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FIG. 1

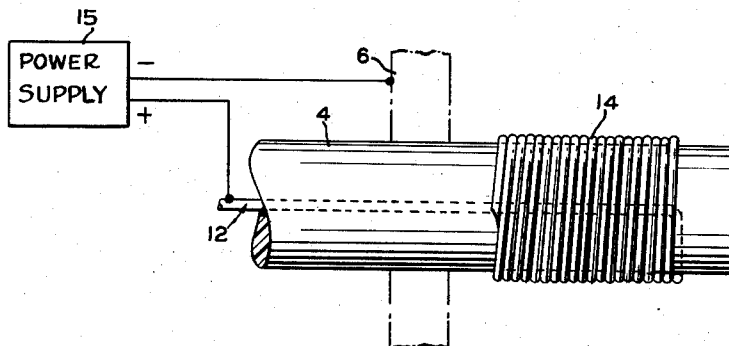


FIG. 2

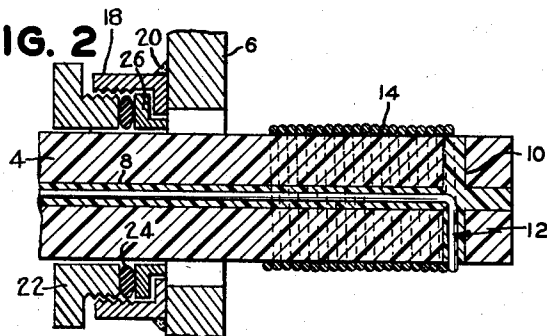
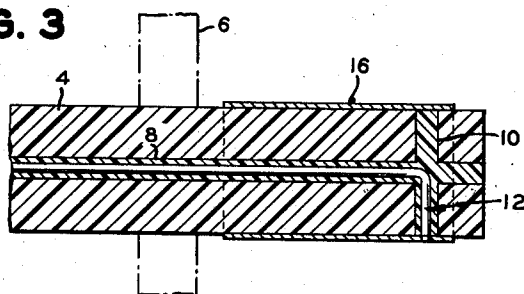


FIG. 3



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3 Claims. (Cl. 204—196)

The present invention deals with an anode for cathodically protecting the inside walls of pipes containing electrolytes, as in the case of a cooling system for oil refineries.

Such pipes, usually made from steel, require protection of their bare inside walls against corrosion and this is efficiently carried out by cathodic protection which involves impressing a slightly negative potential on the pipe walls, the current being supplied by anodes inserted through the walls of the pipe.

It is an object of this invention to provide an anode for cathodic protection of pipes which is easy to manufacture and to insert into the pipe wall. It is another object of the invention to provide an anode which is reliable in performance during long periods. Other objects and advantages of the invention will become apparent from the following description and drawings wherein

Fig. 1 illustrates the side view of a preferred embodiment of the invention

Fig. 2 shows a longitudinal section through the anode of Fig. 1, mounted by means of a compression seal and

Fig. 3 shows another modification of the invention in a longitudinal section.

In accordance with the present invention the anode comprises a body portion in the shape of a rod 4 of insulating material, e.g. plastic, which is inserted into and passes through the wall 6 of a container, pipe or the like. The rod 4 is provided with two bores, one of the bores 8 lying in the axis thereof and the other bore 10 perpendicular to and crossing the first bore at a point close to the end of the rod which lies inside the container or pipe. A lead-in wire 12 is inserted from the outside through the first bore 8 to the intersections of the bores and then radially towards the rod surface through the bore 10. The free end 14 of the wire 12, which acts as the part contacting a liquid, is wound helically around the rod 4, progressing towards the container wall 6.

The space left between the bores and the wire on one hand and the portions of the bores without wire on the other hand are filled with e.g., insulating plastic material in order to form a liquid-tight seal.

Preferably a platinum wire or platinum alloy wire of single or multiple strands is used because the wire constitutes the lead-in portion and contacting portion of the anode in one single unit thereby providing a reliable durable electrical connection which at the same time is easy to manufacture.

The portion of the lead-in wire which is sealed inside the insulating rod 4 or a part thereof can be made from a base metal whereby connection with the platinum or platinum alloy wire is made at any point inside the rod.

The system, as shown in Figure 1, includes a direct current power supply 15 having its positive terminal connected to the outer end of the wire 12. In view of one connection of the negative terminal to the wall 6, a protective current flows from the power supply through the wire 12 and its helically wound portion 14, through the

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liquid to the wall 6, and back to the power supply. A representative example of a self-adjusting current supply for a cathodic protection system which is suitable for the use in connection with the assembly herein described has been set forth in a co-pending application Serial No. 732,275, filed May 1, 1958, a continuation of application Serial No. 513,511, filed June 6, 1955.

According to the modification of the invention as illustrated in Fig. 3, the rod 4 is enveloped in a metallic sleeve 16 which sleeve is electrically connected to the end of the wire 12 at the point where the wire comes to the surface of the rod, the wire being sealed into the rod by filling the spaces between the wire and the walls of the bores. Any suitable base metal wire can be used, while the sleeve 16, as the contacting portion between the liquid and the lead-in wire, consists of platinum or platinum alloy, preferably a platinum or platinum alloy wire mesh, in order to increase the contacting surface.

The insertion of the whole assembly through the wall 6 of the container or pipe is made by any suitable seal type gland of standard commercial construction. As an example, a compression seal is shown in Figure 2. It includes a gland 18 welded to the wall 6 as indicated at 20 and provided with an internal thread which cooperates with a nut 22 to compress a packing 24. The packing rests with its other surface against a washer 26 having suitably the shape shown in Figure 2.

It will be obvious to those skilled in the art that many modifications may be made within the scope of the present invention without departing from the spirit thereof and the invention includes all such modifications.

What is claimed is:

1. In a cathodic protection system, a conducting wall surface having one side in contact with an electrolyte; an anode assembly extending through said wall in contact with said electrolyte; and means for establishing a positive potential between said electrode assembly and said wall surface; said electrode assembly comprising an elongated, substantially rigid rod of plastic insulating material, a transverse bore extending from one side through the center of said rod near a first end of said rod, a substantially axial bore extending from the other end of said rod to the transverse bore, conducting means on the periphery of said rod and extending from a point near said transverse bore and spaced from the first end of said rod a substantial distance toward the other end of said rod, said conducting means comprising platinum, said conducting means further having direct longitudinal and peripheral electrical and mechanical continuity, a conducting wire extending from said conducting means through said two bores to the other end of said rod, and plastic insulating material sealing said bores.

2. An electrode assembly as defined in claim 1 wherein said conducting means constitutes the free end of said wire wound helically around said rod.

3. An electrode assembly as defined in claim 1 wherein said conducting means constitutes a conducting metal sleeve.

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