G. C. JENSEN.

SHIFT DEVICE LOCK MECHANISM.

APPLICATION FILED DEC. 12, 1917.

1,276,926. Patented Aug. 27, 1918.

Fig. 3.

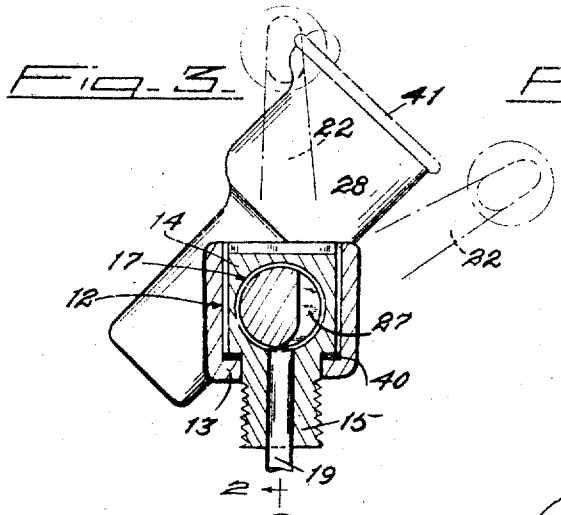


Fig. 4.

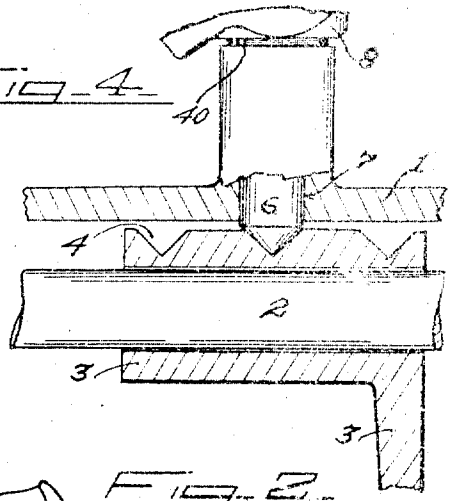
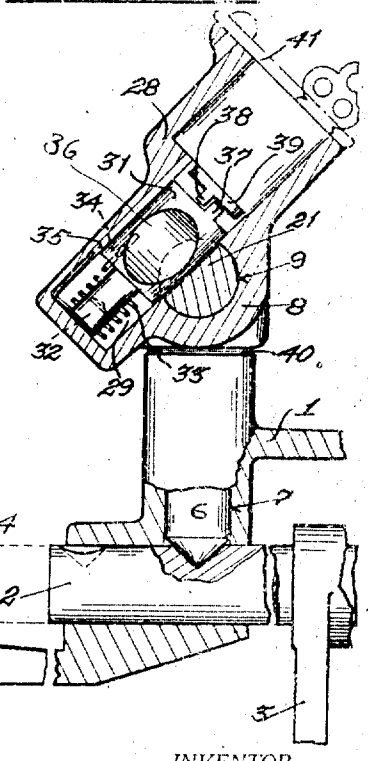


Fig. 2.



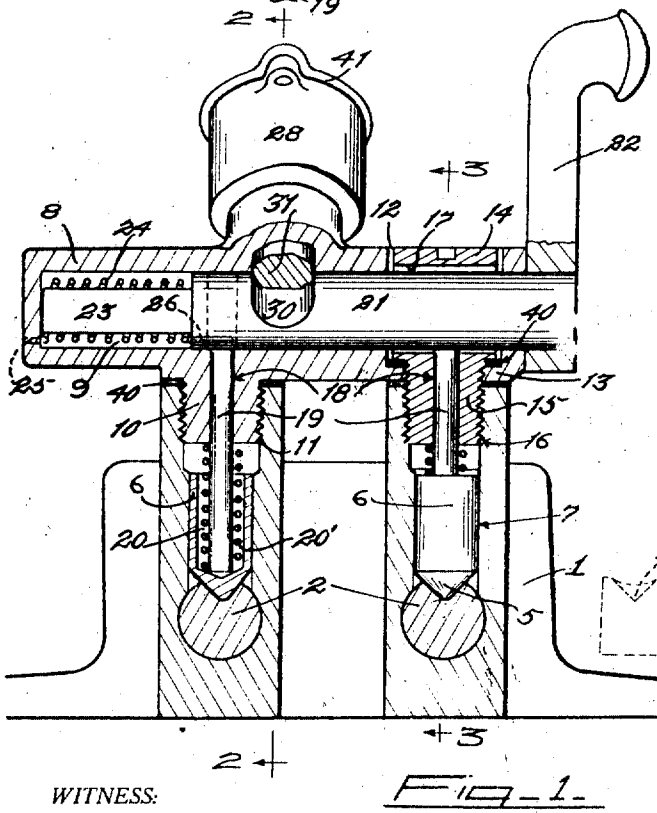


Fig. 1.

WITNESS:

Wm. F. Drew.

INVENTOR.

George C. Jensen.

BY

Acker & Tolin

ATTORNEYS.

UNITED STATES PATENT OFFICE.

GEORGE C. JENSEN, OF OAKLAND, CALIFORNIA.

SHIFT-DEVICE LOCK MECHANISM.

1,276,926. Specification of Letters Patent. Patented Aug. 27, 1918.

Application filed December 12, 1917. Serial No. 206,828.

To all whom it may concern:

Be it known that I, GEORGE C. JENSEN, a citizen of the United States, residing at Oakland in the county of Alameda and State of California, have invented certain new and useful Improvements in Shift-Device Lock Mechanism, of which the following is a specification.

In motor vehicles as at present constructed several types employ a variable speed power transmitting mechanism wherein the speed gears or members are moved to their variable speed positions by suitable shifting blocks either slidably mounted on or movable with a gear shifter rod. These rods are generally two in number, sometimes three, and in their adjusted position are retained by suitable yielding plungers carried by the gear case or the gear case cover.

The present invention relates to a suitable locking mechanism for locking the shifter rods, when the same are movable, or the shifter blocks when the same are movable on the rods, in locked position through said plungers to prevent the operation of the power transmitting gears from a certain set position thus precluding the operation by the vehicle under its own power by unauthorized persons.

The invention has for its principal objects to provide a construction wherein pins or other means cooperate with the plungers or directly with the rods or blocks and are capable of positioning by the operation of a suitable lock controlled mechanism to engage said shift blocks or rods to prevent the movement thereof for the actuation of the speed gears, and which pins and plungers on the release of said lock control mechanism are released to permit of the operative movement of the blocks or rods, and at the same time to hold or retain them in their desired adjusted position.

With the above mentioned and other objects in view, the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings, and set forth in the claims hereto appended, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

To more fully comprehend the invention reference is directed to the accompanying drawings, wherein:

Figure 1 is a vertical sectional view of the preferred embodiment of my invention.

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1 viewed in the direction of the arrows.

Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 1, viewed in the direction of the arrows.

Fig. 4 is a view of the locking constructions as applied to the shifter blocks when said shifter blocks are slidable on the shifter rods.

Referring more particularly to the several view of the drawings, wherein like characters of reference designate corresponding parts, 1, indicates a suitable gear case cover or gear case, inclosing any well known type of variable speed power transmitting mechanism or gears, not illustrated. Disposed within the gear case or cover are the parallel horizontally extending shifter rods 2; in Figs. 1, 2 and 3 the rods 2 are illustrated as being longitudinally movable, while in Fig. 4 the rods 2 are fixed at their opposite ends to prevent longitudinal movement thereof. The longitudinally movable rods carry the fixed gear shifter blocks 3 extending downwardly into the gear case and having operative engagement with the respective movable gears of the transmission, while the fixed rods, when the same are employed carry the longitudinally movable gear shift blocks 3 of a similar construction to that illustrated in Fig. 2. To include both constructions illustrated in Figs. 1, 2 and 3 and 4, the shifter rods and blocks are hereinafter referred to as devices, and said devices are provided in one surface with V-shaped notches or recesses 4, for the reception of the tapered points 5 of suitable gear shift locking plungers 6, longitudinally movable in bores or guides 7, which communicate at their lower ends with said shifting devices. the bores 7 are disposed parallel to each other and open at their upper ends at a point exteriorly of the gear case or gear case cover in which the same are formed.

A suitable elongated casing 8 having a longitudinal bore 9 and a tubular threaded stud 10 projecting from one side thereof is adapted for threaded connection as at 11 through said stud with the upper end of one of said bores 7, said stud closing the

upper end of the bore as in Fig. 1 of the drawings. The opposite end of said casing 8 is provided with a bore 12 extending transversely therethrough in a plane parallel with said stud 10, said bore having a contracted opening 13 and within which is adapted for insertion a retaining screw or bolt 14 terminating at its lower end in a threaded stud 15 which has threaded engagement as at 16 with the upper threaded end of the adjacent bore 7. It will be apparent by providing the casing 8 with an integral stud as at 10 and with a removable locking screw or bolt 14 that said casing is capable of being readily attached by threaded connection with the respective stationary bores 7. The screw or bolt 14 is provided in its upper end with a transversely disposed bore or channel 17 to register with the bore 9 in the casing 8 when said screw or bolt is in operative position, as in Figs. 1 and 2 of the drawings. The studs 10 and 15 are each provided with a vertical bore or guide 18 within each of which is positioned a plunger locking pin 19, the lower end of each of which projects into a suitable recess 20 within the upper ends of the respective plungers, and said pins are of a length that when the upper ends thereof are flush with the lower edge of the respective bores 8 and 17 to contact at their lower end with the lower end of the recesses when said plungers are seated in the notches 4. A coiled spring 20′ is positioned within each of said recesses 20 surrounding the respective pins 19 and are held under compression by the ends of the respective studs 10 and 15 to maintain the lower ends of the plungers in frictional contact with the devices.

Mounted for axial rotation within the casing 8 and extending into the respective alined bores 17 and 9, is a suitable locking shaft 21, one end of which projects exteriorly of the casing 8 and carries an angularly disposed operating handle or portion 22. The locking shaft is formed at its inner end with a contracted portion 23 which is surrounded by a coil sprjng 24 attached at one end as at 25 to the casing 8, and at its opposite end as at 26 to the shaft, the tension of said spring rotating the shaft from locked to unlocked position, Figs. 1 and 3 of the drawings. In register with the upper ends of the pins 19 the shaft is provided with the cam portions 27, one in operative relation with each pin 19, and when said shaft is rotated approximately a one-quarter revolution the deep cut portion of said cam faces will lie in coöperative relation with the upper ends of the respective pins 19 permitting a longitudinal movement of the pins by the plungers when it is desired to move the shifter devices. On the manual rotation of the shaft 21 against the action of the spring 24 to a position as in Figs. 1 and 3, the exterior surface of the shaft is moved into contact with the upper ends of the respective pins forcing the same downwardly into the recesses in their respective plungers and preventing upward movement of the plungers from the notches 4, thus locking the shift devices in their set position.

The casing 8 is preferably provided with a portion 28 providing a lock casing and said lock casing is formed with a bore or channel 29 intersecting the bore 9, as in Figs. 1 and 2 and opening at the outer end of the casing 28. At the point of intersection of the bore or channel 29 with the bore 9 the shaft 21 is provided with a transverse semi-circular groove 30, within which is adapted for reception the peripheral edge of a shaft locking bolt 31, axially rotatable within the bore or channel 29. Said locking bolt being provided at its lower end with a contracted portion 32 about which is coiled a spring 33 secured at one end as at 34 to the bolt and at its opposite end being received in a groove 35 in the side wall of the bore or channel, 29. The peripheral surface of the bolt 31 is provided at a point in line with the shaft 21 with a semi-circular recess or cut out portion 36 of a depth corresponding to that of the cut out portion 30 in the shaft, and when said cut out portion 36 and portion 30 are in register, axial rotation of the shaft 21 is permitted, but when the peripheral surface of said bolt 31 is received in said recess 30 of the shaft 21 axial movement of said shaft is precluded and the same is retained in its locked position and is prevented from longitudinal movement within the bore 9 as in Figs. 1 and 2 of the drawings. The upper end of the bolt 31 is provided with a suitable finger or lug 37 which is adapted to have operative engagement with a corresponding finger or lug 38 carried on the lower end of a suitable key-controlled locking barrel 39 positioned within and closing the upper end of the bore 29. The manual operation of the locking barrel 39 through the controlling key therefor, axially rotates the bolt 31 to position the cut out portion 36 thereof in register with the cut out portion 30, in the locking shaft 21, at which time the spring 24 will axially rotate said shaft to position the cam portions 27 thereof immediately over the pins 19 permitting the upward movement of the plungers 6 when the shifter devices are manually operated. In this position the plungers 6 are yieldably seated against the action of springs 20′ and are capable of longitudinal movement within their respective bores 7 on the movement of the shifter devices to position different stops 4 thereof in coöperative relation with the lower pointed ends of said plungers on the shifting of the gear elements, said plungers preventing accidental movement of the shifter devices when said plungers are seated

in the respective stops 4. When the construction is in unlocked or released position as before described the cut out 36 is in alinement with the cut out 30 permitting an axial movement of the shaft 21, by pressure applied to the lever 22 and on such axial rotation of the shaft against the tension of the spring 24 and to a position where the cut outs 30 and 36 are in register, the spring 33 will cause an axial rotation of the bolt 31 to position the periphery thereof within the cut out 30, at which time the bolt 20 lies in a position as in Figs. 1, 2 and 3 of the drawings, with the pins 19 in contact with the periphery of the shaft and with the lower ends of the recesses 20 in the plungers 6 thereby locking the plungers from upward lineal movement in their respective bores and locking the shifting devices in set position.

If desirable suitable washers or gaskets 40 may be employed to maintain a tight fit between the upper ends of the walls of the bores and the casings 8 and between the lower end of the screw or bolt 14 and the contracted portion 13 of the bore 12. An escutcheon plate 41 may also be provided over the key opening of the lock barrel to exclude dust and dirt therefrom.

It is apparent that I have provided a construction capable of being positioned for cooperation with the commonly used lock plungers for retaining the shift devices in set position and one which is capable of operation to lock said plungers so that the same are prevented from movement and thus lock the shift devices in their set position.

I claim:

1. In combination with a fixed member, a plurality of shifter devices movable relatively thereto and in parallel planes and each provided with a stop, a plurality of yieldably mounted retaining plungers carried by said fixed member and one coöperating with the stop of each shifter device for retaining the respective shifter devices in their set positions, said plungers capable of disengagement from their respective stops on the movement of the respective shifter devices, and a lock controlled mechanism carried by said fixed member and capable of operation to simultaneously lock said plungers in cooperative relation with their respective stops to lock said shifter devices in their set position.

2. In combination with a fixed member a shifter device movable relatively thereto and provided with a stop, a yieldably mounted retaining plunger carried by said fixed member and coöperating with said stop, means for yieldably maintaining said plunger in contact with said stop for retaining said shifter device in set position, said plunger capable of disengagement from said stop on the movement of said shifter device, a lock pin coöperating with said plunger, and a lock controlled mechanism for actuating said pin to lock said plunger in locked engagement with its stop.

3. In combination with a fixed member provided with a plurality of parallel bores internally threaded at their upper ends, a plurality of shifter devices movable relatively thereto and each provided with a stop, a movably mounted retaining plunger positioned in each of said bores and one cooperating with each of said stops, means for yieldably maintaining said plungers in contact with said stops for retaining said shifter devices in set position, a tubular casing provided with a laterally extended tubular stud for threaded connection with one of said bores, a tubular bolt passing through said casing for detachable connection with another of said bores, and a lock controlled mechanism carried by said casing and capable of operation to lock said plungers in locked engagement with said stops and to lock said casing to said fixed member.

4. In combination with a fixed member a shifter device movable relatively thereto and provided with a stop, a yieldably mounted retaining plunger carried by said fixed member and coöperating with said stop means for yieldably maintaining said plunger in contact with said stop for retaining said shifter device in set position, a lock pin coöperating with said plunger, an axially rotatable locking shaft coöperating with said pin and capable of operation to force the pin into engagement with the plunger to lock the plunger in engagement with its stop, and lock controlled mechanism coöperating with said shaft for controlling the rotation thereof.

5. In combination with a fixed member provided with a plurality of parallel bores, a plurality of shifter devices movable relatively thereto and each provided with a stop, a yieldably mounted retaining plunger mounted in each of said bores and one cooperating with each of said stops, means for yieldably maintaining each of said plungers in contact with said stops for retaining said shifter devices in set position, a tubular casing provided with a laterally extended tubular stud for connection with one of said bores, a tubular bolt passing angularly through said casing and for detachable connection with another of said bores, a rotatable shaft within said casing, said shaft retaining said casing and bolt to said fixed member, and a pin coöperating with each of said plungers and with said shaft for maintaining the plungers stationary in engagement with their respective stops on the rotation of said shaft in one direction.

6. In combination with a fixed member provided with a plurality of parallel bores, a plurality of shifter devices movable relatively thereto and each provided with a

stop, a yieldably mounted retaining plunger mounted in each of said bores and one cooperating with each of said stops, means for yieldably maintaining each of said plungers in contact with said stops for retaining said shifter devices in set position, a tubular casing provided with a laterally extending tubular stud for connection with one of said bores, a tubular bolt passing angularly through said casing and for detachable connection with another of said bores, a rotatable shaft within said casing said shaft retaining said casing and bolt to said fixed member, a pin coöperating with each of said plungers for maintaining the same stationary in engagement with their respective stops on the rotation of said shaft, and a lock controlled mechanism carried by said casing and coöperating with said shaft for locking the same from axial rotation and from removal from said casing.

7. In combination with a movable shifter device provided with a stop, a yieldably mounted plunger normally coöperating with said stop for retaining said shifter device in its set position, said plunger capable of disengagement from said stop on the movement of said shifter device, and a lock controlled mechanism capable of operation to lock said plunger in coöperative engagement with said stop to prevent movement of said shifter device from its set position.

8. In combination with a movable shifter device provided with a stop, movable means normally engaging said stop for retaining said shifter device in its set position, said movable means capable of disengagement from said stop during the movement of said shifter device, a locking bolt capable of operation to lock said movable means in cooperative engagement with said stop to prevent movement of said shifter device from its set position, and a lock for controlling the operation of said bolt.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE C. JENSEN.

Witnesses:
E. A. MERRELL,
E. R. ANDREAS.