

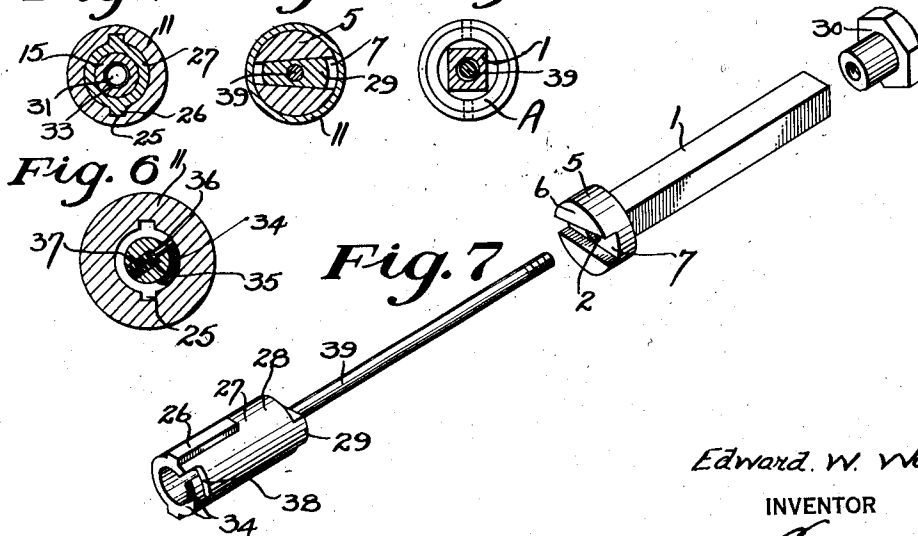
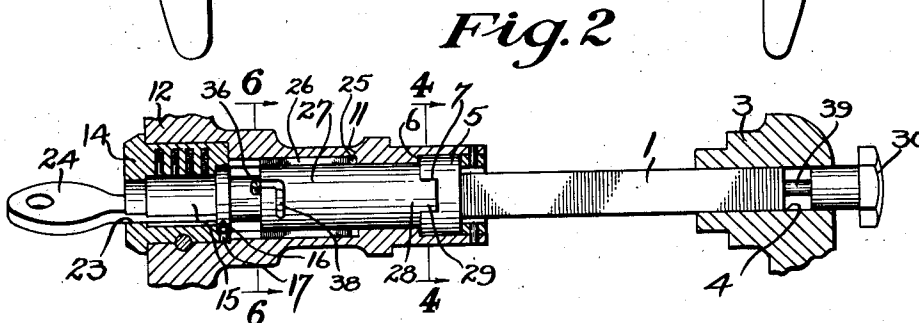
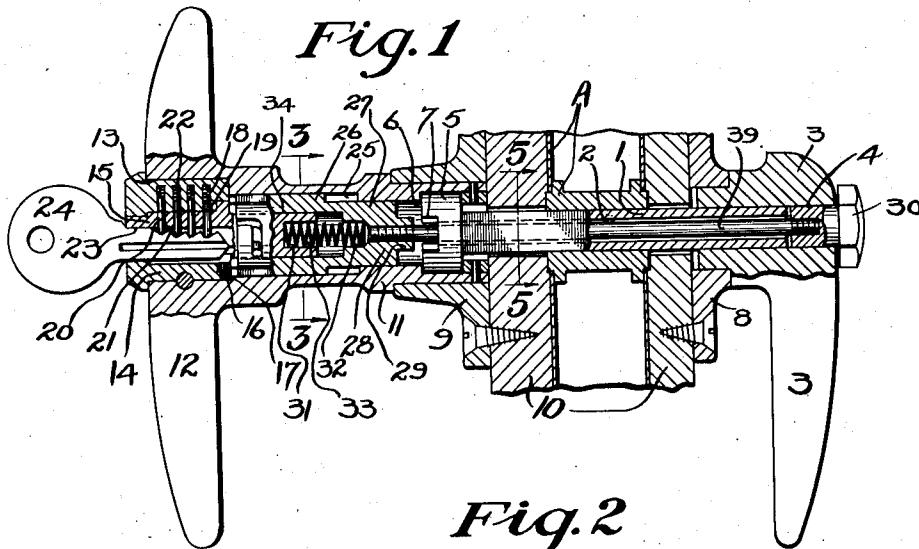
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SPINDLE ASSEMBLY

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SPINDLE ASSEMBLY.

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This invention relates to improvements in spindle assemblies for operating door latches and is primarily intended for use in connection with automobile doors.

It is an object of the invention to provide a spindle assembly having simply operated means on one spindle end for disconnecting the opposite spindle end so that the latter will turn independently of the spindle portion which coacts with the latch actuating mechanism, and to provide means operable from the said opposite spindle end for reconnecting that end with the spindle portion that coacts with the latch operating mechanism.

A further object of the invention is to provide a spindle assembly having a rod projecting through one end, which, when moved longitudinally disconnects the opposite spindle end from the spindle portion which coacts with the latch operating mechanism, and to provide a keyslot in the said opposite spindle end into which a key must be inserted before that end can be reconnected with the spindle portion that cooperates with the latch operating mechanism.

Having thus broadly outlined the major purposes of the invention I will now proceed to describe an embodiment thereof with the aid of the accompanying drawing, in which:

Figure 1 illustrates a sectional view of the invention in position in a door with the outer spindle end disconnected.

Figure 2 shows a view with the whole spindle connected so that the spindle portion which coacts with the latch operating mechanism may be turned from either end of the spindle.

Figures 3 and 5 are sections on the lines 3-3 and 5-5 of Figure 1.

Figures 4 and 6 are sections on the lines 4-4 and 6-6 respectively of Figure 2, and Figure 7 is a disassembled view.

Referring to the drawings, 1 designates a multi-sided spindle having a longitudinal passage 2 therethrough and a handle 3 mounted on one end. A designates a portion of the latch actuating mechanism with which the spindle 1 cooperates. The opening 4 in the handle into which the end of the spindle is received extends completely through the handle. On the opposite end of the spindle is a disc 5 across the face 6 of which is a slot 7 which is preferably wider at one end than the other. 8 and 9 designate bearings mounted on opposite sides of a door 10; in the bearing 8 the handle 3 is rotatably mounted, and

the bearing 9 supports the hub 11 of a second handle 12.

In the bore 13 of the handle 12 a cylinder 14 is so arranged that it and the said handle 14 turn together. 15 denotes a plug having limited rotary movement in said cylinder but held against axial movement therein by a locating pin 16 which projects outwards from the plug and takes into a segmental slot 17 in the cylinder. In the side of the cylinder 14 are radial cavities 18 having tumbler extensions 19 therein which are held against tumbler pins 20 in passages 21 in the plug by springs 22. 23 designates a keyslot in the plug across which the tumbler pins 20 normally extend until they and the tumbler extensions 19 are moved back against their springs 22 by the insertion of a key 24 whereupon the plug is free to be rotated.

In the hub 11 of the handle 12 keyways 25 are provided for keylike projections 26 on the sides of a plunger 27 which is movable longitudinally within said hub. The plunger has a closed end 28 with a transverse projection 29, preferably wider at one end than the other, thereon adapted to engage the slot 7 in the face of the disc 5. The inner end of a rod 39, which extends through the spindle 1 and handle 3, is secured to the closed plunger end 28, and the outer end of the said rod is provided with a grip 30.

The inner end of the plug 15 projects inwardly beyond the cylinder 14 and is rotatable within the open end 34 of the plunger, which in turn is axially movable on the plug. The inner end of the plug 15 is counterbored axially at 31 to receive one end of a helical spring 33, the opposite end of which rests in a similar counterbore 32 in the closed end 28 of the plunger, so that the spring tends to force the projection 29 towards the disc 5.

Radially mounted in an aperture 35 in the plug 15 is a pin 36 which is normally held in such position that it projects outwardly from the side of the plug by a spring 37. 38 indicates a bayonet slot in the open end of the plunger with which said pin cooperates. It will also be noted that a portion of the open end 34 of the plunger is chamfered, as indicated in Figure 6, so that when the plunger is moved towards the cylinder 14 by movement of the rod 39 the pin 36 will recede into its aperture 35 until it is opposite the circular portion of the bayonet slot when the spring 37 will again force it outwards.

Obviously the rotary movement of the

plug 15 in the cylinder 14 is limited by the length of the segmental slot 17 in which the locating pin 16 moves. The movement of the plug must be such that when moved to its limit of travel in one direction the pin 36 is opposite the longitudinal portion of the bayonet slot 38 so that the spring 33 will move the plunger 26 against the disc 7. The limit of movement in the opposite direction must be such that the circular portion of the bayonet slot 38 will receive the pin 36 when the rod 39 is pushed inwards so that the open end of the plunger passes over the said pin.

Obviously the handle 12 and its hub 11, the cylinder 14, and the plunger 27 always turn together, and the position of the plug in the cylinder is always that shown in Figure 1 when the key 24 is removed. The pin 36 is therefore always similarly positioned relative to the slot 38 when the rod 39 has been moved inwards. The purpose of making the slot 7 and its projection 29 wider at one end than the other is so that the handle 11 must always be in the same position before it can become operative, when the slot and projection are of uniform width throughout their length the handle can then become operative when only turned through 180 degrees. This is permissible when the handle is of such design as to be reversible.

While in the foregoing the preferred form of construction has been described and shown it is understood that the invention is susceptible to such modifications as fall within the scope of the appended claims.

What I claim as my invention and desire to secure by Letters Patent is:

1. In an arrangement of the character described, the combination of a spindle having a longitudinal passage therethrough, means for supporting said spindle, a plunger adapted to move axially, coupling portions on the adjacent ends of said spindle and plunger adapted to coact with one another, a rotatable plug extending into the end of said plunger remote from said spindle, means for supporting said plug, means for supporting said spindle, a rod secured to said plunger and extending through said passage for moving said plunger coupling portion out of engagement from said spindle coupling portion, said plug having a radial opening therein, a pin in said opening, a spring in said opening tending to hold said pin so that a portion thereof extends outwardly from said opening, said plunger having a bayonet slot therein the radial portion of which is engaged by said pin when said plunger is moved axially towards said plug, and said plunger being adapted to become disengaged

from said pin when said plug is so turned that said pin is in line with the longitudinal portion of said slot, means tending to move said plunger into coupling engaging position, and said plug being adapted to be rotated from its end remote from said plunger.

2. In an arrangement of the character described, the combination of a spindle adapted to coact with a latch operating mechanism, said spindle having a longitudinal passage therethrough, a handle having an opening therethrough to receive one end of said spindle, means for rotatably supporting said handle and spindle, a second handle, a hub integral with said second handle and extending inwardly therefrom, said hub being rotatably mounted, a plunger movable axially in said hub, coupling portions on the adjacent ends of said spindle and plunger adapted to cooperate with one another, means in said second handle adapted to hold said plunger in such position that its coupling portion remains disengaged from said spindle coupling portion, a rod secured to said plunger extending through said passage and opening for moving said plunger axially away from said spindle, means operable from the outer end of the second handle for releasing the plunger from the holding means in said second handle, and means adapted to move said plunger axially towards said spindle.

3. In an arrangement of the character described, the combination of a spindle adapted to coact with a latch operating mechanism, said spindle having a longitudinal passage therethrough, a handle having an opening therethrough to receive one end of said spindle, means for rotatably supporting said spindle and handle, a second handle, a hub integral with the latter and extending inwardly therefrom, said hub being rotatably mounted, a plunger movable axially in said hub, coupling portions on the adjacent ends of said spindle and plunger adapted to cooperate with one another, a plug in said handle adapted to be rotated, said plug extending into said plunger, a spring between said plug and one end of said plunger tending to force the latter towards said spindle, said plug having a keyslot in its outer end, means cooperating with said plug and said second handle for holding the former against rotary movement until a key is inserted in said keyslot, and means in said plug for holding said plunger so that its coupling portion remains in disengaged position until said plug is turned.

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