Aug. 26, 1924. 1,506,306

A. KIRKALDY

ANODE

Filed Oct. 16, 1923 2 Sheets-Sheet 1

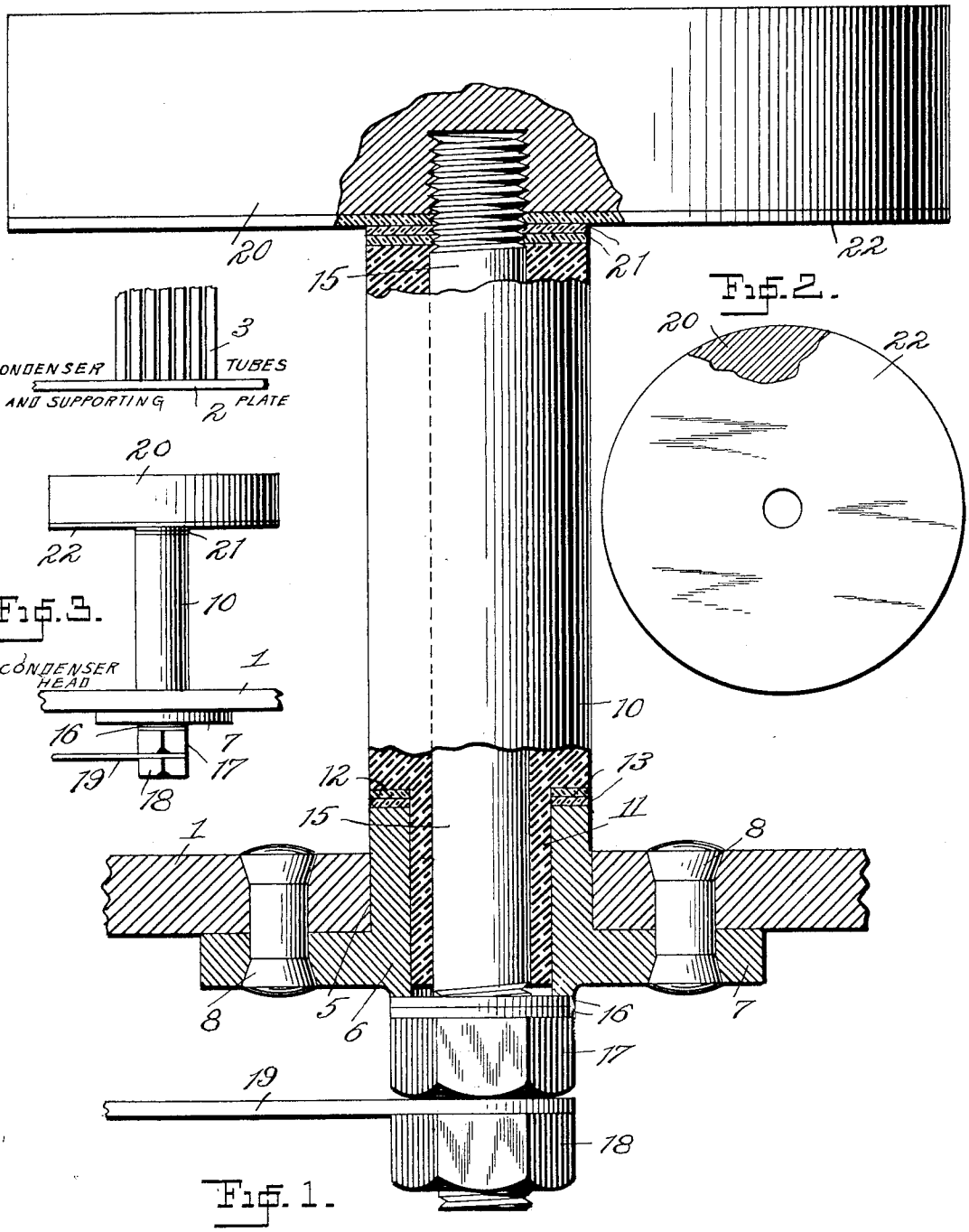


Fig. 2.

Fig. 3.

Fig. 1.

Inventor
Alexander Kirkaldy
By his Attorney
Wm. A. Courtland

Aug. 26, 1924. 1,506,306

A. KIRKALDY

ANODE

Filed Oct. 16, 1923 2 Sheets-Sheet 2

Fig. 4.

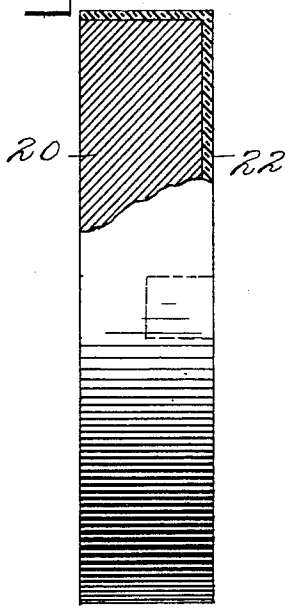


Fig. 5.

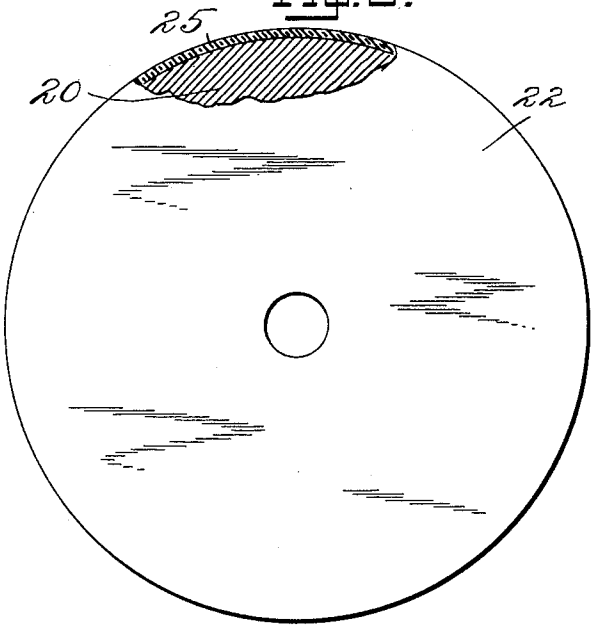


Fig. 6.

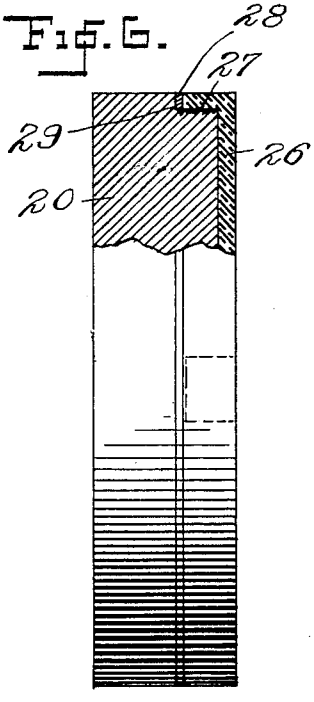
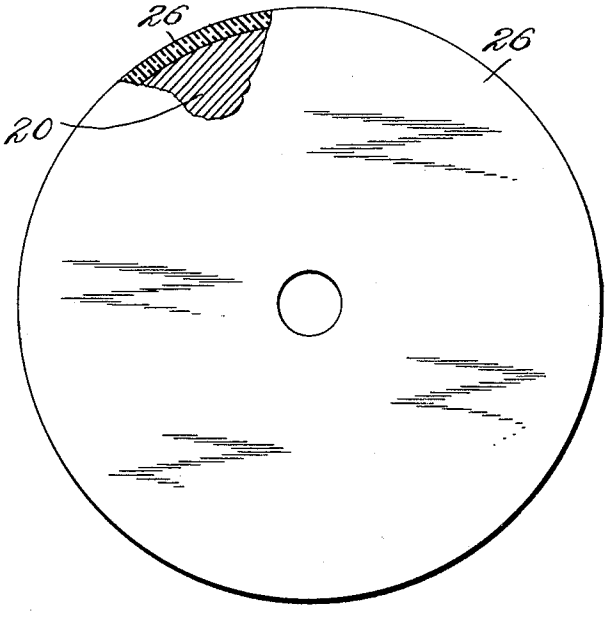


Fig. 7.



Inventor
Alexander Kirkaldy
By his Attorney
Wm. A. Courtland

Patented Aug. 26, 1924. 1,506,306

UNITED STATES PATENT OFFICE.

ALEXANDER KIRKALDY, OF BROOKLYN, NEW YORK, ASSIGNOR TO KIRKALDY ENGINEERING CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

ANODE.

Application filed October 16, 1923. Serial No. 668,847.

To all whom it may concern:

Be it known that I, ALEXANDER KIRKALDY, a citizen of the United States, residing in Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Anodes, of which the following is a specification.

This invention relates in general to anodes and more particularly to the class of anodes employed in an electrolytic system for preventing corrosion of metallic surfaces in contact with water and other liquids, such as condensers, boilers, tanks and the like.

The primary object of the invention is to construct an anode in such a manner that it will be more efficient in its action by directly discharging the current towards the parts to be protected.

Another object of the invention is to construct an anode that will maintain a discharging surface of uniform proportions during the active life of said anode.

Other and further objects, including certain features of construction and application will appear in the specification and be pointed out in the appended claims, reference being had to the accompanying drawings which show the preferred embodiment of my invention.

I am aware of the fact that the electrolytic system for the prevention of corrosion in condensers, boilers and the like, is well known in the art and that such systems are now in practical use, but the desired success has not been attained, owing to the fact that the anodes now used are so constructed and applied that they do not produce and maintain the desired results. By constructing and applying an anode in the manner hereinafter described, I am enabled to overcome the present objectionable conditions and materially improve the efficiency of the anode.

In the accompanying drawings:

Figure 1 is a sectional view of an anode suitably supported in operative position.

Figure 2 is a reduced view of the face of the anode.

Figure 3 is a detail view showing the relation of the anode to the parts of a condenser.

Figures 4 and 5 show a modified form of anode.

Figures 6 and 7 show another modified form of anode.

In the preferred embodiment of my invention as shown in the drawings, 1 is the head, 2 the tube supporting plates and 3 the tubes of a condenser of standard construction.

Suitably located within the condenser head is an opening 5 through which extends a bushing 6. This bushing is provided with a flange 7, shaped to firmly fit the contour of the condenser head and is held in place in any desired manner, here shown as in rivets 8.

The electrode is mounted within the bushing in the condenser head and consists of a tube 10 of any suitable insulating material having one end reduced in diameter, as shown at 11, so that it will pass through the opening in the bushing 6. By reducing the tube in diameter in this manner, a shoulder 12 is formed thereon, and between said shoulder and the inner end of the bushing 6 are packing washers 13 so placed for the purpose of making a water tight joint. Extending through this insulating tube is a metal bar 15 which supports the anode on the inner end thereof and also acts as a conductor to carry the current from the exterior of the condenser to the anode. On this bar, without the condenser, and resting against the bushing 6 are packing washers 16 which are firmly held in position against the bushing by the nut 17 on the supporting bar. The positive terminal 19 which is made of any suitable material is carried on the supporting bar and held in fixed position between the two nuts 17 and 18.

The inner end of the supporting bar is threaded and extends beyond the insulating tube a sufficient distance to fit within the axially bored and tapped anode 20. To prevent the water in the condenser from reaching the supporting bar, I place on said bar between the inner face of the anode and the end of the insulating tube, packing washers 21 which are firmly held in position when the anode is screwed on the end of the supporting bar.

Thus it will be seen that the supporting and conductor bar is properly insulated from the condenser head and by using the packing washers 13, 16 and 21 the parts are assembled in a manner to prevent any of the elements from engaging the conductor bar to cause a short circuit.

The particular construction of the electrode for supporting the anode in desired position forms no part of my present invention. Any electrode may be employed that has the conductor insulated from the condenser and from the water within the condenser.

The construction of the anode is the essential part of the present invention and I preferably make said anode of disk form and of any suitable metal of proportions required to accomplish the intended purpose. Over a portion of the anode, not less than one face, is a covering of insulation, as shown at 22. This insulation is preferably made integral with the anode, such as enamel, porcelain, or any desirable material that can be made to adhere to the metal.

By referring to Figure 3 it will be noticed that in locating the anode within a condenser it is desirable to place same nearer to the parts to be protected, that is, so the distance between the anode and the tubes will be less than the distance between the anode and the condenser head. The object of this arrangement is to obtain a substantially uniform distribution of the current from the anode to the several parts of the condenser to be acted upon.

By insulating the anode on the surface presented toward the condenser head I am enabled to more completely direct the distribution of the current to the parts to be protected and materially deter the flow of current toward the condenser head.

When the anode is insulated in the manner described its gradual destruction will not be over the entire surface of the anode but practically confined to the face presented to the parts to be protected, thereby preserving the full width of the discharging face of the anode at all times during its active life. Practical demonstration has shown that an anode constructed in the manner herein shown and described will give the maximum of efficiency in an electrolytic system of this kind.

Heretofore in electrolytic systems of this kind the entire exposed surface of the anode has been gradually destroyed until the anode assumes the proportions of a knob or some similar form thereby constantly decreasing the discharging value of the anode towards the parts to be protected.

In Figures 4 and 5 I have shown a modified form of means for insulating the anode, that is, insulating the circumferential edge of the anode, as shown at 25, as well as the surface presented towards the condenser head. I have found this to be advantageous in certain usages of the anode particularly when it is desired to still further confine the direct discharge of current to parts to be protected.

Figures 6 and 7 show another modified form of my invention wherein the insulation instead of being formed integral with the anode may be made of any suitable material and in the form of a cap, as shown at 26, said cap having its inner surface 27 threaded to engage like threads on the circumferential portion of the anode. In order to prevent the water from passing between the insulation and the anode I place a gasket 28 between the edge of the cap and the shoulder 29 on the anode.

It should be understood that I do not confine myself to any particular kind or form of insulation nor to any definite method of applying said insulation to the anode, nor any definite proportion of the surface of the anode to be covered with insulation.

I claim:

1. An anode of the character described, comprising a metallic disk having one of its faces completely covered with insulating material.

2. An anode of the character described, comprising a disk of conductive material provided with an axial opening therein and a covering of insulating material over the surface of the disk provided with the axial opening.

3. An anode of the character described, comprising a disk of conductive material provided with an axial opening therein and a covering of insulating material made integral with the surface provided with the axial opening.

ALEXANDER KIRKALDY.