Feb, 27, 1934. G. E. HERRING ET AL 1,949,205

MEANS FOR PROTECTING SILVER ETC., FROM TARNISHING

Filed Dec. 9, 1931 4 Sheets-Sheet 1

Fig. 1.

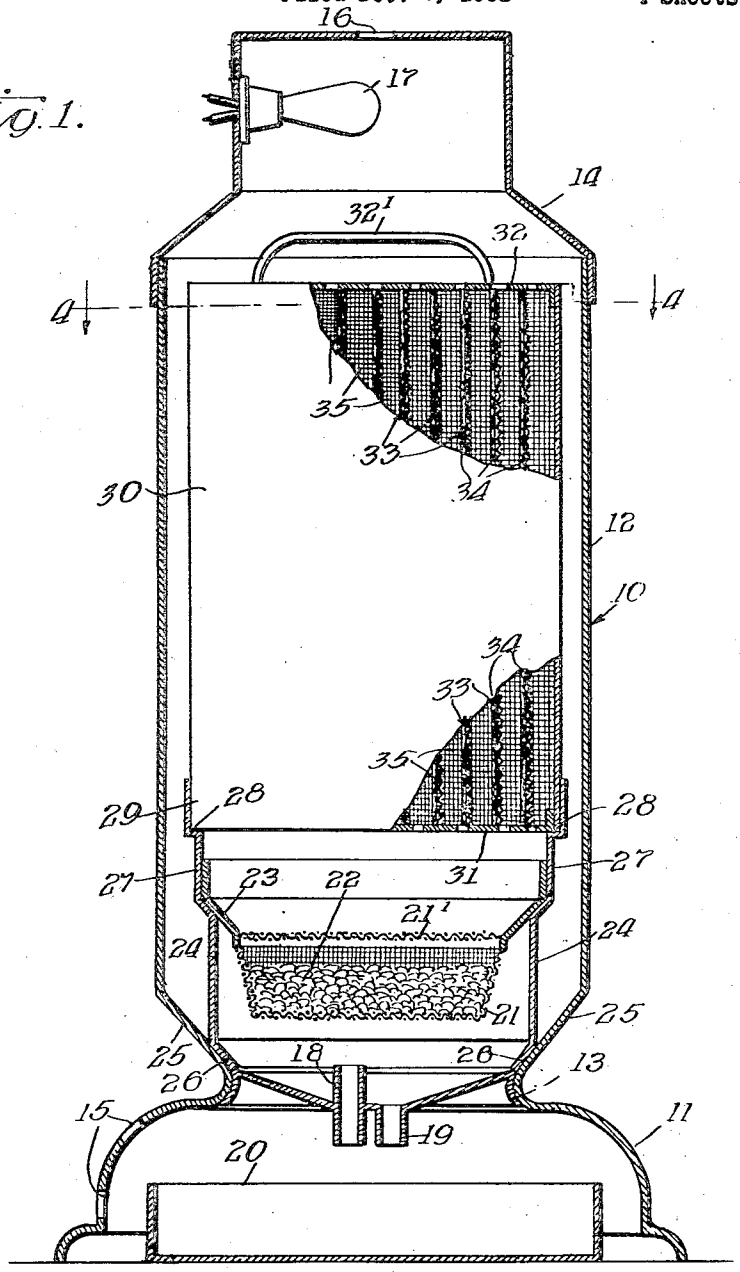

Fig. 2.

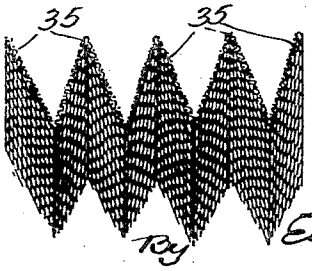

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Fig. 3.

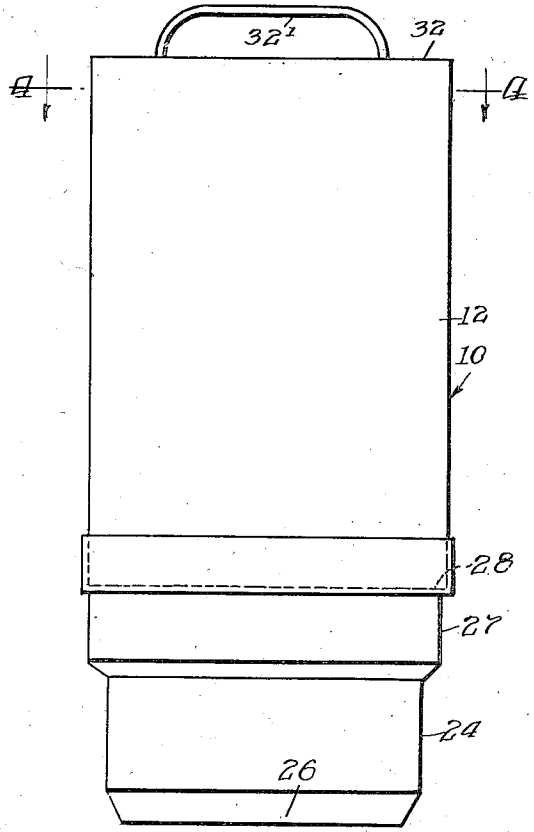
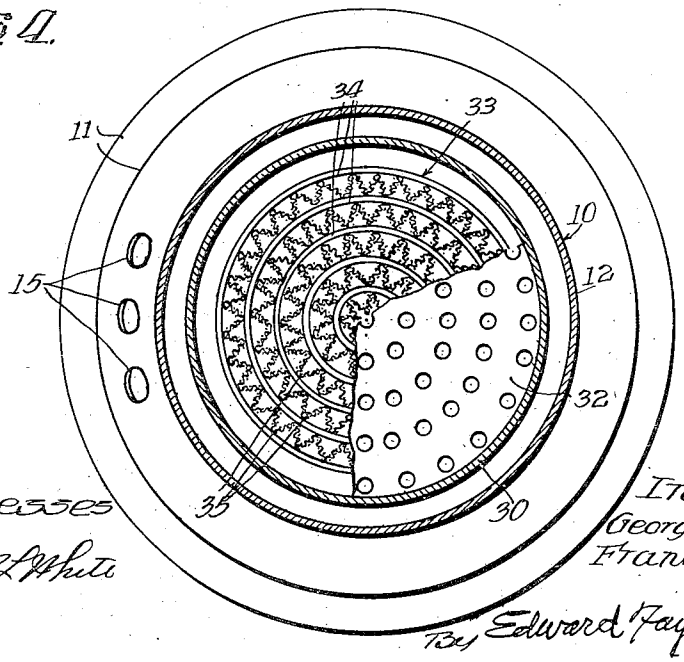


Fig. 4.



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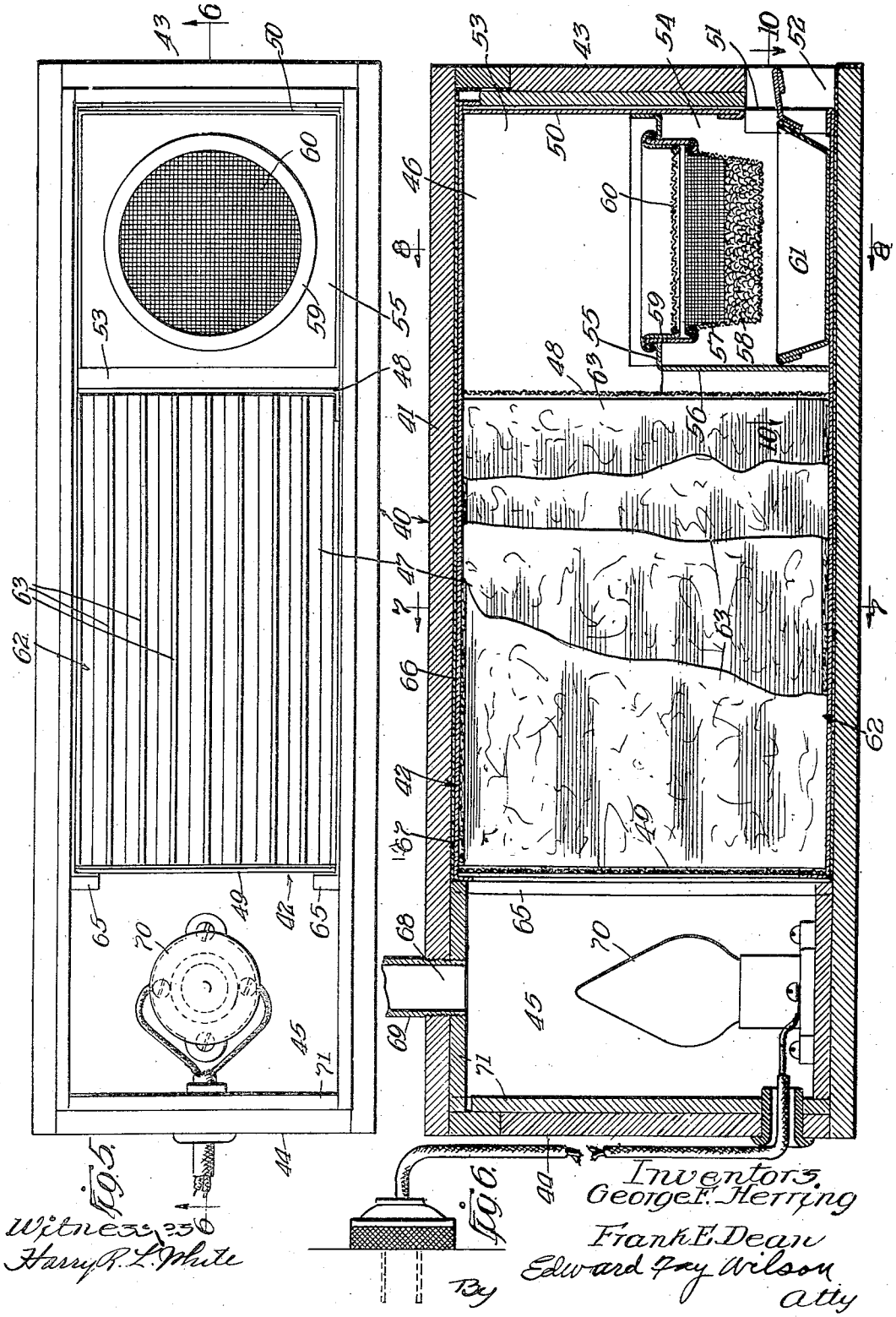

Fig. 5.

Fig. 6.

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MEANS FOR PROTECTING SILVER, ETC., FROM TARNISHING

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Fig. 7.

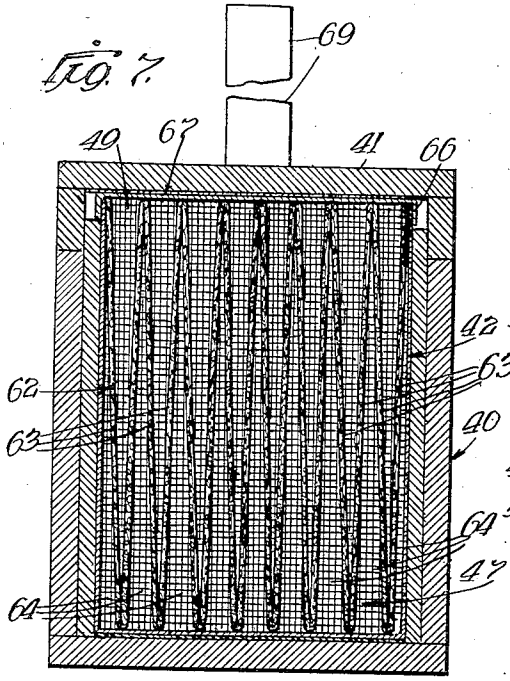


Fig. 8.

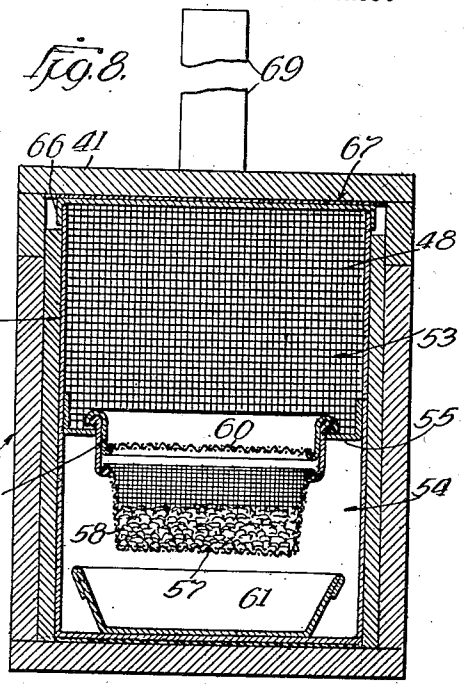


Fig. 9.

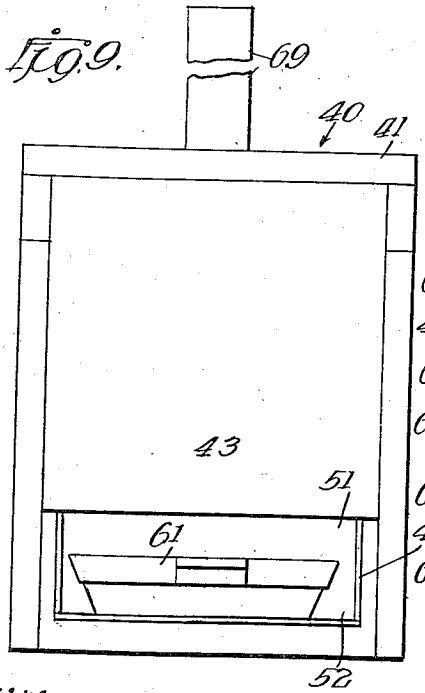
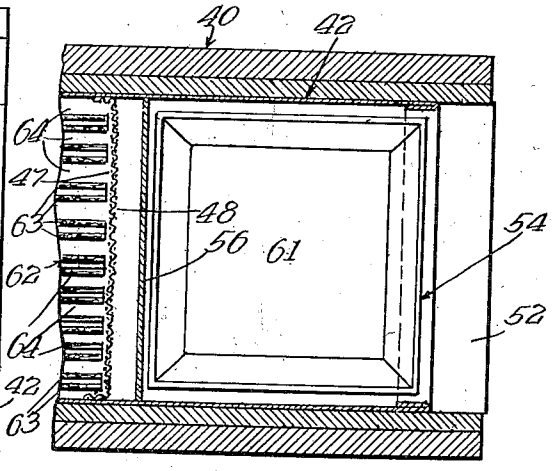


Fig. 10.



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UNITED STATES PATENT OFFICE

1,949,205

MEANS FOR PROTECTING SILVER, ETC., FROM TARNISHING

George E. Herring and Frank E. Dean, Chicago, Ill., assignors to Associated Silver Company, Chicago, Ill., a corporation of Illinois

Application December 9, 1931. Serial No. 579,908

2 Claims. (Cl. 183—4)

This invention relates to a novel means for controlling the condition of the atmosphere in certain prescribed spaces, such as show cases, to the end that articles, especially those made of or coated with metal such as silver, gold, copper, etc., which tarnish on exposure to the atmosphere, shall be protected against tarnishing.

It is well known that the tarnishing of such articles is mainly due to the sulphur dioxide present in the atmosphere and that the tarnishing effect of the sulphur dioxide is increased in the presence of moisture in the atmosphere.

The object of the present invention is to so treat the air in show cases or other enclosed or substantially or usually closed spaces, that the sulphur fumes which are ordinarily present shall be removed and, also, so that the humidity of such enclosed air shall be reduced to a practical minimum.

The novel means consists of a conduit through which the air can pass, means for causing the air to pass through the conduit, and means in the conduit for extracting the moisture from the air and for extracting the tarnishing gases out of the air.

The invention will be more readily understood from the following description taken in conjunction with the appended claims and the accompanying drawings which form part of this specification, and in which:—

Fig. 1 is a vertical, central section of an air treating mechanism embodying the invention in one form, the inner unit being shown partly in side elevation;

Fig. 2 is a fragmentary, perspective view of a woven wire separator we make use of;

Fig. 3 is a separate side elevational view of the inner unit;

Fig. 4 is a horizontal section on the line 4—4 of Figs. 1 and 3;

Fig. 5 is a top plan view with the covers removed of a modified form of device;

Fig. 6 is a vertical, central section on the line 6—6 of Fig. 5;

Fig. 7 is a transverse, vertical section on the line 7—7 of Fig. 6;

Fig. 8 is a transverse, vertical section on the line 8—8 of Fig. 6;

Fig. 9 is an elevational view of one end of the device shown in Fig. 5; and

Fig. 10 is a fragmentary, horizontal section on the line 10—10 of Fig. 6.

Devices for the practice of the novel method may take different forms depending upon the necessities of the installation or the desires of the one who uses the invention.

For instance, a vertical form of device is shown in Figs. 1 to 4, inclusive, and a horizontal form in Figs. 5 to 10, inclusive. The vertical form is the more artistic of the two but in some situations there is not height enough to receive the vertical type but plenty of room to receive the horizontal type.

It will be understood that in both types there is provided a conduit, means for causing air to pass through the conduit, and means within the conduit for extracting the moisture and the tarnishing fumes from the air as it passes through.

In Figs. 1 to 4, inclusive, of the drawings, 10 illustrates the outer casing which is preferably cylindrical in shape. The casing preferably has a flared out base 11 for stability and the main part 12 is closed at its bottom by a partition 13. The casing is open at its top and has a cover 14 which can be removed for changing the contents from time to time as may be necessary.

The base is provided with one or more small openings 15 through which the air to be treated can enter the casing and the cover has an opening 16 through which the treated air can escape. To cause a flow of air through the casing, there is shown a small electric lamp 17 fixed within the cover and which serves to heat the air and set up a draft through the casing.

The lamp 17 is merely typical of any suitable means for causing a flow of air through the casing. With a source of heat as the means for causing the flow of air, naturally the flow is upward through the casing but with other means for causing the flow, it might be downward through the casing.

To permit the air to pass through horizontal partition 13, the partition is provided with a tube 18 open at its ends and at its upper end rising above the partition, as shown. The partition is preferably inclined downwardly and at the lowest point is provided with a drain tube 19 through which accumulated water can readily escape. Beneath the base 11 there is provided a pan 20 for catching and retaining the water which drips through the pipe 19.

The pan 20 may be removed for emptying by simply lifting the casing 10.

In the main body 12 of the casing is arranged the means for removing the moisture and the tarnishing gases from the air. This mechanism consists of a wire mesh basket 21 for holding a deliquescing substance, such as dehydrated calcium chloride 22 or some such similar substance,

for absorbing the moisture from the air as the air flows through the device. Preferably, the wire basket 21 is not completely filled with the moisture absorbing substance so that, if the substance should become caked, the air could flow past same through the upper part of the wall of the basket.

A wire mesh guard 21' is arranged in the upper part of the basket 21 to prevent the displacement of the chemical 22 during shipment.

The wire mesh basket is secured at its top edge to the lower edge of a supporting ring 23 which, in turn, is supported by a tubular supporting member 24. The member 24 extends down below the bottom of the basket and rests at its lower end on an inclined wall 25 which connects the main part 12 of the casing with the base 11.

The lower end 26 of the member 24 is flanged inwardly to provide a firm seat for the internal mechanism and close off the casing so that the air must pass through the mechanism.

The upper end 27 of the supporting tube 24 is formed with a ledge 28 to receive the lower end 29 of a cylindrical casing 30. The casing 30 is slightly smaller than the outer casing 12 and can be readily removed through the top after the cover 14 has been taken off.

The casing 30 contains the means for removing the tarnishing gases, such as sulphur dioxide, from the air flowing through the device.

Preferably, the casing 30 has fixed ends 31 and 32 made of foraminous sheet metal to let the air flow freely through the casing 30.

The means for removing the tarnishing gases preferably consists of a coil 33 of absorbent material, such as blotting paper, which carries a chemical, such as lead acetate, adapted to combine with the sulphur dioxide. The turns of the coil 33 are preferably separated radially by winding up with the strip 34 which forms the coil of blotting paper, a strip of wire mesh 35 which has been corrugated or bent, as best shown in Fig. 2, and which holds the turns of blotting paper separated to let the air flow past and in contact with same.

The corrugated wire mesh strip and the strip of prepared blotting paper, when wound up together, form a roll which fills the casing 30 from end to end and through which the air can pass. The passing air flows over and in contact with the exposed surfaces of the blotting paper in best relation to cause all of the tarnishing gases to be eliminated from the air.

Preferably, the tubular casing 30 is secured to the upper end of the tubular support 24 so that the casing 30, the support 24 and the wire basket 21 form a unit which can be readily placed in or removed from the outer casing 12. For convenience in placing and removing this unit, a handle 32' is provided on the upper end wall of the casing 30.

The device is especially designed and adapted to be placed in a show case, or similar space adapted for storage and exhibition of silverware, and as the device continues to act it, in time, passes all of the air in the show case through same. However, as the show case is opened from time to time, some outside or untreated air enters but it does not have a chance to attack the silverware as the moisture and the gases are soon absorbed by the device. After the device has been in active service for a time, such as a few months, the chemicals become inactive but the interior unit can be easily removed and a new one substituted.

The moisture absorbing chemical 22 tends to drip moisture and this falls down on the partition 13 and flows down through the drain tube 19 and accumulates in the pan 20, which may be emptied from time to time.

In some instances, the removal of the moisture alone from the air is sufficient to protect the contents of a case in which the device is placed and in other instances, the removal of the tarnishing gases alone is all that is required, consequently, the invention is not limited to the combined use of the two but resides broadly in the forced passing of the air in contact with either one of the substances.

In the form of device shown in Figs. 5 to 10, inclusive, the casing 40 as shown, is an elongated box closed at its ends and open at its top. A cover 41 is provided for removably covering the box 40. The box 40 contains a removable box-like casing 42 of a size to transversely fill the box long enough to extend from one end 43 of the box to a point near the opposite end 44 but of a length to leave an end chamber 45 at the end 44 of the box.

The casing 42 is divided into two parts, 46 and 47, by a vertical, transverse partition 48. This partition is foraminous, being preferably made of wire mesh and the opposite end of the casing is closed by a similar end 49, also preferably made of wire mesh. The casing 42 is closed at its opposite end by a solid wall 50 provided with an opening 51 at its lower end. The opening 51 registers with a similar opening 52 provided in the end 43 of the box 40 and these openings permit the air, which it is desired to treat, to enter the device.

The compartment 46 is much shorter than the compartment 47 and is divided into two parts 53 and 54 by a horizontal partition 55. The partition 55 extends from the end 50 of the casing to a point near to the partition 48 and then extends down as shown at 56 to the bottom of the casing. The horizontal partition 55 has a large opening in which a wire mesh basket 57 is supported. The basket contains a suitable chemical 58 such as hydrated salt, for absorbing the moisture out of the air as the air passes same. Preferably, the basket 57 has a sheet metal ring 59 at its upper edge by which it is held in the opening in the partition 55 and a wire mesh cover 60 is provided to retain the chemical 58 in the basket, should the device be turned upside down in handling it before it is set for use.

Below the wire basket is a drip pan 61 to catch the moisture which may drop down from the basket. The pan 61 is removable through the openings 51 and 52 for emptying.

The vertical partition 56 is spaced from the end 48 so that the air passing through the device can pass easily through the whole of the chamber 47 from the top to the bottom.

The chamber 47 contains the chemical carrier for taking the sulphur dioxide out of the air. This preferably consists of a strip 62 of blotting paper which carries the chemical such as lead acetate, and has been folded up in zig-zag form, as best shown in Fig. 7. The strip 62 is as wide as the length of the chamber and the folds 63 are as high as the chamber and folds enough are used so that when the folded strip is dropped down into the chamber 47, its natural sidewise expansion will cause it to fill the chamber from side to side. This form of filler provides many longitudinal passages 64 between the folds 63 and extending from end to end and top

to bottom of the chamber 47. The air in passing through the passages 64 flows over and in close contact with the blotting paper sheets and the tarnishing gases are extracted by the lead acetate carried by the blotting paper.

Side stops 65 may be secured to the walls of the box to hold the casing 42 in place in the box. The casing 42 is closed at its top by a cover 66 which preferably extends over both chambers 46 and 47 so that by removing the cover 66, the materials in both chambers can readily be renewed.

On the other hand, the casing 42 with its contents can be considered as a renewable unit for use in the box and in such case the cover 66 may be secured on permanently as by being soldered in place on the casing.

Preferably, also, the box 40 has a soft lining 67 which contacts with the casing 42 and practically seals the box against leakage of air past the casing 42.

The box 40 is provided with an air outlet 68 opening out of the top of the chamber 45 and a chimney tube 69 may be provided secured in the opening 68 to enhance the flow of air through the device. Under some conditions, the removal of the moisture from the air at the entrance end of the box is sufficient to set up a flow of air through the box sufficient for the action desired. But usually the surrounding atmosphere has not sufficient moisture in it for this action to be satisfactory.

For the purpose of enhancing the flow of air through the device, a circulation booster may be provided. This is typified by an electric light bulb 70 in the chamber 45 which, when lit, heats the air and causes a flow of air through the box from the inlet 52 to the outlet 68.

Preferably, at least the chamber 45 is lined with some suitable fireproof or slow burning material, such as plaster board or the like, as shown at 71.

It will now be understood that both forms of the device shown are effective to protect articles made of tarnishable metal when the device is placed in a practically closed space, such as a show case, with the articles.

As many modifications of the invention will readily suggest themselves to one skilled in the art, we de not limit or confine the invention to the specific details of the showing made herein.

We claim:

1. In an apparatus of the kind described, an outer casing, a removable unit for placement in and removal from the casing, the unit having a wire basket for holding a moisture absorbing chemical, and a sheet of absorbent material carrying a chemical adapted to absorb metal tarnishing gases from the atmosphere, fixed means within the casing for causing air to flow through same.

2. In an apparatus of the kind described, an outer casing, a removable unit for placement in and removal from the casing, the unit having a foraminous container for holding a moisture absorbing chemical, and absorbent material for carrying a chemical adapted to remove metal tarnishing gases from the atmosphere, and means within the casing for causing air to flow through same.

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