United States Patent

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[72] Inventor **Eugene S. Bremerman**
82 Whitehall Court, St. Louis, Mo. 63144

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[54] **ADJUSTABLE SUSPENSION APPARATUS FOR ELECTROLYTIC WATER TREATMENT**
2 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** ..... **204/196,** 122/4 R, 204/286, 204/297, 248/327
[51] **Int. Cl.** **C23f 13/00**
[50] **Field of Search** 122/4; 204/147, 148, 196, 197, 286, 297; 248/323, 327

[56] **References Cited**

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Primary Examiner—T. Tung
Attorney—Rogers, Ezell, Eilers & Robbins

ABSTRACT: An easily installable and adjustable device for preventing electrolytic corrosion in boilers and other types of deleterious water action, including formation of scale and foaming. The device comprises a metallic iron grid, connected to two upstanding metallic arms provided with spaced regularly appearing perforations or holes. The ends of the arms are adapted to be bent over and broken off at the desired lengths and simply bolted through a brass bolt to the boiler shell, with provisions for connecting a ground cable to the bolt for grounding.

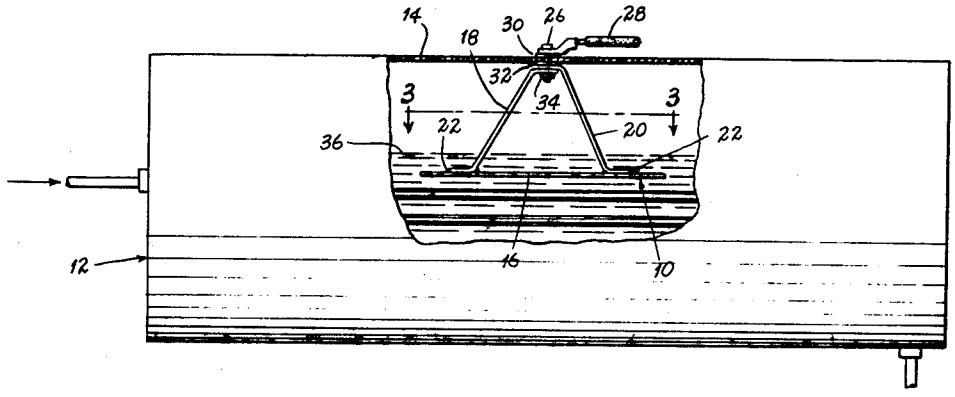


Fig. 1.

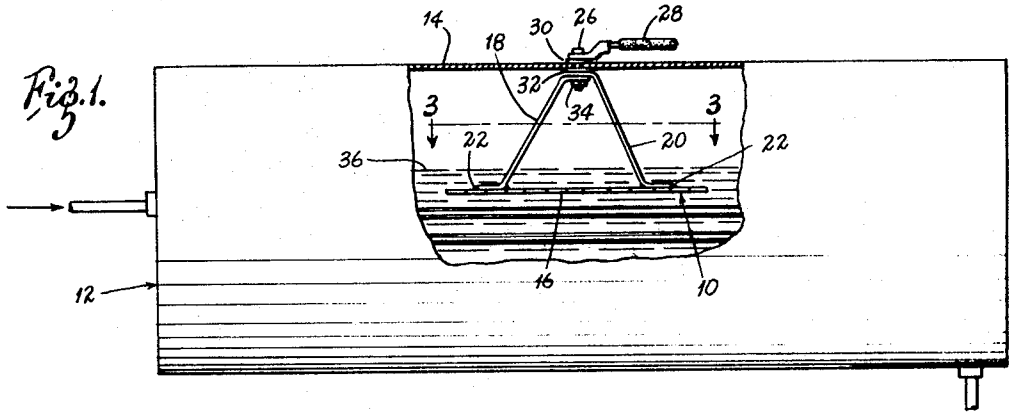


Fig. 2.

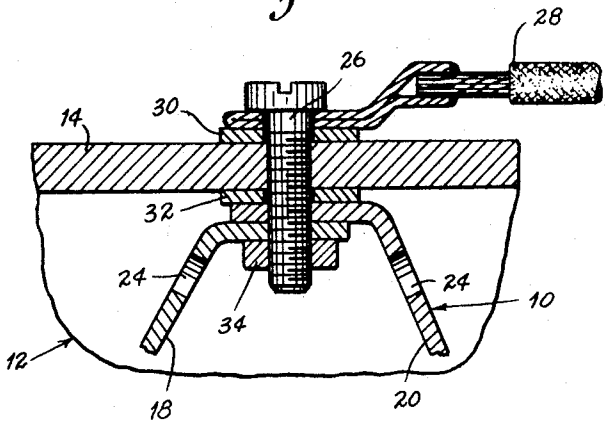


Fig. 4.

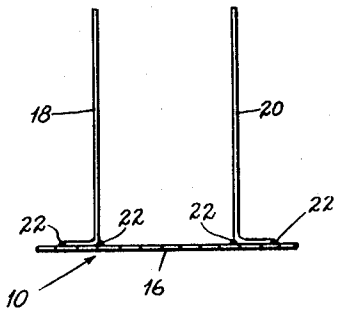


Fig. 5.

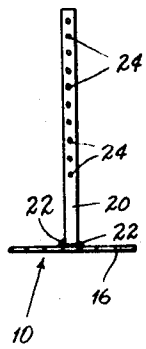
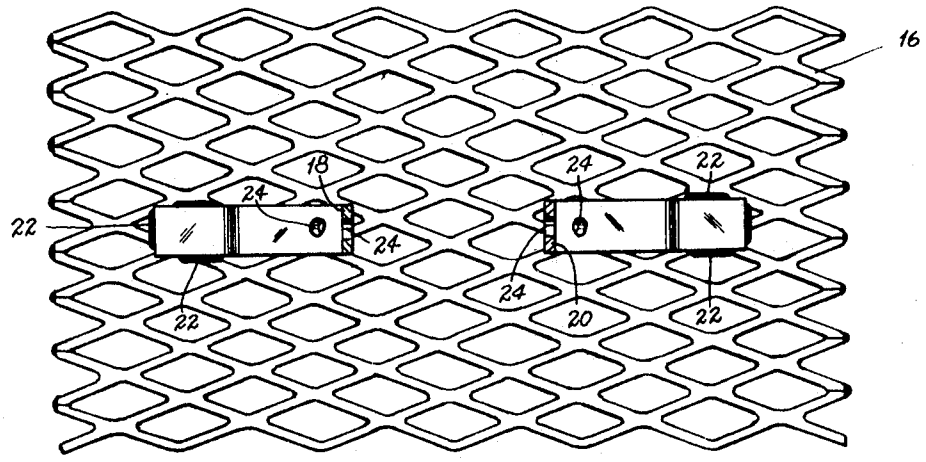


Fig. 3.



INVENTOR:
EUGENE S. BREMERMAN,
BY Kingsland, Rogers, Ezell, Eilers & Robbins
ATTORNEYS

ADJUSTABLE SUSPENSION APPARATUS FOR ELECTROLYTIC WATER TREATMENT

SUMMARY OF THE INVENTION

In my U.S. Pat. Ser. No. 2,975,769, I have disclosed a portable electrolytic water treatment device which is adapted to be simply placed upon the boiler tubes within a boiler. The frame is made of metallic construction and specially constructed insulated feet are provided such that the device could rest upon the tubes of the boiler shell in insulated relationship to suspend the metallic frame in spaced relation.

The instant invention provides an improvement in installation and removes the requirement of mounting on insulated supporting members. The invention provides for a suspended metallic iron frame which is constructed of expanded metal and of gridlike construction. The unit is simply bolted to the shell of the boiler or tank by means of brass bolts. Adjustable strap iron support members are provided for connection to the bolt. The support members are provided with perforations at regular intervals, such that the end can be simply broken off at perforations and the remaining end bent over for connection to the bolt.

By means of the instant invention a simple and effective electrolytic corrosion prevention device has been provided that can be simply installed in boilers, or the like. The device can be simply installed by relatively unskilled workmen and a rugged, stable installation is provided at inexpensive cost.

The above features are objects of this invention and further objects will appear in the detailed description which follows and will be otherwise apparent to those skilled in the art.

For the purpose of illustration of this invention, there is shown in the accompanying drawings a preferred embodiment thereof. It is to be understood that these drawings are for the purpose of illustration only and that the invention is not limited thereto.

In the drawings:

FIG. 1 is a view in elevation of the boiler tank partly broken away showing the interior provided with the corrosion prevention device of this invention;

FIG. 2 is an enlarged fragmentary view in section showing the top of the boiler shell with the connecting construction for the device;

FIG. 3 is an enlarged view in section taken on the line 3—3 of FIG. 1;

FIG. 4 is a view in side elevation of the electrolytic corrosion device before connection; and

FIG. 5 is a view in end elevation taken from the right end of FIG. 4 of the electrolytic corrosion prevention device.

The boiler device of this invention is generally illustrated by the reference numeral 10. It is shown in connected form in a boiler tank 12, connected to the top portion of the shell 14, in FIGS. 1 and 2.

The boiler device 10 consists of an expanded iron grid member 16. To it are connected two strap iron metal members 18 and 20. Each of these members is flanged over at the bottom and welded by weldments 22 to the grid member, as

shown in FIGS. 3, 4 and 5. Each of the support members 18 and 20 is provided with a series of holes 24 appearing at regular spaced intervals. The metal member is of such construction that, by means of a pair of pliers, the free end can be bent and broken at any one of the performations to adjust it to the proper size.

The boiler device 10 is shown in use in FIGS. 1 and 2. In the installation the support members 18 and 20 are adjusted to the proper size by simply breaking off the end to the desired length. They are then bent over to the configuration shown in FIGS. 1 and 2, such that the brass bolt 26 can be inserted through one of the holes 24. Before the insertion, a ground cable 28 is connected and lead washers 30 and 32 on the top and the bottom of the boiler shell are inserted in order to insure good electrical contact. All contacting units are then coated with liquid solder and a brass nut 34 is then pulled up tight to insure the most efficient electrical connection possible. The installation is then completed and ready for use.

Through the provision of the suspended metallic frame boiler device of this invention, a stable installation has been provided in which physical contact of the unit spaced above the boiler tubes is effected to insure that the device is below the water level line 26. Thus, the frame is well protected and insulated from the boiler tubes and is firmly supported to the boiler shell. The installation is simple and expedient and service and maintenance are readily effected where required.

The boiler device for prevention of electrolytic corrosion operates effectively for minimization of damage from electrolytic corrosion and also serves to inhibit pitting and scale and algae formation. The device has been found to be successful in applications and improves the efficiency of boiler operations.

Various changes and modifications may be made within this invention as will be apparent to those skilled in the art. Such changes and modifications are within the scope and teaching of the invention as defined by the claims appended hereto.

I claim:

1. A metallic boiler provided with a protective device vertically adjustable within the boiler, said boiler having horizontally extending boiler tubes adapted to be below the water level therein, said device comprising a metallic grid member suspended in spaced relation above said tubes and below said water level, said grid member being provided with a pair of adjustable support members electrically connected to said grid at one end and to a bolted connection at the top of the boiler at the opposite end, said adjustable support members being connected to said grid at widely spaced points and converging in overlapping registration at the said opposite end to said bolted connection.

2. The device of claim 1 in which said adjustable support members are constructed of strap metal provided with spaced perforations at regular intervals, said perforations being of a size to receive said bolted connection, said adjustable support members being breakable at said perforations and bendable for adjustment to the proper length and for registration at said bolted connection.

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