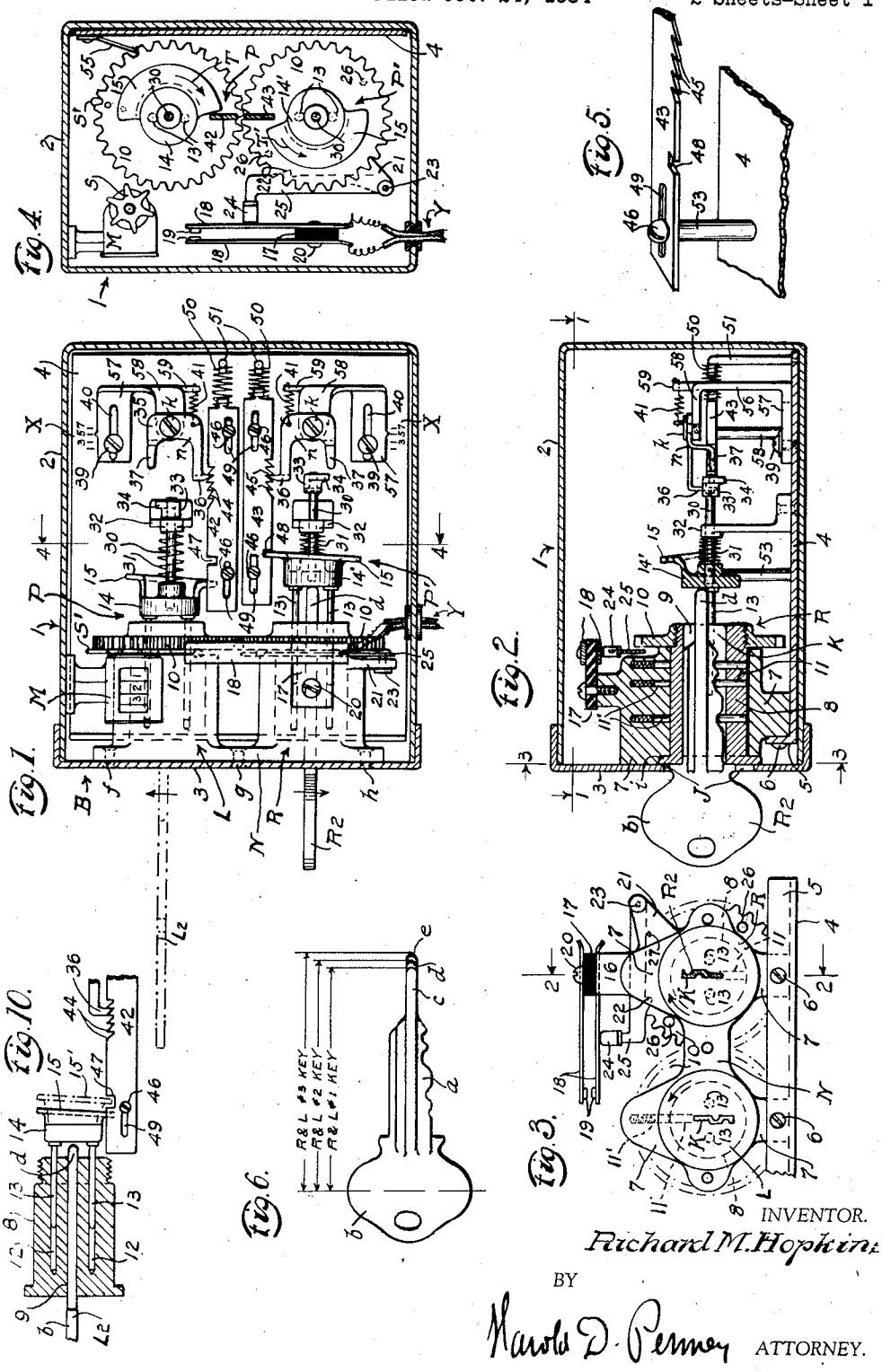
Dec. 15, 1936. R. M. HOPKINS 2,064,474

WATCHMAN'S TOUR SYSTEM

Filed Oct. 24, 1934 2 Sheets-Sheet 1

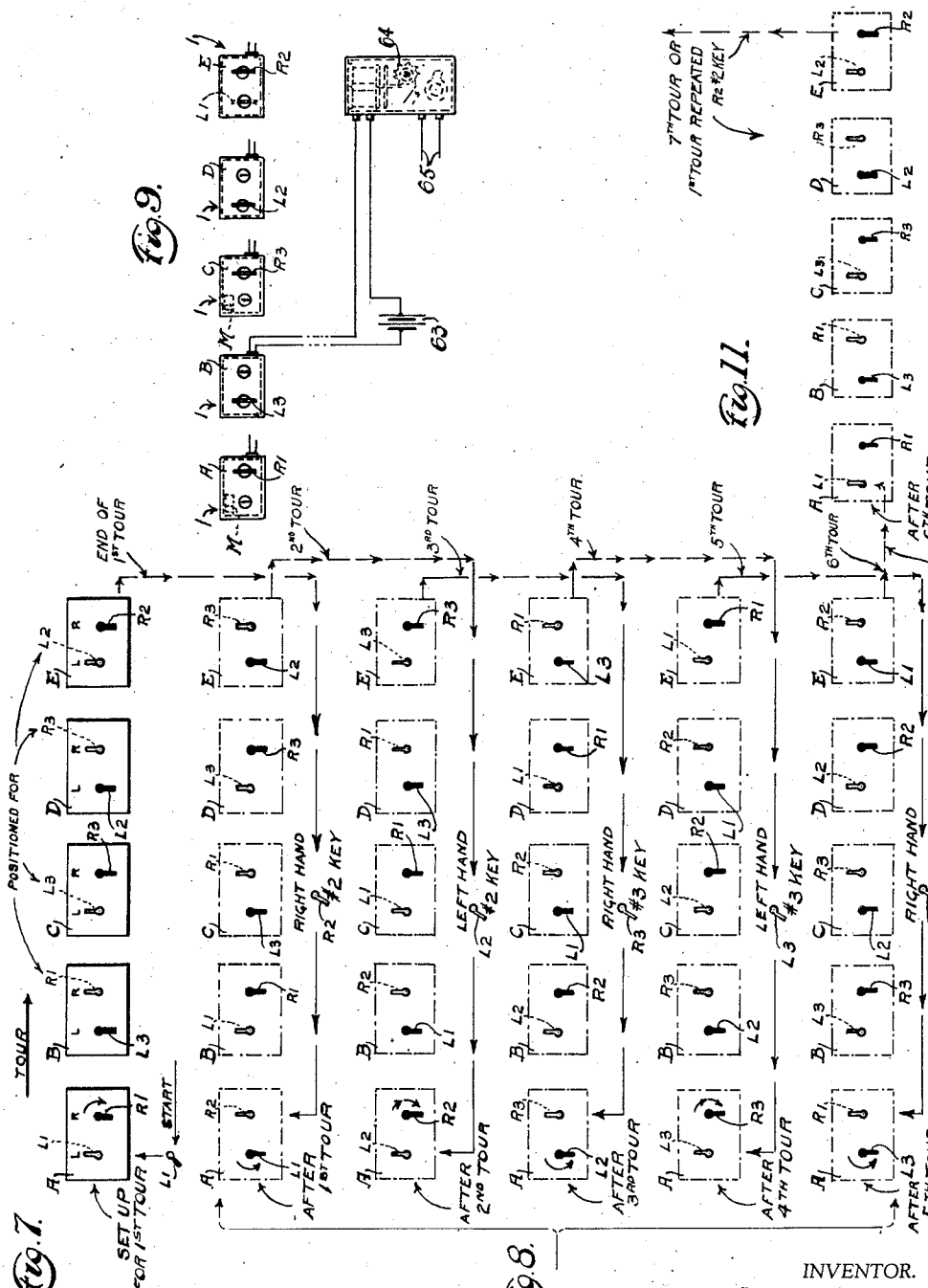


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2,064,474

WATCHMAN'S TOUR SYSTEM

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Application October 24, 1934, Serial No. 749,759

12 Claims. (Cl. 177—360)

The present invention relates to watchman's tour patrol, registry and signal systems, and more particularly to a system wherein each tour station comprises plural key holding and trapping sections, whereby, upon the introduction and operation of a registering key into one of the plural key trapping sections, to condition the same, such registering key becomes trapped, against removal, in said section, until the next sequential patrol of said station, and, simultaneously with its being trapped, causes the release, for removal, of a companion key from an adjacent, operatively connected companion section of said station, which latter released key, in sequence, is utilized to unlock, become trapped, and release a third key from another station section, and thereafter the desired number of other tour stations patrolled and conditioned with sequentially trapped and released keys, to be pointed out in greater detail hereinafter.

Thus, one object of the present invention is to provide a tour system in which a plurality of locked or trapped and releasable keys are utilized to sequentially supervise the station patrol visits of the watchman, to any desired, extended number of tour stations.

A further object of the invention is to provide plural, sequential tour stations, which are successively and sequentially conditioned by key operation for subsequent similar operation.

A further advantage of the herein improvement is in the feature, that each tour station may have the added functions of being a local register of the acts of the watchman at each tour, but each successive key as it is trapped therein, and additionally, each trapped key, when released in its sequence, to the next sequential station section, conditions the station section from which it is released to sequentially receive the next succeeding releasing and conditioning key.

A further advantage is in the provision of means in each said station sections, whereby it may be utilized as a signal transmitting station, secretly or openly, to permit of supervisory check up on the watchman during his tour duty periods, thereby to operate a station recording means, and/or restore a delinquency alarm, these latter being located at the central station.

The foregoing, and other features of the herein invention will be apprehended as the herein description proceeds and it is obvious that modifications may be made in the structure hereof and the methods employed, without departing from the spirit hereof or the scope of the appended claims.

In the drawings,

Fig. 1 is a plan view, in section, taken on the line 1—1, Fig. 2, looking in the direction of the arrows;

Fig. 2 is a longitudinal sectional view of one of the key operated mechanisms, taken on the line 2—2, Fig. 3, looking in the direction of the arrows, and with the housing and cover shown;

Fig. 3 is a front elevation of the lock means, removed from the outer casing;

Fig. 4 is a transverse sectional view, taken on line 4—4, Fig. 1, looking in the direction of the arrows;

Fig. 5 is a fragmentary, sectional, perspective view of one of the slidable conditioning latch levers;

Fig. 6 is a side view of plural keys, superposed, showing the varying lug or station conditioning extensions thereon;

Fig. 7 is a diagrammatic layout of a five station system of a watchman's beat.

Fig. 8 is a diagrammatic layout showing the sequence of the key travel and setting, in the stations, during five tours of the watchman through the five station beat of Fig. 7;

Fig. 9 is a diagrammatic layout of Fig. 7 illustrating a signal or station registry means connected to one of the tour stations;

Fig. 10 is an enlarged fragmentary and sectioned plan of one key-conditioned, and about to be operated, lock and conditioning latch control; and

Fig. 11 is a diagram showing the key set up of a five station tour after the sixth tour of the system shown in Figs. 7, 8 and 9.

The present system of watchman control preferably utilizes plural keys, in the present instance six keys are used, in three duplicate sets or pairs, and as illustrated at *b* in Fig. 6, where three keys are shown superposed upon one another, they may be all of the same type, with the bittings *a* thereof all alike, they may be of the flat or paracentric type, each triple set of keys being provided with a varying, end conditioning extension *c*, *d*, or *e*, one for each set of two keys, each extension being a predetermined increment longer than its subsequent mate. Thus, #1 pair of keys, Fig. 6, are of basic length in their extension *c*, #2 pair of keys are slightly longer at *d* and #3 pair of keys have the longest extension, *e*.

The station registers, generally denoted by 1, Figs. 1, 2, 4, and 8, comprise a housing, 2, preferably rectangular in form, the front end of which is closed by a flanged cover 3. Within the closed

housing, Figs. 2 and 4, there is arranged a removable base or floor plate 4, having an upturned flange 5 on its front end.

Against this flange 5 and resting upon the floor 4 are operatively located a pair of spaced apart, connected, conditioning pin tumbler lock units, generally denoted by L and R respectively, Figs. 1, 2 and 3, these being connected by rib N Fig. 3. The front end of the units L and R are affixed to the inside face of the cover 3 by rivets *f*, *g* and *h*, Fig. 1, shown dotted, thus, in effect the floor, cover and siamesed units L—R are in one piece, and withdrawing of the cover 3 draws out the floor assembled, operative interior of the dual units L and R. Screws 6 attach the lower part of the bodies 7 to the flange of said base 4.

The lock units comprise the pin tumbler supporting bodies 7—7, which are connected by the siamese connection N, and in which are supported two characteristic spring pressed pin tumbler, lock structures comprising two rotatable pin controlled cylinders 8—8, Figs. 2 and 3. In all of the stations of one tour system, the bitting of the keys and the pin tumblers are alike, though these may vary in different tour station installations, or may be of unlike bittings in the L and R keys of one tour system.

The front end of each cylinder is flanged as at *i*, Fig. 2, and the flange rests in a recessed seat in each body 7, and the front of the cover has an opening J before each lock unit which opening is smaller than the flange *i*, and thus the flanged front of the cylinders are rotatably held between the cover front 3 and the recess in body 7.

The opposite, rear end of each cylinder 8 has suitably affixed thereto a gear 10, and these gears 10 mesh with each other, as indicated in Figs. 3 and 4. As thus constructed, rotation of either cylinder 8 causes, or prevents, opposite rotation of the mate cylinder according to conditions, to be later explained.

Each cylinder 8 is provided, in addition to the tumblers and gears, with a longitudinal key slot *k*, which traverses the pin bit bore and opens into the rear end of the cylinder as at 9, in Fig. 2.

Each cylinder body 8 is provided with reciprocally held cam body 14 and 14' respectively, Figs. 1, 2 and 10, each cam body 14—14' having developed on the outer face thereof, a somewhat helically contoured cam flange 15—15. These cams are approximately semi-circular on their outer faces, that is, they only approximate half a circle, as in Fig. 4.

Each cam is fixedly mounted upon two spaced bearing rods 13—13, the other ends of said rods being reciprocally mounted in suitable spaced bores 12—12 which are arranged in the rear end of each pin tumbler cylinder 8, as in Fig. 10.

The front end of each cam body 14 fixedly mounts a guide rod 30, each of these rods being reciprocally mounted in a bearing 32, Figs. 1 and 2, which bearings are rigidly affixed to the floor 4. As thus described the cam bodies 14—14' are each mounted for rotatable reciprocation in a three point bearing formed by the bores 12—12 and bearings 32.

Each rod 30 carries on its outer end a fixed cam body 33, the outer face of which is provided with a sector cam 34.

Each rod 30 is provided with a coiled compression spring 31 which rests between the inside face of bearing 32 and the outer face of cam body 14, or 14', as in Figs. 1 and 2. The purpose of this spring is to put the cam bodies under tension, and to keep them normally strained against the pin tumbler cylinder ends, as shown at 14, Fig. 1, and against the inward thrust of a key L1, as when a key, *b*, is introduced into a key slot, as in Fig. 2, where the cam 15 is shown thrust towards the bearing 32 by extension *d* of key R2.

Between the bearings 32—32, and at the rear of the above described mechanism, there are located, upon floor 4, two pairs of alined posts 53, one pair being shown in Fig. 2, and upon each of these pair of posts are slidably supported notched and ratchet-toothed conditioning slides 42—43, these slides being duplicates, but being reversely mounted relative to each other, as in Fig. 1, so that the ratchet teeth, alike in number of five teeth each, are faced to serve cams 14 and 14' respectively. The details of mounting are fragmentarily shown, perspectively, in Fig. 5.

Each conditioning slide is provided with longitudinally alined slots 49—49, and headed screws 46, the shanks of which pass through said slots and are threadedly engaged in the tops of posts 52—53, and act to operatively hold the slides 42—43 on the tops of said posts, as in Fig. 5 and to also act as stops to the sliding movement of each slide plate to limit the operative movement to desired limits.

Each slide has a notch 47, 48, one for each slide, which is operatively located in the edge thereof adjacent to the cam 15 which it serves, and into which notches, when either cam and slide is in operative relation for movement, the cam flange 15 rotatably engages, to move the slides rearwardly one ratchet tooth distance, at each actuation.

When in trapped key position, as at P, Fig. 1, with the notch 47 out of position as shown, cam 14' cannot be rotated, as it is blocked, due to the meshed gears and the cam 14' at P', by the slide 43, as shown in Figs. 1 and 4, against normal rotation, in the direction of its arrow T'. As thus described, due to the meshed gears 10—10, cam body 14 is also blocked by its slide 43 against normal rotation in the direction of its arrow T'. Thus, interchangeably, one or the other of the cams is prevented from rotation, when only one key is in either lock.

The rear end of each slide, Fig. 1, is shouldered and is provided with a coiled compression spring 50, which springs are supported at their rear ends by posts 51, which are rigidly mounted to floor plate 4. The action of the springs 50—50 against the shoulders tends to keep the slides 42—43 normally pressed in the direction towards the front plate 3.

Located to one side of each slide 42—43, and adjacent the toothed side thereof, are operatively arranged U-shaped ratchet pawl levers generally denoted by *n*—*n*, which are pivotally held by screws *k* to the top leg of support brackets 58—58, the offset feet 57 of which are firmly and adjustably mounted to the floor plate 4, Figs. 1 and 2. The ratchet levers *n* are U-shaped with both legs pointing towards front plate 3, each with its offset ratchet tooth 36 in toothed engagement with the ratchet teeth on the slides 42—43, Fig. 1.

The other legs 37 of the ratchet levers *n* are also offset, see Fig. 2, and thus lie in the path of the sector cam 34. The ratchet levers *n* are strained by coiled extension springs 41—41 affixed between them and an extension 59 on support brackets 58, thus to resiliently maintain the teeth 36 on the ratchet levers *n* in contact with the toothed faces of slides 42—43.

On the floor plate 4, adjacent the foot 57 of

each ratchet support, at X, Fig. 1, are impressed a series of numbered index lines, such as "3", "5", and "7", and the foot of each ratchet support has an index point thereon, each of said feet being further provided with a slot 40, into which a headed screw 39 is introduced to adjustably affix the feet 57 to the floor plate 4, and as required, to lock the floor plates with their index points at any of the indexed positions "3", "5" or "7", for purposes to be explained in detail, later.

Each tour station may be provided with a counting device of any type well known in trade, such as a Veeder counter or its equivalent, indicated as M, which may be suitably affixed to a wall of the housing as in Figs. 1 and 4 so that its star wheel S will be adjacent to and be intermittently operated by every full revolution of one of the gear wheels 10, the said wheel having one or more extensions S' affixed on one face to engage with said star wheel S and revolve it one tooth for each half or full gear revolution. Thus the number of times a station has been visited and conditioned may be locally recorded for the station.

A resilient spring pawl tongue 55, Fig. 4, fixed to the base plate 4, engages with the teeth of gear 10, thereby to prevent back rotation of the meshed gears and insure rotation of the cylinders 8 constantly in the direction of arrows T, T'.

When it is desired to make any one of the tour stations, such as station B, Fig. 9, a supervised or alarm sending station, a further provision of means, as in Figs. 1 to 4 inclusive, comprising a normally open switch, the flat, resilient blades 18—18 of which are normally separated by an insulating block 17, which is held to an extension support 16 provided upon one of the lock units 7, by a screw 20. These blades are provided with contact points 19—19, and are located in an adjacent path relative to one of the gears 10, so that one of two contactor pins 26—26, shown dotted in Fig. 4, and in full in Fig. 3, which are carried by said gear will operate to raise a pivoted switch closing lever 25, by riding the cam point 22 on lever 25, Figs. 1, 3 and 4, shown dotted, and thus cause the insulated contact point 24 on lever 25 to close the points 19—19, and by means of the wiring shown at Y, Fig. 4 and the circuit shown in Fig. 9, later to be described in detail, cause a transmitter box to signal the central station.

The contact lever 25 is pivotally mounted at 23, Fig. 3, by a bracket 21, which is integral with the lock unit 7, and which bracket 21 has a small lever stop pin 27, shown dotted in Fig. 3, to support the lever 25 in non-operative horizontal position. Thus, each half rotation of gears 10 causes one of the pins 26 to operate lever 25 and thus cause an identifying tour station signal to be sent into the central station at each tour operation.

Any or all tour stations may be provided with the foregoing noted switch registering control means.

The action of the device will now be given, before any detailed explanation of the watchman's complete patrol of the stations is given. It will be sufficient, for the moment to state that a plurality of these paired stations are provided about a building at separated points, each station having a trapped key in either the right or left hand lock unit, the key slot of the companion unit being open to receive a key. The watchman possesses one free key, which fits and conditions the open key slot of the A or first station as the watchman starts on this patrol.

Figs. 1 and 2 show the B station which is connected to be actuated to send an alarm to the central station, not shown. A key, R2 is shown inserted in the key slot K, rotated one half revolution and trapped. That is to say that as the key and the other lock unit are set, the key R2 cannot be withdrawn, or rotated. The key R2 cannot be withdrawn because the bittings 11, Fig. 2, prevent it, and the key cannot be rotated to set the bits 11 for key withdrawal because the companion lock is geared to the trapped keyed lock, and the companion lock prevents rotation of the keyed lock because it is blocked against rotation by the cam 15 being blocked by slide rack 42, about as shown in Fig. 4 at P. Thus, the only release for the key R2, is to insert a key L2, having the medium length end extension *d*, and which is shown dotted in Fig. 1, and partly entered, so as to condition its cam 15 by forcing it towards registry with its cam slot 47, so that it may be rotated and thereby permit rotation and release of key R2 from key slot K. Before the entry of key L2 into the left hand lock unit to release R2, the left hand unit is about as shown at Fig. 10 the slide rack 42 being at rest and preventing rotation of cam 15. After the seating of key L2 in said unit, the cam 15 is pushed forward to the dotted position 15', Fig. 10, by the extension *d* thereon, and the cam flange 15 registers and can then enter the cam slot 47, and the left hand lock unit is then free to be rotated one half revolution, anti-clockwise, by key L2, the cam flange 15, during rotation entering the slot 47 of the toothed rack slide 42, as in Fig. 10, and due to the rotation the cam flange 15 pushes ratchet slide 42 back one tooth, compressing spring 50, and causing the ratchet slide 42 to be advanced rearwardly one tooth step further than its previous setting and causing the ratchet pawl tooth 36 on pawl *n* to so hold the ratchet slide in the last position until further advanced one step rearwardly by the next successive conditioning key, in another, later tour.

After the foregoing action, key R2 has, with its cylinder, by means of gears 10—10, been rotated clockwise and is restored to its normal key receiving or releasing position, and thus key R2 may be removed, trapping key L2, and R2 may be then taken to the next successive station and entered into the open R key slot thereof, rotated in a clockwise direction and releasing the next trapped L series key.

Because of the use of R (right hand) and L (left hand) keys in these series the L key rotates its lock anti-clockwise and the alternate R key rotates its lock in a clockwise rotation, thus alternately causing one half revolutions of the gears and associate lock units upon each key operation, but the rotation of each of the lock cylinders 8 of the units is always in the same direction and is so maintained by the spring gear tooth ratchet 55, Fig. 4. After each half rotation the cams and lock units occupy reversed half positions, like that shown in Fig. 4 or alternate thereto.

As in sequence, a key is introduced, trapped, released and removed, and a sequential key introduced, in a single lock unit, the ratchet slide 42 (or 43) is advanced rearwardly tooth by tooth, and caught and held by toothed pawl *n*, until finally, the last L key of the series, L3, with its

longest extension *e* thereon is introduced into a vacant L lock unit, whereupon the cam **15** is pushed back on its longest stroke, until it engages with the ratchet slide slot **47**, and after completing its rotation and setting of the pawl ratchet in the last forward tooth of the ratchet slide, the sector cam **34**, being so far out, and revolving with the cam body **14**, strikes the prong **37** of ratchet pawl *n*, throws it aside, and permits ratchet slide **42** to snap forwardly towards wall front wall **3**, under the impetus of spring **50**, as ratchet tooth **36** is withdrawn from the teeth **44** on slide **42**. This leaves the slide **42** and its cam slot **47** conditioned to receive only the next sequential L key, L*l*, with its shortest extension *c*, which starts the ratchet slide back on its first step of the next sequence of step by step rearward setting, until, after a sequence of L*l*, L2 and L3 keys the ratchet slide is again released to automatically move, forwardly to its L*l* position again.

The foregoing sequence of operation also applies to the operation of the three R series keys R*l*, R2 and R3, and alternately used with the L series of keys, sequentially condition the R series of lock units, step by step, until the ratchet slides of the R series are conditioned from their R*l* positions to and through the R3 positions, whereupon the R ratchet slides **43** return to the initial R*l* positions.

The alternate L key and R key trapping and release positions follow in orderly alternate sequence, and as will be understood from the following steps of watchman's procedure, in which the watchman with his free tours key L*l*, starts on his rounds.

The illustrations of Figs. 7, 8, 9 and 11, show a diagrammatic key sequence, the black down-turned keyholes representing trapped keys, the upturned outlined keyholes representing open key slots, without keys.

In Fig. 9, there is shown, for convenience, both in showing and understanding, a five station tour patrol, the stations denoted by A, B, C, D and E. A greater or lesser number of stations can be utilized. Station B is, like Fig. 9, shown constructed to be connected to a source of electric current supply **63**, and connected in series with a code transmitter box **64**, which in turn is connected by wiring **65** to a central station not shown.

Each station comprises the housing as previously described, each station having a pair of companion lock units **1**—**1** as disclosed in Figs. 1 to 4, each to receive and release a key in operative sequence. As shown in Fig. 9, the five station patrol set up shows a trapped key in one of each of the stations. Starting from the left hand side of Fig. 9, A station has a key trapped in its right hand lock unit R*l*. B station has a key trapped in its left hand lock unit L3, C station has a key trapped in its right hand lock unit R3, D station has a key trapped in its left hand lock unit L2, and the last station, E, has a key trapped in its right hand lock unit R2. This accounts for five keys, leaving a free key L*l* in possession of the watchman, with which to commence his tour of the stations.

As in Fig. 7, which is a diagrammatic layout of the five station patrol set up of Fig. 9, the watchman with his L*l* key in hand, starts at station A, Fig. 7, and as he releases the keys in sequence he must travel from left to right in the direction of the arrow marked "tour", Fig. 7.

He introduces left hand key L*l* into the key slot marked L*l* at the A station, Fig. 7, and then turns the key one half revolution in an anti-clockwise direction. This action rotates both geared pin tumbler cylinders in the station A, as previously described, and leaves key L*l*, trapped in lock unit L*l*, and releases trapped key R*l*, which is then removed, carried to station B and is introduced into the right hand lock unit R*l*. Rotation of key R*l* one half revolution in a clockwise direction, releases its trapped companion key L3, leaving R*l* trapped in the R*l* lock unit of station B.

Released key L3 is then carried to the third station C and introduced into the L3 unit thereof and rotated one half revolution in an anti-clockwise direction. This releases the R3 key in station C and leaves key L3 trapped therein.

Then released key R3 is carried to the fourth station D and is introduced into the R3 slot thereof and rotated one half revolution in a clockwise direction, which releases key L2, and leaves key R3 trapped in the R3 slot of unit D.

Released key L2 is then carried to the last station E, and is introduced into key slot L2 thereof and rotated in an anti-clockwise direction thus trapping itself and releasing key R2 leaving all of the trapped keys, in the positions shown in the first tier of stations in Fig. 8, marked "after 1st tour", shown in solid black and pointing downwardly.

Released key R2 is then carried back from right to left to station A for a 2nd tour, Fig. 8, in the direction of the arrows marked "R2, #2 key", and is introduced into empty key slot R2 (first tier of Fig. 8) is rotated one half revolution in a clockwise direction, trapping itself and releasing key L*l*.

Released key L*l* is then carried to the second or B station and introduced into empty key slot L*l* (first tier of Fig. 8,) and is rotated one half revolution in an anti-clockwise direction, trapping itself, and releasing key R*l*, which is then removed and carried to the "C" station and introduced into slot R*l* and rotated one half revolution in a clock-wise direction releasing key L3, which is then introduced into slot L3 of station "D" and rotated one half revolution in an anti-clockwise direction releasing key R3, which upon introduction into key slot R3 of station E and clockwise rotation, as usual, releases key L2, as a free key for the next tour, and leaving the trapped keys as shown in the second tier, Fig. 8, marked "after second tour".

In the subsequent tours, alternating the keys from their released positions to their mate key trapping and releasing positions, the various progressive advances of the L and R keys from their L*l* to their L3 positions and the R*l* to the R3 on through the various tours may be followed until finally, as in Fig. 11, marked "after 6th tour" the five tour stations have been progressively conditioned back to the "set up" of Fig. 7, and the subsequent progressive advance and reconditioning of the five stations is again repeated, according to requirements.

It will be noted that the L group of keys always condition the left hand or L group of lock units and are always rotated one half revolution in an anti-clockwise direction, and that the R group of keys always condition the right hand or R group of lock units, and are always rotated in a clockwise direction.

It will be noted also, that as the L and R keys are sequentially used, starting with L*l*, or R*l*, they successively condition each station for the recep-

tion of the next key of higher order, such as L2—R2 etc., until finally the last keys of the series L3—R3 condition the stations for the operative reception of the first L1 or R1 keys of the series.

During such tours operation, the keys travel successively from their respective L or R stations progressively through the series of stations, leaving, at the end of each tour, a different trapped key set up, until, at the end of the sixth tour, as in Fig. 11, the set up is identical with the preliminary trapped key set up of Fig. 7, after which the progression of the keys is repeated by subsequent tours, always leaving the watchman in possession of a free, releasing key.

In the event of there being more or less stations required in a single tours series, the *n* pawl support **56**, previously described as having a slotted foot **57**, adjustably held to floor **4** by a head screw **39**, the support **56** may be adjusted to set its index point to index indice "3", Fig. 1, or to index indice "7", according to a decrease to three tours stations only, or a tour comprising seven stations. This adjustment calls less or more of the ratchet teeth **44—45** on slides **42—43** into operation. More or less index positions of pawl support **56** may be provided than shown, and a greater or less number of ratchet teeth **44—45** on slides **42—43** may also be utilized, these changes not altering the structure herein in any way but contribute to lessen or amplify the scope of the system as to the number of stations actually utilized or required for each tour installation.

In addition to the foregoing, it is also obvious that, if the pawl support **56** is moved and fixed to index "7", Fig. 1, for instance, then keys must be provided with longer nose extensions, similar to *c—d—e* of Fig. 6, in order to properly operate and condition the locks.

Having thus described the invention what is claimed is:

1. In a key-controlled system, a station comprising mechanism operative for releasing a previously trapped key, only while trapping a newly introduced key; and means for preventing the retrapping of the released key by said station mechanism until after the subsequent trapping by said station of a different key.

2. In a tour system, a locking device having a pair of pin tumblers which are adapted for operation by different sets of keys, the individual keys of each set being similar, said device including means for rendering rotary movement of the tumblers simultaneous, means for limiting said movement to half revolutions, the tumblers being operable alternately by two keys of the same set, means for trapping the first key in its tumbler on operation of such tumbler by the first key, the first key used being released by operation of the second key, means for restricting the operation of said tumblers to rotary movement in one direction, and means for preventing each tumbler from being operated a second time by a key of any set, whereby only a key of the next set may then operate any tumbler.

3. A station apparatus for a watchman's tour system comprising in combination a locking device having two key operated geared tumblers movable in unison, each of said tumblers having key holding means associated therewith, axially movable members slidably mounted on said tumblers and having rotary movement therewith, said members having thereon semi-circular helical cam flanges, separate keepers coacting with said flanges and each having a flange notch therein, a key having thereon a terminal extension whereby to slide one of said members so that its flange may enter the associated notch to allow of a half revolution of the tumblers, the key being then held by the associated means, and another key having also thereon a terminal extension whereby to slide the other member so that its flange may also enter its associated notch to allow of a second half revolution of the tumblers, the second half revolution being adapted to release the first mentioned key.

4. A station apparatus for a watchman's tour system comprising in combination a locking device having a pair of key operated tumblers, meshing gears carried by said tumblers, means holding said gears against back revolution, axially movable members mounted on said tumblers at the inner ends thereof and having rotary movement therewith, said members having thereon semi-circular helical cam flanges, a separate keeper for each member, each keeper having a flange notch therein; a key having thereon a terminal extension whereby to slide one of said members so that the flange may enter the associated notch to allow of a forward half revolution of the tumblers, the key being then held; and another key having also thereon a terminal extension whereby to slide the other member so that its flange may also enter the associated notch to allow of a second forward half revolution of the tumbers, the second forward half revolution being adapted to release the first mentioned key.

5. A station apparatus according to claim 4, in which said keepers are axially slidable for stepping movement, the helical flanges of the slidable members being adapted to slide said keepers, and means for holding said keepers after each step.

6. A station apparatus according to claim 4, in which said keepers are slidable for stepping movement, the flanges of the slidable members during revolution thereof being adapted to step said keepers; means for holding said keepers after each step; and means for returning the slidable members after extraction of the keys.

7. A station apparatus according to claim 4, in which said keepers are axially slidable for stepping movement, the cam flanges of the slidable members being adapted to step said keepers; means for holding said keepers after each step; spring means for returning said movable cam members after extraction of the keys, and keys having longer terminal extensions, whereby to slide the cam members with their flanges as far as the notches of the retained or held keepers.

8. In a watchman's tour system, in combination, a station device comprising lock mechanism including a pair of coacting geared pin tumblers which are revolvable in unison, each tumbler being adapted to be operated by different keys, axially slidable members mounted on said tumblers and revolvable therewith, said members having thereon semi-circular cam flanges, means restricting said members to half revolutions, said means including slidable notched keepers, there being a notch in each keeper for each flange, short keys for sliding said members to engage the flanges in the respective notches whereby to then revolve the tumblers a half revolution each and to also advance the keepers one step each, each of said short keys being held in its tumbler after the first half revolution, and said short keys being adapted to be extracted from their tumblers after a second half revolution; longer keys for again sliding said members and revolving the

tumblers to further step said keepers, said keepers having thereon teeth; means adjustably mounted in the housing and having thereon pivoted detents for engaging the respective teeth, and an index cooperating with said adjustable means whereby to adjust the latter for engaging a predetermined number of teeth.

9. An apparatus comprising in combination a watchman's tour station and at least one other or next station, each station comprising a locking device including a pair of key trapping tumblers having thereon backwardly slidable extentions, each extension being rotatable with its tumbler; means connecting the tumblers of each pair for unified revolution, said tumblers being operable by similar keys, there being one key always trapped in a tumbler of each device and the associated extension being then moved back, the other tumbler being open or without a key and there being an extra key for a watchman; so that the extra key may be inserted in an open tumbler whereby to slide the associated extension back a distance depending upon the length of the key and turn the tumbler for releasing the trapped key, said extra key being itself then trapped, the released key being available for use in the open tumbler of the next station; and means set by the moved back extension and cooperating therewith for preventing said tumblers with their extensions from being again turned by the same key.

10. An apparatus comprising in combination a plurality of watchman's tour stations, each including a housing having therein a locking device including a pair of simultaneously revolvable key trapping pin tumblers, said tumblers having thereon meshed gears, there being a set of keys wherewith to perform a tour; there being one key trapped in one of the tumblers of the respective devices, the other tumbler being open, and there being an extra key for a watchman; station operating registering means including a circuit having an open switch in the housing; and a pin on one of the gears and in the path of which pin said switch is disposed; so that the extra key may be inserted in an open tumbler whereby to turn both tumblers so as to release the associated trapped key and trap the extra key, the switch being closed during the turning movement for operating the register, the released key being then available for extraction from its tumbler whereby to operate the next station of the system.

11. An apparatus comprising in combination a plurality of watchman's tour stations, each station including a housing having therein a locking device including a pair of key trapping pin tumblers which are revolvable in unison, there being meshed gears on said tumblers; a set of keys wherewith to perform a tour; there being one key trapped in one of the tumblers of the respective devices, the other tumbler being open, and there being an extra key for a watchman; station operating registering means having an open switch in the housing adjacent one of the gears, a pin carried by the gear, said switch being disposed in the path of the pin; station operating counting means disposed adjacent the other gear, and a fixed member carried by the last mentioned gear, said counting means including a revolvable portion which is disposed in the path of said member; so that the extra key may be inserted in an open tumbler whereby to turn both tumblers so as to release the associated trapped key and trap the extra key, said switch being closed and said portion being revolved during the turning movement, the released key being then available for extraction from its tumbler whereby to operate the next station of the system.

12. A station apparatus for watchman's tour systems wherein at least two sets of different keys are utilized, the individual keys of each set being similar; comprising in combination similar locking devices, each device forming a station including first and second key trapping pin tumblers which have simultaneous movement by half revolutions; there being a key of one set trapped in the first tumbler, whereby the second tumbler may be operated by another key of the set to release the trapped key; and means for changing the condition of the tumbler during the key operation so that it may then be operated only by a key of the next set; operation of said first tumbler by the key of the second set being also adapted to release the key of first set from said second tumbler.

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