J. E. CHRISTIE.

CIRCUIT CLOSING COMBINATION ALARM LOCK.

APPLICATION FILED APR. 5, 1915.

1,190,727.

Patented July 11, 1916.

5 SHEETS—SHEET 1.

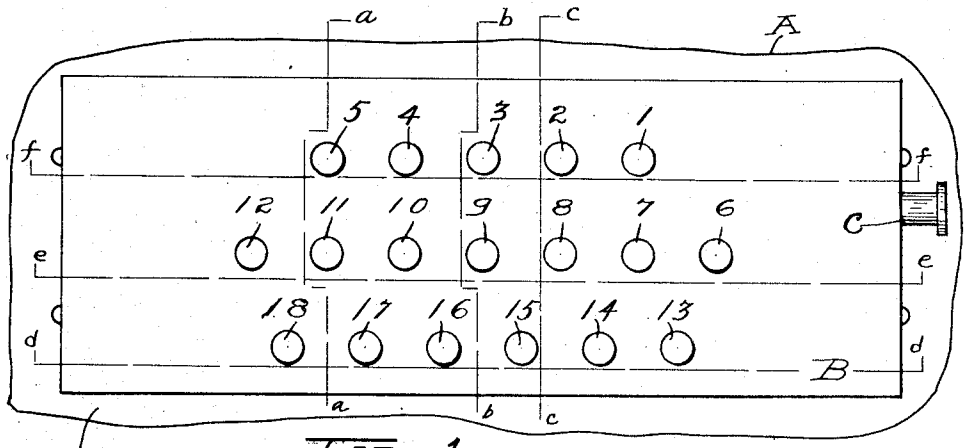


FIG 1

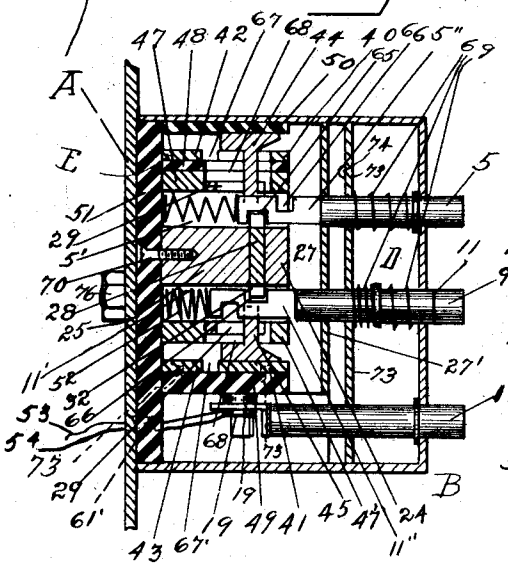


FIG 2

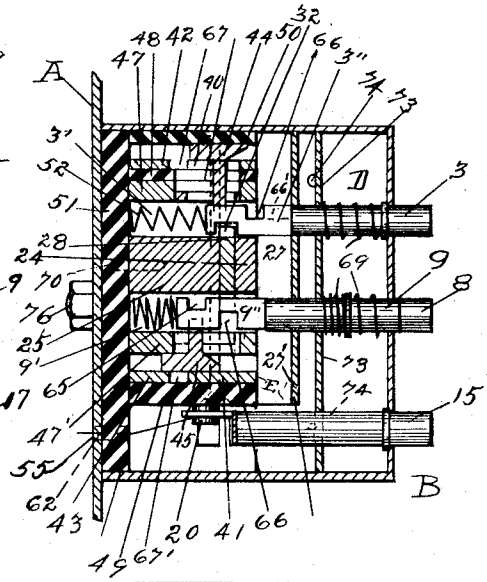


FIG 3

Witnesses
R. L. Horspool
F. J. Alexander

John E. Christie
Inventor

By
F. L. Horspool
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

J. E. CHRISTIE.

CIRCUIT CLOSING COMBINATION ALARM LOCK.

APPLICATION FILED APR. 5, 1915.

1,190,727. Patented July 11, 1916.

5 SHEETS—SHEET 2.

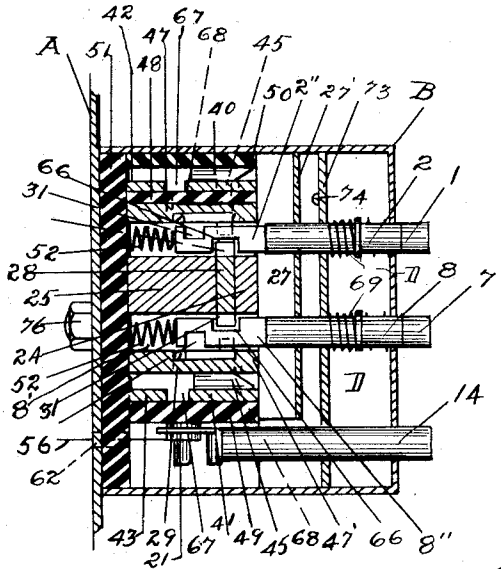


Fig 4

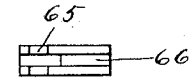


Fig 5

Fig 6

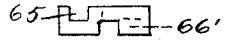


Fig 7

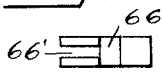


Fig 8

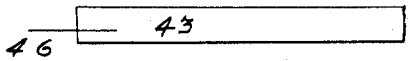


Fig 8A

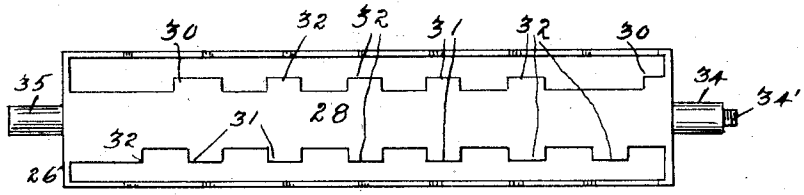


Fig 9

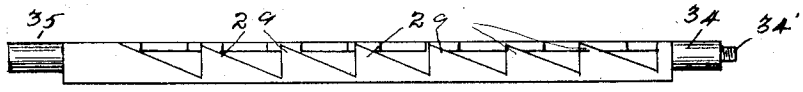


Fig 10

Witnesses
R. L. Horspool
F. J. Alexander

John E. Christie
Inventor

By
F. L. Horspool
Attorney

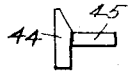


Fig 11

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

J. E. CHRISTIE.

CIRCUIT CLOSING COMBINATION ALARM LOCK.

APPLICATION FILED APR. 5, 1915.

1,190,727.

Patented July 11, 1916.

5 SHEETS—SHEET 3.

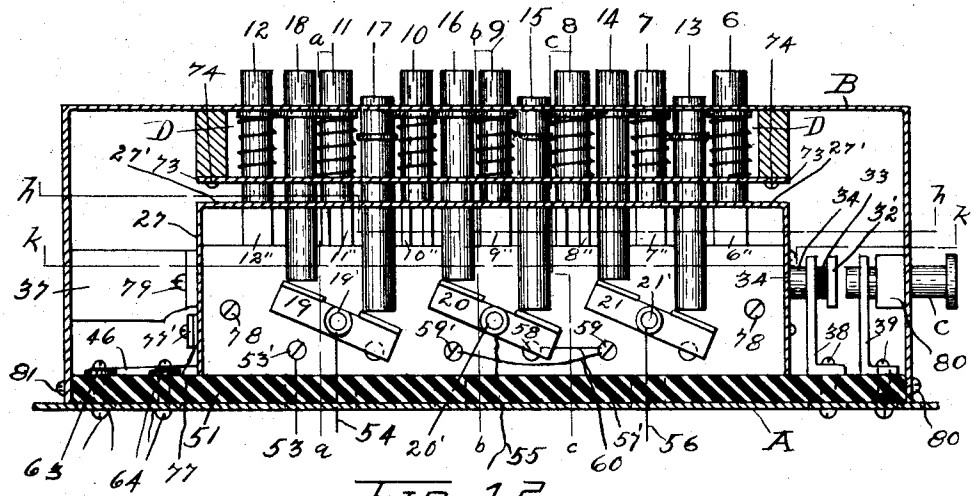


Fig 12

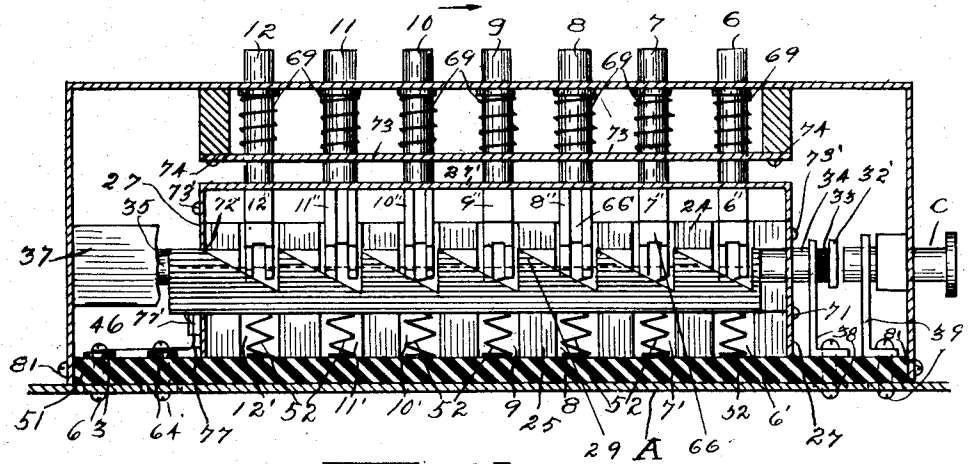


Fig 13

Witnesses
R. L. Horspool
F. J. Alexander

John E. Christie
Inventor

By
F. L. Horspool
attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

J. E. CHRISTIE.

CIRCUIT CLOSING COMBINATION ALARM LOCK.

APPLICATION FILED APR. 5, 1915.

1,190,727.

Patented July 11, 1916.

5 SHEETS—SHEET 4.

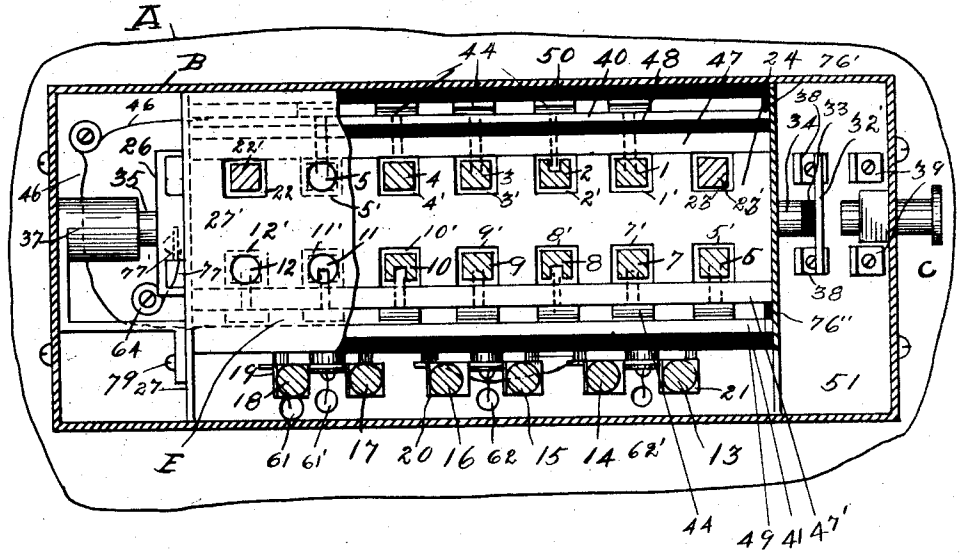


Fig 14

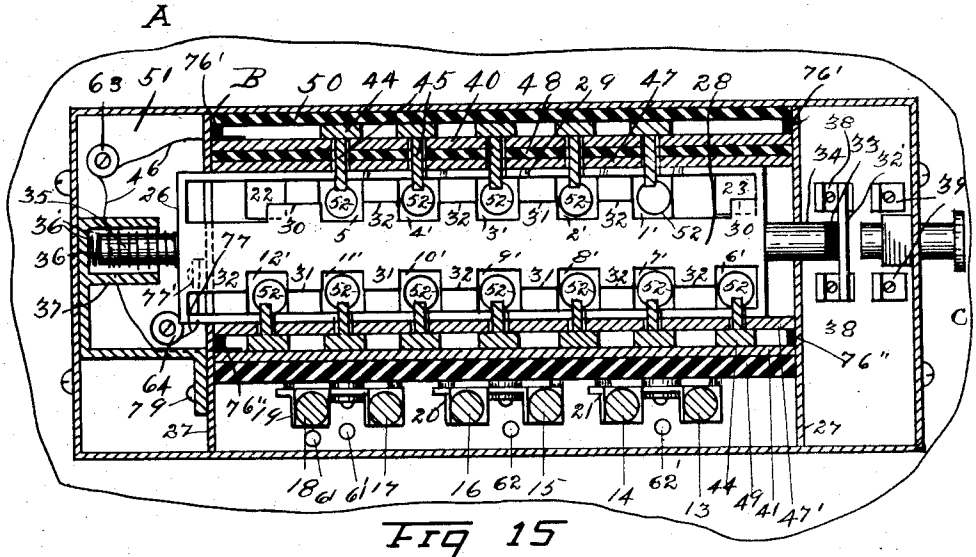


Fig 15

Witnesses
R. L. Horspool
F. J. Alexander

John E. Christie
Inventor
By
T. L. Horspool.
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

J. E. CHRISTIE.

CIRCUIT CLOSING COMBINATION ALARM LOCK.

APPLICATION FILED APR. 5, 1915.

1,190,727.

Patented July 11, 1916.

5 SHEETS—SHEET 5.

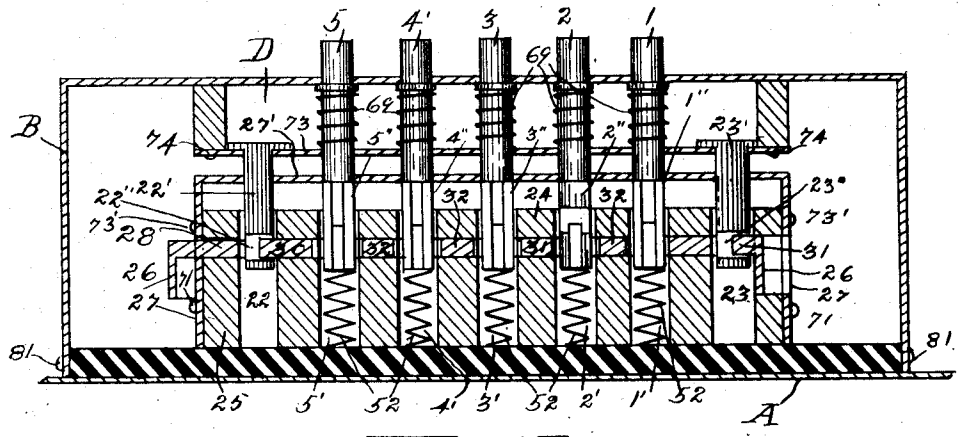


Fig 16

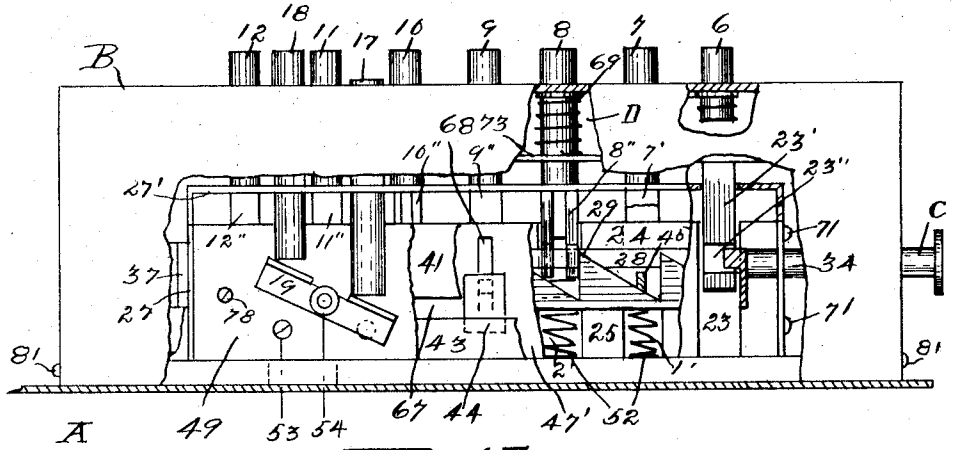


Fig 17

Witnesses
R. L. Horspool
F. J. Alexander

John E. Christie
Inventor

By F. L. Horspool
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN E. CHRISTIE, OF SALT LAKE CITY, UTAH.

CIRCUIT-CLOSING COMBINATION ALARM-LOCK.

1,190,727. Specification of Letters Patent. Patented July 11, 1916.

Application filed April 5, 1915. Serial No. 19,390.

To all whom it may concern:

Be it known that I, JOHN E. CHRISTIE, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented a new and useful Improvement in Circuit-Closing Combination Alarm-Locks, of which the following is a specification.

My invention relates to improvements in circuit closing combination alarm locks that can be used on automobiles, doors, gates and the like.

One object of my invention is to provide a circuit closing combination alarm lock that will give an alarm when any one of the wrong combinations has been moved.

Another object of my invention is to provide a circuit-closing combination alarm lock that will prevent an unauthorized person from operating it, or tampering with it in any way, without the alarm sounding, unless they have the right combination.

Another object of my invention is to provide a circuit-closing combination alarm lock that will prevent the electric current being turned on by a person who has not the knowledge of the right combination.

Another object of my invention is to provide a circuit-closing combination alarm lock that will give alarm by closing the circuit with the electric alarm bell when the hood of the gas engine on the automobile is opened by any unauthorized person.

Figure 1, is a front view of my invention showing the push buttons in their relative positions. Fig. 2, is a section view through *a—a*, Figs. 1 and 12. Fig. 3, is a section through *b—b* Figs. 1 and 12. Fig. 4, is a section through *c—c* Figs. 1 and 12. Fig. 5, is a top view of one of the combination locking tumblers. Fig. 6, is an end view of Fig. 5. Fig. 7, is a side view of Fig. 5. Fig. 8, is a bottom view of Fig. 5. Fig. 8^A is a side view of one end of the back metal plates 42 and 43. Fig. 9, is a plan view of the main circuit closing switch. Fig. 10, is a side view of Fig. 9. Fig. 11, is a side view of one of the alarm circuit closing keys 44. Fig. 12, is a section through *d—d* Fig. 1. Fig. 13, is a section through *e—e* Fig. 1. Fig. 14, is a front section view through *h—h* Fig. 12. Fig. 15, is a front section view through *k—k* Fig. 12. Fig. 16, is a section through *f—f* Fig. 1. Fig. 17, is a view through the bottom showing the bottom plates in their relative positions.

Similar letters and numerals refer to like parts through the several views.

A denotes the section of a dash board of an automobile to which a casing E and a cover B surrounding the same are secured. The cover B is provided with an interior chamber D by a plate 73 which extends parallel to the front plate of the cover the entire width thereof but stops short of the ends thereof in the longitudinal direction. Transverse plates at the ends of plate 73 space it from the cover and screws 74 hold the parts together.

The casing E comprises the end walls 27 and the bridge 27′ integral therewith. The bridge 27′ contains a plurality of openings 1′—12′ to permit insertion of push buttons 1—12 which at their inner ends carry combination locking tumblers respectively denoted 1″—12″. These tumblers are recessed to contain notches 65 and 66 and grooves 66′. The openings 1′—12′ of the casing extend to the bottom thereof through the different parts assembled therein in order to receive the locking tumblers and springs 52 acting on their inner ends to hold them normally in inoperative position. Additional push buttons 13—18 are also provided which serve for the operation of switches 19, 20 and 21 controlling the circuits for the tail and head lights and are mounted in the casing E. The cover B is provided with locking lugs 22′ and 23′ which enter suitable openings 22 and 23 in the casing E and its appertaining parts. The locking lugs are equipped with holding notches 22″ and 23″ in which parts of a main circuit closing switch enter, whereby the cover B is locked to the casing E and to the dash board of the automobile. An insulating plate 51 is secured in any suitable or appropriate manner to the dash board A and to this plate

a back filling plate 25 is secured such as by means of the threaded members 70. A main circuit closing switch 26, to which reference will be made hereinafter, is placed in front of the back filling plate. The front filling plate 24 has sliding engagement with the switch 26 and extends the entire length of the casing E.

The main circuit closing switch 26 is adapted to be reciprocated between the back and front filling plates 25 and 24 and comprises, as is obvious from Figs. 9 and 10, a center plate 28 which is provided with a plurality of lugs 30, 31 and 32, whereby a plurality of notches is formed. The center plate 28 is formed integral with side plates which are provided with ratched notches 29, for a purpose hereinafter stated. The closing switch 26 is provided at one of its ends with a head 32′ which is secured to the neck 34 of the switch by providing an insulation 33 on the neck. The neck 34 is formed with a reduced extension 34′ having threads whereby the head 32′ may be detachably secured to the main circuit closing switch. The switch 26 is controlled by a spring 36 surrounding a cylindrical extension 35 of the switch and held in place by a sleeve 37 which is secured by means of a bracket to the side wall 27 of the casing E. An alarm circuit is provided having terminals 38 mounted on the insulating basis 51. The wires of this circuit lead to the automobile hood or cover of the gas engine where an electric bell or a similar audible signal is provided. The main circuit adapted to be closed by the switch 26 has terminals 39 in proximity to the terminals 38 with which the head 32′ is adapted to contact. The alarm circuit is formed in the interior of the casing E by the front plates 40 and 41 arranged above and below the main circuit switch 26 and the back metal plates 42 and 43 which are in horizontal alinement with the respective front plates, but spaced therefrom. The plates 40, 41, 42 and 43 are connected upon manipulation of certain push buttons by the alarm circuit closing keys 44 which are formed integral with the part 45 adapted to engage the ratched notches 29 of the switch 26. The space between the front metal plates 40 and 41 and the back metal plates 42 and 43 is respectively denoted by 67 and 67′. From the back metal plates 42 and 43 wires 46 lead to the terminals 63 and 64 of the alarm circuit. In the casing E the top guide plate 47 and the bottom guide plate 47′ are provided. A center insulating plate 48 is arranged between the guide plate 47 and the metal top plates 40 and 42, while the insulating plate 50 is secured to the insulating plate 51 whereby the closing keys 44 are insulated from the cover B. A bottom insulating plate 49 is arranged underneath the plates 41 and 43. With reference to Fig. 12 it is seen that wires 53 and 54 are connected to terminals 53′ and 19′ of the switch 19 which may be actuated by the push buttons 17 and 18. The wires lead to the tail lights of the automobile and upon proper manipulation of the push rods the circuit for these lights may be closed. The headlights are simultaneously arranged in a circuit, whose wires 55 and 56 are connected with the middle studs of the switches 20 and 21. Terminals 58, 59 and 59′ are provided in operative relation to the switches 20, 21, and the terminals 58 and 59 are connected by a low resistance wire 57 while a high resistance wire 60 interconnects the terminals 59 and 59′. From the drawing it is obvious that according to the position of the switches 20 and 20′ a circuit between the wires 55 and 56 may be closed through the wire 57 of comparatively little resistance, or through the wire 60 of high resistance, so that when desired the headlights may be dimmed. The various wires leading to the switches for the lights are threaded through openings 61, 61′, 62 and 62′ in the back insulating plate 51.

The top guide plate 47 and the bottom guide plate 47′ are provided with slots 68 in order to permit the insertion of the locking keys 44. Similarly the center insulating plate 48 and the front metal plate 40 are notched whereby the alarm circuit may be closed by means of the locking keys 44.

In assembling the various parts of the device the back insulating plate 51 is secured to the back filling plate 25 by means of screws 70, shown in Fig. 2. The end plates 27 integral with the bridge 27′ are secured to the back filling plate 25 by means of screws 71 (Fig. 16). The main circuit closing switch 26 is placed in front of the back filling plate 25 which may be freely moved in view of an opening being cut in one of the ends 27, as shown at 72′ in Fig. 13. The front filling plate 24 is then placed in front of the main circuit closing switch 26 and between the side walls 27, and is secured thereto by means of screws 73′. The springs 52 on the combination locking tumblers 1′′ to 12′′ are then placed into the openings 1′ to 12′, whereupon the top guide plate 47, the center insulating plate 48, the back metal plate 42 and the front metal plate 40 are mounted in place and secured together by means of screws. The last mentioned plates are, of course, arranged between the end plate 27 and the casing E. The parts being secured in place, the notches 68 of the plates register so that the circuit closing keys 44 may be introduced to close the alarm circuit when the push buttons are wrongly applied, as hereinafter further specified. Spacing strips 76′ are inserted at both ends of the plate to space the insulating plate 50 from

the alarm circuit plates 40 and 42. The bottom insulating plate 49, the front metal plate 41 and the back metal plate 43 are then secured together and placed between the end plates 27 where they are fastened by means of screws 78. The metal plates 41, 43 are separated from the bottom guide plate by spacing strips 76″. The light switches 19, 20 and 21 are then mounted on the bottom insulating plate 49 by means of screws forming the terminals 19′, 20′, and 21′ whereupon the combination casing E is completed. Terminals 38, 39 of the main circuit and terminals 63 and 64 of the alarm circuit are subsequently provided on the back insulating plate 51, and the spring 36 surrounding the back lug 35 of the switch 26 is placed in position and the bracket 37 forming the casing for the spring 36 is secured to the end 27 by means of a screw 79.

To construct the cover B the push buttons are placed in the openings of the front plate, as indicated in Fig. 1. Subsequently the springs 69 are threaded on the push buttons 1—12. The plate 73 is then provided with the locking lugs 22′ and 23′ which serve for holding the cover B unto the combination casing E, and is secured to the transverse parallel plates of the cover B by means of screws 74 whereby the chamber D is formed wherein the various springs 69 of the push buttons 1—12 are incased. Finally the push button C is secured at one side of the cover B by means of the washer 80, whereupon the cover B is ready for being placed unto the combination casing E.

To mount the cover B it is necessary to actuate several push buttons forming the combination of the lock which, in the present instance, are the push buttons 2, 8, 10, and 11, carrying the combination locking tumblers 2″, 8″, 10″, and 11″, whereupon the notches of the aforementioned locking tumblers are in such a position as to permit movement of the main circuit closing switch 26 so that the lugs 30 of the switch pass out of the holes 22 and 23, so that the lugs 22′ and 23′ may enter the holes 22 and 23 adapted to receive them, and the cover B may then be passed over the back insulating plate 51. Having secured the cover B in place, the push button C is pushed in so that the circuit closing switch is placed in its former position in which the lugs 30 will enter the notches 22″ and 23″ of the lugs 22′ and 23′, thus preventing the cover from being removed until the right combination of push buttons is actuated. In order to hold the cover B rigidly the same may be secured to the back insulating plates 51 by means of screws 81 in addition to the locking means.

In case the light switches are to be used, such as is necessary when the invention is applied to an automobile, the cover B is taken off by removing the screws 81 and operating the right combination as indicated above, so that the main circuit closing switch can travel in the direction of the arrow, and the lugs 30 pass out of the holes 22 and 23 and out of the notches 22″ and 23″, thus permitting the withdrawal of the locking lugs 22′ and 23′ and incidentally of the cover B. Then the wires 53, 54, 55, 56, 57, and 60, are arranged in their relative positions and the wires 53, 54, 55, and 56, are threaded through the openings 61, 61′, 62, and 62′, in the back insulating plate 51 and the dash board A. Thereupon the cover is secured in place, as hereinbefore described.

In the operation of the switches for the lights the push button 18 is actuated when it is desired to turn on the tail lights, so that the switch 19 is brought into contact with the terminals 53′ and a circuit is established through wire 53, terminal 53′, switch 19 and return wire 54. The terminal 59 is connected by the wire 57 to the terminal 58 at one side of the switch 20 or by the wire 60 of high resistance to the terminal 59′ on the other side of the switch 20. By actuating the push button 14 the circuit is established through the wires 55, terminal 20′, switch 20, terminal 58, low resistance wire 57, terminal 59, switch 21, terminal 21′ and return wire 56. In case, however, that the head lights are to be dimmed the push button 16 is actuated in addition to push button 14, whereby the circuit is established in the following manner: wire 55, terminal 20′, switch 20, terminal 59′, high resistance wire 60, terminal 59, switch 21, terminal 21′ and return wire 56. In order to break the circuit of the switches 19 and 21, the keys 13 and 17 are actuated and for changing the head lights of the automobile from dim to bright the push button 15 is operated. To connect the circuit in the main circuit the push buttons 2, 8, 10, and 11, are operated which, in turn, displace the combination locking tumblers 2″, 8″, 10″, and 11″, as indicated in Figs. 2 and 4, thus allowing the lugs 31 of the main circuit closing switch 36 to pass through the notch 66 in the combination tumblers 2″, 8″, 10″, and 11″, so that the main circuit closing switch can be moved in the direction of the arrow by the spring until the head 32′ comes in contact with the terminals 39 thus completing the main circuit. In order to break the main circuit the main push button C is actuated which displaces the main circuit closing switch until the head 32′ comes in contact with the terminals 38 whereupon the combination locking tumblers 2″, 8″, 10″, 11″, are returned to normal position by the springs 52. In Figs. 2 and 4 the combination locking tumblers 2″, 8″, and 11″, are shown as they will appear when the correct combination is worked.

If one of the wrong combination locking

tumblers is actuated, as indicated at 9″, Fig. 3, it will engage the extension 45 of the alarm circuit closing key 44, thus forcing the key toward the back metal plate 43 and closing the alarm circuit between the front metal plate 41 and the back metal plate 43. The circuit will remain closed causing the alarm to sound continuously until the correct combination is operated and the main circuit closing switch is moved in the direction of the arrow. By virtue of the ratched notches 29 and the main circuit closing switch the circuit closing keys 44 are moved laterally and upwardly away from the back metal plate 43, whereby the alarm circuit closing key 44 is forced into the position indicated in Figs. 2 and 4. In Fig. 3 the lower key 44 bridges the gap 67′ between the metal plates 41 and 43, thus closing the alarm circuit. Assuming that the combination is to be changed so that the push buttons 2, 3, 10, and 11, should not serve as releasing the longitudinal movement of the main circuit closing switch, the appertaining combination locking tumblers 2″, 8″, 10″, and 11″, are removed and reversed so that the notches 66 are turned toward the guide plates 47 and 47′, as is shown at 3″, 5″, and 9″, in Figs. 2 and 3. The combination shall then comprise, for instance, the push buttons 3, 5, and 9, by turning the combination locking tumblers 3″, 5″, and 9″, so that their notches 66 will be turned toward the filling plates 24 and 25, as shown at 2″, 8″, and 11″, in Figs. 2 and 4. The cover B, of course, must be removed before the combination can be changed.

In applying my invention to an automobile I attach it to the dash board A by means of bolts 26 after holes have been drilled in the dash board for the passage of the electric wires. An electric signal bell is placed under the cover, or hood, of the engine where it cannot be reached from the outside of the hood.

I claim:

1. A circuit closing combination alarm lock of the character described, comprising an insulating plate, a cover, a combination case within said cover and secured to said insulating plate, a switch slidably mounted in said combination case, terminals on said insulating plate adapted to be engaged by said switch, push buttons entering said combination case and means provided on said push buttons adapted to lock said switch in place and to permit operation of the switch respectively upon manipulation of said push buttons.

2. A circuit closing combination alarm lock of the character described, comprising a cover, a combination case within said cover, front and back filling plates within said combination case, a switch slidably mounted between said filling plates, guide plates provided above and below said switch, front and back metal plates spaced apart and arranged at a distance from said guide plates, said metal plates forming terminals of an alarm circuit, push buttons entering said combination case, locking tumblers provided on said push buttons and adapted to engage said switch, and keys arranged between said guide plates and said metal plates adapted to make connections between said metal plates upon manipulation of said push buttons.

3. A circuit closing combination alarm lock of the character described, comprising a cover, a combination case within said cover, an insulating plate attached to said cover, means for securing said insulating plate to said combination case, a switch within said combination case, a bracket secured to said combination case, a spring within said bracket engaging said main closing switch and terminals provided on said insulating plate and adapted to be engaged by said switch.

4. A circuit closing combination alarm lock of the character described, comprising a cover, a spring case within said cover, a lid for said spring case, push buttons passing through said spring case, springs within said spring case and surrounding said push buttons, a main push button on the end of said cover, means for holding said main push button in place, an insulating plate secured to said cover, a combination case within said cover and secured to said insulating plate, a switch slidably mounted in said combination case comprising a center plate having recesses, means provided on said push buttons adapted to engage the notches of said center plate and means for operating said circuit closing switch.

5. A circuit closing combination alarm lock, comprising an insulating plate, a cover, a spring case within said cover, push buttons extending through said spring case, springs within said spring case surrounding said push buttons, a cover for said spring case, locking lugs on said cover having notches, a combination case within said cover and secured to said insulating plate, a switch slidably mounted in said combination case and adapted to enter with lugs the notches of the locking lugs of said second named cover, terminals of a main circuit on said insulating plate and adapted to be engaged by said switch, and means for operating said switch.

6. A circuit closing combination alarm lock comprising an insulating plate, a cover secured thereto, a combination case within said cover and secured to said insulating plate, a switch within said combination case, push buttons controlling said switch, guide-plates within said combination case, front

and back metal plates spaced from each other and from said guide plates and forming terminals of an alarm circuit, insulating plates within said combination case, and keys slidably arranged on said metal plates and adapted to bridge them upon manipulation of said push buttons.

7. A circuit closing combination alarm lock, comprising an insulating plate, a cover secured to said plate, a combination case secured to said insulating plate, a switch slidably mounted in said combination case, terminals on said insulating plate, an extension integral with said switch, a head mounted on said extension but insulated therefrom and adapted to engage said terminals, and means for operating said switch.

8. A circuit closing combination alarm lock, comprising an insulating plate, a cover secured thereto, a combination case within said cover and secured to said insulating plate, a switch slidably mounted in said combination case, said switch comprising a center plate having recesses and side plates having ratched notches, terminals on said insulating plate to be engaged by said switch, metal plates spaced apart and adjacent said switch forming terminals of an alarm circuit, keys slidably arranged on said terminal plates and adapted to bridge them, push buttons entering said combination case, and means arranged on said push buttons for locking said switch and for actuating said keys respectively.

9. A circuit closing combination alarm lock, comprising an insulating plate, a cover secured thereto, a combination case within said cover and secured to said insulating plate, a switch slidably mounted in said combination case, said switch comprising a center plate having recesses, push buttons extending through said cover, locking tumblers provided on said push buttons, springs arranged in said combination case and engaging said locking tumblers, said locking tumblers being provided with notches to permit displacement of said switch when brought into alinement therewith, and terminals provided on said insulating plate adapted to be engaged by said switch.

10. In a circuit closing combination alarm lock, a switch slidably mounted therein, terminals adapted to be engaged by said switch, push buttons controlling said switch, a spring engaging one side of said switch to maintain it in circuit closing position, and a main push button at the opposite side of said switch to force the same into circuit opening or retracted position.

11. In a circuit closing combination alarm lock, a switch slidably mounted therein, terminals adapted to be engaged by said switch, push buttons adapted to lock said switch in position and to permit operation of said switch respectively, a spring engaging one side of said switch to maintain it in circuit closing position, and a main push button at the opposite side of said switch to force the same into circuit opening or retracted position.

12. In a circuit closing combination alarm lock, a switch slidably mounted therein, terminals of a main circuit adapted to be engaged by said switch, said switch comprising a center plate provided with recesses and side plates having ratched notches, metal plates above and below said switch and spaced apart forming terminals of an alarm circuit, keys slidably arranged on said metal plates and adapted to bridge them, push buttons reciprocatingly mounted in said lock and adapted to lock said switch and to operate said keys for closing said alarm circuit respectively.

13. In a circuit closing combination alarm lock, a switch slidably mounted therein, terminals of a main circuit adapted to be engaged by said switch, said switch comprising a center plate provided with recesses and side plates having ratched notches, metal plates above and below said switch forming terminals of an alarm circuit, keys slidably arranged on said metal plates adapted to bridge them, push buttons reciprocatingly mounted in said lock, certain of said push buttons being adapted to bring notches into alinement with said switch upon manipulation to permit its travel, other of said push buttons being adapted to actuate said keys to close the alarm circuit and to enter the said ratched notches of the switch plates.

14. In a circuit closing combination alarm lock, a switch slidably mounted in said lock, terminals adapted to be engaged by said switch, push buttons extending partly through said lock, locking tumblers on said push buttons, said switch being provided with recesses to receive said locking tumblers upon maniplation of said push buttons, and means for operating said switch, substantially as described.

15. In a circuit closing combination alarm lock, a switch slidably mounted in said lock, terminals adapted to be engaged by said switch, said switch comprising a center plate provided with recesses and side plates having ratched notches, metal plates insulated from said switch and spaced apart, said metal plates forming terminals of an alarm circuit, keys slidingly mounted on said metal plates and adapted to connect said metal plates and to enter the ratched notches of said side plates and push buttons controlling said switch and said keys, substantially as described.

16. In a circuit closing combination alarm lock, a switch slidably mounted in said lock, terminals adapted to be engaged by said switch, said switch comprising a center plate

provided with notches, metal plates insulated from said switch and spaced apart, said metal plates forming terminals of an alarm circuit, keys slidingly mounted on said metal plates and adapted to connect said metal plates, push buttons controlling said switch and said keys, and means for restoring the keys to normal position after their displacement.

JOHN E. CHRISTIE.

Witnesses:
F. J. ALEXANDER,
J. W. KNUDSON.

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