July 27, 1926. 1,593,739

R. K. WINNING

LOCK SWITCH

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Fig. 1.

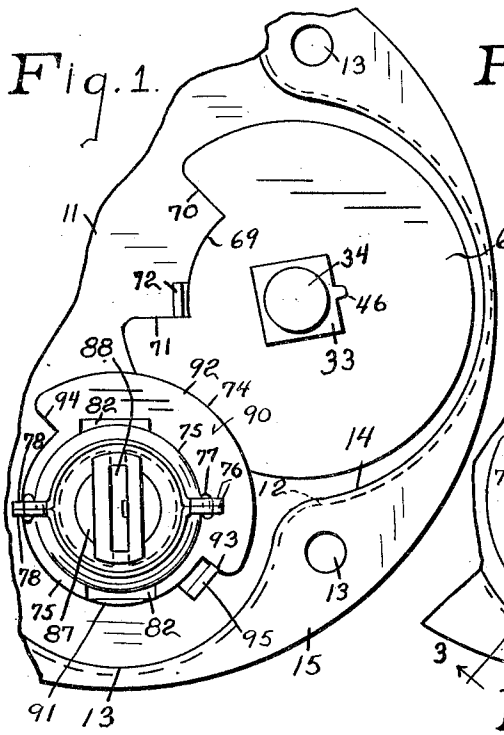


Fig. 2

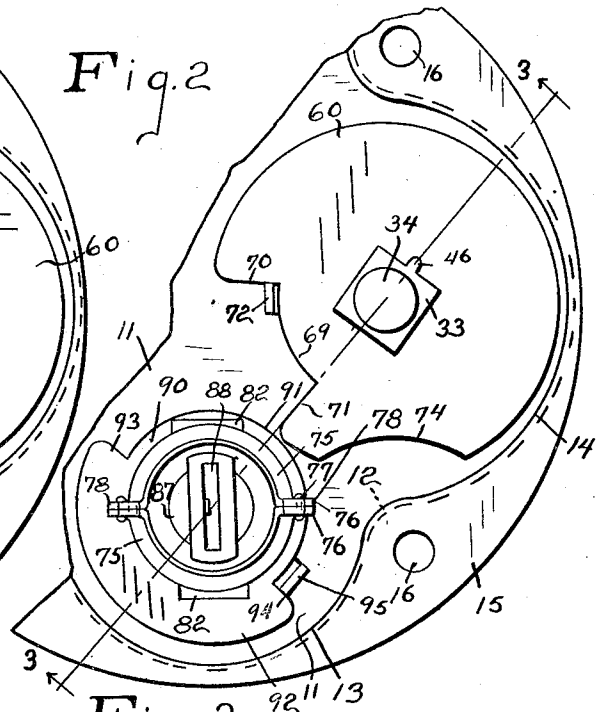
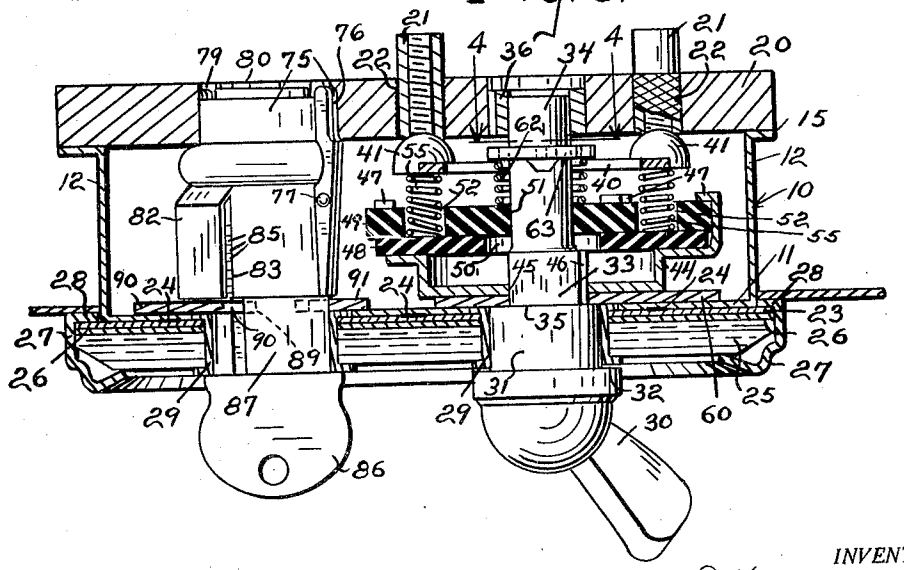


Fig. 3.



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Fig. 4.

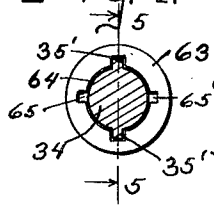


Fig. 5.

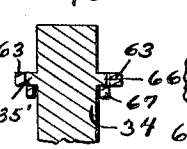


Fig. 6.

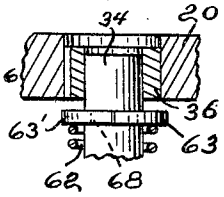


Fig. 7.

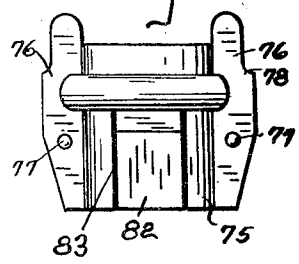


Fig. 8.

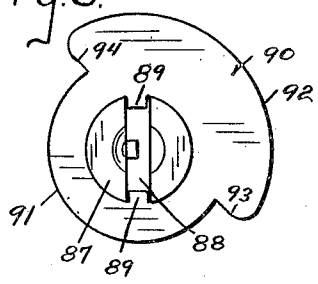


Fig. 9.

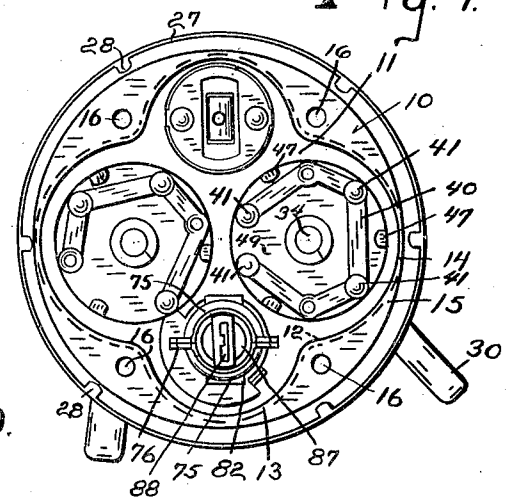
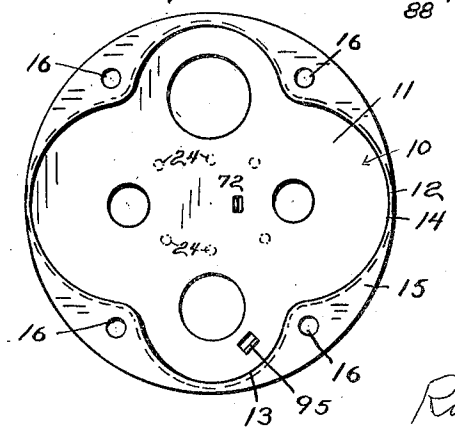


Fig. 10.



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Patented July 27, 1926. 1,593,739

UNITED STATES PATENT OFFICE.

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LOCK SWITCH.

Application filed July 31, 1924. Serial No. 729,356.

This invention relates to improvements in lock switches. More particularly stated, this invention relates to an improved rotary switch provided with a locking device and especially adapted for use in motor vehicles and the like.

One object of this invention is to provide a novel and simple means for utilizing a key operated lock for securing a switch member against rotation, the parts inherently required for the lock and switch being utilized as far as possible for effecting a releasable interlocking engagement between the key-operated member and the switch.

It is a further object of this invention to provide a novel and improved switch structure and, more particularly, a novel arrangement for mounting a floating switch contact and an actuating rotor therefor in a switch casing. With regard more specifically to the switch structure, it is my purpose to provide an arrangement whereby the springs which render the moving switch contacts operative shall, by their reaction, perform a further function in connection with the positioning of the switch operating rotor, an additional spring being preferably employed to aid in the performance of this function. It is a further purpose in this regard to provide a novel and improved spring seat member for attachment to the shaft or rotor by which the switch is actuated.

In the drawings:

Figure 1 is a plan view of the switch and lock and a fragmentary portion of the casing as the parts appear when the rear casing plate has been removed, the parts being illustrated in a locked position.

Figure 2 is a view similar to Figure 1 showing the parts in an unlocked position.

Figure 3 is a section taken on line 3—3 of Figure 2.

Figure 4 is a section taken on line 4—4 of Figure 3 to illustrate a detail of the spring seat construction.

Figure 5 is a detail view taken on the section indicated at 5—5 in Figure 4.

Figure 6 is a detail view similar to Figure 5 and illustrating a modified construction, principally in side elevation.

Figure 7 is a detail view in side elevation of the lock barrel illustrated in Figure 3.

Figure 8 is a detail view in plan of the end of the lock cylinder, showing the means connecting a locking plate therewith.

Figure 9 is a plan view of the complete casing, showing the several parts assembled therein with the back plate removed.

Figure 10 is a view similar to Figure 9, showing the empty casing or shell.

Like parts are identified by the same reference characters throughout the several views.

The switch casing comprises a shell 10 open at its back and provided with an apertured front wall 11. The side wall 12 of the casing member 10 is preferably of a peculiar construction in that it is not annular but is pressed into a series of curves 13, 14, etc., each of which is substantially concentric with the axis of rotation of a switch or lock unit to be housed within the casing. The flange 15 is preferably circular in its peripheral outline and the side wall 12 of the casing will therefore be at different distances from the periphery of flange 15 in accordance with the showing in Figures 1 and 2.

The deviation of side wall 12 from the arc followed by the periphery of flange 15 results in the production of a re-enforced casing member 10 which will be extremely strong although made of comparatively light weight metal, and which facilitates the assembly of the device by forming a series of compartments into which each of the several switch or lock units may be introduced to perform its individual functions.

Secured to the casing member 10 by means of bolts which may conveniently be introduced into apertures 16 between the switch and lock chambers in shell 10 is a back plate 20 which is preferably made of fiber or other like di-electric material. A pair of tubular contacts 21 are pressed into apertures in the fiber plate 20 and may be knurled as at 22 for engagement with the fiber. The tubular members 21 comprise terminals to which electric conductors may be fastened for the control of an ignition circuit or the like. The switch device hereinafter to be described is adapted to complete an electrical connection between terminals 21.

A disk 23 is fastened to the front wall 11 of casing member 10 by spot-welding 24 or

otherwise. This disk serves to provide a means for attaching to the member 10 a finishing plate for the front of the switch. In the present device the finishing plate comprises a glass 25 having a backing 26, and held to the disk 23 by means of a bezel 27 having tongues 28 bent about the margin of disk 23. The glass is further secured by means of bushings 29 which extend through apertures therein and in the disk 23. The ends of the bushing are upset, as indicated, so that the bushing is in effect an eyelet serving the dual function of finishing the bearing aperture through which the switch and lock members extend, and also of providing a bearing for such member.

The switch actuating device comprises integrally a handle 30, a shaft section 31 fitted within the bushing 29, a limiting shoulder 32 abutting the exterior end of the bushing, a square shaft section 33 and a round shaft section 34 of less diameter than the square section. The squared section 33 is of materially less diameter than the shaft section 31, and the resulting shoulder 35 is utilized in a manner hereinafter to be described. A bushing 36 mounted in the rear cover plate 20 intermediate terminals 21 serves as a bearing for the round shaft section 34. Thus, the switch actuating rotor is provided with bearing in both the front and rear of the switch casing and is thus maintained in its properly aligned position.

The floating switch contact comprises an annulus 40 encircling the actuating rotor, including shaft section 34, and provided at properly spaced points with convex protuberances 41 stamped from the material thereof. As previously indicated, the terminals 21 are radially equi-distant from the shaft section 34 and, the protuberances 41 are so disposed that in one position of rotation they may be brought into registery with the tubular terminals 21 to be partially received therein, as indicated in Figure 3. The floating contact member is carried by means of a special mounting which will now be described.

A cup-shaped element 44 is splined to the switch actuating rotor by mounting it upon the squared portion 33 thereof. The cup 44 is provided with an aperture 45 fitted closely to the squared shaft section 33 and, to facilitate the assembly of the parts in their correct relative locations, the shaft section 33 may be provided with an integral key 46. Tongues 47 formed integrally with cup 44 are bent about a pair of fiber disks 48 and 49 to bind such disks onto the cup. Disk 48 is provided with a relatively large aperture at 50 and does not contact with the rotor. Disk 49 is provided with a relatively smaller aperture at 51 to afford just clearance enough for the shaft section 34 of the switch actuating rotor so that the cup and disk unit is thereby provided with two points of support from the rotor for its rigid connection therewith. Immediately beneath each of the stamped protuberances 41 of the floating contact 40 I provide an aperture 52 in disk 49. Compression springs 55 extend into apertures 52 and seat against an imperforate portion of disk 48, the upper end of each such spring is received and confined within a pressed protuberance 41. My purpose in providing two of the disks 48 and 49 is to cheapen the switch construction, inasmuch as I have found it more economical to stamp holes completely through disk 49 and to use an imperforate disk 48 to support the springs than it is to use a single di-electric disk and to bore holes partially therethrough.

The compression springs tend to force axially asunder the floating contact annulus 40 and the carrier made up unitarily of fiber disks 48 and 49 and the cup 44. The carrier unit is held against axial movement by its contact with a disk 60 which is splined to the squared shaft 33 as shown in Figure 2, and which abuts the front wall 11 of casing member 10. Since this carrier unit is therefore confined against axial movement in a forward direction, the force of springs 55 is exerted to press the floating contact annulus 40 in the direction of the di-electric rear plate 20 of the switch casing. When the protuberances 41 register with tubular terminals 21 the spring will force such protuberances into the terminals to the degree indicated. When, therefore, the switch is turned to disconnect terminals 21 from each other the initial turning movement must result in lifting the protuberances 41 from their position of partial reception into tubes 21, against the compression of springs 55.

No means has thus far been described for securing the switch actuating rotor in its indicated position. It is desired to provide some means for this purpose which will not require accurately machined parts for its operative assembly, and consequently, I prefer to use a spring for holding the switch actuating lever snugly in position. Such a spring is indicated at 62 and is confined between fiber disk 49 and a specially constructed spring seat 63.

As shown in Figure 4, the round shaft section 34 may conveniently be so formed as to provide integrally a pair of radial outstanding lugs 35'. It may be stated at this point that the entire switch actuating rotor as previously described may be constructed conveniently by a die casting operation. The spring seat member 63 takes the form of a washer which may be constructed by a stamping operation and which is provided at 64 with an aperture for the shaft section 34, and at 65 with notches sufficient to permit the passage of the lugs 35 on such shaft

section. It is contemplated that the washer shall be slipped over the end of shaft section 34 and pressed axially of the shaft section to subject spring 62 to compression. The axial movement of the spring seat washer 63 will be continued until the lugs 35′ have passed through the notches 65. Thereupon the spring seat washer will be rotated to a position such that the lugs 35 will no longer register with the notches 65 to maintain the spring 62 under compression. In order to key the washer against accidental rotation to spring releasing position, I prefer to provide therein the pockets 66 which may be formed by pressing downwardly a portion of the material of the washer, as indicated at 67. The spring will force the washer upwardly when the lugs 35′ register with pockets 66, and the lugs will thereupon be received in the pockets to confine the washer against rotation, as indicated in Figure 5.

Figure 6 indicates a modified construction, wherein the shaft 34 is peripherally grooved, as indicated by the dotted line at 68. The spring seat washer 63′ comprises a split ring, the ends of which may be brought together when the ring registers with the groove 68, thereby to confine said ring in interlocking engagement with the grooved portion of the shaft section 34. This construction has the disadvantage that the interlocking engagement of the spring seat and the shaft section is effected by the removal of material from the shaft section, thereby weakening the actuating rotor, whereas the construction shown in Figure 4 accomplishes interlocking engagement of the spring seat and the rotor by adding material to the shaft section without in any way weakening it.

Since the compression spring 62 will preferably be a comparatively strong one, and since it acts to draw the entire switch actuating rotor inwardly toward the rear of the switch, I provide means for ensuring that the switch actuating rotor will not become bound against the front of the switch casing. To this end the shoulder 35 is made to contact with the disk 60, and the shaft section 31 is made of a length slightly greater than the length of eyelet or bushing 29. Thus, any constriction or binding between the parts is rendered impossible, clearance being provided between shoulder 32 and the end of eyelet 29.

The disk 60, being splined to the squared shaft section 33 is commonly employed as means for limiting the rotative movement of the switch. To this end the disk 60 is cut away at 69 to provide the shouldered portions 70 and 71. A lug 72 is struck upwardly from the front wall 11 of casing member 10 and co-operates with the shoulders 70 and 71 to provide a stop to limit the rotative movement of the switch actuating rotor and switch within the indicated limits. The disk 60 is provided with an arcuate cut 74 for the purpose of locking it against rotation when desired.

The lock employed in connection with the switch above described may be of any desired character. That which is illustrated herein is of the type in which the introduction of a key with serrated edges aligns a series of disk tumblers with the lock cylinder to permit the cylinder to rotate within the barrel. When the key is withdrawn the tumblers are left in various degrees of radial projection beyond the cylinder and are engaged with the barrel in such fashion that the cylinder cannot be rotated. The barrel is constructed in the present lock from a pair of identical stampings 75, each of which includes laterally projecting flanges 76 joined by rivets 77. The flanges 76 are extended as at 78 and are received in notches or axially extending grooves 79 to key the barrel against rotation. The grooves 79 are formed in the side walls of a hole 80 into which the cylinder proper and the barrel of the lock extend as indicated in Figure 3. Each of the stampings 75 comprising the component parts of the barrel has a portion of its side wall pressed outwardly as at 82, leaving shoulders 83 against which the disk tumblers 85 contact when the key 86 is withdrawn from cylinder 87. The pressing outwardly of the portion 82 of the barrel leaves room for the tumblers 85 to emerge laterally from the cylinder in a manner well understood in the art.

The cylinder 87 and the transverse key slot 88 therein are preferably somewhat wider than is required for the key. Into the ends of the transverse slot 88 project lugs 89 on a cam disk 90. This cam disk performs the function of a bolt in an ordinary lock and is provided with a portion 91 of relatively short radius and a portion 92 of relatively longer radius. The portion 92 terminates in shoulders 93 and 94 which abut a stop member 95, which may conveniently be pressed upwardly from the material of the front wall 11 of the casing shell 10. It will be noted that cam disk 90 is provided with a central aperture just large enough to receive the lock cylinder. The lugs 89 which project into such aperture and are formed integrally with the disk 90 by a stamping operation are adapted to be received into the key slot in the cylinder and thereby to secure the cam disk to the cylinder for rotation therewith.

The arrangement is such that when the cylinder is rotated by means of the key to the position in which it is indicated in Figure 1, the portion 92 of the cam or lock disk 90 will be received within the arcuately cut portion 74 of disk 60. If the key be

withdrawn from the lock cylinder with the parts in the position indicated in Figure 1, the disk tumblers will be projected in the usual manner into engagement with the shoulders 83 of the lock barrel to lock the cylinder against rotation. Thereupon it will obviously be impossible to rotate the switch device, inasmuch as disks 60 and 90 are in engagement with each other, as indicated.

Figure 2 illustrates the parts in their unlocked position, the switch being operative to make contact between terminals 21. When the key is inserted to retract the several tumblers 85 of the lock, the lock may be rotated to its Figure 2 position so that the portion 92 of the cam disk 90 is withdrawn from engagement with disk 60 of the switch. The radius of the portion 91 of cam disk 90 is such as to permit the disk 60 of the switch to rotate freely past it. Accordingly, the switch may be rotated to bring disk 60 to the position indicated in Figure 2, in which position of the parts the switch will be closed to complete a circuit between terminals 21, as shown in Figure 3.

Figure 9 shows the casing shell 10 provided with two additional switch mechanisms operatively mounted therein. It will be understood that the switch mechanisms illustrated in those parts of the casing not shown in Figures 1 and 2 are not specifically involved in the present invention. One of such switch mechanisms comprises the subject matter of a companion application Serial No. 726,269, filed July 16, 1924. These switch mechanisms are illustrated herein primarily for the purpose of showing the requirements which led to the development of the re-enforced casing shell 10. Inasmuch as the specific structures of these other switches comprise no part of the subject matter of this particular application, they will not be further described herein.

It will be understood that whereas I have illustrated a lock of the disk tumbler type, it would be possible to substitute therefor a lock of the Yale type or of the Ward type without altering the substance of the arrangement whereby the rotary lock mechanism may be made to interact and interlock with one or more of the switch mechanisms as illustrated. Furthermore, from the standpoint of the interlocking arrangement between the switch and lock mechanisms, it will be understood that other specific types of switches might be substituted for that which I have illustrated herein. So far as this interlocking feature is concerned, therefore, I do not wish to limit myself to the specific type of lock or the specific type of switch shown.

I claim:

1. In a device of the character described, the combination with a casing and manually adjustable rotors journaled to project therein, of switch mechanism operatively disposed within said casing and connected with one of said rotors to receive movement therefrom, lock mechanism disposed within the casing and operatively associated with the other of said rotors, and stop discs connected with each of said rotors and lying substantially in a common plane adjacent one side of said casing and between said side and said switch and lock mechanism, said discs and said casing being formed for interaction to limit the movement of the respective rotors and said discs being formed for interaction with each other whereby in one position of adjustment of the rotor with which said lock mechanism is associated the other rotor will be secured against movement.

2. In a device of the character described, the combination with a casing having a front wall and a pair of manually rotatable shafts journaled in said wall, of a lock barrel receiving one of said shafts within said casing and incorporating locking mechanism for said shaft, switching mechanism operatively connected with the second of said shafts within said casing, and plates operatively connected with said shafts and disposed in a common plane adjacent the wall of said casing and between said wall and said locking and switch mechanism respectively, the plate connected with said second shaft being provided with an arcuate cut in its periphery and the plate connected with the first mentioned shaft being provided with a portion of relatively increased radius adapted in a selected position of said first shaft to enter said cut and to restrict said second shaft against rotation, while in other positions the radius of said plate on the first mentioned shaft is such as to permit rotation of the plate of the second shaft.

3. In a device of the character described, the combination with a rotor and a switch operatively connected therewith to be actuated therefrom, of a lock barrel adjacent said rotor, a lock cylinder rotatable in said barrel and provided with a transverse key slot extending in one portion of said cylinder to its periphery, of a locking member encircling said cylinder and provided with a lug engaged in said slot, whereby said member is secured to said cylinder for rotation therewith, a portion of said member and a portion of said rotor being adapted in predetermined positions of said member and said rotor for interlocking engagement, whereby to secure said rotor against rotation.

4. In a device of the character described, the combination with a switch casing having substantially parallel front and rear walls, of a switch including a rotor in said casing, a lock including a switch barrel

fastened to the rear wall of the casing and extending therethrough to a point adjacent the front wall thereof, a cylinder journaled in the front wall of said casing and disposed operatively in said barrel, said cylinder being provided with key operable tumblers adapted for interlocking engagement with said barrel and being provided with a key slot extending in the forward portions of said cylinder to the periphery thereof, and a cam plate disposed between the end of said barrel and the front wall of said cylinder and apertured to receive said barrel and provided with lugs engaged in the ends of said slot, certain portions of said plate and said switch being formed for interlocking engagement in predetermined positions of said switch and said cylinder, whereby to secure said switch against rotation.

5. In a device of the character described, the combination with a shaft and lugs projecting radially therefrom, of a spring seat washer adapted to fit upon said shaft and provided with radial notches spaced to receive and permit the passage of said lugs, said washer being rotatable on said shaft in a direction out of registry with said lugs.

6. In a device of the character described, the combination with a shaft and a spring encircling said shaft and confined against axial movement thereon in one direction, a plurality of lugs extending radially from said shaft, and a spring seat washer provided with a central opening of substantially the diameter of said shaft, said washer being provided with notches in the margin of said opening spaced to receive and permit the passage of the lugs on said shaft, said washer being rotatable on said shaft in the direction to adjust said notches out of registry with said lugs.

7. In a device of the character described, the combination with a shaft and a spring encircling said shaft and confined against axial movement thereon in one direction, a plurality of lugs extending radially from said shaft, a spring seat washer provided with a central opening of substantially the diameter of said shaft, said washer being provided with notches in the margin of said opening spaced to receive and permit the passage of the lugs on said shaft, and said washer being further provided with a plurality of axial depressions adjacent said opening spaced arcuately from said notches and each adapted to receive one of said lugs and to retain said lug under the compression of said spring.

8. As a new article of manufacture, a switch casing element comprising a shell having a substantially plane wall and a side wall connected with the first mentioned wall and extending thereabout in a series of curves, each of less radius than the radius of the maximum circle which could be inscribed on said wall, whereby to provide a plurality of recesses opening inwardly toward the center of said plane wall, a plurality of switch mechanisms each disposed in a separate recess, and a locking device disposed in a separate recess and provided with means adapted to engage one of said switch mechanisms to restrict the movement thereof.

9. As a new article of manufacture, a switch shell comprising a wall provided with a plurality of apertures at points spaced from its center, a side wall connected with said first mentioned wall and extending thereabout in a manner to provide central opening recesses, each including one of said apertures, a lock rotor extending through one of said apertures into said shell, a plurality of switch rotors extending through the other of said apertures into said shell, locking and switching mechanisms respectively associated with the aforesaid rotors, and means connected with said locking rotor adapted for interaction with a portion of one of said switching mechanisms to restrain it against movement when said locking rotor is in a particular position of adjustment.

10. As a new article of manufacture, a switch casing shell comprising integrally a plate terminating in a succession of arcuate lines each drawn about one of a series of points remote from the center of said plate, a side wall following said lines, a flange connected with said side wall and terminating in a margin substantially concentric to said plate, a di-electric member connected with said flange, switch terminals mounted therein in a plurality of series, the terminals of each series being concentric with one of said points, switch rotors extending through said plates substantially at said points, switch mechanisms operatively connected with said rotors and adapted to interact with the terminals of associated sets and a lock rotor extending through said plates substantially at another of said points and provided with locking mechanism operatively adapted selectively to restrict the movement of one of said switching mechanisms.

11. In a device of the character described, the combination with a switch casing having front and rear walls and provided in its rear wall with switch terminals, of a rotor including a pair of axially separable members confined between the front and rear walls of said casing and including contact elements adapted for operative interaction with said terminals, and a switch actuating member extending through one of the walls of said casing and connected with said rotor for rotation therewith, said actuating member being provided with a shoulder adapted to abut one of said rotor members and be-

ing resiliently pressed axially in a direction adapted to maintain said shoulder in contact with said rotor member.

12. In a device of the character described, the combination with a switch casing having front and rear walls, of a switch rotor including axially separable members confined between said walls, compression springs urging said members axially apart, whereby to press one of said members against the front wall of said casing, a switch actuating shaft concentric with said rotor journaled in the front wall of the casing and provided with a shoulder abutting said last mentioned member, a spring seat connected with said shaft, and a compression spring confined between said seat and said last mentioned member on the opposite side from that abutted by said shoulder, whereby to draw said shaft axially and resiliently toward a position for the abutment of said shoulder with said last mentioned member.

13. In a device of the character described, the combination with a switch casing having front and rear walls and terminals in its rear wall, of a rotor operable within said casing and including axially separable members resiliently pressed in opposite directions to contact with the front and rear walls of said casing, one of said members carrying contacts adapted for interaction with said terminals, a shaft journaled in said walls and disposed axially of said rotor, said shaft being provided with a shoulder adapted to abut the member contacting with the front wall of the casing, a spring seat connected with said shaft adjacent the rear wall of said casing, and a spring confined between said seat and the rotor member contacting with the front wall of the casing.

14. In a device of the character described, the combination with a switch casing having a front wall, a lock plug extending therethrough, a switch rotor extending therethrough, and switching mechanism operatively connected with said rotor within said casing, of a rear wall for said casing provided with terminals adapted for interaction with said switching mechanism, a lock barrel secured to said rear wall in operative alignment and association with said plug and plates adapted for mutual interaction and mounted on said plug and rotor in a common plane and immediately adjacent the front wall of said casing between said wall and said barrel and switching mechanism respectively.

15. In a device of the character described, the combination with a casing having front and rear walls, of a switch rotor extending through said front wall, switching mechanism operatively mounted on said rotor and comprising axially separable members and interposed spring means confined between said front and rear wall, a plate in splined connection with said rotor and positioned adjacent said front wall to receive the thrust of one of said members, and a lock mounted in said casing and having a part adapted to interact with said plate selectively to restrict the movement thereof.

16. In a device of the character described, the combination with a casing having front and rear walls of a switch rotor extending through said front wall, switching mechanism operatively mounted on said rotor and comprising axially separable members and interposed spring means confined between said front and rear wall, a plate in splined connection with said rotor and positioned adjacent said front wall to receive the thrust of one of said members, and a lock mounted in said casing and having a part adapted to interact with said plate selectively to restrict the movement thereof, said lock comprising a plug extending through said front wall, a cylinder secured against rotation with reference to said rear wall and an eccentric plate splined to said plug and disposed between said cylinder and said front wall substantially in the plane of said first mentioned plate.

17. In a device of the character described, the combination with a casing having front and rear walls, of a switch rotor extending through said front wall, switching mechanism operatively mounted on said rotor and comprising axially separable members and interposed spring means confined between said front and rear wall, a plate in splined connection with said rotor and positioned adjacent said front wall to receive the thrust of one of said members and a lock mounted in said casing and having a part adapted to interact with said plate selectively to restrict the movement thereof, said lock comprising a plug extending through said front wall, a cylinder secured against rotation with reference to said rear wall and an eccentric plate splined to said plug and disposed between said cylinder and said front wall substantially in the plane of said first mentioned plate, said plates and front wall of said casing being formed to provide interacting stop means limiting the degree of rotation of said plates and the parts therewith connected.

18. In a device of the character described, the combination with a switch casing having front and rear walls, of a switch rotor journaled in both of said walls, switch terminals in said rear wall, switching mechanism mounted on said rotor and adapted to interact with said terminals and comprising two axially separable elements and interposed spring means under compression, limiting means on said rotor for restricting the movement of one of said members toward said front wall and comprising a shoulder

and an interposed plate, splined to said rotor, a compression spring acting on said last mentioned member to press it in the direction of said shoulder whereby accurately to position said plate, and locking mechanism adapted selectively to interact with said plate.

19. In a device of the character described, the combination with a switch casing having front and rear walls, of a switch rotor journaled in both of said walls, switch terminals in said rear wall, switching mechanism mounted on said rotor and adapted to interact with said terminals and comprising two axially separable elements and interposed spring means under compression, limiting means on said rotor for restricting the movement of one of said members toward said front wall and comprising a shoulder and an interposed plate splined to said rotor, a compression spring acting on said last mentioned member to press it in the direction of said shoulder whereby accurately to position said plate, and locking mechanism adapted selectively to interact with said plate, said locking mechanism comprising a plug journaled in the front wall of said casing, a barrel connected with the rear wall of the casing and in which said plug is journaled, and an eccentric plate confined between the end of said barrel and the front wall of the casing in the plane of said first mentioned plate, said eccentric plate being splined to said plug and formed selectively to interact with a peripheral portion of said first mentioned plate.

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