April 9, 1935. C. M. H. ATHERTON 1,997,289

AUTOMOBILE IGNITION LOCK

Filed Aug. 14, 1934

Fig. 1.

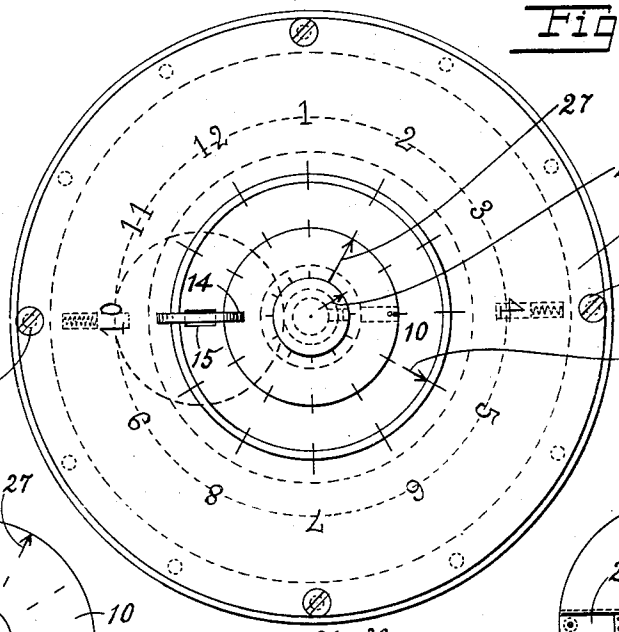


Fig. 3.

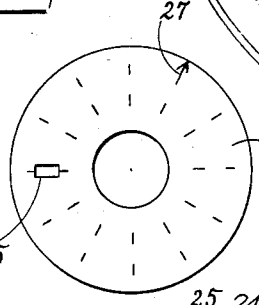
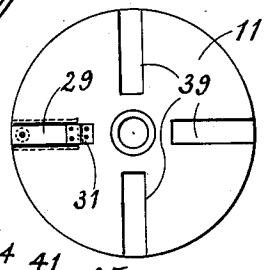


Fig. 4.



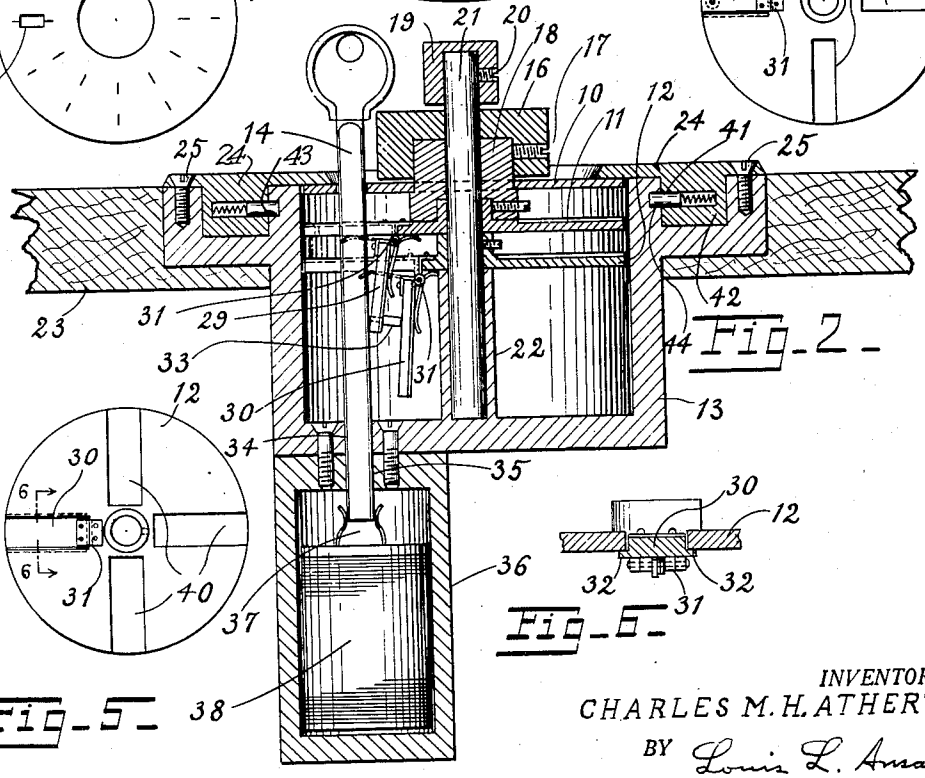


Fig. 2.

Fig. 5.

Fig. 6.

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AUTOMOBILE IGNITION LOCK

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5 Claims. (Cl. 200—45)

This invention relates to a device adapted for use as an automobile ignition lock and more particularly to an ignition lock of a type in which it is necessary to set up a predetermined combination before one can insert a suitable key and thereby close the ignition circuit.

An important object of the invention is to provide a novel and advantageous device of the class specified. Important features of the invention also relate to simplicity of construction, economy in manufacture, and effectiveness in use.

According to a preferred form of the invention, the lock and the switch of the ignition coil are so placed that a suitable key when inserted through the lock may be used to close the switch, the switch being opened upon removal of the key. Preferably use is made of three discs rotatable about a common axis, the outer disc having a radial slot to receive the key, the inner disc having a spring-supported radial flap or sector which may be forced back to admit the key, and the intermediate disc having a spring supported radial flap or sector which may be forced back to admit the key and which is provided with a projection or pin extending to the surface of the inner disc and preventing movement of the associated flap unless the pin is positioned over the flap in the inner disc. In order to prevent opening of the lock by inserting the key in the outer disc and slowly rotating the discs to feel for the slight grooves at the sides of the sectors and thus putting the discs in their proper relative positions, the intermediate and inner discs may be provided with radial dummy grooves similar to those at the sectors. No clue can then be obtained as to which are the grooves at the sectors and which are the dummy grooves.

Other objects, features and advantages will appear upon consideration of the following detailed description and of the drawing, in which

Fig. 1 is a view of the face of the lock;

Fig. 2 is a section taken along a diameter of the face of the lock;

Fig. 3 is a view on a reduced scale of the outer disc of the lock;

Fig. 4 is a similar view of the intermediate disc;

Fig. 5 is a similar view of the inside disc; and

Fig. 6 is a view taken on the line 6—6 of Fig. 5.

Referring to the drawing, the preferred form of the invention comprises three discs 10, 11 and 12 of suitable material, such as metal, so mounted that they may rotate independently of one another, but about a common axis, in a casing 13, preferably a die-casting. Disc 10 may be set by inserting a key 14 in a radial keyhole 15 and turning the disc to the desired position. Disc 11 may be set by means of a knob 16 secured by a set screw 17 to a bushing 18, which in turn is secured in any suitable manner to the disc. Disc 12 may be set by means of a knob 19 secured by a set screw 20 to a shaft 21 to which the disc is secured in any suitable manner. The shaft 21 may be rotatably mounted in a bushing 22 projecting from the bottom of the casing. As illustrated, the disc 12 is positioned at the top of the bushing 22, the disc 11 rotates on the shaft 21 and rests on a bushing projecting from the disc 12, and the disc 10 rotates on the bushing 18 and is supported by a shoulder or ledge on the bushing.

The casing 13 may be mounted in a suitable opening in a dashboard 23 and the various discs may be held in the casing by a ring 24, preferably of metal, of such a size and so placed as to cover the edge of disc 10 while allowing it to rotate easily. The ring 24 may be secured directly to the dashboard or, as here shown, may be secured to the casing 13 by suitable means such as screws 25. The ring may also be provided with suitable radial graduations and accompanying numbers for use in connection with arrows 26, 27 and 28 on the knobs 18 and 19, respectively, in placing the discs in desired angular positions.

Small radial flaps or sectors 29 and 30 are mounted in corresponding openings in discs 11 and 12, respectively, by means of spring hinges 31 which normally hold the sectors in raised position with shoulder 32 (Fig. 6) at the edges of the sectors in engagement with the discs. Preferably the sectors are held just below the surfaces of the discs, thus forming radial grooves. The sector 29 on disc 11 is preferably a little smaller than sector 30 on disc 12, so that it may enter the opening in disc 12 when the sector 30 is moved to open position by a pin 33 projecting downwardly from the sector 29 and of such a length that its end will touch the upper surface of disc 12 and prevent depression of sector 29 unless the pin rests on sector 30. Obviously when the keyhole 15, the sector 29 and the sector 30 are in line, the key, if pressed inwardly through the keyhole, will effect depression of sectors 29 and 30 and the key may be passed, through an opening 34 in the bottom of the casing 13 and an opening 35 in an ignition coil casing 36, into engagement with a switch 37 of an ignition coil

38 to render the corresponding ignition system effective.

In order to prevent any one from putting the discs 10, 11 and 12 into proper position to admit the key by inserting the key and locating the grooves over the sectors 29 and 30 by feeling for the grooves while slowly rotating the discs, a series of dummy grooves 39 may be provided on disc 11 and a corresponding series of grooves 40 may be provided on the disc 12. Then no clue will be obtained by pressure with the key as to which are the grooves at the sectors and which are the dummy grooves.

A unique feature of the illustrated form of the invention is that the indication on the ring 24, toward which the arrows 26, 27 and 28 point when the discs are in proper position, may be changed at will by putting the discs in proper position, inserting the key, removing or loosening one or both set screws 17 and 20, rotating to a new reading whichever knob 16 or 19 has been released, and tightening whichever set screw has been loosened.

The ring 24 has already been described as secured to the casing 13 by screws 25 but it may be secured thereto by other means, for example, as illustrated, by means of spring-pressed pins 41 projected from suitable bores in an annular flange 42 of the ring 24, projecting downwardly into a corresponding groove in the upper part of the casing 13, into a suitable recess 43. This recess may extend completely around the central part of the casing, thus permitting the ring 24 to be rotated on the casing 13 to different positions when the screws 25 are removed, and the casing may be provided with additional screw holes to receive the screws 25 when the ring is shifted. This would provide another way for setting up a new combination.

The openings 34 and 35 through which the key passes into the ignition coil casing 36 may also be made of such shape in cross-section that the key 14, in addition to being small enough to pass through the keyhole 15, would have to be of proper cross-sectional shape to pass through the openings 34 and 35.

The operation of the device is substantially as follows: In order to insert the key 14 and close the ignition coil circuit, the discs 10, 11 and 12 are brought to the proper position by bringing the indices or arrows 26, 27 and 28 into line with the proper numbered graduations on the ring 24—the disc 10 being turned preferably by the key 14 inserted in the keyhole 15, the disk 11 being turned by the knob 16 and the disc 12 being turned by the knob 19. The key may then be pressed inwardly and after depressing the sectors 29 and 30 (Fig. 2) enter the switch 37 and close the ignition coil circuit. Obviously the order in which the discs are brought to the proper positions is immaterial. When the ignition is to be locked, the key is withdrawn and the discs are turned to other positions.

It should be understood that various changes may be made and that certain features may be used without others without departing from the true scope and spirit of the invention.

Having thus described my invention, I claim:

1. In a device of the class specified, an ignition switch operable by a key and means for controlling the admission of the key comprising a rotatable disc having a keyhole brought into alignment with the switch by rotation of the disc, a second rotatable disc back of the first and provided with a spring-supported sector to be engaged by the key when the sector is back of the keyhole, a third rotatable disc having a larger spring-supported sector, a pin projecting from the second disc toward the third and serving by engagement with the third disc to prevent depression of the sector in the second disc unless in line with the sector in the third disc, and means for turning said discs to the proper relative positions.

2. In a device of the class specified, an ignition switch operable by a key and means for controlling the admission of the key comprising a rotatable disc having a keyhole brought into alignment with the switch by rotation of the disc, a second rotatable disc back of the first and provided with a spring-supported sector to be engaged by the key when the sector is back of the keyhole, a third rotatable disc having a larger spring-supported sector, a pin projecting from the second disc toward the third and serving by engagement with the third disc to prevent depression of the sector in the second disc unless in line with the sector in the third disc, a casing in which said discs rotate and having a bushing projecting from the bottom thereof, a shaft on which the third disc is mounted, said shaft being rotatable in said bushing and extending out of said casing, a knob on the outer end of said shaft for turning the same, a sleeve on said shaft between said third disc and said knob, said second disc being mounted on the sleeve adjacent the inner end thereof, a knob on the outer end of said sleeve, and a graduated ring secured against the outer side of said casing and overlying the outer edge of the first or outer disc to hold all of the discs in said casing, said knobs and the outer disc being provided with indices cooperating with the graduations on said ring to determine the setting of said discs.

3. In a device of the class specified, an ignition switch operable by a key and means for controlling the admission of the key to the switch comprising a rotatable disc having a keyhole to be brought into alignment with the switch by rotation of the disc, a second rotatable disc back of the first and provided with a spring-supported movable portion adapted to be moved out of the way of the key by pressure of the key thereagainst, a third disc rotatable back of the second and having a portion through which said key may be passed when the disc is properly positioned with reference to said second disc, and means controlled by the third disc to prevent opening movement of said movable portion of the second disc unless the second and third discs are properly positioned relative to each other.

4. In a device controlled by the insertion of a key, a fixed part having a keyhole through which the key passes substantially at the end of its insertion movement, a rotatable disc outside of said fixed member provided with a movable sector-spring hinged to the disc and limited in its spring-urged movement to a position back of the outer face of the disc thereby providing a groove at the face, and a key-receiving rotatable device at the outer side of said disc to enable the key in the rotatable device to be brought into alignment with said movable sector and with said keyhole, said disc being provided at its outer face with radial dummy grooves to render it difficult to locate by feeling therefor the groove at the outer side of said movable sector.

5. In a device controlled by the insertion of a key, a fixed part having a keyhole through which the key passes substantially at the end of

its insertion movement, a rotatable disc outside of said fixed member provided with a movable sector spring-hinged in the disc at its inner end and limited in its spring-urged movement to a position back of the outer face of the disc thereby providing a groove at said outer face, said disc being provided with radial dummy grooves to interfere with finding the sector by feeling with the key, a second or intermediate disc having a spring-hinged sector limited in its movement to provide a groove at the outer side of the sector and disc, said intermediate disc having radial dummy grooves serving the same purpose as the grooves in the inner disc, and a disc at the outer side of said intermediate disc having a keyhole in which the key may be inserted to turn the disc to bring the keyhole therein over the keyhole in the fixed member so that the key may be inserted through the second keyhole when the intermediate and inner discs are properly positioned.

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