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PLUG AND JACK ASSEMBLY

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2 Sheets-Sheet 1

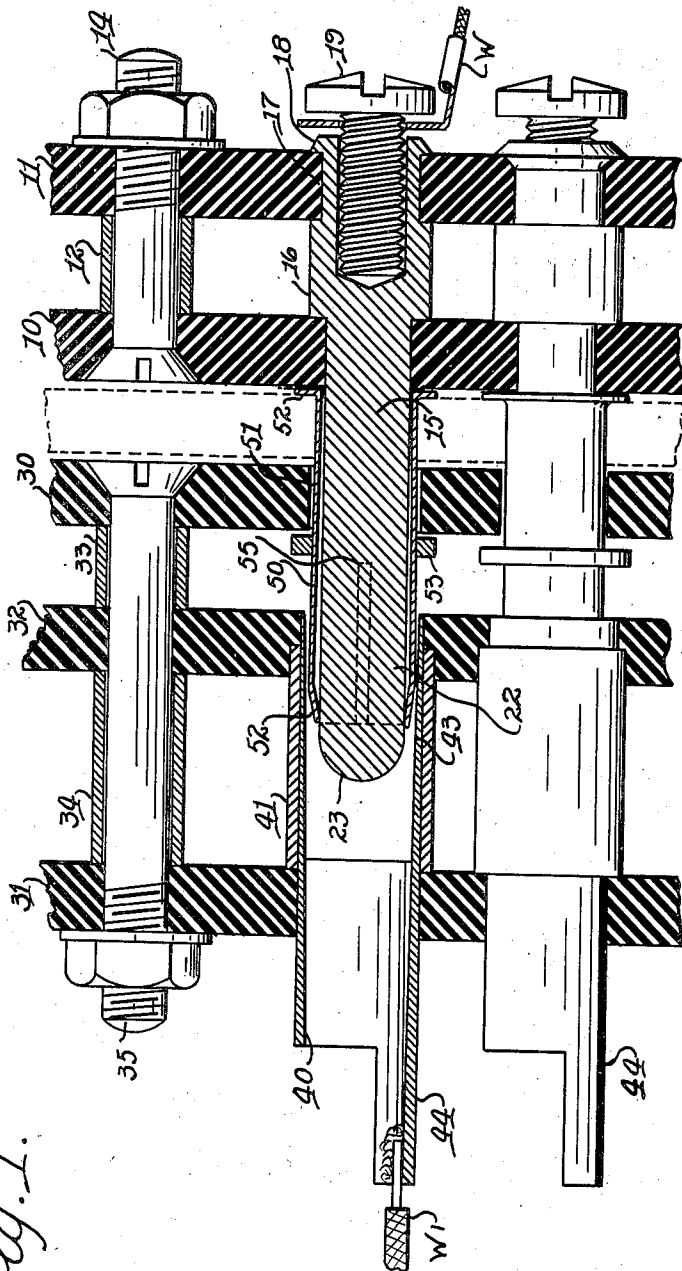


Fig. 1.

Inventor.
Eugene L. Mentor.
By Chas. T. Hawley
ATTY.

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INVENTOR.
Eugene L. Mentor.
BY
Chas. P. Hawley
ATTY.

UNITED STATES PATENT OFFICE

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PLUG AND JACK ASSEMBLY

Eugene L. Mentor, Westminster, Mass., assignor
to Simplex Time Recorder Co., Gardner, Mass.,
a corporation of Massachusetts

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This invention relates to a plug and jack assembly designed for conveniently connecting or disconnecting a pair of wires. My improved plug and jack assembly is capable of general application but is particularly adapted for use in a multiple assembly block by which a plurality of plugs and jacks are simultaneously connected or disconnected.

It is the general object of my invention to provide a plug and jack assembly which may be easily operated manually and in which a firm and reliable contact is maintained when the parts are assembled. A further object is to provide a plug and jack assembly so constructed that each plug is accurately aligned with its jack before final seating therein.

To the attainment of these general objects, important features of my invention relate to the provision of guide sleeves having slightly tapered inner surfaces, plugs of substantial diameter and each having a rounded entrance end, and interposed jack sleeves mounted for limited sliding movement relative to the guide sleeves and each having a split and contracted inner end portion which makes effective and reliable engagement with its plug when the plugs are fully seated.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a side elevation, partly in section, of my improved plug and jack assembly, partly assembled;

Fig. 2 is a similar view but with the parts fully assembled;

Fig. 3 is a side elevation of a plug as used in my invention; and

Fig. 4 is a side elevation of a slidable jack sleeve.

Referring to the drawings, my improved assembly comprises a plug unit and a jack unit. Each of these units may be made-up to accommodate any number of plugs or jacks and seventy or more pairs of plugs and jacks commonly constitute a single assembly.

The plug unit shown at the right in Fig. 1 comprises a front panel 10 and a back panel 11, held in spaced relation by collars 12 and firmly secured together by bolts 14. Each plug 15 has an enlarged portion 16 preferably equal in length to the spacing collars 12, and each plug also has a reduced portion 17 which extends through and is preferably riveted outside of the panel 11, as shown at 18. The outer end of each plug 15 is

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also threaded to receive a screw 19 by which a wire or terminal clip W may be secured.

The operative portion 22 (Fig. 3) of the plug 15 is preferably cylindrical and of substantial diameter and is rounded at its inner end as indicated at 23. The spaced panels 10 and 11 and the plugs 15 mounted in definitely spaced relation between the panels 10 and 11 constitute the plug unit.

The jack unit comprises a front panel 30, a back panel 31 and an intermediate panel 32, all held in spaced relation by collars 33 and 34 and clamped together by bolts 35.

Guide sleeves 40 are mounted in aligned openings in the panels 31 and 32 and are surrounded by reinforcing bushings 41, preferably seated in recesses 42 in the rear side of the intermediate panel 32 and abutting the front surface of the back panel 31. The bushings 41 help in aligning the guide sleeves 40 and in preventing swelling or outward expansion of the guide sleeves when in use. The parts 40 and 41 may be secured together before assembly in the jack unit or may be formed integral, if so desired.

Each guide sleeve 40 has its inner surface 43 slightly enlarged or tapered toward the front panel 30, and the rear end of each guide sleeve 40 is preferably cut away to provide an extension 44 to which a wire W1 may be soldered or otherwise secured.

A jack sleeve 50 (Figs. 1 and 4) is provided for each guide sleeve 40, and these jack sleeves are mounted in spaced openings 51 in the front panel 30 of the jack assembly, each jack sleeve 50 being a very loose fit in its opening 51.

Each jack sleeve 50 is provided with an end flange 52 (Fig. 4) and with a collar 53 to limit sliding movement of the jack sleeve relative to the panel 30. The collar 53 may be formed integral with the jack sleeve 50 but preferably is formed separate and is forced thereon or otherwise firmly secured in the position shown in Fig. 4. The rear or inner end of each jack sleeve 50 is slotted in quarters at 55 and is inwardly tapered as indicated at 56.

The parts are shown in partially assembled relation in Fig. 1, with the plugs 15 contacting the contracted inner ends of the jack sleeves 50, and with the jack sleeves 50 substantially in their outermost positions and loosely supported in the panel 30 and in the enlarged or tapered outer ends of the guide sleeves 40.

As pressure is thereafter applied to the plug unit, the front panel 10 of said unit will engage the end flanges 52 of the jack sleeves 50 and will force the sleeves rearward in the jack assembly

until the collars 53 engage the intermediate panel 32 in the position shown in Fig. 2.

While the jack sleeves 50 are thus being moved from the position shown in Fig. 1 to the final or seating position shown in Fig. 2, the split end portions 56 of the jack sleeves are forced inward by the contracting surfaces 43 of the sleeves 40, and the inwardly contracted end portions 56 then firmly engage the outer surfaces of the plugs 15. Such engagement is under pressure, and reliable and effective contact is thus provided and maintained.

It will be noted that final assembly pressure need be applied only after the parts reach the partially assembled position shown in Fig. 1, in which position the parts are all accurately aligned and ready for final seating. Furthermore, when the parts are to be separated, a short initial movement of the plug assembly withdraws all of the plugs 15 and jack sleeves 50 from the tapered guide sleeves 40, so that pressure is quickly relieved on the plugs 15, which are thereafter freely removable.

My improved assembly has the important advantage that the jack sleeves 50 are normally quite loosely mounted, so that they can be easily aligned with the plugs 15, which may not be in exact alignment as manually presented. Furthermore, the final seating pressure is not applied until the parts are so far assembled that accurate alignment is insured.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. A plug and jack assembly comprising a fixed guide sleeve having a rearwardly contracted bore, a jack sleeve slidable in said guide sleeve and having a slotted and inwardly displaced rear end portion, and a plug insertable in said jack sleeve and firmly engaged by the slotted rear end portion of

said jack sleeve when said jack sleeve is fully seated in the rearwardly contracted bore of said fixed guide sleeve, and said two sleeves and plug being of conducting material.

2. A plug and jack assembly comprising a fixed guide sleeve having a rearwardly contracted bore, a jack sleeve slidable in said guide sleeve and having a slotted and inwardly displaced rear end portion, and a plug insertable in said jack sleeve, the rearwardly contracted bore of said guide sleeve forcing the slotted portion of said jack sleeve inwardly and the free end of said plug being rounded and forcing the extreme rear end elements of said jack sleeve outwardly as said plug is fully seated, thereby effecting firm contact of said plug, jack sleeve and guide sleeve, all of which are of conducting materials.

3. In a plug and jack assembly, a jack unit comprising front, back and intermediate panels, means to secure said panels in spaced relation, a guide sleeve fixed relative to said panels, a jack sleeve slidable in said guide sleeve and loosely slidable in the front panel, and means to limit sliding movement of said jack sleeve in said front panel in both directions, said sleeves being of conducting material and being firmly engaged with each other when fully assembled.

EUGENE L. MENTOR.

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