

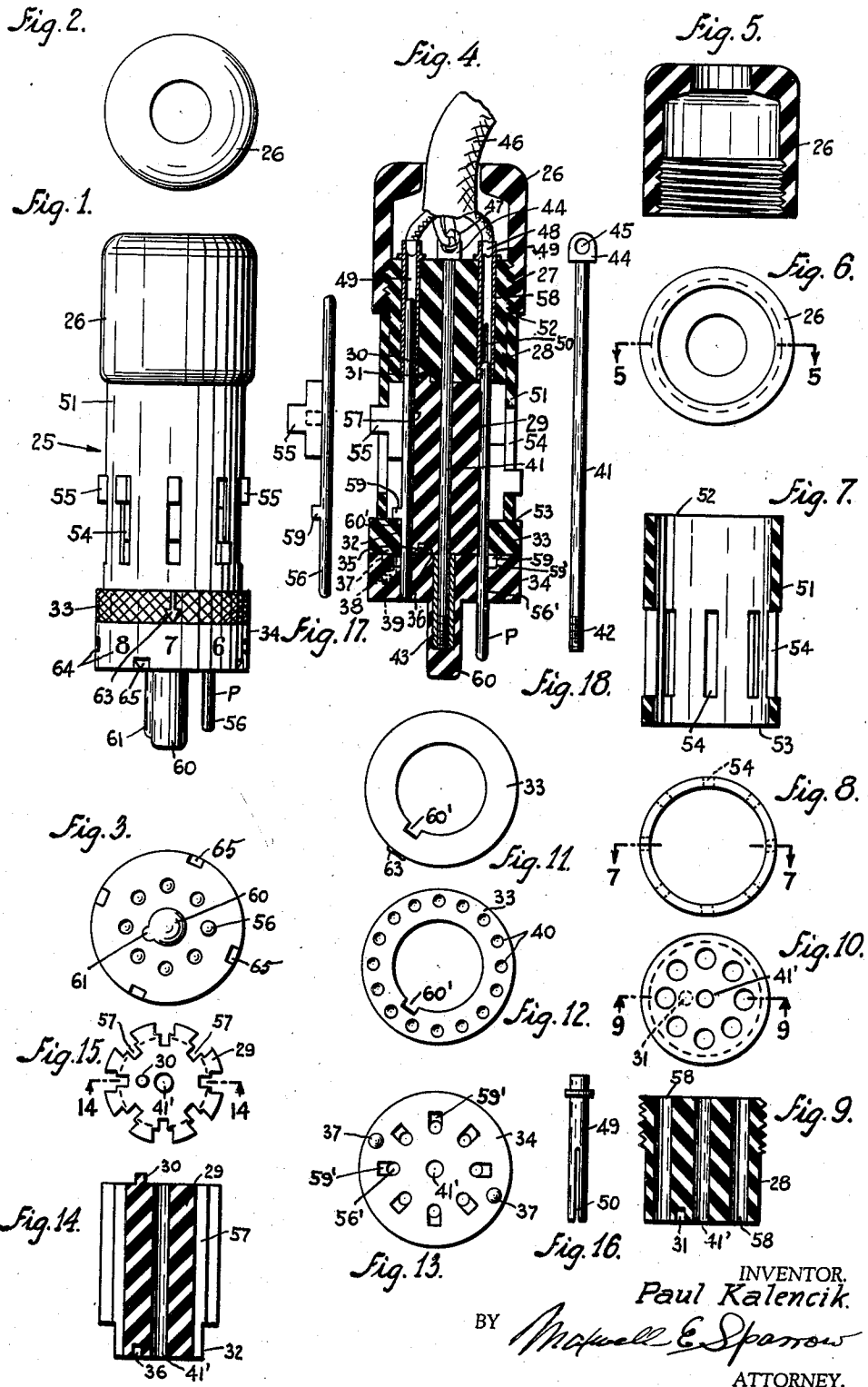
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ANALYZER PLUG

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ANALYZER PLUG

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9 Claims. (Cl. 173—361)

This invention relates to improvements in electric plugs and more particularly to the type known as analyzer plugs having retractable prongs.

5 The invention contemplated herein which is an electrical plug having retractable prongs is adapted for use in multiple wire cable circuits in electrical and radio devices where the circuit is to be extended through said plug and cable to
10 analyzing and testing meters, as for instance, to check voltages on the various elements in radios employing the new OCTAL base radio tubes.

15 The invention can also be utilized in electrical circuits where it is desired to break one or more individual circuits in a multiple wire circuit. The breaking of said circuits is done selectively.

Radio sets are often provided with blocked OCTAL sockets, in which no holes are punched where tube prongs are omitted. It has been, therefore, necessary up to now to provide analyzer
20 plugs with a set of individual adapters. The use of a plurality of individual adapters for insertion of an analyzer plug is cumbersome and at times difficult to apply.

25 It is an object of this invention to provide an analyzer plug with retractable prongs.

It is a further object of this invention to provide an analyzer plug with retractable prongs which prongs can be securely locked in either
30 the retracted or extended position.

It is a further object of this invention to provide a unitary analyzer plug incorporating the features of separate adapters, thereby doing
35 away with the requirement of separate adapters for testing the new standardized sockets for OCTAL base tubes.

It is a further object of this invention to provide such an instrument which permits plugging
40 in OCTAL tube sockets wherein one or more holes are blanked corresponding to missing prongs of different tubes.

It is a further object of this invention to provide an analyzer plug which combines in a single unit adapters for various types of tube sockets
45 and a plug for extending the circuit of the socket to the tester or analyzer.

This invention accordingly consists in the features of construction, combination of parts and in the unique relations of the members and in the relative proportioning and disposition thereof; all as more completely outlined herein.

To enable others skilled in the art so fully to comprehend the underlying features thereof
55 that they may embody the same by the numerous

modifications in structure and relation contemplated by this invention, a drawing depicting a preferred form of the invention has been annexed as a part of this disclosure, and in such drawing, like characters of reference denote corresponding parts throughout all the views, of which:

Fig. 1 is a side elevational view of an analyzer plug embodying the invention, showing one prong extended, without wire cable.

Fig. 2 is a top plan view of Fig. 1.

Fig. 3 is a bottom plan view of Fig. 1.

Fig. 4 is a vertical sectional view taken through Fig. 1 showing in addition a portion of the connected cable.

Fig. 5 is a sectional view taken through the cap along lines 5—5 of Fig. 6.

Fig. 6 is a bottom plan view of cap shown in Fig. 5.

Fig. 7 is a sectional view taken through the shell along lines 7—7 of Fig. 8.

Fig. 8 is a bottom plan view of the shell shown in Fig. 7.

Fig. 9 is a sectional view through the pin plug along lines 9—9 in Fig. 10.

Fig. 10 is a top plan view of the pin plug shown in Fig. 9.

Fig. 11 is a top plan view of the adjuster ring.

Fig. 12 is a bottom plan view of the adjuster ring.

Fig. 13 is a top plan view of the plug member.

Fig. 14 is a cross-sectional view of the prong member taken along line 14—14 in Fig. 15.

Fig. 15 is a top plan view of the prong member.

Fig. 16 is a detail side elevational view of the prong bushing.

Fig. 17 is a side elevational view of a prong member.

Fig. 18 is a side elevational view of the center locking shaft.

The analyzer plug 25 has a cap 26 threadedly engaging at 27 the pin plug 28. The prong guide 29 abuts against the pin plug 28, being localized by means of a projection 30 inserted into recess 31. Encircling the neck or reduced portion 32 of prong guide 29 and free to rotate is the adjuster ring 33. The bottom of the analyzer plug 25 is made up of the base 34 which may have bevelled notches 35 for clearing mounting socket screws or rivets when the device is in use for testing purposes. Base 34 also has a projection 35 fitting into recess 36 in the underside of prong guide 29 for locating purposes. Base 34 is provided with two ball-bearings 37 held in recesses 38 and pressed upward by compression springs 39. The

tops of ball-bearings 37 fit into recesses 40 provided in the underside of adjuster ring 33. The whole unit except the cap 26 is held together by means of a center locking shaft 41 passing through vertical openings 41' of the various parts. The shaft 41 has a threaded end 42 which screws into a metal bushing 43 in base 34. The top of the shaft 41 is provided with a head 44 having an eye 45 into which an electric cable 46 is tied as at 47. The plurality of wire ends 48 of the cable are soldered or otherwise secured within top portion of prong bushings 49. The prong bushings 49 are made to give a spring grip action by providing slots 50.

Encircling part of pin plug 28 and part of prong guide 29 is a shell 51. Shell 51 abuts against cap 26 at 52, and at 53 it provides a sliding surface for adjuster ring 33. Shell 51 is provided with longitudinal slots 54, through which the insulated knobs 55 attached to the prongs 56 protrude. Prongs 56 slide within grooves 57 of guide 29 and perforations 56' in base 34.

The pin plug 28 is provided with holes 58 into which are inserted the prong bushings 49, the latter being made long enough to always contact the metal prongs 56.

Each prong or contact 56 has a projection 59 which locks it in either location more particularly described below. The adjuster ring 33 has a single slot or passage 60', which permits the projection 59 to pass either up or down, as desired.

After the slot 60' has passed the slot 57 by rotating member 33, the projection or abutment 59 will ride against either the underside or the top surface of the member or adjuster ring 33. There are twice as many recesses 40 in the adjuster ring as there are prongs 56, thereby providing for intermediate locations when the prong members 56 cannot be moved. Base 34 may be provided with an alining plug 60 having an alining key 61, which is standard in OCTAL base radio tubes. On the outer surface of the adjuster ring 33, just opposite the slot 60' is an identification mark 63, for example an arrow. Base 34 may be provided with identification marks for the prongs such as the numbers 1-8 (generally indicated by the numeral 64). These numbers may be employed to correspond with the pin number arrangement in OCTAL bases or sockets.

The operation of the device hereinabove described is as follows: Normally all the prongs 56 are in concealed position within the analyzer plug. There are in this particular form of the invention eight such prongs. The arrangement is suitable for so-called "OCTAL sockets" used in conjunction with "OCTAL base" radio tubes. After the identification numbers of the prongs have been determined, the adjuster ring 33 is rotated until the arrow 63 is alined with the first of the selected identification numbers on base 34, as for example, 7 in Fig. 1. This will bring slot 60' of the adjuster ring 33 in alinement with the slot 57 in the guide 29. The abutment 59 of prong 56 will thereby slide through slot 60' downwardly and the prong will project through opening 56' beyond the base 34 as at P. The projection or lug 59 will then rest on the bottom of recess 59' of base 34. The ball-bearings 37 during the turning operation of the adjuster ring 33 will snap into and out of respective recesses 40 and then snap into a recess 40 corresponding to the desired alinement of a groove 57 and slot 60', thereby assuring localization of slot 60' in relation to groove 57. As the adjuster ring 33 is provided with only one slot 60', the prong 56 will be

unable to be shifted either up or down after groove 57 and slot 60 have been dis-alined, the projection 59 resting either against the solid under or top surface of the adjuster ring 33. This adjuster ring 33 is now turned to the next identification number of the series of the combination, say, number 5 and the above operation is repeated.

After all the selected prongs are projected, the arrow 63 is left in an intermediate recess 40, located between any of the identification numbers. The slot 60' is thereby removed from alinement with any of the slots 57 in the base 29. All of the prongs 56 will be thus securely locked in either up or down positions. To return the prongs into the slots 57 respective alinement of grooves 57 and slot 60' are brought about as above and the prongs retracted respectively.

It is believed from the above description that those skilled in the art will have no difficulty in understanding the construction, the method of use and operation of the device herein disclosed and a further detailed discussion thereof is unnecessary. The invention is of simple and practical construction and is adapted to accomplish among others all of the objects and advantages herein set forth.

Without further analysis, the foregoing will so fully reveal the gist of this invention that others can by applying current knowledge readily adapt it for various applications without omitting certain features, that, from the standpoint of the prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention, and therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalency of the following claims.

I claim:

1. A device of the character described comprising a body having a plurality of retractable prongs, each of said prongs having means for extending and retracting the same, and means for locking said prongs in either extended or retracted positions, said latter means comprising a member rotatable with respect to said body and having a passage for permitting selective extension and retraction of said prongs.

2. A device of the character described comprising a body having a plurality of slidable contacts, each of said contacts having means for extending and retracting the same, means for locking said contacts in either extended or retracted position, said latter means comprising a member rotatable with respect to said body and having a passage for permitting selective extension and retraction of said contacts and an abutment on each of said contacts for engagement with said member.

3. A device of the character described comprising a body having a plurality of slidable contacts, means for making electrical connection between said contacts and conductors respectively, an abutment on each of said contacts, a member rotatable with respect to said body, said member having a passage for selective extension and retraction of said contacts, said abutment engageable with said member to prevent reverse movement of a contact after it shall have been extended or retracted and the member rotated.

4. A device of the character described comprising a body having a plurality of slidable contacts, means for making electrical connection between said contacts and conductors respectively, an abutment on each of said contacts, a member ro-

tatable with respect to said body, said member having a passage for selective extension and retraction of said contacts, and means carried by each contact for extending and retracting the same, said abutment engageable with said member to prevent reverse movement of a contact after it shall have been extended or retracted and the member rotated.

5 5. A device of the character described comprising a body having a plurality of slidable contacts, an electrical connector for each of said contacts, an abutment on each of said contacts, a member rotatable with respect to said body, said member having a passage for selective extension and retraction of said contacts, said member providing a stop co-operating with said abutment to prevent reverse movement of a contact after it shall have been extended or retracted and the member rotated.

10 6. A device of the character described comprising a body having a plurality of slidable contacts, each of said contacts having means for extending and retracting the same, an electrical connector for each of said contacts, a member rotatable with respect to said body for locking said contacts in either extended or retracted position, said member having a passage for selective extension and retraction of said contacts respectively, and means to identify said contacts for their selection.

15 7. A device of the character described comprising a body having a plurality of slidable con-

tacts, each of said contacts having means for extending and retracting the same, a member rotatable with respect to said body for locking said contacts in either extended or retracted position, said member having a passage for selective extension and retraction of said contacts respectively, and means to identify said contacts for their selection.

5 8. A device of the character described comprising a body having a plurality of slidable contacts, each of said contacts having means for extending and retracting the same, an electrical connector for each of said contacts, a member rotatable with respect to said body for locking said contacts in either extended or retracted position, said member having a passage for selective extension and retraction of said contacts respectively and means for identifying the location of said passage, and means to identify said contacts for their selection.

10 9. A device of the character described comprising a body having a plurality of slidable contacts, an electrical connector for each of said contacts, a member rotatable with respect to said body, said member having a passage for selective extension and retraction of said contacts respectively, means to retain a contact of said contacts in either extended or retracted position, and means for facilitating the locating of said passage with respect to said contacts.

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