, causing relative rotation of the lock cylinder in the body 1 as the latter is turned through its revolution within the casing 8. This relative rotation of the lock cylinder 15 rotates a one-tooth gear 16 secured to the end of the cylinder 15 so that its single tooth 17 engages a tooth of a ratchet wheel 18 on the end of the cylinder 10 and turns the latter through a limited angle for shifting one set of holes 11 out of registration with certain plungers 9, and bringing a different set of holes 11 into registration with other plungers 9 of the key bit, so that when the tour key is withdrawn from the box it is no longer adapted to operate in that box, but is adjusted for use in another box of the series.

Incidentally, the ratchet-toothed wheel 18 is provided with a spring detent pawl 19 which not only serves to hold it quite definitely at each adjusted position, so that the holes 11 will be properly registered with their plungers 9 but also prevents reverse rotation of the wheel 18 and the cylinder 10 which, in turn, prevents the one-tooth gear 16 and the lock cylinder 15 from being turned backward through as much as a full revolution at any time.

As a check upon the watchman's activities the present invention provides in the body 1 of the tour key a counter mechanism, indicated at 20 as being enclosed in a cylindrical case having an offset portion containing the window 21 at which the dial numerals 22 are at all times visible. The cylindrical body 1 is formed at its outer end with an inturned integral flange 1^a and, with the exception of this flange, the entire length of the body is provided with a longitudinal slot 1^b of uniform width so that in assembling the tour key the casing 4 of the bit 3 together with the lock cylinder 15 is first slid into position against the end flange 1^a; then a filler ring 23, having a thickened portion 24 dimensioned to occupy the width of the slot 1^b, is inserted in the body 1, followed by the counter 20 with its window portion 21 occupying the slot 1^b. Finally, the shank 2^a of the key bow 2 is entered in the hollow body 1 with a feather portion 2^b occupying the end of the slot 1^b and with a rivet 25 securing the parts in assembled relation. The lock cylinder 15 provides a square, axially-disposed socket 26 at its inner end, and the operating shaft 27 of the counter 20 is squared to fit therein, so that each revolution of the lock cylinder 15 shall cause one revolution of the counter shaft 27. This will produce a corresponding change in the dial reading of the counter, ordinarily an increase of one unit in the total reading of the counter. Thus, each rotation of the lock cylinder 15, such as is caused by a rotation of the tour key in one of the boxes of the system, will be registered by the counter; and if the watchman has faithfully performed his routine, the increase in the numerical reading of the counter will correspond at any time to the number of stations in the system which the watchman has visited since the last observed reading.

It should be understood that the box illustrated in Fig. 6 is one of the intermediate boxes of the series, not being provided with any signal mechanism but being intended merely to require the watchman to follow a prescribed route in the course of his inspection tour. At one or more stations of the route the box will include electrical signaling mechanism, as more fully shown and described in my co-pending application. If the watchman or anyone else intending to make a false record of the situation—as, for example, in the case of a burglary or intended hold-up—should succeed in tapping the wires of the signal circuit, or otherwise manipulating the mechanism of the box connected with the signal circuit so as to send in a signal without using the tour key in the regular manner, the reading of the numerals 22 of the counter 20 would not be altered as they would under normal conditions; and particularly if the watchman himself should tamper with the electrical signal so as to avoid making his complete rounds and entering the tour key in each of the boxes on the route, there would be a considerable discrepancy in the reading of the counter numerals 22 which would be noted as soon as the watchman turned in his tour key to the supervising office. Thus the provision of the counter enables a close check to be maintained on the activities of the watchman and his method of performing his duties.

While there is shown and described herein certain specific structure embodying the invention, it will be manifest to those skilled in the art that various modifications and rearrangements of the parts may be made without departing from the spirit and scope of the invention, and that the same is not limited to the particular form herein shown and described, except in so far as indicated by the appended claims.

I claim:

1. A tour key for use in a system which includes a series of stations with a watchman's box at each station, said tour key including a bit and a hollow cylindrical body with an integral inturned flange at one end and a slot extending longitudinally in the body from the said flange to the opposite end of the cylinder, the bit comprising a casing with notches in one edge and enclosed mechanism including means for selectively blocking said notches to alter the contour of the bit, said bit being inserted in the slot of the body adjacent the end flange, a counter mechanism enclosed in a cylindrical case having an offset window of substantially the same width as the slot, the cylindrical body being fitted snugly within the cylindrical body of the key with its window occupying said slot, and a bow or handle for the key including a cylindrical shank fitting snugly in the end of the key body with a feathered portion occupying the slot and with means sealing said bow to the body whereby the bit with its associated mechanism and the counter are sealed into the key body said counter being operatively connected to the mechanism of the bit for registering the number of changes in the blocking means thereof.

2. A tour key for use in a system which includes a series of station boxes in each of which said key is to be actuated, said key including means capable of a plurality of adjustments each rendering the key operable in a different box of the series, means in the key by which one of said adjustments is effected by operation of the key in each box of the series, and a counter mechanism in the key connected with said last mentioned means to register each adjustment.

3. A tour key for use in a system which includes a series of station boxes in each of which said key is to be actuated, said key including means capable of a plurality of adjustments each rendering the key operable in a different box of the series, means in the key by which each of said adjustments is effected by operation of the key in a different box of the series, and a counter mechanism fixed in the key for movement

bodily therewith but having a relatively movable actuating member arranged for operable connection with a fixed part of each box and serving to actuate the counter upon operation of the key in the box.

4. A tour key for use in a system which includes a series of station boxes in each of which said key is to be actuated, said key including means capable of a plurality of adjustments each rendering the key rotatively operable in a different box of the series, rotatable means in the key by which each of said adjustments is effected by rotation of the key in a different box of the series, and a counter mechanism fixed in the key but having a relatively rotatable actuator arranged for ooperative connection with a fixed part of each box to register each rotation of said key in a box.

5. In the combination defined in claim 4, said rotatable means comprising a cylinder lock disposed axially in the key with respect to the axis of rotation of the latter and the rotatable actuator of the counter mechanism including an operating shaft co-axial with the cylinder lock and connected thereto for rotation thereby.

6. A tour key for use in a system which includes a series of station boxes in each of which said key is to be actuated, each box being provided with a different combination of wards, the key including tumblers projecting in positions to register with the wards in the boxes, a control member normally disengaged from all the tumblers and shiftable in the key to a series of positions each corresponding to the wards of one box of the series, said member serving at each position to block one or more tumblers in projected position and to release one or more tumblers for yielding encounter with the wards of the corresponding box so as to allow manipulation of the key therein, means in the key by which said control member is shifted upon manipulation of the key in a box of the series, and a counter mechanism in the key connected to said last mentioned means to register each adjustment of the control member.

7. In the combination defined in claim 6, the manipulation of the key in each box being a rotation thereof, the control member comprising a cylinder axially rotatable in the key and having variously disposed recesses arranged to register with different tumblers or groups of tumblers at different positions in the rotation of the cylinder and the means for effecting adjustment of said control member being geared to rotate it through a limited angle for shifting one or more different recesses thereof into registration with corresponding tumblers each time the key is turned through a full revolution in a box of the series, and the said counter mechanism in the key being connected to said last mentioned means to register each such revolution of the key in a box of the series.

HAROLD MACHINIST.