

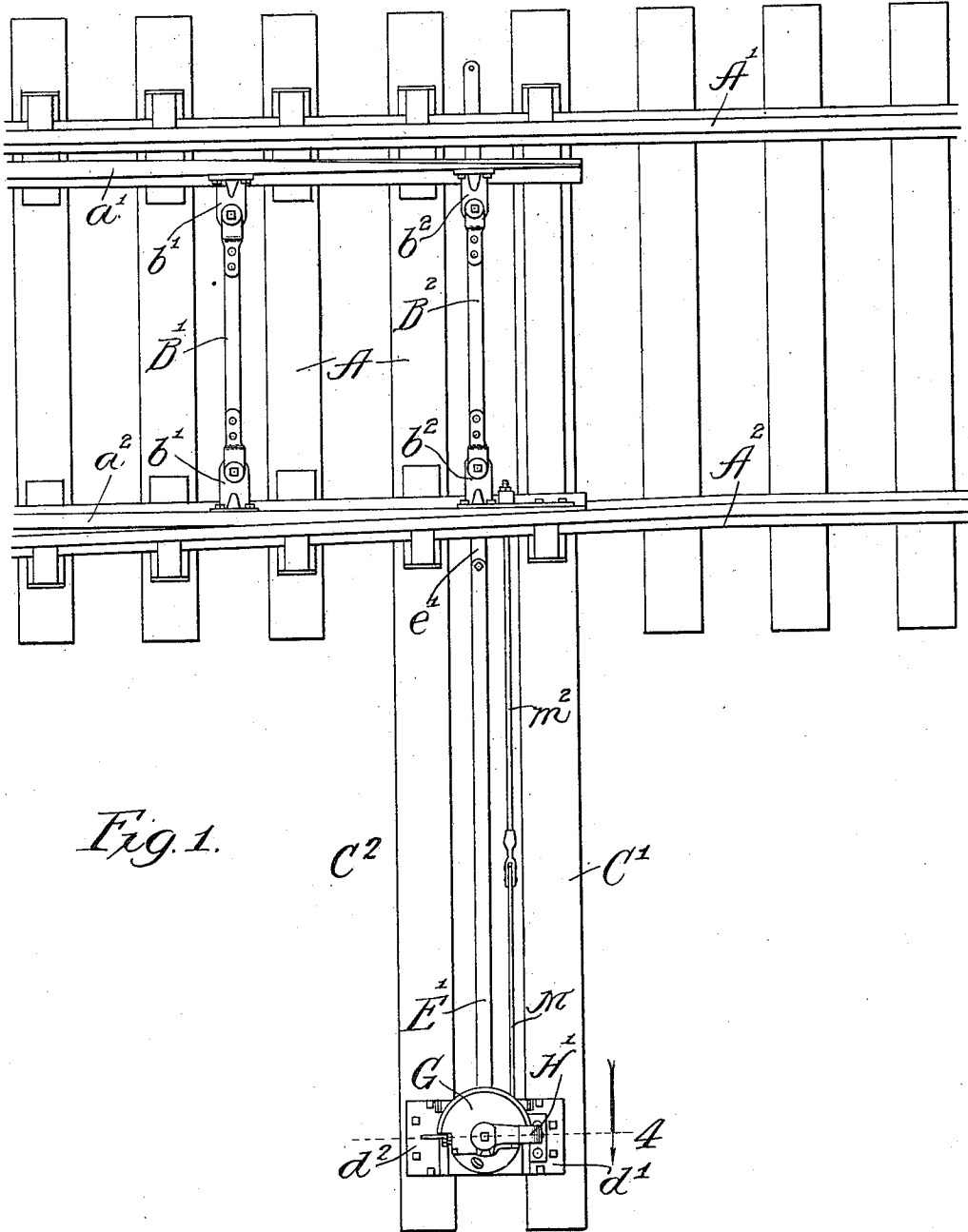
T. E. CALVERT.
SWITCH STAND.

APPLICATION FILED AUG. 16, 1909.

Patented Jan. 10, 1911.

981,379.

4 SHEETS—SHEET 1.



Witnesses:
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Chas. H. Bull.

Inventor:
Thomas E. Calvert.
By Sheridan, Wilkinson & Scott
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4 SHEETS—SHEET 2.

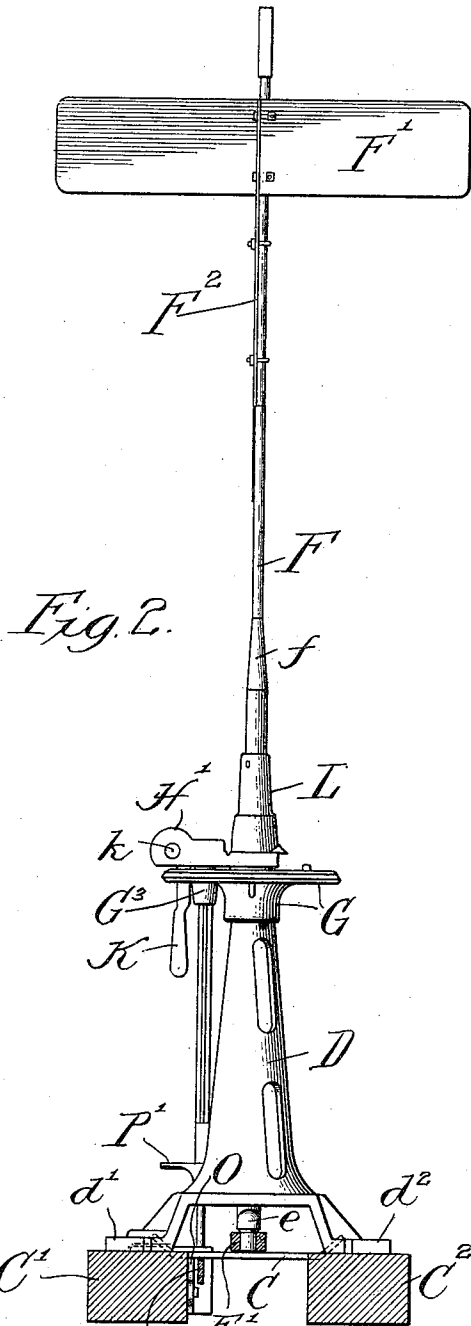


Fig. 2.

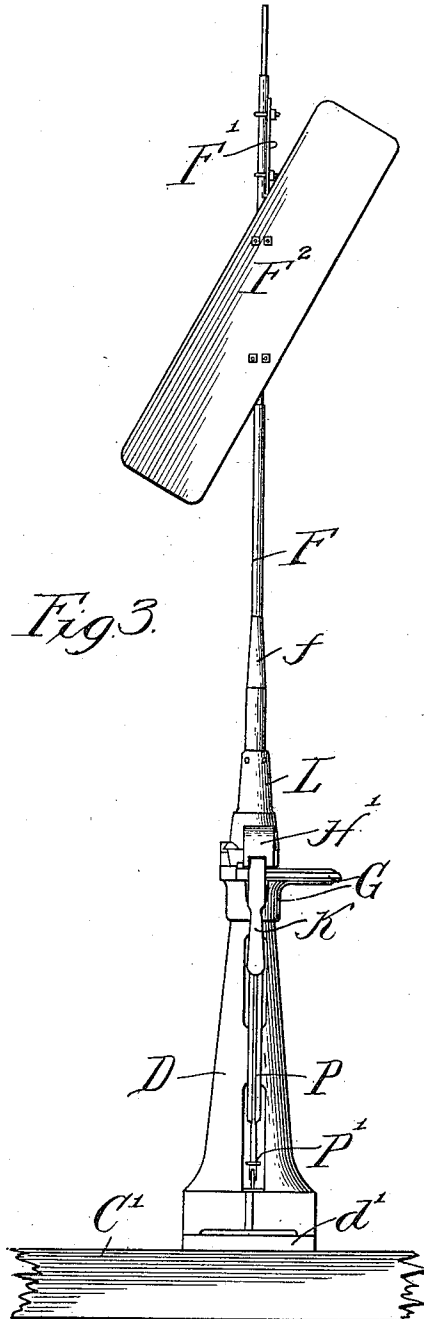


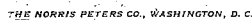
Fig. 3.

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4 SHEETS—SHEET 3.



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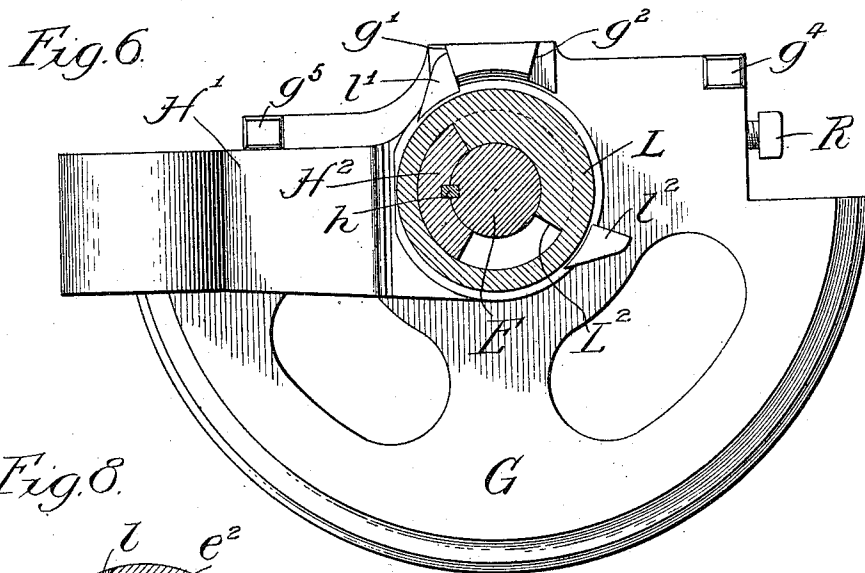


Fig. 8.

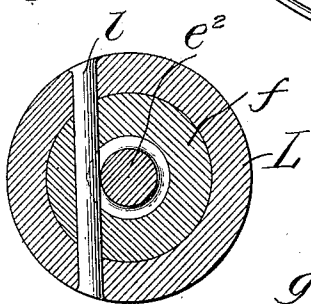
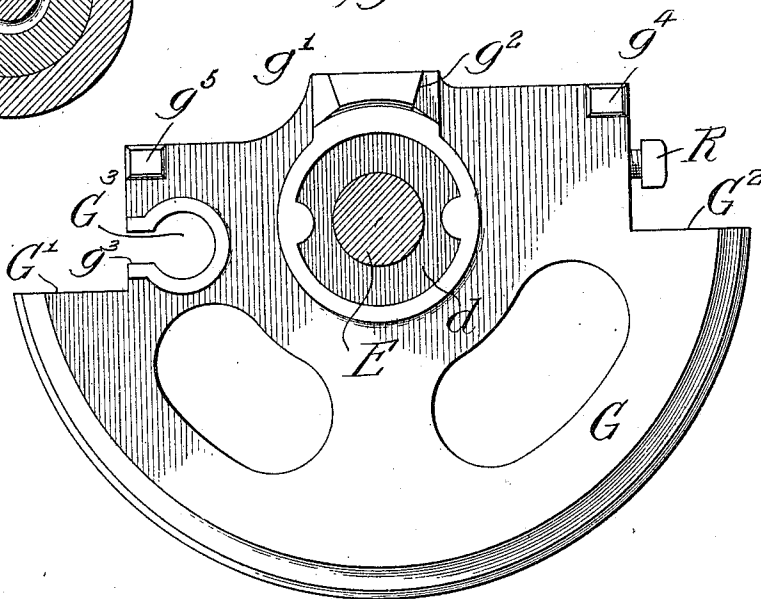


Fig. 7.



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UNITED STATES PATENT OFFICE.

THOMAS E. CALVERT, OF CHICAGO, ILLINOIS.

SWITCH-STAND.

981,379.

Specification of Letters Patent.

Patented Jan. 10, 1911.

Application filed August 16, 1909. Serial No. 513,071.

To all whom it may concern:

Be it known that I, THOMAS E. CALVERT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Switch-Stands, of which the following is a specification.

My invention relates in general to railroad switch stands, and more particularly to a switch stand of the general character covered by my prior Patents Nos. 353,664 of December 7, 1886, and 568,938 of October 6, 1896.

In the practical use of switch stands it sometimes occurs that they become accidentally displaced, such displacement resulting in a movement of the switch points, owing to their connection with the switch stand, thereby rendering liable the derailment of a passing train.

The primary object of my invention is to provide a switch stand with means for locking the switch points in a given position independently of the switch stand and which will not be rendered inoperative by an accident to the stand.

A further object of my invention is to provide a switch stand which will lock the switch points in either main line or siding positions and prevent the removal of the key in intermediate positions, and which will also, independently of the stand-locking means, retain the switch points in main line position.

A still further object of my invention is to provide a switch stand which will be comparatively simple in construction, efficient in operation, and durable in use.

My invention will be more fully described hereinafter with reference to the accompanying drawings, in which the same is illustrated as embodying a convenient and practical form, and in which—

Figure 1 is a plan view of the switch stand and switch points connected therewith; Fig. 2 an elevation view of the switch stand; Fig. 3 an elevation view of the switch stand, looking from the left of Fig. 2; Fig. 4 an enlarged vertical section, taken on line 4 of Fig. 1; Fig. 5 a detail vertical section, taken on line 5 of Fig. 4 on a still larger scale; Fig. 6 an enlarged sectional view, taken on line 6 of Fig. 4; Fig. 7 an enlarged sectional view, taken on line 7 of Fig. 4; and

Fig. 8 an enlarged sectional view, taken on line 8 of Fig. 4.

The same reference characters are used to designate the same parts in the several figures of the drawings.

Reference characters A' A^2 indicate the rails of a railroad track at a point where the siding connects with the main line.

Reference characters a' a^2 indicate the switch points, which are shown in Fig. 1 in main line position.

A indicates the ties underlying the rails.

B' B^2 indicate switch rods of any suitable construction for connecting the movable switch points a' and a^2 .

C' C^2 indicate head blocks, which project to one side of the track and upon which the switch stand is mounted.

Reference letter D indicates the base of the switch stand, which is provided with outwardly projecting feet d' d^2 overlying and secured to the head blocks.

E designates a crank shaft located vertically within the base D and supported so as to oscillate by means of the web D' , through which the shaft passes adjacent its lower end and by means of the reduced upper end of the base which closely surrounds the shaft. The portion of the shaft E beneath the web D' is provided with a crank e , the depending outer end of which extends loosely through an opening in the outer end of a connecting rod E' , the opposite end of the latter being connected to a projection e' of the switch rod B^2 extending beneath the rail A^2 . The end of the connecting rod E' , which extends beneath the base D , is supported upon a strap C , and is thereby retained in coupled relation with the depending end of the crank e . The strap C extends between the head blocks C' and C^2 , and is provided with upwardly projecting ends secured to the feet d' d^2 of the base D in any suitable manner, as by casting the feet of the base around the ends of the strap.

The rod E' is assembled in place by inserting the crank end under the stand over the strap C and resting thereon but with the track end raised, thus permitting the crank end to go under the said depending end of crank e so that when the track end of E' is lowered the end of crank e will enter the opening in the crank end of bar E' . The track end may then be attached to e'

on the switch rod B². By this arrangement the base-web and crank bearing are within a minimum possible distance from the plane of rotation of the crank *e*, thus minimizing lost motion at all times.

G indicates a quadrant plate, which is secured upon the upper end of the base D, by means of a depending flange *g* having a conical opening therein, in which is received the conical upper end *d* of the base D.

In order to prevent rotation of the quadrant plate relatively to the base, interlocking ribs and grooves—such as shown in Fig. 7 and indicated by dotted lines in Fig. 4—are provided. A lower hub casting H is located above the quadrant plate G, and is rigidly secured to the shaft E in any suitable manner, as by means of a key *h*. Projecting laterally from the lower hub casting H is a lever H' having therein a chamber, in which is received the upper end of a handle K. A pivot pin *k* extends through registering openings in the end of the handle within the chamber in the lever H' and in the adjacent walls of such chamber.

Located within the chamber in the lever H' is a lock of ordinary key and plunger construction, comprising a casing K² and plunger K³. A spring *k*² is interposed between the plunger and the casing, the tension of which projects the end of the plunger against the adjacent surfaces on the lever K. A recess *k*¹ is provided in the lever, into which the spring projects the plunger when the lever is in a depending position, as shown in Fig. 4.

L indicates an upper hub casting having a chamber in which is received the upper portion of the lower hub H. The upper hub L surrounds a short section of tubing *f* and is rigidly secured thereto by means of a transverse pin *l*, such pin extending partially within an annular groove in the upper reduced end *e*² of the shaft E, such reduced end projecting upwardly within the tube *f*.

F designates the target mast, which rotatably abuts upon but is not a part of or integral with *e*² of shaft E and which is surrounded by and rigidly secured to the upper portion of the tube *f*, preferably by welding.

F' indicates the siding target, and F² the main line target, which lie in planes at right angles to each other and which are rigidly secured to the mast F in any suitable manner, as by means of U-bolts, as clearly shown in Figs. 2 and 3.

In order that the switch points may be retained in main line position independently of the locking mechanism of the switch stand proper, I provide the following supplemental locking mechanism, so that in case the switch stand should be accidentally displaced the switch points will remain firmly locked in main line position.

A locking rod M extends beneath the

switchstand and is connected at one end by means of a rod *m*² with the switch point *a*². The locking rod M passes through a plunger N and is provided with a recess *m* to receive such plunger and to be thereby locked against longitudinal movement. The plunger N is located within a chamber *o*, the latter being preferably formed integral with a plate O. This plate O is rigidly secured to one of the head blocks, as, for instance, C², and is preferably provided with a horizontal top portion *o*¹, which overlies the head block and extends within a recess in the foot *d*¹ of the base D, as shown in Fig. 4. In order to force the plunger N upwardly into engagement with the recess *m* in the locking rod M, a spring *n* is interposed between the plunger and the bottom of the surrounding chamber *o*.

In order to depress the plunger, and thereby unlock the rod M, a vertical rod P is mounted to reciprocate vertically upon the base D, the lower end of such rod resting against the top of the plunger N. The rod P passes through an opening in the web D' of the base D, and is provided with guide wings *p* engaging the wall of the opening. Secured to the rod P, at a point slightly above the web D' is a projection P' adapted to be depressed by the foot of the operator. The rod P extends upwardly within a circular guide G³ depending from the quadrant plate G, a collar P³ being provided on the upper end of the rod P to guide the same within the flange G³ on the quadrant. A lug *p*³ projects laterally from the upper end of the rod P and extends through a vertical slot *g*³ in the surrounding circular guiding flange G³. The lever K is provided with a recess *k*³ adapted to surround the lug *p*³ when the lever is in the locked position shown in Fig. 4, in which the switch points are locked in main line position.

The operation of my improved switch stand is as follows: When the parts are in the positions indicated in the drawings the switch points are locked in main line position and the main line target F² occupies a plane transverse to the direction of the track. In order to throw the switch points to siding position, a key is first inserted in the lock carried by the lever H' and the plunger K³ withdrawn from engagement with the recess *k*¹ in the head of the handle K. The handle K is then swung upwardly, so that the circular cam surface on its head will engage the plunger K³ and retain the latter retracted, thereby preventing the withdrawal of the key as long as the lever is in such position, the construction of the lock being such that the key can be inserted or withdrawn only when the lock is in its normal locked position. Such construction is already well known in the locksmith's art and is not here fully described or

claimed as new. The projection P' is then depressed, so as to remove the plunger N of the supplemental locking device from engagement with the locking rod M, such depression of the rod P being permitted by the fact that the handle K having been swung outwardly has disengaged the lug p^3 from the recess k^3 . Before following the operation in further detail it should be noted that the exact time of movement of hub L with respect to H depends on adjustment and fit to this extent, namely, if the hub elements fit closely together any movement of one tends to carry the other with it by friction alone. If, on the other hand, they fit loosely and the combined parts L, f and F rest pivotally on e^2 then, because of inertia any movement of L will tend to lag 90° behind H. For the purpose of description the former condition is assumed, though it is practically immaterial which condition exists, since the final results are the same. The handle K is then moved laterally carrying the lever H' half way around along the quadrant plate G. Such movement is imparted to the lower hub casting H, and thence to the crank shaft E, connecting rod E', and switch points. The upper hub L, tube f, and shaft F which rest upon the moving members are also carried around part way. After a movement of the lower hub H through approximately 90°, a lug l^2 on hub L, engages the stop shoulder g^2 on the quadrant plate G, as will be clearly evident from an inspection of Fig. 6, and thereby stops its rotation, but this does not limit the rotation of the hub H. A continued movement of the handle K along the quadrant plate G continues to rotate the lower hub H, and consequently continues to move the switch points. The movement of the handle K continues through 180°, at the limit of which angle the lever H' engages the stop lug g^4 on the quadrant plate, such movement of the handle having rotated the shaft E 180° and completed the throw of the switch points, and also having rotated the mast 90°. When the lever H' comes into engagement with stop g^4 the lug H^2 on the lower hub H comes into engagement with a similar lug or shoulder L^2 on the upper hub L thereby holding L against any tendency to turn back before the lower hub is released. If it is desired to permit the switch points to be locked in siding position, the screw R—shown in Figs. 6 and 7—is removed, thereby permitting the handle K to swing downwardly past the shoulder G^2 on the quadrant plate into position to permit the plunger K^3 to engage the recess k' in the head of the handle, thereby permitting the key to be withdrawn. When it is desired to prevent the switch points being locked in siding position, the screw R is secured to the quadrant, thereby preventing the handle

K from being swung downwardly sufficiently far to permit engagement of the plunger K^3 with the recess k' and the removal of the key.

When it is desired to return the switch points to main line position, the handle K is swung into horizontal position, so as to pass above the shoulder G^2 in the quadrant plate, and is then moved reversely through 180° until the lever H' engages the stop lug g^5 , when the handle K may be swung downwardly past the shoulder G' into the position shown in Fig. 4, in which the handle is locked by the plunger K^3 . This in turn locks the rod P against depression through the engagement of the lug p^3 within the recess k^3 . In this reverse rotation the hubs H and L both start and rotate together through 90°. Then the lug l' on the hub L engages the stop lug g' on the plate G. The hub H then continues through the other 90° till the lever H' engages the stop g^5 and the shoulder H^2 simultaneously engages the shoulder L^2 and locks the hub L until hub H is released. If the freely pivoted condition, aforesaid, exists with respect to hubs H and L then the movement will tend to be as follows: The lock H' as shown in Fig. 6 is turned in a counterclockwise direction through an angular space of 90° during which motion the part H^2 moves irrespectively of the upper hub element L, but at the end of this 90° movement the lug H^2 on the lower hub element H engages with the shoulder L^2 of the upper hub element L. Further movement of the lever H' causes movement of the member L, which movement is completed when the lug l^2 reaches the projection g^2 at which time the lever H' has completed its final movement through 180° and contacts with the projections g^4 .

From the foregoing description it will be observed that I have invented an improved switch stand, which not only comprises mechanism for throwing the switch points and retaining them locked in either main line or siding position, but also comprises a supplemental locking device supported independently of the switch stand and separately connected to the switch points, so as to positively retain such switch points locked in main line position, regardless of any accident which may happen to the switch stand. It will be further observed that such supplemental locking device cannot be operated except after the handle of the switch stand has been unlocked, and hence the switch points are doubly locked and can only be unlocked by one having the key to the switch stand lock.

While I have described more or less in detail the particular embodiment of my invention illustrated in the drawings, yet it will be understood that many modifications

may be made by those skilled in the art without departing from the spirit of my invention. Therefore I do not wish to be understood as limiting myself to any specific embodying structure, but desire to cover any structure embodying my invention as defined by my claims.

I claim:—

1. The combination with a switch stand comprising means for throwing a switch point and means for locking the switch point in completely thrown positions, of a supplemental locking device supported independently of the switch stand for retaining the switch point in a given position, said supplemental lock being controlled by the switch stand mechanism through a downwardly acting compression member adapted to act downward only.
2. The combination with a switch stand comprising means for throwing a switch point and means for locking the switch point in completely thrown positions, of a supplemental locking device supported independently of the switchstand for retaining the switch point in a given position, and interlocking connections between the switch stand locking means and said supplemental locking device, said connections being adapted to act downward only.
3. The combination with a switch point of a switch stand, means operatively connecting the switch point and switch stand, supplemental locking means structurally independent of the switch stand and adapted to act downward only but controlled thereby, and separate connecting means joining the switch point with said locking means.
4. The combination with a switch stand comprising means for throwing a switch point, of a rod connected to the switch point and extending adjacent the stand, a locking device supported independently of the stand adapted to engage said rod and retain the switch point in a given position, and means for actuating the said locking device mounted on said stand, the last said means being adapted to act downward only.
5. The combination with a switch stand comprising means for throwing a switch point, of a rod connected to the switch and extending adjacent the stand, a locking device supported independently of the stand adapted to engage said rod and retain the switch point in a given position, and a vertically reciprocating rod mounted upon said stand and engaging at its lower end by thrust contact the said locking device for actuating the same.
6. The combination with a switch stand comprising means for throwing a switch point, of a rod connected to the switch stand and extending adjacent the stand, a locking device supported independently of the stand adapted to engage said rod and retain the switch point in a given position, a vertically reciprocating rod mounted upon said stand and engaging at its lower end by thrust contact the said locking device for actuating the same, and a projection on said vertically reciprocating rod to depress the same and thereby disengage such locking device from the switch point rod.
7. The combination with a switch stand comprising means for throwing a switch point and means for locking the switch point, of a rod connected to the switch point and extending adjacent the stand, a locking device supported independently of the stand adapted to engage said rod and retain the switch point in a given position, and interlocking connections between said locking device and the switch stand locking means, said connections comprising chiefly a thrust element adapted only to act downward on said device.
8. In a switch stand, the combination with a base, of an oscillatory shaft supported thereby and operatively connected to a switch point, a lever for oscillating said shaft, means for locking said lever in position to retain the switch point in a given position, a supplemental locking device independently supported and independently connected to the switch point for retaining the same in a given position, and interlocking connections between said lever and said supplemental locking device for controlling the operation of the latter, said connections being adapted to co-act with said supplemental locking device by downward thrust only.
9. In a switch stand, the combination with a base, of an oscillatory shaft supported by the base and operatively connected to a switch point, a lever and handle pivoted thereto for oscillating said shaft, means for locking said lever in position to retain the switch point at a given position, a supplemental locking device independently supported and independently connected to the switch point, a vertically reciprocating rod mounted upon said base for actuating said supplemental locking device, and a projection on said vertical rod adjacent said handle and adapted to be engaged thereby to prevent the operation of said supplemental locking device, said rod having its lower end plain and adapted to exert upon the said supplemental locking device a downward thrust only.
10. In a device of the class described, a locking device comprising a locking rod, a plate adapted to be fastened to a head block, a housing integral with said plate, a plunger adapted to reciprocate in said housing, a perforation in said plunger adapted to permit the said rod to reciprocate horizontally therethrough, a notch in said rod adapted to engage with said plunger, a

spring adapted to thrust the plunger into engagement with said notch when in registry therewith, and an opening in said housing adapted to admit an external member to push back the plunger against the said spring and thereby release the said rod.

11. In a device of the class described in coaction with a main locking device, a locking device the latter comprising a locking rod, a plate adapted to be fastened to a head block, a housing integral with that part of said plate which is at the side of a head block, a plunger adapted to reciprocate vertically in said chamber, a horizontal perforation in said plunger adapted to engage the said rod and permit it to reciprocate horizontally therethrough, a notch in said rod adapted to engage with said plunger, a spring adapted to thrust the said plunger upward into engagement with the said notch when the rod is in locking position with the said notch and plunger in registry, and an opening in the upper side of said chamber adapted for entry of an unattached exterior member controlled by a main switching mechanism to thrust the said plunger downward out of engagement with the notch on the said rod.

12. In a device of the class described in coaction with a main lock, a supplementary locking device comprising a housing frame adapted to be attached to the side of a head block, a locking rod a plunger adapted to engage with a notch in said rod, a spring to thrust the plunger upward into engagement with said notch, a vertical plunger shaft

mounted on the switch stand and adapted to thrust downward against said plunger, a foot shoulder on said shaft adapted to force it downward, and automatic means for locking said shaft in its upper position except when the switch is unlocked.

13. In a device of the class described, a lock housing frame adapted to lie at one side of a head block and be attached thereto, a plunger adapted to be contained within said frame, a spring adapted to actuate said plunger into detachable engagement with a switch rod, and unattached coacting means adapted to be controlled by a main switch stand and adapted to unlock said plunger and switch rod.

14. In a device of the class described, the combination with a main switch stand and lock of a supplementary locking device disengagement of which is subject to said main lock through means of an element extending from the main to the supplementary device, said element being capable of exerting only a downward force against said supplementary device, application of said force being permitted by said main lock only when said main lock is open, and said supplementary lock presenting only a substantially flat and horizontal surface to said element.

In testimony whereof, I have subscribed my name.

T. E. CALVERT.

Witnesses:

W. S. BURLEY,
F. W. RIZER.