J. A. HOFFMAN.

AUTOMATIC SWITCH STAND.

APPLICATION FILED JULY 13, 1911.

1,010,762. **Patented Dec. 5, 1911.**

2 SHEETS—SHEET 1.

Fig. 1.

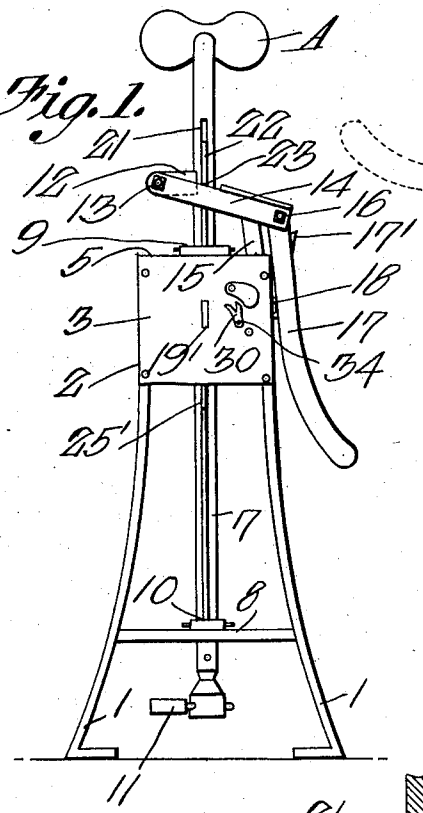


Fig. 2.

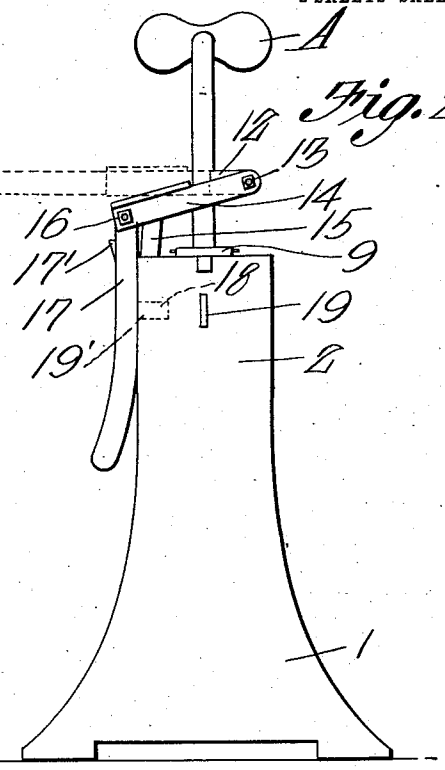
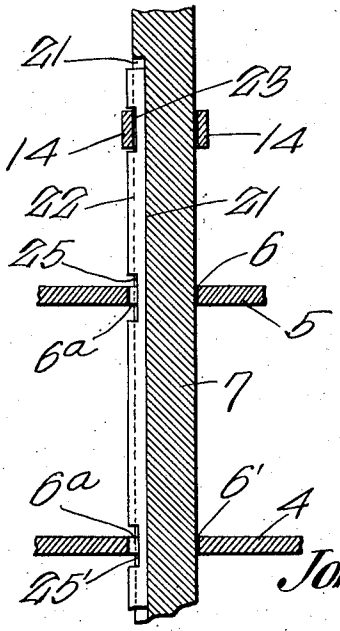


Fig. 3.



Witnesses

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2 SHEETS—SHEET 2.

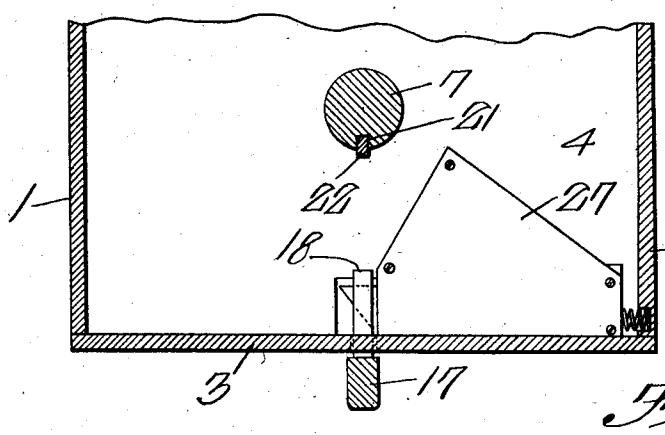


Fig. 4.

Fig. 5.

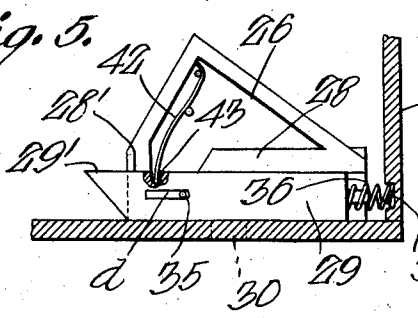


Fig. 7.

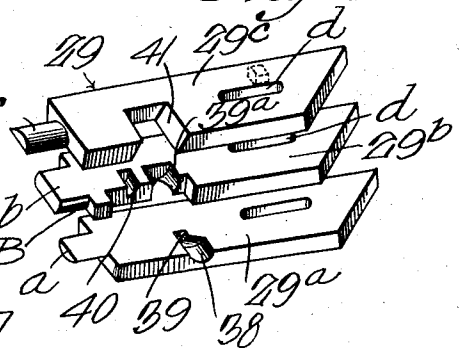


Fig. 6.

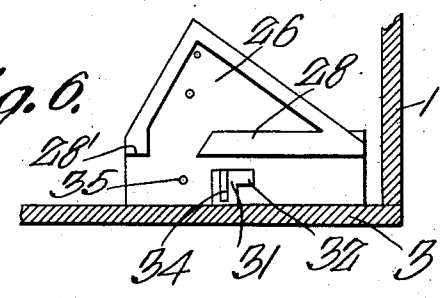


Fig. 9.

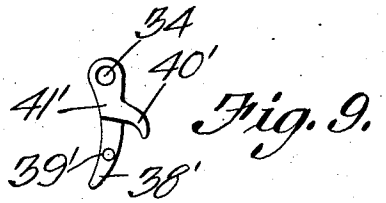
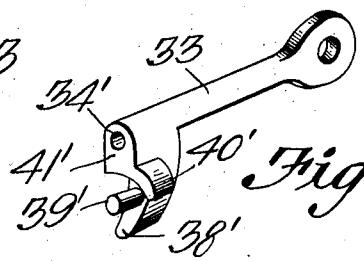


Fig. 8.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN A. HOFFMAN, OF LOFTY, PENNSYLVANIA.

AUTOMATIC SWITCH-STAND.

1,010,762. Specification of Letters Patent. Patented Dec. 5, 1911.

Application filed July 13, 1911. Serial No. 638,323.

To all whom it may concern:

Be it known that I, JOHN A. HOFFMAN, a citizen of the United States, residing at Lofty, in the county of Schuylkill and State of Pennsylvania, have invented a new and useful Automatic Switch-Stand, of which the following is a specification.

This invention relates to improvements in automatic switch stands, the primary object of the invention being the provision of an automatic switch stand in which the crank lever shaft of a switch signal is so disposed and provided with a vertically slidable locking means as to prevent the rotation thereof, in combination with a peculiar form of locking device disposed within a casing carrying the crank lever and so mounted as to automatically lock the lever in one of two positions, and require the manipulation by a key, for releasing the same to be locked in the other position.

A further object of this invention is the provision of a base carrying a casing, in which is rotatably mounted the semaphore or signal carrying crank lever having mounted thereon above the casing a peculiar form of operating lever and lock, which is so pivoted with relation to the crank lever and to a sliding lock device carried by the said crank lever and operable with the casing, that the said crank lever may be rotated and held at the desired signaling position, in combination with the lock mounted within the casing and composed of three tumblers or bolts actuated by individual and also a common single spring, and so mounted as to be operated to release the operating lever of the switch lock by the manipulation of a single key.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings:—Figure 1 is a front elevation of a complete switch stand. Fig. 2 is a side elevation thereof. Fig. 3 is a sectional view through the crank lever showing the sliding lock in the position it assumes to permit the rotating of the crank lever or the operating lever. Fig. 4 is an enlarged detail sectional view through the casing and crank lever showing the lock in plan. Fig. 5 is a detail view of the lock with the upper plate removed, the tumblers or bolts being in locked position. Fig. 6 is a similar view with the locking portions removed from the casing. Fig. 7 is a detail perspective view of the members of the tumbler or bolt detached. Fig. 8 is a perspective view of a key employed in the sectional tumbler or bolt. Fig. 9 is an end view thereof.

Referring to the drawings, the numeral 1 designates the two standards or supports of the switch stand which carry at their upper ends 2, the casing formed by the front and rear walls 3 and 3′ and the bottom and top walls 4 and 5. The front 3 is removable so as to permit access to the interior of the casing and the locking mechanism.

Provided centrally in the top and bottom walls 4 and 5 are the apertures 6 and 6′ provided each with the peripheral key slot 6^a, the purpose of which will presently appear. Mounted within the apertures 6 and 6′ so as to be rotated in the desired direction, preferably in an arc of 90°, is a vertical crank shaft or lever 7, whose lower end passes through the lower brace 8, the collars 9 and 10 limiting the downward movement of the shaft with relation to the support, while mounted upon the upper end is the signal A and in the lower end the crank lever 11 for connection to the switch operating mechanism not shown.

Carried by the crank lever 7 above the casing and at right angles thereto is an arm or fulcrum 12, which at 13 has pivotally connected thereto the lever 14, provided with the leg or support 15, which normally retains the same in the position as clearly shown in full lines in Figs. 1 and 2, the lower end of the leg or support 15 resting upon the upper surface of the top 6 of the casing. Pivoted at 16 in the outer end of the lever 14 is the operating lever 17 which is provided with the projection 17′, adapted to abut against the outer end of the lever 14 and permits the operating lever to be

made rigid with the lever 14 when in such position, so that the said lever 14 may be raised by the lever 17 and by reason of its slot connection 14^a, with strips 22 will actuate the sliding strip 22 which is mounted within the vertical groove or slot 21 of the crank shaft 7.

Projecting from the inner face of the operating lever 17 and carried thereby is the locking loop or eye 18, adapted to be projected through the slots 19 and 19′ of the casing and to be actuated upon by a lock, as will presently appear.

As before stated the crank shaft or lever 7 provided with the vertical slot or groove 21, in which is slidably mounted the locking strip 22, which is adapted to normally pass through the peripheral slots 6^a of the top 5 and bottom 4 of the casing and normally prevent the said shaft or lever 7 from being rotated.

As shown in Fig. 3, the lever 17 has been moved to assume the dotted line position as shown in Fig. 2, thereby lifting the strip 22 vertically so that the said strip passes through the notches 6^a formed in the top 5 and the bottom 4 of the stand, bringing the notches 25 and 25′ respectively of said strip 22 so as to span the respective top 5 and bottom 4 of the stand and thus permit the rotation of the shaft 7, so that the locking eye 18 may enter either the slot 19 or 19′ to lock the switch and the signal A.

Carried upon the inner face of the front 3 of the casing and bodily movable therewith, is a casing 26 provided with the removable cover 27, said casing itself being provided with the strip 28 and projection 28′, which provides a guiding means for the sliding action of the packing bolt 29, which as clearly shown in Fig. 7 is formed by the three members 29^a, 29^b and 29^c, which are provided with the rear projections *a*, *b* and *c* respectively, which are adapted to be surrounded by means of the coiled spring 36 which assumes the position as shown in Fig. 5 resting within the recess 37 in the wall 1 and normally holding the locking end 29′ of the bolt tumblers so as to project to engage the eye 18 of the lock of the operating lever 17. Although only one of these locks is shown in assembled position, two of them are necessary as is apparent for the reason that the lever 17 must be locked in the two positions that is when the locking eye passes through either one of the slots 19 or 19′.

As clearly shown in Fig. 6 of the drawings, the lower wall of the lock casing 26 is provided with an aperture 31 disposed adjacent to the key aperture 30, the same being provided with an offset slotted portion 32 and with the key centering pin 34, which is adapted to enter the aperture 34′ at the end of the stem of the key 33, the detailed construction of the key being clearly shown in Figs. 8 and 9.

In describing the various members of the bolt or tumbler 29, the relative portions of the key will be described in connection therewith. Said members are provided with the longitudinal slots *d* which are adapted to fit upon the pin 35 carried by the casing 26 thereby retaining all of said members in the relative position within the casing, said member 29^a being provided with the large socket 38 for the reception of the pointed end 38′ of the key and with the small recess 39 for the reception of the lower portion of the pin 39′, the member 29^b being provided with the large slot 39^a through which the pin 39 is adapted to project and fit. A slot or recess 40 is also provided in the face of the member 29^b and terminates within a reduced recessed portion near the lug B, the said recess or slot 40 being for the reception of the intermediate lug or hook 40′ formed integral with the key while the member 29^c is provided with the slot 41 having the inclined walls as clearly shown in Fig. 7, for the reception of the main body portion 41′ of the key, it thus being evident that when the said members 29^a, 29^b and 29^c are in assembled position, as clearly shown in Fig. 5, these various slots and recesses will unite or co-act to receive the various portions of the key 33 so that when the aperture 34′ encompasses the pin 34 and the key is seated or pushed home, the various projections and portions of the key will seat within the recesses and slots of the members of the bolt or tumbler and that by the manipulation of the key with the pin 34 as its pivot, the said members of the bolt will be moved in unison against the tension of the spring 36 so that the locking end 29′ will be released from the yoke or eye 15 of the operating lever 17, so that the operating lever may be moved outwardly and be operated to assume the position shown in dotted lines in Fig. 2, so that the locking strip 22 may be lifted simultaneously to permit the rotation of the switch lever or crank lever 7 to move the signal A and operate the switch (not shown). The locking bolt or tumbler of this lock may be formed in a single member if desired without departing from the spirit of the invention, for in order that the various slots and recesses may be properly formed, it is deemed necessary and preferable to make the same in three members instead of one, the spring 36 uniting with the casing 26 and cover 27 to retain the said members in their relative position, but permitting if necessary a slight sliding movement between each member without affecting the other, so that no tampering with the same will actuate all three members of the bolt tumblers to re-

lease the operating lever of the switch. In other words the three members of the bolt or tumbler must be actuated simultaneously to release the locking lever. To further assist the spring 36 in returning the members of the lock, three individual springs 42 are mounted within the casing 26 and have their free ends in engagement with the recess 43 formed in the outer face of each of the bolt-members or tumblers.

What is claimed is:

1. A switch stand having a support, a switching shaft mounted therein, an arm carried thereby, a lever pivoted to said arm for turning said shaft a partial revolution, a locking strip slidably mounted in the shaft and operably connected to said lever, co-acting means carried by the support and strip to prevent rotation of the shaft, and a lock carried by the support and in the path to engage the lever.

2. A switch stand having a support, a switching shaft mounted therein, an arm carried thereby, a short lever having one end pivoted to the arm, an operating lever hinged to the outer end of said short lever and having movements toward and away from the support, co-acting locking means carried by the shaft and support to lock the shaft against rotation, one member of said locking means being operably connected to the first lever, and co-acting locking means carried by the hinged lever and support for locking the hinged lever to the support.

3. A switch stand, having a support, a switching shaft mounted therein, an arm carried thereby, a short lever having one end pivoted to the arm, an operating lever hinged to the outer end of said lever and having movements toward and away from the support, a locking strip vertically slidable in said switching shaft, co-acting means carried by the shaft and support for locking the shaft against rotation, and co-acting locking means carried by the hinged lever and support for locking the hinged lever to the support.

4. A switch stand, having a support, a switching shaft mounted therein, an arm carried thereby, a short lever having one end pivoted to said arm and straddling the shaft, an operating lever hingedly connected to the other end of said short lever and having movements toward and away from the support, a strip vertically slidable within the shaft and operably connected to the short lever, said strip forming with the support a lock to prevent rotation of the shaft, a spring actuated lock carried by the support, and means carried by the hinged lever for engagement with said last mentioned lock to lock the hinged lever to the support.

5. A switch stand having a support with a casing at the upper end thereof, a switching shaft mounted for partial rotation through said casing, an arm carried by said shaft above the casing and projecting at right angles thereto, a short lever having one end pivoted in said arm and straddling the shaft above the casing, an arm carried by the free end of said lever and normally engaging the upper end of the casing to limit the downward movement of the short lever, an operating lever hingedly connected to the free end of the short lever and having movements to and from the support, a locking strip operably connected to the short lever for locking the shaft against rotation, and co-acting locking means carried by the casing and operating lever for locking the lever to the support.

6. A switch stand, having a support provided with a casing at the upper end thereof, a switching shaft capable of partial rotation mounted in said support and projecting through the casing, a lever operably connected to the shaft for rotating the same, a lock carried by the shaft and operably connected to said lever for locking the shaft against rotation, and another lock disposed in the casing for engaging said lever.

7. A switch stand, having a support provided with a casing in its upper end, a switching shaft journaled for partial rotation and projecting above and below said casing, a locking strip slidably mounted within said shaft and adapted to prevent rotation of the shaft, an arm carried by the shaft above the casing, a short lever having one end connected thereto, and connected intermediate of its ends to said strip, an arm carried by the free end of said lever to engage the casing to limit the movement of the lever, an operating lever pivoted to the free end of said short lever, and having movements to and from the support, a spring actuated and key operated lock disposed within the casing, and means carried by the operating lever adapted to engage said lock to retain the operating lever in engagement with the support.

8. The combination with a switch stand having a casing, a switching shaft projecting therethrough and mounted for partial rotation therein, a lever fulcrumed to said shaft and carrying a locking bail movable toward and away from the casing, and a locking device carried by the shaft and operably disposed with relation to the lever to prevent rotation of the shaft, of a lock disposed within the casing, said lock comprising a bolt composed of a series of members having a bail engaging end adapted to engage the bail of the operating lever to lock the same against movement, a spring for normally projecting all of said members into bail engaging position, and an individual spring for each member of the bolt

for permitting individual action thereof, all of said members being provided with key receiving abutments adapted to aline to form a single key receptacle to permit all of said members to be operated as a single bolt to release the bail and permit the disengagement of the operating lever.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN A. HOFFMAN.

Witnesses:

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WILLIAM H. SCHOLLENBERGER.

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