Aug. 15, 1939. E. F. NORRITO 2,169,988

MULTICIRCUIT JACK

Filed March 1, 1937 3 Sheets-Sheet 1

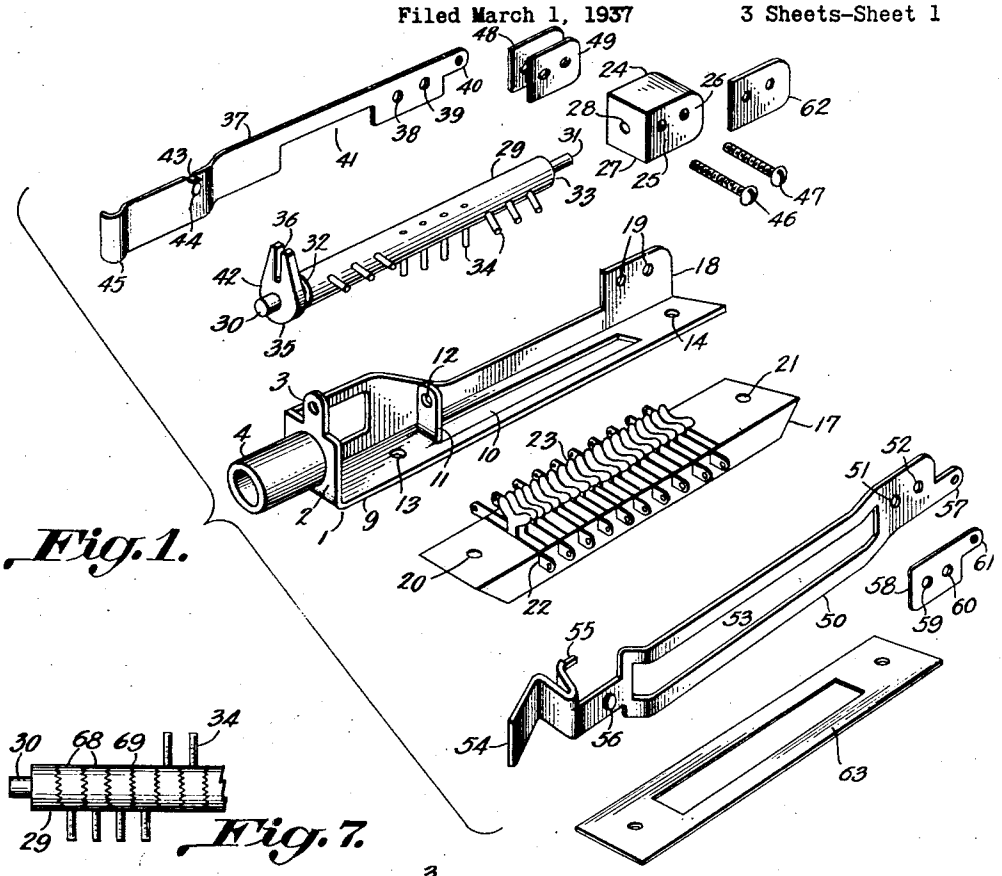


Fig. 1.

Fig. 7.

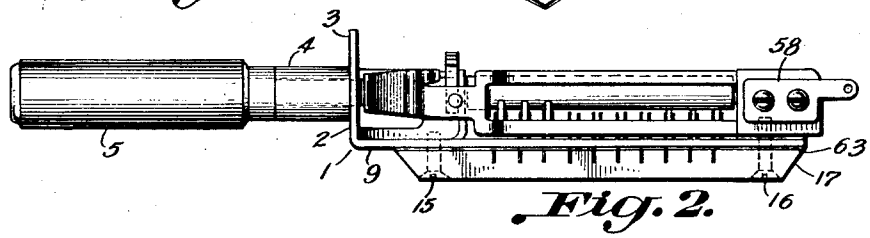


Fig. 2.

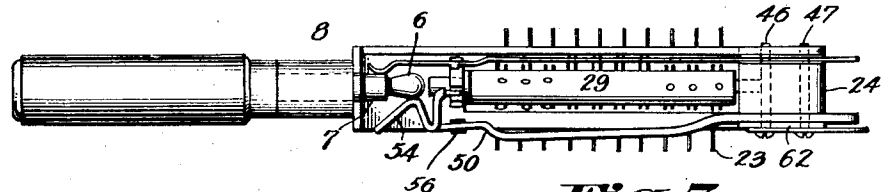


Fig. 3.

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MULTICIRCUIT JACK

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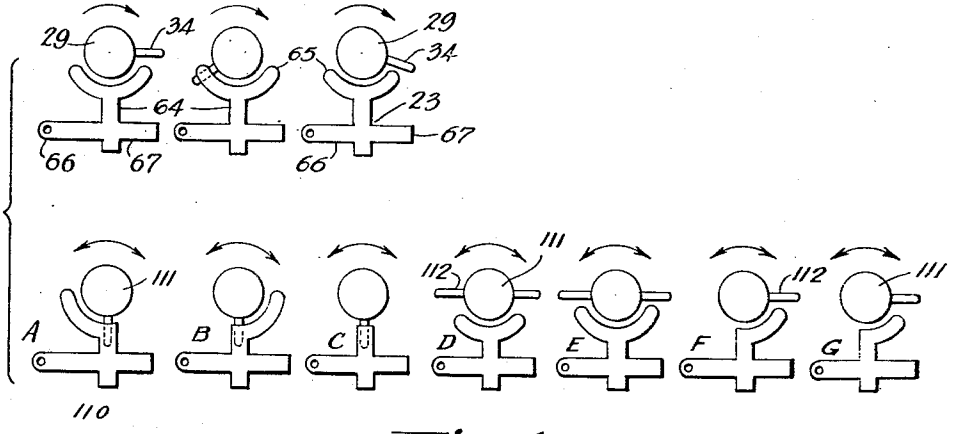


Fig. 4.

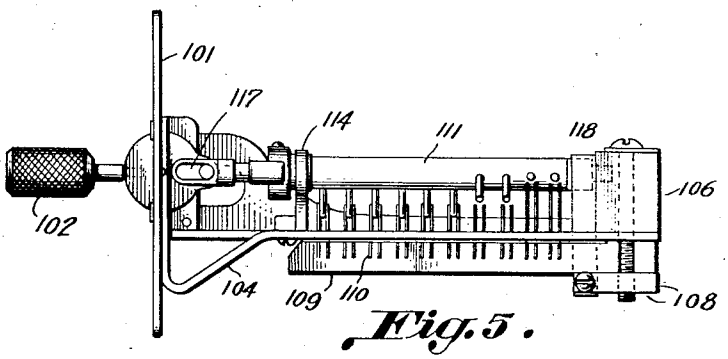


Fig. 5.

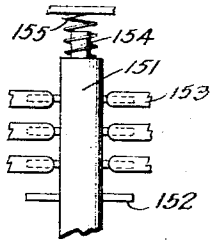


Fig. 8.

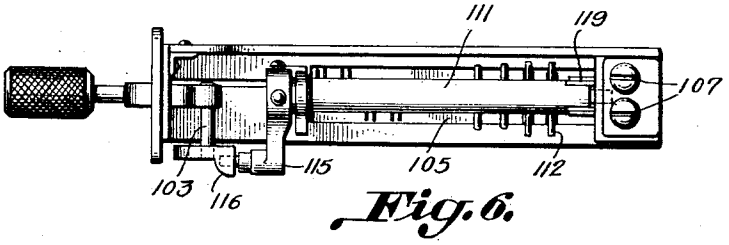


Fig. 6.

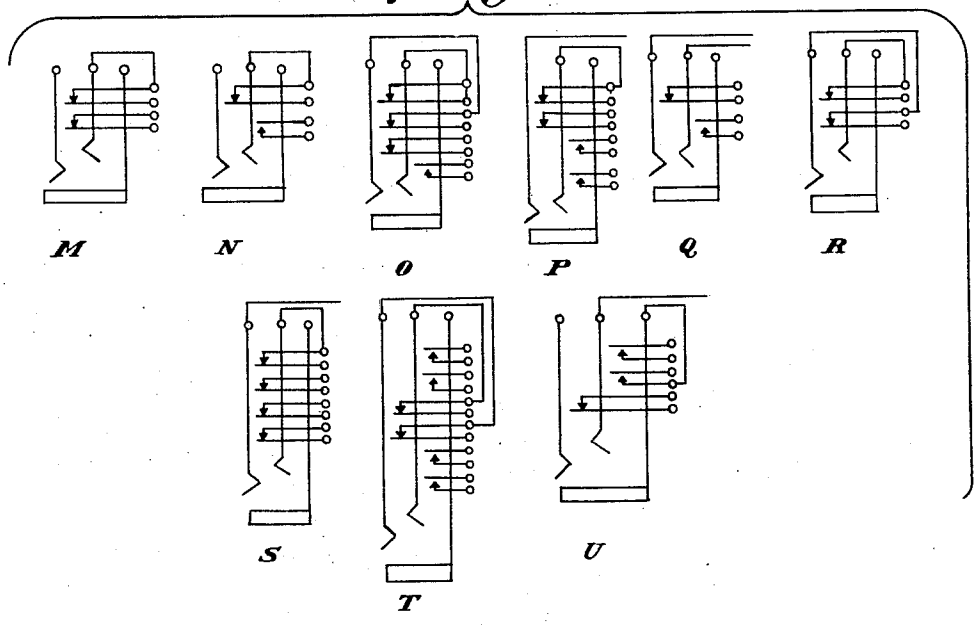
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MULTICIRCUIT JACK

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Fig. 11.



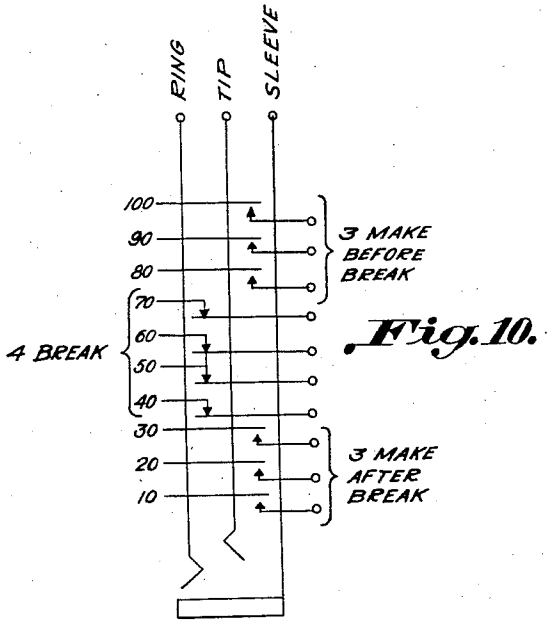


Fig. 10.

Fig. 9.



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UNITED STATES PATENT OFFICE

2,169,988

MULTICIRCUIT JACK

Earl F. Norrito, Malverne, N. Y.

Application March 1, 1937, Serial No. 128,501

17 Claims. (Cl. 179—96)

The present invention relates to improvements in telephone jacks such as are generally used in telephone equipment and more specifically panel boards where it is necessary or desirable to connect a group of signals so that they will operate in a definite pre-determined sequence. The improvement readily lends itself to the toggle key type of switch.

The standard jack used at present in industry is of the strip type consisting of a number of flat insulated springs or strips running parallel to each other and arranged in a vertical pile. These standard jacks are manufactured to give different sequences of makes and breaks which are not interchangeable. That is, a different jack must be used for each different sequence and where a change is desired or another signal is to be added, the jack must be removed and a proper one substituted. Thus a complete series of jacks have had to be carried by the installation and maintenance electricians.

It is a further object of the invention to provide a jack of universal construction from which a multiple of circuits may be obtained without changing the construction or dimensions or making it necessary to obtain a certain type.

It is an object of the invention to provide a jack which is sturdy and strong and yet of inexpensive construction.

It is an object of this invention to provide a switch which occupies a minimum of panel area and the area occupied is substantially independent of the circuits controlled.

It is an object of this invention to provide a jack which may be successfully used on tone circuits where extremely low current is used such as wireless and broadcast signals over a tone line. In the present type standard jack the flat springs having a broad and lengthy surface and assembled closely together in parallel formation act as condensers when the circuit is broken, permitting leakage or "cross talk" from one spring to the other. In the invention this surface area has been reduced to a minimum.

It is an object of the invention to provide a revolving or reciprocating rod of some insulating material such as Bakelite, having a number of metal pins inserted around the circumference at various radial angles. When the rod or arm is revolved through a certain number of degrees the pins pass between a pair of flexible spring terminals, completing a circuit between them. The rod is rotated or reciprocated sufficiently to make or break circuits according to the arrangement of the pins. By this construction, having a total of ten available circuits, exclusive of tip, ring and sleeve, it is possible to use one standard jack of this type to make any combination or group of combinations desirable by wiring to the proper terminals or lugs which form a part of the circuits without the use of a specially constructed jack or toggle key for every different combination. With the present standard jack it is only possible to make the one combination for which it has been constructed. By using the invention it is possible to arrange the wiring for any combination or group of combinations desired without changing the unit in any way. Thus the unit jack or toggle key remains standard in size and compactness resulting in a tremendous economy in panel space. The present type of units with their flat strip springs use "point to point" contacts which very often fail to make contact because of dust and dirt collecting upon, or corrosion of the points. This is especially true where tone signals are used and perfect contact must be maintained as in radio broadcast. In the invention the contacts are all of the wiping type which constantly clean themselves. The invention makes possible nearly a hundred combinations on the jack and nearly two hundred combinations on the toggle key.

Referring to the accompanying drawings which form a part of this specification:

Fig. 1 is an exploded view of the jack type unit.

Fig. 2 is an elevation of the jack with the plug in place.

Fig. 3 is a plan view of the jack unit.

Fig. 4 is a schematic drawing of the various type terminal elements.

Fig. 5 is an elevation of the toggle key switch.

Fig. 6 is a plan of the toggle key switch.

Fig. 7 is a fragmentary detail of a contact arm which may be used in both the jack and toggle switches.

Fig. 8 is a fragmentary view of modified construction of the jack unit.

Fig. 9 is a plan view of a locking toggle pin.

Fig. 10 is a schematic circuit drawing of the jack Fig. 1.

Fig. 11 is a series of schematic circuit drawings showing various control circuit connections to obtain definite sequences of events.

Referring to Figs. 1, 2 and 3, the structure of the device may be readily identified. The main body piece, indicated generally by numeral 1 has an upstanding face flange 2 at its forward end. The flange 2 is intended to rest against the rear of a switch board panel or the like. The upper side of flange 2 is provided with a perforated lug 3 by means of which the entire assembly may be firmly mounted on a panel. Projecting from the front face of flange 2 is a ferrule 4 of such size as to receive a plug 5 which will extend through flange 2 as will be later described. Plug 5 may be provided with the conventional tip 6, ring 7 and sleeve 8 connections. Ferrule 4 is intended to extend through a hole in the panel and present an exposed end at the front of the panel into which plug 5 may be readily inserted. Ferrule 4 also aids in firmly mounting the assembly on the panel.

Body piece 1 has a base portion 9 which is slotted as at 10 and fitted with an upturned lug 11 at the forward end of slot 10. Lug 11 has a perforation 12. Base portion 9 is further perforated at 13 and 14 to receive mounting screws 15 and 16 for attaching terminal support 17 to the underside of base portion 9. Body piece 1 is provided with an upstanding side flange 18 which is perforated at 19.

Terminal support 17 is perforated at both ends as at 20 and 21 to match perforations 13 and 14. The upper surface of support 17 is provided with a series of transverse slots 22 to receive terminal elements 23. Terminal elements 23 are individually insulated because of the non-conducting properties of support 17.

A block 24 of non-conducting material is provided with two transverse holes 25 and 26, a hole 27 in its bottom face to receive screw 16 and a hole 28 in its forward surface to serve as a bearing. Block 24 is mounted over hole 14 at the rear of base portion 9.

An elongate cylindrical contact arm 29 or spindle is provided at both ends with journal elements 30 and 31, which being of smaller diameter than the arm 29 form thrust bearing surface 32 and 33 which bear upon lug 11 and block 24. Journal elements 30 and 31 fit into and turn on bearing holes 12 and 28. To form a better bearing the elements 30, 31 may be sheathed with brass ferrules. The body of arm 29 is composed of any suitable non-conducting material in which is mounted a plurality of contact pins 34 spaced at intervals. Mounted on the forward journal element 30 is a cam 35 of fiber or the like. Cam 35 is removable and when assembled is spaced from bearing 32 by lug 11. Cam 35 turns with journal 30 and is provided in its upper face with a relatively deep vertical slot 36. The sides of cam 35 are rounded as at 42.

Spring strip element 37 is provided with two perforations 38 and 39 at one end for mounting on one side of block 24 and a projecting lug 40 for connecting the ringing circuit. The central portion of strip 37 is cut away as at 41 to provide room for contact pins 34. Adjacent the forward end of strip 37 a small tongue 43 is bent inwardly and adapted to ride on the rounded side 42 of cam 35. Adjacent tongue 43 strip 37 is perforated to receive a small insulating disk 44 to prevent it from electrically contacting flange 18. The forward end of strip 37 is formed with a lip 45 to contact ring connection 7 on plug 5. Strip 37 is further insulated from flange 18 and screws 46 and 47 by insulating laminae 48 and 49.

Firmly mounted on the right side of block 24 is cam actuator and tip circuit element 50. Holes 51 and 52 at one end receive screws 46 and 47. The whole central portion may be slotted as at 53. Element 50 is made of spring material and is provided at its forward end with a lip 54 adapted to be acted upon by tip 6 of plug 9. Adjacent lip 54 a projecting finger 55 is provided adapted to ride in slot 36 of cam 35. Element 50 is perforated so as to receive insulating disk 56 to prevent it from electrically contacting lug 11. A lug 57 extends from the rear of element 50 for connecting the tip circuit wire.

A small member 58 is perforated at 59 and 60 to receive screws 46 and 47. It is provided with a projecting lug 61 for connecting the sleeve circuit wire. Member 58 is insulated from element 50 by a thin piece 62 of fiber or the like. Terminal elements 23 are insulated from base portion 9 by fiber piece 63 which is provided with a central aperture to permit the projection of the terminal elements.

The terminal elements 23 are stamped from sheet brass or the like and have a stem portion 64 from the top of which branch arcuate arms 65. Transverse tabs 66 and 67 extend laterally from the lower portion of stem 64. Tab 66 is of sufficient length to extend beyond the side of terminal support 17 so that circuit leads may be soldered or otherwise connected thereto. Tab 67 does not extend beyond support 17. Terminal elements 23 may be anchored to support 17 in any suitable manner as by gluing, wedging or force fit. Elements 23 are mounted in pairs as shown in Figs. 1 and 2. Each of the pair being close enough together so that pins 34 complete the electrical connection between the elements 23 and wipe or rub against them thus making the contact more certain.

The operation of the jack is as follows. The signal circuit leads are fastened to each pair of terminal elements 23 at tabs 66. Plug 5 is inserted in ferrule 4 until tip 6 touches lip 54 of actuator element 50. Farther insertion of plug 5 causes lip 54 which is at an angle to its path to move to one side against the spring action of element 50. Finger 55 moves with element 50 and presses against the walls of slot 36 of cam 35. This causes cam 35 to rotate. Tongue 43 resting on cam 35 holds lip 45 clear of tip 6 and as the cam turns lip 45 is permitted to come into contact with ring 7 under its inherent spring action.

Contact arm 29 rotates with cam 35 carrying contact pins 34 with it. The pins 34, make, break or maintain the signal or control circuits depending upon the radial position of the pins 34 as taught in the first three showings in Fig. 4. It is also possible to operate certain circuits in time sequence with respect to others.

Of the three terminals 23 in the upper row of Fig. 4, the first is a normal make upon the indicated rotation of arm 29, the second is a normal break and the third is a make before break since it makes its circuits before the circuit shown in the second terminal is broken.

With the terminal shown in Figs. 1, 2 and 3 the following combinations may be obtained with a single jack. Others may be added as desired by merely making the jack longer. It is noted that the number may be doubled without an increase in the projected panel area required by the jack. This point is most important in crowded switch boards where panel area is at a premium.

Connections for jack units

Circuits:
Tip.
Ring.
Sleeve.
3 make.
4 break.
3 make before break.

Combinations	Terminal connections
1 make	1
1 break	4
2 make	1 2
2 break	4 5
3 make	1 2 3
3 break	4 5 6
4 break	4 5 6 7
1 break before 1 make	4 1
2 break before 1 make	4 5 1
3 break before 1 make	4 5 6 1
4 break before 1 make	4 5 6 7 1
1 break before 2 make	4 1 2
1 break before 3 make	4 1 2 3
2 break before 2 make	4 5 1 2
3 break before 3 make	4 5 6 1 2 3
4 break before 3 make	4 5 6 7 1 2 3
2 break before 3 make	4 5 1 2 3
3 break before 2 make	4 5 6 1 2
4 break before 2 make	4 5 6 7 1 2
1 make before 1 break	8 4
1 make before 2 break	8 4 5
1 make before 3 break	8 4 5 6
1 make before 4 break	8 4 5 6 7
2 make before 1 break	8 9 4
2 make before 2 break	8 9 4 5
2 make before 3 break	8 9 4 5 6
2 make before 4 break	8 9 4 5 6 7
3 make before 1 break	8 9 10 4
3 make before 2 break	8 9 10 4 5
3 make before 3 break	8 9 10 4 5 6
3 make before 4 break	8 9 10 4 5 6 7
1 make before 1 make	8 1
1 make before 2 make	8 1 2
1 make before 3 make	8 1 2 3
2 make before 1 make	8 9 1
2 make before 2 make	8 9 1 2
2 make before 3 make	8 9 1 2 3
3 make before 1 make	8 9 10 1
3 make before 2 make	8 9 10 1 2
3 make before 3 make	8 9 10 1 2 3
1 make before 1 make after 1 break	8 1 4
1 make before 2 make after 1 break	8 1 2 3
1 make before 3 make after 1 break	8 1 2 3 4
1 make before 1 make after 2 break	8 1 4 5
1 make before 1 make after 3 break	8 1 4 5 6
1 make before 1 make after 4 break	8 1 4 5 6 7
2 make before 1 make after 1 break	8 9 1 4
2 make before 2 make after 1 break	8 9 1 2 4
2 make before 3 make after 1 break	8 9 1 2 3 4
2 make before 1 make after 2 break	8 9 1 4 5
2 make before 1 make after 3 break	8 9 1 4 5 6
2 make before 1 make after 4 break	8 9 1 4 5 6 7
2 make before 2 make after 2 break	8 9 1 2 4 5
2 make before 2 make after 3 break	8 9 1 2 4 5 6
2 make before 2 make after 4 break	8 9 1 2 4 5 6 7
2 make before 3 make after 2 break	8 9 1 2 3 4 5
2 make before 3 make after 3 break	8 9 1 2 3 4 5 6
2 make before 3 make after 4 break	8 9 1 2 3 4 5 6 7
3 make before 1 make after 1 break	8 9 10 1 4
3 make before 2 make after 1 break	8 9 10 1 2 4
3 make before 3 make after 1 break	8 9 10 1 2 3 4
3 make before 3 make after 2 break	8 9 10 1 2 3 4 5
3 make before 3 make after 3 break	8 9 10 1 2 3 4 5 6
3 make before 3 make after 4 break	8 9 10 1 2 3 4 5 6 7

Figs. 10 and 11 present circuit drawings of the jack connections. Fig. 10 shows the settings of the pins **34** as arranged in Fig. 1. These of course can readily be modified. With the settings as shown, the circuit diagrams in Fig. 11 show the following connections.

M—Two break with closed circuit tip connection. Corresponds to Western Electric jacks 217, 220, 235.

N—One make after break with closed circuit tip connection. Corresponds to W. E. jacks 225, 234.

O—One make after three break with tip and ring closed circuit connection. Corresponds to W. E. jack 245.

P—Two make after two break using open circuit ring connection and closed circuit tip connection. Corresponds to W. E. 284.

Q—One make after one break using tip and ring as open circuits. Corresponds to W. E. 243.

R—Two break with tip and ring closed circuit connection. Corresponds to W. E. 248, 239.

S—Four break with closed tip and open ring connection. Corresponds to Stromberg-Carlson 155.

T—Two make before two break, two make after two break, with closed circuit tip and ring. Not catalogued.

U—Two make before one break, with tip open circuit and sleeve closed circuit. Corresponds to Stromberg-Carlson type.

As may be seen in referring to the jack circuit drawing with ten available circuits many multiple circuits may be obtained by shunting and cross connecting the various terminal connections, including tip, ring and sleeve.

In Fig. 7 is shown one means by which the radial position of the pins **34** may be changed. Arm **29** may be built up of a series of segments **68** having mating teeth **69**. The teeth **69** may be only three or four in number to give definite radial positions to pins **34** or many may be used as shown.

If desired a solenoid may be used to reciprocate plug **5** for remote control work.

In Figs. 5 and 6 may be seen the application of the concept of Figs. 1, 2 and 3 to a key or toggle type of switch. Mounting plate **101** has journaled thereto an operating lever **102** having a projecting pin **103** on its under side. Support arm **104** is screwed or otherwise fastened to the underside of mounting plate **101** and aids in the journaling of lever **102**. Support arm **104** extends rearwardly of plate **101** and is provided with an elongate slot **105**. A non-conducting block **106** is mounted on the upper rear portion of support arm **104** and is fastened thereto by screws **107** which thread into a spring support arbor **108**. Between spring support **108** and arm **104** is mounted a terminal support **109** for terminals **110** such as are shown in the bottom row of Fig. 4.

A contact arm **111** having contacts **112** projecting radially therefrom is rotatably mounted above arm **104**. One end of arm **111** is journaled in bearing **114** projecting from arm **104**. The end of arm **111** which projects through bearing **114** carries a lever arm **115** which in turn has pivoted to it a toggle element **116** slotted as at **117**. The slotted portion **117** in Fig. 5 shows the movement for non-locking. For locking key in both directions the slotted portion **117** terminates in a circular design as shown in Fig. 9. For locking in one direction and non-locking in the other, the slotted portion **117** may terminate in a part circular design either top or bottom as desired. Pin **103** fits in slot **117** and causes arm **111** to rotate when key or lever **102** is raised or depressed.

Terminals **110** mounted in support **109** project through slot **105** so as to engage contacts **112**. Spring support **108** mounts two leaf springs **118** which bear against flattened portions **119** at the end of arm **111** so as to restore it when rotated out of normal position.

The terminal elements **110** are stamped from sheet brass or the like and may take a number of shapes depending upon the function desired, as shown in the second line of Fig. 4.

As shown by the arrows, arm **111** may be rotated in either direction. With lever **102** in Fig. 5 down, the rotation is counter-clockwise. With lever **102** up arm **111** rotates clockwise. Upon the basis of such rotation terminal A maintains

its circuit with lever 102 up and breaks the circuit with lever 102 down. Terminal B is just the reverse of terminal A. Terminal C breaks its circuits for both up and down positions of lever 102. Terminal D makes its circuits for both positions of the toggle. Terminal E makes before break for both positions of the toggle. Terminal F is a make before break for the up position only of lever 102. Terminal G is a make after break on the up position only of lever 102.

The toggle switch shown in Figs. 5 and 6 has two terminals of type A, two of type B, two of type C, two of type D and two of type E, counting from the front of the switch. Such a switch is capable of being wired for the following circuit combinations.

Two way toggle switch (20 point).

Total number c" circuits—10.

Unoperated position—6 closed circuits—4 open circuits.

Operates positions	Toggle up	Toggle down
Terminals		
1	One maintain	One break.
2	do	Do.
3	One break	One maintain.
4	do	Do.
5	do	One break.
6	do	Do.
7	One make after break	One make after break.
8	do	Do.
9	One make before break	One make before break.
10	do	Do.
1 2	Two maintain	Two break.
1 4	One maintain one break	One break one maintain.
1 6	do	Two break.
1 8	One maintain one make	One make after break.
1 10	do	One make before break.
3 2 (same as 1 4)	Except toggle reversed	
3 4 (same as 1 2)	do	
3 6	Two break	One maintain one break.
3 8	One make after break	One make one maintain.
3 10	One make before break	Do.
5 2 (same as 1 6)	Except toggle reversed	
5 4 (same as 3 6)	do	
5 6	Two break	Two break.
5 8	One make after break	One make after break.
5 10	One make before break	One make before break.
7 2 (same as 1 8)	Except toggle reversed	
7 4 (same as 3 8)	do	
7 6 (same as 5 8)	do	
7 8	Two make	Two make.
7 10	One make before make	One make before make.
9 2 (same as 1 10)	Except toggle reversed	
9 4 (same as 3 10)	do	
9 6 (same as 5 10)	do	
9 8 (same as 7 10)	do	
9 10	Two make (before break)	Two make (before break).
1 2 3	Two maintain one break	Two break one maintain.
1 2 5	do	Three break.
1 2 7	Two maintain one make	One make after two break.
1 2 9	do	One make before two break.
1 3 4	One maintain two break	Two maintain one break.
1 3 5	do	Two break one maintain.
1 3 7	One maintain one make after one break	One maintain one make after one break.
1 3 9	One maintain one make before one break	One maintain one make before one break.
1 5 6	One maintain two break	Three break.
1 5 7	One maintain one make after one break	One make after two break.
1 5 9	One maintain one make before one break	One make before two break.
1 7 8	One maintain two make	Two make after one break.
1 7 9	One maintain one make before make	One make before break one make after one break.
1 9 10	One maintain two make	Two make before one break.
1 2 3 4	Two maintain two break	Two break two maintain.
1 2 3 5	do	Three break one maintain.
1 2 3 7	Two maintain one make after break	One maintain one make before two break.
1 3 4 7 (same as 1 2 3 7)	Except toggle reversed	
1 3 4 9 (same as 1 2 3 9)		
1 5 6 7	One maintain one make after two break	One make after three break.
1 5 6 9	One maintain one make before two break	One make before three break.
1 7 8 9	One maintain three make	Two make after one break one make before one break.
1 2 3 4 5	Two maintain three break	Three break two maintain.
1 2 3 4 7	Two maintain one make after two break	Two maintain one make after two break.
1 2 3 4 9	Two maintain one make before two break.	Two maintain one make before two break.
1 2 3 4 5 6	Two maintain four break	Two maintain four break.
1 2 3 4 5 7	Two maintain one make after three break.	Two maintain one make after three break.
1 2 3 4 5 9	Two maintain one make before three break.	Two maintain one make before three break.
1 2 3 4 5 6 7	Two maintain one make after four break.	Two maintain one make after four break.
1 2 3 4 5 6 9	Two maintain one make before four break.	Two maintain one make before four break.
1 2 3 4 5 6 7 8	Two maintain two make after four break.	Two maintain two make after four break.
1 2 3 4 5 6 7 9	Two maintain one make before four break one make after four break.	Two maintain one make before four break one make after four break.
1 2 3 4 5 6 7 8 9	Two maintain one make before four break two make after four break.	Two maintain one make before four break two make after four break.
1 2 3 4 5 6 7 8 9 10	Two maintain two make before four break two make after four break.	Two maintain two make before four break two make after four break.
2 3 4 5 6 7 8 9 10	One maintain two make before four break two make after four break.	Two maintain two make before three break two make after three break.
3 4 5 6 7 8 9 10	Two make before four break two make after four break.	Two maintain two make before two break two make after two break.
4 5 6 7 8 9 10	Two make before three break two make after three break.	One maintain two make before two break two make after two break.
5 6 7 8 9 10	Two make before two break two make after two break.	Two make before two break two make after two break.
6 7 8 9 10	Two make before one break two make after one break.	Two make before one break two make after one break.
7 8 9 10	Two make before two make	Two make before two make.
8 9 10	Two make before one make	Two make before one make.
10	One make before (—)	One make before (—).

Fig. 8 discloses a modification of the panel jack. Contact arm 151 corresponds to arm 29 and carries contacts 152. Terminals 153 are so positioned beside arm 151 that contacts 152 make and break circuits as desired upon reciprocation of arm 151. The spacing of contacts 152 and terminals 153 may be varied so as to make, break, make before break or other circuit sequences. Arm 151 is provided with a projection 154 to receive coil spring 155 which is of sufficient strength to restore arm 151 to its normal position upon removal of the plug. The friction of the plug fitting in the ferrule 4 may be sufficient to keep the spring 155 compressed.

As the above units may be regarded as standard and the various parts in some cases interchangeable they can be readily altered by inserting parts. These parts may be dealt in separately and it is the inventor's desire that these parts may be protected as well as the device as a whole.

I claim:

1. A telephone jack of normal construction, means mounted for rotation, said means so constructed as to make and break a predetermined number of circuits upon rotation, a plug, said plug upon its insertion in the jack acting on said means to cause it to rotate.

2. A telephone jack of normal construction, a rotating contact means, means so constructed and positioned with respect to said rotating means as to transform motion of translation into motion of rotation whereby said rotating contact means may be caused to rotate.

3. A telephone jack of normal construction, a contact spindle mounted for rotation, a plug, means operative upon the insertion of said plug into said jack for rotating said spindle to make and break a predetermined number of contacts in a predetermined sequence.

4. A panel jack of normal construction, a plug, a base member, signal circuit terminals supported by said base member, a member mounted for rotation and carrying circuit closing elements, so positioned as to affect said signal circuits, a member having a lip so constructed and arranged that the insertion of the plug into said jack acts on said lip and causes it to move said member and rotate said member mounted for rotation and affect certain of the signal circuits.

5. A telephone jack of normal construction, an elongate member mounted for rotation, a plug, means operative upon the insertion of said plug into said jack for rotating said member to make and break a predetermined number of contacts in a predetermined sequence.

6. A telephone jack of normal construction, a base member, signal circuit terminals supported by said base member, an elongate movable contact member having a plurality of contacts thereon bodily movably mounted on said base member and in operative relation with said terminals, a plug, means operative upon insertion of said plug into said jack for moving said movable contact member to make and break a predetermined number of circuits in a predetermined sequence.

7. A telephone jack of normal construction, a base member, circuit terminals mounted thereon in side by side relation, a rotating member mounted closely adjacent said circuit terminals, circuit closing means on said rotating member so constructed and arranged that they may contact said circuit terminals, ferrule means adapted to receive a plug, movable means positioned adjacent said rotating means and said ferrule means whereby the insertion of a plug in said ferrule means causes rotation of said rotating means and said circuit closing means to either make or break contact with said circuit terminals in a predetermined sequence.

8. A telephone jack of normal construction, circuit terminals mounted thereon, a rotating member mounted closely adjacent said circuit terminals, circuit closing means on said rotating member so constructed and arranged that they may contact said circuit terminals, a plug movable means actuated by the insertion of said plug into said jack and positioned adjacent said rotating means and operably connected thereto whereby movement of said movable means causes rotation of said rotating means and changes the relative position of said circuit terminals and said circuit closing means.

9. A telephone jack of normal construction, a base member, signal circuit terminals supported by said base member, an elongate bodily moveable contact member, having a plurality of contacts thereon, said contact member being bodily moveably supported by said base member and in operative relation with said terminals, a plug, said bodily moveable contact member so mounted and arranged that it is operative upon insertion of the plug into said jack and is bodily moved upon such insertion of said plug whereby a predetermined number of circuits are made or broken in a predetermined sequence, and means tending to restore said bodily movable member to its original position.

10. A telephone jack of normal construction, a base member, signal circuit terminals supported by said base member, an elongated movable contact member having a plurality of contacts thereon, said contact member being bodily movably supported by said base member and in operative relationship with said terminals, a plug, said bodily movable contact member so mounted and arranged that it is bodily moved upon insertion of the plug into said jack whereby a predetermined number of circuits are made or broken in a predetermined sequence, means tending to restore said bodily movable member to its original position, said signal circuit terminals being mounted on said jack and arranged one behind the other in such a manner that the projected area of the jack upon a panel surface is substantially independent of the number of circuits controlled by said jack.

11. The combination set forth in claim 1, said means having a plurality of contacts thereon and signal circuit terminals mounted on said jack in operative relation to said contacts.

12. The combination set forth in claim 2, said contact means having a plurality of contacts thereon and signal circuit terminals mounted on said jack in operative relation to said contacts.

13. The combination set forth in claim 1, said means comprising a plurality of segments angularly adjustable and contact elements on certain of the segments.

14. A telephone jack of normal construction, a base member, signal circuit terminals supported by said base member, an elongate movable contact member having a plurality of contact portions in operative relation with said terminals, means mounting said contact member on said base member, said contact member being bodily movable with respect to said base member and said mounting member, a plug, said bodily movable contact member so mounted and arranged that it is operative upon insertion of the plug

into said jack and is bodily moved upon such insertion of said plug whereby a predetermined number of circuits are made or broken in a predetermined sequence.

15. The combination set forth in claim 14, said bodily movable contact member being mounted for translation with respect to said base member.

16. A telephone jack of normal construction, a plug, an elongate member mounted for rotation, reciprocating means mounted on said jack so constructed and arranged that actuation of said means rotates said elongate member, said means being actuated by the insertion of said plug into said jack.

17. The combination set forth in claim 16, contact elements on said elongate member, terminal elements positioned in side by side relationship beside said member whereby rotation of said member makes or breaks contact between said terminal element and said contact elements.

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