

W. R. TOWNLEY AND P. H. LEAHY.

COMBINATION LOCK.

APPLICATION FILED SEPT. 25, 1917.

1,370,859.

Patented Mar. 8, 1921.

4 SHEETS—SHEET 1.

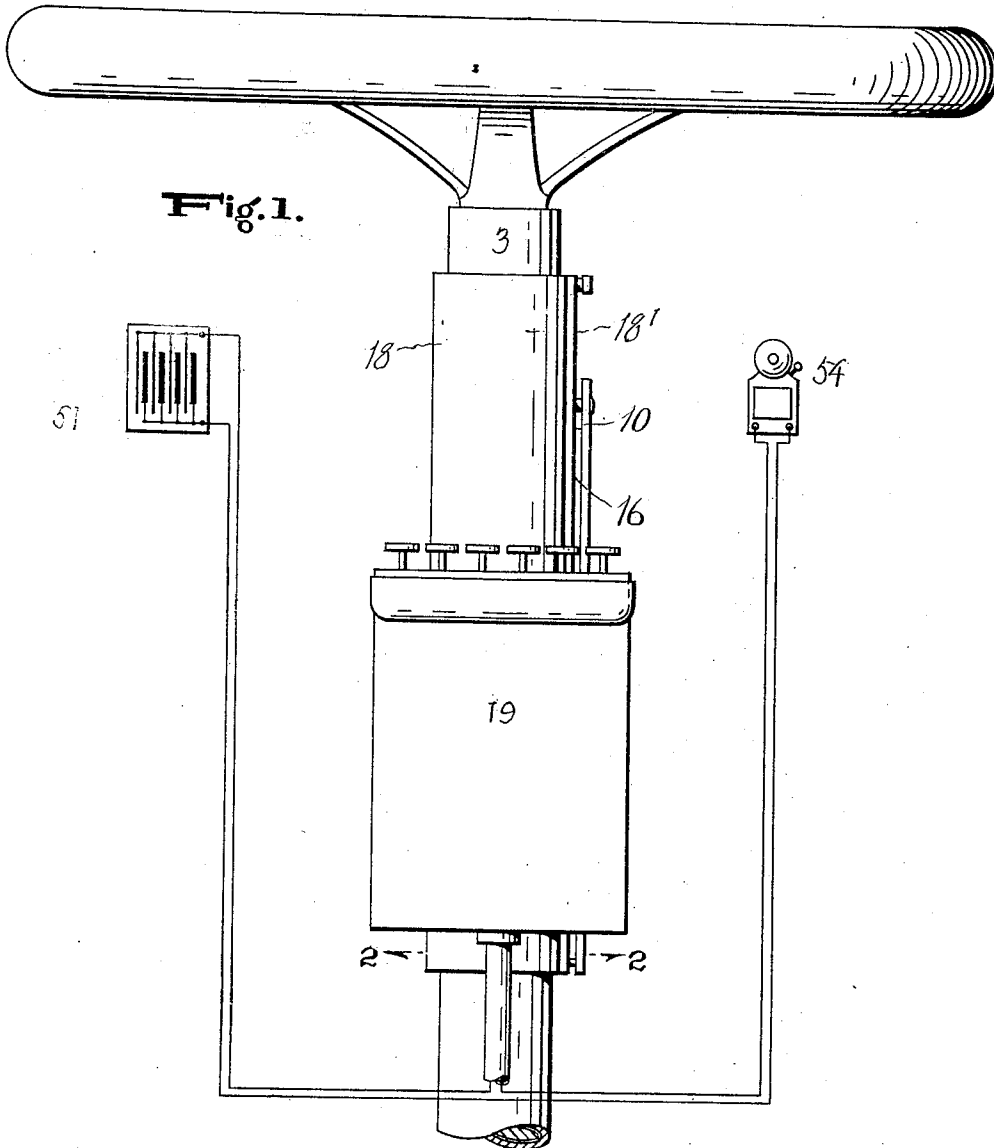
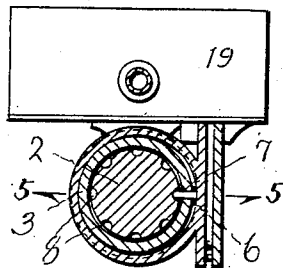


Fig. 2.



Intentional-
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Fig. 3.

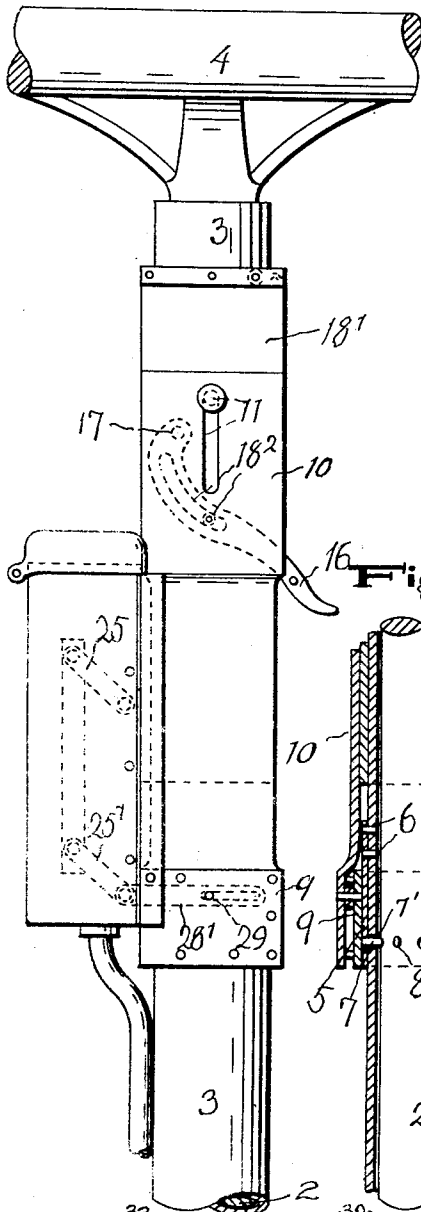


Fig. 4.

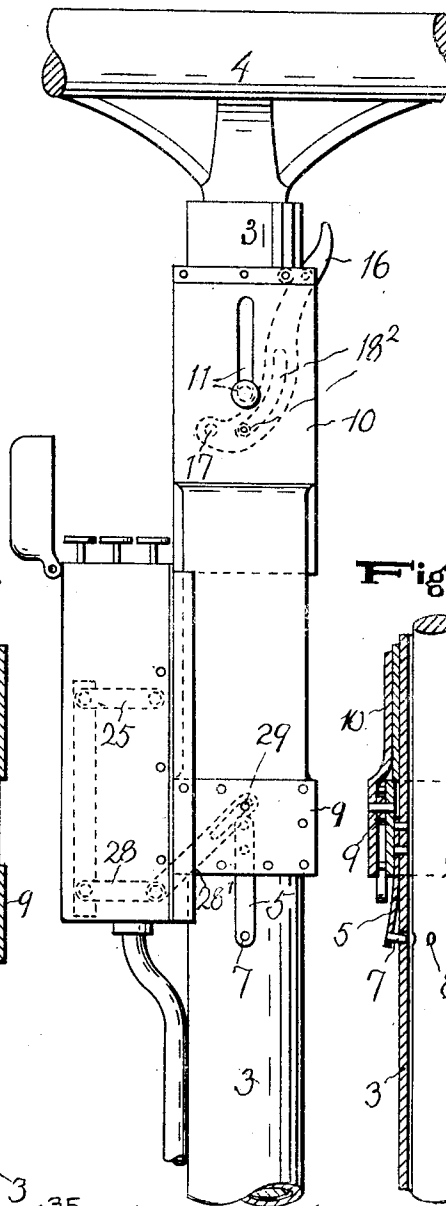


Fig. 5.

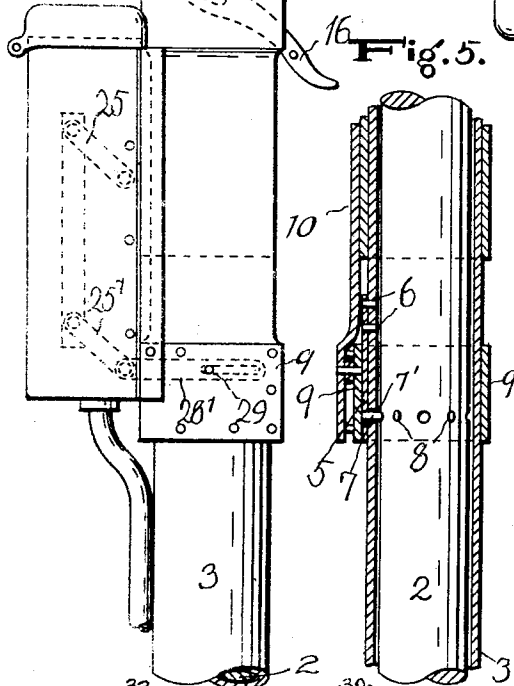
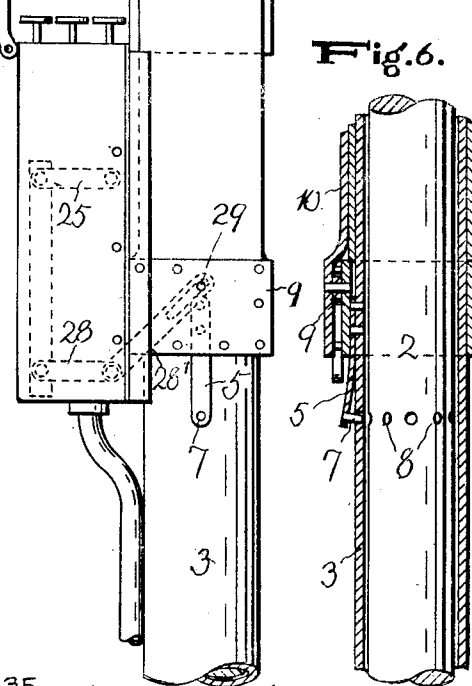
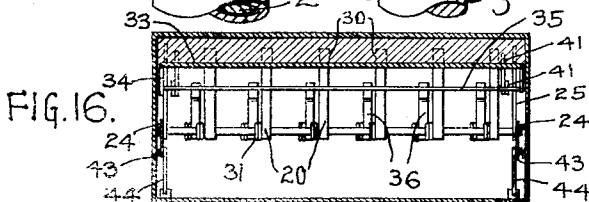


Fig. 6.



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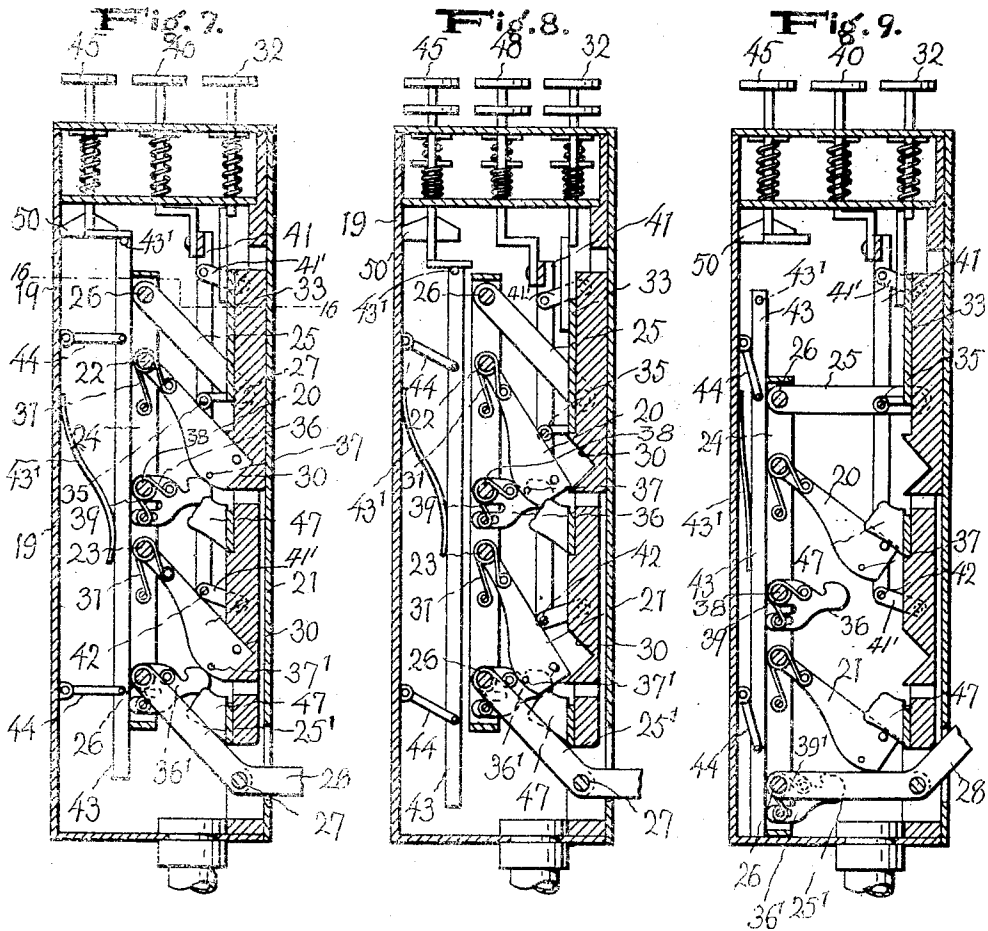
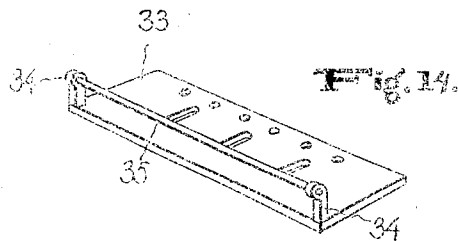
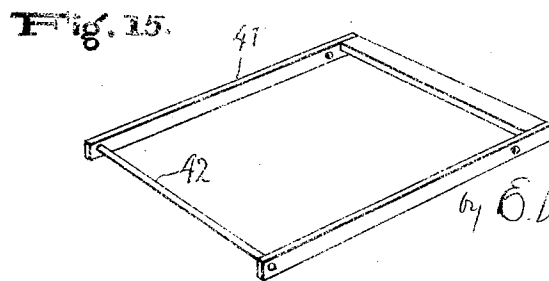
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4 SHEETS—SHEET 4.

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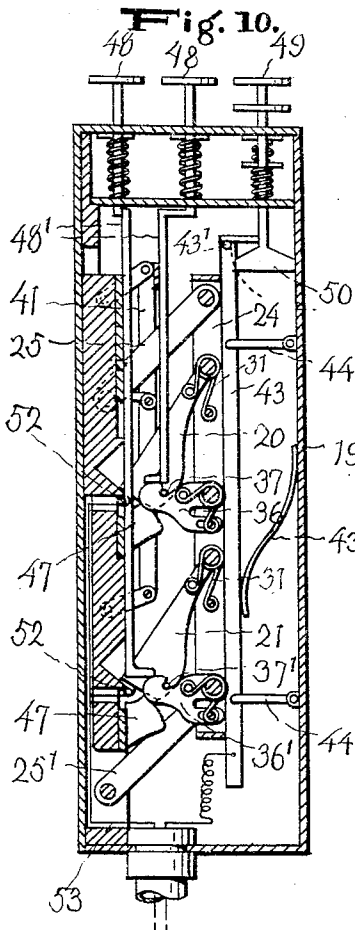
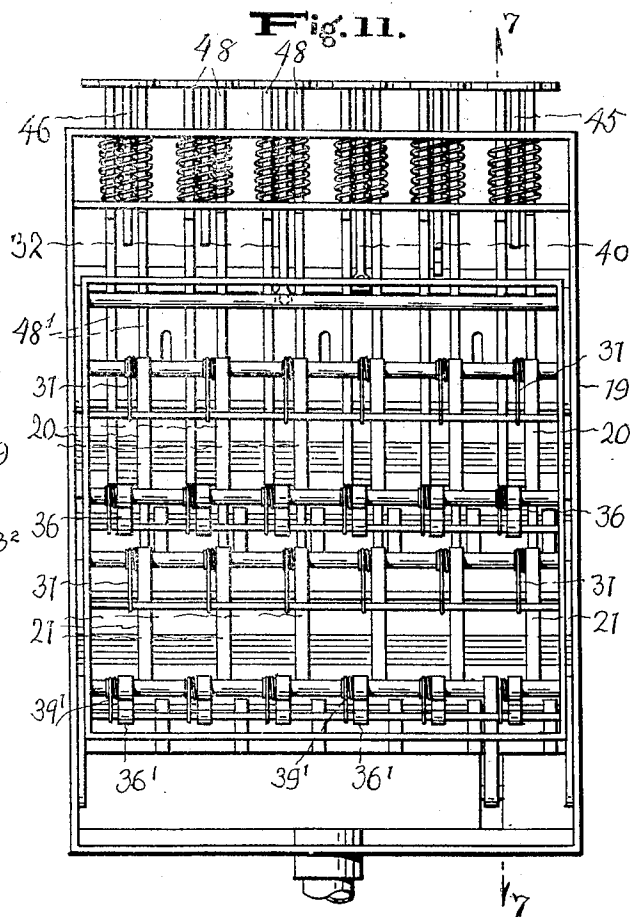


Fig. 12.

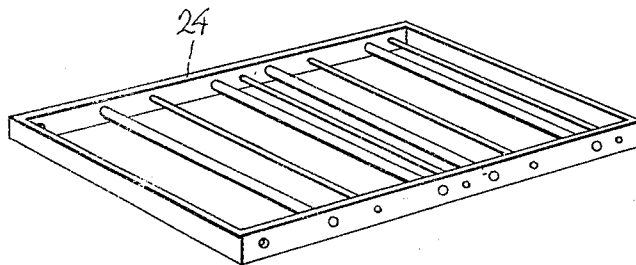
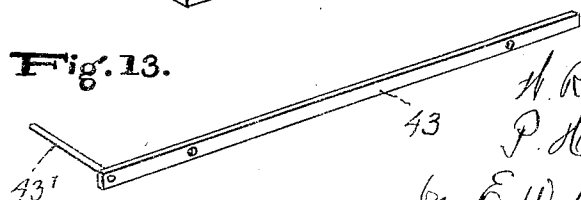


Fig. 13.



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UNITED STATES PATENT OFFICE.

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COMBINATION-LOCK.

1,370,859.

Specification of Letters Patent.

Patented Mar. 8, 1921.

Application filed September 25, 1917. Serial No. 193,170.

To all whom it may concern:

Be it known that we, WILLIAM R. TOWNLEY and PATRICK H. LEAHY, citizens of the United States, residents of Canandaigua, in the county of Ontario and State of New York, have made a certain new and useful Invention in Combination-Locks; and we declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the invention, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a front view of the invention as applied, showing the alarm, battery and connections diagrammatically.

Fig. 2 is a section on the line 2—2, Fig. 1.

Fig. 3 is a side view of the invention, as applied, with the parts locked.

Fig. 4 is a similar view with the lock released.

Fig. 5 is a section on the line 5—5, Fig. 2, with the parts locked.

Fig. 6 is a similar section with the lock released.

Fig. 7 is a section on the line 7—7, Fig. 11, with the parts locked.

Fig. 8 is a similar view with certain keys depressed, and the dogs released from their seats and held in released position.

Fig. 9 is a similar view with the operating lever actuated to release the lock.

Fig. 10 is a view similar to Fig. 8, but looking the opposite way.

Fig. 11 is a side view of the casing and the combination lock, with one side plate and the parts attached thereto removed.

Fig. 12 is a detail perspective view of one of the reciprocatory frames.

Fig. 13 is a similar view of one of the stop bars.

Fig. 14 is a similar view of another of the reciprocatory frames.

Fig. 15 is a similar view of the third reciprocatory frame.

Fig. 16 is a section on line 16—16, Fig. 7.

The invention has relation to combination locks, designed mainly for use in connection with means for securing the steering post of an automobile against rotation, said means shown and described in my co-pending application for patent, Serial Num-

ber 184099. Other objects and advantages will hereinafter appear.

The invention consists in the novel construction and combinations of parts, as hereinafter set forth.

In the accompanying drawings illustrating the invention, the numeral 2 designates the steering post, 3, a non-rotary sleeve or column surrounding said post, and wherein the latter turns or is rotated by operation of the hand wheel 4. 5 is a downwardly projecting elastic tongue or clutch member, carried by the steering column or tube, being riveted thereto at one end at 6, and having at its other end an inwardly projecting tooth 7, designed to pass through an opening 7' of said column into engagement with any one of a circular series of recesses or seats 8 of said post to secure the post and the column together and prevent rotation of the post. The clutch tongue is laterally yieldable and is normally through inherent elasticity sprung outwardly into position of release from the seats of the post.

9 is a sliding sleeve mounted upon the steering column and having a flat or plate form upward extension 10, the latter having at its upper portion a slot and pin connection 11 with an annular member shrunk upon the steering post column. The sleeve 9 engages over the locking tongue 5 and presses the same inwardly into position close to the steering column and post, the tooth 7 being thereby held in engagement with its seat in said post. An operating lever 16 is pivoted at one end at 17 to the flat face 18 of said annular member, the latter being designated 18, and the upper portion of the extension 10 lying over the lever 16, the operating end only of the lever projecting outwardly into exposed position. The lever 16 is provided with a slot and pin connection 18² with the extension 10 of the sleeve, said slot having inclined or cam walls and upon actuation of the lever pressing the sleeve downwardly over the clutch tongue and said tongue inwardly to engage the tooth thereof with its seat in the steering post. Upon reverse movement of the lever, the sleeve is brought upwardly from over said tongue, the latter then through inherent elasticity springing laterally and outwardly into released position, the post being then free to turn in steering the car.

The clutch tongue being in engagement with its seat in the steering post, and the sliding sleeve in depressed position thereover, the following means are provided to prevent the upward movement of said sleeve from over said tongue.

Located within a casing 19 carried by the steering post column are an upper series of dogs or members 20, usually six in number and a lower series of dogs or members 21, both series pivoted respectively at 22 and 23 to a reciprocatory frame 24, the latter having links 25, 25', pivoted thereto at 26 and pivoted to the casing 19 at 27, a lever 28 corresponding to one of the lower links 25' being extended outwardly at 28' and having at its outer end a slot and pin connection 29 with the sleeve 9.

This sleeve being in depressed position and located over the clutch tongue the steering post secured against rotation as stated, the frame 24 would be located in raised position, as shown in Fig. 7 of the drawings, and the dogs or members 20, 21 would be in engagement with seats 30 of said casing. These dogs extend downwardly from their pivotal ends into engagement with said seats, the latter being usually of right angle form as are also the lower ends of the dogs fitting therein, springs 31 acting to press the dogs into engagement with said seats. The dogs so engaging the seats will resist any downward movement of the frame 24, owing to the binding of the lower right angle ends of the dogs in the right angle seats, and if it is sought to elevate the sleeve 9 from over the clutch tongue by operation of the lever 16, the engagement of the dogs in their seats will prevent it.

In order therefore to release the dogs from their seats, a depressible key 32 is at its lower end connected with a sliding reciprocatory frame 33, the latter having lower out-turned lugs 34, carrying a transverse rod 35, said rod having engagement with each of the upper series of dogs 20 near the lower ends thereof and serving in the depression of the key to rock the dogs from their upper pivotal ends as centers from out of their seats into the position shown in Fig. 8 of the drawings, where they are at once caught and held by spring catches 36, having hooked engagement with pins 37 of the dogs, said catches pivoted to the frame 24 at 38 yieldable in one direction against the tension of their springs 39. A depressible key 40 is connected at its lower end with a reciprocatory frame 41, shown as having pivotal link connection 41' with the casing 19. Frame 41 has at its lower end a transverse rod 42, said rod having engagement with each of the lower series of dogs 21 near the lower ends thereof and serving in the depression of the key to release the dogs from their seats as stated for the upper

series. The lower series of dogs are at once caught and held in released position by similar spring catches 36', having hooked engagement with pins 37' of the dogs, said catches pivoted to the frame 24 at 26 and yieldable in one direction against the tension of their springs 39'. Both series of dogs having been rocked from engagement with their seats elevation of the sleeve 9 from over the clutch tongue, will again or still be prevented by engagement of stop bars 43, 43', with the side bars of the frame 24, the former being respectively connected with the casing 19 by links 44, pivoted at the ends thereof to said bars and to the casing.

In order therefore to move the bars 43, 43' downwardly a depressible key 45 has at its lower end operative engagement with one end of one bar 43 through the medium of a pin 43' of said bar, and a depressible key 46 has at its lower end engagement with an end of the other bar 43, these two keys serving upon depression thereof to move said bars downwardly into the position shown in Fig. 8 of the drawings, where they are held by continued depression of said keys.

The lever 16 may now be actuated to raise the sleeve 9 from over the clutch tongue, and in this movement of the sleeve the bars 43 will be further moved downwardly as shown in Fig. 9 of the drawings.

In the downward movement of the frame 24 consequent upon elevation of the sleeve 9, the dogs 20 and 21 moving with said frame engage at their lower edges with trippers 47, one for each dog, said trippers serving to accelerate the movement of the dogs and to trip or release the same from the catches 36, 36'.

In the reverse operation of the lever 16 to lower the sleeve 9 over the clutch tongue and force the tooth of the latter into engagement with its seat in the steering post, the dogs 20 and 21 moving with the frame 24 will engage the devices or trippers 47, the latter now acting to retard the movement of the dogs with said frame, and will facilitate the reengagement of these dogs with their seats 30. A plurality of keys 48, twelve in number as shown, and corresponding in number to that of the dogs 20 and 21, have each a lower extension 48' in operative engagement with one of the catches 36, so that upon depression of any of these keys, subsequent to depression of the keys 32 and 40, one of the dogs will be released from its spring catch and through the action of its spring 31 caused to reengage its seat 30. The keys 48 are ordinarily not used by the occupant or owner of the car, being designed to confuse any one seeking to use the car without license.

As a further guard against unlicensed use of the car, should it be attempted to press

down all of the keys at the same time, a wedge key 49 will be caused at its lower end 50 to engage between the pin 43' of the frame 43 and the side wall of the casing 19, said frame being thereby prevented from moving upwardly as required previous to elevation of the sleeve 9 from over the clutch tongue.

Should an unlicensed person attempt to release the lock by operation of the keys 32 and 40 previous to depression of the keys 45 and 46, an electric circuit will be completed and an alarm sounded. The circuit is completed as shown in Figs. 1 and 10 from the battery 51, through one of the bars 43 and the reciprocatory frame 24 to the dogs 20 and 21. The dogs in falling to released position will contact with the terminals 52 of the circuit wire branch 53 to complete the circuit and sound the alarm or bell 54. A spring 43² serves to move the bars 43 upwardly to normal position, upon release of the keys and lock.

We claim:—

1. In a combination lock, a steering post having an annular series of recesses, a steering column having a clutch tongue adapted to engage any one of said recesses, and means for preventing disengagement of said tongue from any recess, including a member adapted to overlie said tongue, a stationary casing having seats, a reciprocatory frame having operative connection with said member and pivotal link connection with said casing and working therein, pivoted dogs carried by said frame and engaging said seats, key-operated means for releasing certain of said dogs from their seats, and key-operated means for releasing the remainder of said dogs from their seats.

2. In a combination lock, a steering post having an annular series of recesses, a steering column having a clutch tongue adapted to engage any one of said recesses, and means for preventing disengagement of said tongue from any recess, including a member adapted to overlie said tongue, a stationary casing having upper and lower series of seats, a reciprocatory frame having operative connection with said member and pivotal link connection with said casing and working therein, upper and lower series of pivoted dogs carried by said frame and en-

gaging said seats, key-operated means for releasing the upper series of dogs from their seats, and key-operated means for releasing the lower series of dogs from their seat.

3. In a combination lock, a steering post having an annular series of recesses, a steering column having a clutch tongue adapted to engage any one of said recesses, and means for preventing disengagement of said tongue from any recess, including a member adapted to overlie said tongue, a stationary casing having seats, a reciprocatory frame having operative connection with said member and pivotal link connection with said casing and working therein, pivoted dogs carried by said frame and engaging said seats, key-operated means for releasing certain of said dogs from their seats, key-operated means for releasing the remainder of said dogs from their seats, a reciprocatory frame having pivotal link connection with said casing and engaging the first named frame to prevent movement thereof, and key-operated means for releasing the last named frame.

4. In a combination lock, a steering post having an annular series of recesses, a steering column having a clutch tongue adapted to engage any one of said recesses, and means for preventing disengagement of said tongue from any recess, including a member adapted to overlie said tongue, a stationary casing having seats, a reciprocatory frame having operative connection with said member and pivotal link connection with said casing and working therein, pivoted dogs carried by said frame and engaging said seats, key-operated means for releasing certain of said dogs from their seats, key-operated means for releasing the remainder of said dogs from their seats, a spring catch for holding each dog in released position, and key-operated means for releasing each spring catch, said dogs having each a spring for reengaging it with its seat.

In testimony whereof we affix our signatures, in presence of two witnesses.

WILLIAM R. TOWNLEY.
PATRICK H. LEAHY.

Witnesses:

MARION M. KING,
FRED D. CRIBB.