

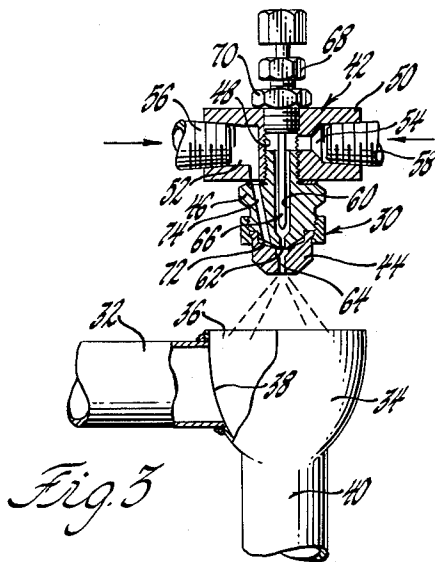
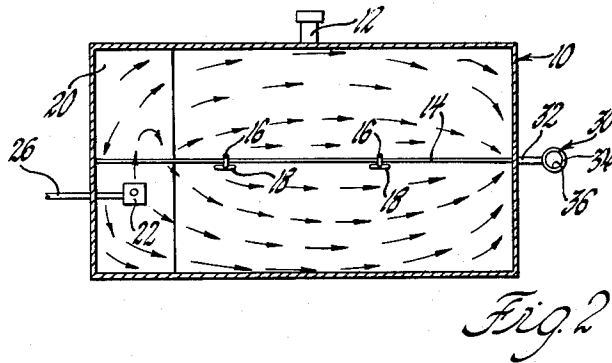
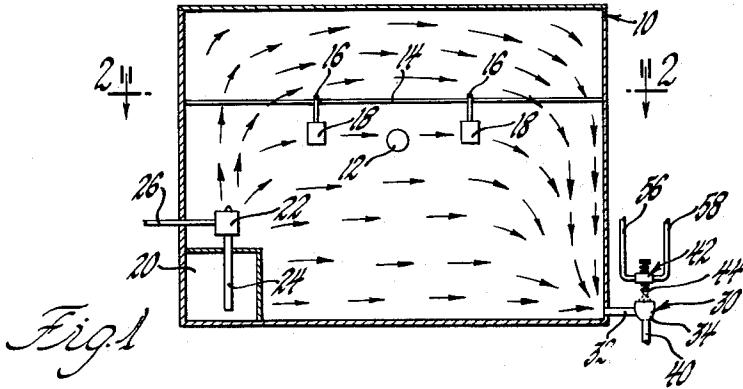
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CORROSIVE VAPOR TEST CHAMBER

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CORROSIVE VAPOR TEST CHAMBER

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2 Claims. (Cl. 23—253)

This invention relates to chambers for testing corrosive vapor resisting characteristics of elements formed of various corrosion resisting alloys or plated or otherwise coated with intended corrosion resisting metals or materials.

In test chambers of the type indicated, a corrosive salt vapor or fog is generated from a brine solution by an air aspirated spray nozzle and normally exhausted to the atmosphere through a stack of suitable draft producing height. In built-up industrial and residential communities, zoning laws and ordinances necessarily require such test chambers to have relatively high vapor exhausting stacks to prevent noxious low level air pollution. The variable draft provided by such an exhaust stack is further incapable of proving constant flow and even distribution of the corrosive vapor within the test chamber.

The instant invention particularly contemplates providing such a test chamber with controllable means effecting constant flow and even distribution of the corrosive vapor over the test elements within the chamber and exhausting the corrosive vapor therefrom without detrimental pollution of the atmosphere or local water supply. In a preferred illustrative embodiment, a suitable valve controlled nozzle sprays water into an inverted bell shaped drain connected to the end of the test chamber opposite the brine vaporizing nozzle. This water spray continuously aspirates a limited exhaust flow of the corrosive vapor from the test chamber into the drain connection and provides a relatively weak solution of the exhausted vapor for disposal through the drain connection. If necessary, this exhaust vapor solution may be further diluted with other drain water thereby preventing any deleterious pollution of the local water supply. In the alternative, this exhaust vapor drain solution may be directed into suitable evaporating tanks or ponds for reclamation of the particular corrosive salts.

The foregoing and other objects, advantages and features of the invention will be apparent from the following description of a preferred illustrative embodiment having reference to the accompanying drawing, in which:

FIGURE 1 is a somewhat diagrammatic sectional view taken longitudinally of an illustrative corrosive vapor test chamber embodying the invention;

FIGURE 2 is a view similar to FIGURE 1 and shows the test chamber in transverse plan section substantially in the plane of the line indicated at 2—2 of FIGURE 1; and

FIGURE 3 is an enlarged view corresponding to a portion of FIGURE 1 and shows an illustrative vapor exhausting, spray jet aspirator with portions broken away and shown in sectional detail.

Referring more particularly to FIGURES 1 and 2, a corrosive vapor test chamber is shown somewhat diagrammatically and indicated generally by the reference numeral 10. This chamber has a conventional exhaust stack connection 12 which is capped in the illustrative embodiment. A rail 14 extends longitudinally of the chamber and supports hangers 16 which are adapted to suitably suspend test pieces 18. A tank 20 extends transversely of the chamber at one end. A vaporizing nozzle 22 is mounted on the tank 20 and connected by a pipe 24 to a corrosive brine solution stored within the tank. During the test period, pressurized air supplied through a pipe 26 continuously aspirates the brine solution upward-

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ly through the pipe 24 to the nozzle 22 and vaporizes the brine emitting therefrom.

In accordance with the invention, the brine vapor thus supplied is slowly exhausted from the test chamber by an air-water spray aspirator 30 connected by a pipe 32 to the end of the test chamber distal from the brine vaporizing nozzle 22. The vapor exhausting aspirator 30 comprises an inverted bell-shaped member 34 having an upper opening 36 and a side opening 38 suitably connected to the adjacent end of the pipe 32 as shown. The lower end of the bell 34 is connectable through a pipe 40 to a suitable drain system. An exhaust aspirating spray nozzle 42 is mounted coaxially above the aspirator bell 34. This spray nozzle is adapted to emit an air atomized water spray into the opening of the bell-shaped member which tends to aspirate vapor from the test chamber into the bell and its drain connecting pipe.

As shown in FIGURE 3, the spray nozzle 42 of the illustrative embodiment comprises a nozzle member 44 suitably connected as shown to a gland member 46. The gland member is in turn threadably supported in a tapped hole 48 extending vertically through a connector 50. The opposite ends of this connector define fluid inlet chambers 52 and 54 connected to the adjacent ends of pipes 56 and 58, respectively. The distal ends of the pipes 56 and 58 are connectable to suitable supplies of pressurized air and of water. The water inlet chamber 54 is connected through a passage 60 and orifice 62 extending axially through the gland 46 to the orifice 64 of the spray nozzle member 44. This water supply connection through the gland member is controlled by a needle valve 66 sealingly supported by glands 68 and 70 threaded in the upper end of the tapped hole 48 of the connector 50. The needle valve 66 is axially adjustable with respect to the orifice 62 of the gland member to control water flow there-through. An annular chamber 72 formed between the nozzle and gland members 44 and 46 is connected by a passage 74 extending through the gland member to the pressurized air inlet chamber 52. Thus the water supplied to the gland orifice 62 is aspirated and atomized by the supplied pressurized air and sprayed through the nozzle orifice 64 into the upper open end 36 of the bell member 34.

During the period of a particular test, this water spray aspirates air from the atmosphere outside the chamber and a limited flow of exhaust vapor from the test chamber into the bell-shaped member. The exhausted vapor is entrained in the water spray within the bell-shaped member to provide a relatively weak, dilute solution of the exhaust vapor for disposal through the drain pipe connection 40. The rate of vapor exhausting aspiration from the test chamber may be regulated by proper adjustment of the water spray controlling needle valve 66 with respect to the gland orifice 62 to provide desired vapor flow and distribution through the test chamber or to provide the desired relative strength or dilution of the drain solution.

From the foregoing description of the preferred illustrative embodiment, it will be seen that the invention provides a relatively simple, inexpensive vapor exhausting means controllable to insure constant flow and even distribution of the corrosive vapor over test elements supported within a corrosive vapor test chamber of the type indicated and eliminates the relatively high, variable draft producing exhaust stack normally used with such a chamber. It will be further apparent that various modifications and changes might be made therein without departing from the spirit and scope of the invention as defined in the following claims.

I claim:

1. A corrosive vapor test chamber adapted to support test elements therein including means for supplying a corrosive vapor to the chamber and means spaced from the supply means for exhausting the vapor from the chamber comprising a vapor exhaust pipe, an open drain connected thereto and nozzle means connected to a supply of water and a supply of pressurized air and operable to emit an air atomized spray of water into the open drain past the exhaust pipe to aspirate atmospheric air and to aspirate vapor from the chamber through the exhaust pipe to dilute the vapor with water and air.

2. The corrosive vapor test chamber of claim 1 including means regulating the emitted vapor spray to regulate the rate of vapor aspiration and the degree of vapor dilution.

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