

June 12, 1934.

W. F. FOLMER ET AL

1,962,439

INSECT EXTERMINATOR

Filed Sept. 23, 1931

2 Sheets-Sheet 1

Fig. 1

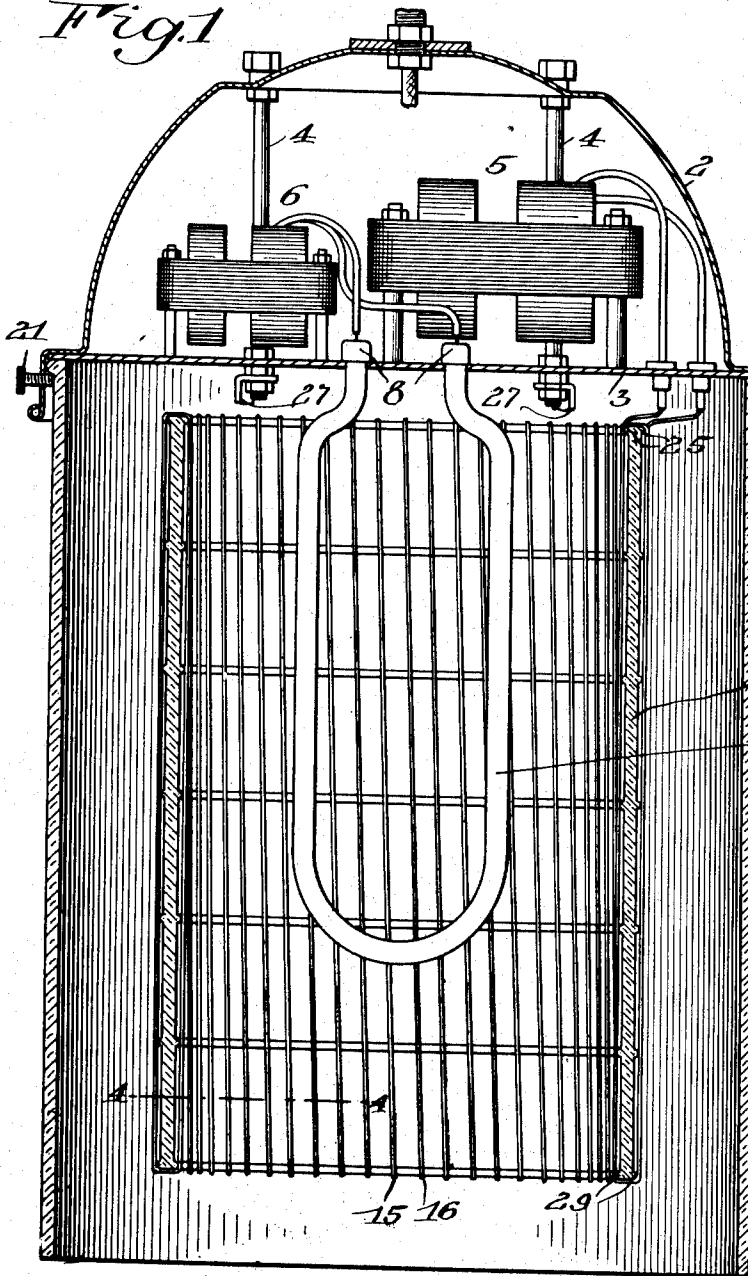


Fig. 2

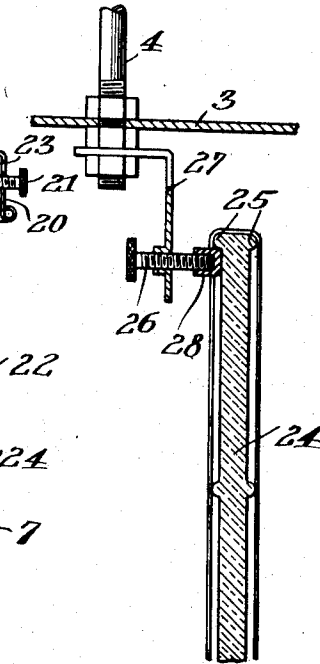


Fig. 3

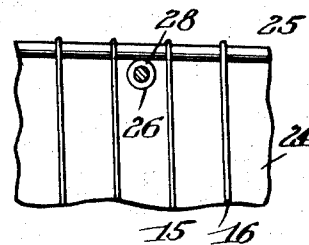
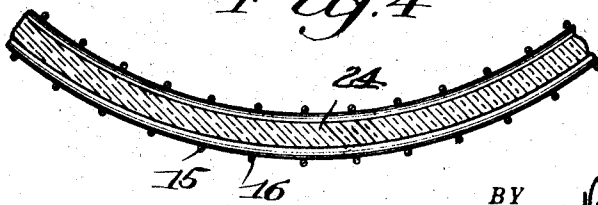


Fig. 4



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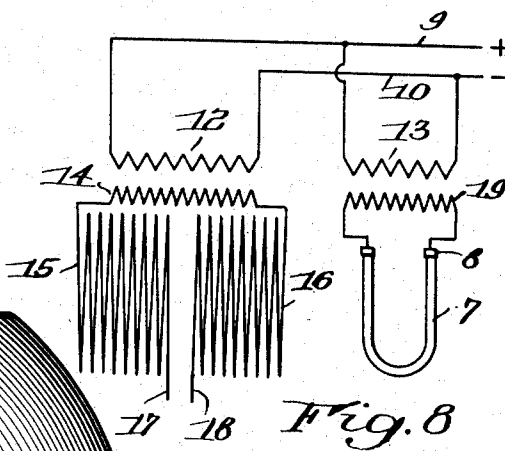
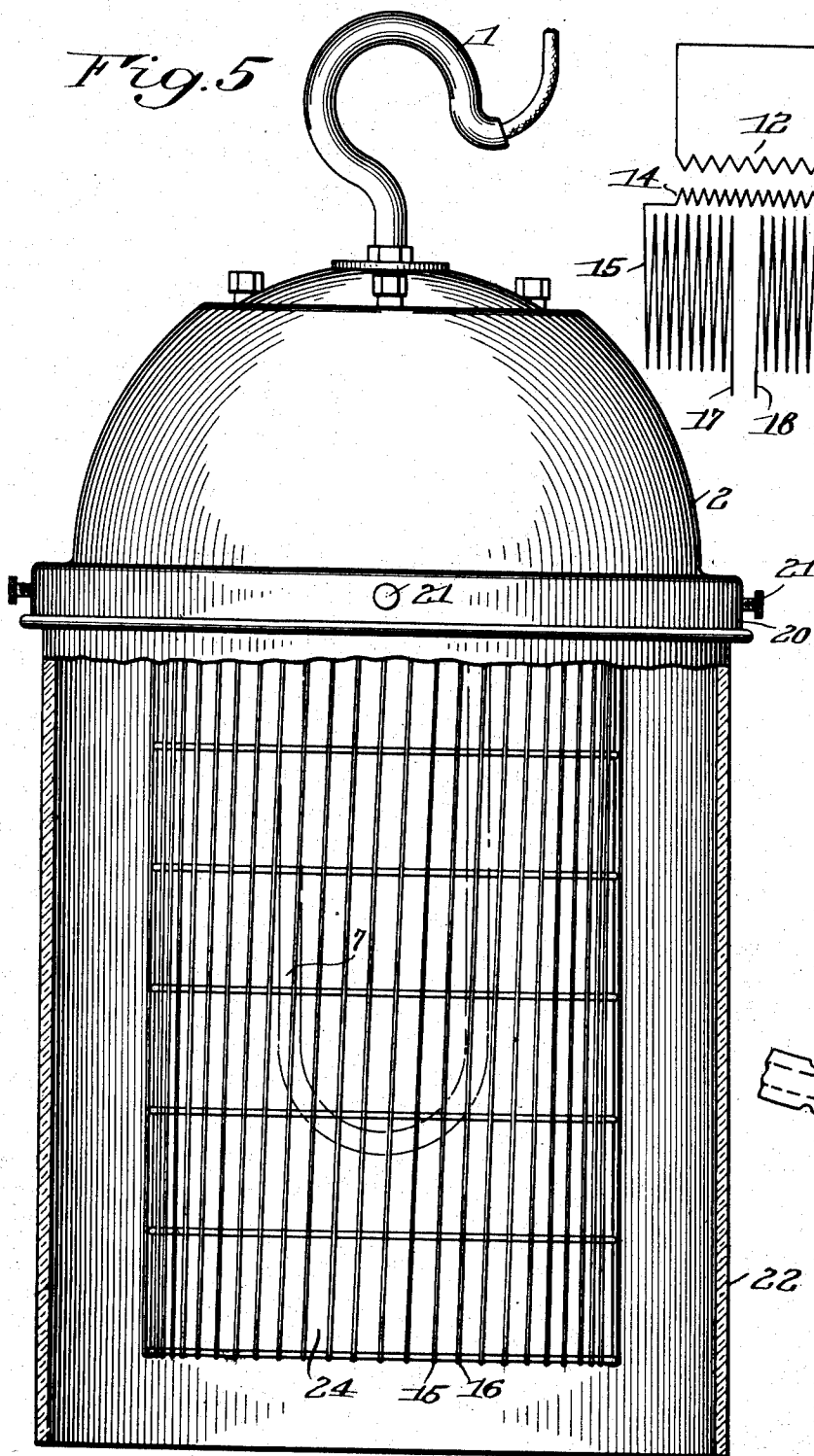
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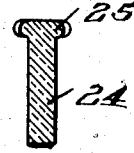
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*Fig. 5*

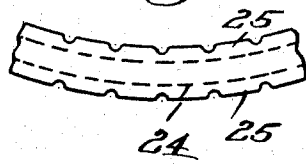


*Fig. 8*

*Fig. 6*



*Fig. 7*



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## UNITED STATES PATENT OFFICE

1,962,439

## INSECT EXTERMINATOR

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Application September 23, 1931, Serial No. 564,589

5 Claims. (Cl. 43—112)

Our present invention relates to electrical appliances and more particularly to the application of electricity to the destruction of flies, moths and other pestiferous insects, and it has for its object to provide a simple, economical and efficient device of this character. The improvements are directed in part toward greatly enlarging, in a simple way, the electrically charged area, contact with which is fatal to the insects, without increasing the over-all proportions of the device.

To these and other ends, the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Fig. 1 is a central vertical sectional view through an electrical exterminator constructed in accordance with and illustrating one embodiment of our invention;

Fig. 2 is an enlarged detailed section taken in a vertical plane through a fragment of the inner wire carrying cylinder and its supporting means;

Fig. 3 is an enlarged elevation of a fragment of the upper rim of the inner cylinder;

Fig. 4 is an enlarged fragmentary horizontal section on the line 4—4 of Fig. 1;

Fig. 5 is a side elevation of the exterminator with the outer cylinder broken away and shown partly in vertical section;

Fig. 6 is an enlarged vertical section of a fragment of the rim of the inner wire carrying cylinder;

Fig. 7 is a top plan view of the same fragment, and

Fig. 8 is a diagrammatic view of the circuit arrangements of the electrical equipment.

Similar reference numerals throughout the several views indicate the same parts.

Referring more particularly to the drawings, the exterminator shown is designed to be suspended from above and embodies a suspension hook 1 secured to the top of a dome or cap casing 2, the floor 3 of which is fastened to the cap by spacing and supporting bolts 4. Housed within the casing 2 is a transformer, indicated generally at 5, for stepping up the ordinary 110 volt charge of a lighting circuit to above the 2000 volts required to instantly destroy life. Beside it on the floor 3 is another smaller transformer 6, while beneath the center of the floor is a mercury vapor tube lamp 7 in suitable sockets 8. We prefer to employ a mercury lamp because it furnishes a

closer approach to "cold light" than does an incandescent lamp and certain insects, such as the common house fly, while attracted by light, are repelled by the presence of heat.

The circuit connections of these instrumentalities are readily understood from an inspection of Fig. 8, in which 9 and 10 are the line wires with the transformer field 12 and the smaller transformer field 13 leading off in parallel therefrom. The high tension circuit from the induction field 14 associated with 12 leads through two conducting wires 15 and 16 having dead ends 17 and 18, respectively, which will be later referred to, the killing being effected by the body of the insect shorting these two conducting wires at any point.

Another induction coil 19 associated with the field 13 leads to the sockets 8 and to lamp 7. An outer flange 20 on the cap 2 is provided at intervals with fastening screws 21 that detachably support an outer glass cylinder 22. The upper rim of the cylinder abuts the floor 3 and is molded with the provision of an outer bead 23 that rests on the screws 21. Within the cylinder 22 is a smaller concentrically arranged inner glass cylinder 24 spaced therefrom and enclosing the lamp 7 from which it is also well spaced. This cylinder is provided with both inner and outer projecting beads 25 similar to the bead 23 at its upper rim, by the inner one of which it is detachably hung upon fastening screws 26 carried in brackets 27 depending from the lower projecting ends of bolts 4. The said screws so engage the cylinder through the medium of insulating cups 28.

Cylinder 24 preferably does not abut the floor 3, as does outer cylinder 22, but is spaced therefrom by the brackets in order to allow circulation of air for ventilating and cooling purposes. As will be seen, both cylinders are open at the bottom, from which point safe access may be had to the lamp or lure 7 with respect to the high tension circuit, the disposition of which will now be described.

The conductors 15 and 16 in the present form of flexible copper wires are wound back and forth over the inner and outer walls of the inner cylinder 24, longitudinally thereof in the manner shown in the Figures 1 and 5. In other words, their stretches are parallel and alternated with each other so that adjacent parallel wires on both the inner surface and the outer surface are of opposite polarity and can close the induced circuit 14 of the transformer when connected by the body of the insect alighting upon or crawling upon any part of the cylinder. At this point it may be stated that actual contact of the body

with the two adjacent wires is not required, as there is a charged zone about each through which the current jumps and it is only necessary for the insect body to enter both zones, which even the smallest of insects will do with the wires spaced about three eighths of an inch apart. The dead ends 17 and 18 of the conductors 12 and 13 may be suitably anchored in the lower end of cylinder 24, as shown in Fig. 1.

To hold the wires in position properly spaced from each other and also from the glass surfaces, the bottom rim of cylinder 24 is provided with laterally projecting beads 29 in duplication of the upper beads 25. All of the said beads are notched or grooved as best shown in Figs. 6 and 7, constituting seats in which the wires lie.

In the operation of the device, the flies, moths and other insects flying up toward the light or lure 7 within the outer cylinder 22 have both the annual space between the two cylinders and the interior of the inner cylinder 24 in which to flutter and fly about. In both instances the charged wall is ever present and once inside there is small chance of the insect emerging safely. As it is characteristic of the common housefly that it prefers to proceed in an upward direction whether flying or crawling as is borne out by the common observation of the movements of the fly upon a window pane the device such as herein described, open at the bottom and furnishing such an extensive charged surface is very effective against this particular insect. At the same time the outer cylinder 22 constitutes a safety device or guard which prevents birds and humans from being killed or injured.

Nearly all of the insects that are injurious to vegetation are night flyers and the free use of our exterminator in or adjacent to orchards and gardens will free plant growth from pests as effectively, if not more effectively, than spraying.

It will be understood that, while we have described the cylinders 22 and 24 as being made of glass which we prefer, equivalent materials may be substituted so long as they are dielectric and translucent. Also, the lamp 7 may be augmented as a lure with suitable bait attractive to flies or such bait substituted as a lure under some conditions.

We claim as our invention:

1. In an electrical insect exterminator, the

combination with a tubular glass open cylinder having a lure therein, of pairs of high tension wires of opposite polarity extending across the inner surface of the cylinder in appropriately spaced relationship, and a source of high voltage current connected with the wires. 80

2. In an electrical insect exterminator, the combination with a tubular glass open cylinder having a lure therein, of pairs of high tension wires of opposite polarity extending across the inner and outer surfaces of the cylinder in appropriately spaced relationship, and a source of high voltage current connected with the wires. 85

3. In an electrical insect exterminator, the combination with a tubular glass open cylinder having a lure therein, of continuous wires of opposite polarity wound longitudinally around the cylinder, the stretches of which wires alternate with each other in suitably spaced relationship across both the inner and outer surfaces of the cylinder, and a source of high voltage current connected with the wires. 90 95

4. In an electrical insect exterminator, the combination with an open tubular glass cylinder having its upper and lower rims provided with projecting beads, and a lure within the cylinder, of continuous wires of opposite polarity wound longitudinally around the cylinder, the stretches of which wires alternate with each other in suitably spaced relationship across both the inner and outer surfaces of the cylinder being held apart from said surfaces by the beads, and a source of high voltage current connected with the wires. 100 105

5. In an electrical insect exterminator, the combination with an open tubular glass cylinder having its upper and lower rims provided with projecting beads, and a lure within the cylinder, the beads having notches therein at spaced intervals, of continuous wires of opposite polarity wound longitudinally around the cylinder, the stretches of which wires alternate with each other across both the inner and outer surfaces of the cylinder and being held by the beads and the notches therein suitably spaced apart and also spaced from the cylinder surfaces, and a source of high voltage current connected with the wires. 110 115 120 125

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