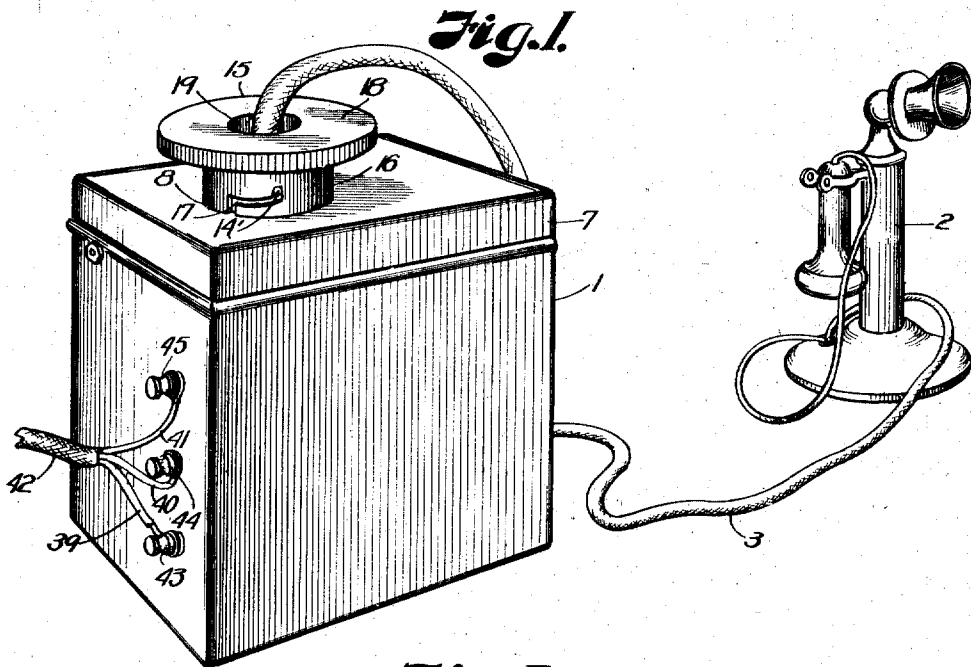
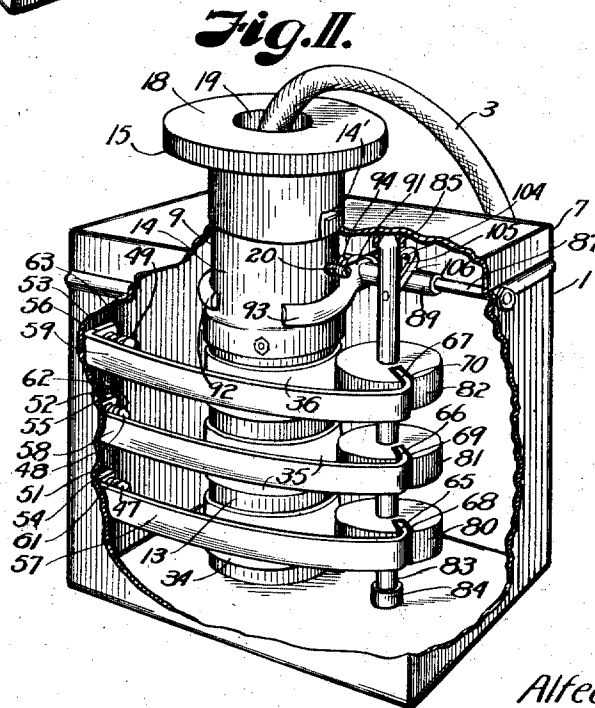


A. TOLL.
SWIVEL FOR TELEPHONE BOXES.
APPLICATION FILED MAY 10, 1915.

1,255,248.

Patented Feb. 5, 1918.
2 SHEETS—SHEET 1.



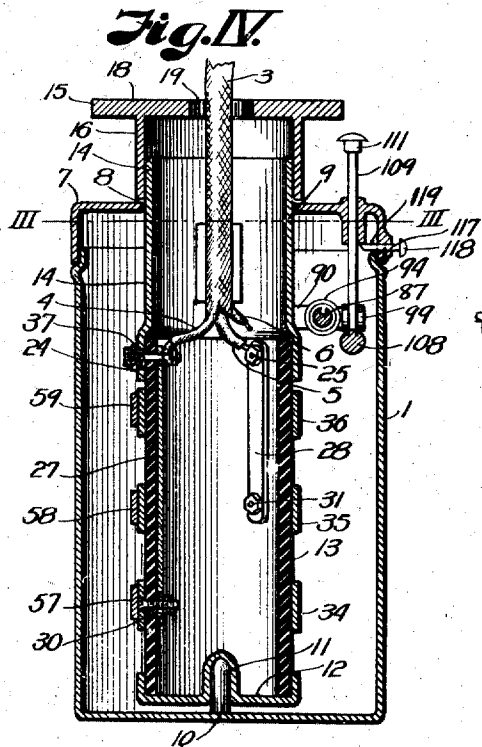
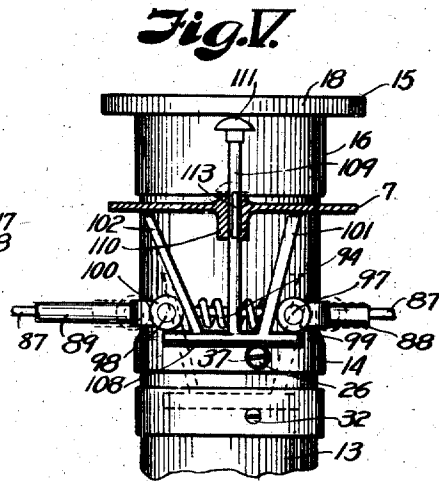
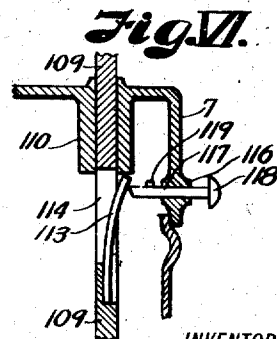
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SWIVEL FOR TELEPHONE-BOXES.

1,255,248.

Specification of Letters Patent.

Patented Feb. 5, 1918.

Application filed May 10, 1915. Serial No. 27,268.

To all whom it may concern:

Be it known that I, ALFRED TOLL, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Swivels for Telephone-Boxes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon which form a part of this specification.

My invention relates to a swivel for telephone boxes, and has for its principal object to provide a device for facilitating the untwisting of the wire cord of an ordinary desk telephone.

In accomplishing this object I have provided improved details of structure, the preferred forms of which are illustrated in the accompanying drawings, wherein:—

Figure I is a perspective view of a telephone box containing my improvement and illustrating its association with a desk telephone instrument.

Fig. II is a perspective view of the box, a part of the box being broken away to show my improvements.

Fig. III is a horizontal section on the line III—III, Fig. IV.

Fig. IV is a vertical section on the line IV—IV, Fig. III.

Fig. V is an enlarged detail view of the clamp and its actuating mechanism.

Fig. VI is a detail perspective view of the clamp latch.

Referring more in detail to the drawings:—

1 designates a telephone box, 2 the desk instrument, and 3 a wire cord within which the talking, ringing and circuit return wires 4, 5 and 6 are run to mounting in the box.

In the present construction the box 1 comprises a body portion and removable lid 7, which may be locked in any suitable manner to the body and has an aperture 8 through which a barrel 9 is extended so that it may freely rotate; the barrel being supported on a pin 10 in the bottom of the box that projects into a socket 11 in the bottom 12 of the barrel.

The construction of the barrel comprises the bottom 12, which may be of any suitable material, a cylinder 13 of fiber, or other insulating material, and a cap cylinder 14 that rises from the cylinder 13 and extends through the cover aperture 8; the cap cylinder being provided with a laterally directed pin 14' above the cover for locking the cap 15 in place.

The cap 15 comprises a collar 16, which is carried on the exposed end of the cap cylinder 14 and has a bayonet slot 17 through which the pin 14' is adapted for travel and whereby the cap may be locked to the cylinder, and a cover plate 18 that is fixed to the collar and has a reduced opening 19 at the center through which the cord 3 extends into the box within the cylinder.

The cord 3 is anchored to the cap cylinder 14 by set screws 20 that extend through boxes 21 on the cylinder into sockets 22 in a clamp 23 that is fixed to the cord, so that when the parts are assembled the clamp may be fixed snugly on the cord adjacent the free ends of the wires, and when projected into the cap cylinder may be fixed in place by adjustment of the set screws.

The three wires 4, 5 and 6 connect respectively with separate binding posts 24, 25 and 26 on conductive bars 27, 28 and 29 that lie within the insulation cylinder 13 and are fixed thereto by conductive bolts, or the like. 30, 31 and 32 that extend through the cylinder and also serve to anchor brush rings 34, 35 and 36 to the outer periphery of the cylinder, so that current may flow from the rings through the attaching members to the bars and thence to the wires 4, 5 and 6; the preferred construction being that wherein the binding posts 24, 25 and 26 serve to attach the upper ends of the bars 27, 28 and 29 to the insulation cylinder and also to connect the two cylinder members (Fig. IV).

In this construction the parts of the posts extending through the conductive extension cap cylinder 9 are protected by insulation collars 37 in order to prevent short circuiting through the cap cylinder.

The line wires 39, 40 and 41, which come to the box through the cord 42, are connected respectively with binding posts 43, 44 and 45 on the box, the inner ends of which project into the box and carry heads 47, 48 and 49.

Mounted on the inner ends of the binding posts 43, 44 and 45 and insulated from the box by fiber, or like blocks, 51, 52 and 53 are the heads 54, 55 and 56 of brush arms 57, 58 and 59; the said heads being of flexible material, preferably spring metal, and held yieldingly in place by springs 61, 62 and 63, which surround the binding posts and bear against the brush heads and post heads respectively.

The brushes 57, 58 and 59 extend along and normally contact with the collars 34, 35 and 36 so that current flowing through the line wires and binding posts 43, 44 and 45 passes to the collars and to the instrument wires 4, 5 and 6.

The free ends of the brushes have hooks 65, 66 and 67 thereon which lie in insulation sockets 68, 69 and 70 in disks 80, 81 and 82 respectively, that are fixed on a vertical spindle 83 which is revolvably mounted in bearings 84 and 85 in the bottom and cover of the box 1 respectively; the brushes being bent so that they are held in contact with the collars under normal conditions, and the hook mountings being such that when the vertical spindle is rotated the brushes are pushed away from the collars to interrupt the flow of current through the brushes.

Extending transversely through the box and along the cap cylinder 14 is a rod 87, and slidably mounted on said rod are sleeves 88 and 89, which carry arms 90 and 91 having curved fingers 92 and 93 that lie along and normally grip the cap cylinder to hold the same firmly in place and prevent rotation thereof; the fingers being held yieldingly against the cylinder by a spring 94 that surrounds the rod 87 and has hooked ends 95-96 connected with respective arms 90 and 91.

The arms 90 and 91 have extensions 97 and 98 provided with rollers 99 and 100 against which the spreading arms 101 and 102 are adapted to bear; the arm 101, which is operable on the roller of the arm 90, having a slight incline relative to the other inclined arm 102 in order that while the operation of the wedge arms may move the gripping arm 90 to free the cap cylinder, movement of the arm 91 is greater to not only free the cylinder, but also actuate mechanism for rotating the spindle 83 that controls the spread of the brushes 34, 35 and 36.

This last named mechanism comprises a pin 104 on the sleeve 89, which projects into a slot 105 in an arm 106 that is fixed to the spindle, so that when the sleeve 89 is moved outwardly along the rod, the arm is rotated to rotate the spindle and spread the brushes; reverse movement of the sleeve drawing the spindle back to its initial position to insure recontact of the brushes.

The spreading arms 101-102 are connected by a head 108 which carries a push rod 109 that is slidably mounted in a bearing 110 in the top 2 of the telephone box, and has a button 111 on its free end so that the rod may be depressed by pressure on the button.

In order to automatically lock the push rod in lowered position so that the spreading arms may be held away from the barrel, I provide the rod 109 with a spring metal latch tooth 113, which is adapted to engage the under edge of the bearing 110 when the rod is depressed; the tooth being located in a groove 114 in the rod to permit the rod to slide within the bearing, so that when the rod is depressed, the tooth is projected from the rod and will engage the bottom of the bearing to hold the rod in functional position.

Slidably mounted in a bearing 116 in the side of cover 7 is a pin 117 which is adapted to engage the tooth 113 and force the same back into the rod groove to enable the rod to return under tension of the spring 94; the pin being provided with an outer head 118 and an inner keeper 119 that anchor the same to the bearing.

In using the apparatus, presuming the parts to be constructed and assembled, as described, should the instrument cord 3 become twisted, as it frequently does in actual use, it is not necessary for any of the parts to be disconnected or the instrument to be manipulated in order to untwist the cord. Presuming that it is desired to untwist the cord, it is only necessary to depress the push rod 109 to force the arms 101-102 away from the barrel and rotate the spindle to spread the brushes to free the barrel to which the wires in the cord 3 are attached, so that the barrel may be revolved within the box to untwist the cord.

The cylinder is released and the contacts broken when the rod is depressed, by the same operation of the rod; that is, when the rod is pushed downwardly the slightly inclined arm 101 moves the finger 92 away from the cap cylinder sufficiently to free the cylinder and the arm 102 having the greater incline moves the finger 93 away from the cylinder and also rotates the spindle upon which the contact brushes are mounted; the push rod being automatically locked in its lowered position by its latch and held in such position until the latch is released. This movement of the spindle springs the brushes away from the cylinder collars to break the contact, so that while the barrel is being revolved no current is flowing through the instrument wires.

When the cord has been straightened, the parts are returned to normal position by moving the latch pin 117 against the latch tooth 113 to force the latter into its groove; 130

the spring 94 automatically returning the parts to normal and operative position as soon as the latch is relieved.

By mounting the springs 61, 62 and 63 on the brush posts, pressure is constantly maintained on the brushes that tends to hold the brushes in contact with the barrel collars, so that if the brushes should be of unequal length, the inequality is taken up by the springs.

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

1. In combination with separated wires, one rotatable relative to the other, brushes on the separate wires adapted for coöperation to close a circuit therebetween, and manually operable means for actuating one of said brushes to make or break a connection thereof with the brush on the other wire.

2. The combination with a connection box, of line wires, flexible contact members connected with said line wires, a rotatable body within the box having brushes for engagement with the flexible contact members, a telephone instrument, wires connected with the instrument and said brushes and rotatable in the box, and manually operable means for actuating the flexible contact members to break their connection with said brushes.

3. The combination with line and instrument wires, of a rotatable contact element for the instrument wires, brushes for the line wires in coöperative relation to the instrument wire contact member, means for locking the contact member, and means for simultaneously actuating the locking means and the brushes.

4. The combination with a rotatable barrel having peripheral contact collars, of wires projected into the barrel and connected with said collars, brushes normally engaging the collars, and means for spacing the brushes from the collars.

5. The combination with a rotatable barrel having peripheral contact collars, of wires projected into the barrel and connected with said collars, brushes normally engaging the collars, means for normally locking the barrel, and mechanism for simultaneously actuating the locking means and spacing the brushes from said collars.

6. The combination with a rotatable barrel having peripheral contact collars, of wires projected into the barrel and connected with said collars, brushes normally engaging the collars, means for spacing the brushes from the collars, and means for tensioning the brushes to insure contact thereof with the barrel collars.

7. The combination with a rotatable barrel having peripheral contact members, of rotatable means for supporting a plurality

of brushes, independent brushes for the several barrel contacts, having insulating connection with said rotatable means, and wires projected into the barrel and conductively connected with said contact members.

8. The combination with a rotatable barrel having peripheral contact members, of rotatable means for supporting a plurality of brushes, independent brushes for the several barrel contacts, having insulated connection with said rotatable means, wires projected into the barrel and conductively connected with said contact members, and means for actuating the said rotatable means to break the brush contacts.

9. The combination with a movable barrel having contact members, of a rotatable spindle, a brush for each contact member having one end connected with and insulated from the spindle, means for anchoring the opposite ends of the brushes, and means for rotating the spindle to spread the brushes from the movable barrel.

10. The combination with a movable barrel having contact members, of a rotatable spindle, a plurality of disks fixed on the spindle, and having radial insulation blocks, individual brushes contacting the barrel members, and having hooked ends anchored in the insulation blocks, means for anchoring the opposite ends of the brushes, and means for actuating the spindle to space the brushes from the barrel.

11. The combination with a movable barrel, of a plurality of individual binding posts, a rotatable spindle having individual insulation members, a brush having one end anchored to each of the binding posts and its opposite end in hooked engagement with an insulation member on the support, and means for actuating the spindle to break the contact of the brush with its barrel member.

12. The combination with a binding post, of a movable barrel having a contact member, of a rotatable spindle, a brush having a head slidably mounted on the binding post, a spring tensioning the head relative to the post, and a hook on the opposite end of the brush eccentrically connected with and insulated from the spindle, and means for actuating the spindle to space the brush from the barrel.

13. The combination with a binding post, of a movable barrel having a contact member, a brush having one end anchored to the binding post, a spindle eccentrically and non-conductively connected with the opposite end of the brush, and means for actuating the spindle to space the brush from the barrel contact.

14. The combination with a binding post, of a movable barrel having a contact member, a rotatable spindle, a disk on said spindle having a radial insulation block, a brush anchored to the binding post and to

the insulation block on said spindle, means for normally tensioning the spindle to induce contact of the brush with the barrel contact, and a spacer for actuating the spindle to break the contact.

15. The combination with a rotatable barrel having a contact member, of a brush normally engaging said contact, means for normally retaining the barrel in fixed position, and mechanism for actuating the holding means and brush to free the barrel and break the contact.

16. The combination with a rotatable barrel having a contact member, of a brush normally engaging the contact member, a rod, collars slidably mounted on the rod and having clamp fingers engaging the barrel, a spindle operatively connected with the brush, yielding means for normally retaining the collars in operative position, and a spacer for moving the collars against the tension of said yielding means.

17. The combination with a rotatable barrel having a contact member, of a brush normally engaging the contact member, a rotatable member for supporting the brush, slide collars having fingers normally clamping the barrel and provided with bearing portions, a spring normally retaining the fingers in holding relation to the barrel, connection between one of the fingers and the brush support, a substantially wedge-shaped member adapted for engaging the arm bearings to actuate the fingers, and a handle member for actuating said wedge-shaped members.

18. The combination with a rotatable barrel comprising an insulation cylinder, spaced contact rings on the insulation cylinder, instrument wires having separate connection with the several contact rings, line wires, separate brushes connected with the line wires and with the several contact rings, mechanism for locking the barrel, and means operable by the locking mechanism for controlling contact of the brushes with said rings.

19. The combination with a rotatable barrel comprising an insulation cylinder, spaced contact rings on the cylinder, conductive members located within the cylinder, and having conductive connection with the rings, a brush for each of the contact rings, means for locking the cylinder, and mechanism operable by said means for controlling contact of the brushes with said rings.

20. The combination with a rotatable barrel comprising an insulation cylinder, spaced contact rings on the cylinder, conductive members located within the cylinder, and

having conductive connection with the rings, 60 a brush for each of the contact rings, means for locking the cylinder, mechanism operable by said means for controlling contact of the brushes with said rings, an extension on the insulation cylinder, a guide collar 65 mounted in the extension, and instrument wires connected with the several conductive members and having a cord portion located in said collar.

21. The combination with a rotatable barrel having a contact member, of a brush normally engaging the contact member, a rod, collars slidably mounted on the rod and having clamp fingers engaging the barrel, a spindle operatively connected with the brush, yielding means for normally retaining the collars in operative position, a spacer for moving the collars against the tension of said yielding means, and means for automatically locking the spacer in functional position.

22. The combination with a rotatable barrel having a contact member, of a brush normally engaging the contact member, a rod, collars slidably mounted on the rod and having clamp fingers engaging the barrel, a spindle operatively connected with the brush, yielding means for normally retaining the collars in operative position, a spacer for moving the collars against the tension of said yielding means, means for automatically locking the spacer in functional position, and manually operable means for actuating the spacer lock.

23. The combination with a rotatable barrel having a contact member, of a brush normally engaging the contact member, a rotatable member for supporting the brush, slide collars having fingers normally clamping the barrel and provided with bearing portions, a spring normally retaining the fingers in holding relation to the barrel, connection between one of the fingers and the brush support, a substantially wedge-shaped member adapted for engaging the arm bearings to actuate the fingers, a housing inclosing the working parts, a bearing member on said housing, a grooved rod slidable in the bearing member and connected with the wedge-shaped member, a latch normally housed in the rod groove and adapted for projection to locking engagement with the bearing, yielding means for projecting the latch, and a pin slidably mounted in the housing and adapted for returning the latch to free the grooved rod.

In testimony whereof I affix my signature.
ALFRED TOLL.