Aug. 15, 1933. H. E. NORVIEL 1,922,449

LOCK CONTROLLER

Filed June 29, 1929

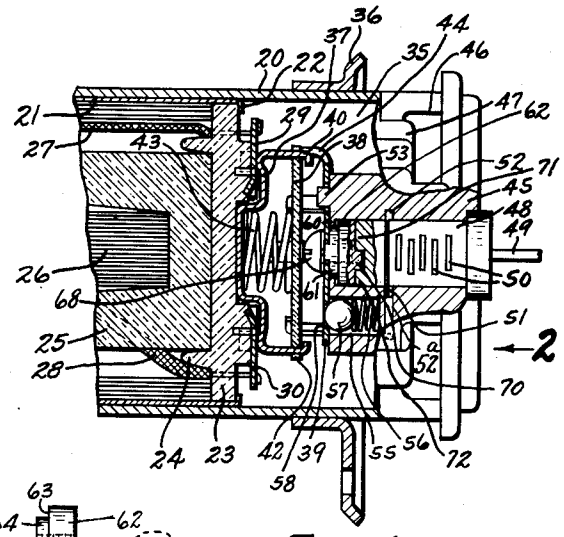


Fig. 1

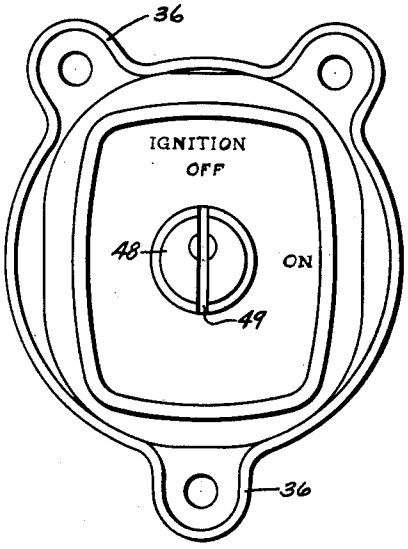


Fig. 2

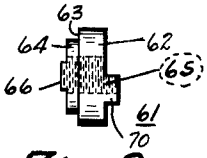


Fig. 3

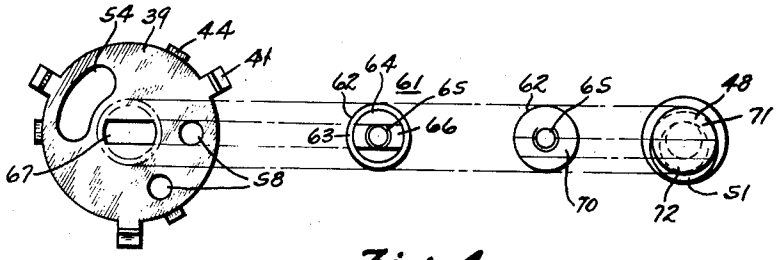


Fig. 4

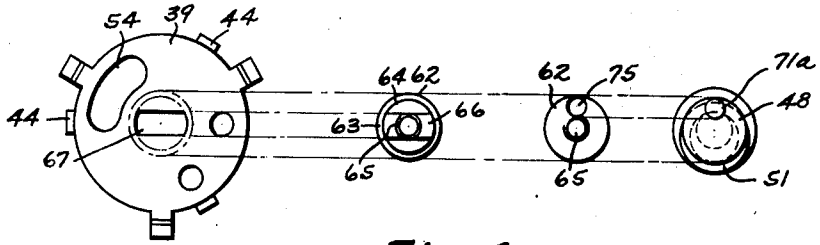


Fig. 6

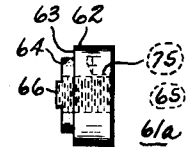


Fig. 5

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Patented Aug. 15, 1933 1,922,449

UNITED STATES PATENT OFFICE

1,922,449

LOCK CONTROLLER

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Application June 29, 1929. Serial No. 374,827

2 Claims. (Cl. 70—14)

This invention relates to lock controllers for ignition circuits or other apparatus, and is particularly directed to that lock controller built into an ignition unit usually embodying an interconnected switch structure having appropriate electrical connection with elements of the said unit.

It is an object of this invention to provide means for retaining the circuit controlling parts in proper relation, during removal or replacement of an actuator for the movable contact parts. This is accomplished by rotatably mounting a coupler in the controller frame and securing the movable contact mechanism to this coupler, which is provided with separable mating provisions through which it may be driven by said actuator, the assembled movable contact and coupler being retained in operable position at all times by provisions of the actuator support.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing wherein a preferred embodiment of one form of the present invention is clearly shown.

In the drawing:

Fig. 1 is a longitudinal section illustrating a lock controller embodying my improvement.

Fig. 2 is a face view of the unit substantially as indicated by the arrow 2 of Fig. 1.

Fig. 3 is an elevational view of a coupling unit contributing to my invention.

Fig. 4 is a schematic showing illustrating the cooperative and interfitting engagement of the elements contributing to my invention.

Fig. 5 is a view in elevation showing a modification of the coupling member.

Fig. 6 is a schematic showing similar to Fig. 4, showing the coactive interfitting relation of the modified form of the coupler unit.

In the drawing 20 represents a casing of hardened or theft proof metal enclosing an ignition unit, as in the present instance the usual ignition coil. Within the casing 20 is secured a can 21, the edge of which is turned inwardly at 22 to provide a seat for a nonconducting end member or coil base 23 provided with an annular skirt 24 centrally locating a nonconducting block 25 within which reposes the end of a core 26 of the coil having leads 27 and 28. The leads 27 and 28 have their bared ends passed through the end member 23 and are connected with switch contacts 29 and 30 respectively secured to the face of the member 23.

The casing 20 is projected sufficiently beyond the coil base 23 to provide a chamber 35 housing a controller mechcanism, in the present instance a switch structure having cooperative engagement with the contacts 29 and 30. The case 20 also provides an attaching bracket 36 by which the ignition unit may be secured to an appropriate support somewhere on the vehicle body. The switch structure comprises a movable contact plate 37 which in the present instance is rotatable into and out of engagement with the contacts 29 and 30 by a key controlled means later to be described. The plate 37 is resiliently supported by a nonconducting plate 38 supported and driven by a driving plate 39 by means of angular tongues 40 of the contact plate and the tongues 41 of the driving plate engaging peripheral notches 42 of the nonconducting plate 38. The tongues 40 form a loose fit in the notches of the plate and a spring 43 is interposed between the contact plate 37 and the nonconducting plate 38 insuring a yieldable contact engagement between the contact plate 37 and the coil base 23, providing a floating support for the movable contact plate. The plate 38 is more rigidly secured to the driving plate 39 in that it rests against the ends of spacing posts 44 provided by the driving plate 39 and at intermediate points between the tongues 41, and the angular extensions of the said tongues.

The switch housing 35 is closed off by a lock frame 45 which is peripherally recessed at 46 into which are bent tongues 47 about the terminal edge of the case 20. The lock frame 45 is provided with a central stepped bore in which is disposed the key controlled means or lock cylinder 48 operable by a key 49. Insertion and manipulation of the proper key 49 operates upon the tumblers 50 to permit turning of the barrel 48 as may be desired. The key controlled means 48 also include a spring retaining bolt 51 that cooperates with an internal annular groove 52 which under proper conditions known to those skilled in the art functions to retain the key controlled means securely within the lock frame.

The lock frame 45 has provision for limited rotation thereon, of the driving plate 39 by means of a stud 53 which is received by an arc shaped slot or elongated aperture in the driving plate 39. A well 55 is formed in the lock frame which contains a spring 56 and ball 57 providing detent means in cooperation with detent apertures 58 of the plate 39. At the inner end of the lock frame the bore providing for the reception of the key cylinder means 48 is re-

duced in diameter so as to provide the inwardly directed flange 60 acting as a retainer for a coupling member 61 interposed between the key controlled means and the driving plate 39. This coupling or interponent member is of stepped cylindrical formation substantially as indicated in Figs. 3 or 5, and comprises a larger portion 62 nicely rotatable within the main bore of the lock frame. A shoulder 63 joining the portion 62 with a smaller portion 64 cooperates with the flange 60 at the inner end of the lock frame as illustrated in Fig. 1 to provide a bearing or journal for coupling. The coupling 61 is centrally bored and threaded at 65, and the smaller portion 64 thereof is provided with a rib or boss 66 which makes driving engagement with the plate 39 by a similar shaped aperture 67 in the plate. A screw 68 passing through the aperture 67 and into the threaded bore 65 of the coupling secures the driving plate to the coupling and the coupling and switch structure in operative association at the inner end of the lock frame substantially as illustrated in Fig. 1.

The reverse end of the coupling 61 is formed to provide a one-way driving slip connection with the key controlled means 48, and in the preferred form comprises an offset rib or tongue 70 which cooperates with complementary offset lugs 71 and 72 on the inner end of the key controlled means 48 in substance defining a Oldham connection. In a modified form, the connection between the coupling 61*a* and the driving plate is essentially the same as in the preferred form, but the separable connection with the key controlled means 48 embodies a recess 75, in the rear face of the larger portion 62 of the coupling, which recess has mating engagement with an offset lug 71*a* of reciprocal form upon the inner end of the key controlled means 48 as is clearly illustrated in Figs. 5 and 6.

The structure herein described is attributed with the features providing for separable connection between the key controlled means and the driving plate of the switch mechanism through the coupling member 61 or 61*a* as the case may be. It is obvious that when the structure is assembled, the coupling member 61 reposes in the reduced bore of the lock frame and rotatably secured thereto is the driving plate 39 as defined and limited by the stud 52 and slot 53. The screw 68 secures the coupling and driving plate together and the switch structure to the inner end of the lock frame in cooperative relation therewith.

In practice it is customary to assemble the switch structure as a unitary assembly, first inserting the coupling member 61 in the bore of the lock frame so that the smaller cylindrical portion 64 is rotatably received in the reduced bore and with the shoulder 63 against the flange 60 where it is made to interfit with the boss 66 in the opening 67 of the driving plate 39 when the retaining screw 68 is driven home. The movable contact assembly is then attached by placing the plate 33 against the posts 44 and bending in the tongues 41. The key controlled means 48 is then inserted in the bore of the lock frame so that the retaining bolt 51 is seated within the annular groove 52. This is easily accomplished by depressing the bolt 51 as it is presented to the bore of the lock frame and the assembly 48, then forced into the bore and rotated in either direction until proper engagement is made between the lugs 71 and 72 of the key controlled means and the lug 70 of the coupling, or until the offset lug 71*a* in the modified form is received by the recess 75 in the coupling. Due to the offset relation of the complementary parts forming the one-way connection between the key controlled means 48 and the coupling member it is possible for only one driving connection to be made between these members, since there is but one way in which they will fit together.

When the lock cylinder 48 has been properly oriented with respect to the coupling 61 or 61*a* as the case may be, then continued pressure of the key controlled means within the bore will dispose the retaining bolt 51 opposite the groove 52 whereupon the said bolt will drop into the groove in the usual manner as is well known to those skilled in the art. When it is desired to remove the key controlled means 48 from the lock frame the retaining bolt 51 is depressed or retracted by any means well known in the art, so that the key controlled means 48 can then be withdrawn from the lock frame as for service or other purposes. In Fig. 1, means provided for the manipulation of the retaining bolt 51 has been illustrated as comprising a hole or passage 52*a*, through one wall of the lock frame 45 and communicating at one end with the groove 52. Under predetermined conditions, that is, when the lock cylinder 47 has been moved to its unlocked position and when the unit has been removed from its support, a wire or rod may be inserted in the passage 52*a* for depression of the bolt 51 or to force it out of the groove 52, whereupon the key cylinder 48 may be readily withdrawn from the frame 45. Thus, it is seen that in case of injury or damage to the lock structure itself the key cylinder 48 may be readily removed from the lock frame without disturbing or in any way disorganizing any of the structure associated therewith. The lock may be replaced with another which provides a similar driving engagement between it and the coupling member 61 or 61*a*. In assembling the new lock it is only necessary to insert it in the bore of the lock frame orient it with respect to the coupling and continue to press it inwardly. Driving engagement is coincidentally made with the switch structure and the bolt 51 falls into place securing the mechanism in the proper relation.

When the new lock or the repaired lock as it may be, has been connected or reassembled with the controller mechanism, here with the switch structure, operation of the key controlled means 48 through the driving connection between the elements 66, 67, 70, 71, and 72 will actuate the controller to regulate the function of the coupled unit. In the illustrated embodiment actuation of the key controlled means will act upon the switch mechanism to open and close the circuits of the ignition unit.

While the form of embodiment of the present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. In a lock controller for an ignition unit having a switch member, a lock frame and a lock for actuating the switch member, the combination comprising, a coupling member carried by the lock frame and interposed between the lock and switch member, and means provided by the

frame and cooperating with the coupling member for preventing effective axial movement of the coupling member, said coupling connecting the lock and switch member for operation of the latter by said lock.

2. A lock controller comprising in combination; means inclosing controlled elements, said means including a lock frame having a bore; a driving plate; a coupler rotatably supported in said bore and in driving relation with said plate; means for connecting said plate with the coupler for preventing movement of said plate relative to said coupler; key controller means rotatably supported in said bore for operation of said driving plate through said coupler; and a flange provided by said frame cooperating with the coupler for preventing effective axial displacement of said coupler from said key controller means.

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