Feb. 3, 1942. L. J. BARIBAULT 2,271,966

ELECTROMAGNETICALLY CONTROLLED LOCK

Filed May 26, 1941

Fig. 1.

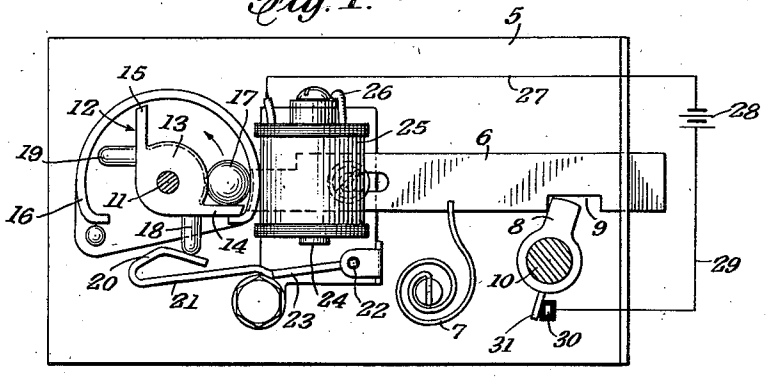



Fig. 2.

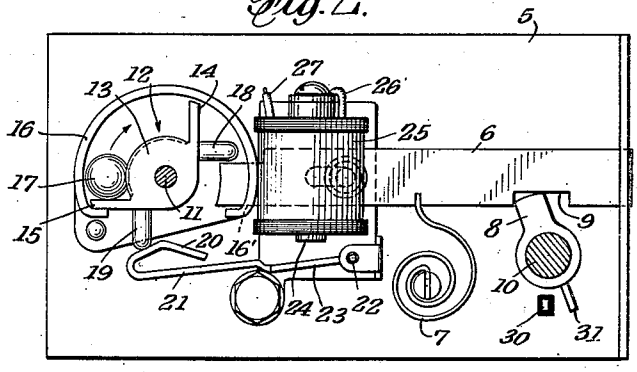
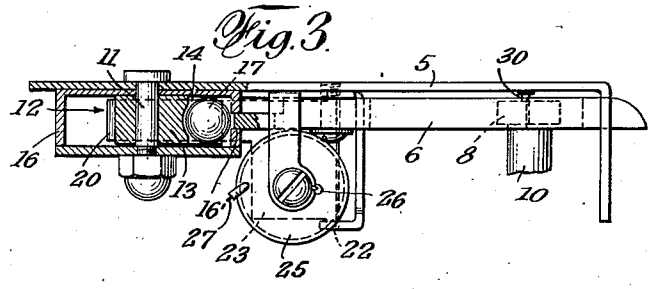



Fig. 3.




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## ELECTROMAGNETICALLY CONTROLLED LOCK

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19 Claims. (Cl. 292—153)

The present invention relates to electro-magnetically controlled locks and aims to provide a lock of the general character indicated which is particularly adaptable, but not to be limited to controlling the doors of an automobile or other means having multiple doors as will hereinafter be more fully set forth.

It is the main object of the present invention to provide an electro-magnetically controlled lock which is simple in construction, easy and economical to fabricate, assemble and install where needed, and admirably adapted to perform its intended functions.

In the accompanying specification there shall be described and in the annexed drawing shown an illustrative embodiment of the locks of the present invention. It is, however, to be clearly understood that the present invention is not to be limited to the exact details herein shown and described for purposes of illustration only inasmuch as changes may be made therein without the exercise of invention and within the scope of the claims hereto appended.

In the accompanying drawing,

Figure 1 is a side elevational view of an electro-magnetically controlled lock made in accordance with the present invention, the lock being shown in a locked position,

Figure 2 is a similar view of the same in an unlocked position, and

Figure 3 is a partial top plan, partial longitudinal sectional view of the same, again in a locked position.

Before describing the invention in detail it is deemed desirable to point out some of the shortcomings of the means hither-to used for locking multiple doors, particularly in automobiles, and point out the manner in which the present invention overcomes and eliminates these shortcomings. For example, at the present time the doors of automobiles are provided with individual locking means so that it is necessary when the operator leaves the vehicle to stretch back from the front seat and set the locking means for the rear doors. Likewise, when the operator enters the vehicle, if other persons intend to enter the same by the rear doors, it is necessary, after opening the front door, to reach in and unlock the rear doors from the inside. The present invention provides a lock which eliminates these inconveniences; for, by means of the present invention there is provided a lock which can be installed in three of the four doors of a vehicle, and all three can be controlled from a central point, associated, for example, with the front door used by the operator. It is, of course, to be clearly understood that the operation of the present invention is not by any means limited to the example just described. The lock of the present invention can be used anywhere that an electro-magnetically controlled lock would be desirable.

Referring now in detail to the aforesaid illustrative embodiment of the present invention and with particular reference to the drawing illustrating the same, the numeral **5** designates a plate in which there is slidably mounted a sliding bolt **6**, the outer end of which is adapted to cooperate with a keeper (not shown), and which is normally maintained in the locked position shown in Figure 1 of the drawing by means of a spring **7**. The bolt **6**, is adapted to be moved out of its locked position by means of a lug **8** cooperable with a recess **9** in the bolt, the lug being carried on a shaft **10** adapted to be rotated by any desired key mechanism.

Rotatably mounted in the plate **5**, adjacent the inner end of the bolt **6**, is a shaft **11** having fixed thereon a cradle **12** consisting of a hub **13** and arms **14** and **15** extending from the hub at right angles to each other. Cooperable with the cradle **12**, and partially surrounding the same, is an arcuate flange **16** carried by the plate **5**, the arrangement being such that a weighted ball or detent **17** is retained in the cradle **12**. The flange **16** is provided with an opening **16'** receptive of the inner end of the bolt **6**. Depending from the underside of each of the arms **15** and **16** are projections **18** and **19** adapted to cooperate, as will hereinafter be more fully explained, with a cam **20** formed at the outer end of a lever **21** pivotally mounted, as at **22**, on the plate **5**. The inner end **23** of the lever **21** is adapted to function as an armature and is disposed immediately below the core **24** of an electro-magnet **25**.

One end of the electro-magnet is grounded to the plate **5** by means of a conductor **26**. The other end of the electromagnet is connected by a conductor **27** to one side of the source of electric current **28**. The other side of the source of electric current **28** is connected by a conductor **29** to a contact **30** carried by the plate **5** and insulated therefrom. Associated with the shaft **10** is a leaf contact **31** adapted, when the shaft **10** is rotated by a key mechanism, to wipingly engage the contact **30** and thereby momentarily close the electric circuit through the electromagnet **25**.

This completes the description of the aforesaid illustrative embodiment of the present invention and the operation thereof may be briefly summarized as follows:

It will be noted from Figure 1 of the drawing that the cradle **12** is in such position that the weighted detent **17** is supported on the arm **14** adjacent the inner end of the bolt **6**. In this figure of the drawing, the bolt is shown in its locked position and until the weighted detent **17** is moved out of the path of the bolt **6**, the latter cannot be moved into an unlocked position. When it is desired to unlock the device a key

mechanism (not shown) is operated to start the rotation of the shaft 10. This operation brings the contact 31 momentarily into engagement with the contact 30 thus completing an electric circuit through the electro-magnet 25. The electrical impulse to the electro-magnet 25 causes the attraction, with a snap action, of the lever 21 to the core 24 and this movement is transmitted, by virtue of the engagement of the cam 20 with the projection 18 to the cradle 12. The latter is rocked thereby, throwing the weighted detent 17 over into a position resting upon the other arm 15 of the cradle, as shown in Figure 2 of the drawing. Of course, as soon as the contacts 31 and 30 are separated, the lever 21 returns to its normal downward position and the continued rotation of the shaft 10 of the key mechanism through the engagement of the lug 8 in recess of the bolt 6, permits the bolt to be moved out of engagement with its keeper (not shown). It will be noted that the latter action is permitted to take place by reason of the fact that there is no longer any obstruction in the path of the inner end of the bolt 6. The next time that the key mechanism is operated to rotate the shaft 10, the reverse operations take place; that is, the bolt may be moved into its locked position, immediately followed by momentarily charging the electro-magnet and thereby returning the cradle and the weighted detent carried thereby to the original position shown in Figure 1 of the drawing.

This completes the description of the operation of the mode of use of the present invention. It will be noted from all of the foregoing that there is provided by means of the present invention an electro-magnetically controlled lock which is simple in construction, easy and economical to fabricate and assemble and admirably adapted to permit its intended functions.

In order to adapt the lock of the present invention to the situation above described in connection with the multiple doors of an automobile, a lock of this type is installed at each of the doors except one and it is the key mechanism at that one door that controls the flow of current to the electro-magnets.

Other objects and advantages of the device of the present invention will be obvious to those skilled in the art to which the present invention relates.

What I claim as my invention is:

1. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, a weighted detent carried by said cradle, and electro-magnetic means cooperable with said cradle to rock the same with a snap action whereby the detent carried thereby is alternately shifted in and out of the path of movement of the sliding bolt.

2. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, said cradle including a hub and a pair of arms extending therefrom at right angles to each other, a weighted detent carried by said cradle, and electro-magnetic means cooperable with said cradle to rock the same with a snap action whereby the detent carried thereby is alternately shifted from one of said arms to the other corresponding to positions in and out of the path of movement of the sliding bolt.

3. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, a weighted detent carried by said cradle, and electro-magnetic means cooperable with said cradle to rock the same with a snap action whereby the detent carried thereby is alternately shifted in and out of the path of movement of the sliding bolt, the electrical impulses to said electro-magnetic means being controlled by a switch operated by the key which moves the sliding bolt.

4. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, said cradle including a hub and a pair of arms extending thereform at right angles to each other, a weighted detent carried by said cradle, and electro-magnetic means cooperable with said cradle to rock the same with a snap action whereby the detent carried thereby is alternately shifted from one of said arms to the other corresponding to positions in and out of the path of the sliding bolt, the electrical impulses to said electro-magnetic means being controlled by a switch operated by the key which moves the sliding bolt.

5. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, a weighted detent carried by said cradle, electro-magnetic means cooperable with said cradle to rock the same with a snap action whereby the detent carried thereby is alternately shifted in and out of the path of movement of the sliding bolt, and means cooperable with said cradle to guide said detent during said shifting.

6. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, a weighted detent carried by said cradle, electro-magnetic means cooperable with said cradle to rock the same with a snap action whereby the detent carried thereby is alternately shifted in and out of the path of movement of the sliding bolt, and an arcuate flange cooperable with said cradle to guide said detent during said shifting.

7. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, said cradle including a hub and a pair of arms extending therefrom at right angles to each other, a weighted detent carried by said cradle, electro-magnetic means cooperable with said cradle to rock the same with a snap action whereby the detent carried thereby is alternately shifted from one of said arms to the other corresponding to position in and out of the path of movement of the sliding bolt, and means cooperable with said cradle to guide said detent during said shifting.

8. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, a weighted detent carried by said cradle, electro-magnetic means cooperable with said cradle to rock the same with a snap action whereby the detent carried thereby is alternately shifted in and out of the path of movement of the sliding bolt, and means cooperable with said cradle to guide said detent during said shifting, the electrical impulses to said electro-magnetic means being controlled by a switch operated by the key which moves the sliding bolt.

9. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, said cradle including a hub and a pair of

arms extending therefrom at right angles to each other, a weighted detent carried by said cradle, electro-magnetic means cooperable with said cradle to rock the same with a snap action whereby the detent carried thereby is alternately shifted from one of said arms to the other corresponding to position in and out of the path of movement of the sliding bolt, and means cooperable with said cradle to guide said detent during said shifting, the electrical impulses to said electro-magnetic means being controlled by a switch operated by the key which moves the sliding bolt.

10. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, said cradle including a hub and a pair of arms extending therefrom at right angles to each other, a weighted detent carried by said cradle, electro-magnetic means cooperable with said cradle to rock the same with a snap action whereby the detent carried thereby is alternately shifted from one of said arms to the other corresponding to positions in and out of the path of movement of the sliding bolt, and an arcuate flange cooperable with said cradle to guide said detent during said shifting.

11. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, a weighted detent carried by said cradle, electro-magnetic means cooperable with said cradle to rock the same with a snap action whereby the detent carried thereby is alternately shifted in and out of the path of movement of the sliding bolt, and an arcuate flange cooperable with said cradle to guide said detent during said shifting, the electrical impulses to said electro-magnetic means being controlled by a switch operated by the key which moves the sliding bolt.

12. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, said cradle including a hub and a pair of arms extending therefrom at right angles to each other, a weighted detent carried by said cradle, electro-magnetic means cooperable with said cradle to rock the same with a snap action whereby the detent carried thereby is alternately shifted from one of said arms to the other corresponding to positions in and out of the path of movement of the sliding bolt, and an arcuate flange cooperable with said cradle to guide said detent during said shifting, the electrical impulses to said electro-magnetic means being controlled by a switch operated by the key which moves the sliding bolt.

13. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, a weighted detent carried by said cradle, a pivotally mounted cam, and electro-magnetic means cooperable with said cam to impart thereto a snap thrust, in turn transmitted to said cradle whereby the latter is rocked with a snap action to alternately shift the detent carried thereby in and out of the path of movement of the sliding bolt.

14. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, a weighted detent carried by said cradle, a pivotally mounted cam, and electro-magnetic means cooperable with said cam to impart thereto a snap thrust, in turn transmitted to said cradle whereby the latter is rocked with a snap action to alternately shift the detent carried thereby in and out of the path of movement of the sliding bolt, the electrical impulses to said electro-magnetic means being controlled by a switch operated by the key which moves the sliding bolt.

15. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, a weighted detent carried by said cradle, a pivotally mounted cam, electro-magnetic means cooperable with said cam to impart thereto a snap thrust, in turn transmitted to said cradle whereby the latter is rocked with a snap action to alternately shift the detent carried thereby in and out of the path of movement of the sliding bolt, and means cooperable with said cradle to guide said detent during said shifting.

16. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, a weighted detent carried by said cradle, a pivotally mounted cam, electro-magnetic means cooperable with said cam to impart thereto a snap thrust, in turn transmitted to said cradle whereby the latter is rocked with a snap action to alternately shift the detent carried thereby in and out of the path of movement of the sliding bolt, and an arcuate flange cooperable with said cradle to guide said detent during said shifting.

17. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, a weighted detent carried by said cradle, a pivotally mounted cam, electro-magnetic means cooperable with said cam to impart thereto a snap thrust, in turn transmitted to said cradle whereby the latter is rocked with a snap action to alternately shift the detent carried thereby in and out of the path of movement of the sliding bolt, and means cooperable with said cradle to guide said detent during said shifting, the electrical impulses to said electro-magnetic means being controlled by a switch operated by the key which moves the sliding bolt.

18. Means for controlling the movement of the sliding bolt of a lock, comprising a detent-carrying cradle pivotally mounted adjacent the sliding bolt, a weighted detent carried by said cradle, a pivotally mounted cam, electro-magnetic means cooperable with said cam to impart thereto a snap thrust, in turn transmitted to said cradle whereby the latter is rocked with a snap action to alternately shift the detent carried thereby in and out of the path of movement of the sliding bolt, and an arcuate flange cooperable with said cradle to guide said detent during said shifting, the electrical impulses to said electro-magnetic means being controlled by a switch operated by the key which moves the sliding bolt.

19. A device for controlling the movement of the sliding bolt of a lock comprising means for supporting a weight adjacent the sliding bolt, a weight carried by said first named means, and electrical means cooperable with said first named means to operate the same whereby said weight is alternately shifted in and out of the path of movement of the sliding bolt.

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