

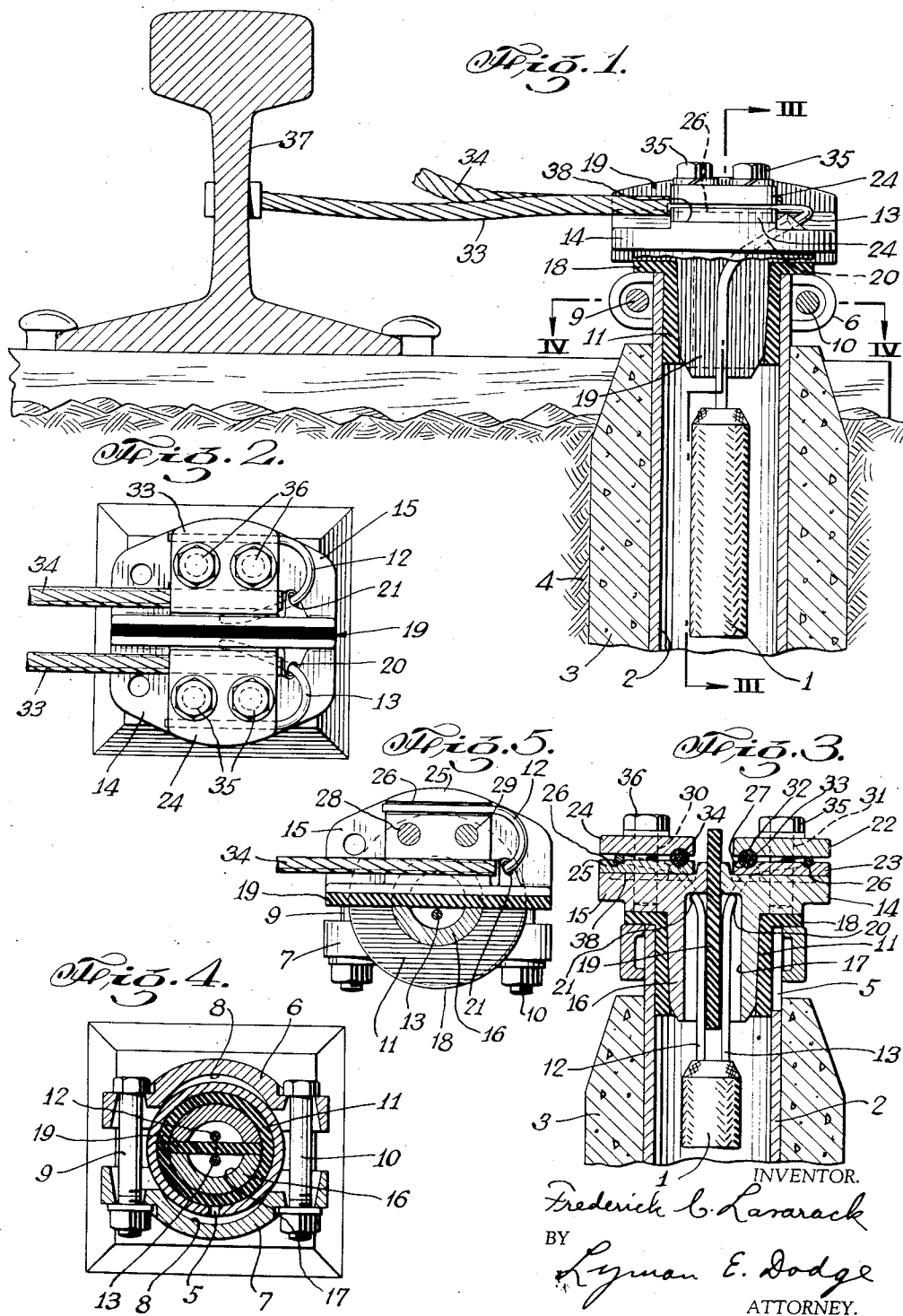
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CONNECTER

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## UNITED STATES PATENT OFFICE

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## CONNECTER

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4 Claims. (Cl. 247—3)

This invention relates to electrical conductors, particularly to connectors therefor, and more especially to connectors especially adaptable for use in railway track circuit signalling.

As is well understood by those skilled in the railway signalling art, electrical conductors are attached to the rails at intervals. These conductors of necessity must be either on or in the ground. In general they are placed in what is called "trunking", which is merely a wooden conduit. Of late many of these conductors have been of the form known as "parkway cable". These cables are buried in the ground without protection, such as trunking and emerge from the ground close to the point on the rail at which they are to be connected. Upon emerging from the ground the wire or conductor within the cable is laid bare and connected to some form of bond wire and pin for connection to the rail. Laying bare the conductor of the cable renders the cable subject to the entrance of moisture and water which might destroy it, therefore, this end must be protected.

Various means have been employed to protect the end of the parkway cable. These have generally assumed the form of a vertical conduit within which the parkway cable is positioned as it is brought vertically upward in the ground to be connected above the ground with the desired object or device. Such a construction is illustrated in the patent to F. C. Lavarack et al., No. 1,665,629, dated April 10, 1928, and somewhat analogous construction serving a somewhat similar purpose is shown in the patent to F. C. Lavarack et al., No. 1,887,272, dated November 8, 1932.

A principal object of the present invention is to provide a construction of the general nature specified, suitable for analogous purposes to those mentioned, which will afford means for making connection to a parkway cable having more than one conductor therein.

Other objects and advantages will appear as the description of the particular physical embodiment selected to illustrate the invention progresses, and the novel features will be particularly pointed out in the appended claims.

In describing the invention in detail and the particular physical embodiment selected to illustrate the invention, reference will be had to the accompanying drawing, and the several views thereon, in which like characters of reference designate like parts throughout the several views, and in which:

Figure 1 is a side elevational view of a portion of trackway, track rail, parkway riser protector,

parkway riser, and a connector attached to the parkway cable constructed in accordance with applicant's invention, some of the parts being broken away and sectioned to more clearly show the construction; Fig. 2 is a top plan view of the connector as shown in Fig. 1; Fig. 3 is a cross-sectional view of the device as shown in Fig. 1 on the plane indicated by the line III—III, viewed in the direction of the arrows at the ends of the line; Fig. 4 is a cross-sectional view of the device as shown by Fig. 1 on the plane indicated by the line IV—IV viewed in the direction of the arrows at the ends of the line; Fig. 5 is a top plan view of the connector corresponding to the view of the connector as shown in Fig. 2, but with one portion of the connector removed in order to more clearly show the construction.

Numeral 1 designates a parkway cable. This cable is used to make electrical connection between two bodies or pieces of apparatus. In railway practice, it is generally buried in the ground and upon being brought up out of the ground it is usual and quite necessary to protect it so that it will not be affected by weather conditions.

The parkway cable 1 is shown as protected by a duct, preferably an iron pipe 2. This pipe 2 extends a desirable or necessary distance into the ground and so protects the end of the parkway cable 1 which approaches close to the surface of the ground.

In practice it is usual to also protect the duct 2 by means such as concrete 3. This concrete furnishes a larger body which is more certain to remain in a fixed position in the earth 4 and also serves to extend the life of the pipe 2 when it is made of iron by protecting it from rusting.

The upper end of the pipe 2 is preferably bifurcated as at 5. This bifurcation is for the purpose of enabling one to decrease the internal diameter of the duct 2 by squeezing the upper end thereof. The method preferred by applicant for compressing or squeezing the upper end of the duct 2 makes use of a clamp formed in two parts 6 and 7. Each of these parts of the clamp has an interior contour 8 approximating but still departing from the normal contour of the outside of the duct 5. The contour 8 is made preferably on a smaller radius than the radius of the outside of the duct 2. The two parts 6 and 7 of the clamp are drawn together by any suitable or appropriate means such as the bolts 9 and 10. When these bolts 9 and 10 are tightened the upper end of the duct 2 is decreased in size so that any body or bodies suit-

ably positioned within the upper end of the duct 2 may be held tightly therein.

In prior constructions with which applicant is familiar, the parkway cable 1 has been formed with one electrical conductor therein only. In the present instance applicant illustrates a construction particularly adapted to a parkway cable having more than one conductor therein. In the specific illustration shown the parkway cable has conductors 12 and 13 therein. As there are two conductors in the parkway cable, and as each conductor is presumed to be part of a circuit separate and independent from the other conductor, or at least the electrical conditions are such that one conductor must be insulated from the other conductor, applicant has provided a connector for positioning within the upper end or outer end of the duct 2 which efficiently and satisfactorily provides for making connections to a parkway cable having more than one electrical conductor therein.

For each electrical conductor of the parkway cable, applicant provides a connector head as 14 and 15. Each of these connector heads is formed of a material having satisfactory mechanical strength such that it may be satisfactorily threaded so that bolts or screws may be inserted therein and be held firmly and securely, or at least has sufficient tensile strength to withstand such strains as may be put upon it by pulls exerted upon the conductors attached thereto. In the particular form shown applicant prefers to make the conductor heads, as 14 and 15 of metal, preferably cast iron.

Each of the connector heads 14 is provided with a depending skirt 16 semi-circular on its outer periphery and formed with a semi-circular cavity 17.

Applicant inserts a sleeve 11, formed of insulating material into the upper end of the duct 2. The penetration of this sleeve 11 is determined by the shoulder 18 thereon which rests against the end of the duct 2.

In assembling the device, applicant takes two connector heads, as 14 and 15 and places them within the sleeve 11, as best shown in Fig. 3 separating them by the insulating separator 19, which may be made of any suitable or appropriate insulating material such as hard fibre. With the parts assembled as described the clamps 6 and 7 are caused to compress the upper end of the duct 2 by setting up the bolts 9 and 10 so that the insulating heads 11 and the heads 14 and 15, and the insulating separator 19 are all firmly held together and in the end of the duct 2 as shown in Fig. 3.

As it is desired to form electrical connection with the two conductors 12 and 13, these conductors are brought up to the outside of the duct 2 through the orifices 20 and 21 in the connectors 14 and 15. In practice these conductors 12 and 13 would, while approximately in the straight condition, be passed through the orifices 20 and 21 before the sleeve 11 and the heads 14 and 15 are actually inserted into the end of the duct 2. If this requires a very long end of the wire it may be cut off after the connections hereinbefore described are made.

As the connector heads 14 and 15, in the specific form described, are formed of cast iron, applicant, in order to secure good electrical conductivity provides a platform 38 on each and resting thereon provides upper and lower wire connecting plates 22 and 23, and 24 and 25. The lower connecting plates 23 and 25 are substan-

tially flat plates each formed with two parallel semi-circular grooves 26 and 27 therein and with two bolt receiving orifices, as 28 and 29. The top plates 22 and 24 are formed with two bolt receiving orifices 30 and 31 but with one semi-circular wire receiving groove as 32.

The two conductors 12 and 13 on being brought out through the orifices 20 and 21 are bent around, as best shown in Fig. 2, and each positioned in one of the parallel semi-circular grooves of the plates 23 and 25.

The electrical conductor to be electrically connected to the conductors as 12 or 13 such as 33 or 34 are also laid in the semi-circular grooves of the plates 23 and 25 and then the top connecting plates 22 and 24 are positioned over the conductors 12, 13, 33 and 34 and then the bolts, as 28 and 29 are tightened and secure and firm electrical and mechanical contact is made between the conductors 12 and 13 and conductors 33 and 34, but the electrical circuit of conductor 13 is thoroughly insulated from the electrical circuit of conductor 33 and both circuits are insulated from the duct 2 so that neither is grounded.

In Fig. 1 applicant has shown one of the conductors, as 33, connected in a usual way to a rail 37. In the same manner, the conductor 34 may be connected to a rail or to any other desired piece of apparatus to which it is necessary to be connected.

From the hereinbefore given description it will be seen that applicant has provided a simple and convenient parkway cable riser protector in the duct 2 and the concrete reinforcement 3 thereof and has provided a connector whereby each of the conductors as 12 and 13 of the parkway cable may be connected to electrical conductors so that each will be separated from the other and from ground and the parts will be so positioned that the exposed end of the parkway cable will be protected from the weather and the electrical connection between the conductors is one which is probably and likely to remain for a long time in good condition, but which if defective is so constructed that all parts may be readily got at and seen.

Although I have particularly described one particular physical embodiment of my invention and explained the operation, construction and principle thereof, nevertheless, I desire to have it understood that the form selected is merely illustrative, but does not exhaust the possible physical embodiments of the idea of means underlying my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. In a connector, in combination: a connector head formed with a skirt having a wire receiving groove therein, a platform for the reception of a connector plate, and a threaded cavity for the reception of a bolt; a similar but reversely arranged connector head, each of said heads formed with a through orifice adapted for the reception of a conductor; an insulating body between the heads; means for retaining the heads and insulating body in position; a lower connecting plate resting upon the platform of each head and an upper connecting plate positioned over each lower connecting plate; each lower plate formed with an orifice for the reception of a threaded bolt, the lower plate formed with two semi-circular wire receiving grooves, and the upper plate formed with a wire receiving groove mating with one of the grooves of the lower plate whereby a conductor may be passed through the

orifice in the head, positioned in the wire receiving groove of a head, and clamped between a lower and an upper connector plate while lying in the groove of the lower plate with the clamping bolt threaded into the threaded orifice of the head, and a conductor may be positioned in the other wire receiving grooves of the lower and the upper plate whereby electrical connection may be made between the said conductors.

10 2. In a connector, in combination: a conduit; an insulating sleeve positioned within the conduit and having a shoulder resting against the end thereof; two similarly formed but reversely arranged connector heads formed with skirts, each 15 skirt having a wire receiving groove therein, and each head formed with a through orifice for the reception of a conductor, positioned with their skirts within the insulating sleeve; an insulating plate positioned between the connector heads; 20 means for clamping the sleeve, the heads and the insulating plate in position in the end of the conduit; and means attached to each head for connecting two conductors lying within the duct and 25 one on each side of the insulating plate, one to one head and one to the other head outside of the

conduit with each conductor lying in a through orifice of a head.

3. In a connector, in combination: two similarly formed but reversely arranged connector heads; an insulating plate positioned between the heads; means for positioning and holding the heads in the end of a conduit; means for insulating the heads from the conduit; means for connecting one of two wires within a conduit to each of the heads without the conduit; and means for 10 connecting a conductor to each of the heads without the conduit.

4. In a connector, in combination: a connector head; a similar but reversely arranged connector head; each of said heads formed with an orifice 15 adapted for the reception of a conductor; an insulating body between the heads; means for retaining the heads and insulating body in position; a threaded bolt; a lower connecting plate and an upper connecting plate for each of said heads, 20 each plate formed with an orifice for the reception of the threaded bolt, said bolt adapted to be threaded into a threaded orifice of a head whereby a conductor positioned between the plates is 25 securely held.

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