

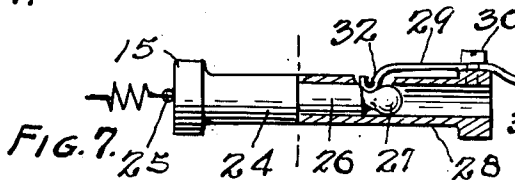
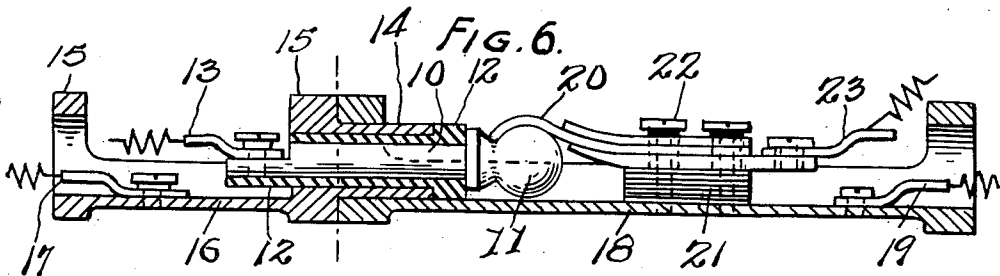
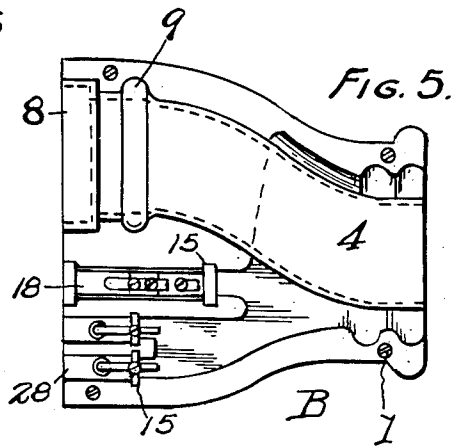
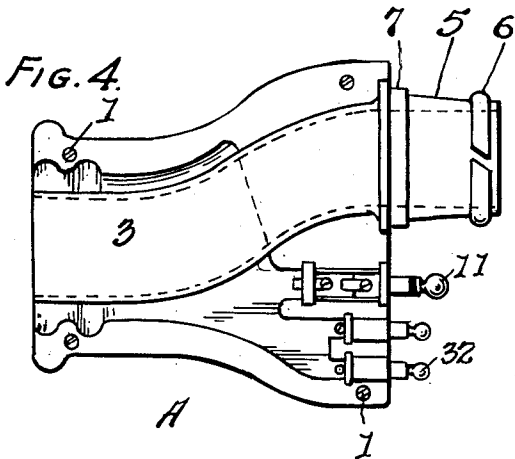
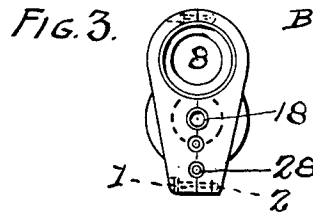
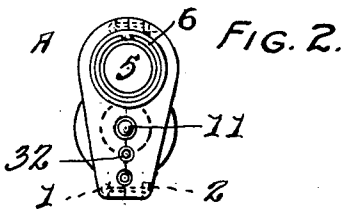
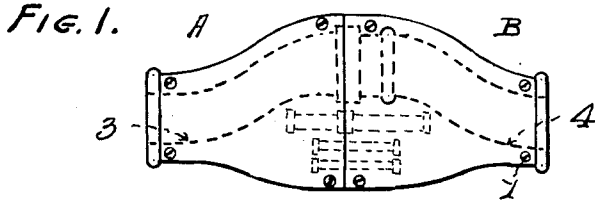
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R. E. DARLING

2,634,311

COMPOSITE FLUID AND ELECTRICAL CONNECTOR

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INVENTOR.
RALPH E. DARLING
BY
Charles K. Davies & Son
attys.

UNITED STATES PATENT OFFICE

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COMPOSITE FLUID AND ELECTRICAL
CONNECTOR

Ralph E. Darling, Bethesda, Md.

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1 Claim. (Cl. 173—326)

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The present invention relates to an improved composite fluid and electrical connector or disconnector including separable units each having embodied therein a tubular connector for conveying liquid or gaseous fluids, together with electrical connectors for making and breaking electrical circuits that pass through the composite connector. The novel connector consists of two sectional and separable units, each having automatically coating mechanical means for uniting or fastening together the aligned units, and these units are also equipped with automatically coating contact terminals, by means of which the circuits of which they form a part are automatically closed and opened.

The mechanical fastening devices and the electrical contacts of the connector units are combined and arranged to retain the units in axial alinement, and the contacts or electrical appliances are employed to hold the units against relative rotary movement. For these purposes a plug unit is equipped with a projecting plug fastener; the complementary socket unit is equipped with a socket fastener; the plug unit is provided with an electrical plug contact and its socket unit is provided with a socket contact therefor; the mechanical fastener and the electrical appliances being provided with resilient detents, and arranged in parallelism to insure correct connection, as well as disconnection, of the units under a predetermined manually applied force.

The composite connector is composed of a minimum number of parts that may with facility be manufactured of suitable material and at low cost of production, and the parts may be assembled with convenience to assure a compactly arranged appliance that is simple in construction and operation, durable, and reliable and efficient in the performance of its functions as a connector between axially aligned tubes or hoses, and the wires of sections of electrical circuits.

In the accompanying drawings I have illustrated a complete example of a physical embodiment of my invention in which the parts are combined and arranged in accord with one mode I have designed for the practical application of the principles of my invention. It will however be understood that changes and alterations are contemplated and may be made in these exemplifying drawings, and mechanical structures and electrical appliances, within the scope of my claim without departing from the principles of the invention.

Figure 1 is a view in side elevation of a composite connector in which my invention is em-

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bodied. Figure 2 is an inner face view of the plug unit; and Figure 3 is a similar view of the socket unit.

Figure 4 is an enlarged view in elevation showing the inner side of a section of the plug unit; and Figure 5 is a similar view of the socket unit.

Figure 6 is a further enlarged longitudinal sectional view of a plural contact plug and socket electrical connector; and

Figure 7 is an enlarged view partly in section of one of the single contact plug and socket electrical connectors.

As indicated in Figs. 1, 2 and 3, the composite connector includes a plug unit A and a socket unit B, each made up of two complementary sections of suitable non-conducting material, and the sections of the units are united or fastened together by suitable clamping means as screw bolts 1 passed transversely through the sections and provided with clamping nuts 2.

The two sectional units are fashioned with interior voids, and within each unit is encased and clamped an angular connector tube or conduit, as 3 and 4, of aluminum or other suitable material for passage of gaseous fluids through the jointed units. The outer ends of the two units are formed with annular recesses to receive the ends of hose sections, and these hose sections terminate in smooth sleeves that are slipped into annular voids of the units that surround the outer ends of the conduits or tubular connectors 3 and 4.

The inner ends of the tubular connectors or conduits are fashioned as quick-detachable coupling members for jointing together the separable units, and for this purpose the angular tube 3 of the plug member A is provided with a projecting tubular plug 5 that is equipped near its free end with an exterior resilient split coupling ring 6 that forms a spring detent, and the base of the hollow plug is provided with an annular packing gasket or ring 7.

The adjoining end of the angular tube or conduit 4 of the socket unit B terminates in an open coupling socket 8 to receive the plug 5 and engage the gasket 7, and the socket is formed with an exterior annular rib 9 that provides an inner annular groove or seat for the expansible ring or spring detent 6, to form a quick-detachable coupling for the two units.

Four conductors or wires of two electrical circuits are entered from the outer ends of the recessed units into the voids of the units, and as here shown the two wires of one circuit are attached at opposite ends of a plural contact

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member or electrical connector. Within the jointed units, and the two wires of a second electrical circuit are attached to a pair of spaced single contacts that are mounted within the units, in parallelism with the plane of the aligned coupling between the connector tubes or conduits.

As best seen in Fig. 6 the quick-detachable plural contact members include an insulated contact plug 10 that terminates in a spherical head 11, and the plug is encased within an insulating jacket 12 and equipped with a wire terminal 13. This plug with its jacket is fixed in a conducting sleeve 14 having an integral annular attaching head 15, and the plug assembly includes a semi-cylindrical or cut-away casing 16, and a terminal 17 that projects through another annular attaching head 15. The round and annular heads 15 of the several electrical appliances coact with depressions forming voids in the sections of the plug and sockets units to retain the electrical plugs and sockets against displacement.

For coaction with the plural electrical terminal plug the socket unit B is equipped with a semi-cylindrical conducting shell 18 having spaced annular heads 15, the inner one of which, together with the shell, forms a socket for the exterior conducting sleeve 14 and the jacketed plug 10, and the outer end of the shell 18 is equipped with a terminal 19 complementary to the terminal 17 of the plug assembly.

For coaction with the spherical head 11 of the plug a resilient multi-blade contact, or spring detent 20 is fastened to an insulating block 21 by means of insulated screws 22 to the bottom wall of the shell 18, and another terminal 23 is attached to a blade of the spring detent. By coaction of the spring detent with the head 11 of the plug assembly these units of the separable plural terminal connector are fastened together against longitudinal displacement.

One of a pair of single contact circuit makers is shown in detail in Fig. 7, where the conducting plug or contact member 24 is mounted in the plug unit A of the connector and provided with a terminal on the end head 15 as indicated at 25, and a reduced conductor pin 26 of the plug is fashioned with a spherical contact head 27.

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The headed plug of the unit A is inserted into a socket sleeve or shell 28 mounted in complementary voids of the socket unit B, and a spring conductor blade 29 is fastened by screw 30 on the annular attaching head 15 of the shell 28, so that the outer end 31 of the blade forms a circuit terminal complementary to the terminal 25 of the plug 24. The inner end of this resilient contact blade is formed as a spring detent 32 that projects through a slot in the shell 28 for coaction with the headed plug 26 to prevent accidental displacement of the parts.

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

In a fluid-conveying and electrical circuit-making connector, the combination with a pair of supporting units, an angular connector-tube fixed within each unit with the outer ends of the tubes in axial alinement for end attachment of hose sections, said tubes having parallel offset inner ends and intermediate angular portions, the offset inner ends of the tubes also being in axial alinement and forming a plug-and-socket joint, and a detent-fastener comprising a split resilient coupling ring on the plug-end coacting with a complementary groove in the socket-end, of coacting pairs of axially alined quick-detachable electrical contacts mounted in the units in planes parallel with the axial plane of the coupling joint.

RALPH E. DARLING.

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