D. N. HITCHCOCK.

AUTOMATIC DISINFECTING DEVICE.

APPLICATION FILED DEC. 16, 1916.

1,248,859. Patented Dec. 4, 1917.

Fig. 1.

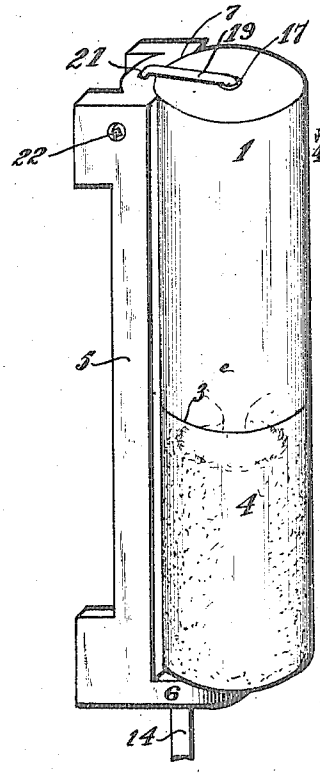


Fig. 2.

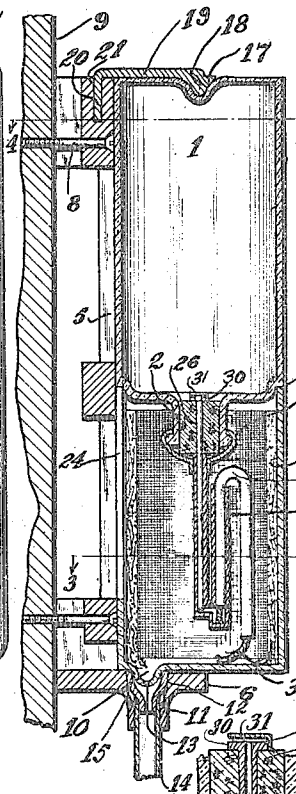


Fig. 4.

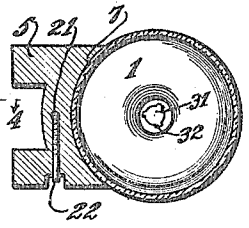


Fig. 5.

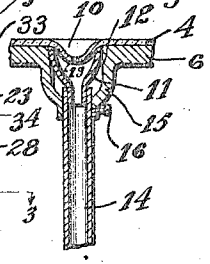


Fig. 6.

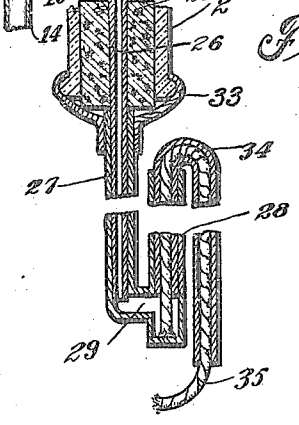
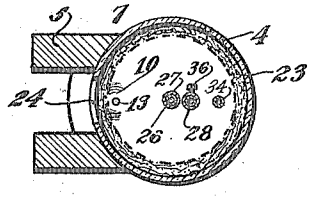


Fig. 3.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC DISINFECTING DEVICE.

1,248,859. Specification of Letters Patent. Patented Dec. 4, 1917.

Application filed December 16, 1916. Serial No. 137,378.

To all whom it may concern:

Be it known that I, DANIEL N. HITCHCOCK, a citizen of the United States, and resident of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Automatic Disinfecting Devices, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved automatic disinfecting device of that class which periodically drops from a reservoir an infinitesimal quantity of a liquid disinfectant, and which continuously impregnates the air of a room with disinfectant by evaporation of the latter; and my invention consists in the novel features of construction and organization, as hereinafter fully described and particularly pointed out in the claims appended to this specification.

The object of my invention is to provide an improved disinfecting device which shall be especially adapted for use upon railway trains, and which will be simple and durable in construction, and economical in the use of the liquid disinfectant.

Heretofore, in all such devices used upon railway cars, the jarring, jumping and jolting of such cars has rendered the disinfecting devices very wasteful of the disinfectant, owing to the fact that the "jumping" of the cars has forced an abnormal quantity of the liquid out of the reservoirs, and thereby increased the cost of operation to such an extent as to render the devices impracticable.

My invention may, of course, be used in buildings as well as upon railway cars.

In the drawings,

Figure 1 is a perspective view of a disinfecting device embodying my invention.

Fig. 2 is an enlarged vertical section of the same.

Fig. 3 is a horizontal section of the same, taken on the line 3—3 of Fig. 2.

Fig. 4 is a horizontal section of the same, taken on the line 4—4 of Fig. 2.

Fig. 5 is a vertical detail-section of the construction at the lower end of the wick-chamber, showing the "teat" in the bottom thereof, and the connections for the discharge-tube, and

Fig. 6 is a vertical detail-section of the inverted neck of the reservoir (or bottle), showing the connection therewith of the feed-tube and the wick-tube.

The numeral 1 designates a disinfectant reservoir, which is made in the form of an inverted glass bottle, in the present instance, but which may of course be made of any suitable material.

The said reservoir 1 is provided with the usual bottle-neck 2, while at the base of its breast is formed an annular shoulder 3, which latter rests upon the upper edge of a cylindrical wick-chamber 4.

A suitable bracket 5, preferably made of aluminum, is provided for the purpose of securing the device to a wall or other support, and the said bracket has a horizontal arm 6 at its lower end, on which rests the lower end of the wick-chamber 4.

Said bracket 5 extends the full length of both the reservoir and the wick-chamber, and the outer face of said bracket has a curved vertical seat 7 in which the curved peripheries of said reservoir and wick-chamber rest, to afford an efficient reinforcement for said parts throughout their heights, and to retain them firmly at all times in vertical alinement, no matter how much the railway car may jump or jolt during use of the device.

Bolts or screws 8, having their heads countersunk in said bracket 5, and concealed by the said reservoir and wick-chamber, are used in securing the said bracket to the wall or other support 9.

The lower end of the wick-chamber 4 is made with a circular depression 10, which projects below said end and forms a "teat" thereat, for a two-fold purpose, to-wit: It engages within a funnel 11 located within an opening 12 formed in said horizontal arm 6 of said supporting-bracket 5, and thereby firmly holds said wick-chamber in place on said arm; and said teat is provided with a small central perforation 13, through which the liquid disinfectant passes from said wick-chamber and drops through the said funnel into the discharge-pipe 14, into which the lower end of said funnel extends.

Said funnel may be made of rubber, so as to act as a gasket, in making a tight joint between the teat 10 and the wall of said perforation 12 of said horizontal arm 6.

Depending from the underside of said arm 6 is a pipe-clamp 15, into which a screw 16 is threaded so that its inner end will engage the said discharge-pipe 14, and secure the latter firmly in position within said pipe-clamp.

The upper end of said reservoir 1 is provided with a central depression 17, which is detachably engaged by a down-turned head 18 of the locking-bracket 19, for the purpose of holding and locking the device in place upon said supporting-bracket 5, when my invention is in service.

Another down-turned portion 20 of the said locking-bracket 19 is removably inserted in a vertical socket 21 formed in the adjacent upper end of said supporting-bracket 5, and a set-screw 22 is threaded into the side of said last-named bracket so that the inner end of said set-screw engages said portion 20 and securely clamps the same within said socket, and thereby locks the entire device in its place on the said supporting bracket.

Within said wick-chamber 4 is a large circular wick 23, which is of such size as to reach around the inner surface of said chamber in contact therewith, and the height of said wick is almost equal to the height of the chamber, so that the wick will reach from the bottom of the chamber to a point near the upper end thereof, so as to expose the greatest possible area of wick within said chamber to the action of the air therein, such air entering said chamber through the lower end of a large vertical slot or opening 24, which is formed in the rear portion of the chamber, as shown more clearly in Fig. 3.

A suitable stopper 25 is firmly located within said neck 2 of the reservoir 1, and a small vertical feed-tube 26 has its upper portion fixed in a perforation formed within said stopper, so that said tube passes through the latter and extends downwardly within a protecting-tube 27, to the lower end of which the wick-tube holder 28 is connected by a lateral extension 29.

The upper end of said feed-tube 26 is provided with a horizontal flange 30, which rests in contact with the upper end of said stopper, so that the liquid disinfectant may pass from said reservoir 1 into the said feed-tube, and thence to the said lateral extension 29 and wick-tube holder 28.

A cap or shield, 31, is placed over the upper end of said feed-tube 26, within the reservoir, and is supported a slight distance above said end of said tube by means of a plurality of integral marginal legs 32, which depend from said cap and rest upon the upper end of said stopper 25, for the purpose of preventing the liquid disinfectant from being forced too rapidly into the open end of said feed-tube by the "jumping" or jarring caused by the running of the railway car, and yet permit an ample quantity of such disinfectant to gradually flow through the limited space between said cap and the open end of said tube.

A suitable clamp 33 embraces the beaded neck 2 of said reservoir 1, as well as the upper portion of the said protecting-tube 27, and removably fastens the said tube to the said neck.

An inverted U-shaped wick-tube 34 is telescopically, and detachably mounted in the upper end of the said wick-tube holder 28, and a suitable wick 35 is mounted within said wick-tube, so that one end of said wick projects into the space beneath the lower end of the leg of said wick-tube which is in said wick-tube holder, and the opposite end of said wick extends beyond the other leg of said wick-tube, and rests in contact with the bottom of the wick-chamber 4.

A common set-screw 36 is threaded through said wick-tube holder 28 and engages the inclosed leg of said wick-tube 34, to retain same in the desired adjustment.

The operation is as follows:

An extended description of the operation of my invention will not be necessary, as the function of the several parts will be obvious to those skilled in the art.

To fill the reservoir 1, the same is detached and placed with its neck 2 upward, the locking-bracket 19 having been, of course, first released and its head 18 removed from the depression 17 in the top of said reservoir, which may be done by loosening the set-screw 22.

The stopper 25 is then withdrawn, together with all the parts attached thereto, which may be done by detaching the flexible end of the clamp 33 from the beaded-neck of said reservoir. After the reservoir 1 is filled with disinfectant liquid, it is replaced and locked in position, as shown, by manipulating the locking-bracket and its set-screw 22, in the manner previously described.

The disinfectant liquid flows out of the reservoir 1 by passing under the said cap or shield 31, at the rate of about one quart per month, into the open upper end of said feed-tube 26, and thence passes to the wick-space in the lower end of said wick-tube holder 28 by way of the lateral extension 29, where it is conducted by capillary attraction of the wick 35 through the wick-tube 34 and deposited in the bottom of the wick-chamber, and accumulates therein until it reaches a sufficient height upon the large wick 23 to be carried away in a measure by said large wick and exposed to the air circulating in said wick-chamber by way of the large vertical opening or slot 24, whence the disinfected air escapes and mingles with the air of the room.

The liquid disinfectant also passes through the said small perforation 13 of the teat 10, and drops into the underlying discharge-pipe 14, and is carried thereby to any desired destination and discharged, for an obvious purpose.

Should the flow through said wick-tube 34 be too rapid, it may be lessened by ad-

justing the wick-tube in said wick-tube holder 28, that is—by raising said wick-tube until its discharge end, or leg, will have less siphonic effect, it being well known that the shorter the said leg is the less rapid will be the flow through the siphon, and vice versa.

I do not wish to restrict myself to the details of construction shown and described herein, as obvious modifications will suggest themselves to skilled mechanics and experts in the art.

I particularly claim the following as my invention:

1. In a disinfecting device, a reservoir in the form of an inverted bottle having a neck, a stopper in said neck, a feed-tube extending through said stopper and having a horizontal flange at its upper end, and a shield having legs which rest upon said stopper within said reservoir and support said shield a slight distance above the entrance to said tube.

2. In an improved disinfecting device, a wick-chamber having a discharge-teat, a supporting-bracket having a perforated horizontal arm in the perforation of which said teat is located to prevent lateral removal of said chamber from said arm, a discharge-pipe connection beneath the perforation of said discharge-teat, a suitable wick in said wick-chamber, a reservoir supported by said wick-chamber, a feed-tube for feeding liquid disinfectant into said chamber from said reservoir, and locking-means for preventing the removal of said reservoir from said wick-chamber.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

DANIEL N. HITCHCOCK.

Witnesses:
HENRY L. HIGDON,
JOHN C. HIGDON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."