Nov. 30, 1926. 1,608,539

A. B. WETHERELL

LOCKING MEANS

Filed Oct. 31, 1923 2 Sheets-Sheet 1

FIG. 1.

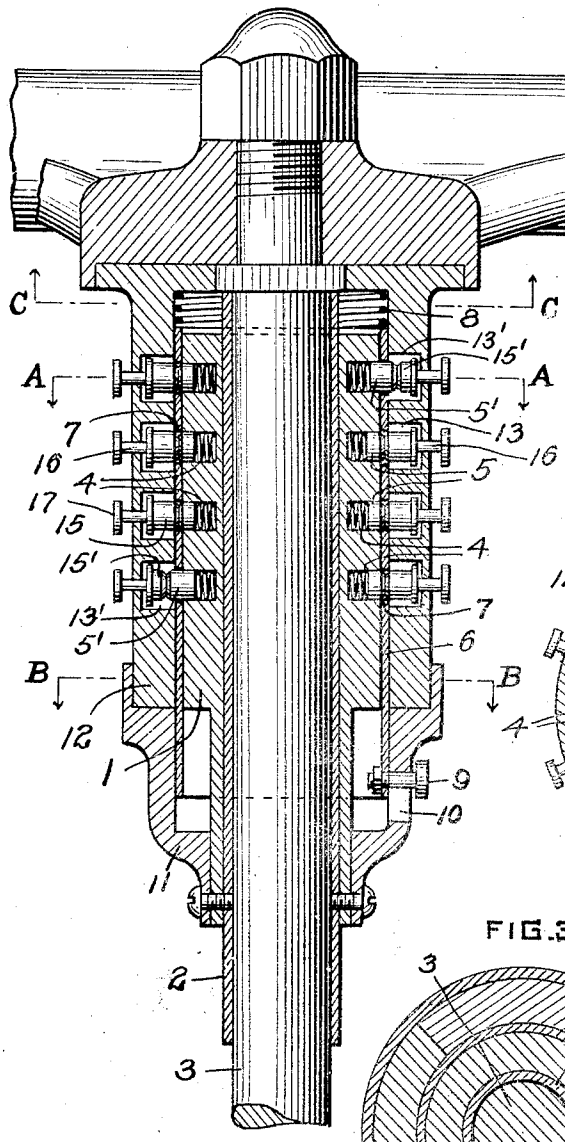


FIG. 2.

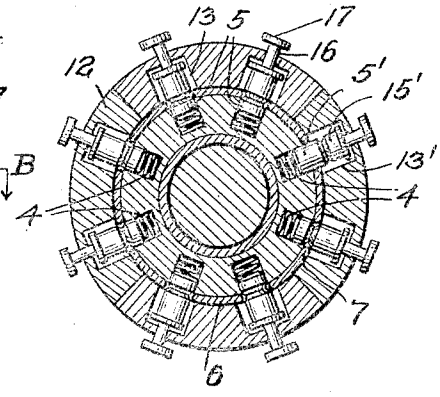
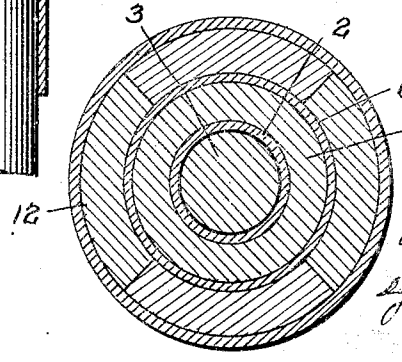


FIG. 3.



WITNESSES

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FIG.4.

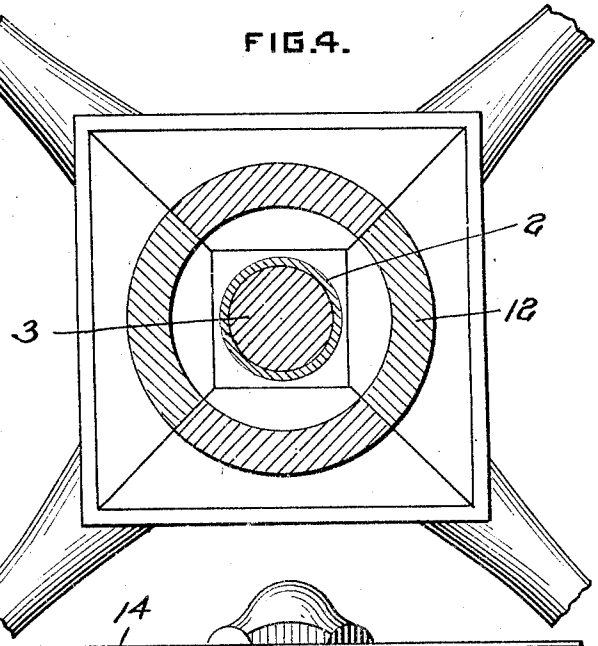
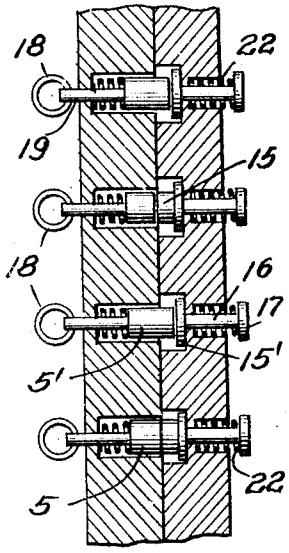


FIG.6.



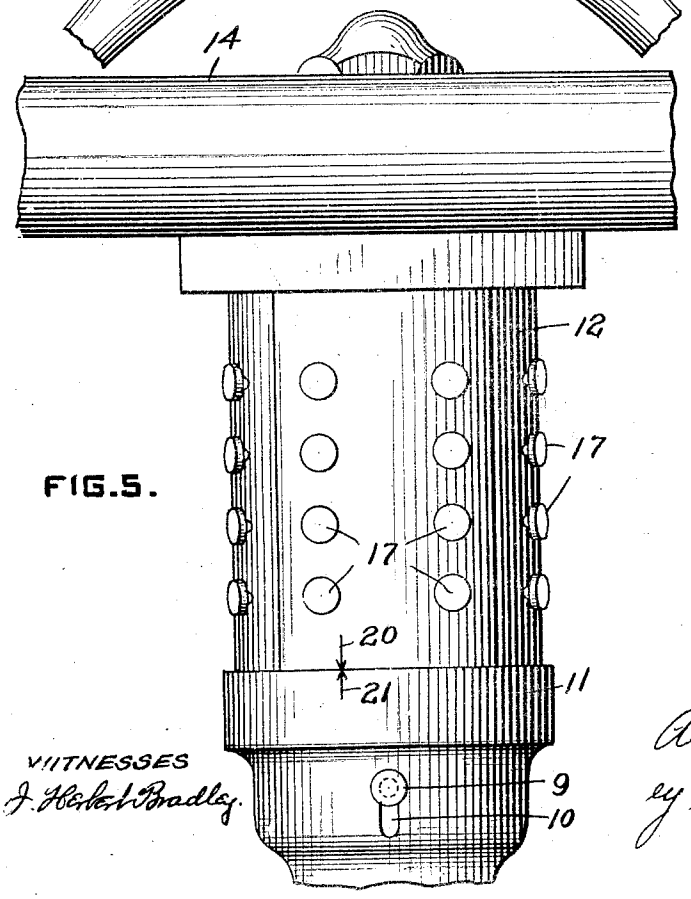


FIG.5.

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WITNESSES

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Patented Nov. 30, 1926. 1,608,539

UNITED STATES PATENT OFFICE.

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LOCKING MEANS.

Application filed October 31, 1923. Serial No. 671,873.

My invention relates to a combination locking means and is particularly adapted for locking such mechanisms as steering wheels when not in use, although it will be obvious from the following description that it is adapted for other uses.

Many locks for steering wheels are so made as to lock the wheel to the steering post when in use and to unlock it therefrom when idle. Such locks are dangerous as they do away with the rigid connection between the steering wheel and post which is essential for absolute safety. Also many locks which are at present in use require the manipulation of a key for locking and unlocking with the attendant disadvantages and the danger of losing the key and so rendering the lock useless.

An object of my invention is to provide a lock which in no way affects the rigid connection between the wheel and steering post and which is so constructed as to positively hold the wheel against any movement when locked.

A further object is to provide a simple, positive lock of this type which can be easily and surely operated without the use of keys of any sort.

Further objects will be apparent from the following description and the accompanying drawings in which I have shown one embodiment of my invention as applied to a steering wheel and in which Figure 1 is a vertical section through my locking means showing it applied to a steering post, Fig. 2 is a horizontal section on the line A—A of Fig. 1 looking in the direction of the arrows, Fig. 3 is a similar view on the line B—B of Fig. 1 looking in the direction of the arrows, Fig. 4 is a similar view on the line C—C of Fig. 1 looking in the direction of the arrows, Fig. 5 is a side elevation thereof and Fig. 6 is a sectional view of my locking means as applied to such an instrument as a door showing the means for unlocking the members from the inside without manipulating the required combination.

As illustrated the lock includes two relatively movable members 1 and 12 which are adapted to be moved into and out of locking position. Each member is provided with several tumbler receiving apertures, so arranged that each aperture of one member, registers with an aperture of the other member when the members are in locking position. Some of said apertures are provided with spring pressed tumblers 5 and 5′ which are so arranged that they normally form a locking, element, between said members, when the members are in locking position. Other apertures are provided with manually actuated tumblers, which either control the movement of the spring pressed locking tumblers, or which themselves are capable of locking the members in the locking position. A separate actuating device, is provided for each manually operated tumbler, and these devices are similar in appearance so as to disguise those which control the movement of the spring pressed locking plungers.

As applied to a steering wheel my invention includes a cylindrical stationary member 1 which is adapted to be rigidly secured to a housing 2 of a steering post 3. A plurality of circumferential rows of recesses 4 are provided in the cylindrical member. Seated in these recesses are tumblers 5 adapted to be spring pressed outwardly by spiral springs located between the bases of the tumblers and the bottoms of the recesses. Certain of these locking tumblers 5′ have greater length than the others, for a purpose to be hereinafter described.

Surrounding the stationary recessed member 1 is a movable keeper sleeve 6 which is provided with a plurality of circumferential rows of recesses 7 which are adapted to cooperate with the recesses 4 of the stationary member when the keeper sleeve is in its raised position. When the sleeve is lowered its recesses 7 are moved out of line with the recesses of the stationary member and the latter are then closed by the sleeve which retains the locking tumblers 5 and 5′ within their recesses and prevents their outward movement. This keeper sleeve is normally pressed downwardly by a spiral spring 8 located between the top of the sleeve and the upper part of my locking means, and surrounding the top of the steering post housing. It is adapted to be raised to bring its recesses into line with the locking tumblers by a button 9 extending through a slot 10 in the lower support 11 of my locking means.

This lower supporting member 11 is adapted to be rigidly secured to the inner stationary member 1 and to the housing 2 for the steering post. Its upper face is

recessed for the reception of a locking sleeve or movable member 12 which is provided with a plurality of rows of inner recesses 13 similar to and adapted to register with the recesses of the inner stationary member 1 and of the keeper sleeve 6 when the latter is raised. This outer locking sleeve may, if desired, be formed by a plurality of segments shown in the drawing as four in number. This provides for ease in assembling. It is rigidly secured to the under face of the steering wheel 14 and is adapted to turn therewith.

Located in the recesses 13 which come opposite the locking tumblers 5 are manually operated tumblers 15 of such length as to prevent these locking tumblers from entering the recesses in the locking sleeve. In the recesses 13′ which are adapted to come opposite the long tumblers 5′ are other manually operated tumblers 15′ which are of such length as to allow the tumblers 5′ to enter the recess in the outer sleeve when it is in line therewith and when the perforation in the keeper sleeve also registers therewith. All of the manual tumbers 13 and 13′ are provided with stems 16 which extend outwardly through small openings in the circumference of the locking sleeve and have at their outer extremity similar operating means or buttons 17.

Assuming that the steering wheel is locked against movement by the locking tumblers 5′, as shown in Fig. 1, and that it is desired to unlock it therefrom in order to manipulate it, it will be impossible to do so unless the operator has knowledge of what combination of buttons 17 to press to release the wheel. If he should push any one of the wrong buttons he would simply cause one of the manual tumblers 15 to push back the associated tumbler 5 and enter the recess 4 in the stationary member 1. Obviously any manipulation of the buttons other than the correct combination would fail to unlock the steering wheel. To do so it is essential that only the buttons of the manual tumblers 15′ be operated. This will result in forcing the locking tumblers 5′ out of the recesses in the sleeve 12. Upon such movement the keeper sleeve 6 is forced downwardly by its spring past the beveled ends of the various tumblers, thus closing all recesses and preventing any locking movement of the tumblers. The wheel is then free to be rotated and the car operated. To lock the wheel it is only necessary to bring the recesses 13′ opposite the locking tumblers 5′ and to raise the keeper sleeve by means of the button 9 and when the recesses register the locking tumblers are forced outwardly into locking position by the springs 4.

Proper registration of the recesses is assured by the provision of an indicator such as lines 20 and 21 on the outer surface of movable sleeve 12 and the stationary support 11 respectively.

It is thus seen that I have provided a secure lock which can be easily applied to a steering wheel without in any way interfering with its rigid connection to the steering post and that my lock can be easily manipulated without the use of any keys whatsoever.

In Fig. 6 I have shown my lock as applied to two movable members such, for example, as a door, and its casing shown for simplicity as applied to a sliding door and its jamb.

The lock in this case is similar in all respects to the one herein above described with the additional feature of having the locking tumblers provided with a means such as rings 18 connected to stems 19 which extend outwardly from the base of the tumblers to allow all tumblers to be pulled back into unlocked position. This enables the door or the like to be unlocked from the inside by one who is unaware of the proper combination and also holds each locking tumbler in its recess.

Springs 22 are provided beneath the buttons 17 of each manually operated tumbler to hold the same in the proper position and to prevent its obtrusion in the way of the door when closing the latter.

Having thus described one embodiment of my invention what I claim as new and desire to secure by Letter Patent is:—

1. A lock including a member having tumblers mounted in recesses therein, a second relatively movable member having a cooperating recess adapted to register with the recesses of said first member to receive said tumblers so as to lock said members against relative movement, means for unlocking said members and means for normally preventing said tumblers from locking said members together.

2. A lock including a member having tumblers mounted in recesses therein, a second relatively movable member having cooperating recesses adapted to register with the recesses of said first member to receive said tumblers so as to lock said members against relative movement, means for unlocking said members and means adapted to be automatically operated upon the unlocking of said members to prevent said tumblers from locking said members together.

3. A lock including a member having tumblers mounted in recesses therein, a second relatively movable member having cooperating recesses adapted to register with the recesses of said first member to receive said tumblers so as to lock said members against relative movement, means for unlocking said members, means adapted to be automatically actuated upon unlocking of said members for preventing said tumblers

from locking said members together, said means being manually operable to permit locking movement of said tumblers.

4. A lock including a member having tumblers mounted in recesses therein, a second relatively movable member having cooperating recesses adapted to register with the recesses of said first member to receive said tumblers so as to lock said members against relative movement, means for unlocking said members and means interposed between said members and adapted to be automatically operated upon unlocking of said members so as to close said recesses and prevent said tumblers from locking said members together and means for manually shifting said last named means so as to permit locking movement of said tumblers.

5. A lock comprising relatively movable members having tumbler receiving apertures formed therein, tumblers mounted in the apertures of one of said members and movable into engagement with apertures of the other member when the apertures of said members are in an opposed relation, separate manually operating means, associated with each tumbler, for moving the tumbler to different positions in its mounting aperture and a movable keeper plate located between said members and having tumbler receiving recesses formed therein, said plate being adapted to prevent locking movement of said tumblers.

6. In a steering wheel lock, a recessed cylinder adapted to be secured to a steering post housing and having spring pressed locking tumblers seated in the recesses thereof, a surrounding locking sleeve adapted to be secured to a steering wheel and having recesses adapted to coincide with the recesses of said cylinder to receive said tumblers, tumblers in certain of said sleeve recesses of such length as to prevent entrance of the corresponding locking tumblers and which if actuated will enter the cylinder recesses, tumblers in the other sleeve recesses of such length as to permit entrance therein of the corresponding locking tumblers and which upon actuation will press back the tumblers to unlock the sleeve and cylinder, all of said tumblers in said sleeve having similar external actuating means and means for normally preventing movement of said locking tumblers.

7. In a steering wheel lock, a recessed cylinder adapted to be secured to a steering post housing and having spring pressed locking tumblers seated in the recesses thereof, a surrounding locking sleeve adapted to be secured to a steering wheel and having recesses adapted to coincide to the recesses of said cylinder to receive said locking tumblers, manually operated plungers in certain of said sleeve recesses of such length as to prevent entrance therein of the corresponding locking tumblers and which if actuated will enter the cylinder recesses, manually operated tumblers in the other sleeve recesses of such length as to permit entrance therein of the corresponding locking tumblers and which open actuation will press back the said tumblers to unlock the sleeve and cylinder, all of said manually operated tumbers having similar external actuating buttons, means for normally preventing movement of said tumblers comprising a spring pressed perforated keeper sleeve between said cylinder and locking sleeve for automatically closing said recesses upon unlocking said cylinder and sleeve and means for manually moving said keeper sleeve to permit said locking tumblers to enter said sleeve recesses through the perforations of said keeper sleeve.

8. A lock comprising a member having tumblers seated in recesses and a second relatively movable member having cooperating recesses adapted to register with the recesses of said first member to receive said tumblers to lock said members against relative movement, means in certain of said cooperating recesses to prevent entrance of the corresponding tumblers and means in the other cooperating recesses adapted to press back the corresponding tumblers to unlock said members, all of said means, having similar external actuating buttons and means on each tumbler for retracting the same.

In testimony whereof, I have hereunto subscribed my name this 20th day of October, 1923.

ANSON B. WETHERELL.