Nov. 15, 1955 C. A. HILLGREN 2,723,874

PRIVACY LOCK

Filed May 8, 1951 2 Sheets-Sheet 1

Fig. 1.

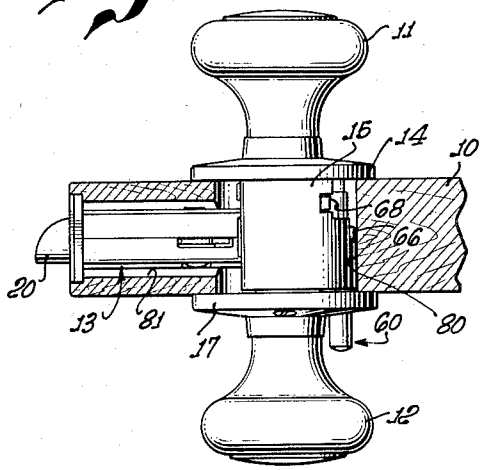


Fig. 2.

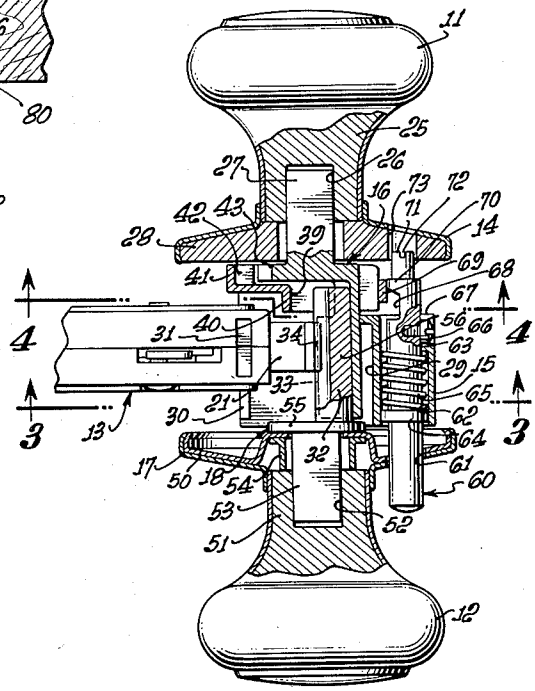


Fig. 3.

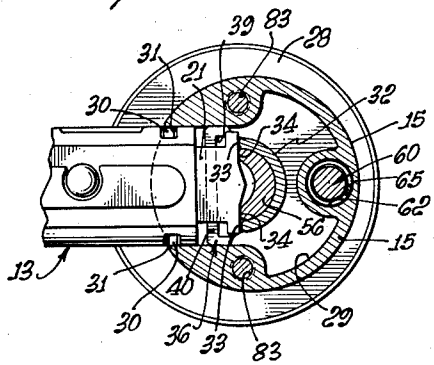


Fig. 4.

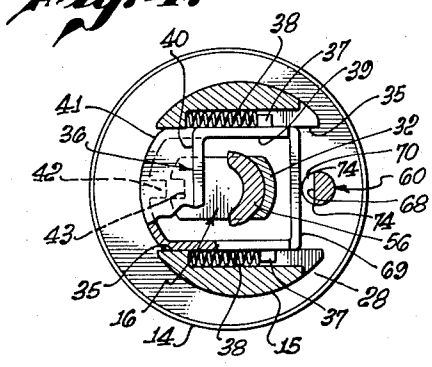
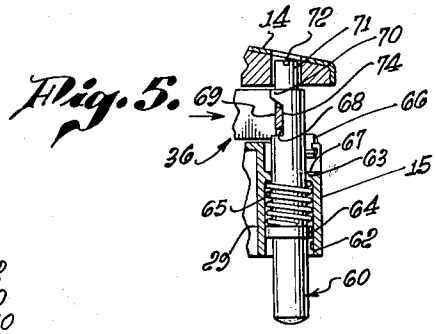


Fig. 5.



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Filed May 8, 1951 2 Sheets-Sheet 2

Fig. 8.

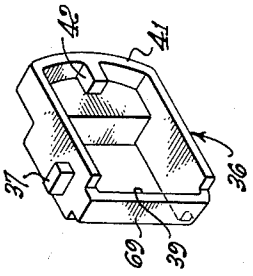


Fig. 7.

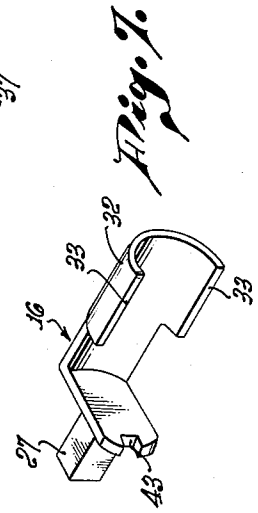
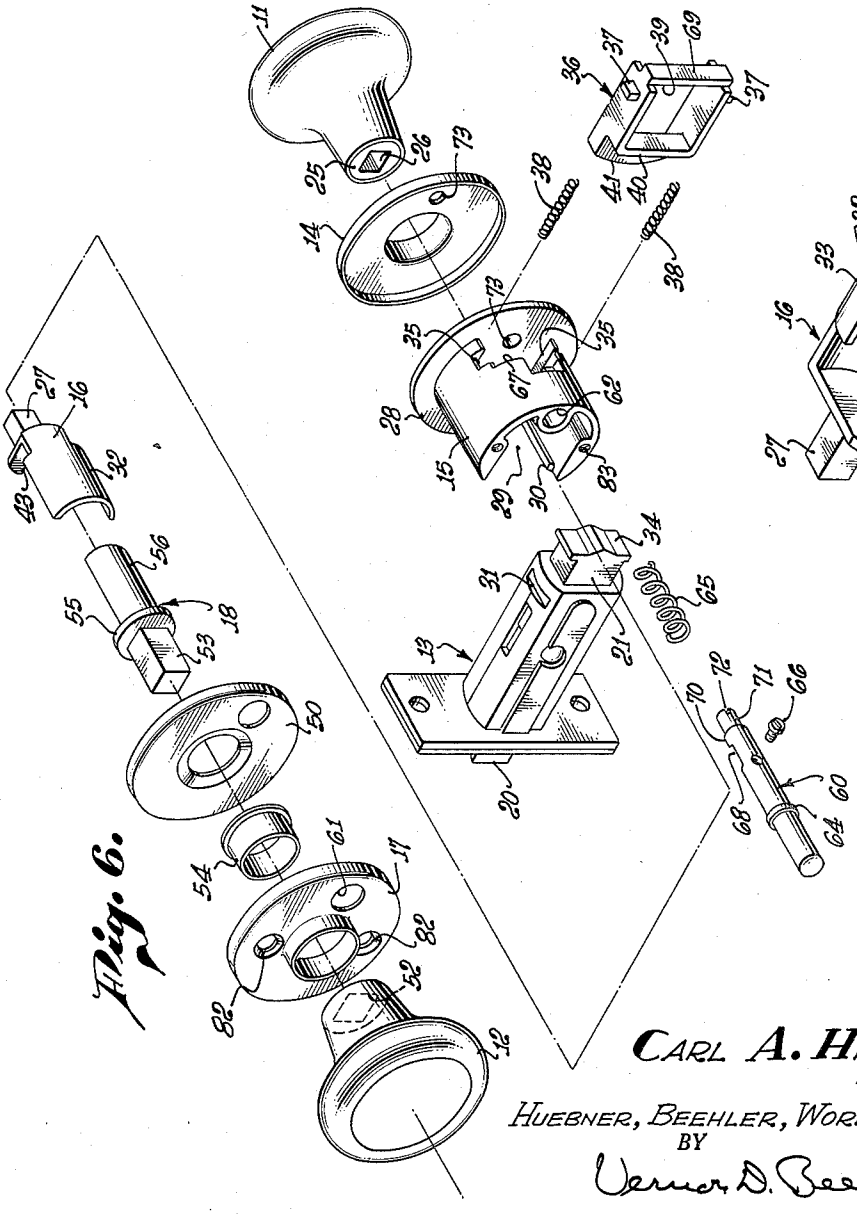


Fig. 6.



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2,723,874

PRIVACY LOCK

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Application May 8, 1951, Serial No. 225,217

2 Claims. (Cl. 292—336.3)

The invention relates to door hardware and has particular reference to a lock set, frequently called a privacy lock, wherein there is provided a latch which can be operated so as to be locked against opening by rotation of the knob on one side of the door but which is free to be opened by rotation of the knob on the other side of the door.

The application herein described is a continuation in part of my application, Serial No. 92,107, filed May 9, 1949, now Patent No. 2,662,388, issued December 15, 1953.

Among the objects of the present invention is to provide a new and improved privacy lock set which is particularly simple in its construction, thereby to simplify and minimize the expense both of construction and assembly.

Another object of the invention is to provide a new and improved privacy lock set wherein the assembly prior to installation in the door is such that substantially only three assembly parts comprise the entire lock set, thereby to simplify installation of the lock set in the door.

Still another object of the invention is to provide a lock set of new and improved construction which is positive in its operation and direct acting and which at the same time is adapted to be utilized with a slide-on latch assembly so that the lock set can be readily employed for successful operation with doors of different thicknesses.

Another object still is to provide a new and improved lock set and particularly a privacy lock set in which the number of parts has been greatly reduced over the number of parts heretofore used in comparable structures in the prior art.

Also included among the objects of the invention is to provide a new and improved lock set whereby the latching or locking pin is readily manipulated by the fingers on the side of the door opposite from the side which is to be locked but wherein the pin is given access to form the locked side of the door by means of some special instrument such as a screw driver so that in the event the person behind the locked door is unable for any reason to himself manipulate the door latch, someone on the locked side by employment of the special instrument can unlatch the door and thereby gain access to the opposite side without it being necessary to dismember the lock set. The special means is, however, made inconspicuous so that under ordinary circumstances when the privacy lock set is engaged, a person on the outside or locked side will not inadvertently unlatch the locked door.

Also included among the objects of the invention is to provide a new and improved privacy lock set wherein the parts are so designed and constructed that they readily interlock without it being necessary to apply auxiliary means to hold the parts once in assembled position.

With these and other objects in view, the invention consists in the construction, arrangement and combination of the various parts of the device whereby the objects contemplated are attained, as hereinafter set forth, pointed

out in the appended claims and illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a plan view of the privacy lock set shown installed in a door with the door shown in section.

Figure 2 is a longitudinal sectional view of the lock set illustrated in Figure 1.

Figure 3 is a cross sectional view of the lock set taken on the line 3—3 of Figure 2.

Figure 4 is a cross sectional view of the lock set taken on the line 4—4 of Figure 2.

Figure 5 is a fragmentary sectional view of the lock set showing the privacy latch pin in a latched or locked position.

Figure 6 is an exploded view in perspective showing all of the parts of the lock set disassembled.

Figure 7 is a perspective view of a latch actuator forming part of a divided spindle, which latch actuator is designed to be attached to the outside knob.

Figure 8 is a perspective view of the yoke which locks the latch against opening when the latch pin is set.

The lock set in Figure 1 is shown installed in a door 10 which might, for example, be an inside door of a house such, for example, as a bathroom door wherein a knob 11 would be considered as an outside knob and a knob 12 would be considered as an inside knob.

In the main the lock set may be considered as constituting three assemblies, namely, an outside knob assembly, an inside knob assembly, and a latch assembly, the latch assembly being indicated generally by the reference character 13.

The outside knob assembly may be considered as including among other parts the outside knob 11, an outside escutcheon plate 14, a spindle housing 15 and a latch actuator or latch actuating spindle element 16, the last element being shown in Figure 2.

The inside knob assembly may be considered as including in part the inside knob 12, an inside escutcheon plate 17, and an inside latch actuator or spindle element 18, the last identified element being shown in Figure 2.

The latch assembly 13, details of which have been omitted in this patent application, is the same as the latch assembly shown and described in my Patent No. 2,662,388, issued December 15, 1953, of which this is a continuation in part.

It is sufficient to note here that the latch assembly is a rocker type assembly wherein a latch bolt 20 is retracted by a shift outwardly of a bolt slide 21.

More specifically, the outside knob assembly is so constructed that the knob 11 here shown as including a core 25 has a square hole 26 in the core which receives a square end 27 of the latch actuator 16 which is affixed to the knob so that the latch actuator is non-rotatable with respect to the knob and also so that they form when assembled in effect a single integral part. The outside knob assembly also includes a reinforcing disk 28 to provide a stiffening element for the escutcheon plate 14. Also it should be noted that the stiffening plate 28 is an integral part of the spindle housing 15, this relationship being more readily apparent in Figure 6.

The spindle housing as more readily appears in Figure 6 is provided with a recess 29 having side walls on which are located longitudinally extending ridges 30, one of which is shown in Figure 6. The ridges are adapted to receive complementary recesses 31 in the exterior of the latch housing 13 so that the latch housing may be slid into engagement with the spindle housing with the latch bolt operating slide 21 in proper position to be manipulated when the knobs are turned.

The outside latch actuator 16 shown in greater detail in Figure 7 possesses a semi-cylindrical portion 32 which has a pair of edges 33, these edges being designed so as

to contact a cam face 34 on the latch bolt slide 21 when the knob 11 is rotated.

The spindle housing is further provided with a transverse slide-way 35 which opens out on the solid side of the spindle housing 15 as illustrated in Figure 6 and which also opens out on the open side of the spindle housing as illustrated in Figure 4. The transverse slide-way is designed to slidably receive the yoke 36 shown in Figure 6 and also shown in perspective as viewed from the opposite by Figure 8. The yoke is inserted from the opened end of the transverse slide-way visible in Figure 6. Lugs 37 are provided on the sides of the yoke for engagement with coil springs 38.

The assembled position of the yoke and the coiled springs is best seen in Figure 4. It should be noted that the springs as illustrated in Figure 4 move the yoke from left to right. The yoke, moreover, is provided with a central aperture 39 and an overhanging ridge 40, the function of which will be subsequently described in connection with a description of the inside knob assembly.

As illustrated in Figure 8 there is provided a dome-like ridge or arcuate portion 41 having a depending lug or detent element 42. The detent element is designed to engage with a complementary recess 43 in the outside latch actuating element 16, which recess is clearly illustrated in Figure 7.

The dotted line positions of the recess 43 and detent element 42 shown in Figure 4 illustrate the position of the respective parts when in disengagement. In that position the outside knob 11 can be rotated so as to rotate the latch actuator 16, thereby to unlatch the door.

The inside knob assembly previously referred to as including the inside knob 12, escutcheon plate 17 and inside latch actuator 18 also includes a stiffening washer 50 to reinforce the escutcheon plate 17. The inside knob 12 may also include a core 51 in which is a square aperture 52 adapted to have nonrotatably fixed therein a square end 53 of the latch actuator 18. Also included is a spacing ring 54 which bears against a flat portion of the stiffening washer 50 to hold it rotatably against a shoulder 55 on the latch actuator. It should be noted that the escutcheon plate and its stiffening washer are adapted to have the knob and latch actuator rotated with respect to those parts.

The latch actuator 18 includes a substantially semi-cylindrical portion 56. This semi-cylindrical portion 56 is adapted to nest in or overlie the semi-cylindrical portion 32 of the outside latch actuator element, as is illustrated both in Figures 2 and 3. The semi-cylindrical element 56 is also adapted to engage the cam face 34 of the bolt slide 21, manipulation of which retracts the latch bolt 20.

It is also significant that the semi-cylindrical portion 56 is designed to extend far enough toward the outside knob assembly so that at least the end of the semi-cylindrical element 56 underlies the overhanging ridge 40. In the position of the parts shown in Figure 2, however, the parts correspond in position to the showing in Figure 4 which is unlatched position. In that position there is a space between the overhanging ridge 40 and the semi-cylindrical element 56 which corresponds to the movement of the yoke from left to right when it passes from a disengaged position to an engaged position.

In order to lock the door from the inside so that it cannot be opened by rotation of the outside knob 11, there is provided a latch pin 60 which protrudes inwardly from the escutcheon plate 17 adjacent the base of the inside knob 12. It will be noted that the escutcheon plate 17 has an aperture 61 therein for reception of the latch pin.

The spindle housing 15 is also provided with an aperture 12 adapted to receive the latch pin 60 and at the bottom of the aperture 62 is a shoulder 63. The latch pin is provided with a collar 64 which is adapted to press against a coil spring 65 which bottoms on the shoulder and normally tends to urge the latch pin 60 inwardly with respect to the door in the direction of the inside knob 12.

In order to hold the latch pin in the aperture 62 there is provided a screw 66 which is adapted to abut against a face 67 on the spindle housing to limit the distance which the latch pin can be thrown inwardly as a result of spring tension.

The latch pin has a transverse cut 68 at the end remote from the exposed end which is sufficiently wide to receive a bar 69 of the yoke 36. The pin is also provided with a cam 70 which as shown in Figure 2 is adapted to lift the yoke 36 by pressing against the bar 69. A sloping face adjacent the shoulder clearly visible in Figures 2 and 5 provides a surface upon which the bar can ride when it is lifted from the cut 68 to its position upon the cam 70 as illustrated in Figure 2.

Also as illustrated in Figures 2 and 5 the latch pin 60 is provided with a reduced end 71 in which is a screw driver slot 72. The reduced end is designed to be received in a hole 73 which extends through the reinforcing plate 28 and the outside escutcheon plate 14. It will be noted further, however, that the reduced end 71 sits well beneath the outside surface of the escutcheon plate. The purpose of this portion of the latch pin is to permit the yoke to be moved by rotation of the latch pin rather than endwise movement in the event it becomes necessary to unlatch the door from the outside.

When the parts are mounted in a door 10 as illustrated in Figures 1 and 2, the latch pin is ready for operation. Let it be assumed that the parts first and normally occupy the positions illustrated in Figure 2. As there shown, both knobs 12 and 11 may be rotated thereby to withdraw the bolt 20 from latched position. To do this the semi-cylindrical parts 32 or 56 may be rotated in order to press against the latch bolt slide 21. This is possible because the latch pin 60 occupies the position shown in Figure 2 wherein the cam 70 is shown bearing against the bar 69 whereby the yoke 36 is shifted in position from right to left as viewed in both Figures 2 and 4 a distance sufficient so that the detent element 42 entirely clears the recess 43.

When it is desired to latch the latch bolt from the inside of the door, the latch pin 60 is depressed or shifted from the inside knob toward the outside knob against the pressure of the coiled spring 65. When the latch pin is shifted a distance sufficient to remove the cam 70 from its position against the bar 69, the bar will fall into the cut 68 as illustrated in Figure 5. This permits the yoke to move laterally from left to right, as viewed in Figures 2 and 4, a distance sufficient so that the detent element 42 falls into the recess 43. When in that position it will not be possible to rotate the outside knob 11.

When, however, it is desired to unlatch the door from the inside by rotation of the inside knob 12, the knob is rotated and the semi-cylindrical element 56, the relationship of which is best illustrated at this stage of adjustment in Figure 3, is rotated, thereby pressing against the slide 21 to unlatch the latch bolt. At the same time the semi-cylindrical portion 56 presses against the overhanging ridge 40 of the yoke and lifts the yoke or rather shifts the yoke from right to left a distance sufficient to remove the detent element 42 from the recess 43. At the same time the bar 69 will be lifted out of the cut 68 and the spring 65 will then reciprocate the latch pin 60 endwise until the cam 70 is positioned beneath the bar 79. This operation will hold the detent element out of engagement with the recess 43 and thereafter the latch can be withdrawn by rotation of the outside knob 11 as well as the inside knob 12.

Let us assume again that the latch pin has been pushed inwardly toward the lock to again lock the bolt against retraction by the outside knob 11. If under these circumstances it should become necessary to open the door from the outside, a screw driver can be inserted into the screw driver slot 72 of the reduced end portion 71 of the latch pin and the latch pin rotated. Rotation of the latch pin in either direction will bring one shoulder 74

or another against the bar **69** and will push the yoke from right to left a distance sufficient to release the detent element from engagement in the recess **43**. The outside knob can then be rotated in order to withdraw the latch bolt **20**. Also as soon as the bar **69** has been lifted from the cut **68**, the spring **65** will be enabled to snap the latch pin inwardly toward the inside knob a distance comparable to that shown in Figure 2, although in the position just described the latch pin will be rotated so that the cut **68** will not be beneath the bar **69**. The latch pin may, however, be reset by rotation back to the initial position in which relationship it is ready to be operated again by manipulation of the latch pin from a point adjacent the inside knob **12**.

When the parts of the latch are initially assembled in the factory, they are assembled into three assemblies as previously described, namely, an outside knob assembly featuring the knob **11**, the spindle housing **15**, the yoke **36** and latch pin **60** as one complete assembly. The latch mechanism in the housing **13** forms a second assembly and the inside knob assembly forms a third, this comprising the knob **12**, escutcheon plate **17** and latch actuator **18** to name the principal parts. The latch actuator **18** on the inside knob assembly and the latch actuator **16** on the outside knob assembly may be considered as constituting a single divided spindle, both latch actuator parts of the spindle being received within the spindle housing **15**.

When the three assembled parts are to be inserted in a door a hole **80** is drilled through the door transversely and another hole **81** is drilled edgewise into the door to meet the hole **80**. The latch mechanism **13** is first inserted to a position illustrated in Figure 1 and then the inside knob assembly is inserted so that the ridges **30** of the spindle housing slide into the recesses **31** of the latch assembly housing. This anchors the latch assembly in place. It also makes it unnecessary to accurately center the holes **80** and **81** inasmuch as considerable freedom is permitted in the attachment together of these named parts.

The inside knob assembly may then be inserted into the hole **80** until the semi-cylindrical part **56** overlies the semi-cylindrical part **32** in position where both underlie the slide **21** and the overhanging ridge **40**. Should the door be somewhat wider, the semi-cylindrical part **56** will not enter quite as deeply as shown. A reasonable variation in door thickness may readily be accommodated without necessitating any change in the door hardware comprising the lock set.

The outside and inside knob assemblies may be held in assembled condition by insertion of conventional bolts, not shown, through apertures **82** in the escutcheon plate **17** entering threaded holes **83** in the spindle housing.

The privacy lock set thus described is one simple in its initial fabrication and assembly, simple from the point of view of installation in a door and also simple and complete in its operation in that it can be manipulated in a conventional way from the inside of the door and by special means from the outside of the door.

While I have herein shown and described my invention in what I have conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of my invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent devices.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a privacy lock set a substantially cylindrical spindle housing adapted to be set transversely in a door, an outside spindle at one side of said housing and rotatably mounted therein and having a latch actuating portion within the housing, an inside spindle on the other side of said housing and rotatably mounted therein and having a latch actuating portion within the housing concentric with said latch actuating portion of the outside spindle, said housing having a transverse slideway at the side adjacent the outside spindle including a laterally open yoke receiving end, a spring holding means in said slideway near the other end, a yoke reciprocatably mounted in said slideway and spring means between said holding means and the yoke normally urging said yoke toward said yoke receiving end, a pin reciprocatably mounted in said housing and spring means normally urging said pin toward the inside spindle end of the housing, said pin having a recess adjacent the yoke, a cross element on the yoke having one position on the circumference of the pin and receivable in said recess in another position of the pin, and locking means respectively on the outside knob spindle and the side of said yoke remote from said cross element having engaged and disengaged positions, said locking means being in one of said positions when the cross element rests on the circumference of the pin and being in the other of said positions when the cross element is in said recess.

2. In a privacy lock set a substantially cylindrical spindle housing adapted to be set transversely in a door, an outside spindle at one side of said housing and rotatably mounted therein and having a latch actuating portion within the housing, an inside spindle on the other side of said housing and rotatably mounted therein and having a latch actuating portion within the housing and concentric with said latch actuating portion of the outside spindle, said housing having a transverse slideway extending therethrough at the side adjacent the outside spindle including a laterally open yoke receiving end, spring shoulders in said slideway near the other end, a yoke reciprocatably mounted in said slideway and springs between said shoulders and the yoke normally urging said yoke toward said yoke receiving end, said housing having an interiorly located pin recess between ends thereof, a pin reciprocatably mounted in said recess and a spring in said recess normally urging said pin toward the inside spindle end of the housing, a removable stop on the pin extending into said yoke receiving end of the slideway and adapted to abut an edge of said yoke receiving end under action of said spring whereby to lock the pin and the yoke in their reciprocatable positions, said pin having a recess adjacent the yoke, a cross element on the yoke having one position on the circumference of the pin and receivable in said recess in another position of the pin, and locking means respectively on the outside knob spindle and the side of said yoke remote from said cross element having engaged and disengaged positions, said locking means being in disengaged position when the cross element rests on the circumference of the pin and being in engaged position when the cross element is in said recess.

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