J. L. DONALD.

GROUND CONNECTOR.

APPLICATION FILED DEC. 19, 1908.

970,693.

Patented Sept. 20, 1910.

Fig. 1.

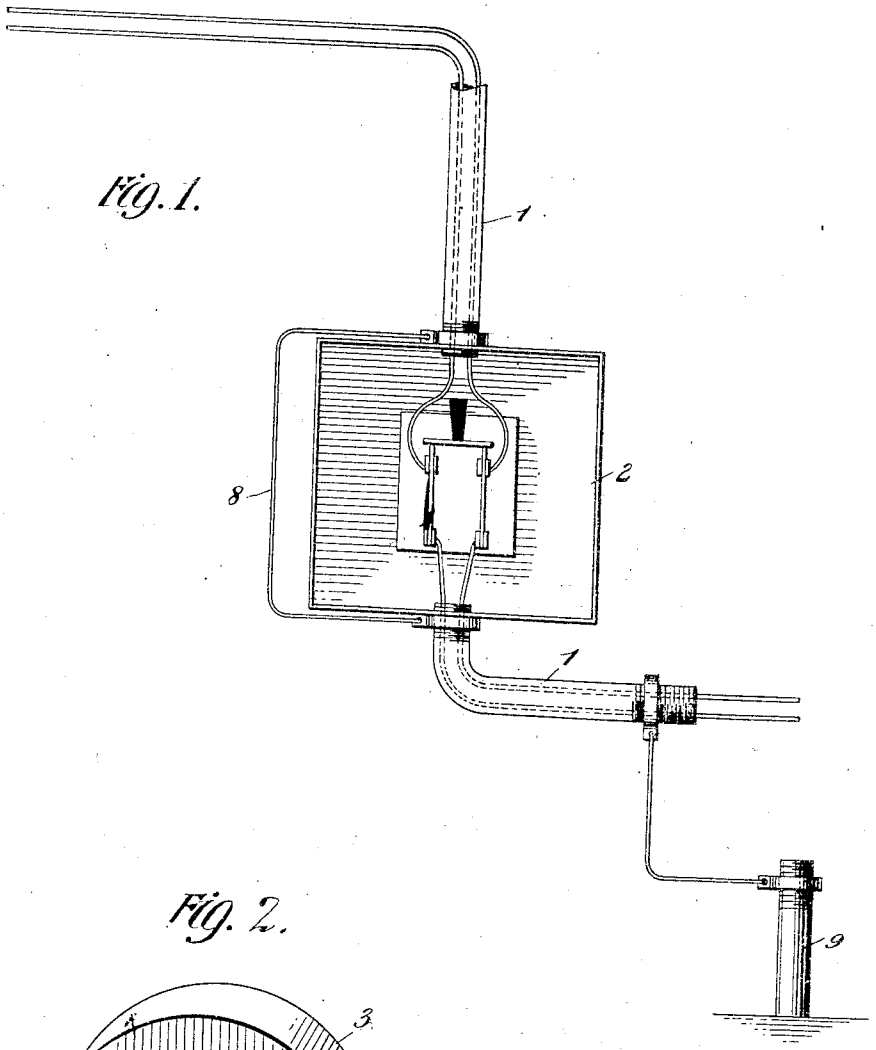


Fig. 2.

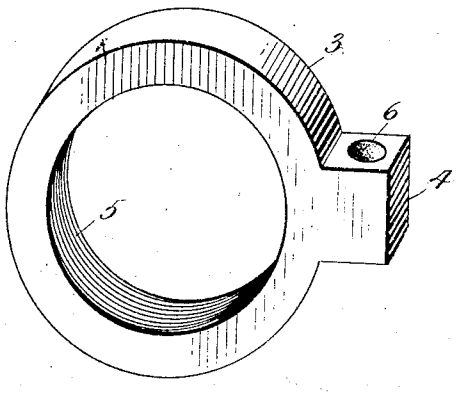
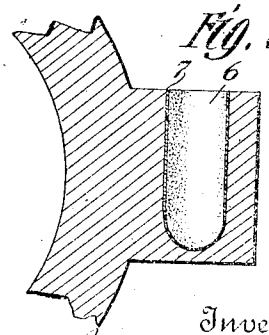


Fig. 3.



Witnesses:

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JAMES L. DONALD, OF MOORESVILLE, NORTH CAROLINA.

GROUND-CONNECTOR.

970,693. Specification of Letters Patent. Patented Sept. 20, 1910.

Application filed December 19, 1908. Serial No. 468,328.

To all whom it may concern:

Be it known that I, JAMES L. DONALD, a citizen of the United States, residing at Mooresville, in the county of Iredell and State of North Carolina, have invented certain new and useful Improvements in Ground-Connectors, of which the following is a full, clear, and exact description.

My invention relates to a ground connector, particularly for use in conduit wiring.

It is a usual practice to run the circuit wires for lamps, motors and other electrical appliances through conduits of ordinary iron piping, interrupted at intervals by the switch, outlet and junction boxes for the circuit branches and connections. The main object of this arrangement is to provide absolute protection against fire, it being evident that any grounds or short-circuits in the circuit wires can do no damage if they are entirely inclosed in a wrought iron pipe. But in order to make the protection complete and adequate, it is evident that the pipe must be thoroughly grounded at all points, so that grounds or short-circuits from the interior circuit wires or from any exterior conductor, will not electrify a portion of the length of the pipe to a sparking or arcing potential by reason of any poor or inadequate ground connection of such pipe section. It is evident that some means must be provided for insuring a low resistance path to ground from every portion of the conduit pipe, in case the latter is to be any real protection against fire and other damage, due to grounds or short-circuits of the interior circuit wires, or any exterior charged conductor.

It is the purpose of my invention to provide a very simple and efficient means for this purpose.

With this object in view, my invention consists in the features of construction and combination as hereinafter set forth and claimed.

In the drawings: Figure 1 is a view showing the general features of an ordinary conduit wiring system embodying the principles of my invention; Fig. 2 is a perspective view of one of the grounding appliances, and Fig. 3 is a detail sectional view of the same.

Referring to the drawings: 1 designates sections or portions of an ordinary conduit pipe, and 2 denotes an outlet, switch or junction box of the type ordinarily employed and to which the pipe sections 1 are threaded, either directly or through any intermediate bushings (not shown). The boxes 2, are ordinarily made of stamped sheet metal and have such thin walls that a good direct threaded engagement with the pipe sections is difficult to secure. Where connecting bushings of some sort are employed, a sufficiently good mechanical connection is made between the pipe sections and the switch boxes, but the electrical connection is very inferior. If the sheet metal of the switch boxes is oxidized, as is the usual case, it may happen that the pipe is practically insulated from the boxes altogether. Under these circumstances, a "short" on such pipe section would immediately dangerously elevate its potential.

In carrying out my invention to overcome the foregoing difficulties, I make use of the fact that the ends of the pipe sections, where they join the switch or outlet boxes, are necessarily threaded with usual pipe threads. The ordinary pipe thread is slightly tapering or conical, which fact has an important bearing in my invention. I provide stamped sheet metal collars 3, of brass or copper with a lug 4 on one side, and interiorly threaded at 5 to fit standard pipe threads. These collars will, of course, be stamped in different sizes corresponding to different sizes of conduit piping ordinarily employed. They are most conveniently punched out of 3/16″ or 1/4″ sheet brass or copper, and then merely interiorly threaded, whereupon they are ready to be assembled upon the threaded section of the pipe, without any further machining or finishing processes to insure perfect fit. The lateral lug 4 should, however, be drilled with a hole 6 of sufficient size to receive a stout copper wire, and the interior of this hole is conveniently tinned at 7 to facilitate soldering such copper wire integrally to the lug.

The use and operation of the invention will be clear from the drawings.

It is merely necessary to assemble the collars 3 upon the threaded ends of the pipe sections 1 adjacent to the connections of these pipe sections to the various outlet, switch and junction boxes. Short lengths of copper wire 8 are then soldered to the collars on opposite sides of the various boxes, thereby bonding the various pipe sections together in a continuous low-resistance circuit. At some point a pipe 9 may be driven into

the ground, or otherwise arranged to make a good ground connection, and this pipe bonded to one of the pipe sections 1 in the same manner as the various sections 1 are bonded to one another. Each collar makes a perfect electrical connection with its pipe section, partly because it is of sufficient thickness to make a good threaded engagement therewith, and partly because of the fact that it can be screwed back upon the tapered threads of the pipe section as far as the strength of the workman will permit, brightening up the surfaces of the threads by the friction, and insuring a high pressure and good electrical contact between the engaging metallic surfaces. The bond wires 8 being soldered to the respective collars, make a substantially perfect electrical connection therebetween, so that the entire conduit pipe length is bonded into a very perfect low resistance grounded circuit capable of carrying off a heavy current, without undue rise of potential at any point.

What I claim, is:—

A ground connector for conduit wiring comprising an integral metal collar interiorly pipe threaded for engagement with a pipe end, the pipe thread by reason of its taper affording especially good electrical connection between said collar and pipe, said collar further being provided with an integral laterally extending lug having a lined aperture therein for the reception of a connecting wire.

In witness whereof, I subscribe my signature, in the presence of two witnesses.

JAMES L. DONALD.

Witnesses:

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