O. KESSLER.

SWIVEL ATTACHMENT PLUG.

APPLICATION FILED JULY 27, 1916.

1,231,379.

Patented June 26, 1917.

2 SHEETS—SHEET 1.

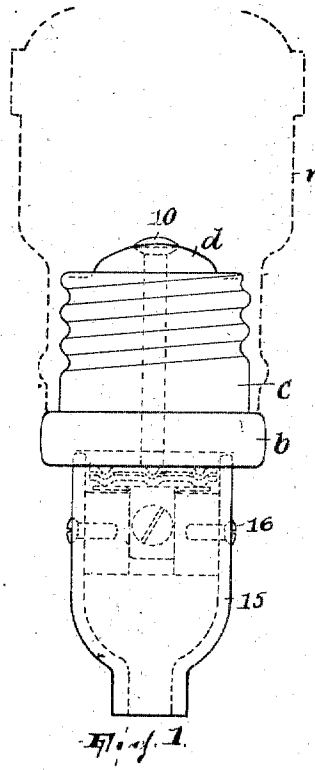


Fig. 1.

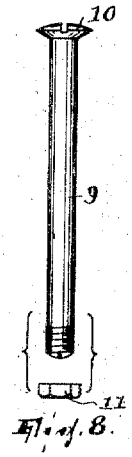


Fig. 8.

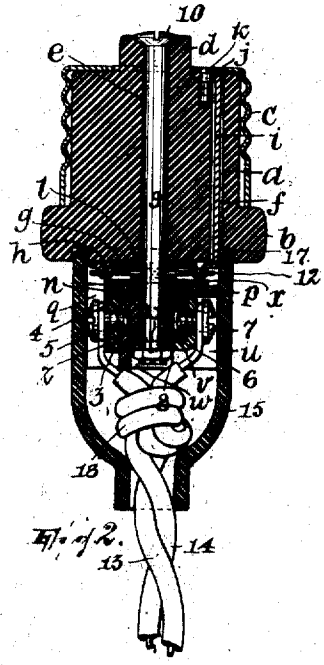


Fig. 2.

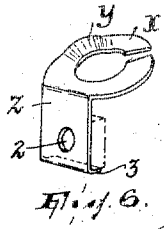


Fig. 6.

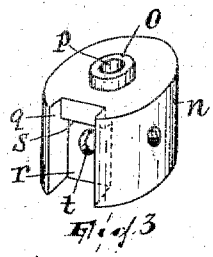


Fig. 3.

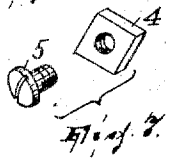


Fig. 7.

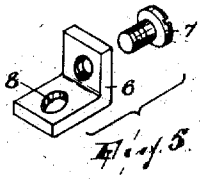


Fig. 5.

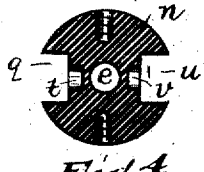


Fig. 4.

WITNESS:

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2 SHEETS—SHEET 2.

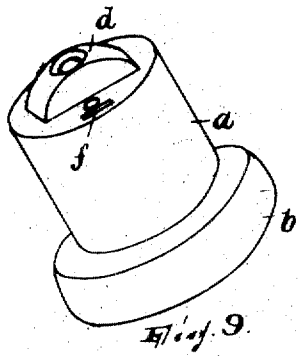


Fig. 9.

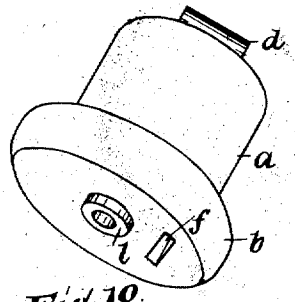


Fig. 10.

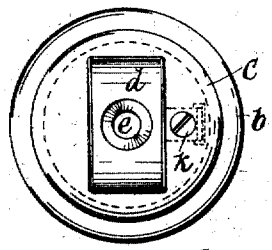


Fig. 11.

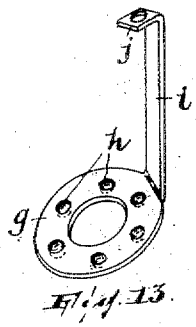


Fig. 13.

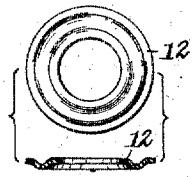


Fig. 14.

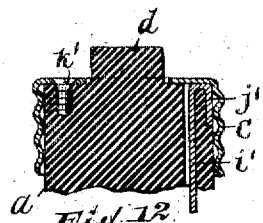


Fig. 12.

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SWIVEL ATTACHMENT-PLUG.

1,231,379. Specification of Letters Patent. Patented June 26, 1917.

Application filed July 27, 1916. Serial No. 111,631.

To all whom it may concern:

Be it known that I, OTTO KESSLER, a citizen of the United States, residing at Passaic, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Swivel Attachment-Plugs, of which the following is a specification.

This invention relates to those attachment devices for electric wires in which there are a plug element to be fitted into a socket and a wire attachment element swiveled together, and it consists in certain improvements in such devices having for their principal object to permit freedom of swiveling movement with maintenance of perfect electric contact between the elements, produce simplicity and economy of construction and promote facility of assembling the parts of the device and attaching the wires.

In the accompanying drawings,

Figure 1 is a side elevation of the device showing the socket in dotted outline;

Fig. 2 is a longitudinal sectional view of the device;

Fig. 3 shows the insulating member of the wire attachment element in perspective;

Fig. 4 shows said member in transverse section;

Figs. 5, 6 and 7 show the fittings applied to said member in perspective;

Fig. 8 shows the parts of the spindle in side elevation;

Figs. 9 and 10 are perspective views of the insulating member of the plug element and Fig. 11 is a plan of the plug element;

Fig. 12 shows a modification of the plug element in section;

Fig. 13 is a perspective view of a contact device carried by the plug element; and,

Fig. 14 shows in plan and in transverse section a contact disk which is preferably interposed between the elements.

The plug element includes an insulating body or member *a* of cylindrical form, with a flange *b* at one end to be gripped by the thumb and finger in turning the plug. The member *a* is provided with a metal contact *c*, in the present case being a threaded sheath. The entering end of the member *a* has an upstanding boss *d* which is rectangular in plan (Fig. 11) penetrating a rectangular hole in the end of the sheath, said hole fitting the boss, which thereby keeps the sheath from turning thereon. Member *a* has an axial bore *e* penetrating the same and its boss. *f* is a hole extending parallel with the bore *e* through member *a*. An annular disk *g*, having small knobs or bosses *h* pressed therein and projecting away from member *a*, bears against the flat end of member *a* which is provided with the flange *b*, and said disk has an integral stem *i* which projects through the hole *f* and has its free end bent over, as at *j* and in electrical contact with the inner surface of the end portion of the sheath *c*, a screw *k* being driven through the sheath and the end *j* of said stem into member *a*. The disk *g* snugly receives an integral low-lying stud *l* on the outer end of the member *a*. In view of the foregoing it will be seen that the plug element is quite simple in construction, that its parts may be readily assembled and that when they are assembled they will permanently retain their intended relation to each other notwithstanding the displacing influence of the forces operating when the plug is fitted to the socket, which is indicated in Fig. 1 by the dotted outline *m*. A modification of the plug is shown in Fig. 12 in which the free end *j'* of the stem *i'* is bent outwardly and downwardly again so as to have contact with not only the end but the cylindrical portion of the sheath *c*, the screw *k'*, screwed into the member *a*, penetrating only the sheath.

The wire attachment element includes a cylindrical insulating body or member *n* having at its inner end an integral low-lying stud *o* and penetrated by an axial bore *p*. In one side of member *n* a wide slot *q* is formed longitudinally thereof, the same having a countersink *r* extending from the outer end of member *n* toward but not to its inner end, thus leaving a shoulder *s*; at the bottom of the countersink is a plain hole *t*. Diametrically opposite the slot *q* there is formed another slot *u* which extends from the outer end toward but not to the inner end of the member *n* and has a hole *v* at the bottom thereof. From the outer or free end of this slot across the outer end of member *n* toward but not to the side thereof having the slot *q* there is formed another slot *w*. An angular slot is thus produced by the slots *u*, *w*. *x* is an annular split disk preferably formed with a bend at *y* and bearing against the inner end of member *n*, receiving snugly the stud *o*; it has a shank *z* upstanding therefrom and formed with a hole 2, the end of the shank being bent inwardly. A rectangular nut 4 is received in the countersink *r*, being traversed by the shank, one face of the nut bearing against the shoulder *s* and the other against the bent-off end 3 of the shank,

and into this nut, penetrating the hole 2 in the shank, is screwed the screw 5, whose inner end is engaged with the plain hole *t* in the countersink *r*. It will be noted that the screw is not screwed into the hole *t* (which construction might lead to stripping the threads in the soft material of the member *n*) but that the parts are retained in place because of the angular form of the element *x*—*z* and the fact that it is held from lateral displacement by the stud *o* and longitudinal displacement by the engagement of the screw in the hole *t*. A metallic angle piece 6, having one arm lying in the slot *u* and having screwed into it a screw 7 which engages in the hole *v* and its other arm lying in the slot *w* and formed with a hole 8, is secured to the member *n* by said screw and the swivel element of the device, as will now appear.

Said swivel element is a spindle 9 in the form of a screw, the same penetrating bores *e*, *p* of the members *a* and *n*, its head 10 being countersunk in the boss *d* and affording a contact portion and its other end being threaded and penetrating the hole 8 of the angle piece 6 and receiving a nut 11 which may be prevented from disengagement by splitting and then upsetting said end of the spindle (compare Figs. 8 and 2).

Preferably, the bent split disk *x* acts as a spring to maintain the annular and annularly channeled disk 12, shown in Fig. 14, against the circular series of bosses *h* of the disk *g*. When the nut on the spindle has been tightened the arrangement is such, on account of the described construction of the parts *g*, *x* and 12, that the wire attachment member may be turned with perfect freedom although the spindle binds the parts together so firmly as to produce a perfect electrical contact.

The wires 13 and 14 are respectively attached at their ends to the screws 5 and 7; and these latter being on the sides of the wire attachment device are readily accessible. It will be noted that the manner of connecting the wires substantially as shown is such as to afford substantial resistance to any strain imposed upon them, due to the device *x z* bearing against the inner end of member *n* and the angle piece 6 being supported by the spindle and by the engagement of screw 7 in the plain hole *v*.

The attachment element is preferably equipped with a bell-shaped sheath 15 of insulating material slipped over the member *n* and secured thereto by screws 16 (Fig. 1), its inner edge being received in an annular groove 17 in the member *a*. Its restricted outer end, if a knob 18 is formed in the wires within the shell, will assume any strain imposed on the latter.

It will be understood that the circuit from one wire will be through the part 6 and the terminal afforded by part 9 to one contact in the socket *m* and from the other wire through the parts *z*—*x*, 12, *g*—*i*, and the terminal afforded by part *c* to the other contact of the socket.

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

1. In a swivel attachment device, the combination, with an insulating plug, of an insulating wire attachment member and a conductive spindle forming a swiveling axis for and penetrating and holding together the plug and said member and affording one terminal of the device, means on the plug, reaching between said plug and member, to afford the other terminal of said device, a wire binding means on said member electrically attached to said spindle, and another wire binding means including an angular conducting device also reaching between the member and the plug and secured to the exterior of the said member and a stud adapted to hold said conducting device against lateral displacement, said conducting device being in electrical connection with said terminal affording means on the plug.

2. In combination, an insulating plug and an insulating wire attachment member having means to swivel-connect them affording one terminal of the device, a wire-binding device on the member electrically connected to said means, another wire-binding device on the member having contact means extending between the plug and said member, another terminal on the plug, and a conductive device on the plug electrically connected to the second terminal and having contact means between said plug and member, one of said means having a circular series of integral knobs engaging the other.

3. In combination, an insulating plug and an insulating wire attachment member having means to swivel-connect them affording one terminal of the device, a wire-binding device on the member electrically connected to said means, another wire-binding device on the member having contact means extending between the plug and said member, another terminal on the plug, and a conductive device on the plug electrically connected to the second terminal and having contact means between said plug and member, one of said means having a circular series of knobs and the other being a spring, and an annularly channeled conductive disk arranged between said means.

In testimony whereof I affix my signature.

OTTO KESSLER.