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PLUG AND SOCKET HAVING A SPRING-PRESSED LATCH

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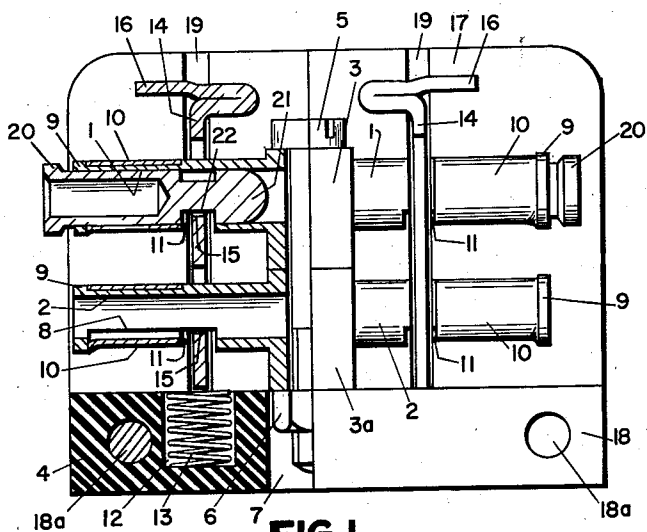


FIG. 1.

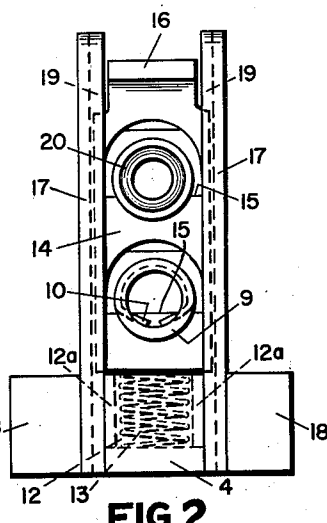


FIG. 2.

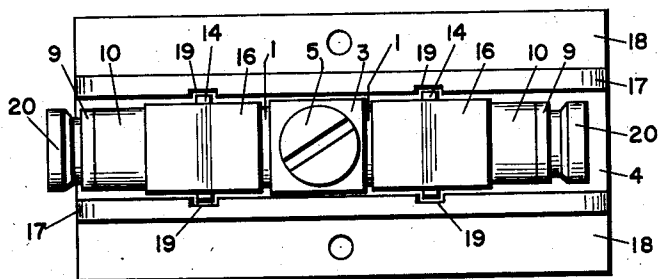


FIG. 3.

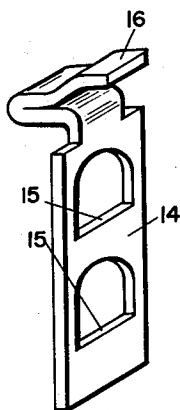


FIG. 4.

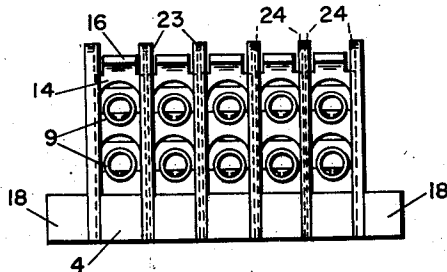


FIG. 5.

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UNITED STATES PATENT OFFICE

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PLUG AND SOCKET HAVING A SPRING-PRESSED LATCH

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1 Claim. (Cl. 339—91)

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This invention relates to electrical wiring systems to provide a terminal connection for accommodating the ferruled ends of electrical conductors.

It has previously been proposed to provide a wiring system containing double ended socket members which are built up from clamp plates and compressed together by means of a screw passing through the centre of the clamp plates into a base plate against the tension of a spring, whereby after a plug has been inserted into each end of the double ended socket the screw can be tightened so as to compress the clamps into engagement with the plugs.

The invention is particularly suitable for the wiring of aircraft where there are several connections arranged in a group or groups or located in junction or distribution boxes.

An object of the invention is to provide a terminal connection whereby the ferruled ends of electrical conductors are locked automatically when inserted into a socket.

A further object of the invention is to provide a terminal connection with a manually actuated means to enable ferrules which have been held in locking engagement with a socket to be released.

Other objects, features of construction, and arrangement of parts will be found from the following description with reference to the drawing and the scope of the invention from the appended claims.

A detailed description will now be given with reference to the accompanying drawing, in which:

Fig. 1 is a sectional elevation of a terminal assembly.

Fig. 2 is an end view of Fig. 1.

Fig. 3 is a plan view.

Fig. 4 is a detail of a latch plate, and

Fig. 5 is an end view of a bank of terminals.

Referring to the drawing:

Two double ended socket members 1, 2 integral with a centre pillar 3, 3^a are placed one above the other and are secured to a base plate 4 by means of a bolt 5 passing through the central pillars 3, 3^a and being secured thereto by a nut 6 screwed on the bolt 5 in a recess 7 formed in the underside of the base, as shown in Fig. 1.

Each tubular end of the socket members 1, 2 is provided with a longitudinal slot 8 on the underside, and an external flange 9 at the outer end.

A separate leaf spring 10 embraces each tubular end of the sockets 1, 2 in such a manner, that

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the ends of the springs 10 terminate within the margin of the slots 8. A clearance 11 is provided between the inner end of each slot and side of the spring 10 for the purpose hereinafter set forth.

The base plate 2 is provided with an annular recess 12 beneath the clearances in the respective rows of tubular ends of the sockets 1, 2 to accommodate a helical spring 13. Said recess 12 is provided with cross slots 12^a for the purpose hereinafter set forth.

A separate slotted latch plate 14 is inserted over the respective tubular ends in alignment with the clearances 11. In this position the lower end of said latch plates 14 engages with the helical spring 13, to provide a spring loading and at the same time retaining the lower edge of the slots in said latch plates 14 in engagement with the clearances provided on the tubular ends of the sockets 1, 2. The upper ends of these said latch plates 14 are bent over horizontally to form a depressor plate 16.

An upstanding plate 17 is fixed to the base 3 on each side of the tubular sockets 1, 2 together with blocks 18 by means of bolts 18^a. Said plates 17 are formed with complementary vertical grooves 19 in direct alignment with the cross slots 12^a whereby the latch plates 14 are free to slide vertically and are prevented from being displaced.

The blocks 18 form a mounting for securing the terminal assembly to a fixed support.

A ferrule 20 with a spherical end 21 and a circumferential groove 22 is removably fitted in to the tubular ends of the sockets. In operation it is assumed that the ferrules 20 are fixed to the ends of electric leads; in order to provide a connection between the leads and terminal assembly, it is only necessary to press the ferrules 20 into the double ended sockets 1, 2 until the spherical ends 21 engage the lower slotted ends 15 of the latch plate 14 to cause same to move downwardly against the tension of the spring 13; as soon as the groove 22 coincides with the clearance 9 the latch plate 14 springs into engagement with said groove 22 whereby the ferrule is locked to the socket.

To release any one of the ferrules 20 it is only necessary to apply a downward pressure on the depressor 16 to move the latch plate 14 out of engagement with the circumferential groove 22 when the ferrule 20 can be withdrawn.

The invention is not limited to the number of double ended sockets arranged one above the other.

Referring to Fig. 5 the double ended sockets

are arranged in a bank of four, in this construction the intermediate upstanding plates 23 form the dividing wall between the rows of sockets, and are provided with complementary vertical grooves 24 on both sides to enable the latch plates 14 to slide vertically as hereinbefore described with reference to Figs. 1 to 3.

I claim:

In a socket coupling for electrical wiring systems the combination of a base plate having upstanding parallel walls with diametrically opposed vertical guide slots therein, a centre pillar fixed to the base plate between the walls, at least one double ended resilient socket member mounted in said pillar for receiving grooved inserts, each socket end consisting of a tubular member with a longitudinal slit which terminates into a latch slot, a spring surrounding each socket being connected to the slit therein, a separate spring loaded depressible latch plate inserted over each end of the sockets and slidable in the vertical guides in the walls, each said latch plate formed

with stirrup-shaped latches which encircle the sockets and extend into the latch slots therein whereby grooved inserted lugs are locked to said sockets.

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