Sept. 27, 1932. R. L. RENWICK 1,879,495

INSECT ELECTROCUTOR

Filed Nov. 17, 1930 2 Sheets-Sheet 1

Fig. 1.

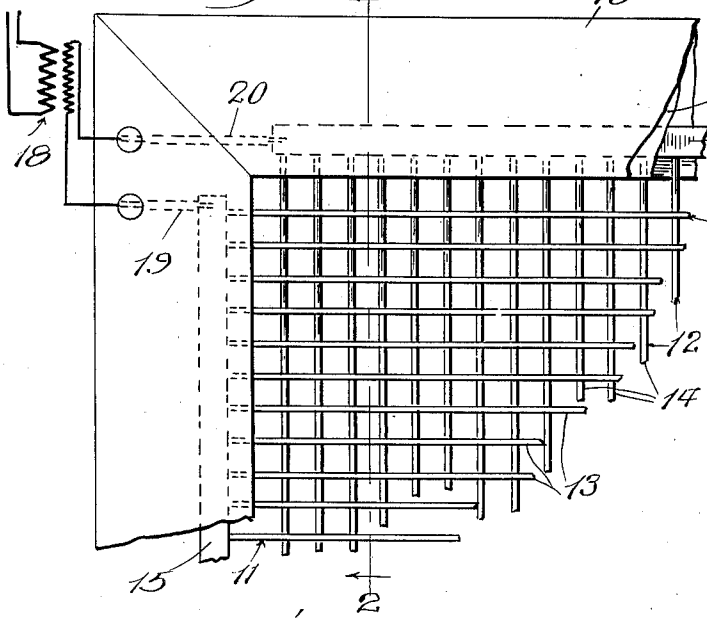


Fig. 2.

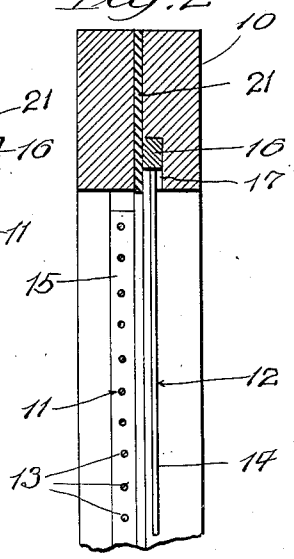


Fig. 3.

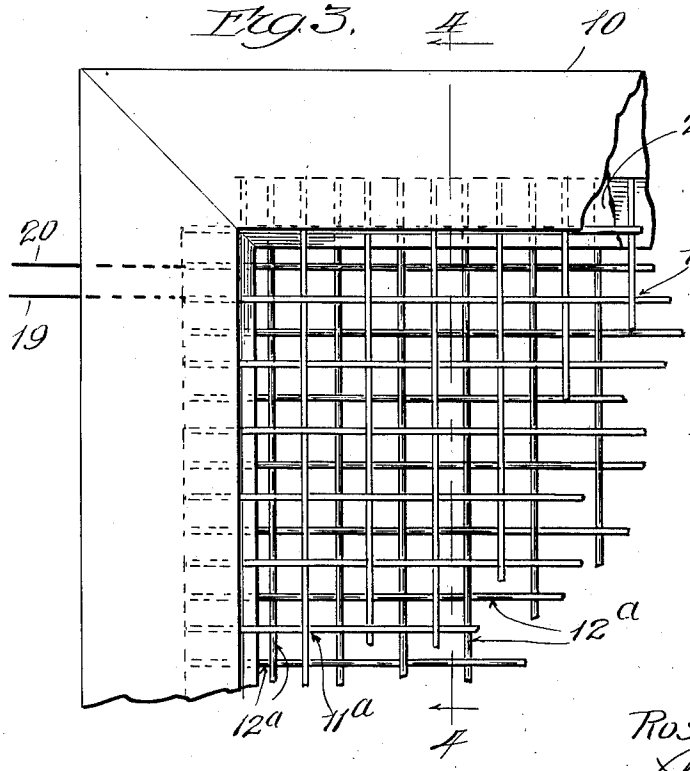
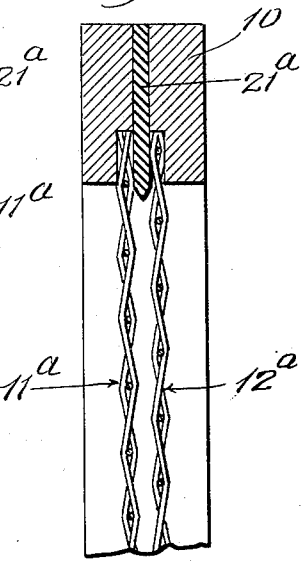


Fig. 4.



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Fig. 5.

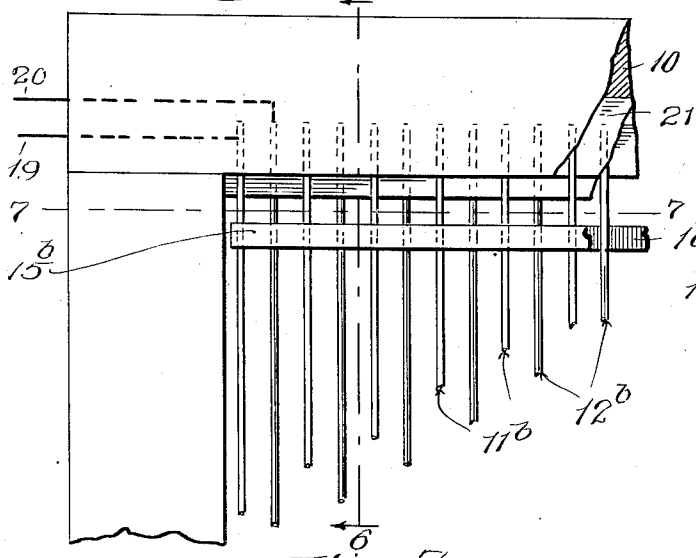


Fig. 6.

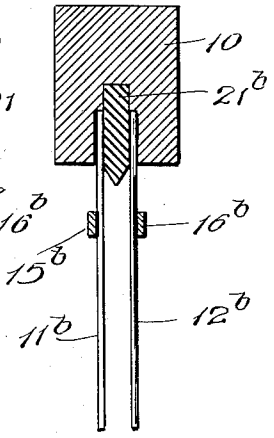


Fig. 7.

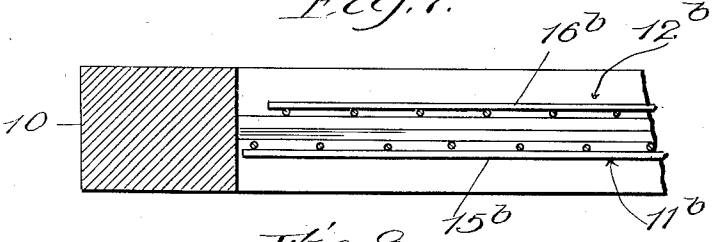


Fig. 8.

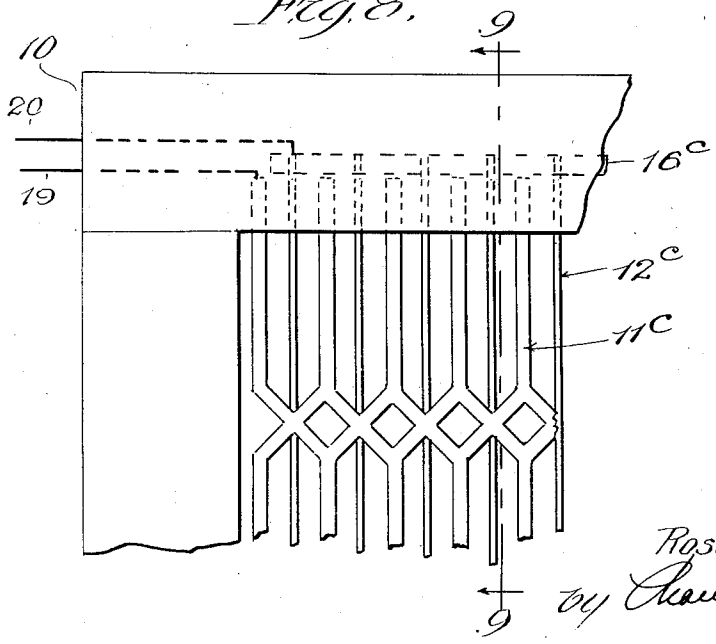
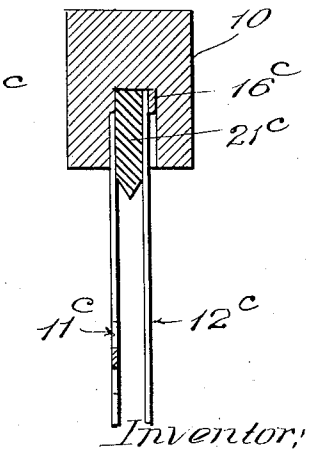


Fig. 9.



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UNITED STATES PATENT OFFICE

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INSECT ELECTROCUTOR

Application filed November 17, 1930. Serial No. 496,089.

This invention relates to insect electrocutors, and its principal object is to increase the efficiency of such devices. Another object is to provide an insect electrocutor which affords a minimum resistance to the passage of light and air.

Another object is to provide an electrocutor wherein the elements which comprise the electrodes are widely spaced, with the electrode of one polarity disposed in one plane and the electrode of opposite polarity disposed in a plane parallel therewith, but spaced therefrom, and with the elements of one electrode disposed out of alignment with the elements of the other electrode, whereby relatively wide open spaces are provided between the elements of the electrodes, which arrangement freely admits of the passage of light and air and affords an attractive passage for the insect. Another object is to provide an insect electrocutor which may be formed of parallel rods, bars, ribbons, or the like, or of reticulated metal fabric, metal grilles, and the like.

Other objects and advantages will appear in the course of this specification, and with such objects and advantages in view, this invention consists in the several novel features of construction, arrangement and combination of parts hereinafter fully set forth and claimed.

The invention is clearly illustrated in the drawings accompanying this specification in which—

Figure 1 is a fragmental side elevation of an insect electrocutor embodying one form of the present invention;

Fig. 2 is a vertical cross section taken on the line 2—2 of Fig. 1;

Fig. 3 is a fragmental side elevation of a slightly modified form of the invention;

Fig. 4 is a vertical cross section taken on the line 4—4 of Fig. 3;

Fig. 5 is a fragmental side elevation of a second modification;

Fig. 6 is a vertical cross section taken on the line 6—6 of Fig. 5;

Fig. 7 is a horizontal section taken on the line 7—7 of Fig. 5;

Fig. 8 is a fragmental side elevation of a third modification; and

Fig. 9 is a vertical cross sectian taken on the line 9—9 of Fig. 8.

Referring to said drawings, and first to Figs. 1 and 2 which show one embodiment of the invention, the reference character 10 designates a frame which may be composed of wood, metal, or other material, and 11 and 12 designate two electrodes of opposite polarity supported by the frame 10. The electrodes 11 and 12 disposed in two parallel planes spaced somewhat apart.

In this form of the invention, the electrodes are composed of lengths of metal elements, such as wire rods, ribbons, or the like, 13 and 14, those of each electrode being widely spaced and extending parallel with each other. The metal elements 13 of the electrode 11 extend in horizontal lines, and the metal elements 14 of the electrode 12 extend in vertical lines. The wires of each electrode are connected at one or both ends to a bus bar or other metal bar 15 or 16 which is contained in a groove 17 formed on the inner edge of the frame 10. The two electrodes are insulated from each other, as, for instance, by strips of insulating material 21 contained in the frame 10 and interposed between the bus bars or other metal bars 15 and 16 to which the metallic elements of the electrodes are fastened. The electrodes are electrically charged from a transfomer 18 through conductor wires 19 and 20 which lead from the transformer to the electrodes 11 and 12.

It will be observed that all of the metallic elements of each electrode are arranged in a single plane, and that the two electrodes are spaced a considerable distance apart. Furthermore, the metallic elements of one electrode are disposed out of alignment with those of the other electrode. This arrangement of the metallic elements of the electrode permits them to be widely spaced apart so as to freely admit the passage of light and air through the device, besides offering relatively large free spaces for the entrance of insects to the electrocutor. The spacing of the metallic elements is such that in the event an insect enters the space between the electrodes,

the gap between the adjacent metallic elements thereof is bridged, whereby the insect is instantly electrocuted.

In the form illustrated in Figs. 3 and 4, the electrodes 11^a and 12^a are formed of coarse mesh reticulated metal fabric, such as wire mesh. As in the form of the invention illustrated in Figs. 1 and 2, the two electrodes are arranged in separate planes spaced somewhat apart, and the metallic elements of each electrode are offset or staggered with respect to those of the other electrode, whereby relatively large interstices are provided between the metallic elements of each electrode, which arrangement affords relatively large open areas for admission of light and air, and for the passage of insects to the space between the two electrodes. In this case also the electrodes are insulated from each other, as, for instance, by strips of insulating material 21^a contained in the frame 10 and interposed between the edge portions of the electrodes. The two electrodes are connected to a transformer by conductor wires 19 and 20.

In the form of the invention illustrated in Figs. 5 to 7, inclusive, the electrodes 11^b and 12^b are formed of wire, rods, ribbons, or the like, all arranged parallel with each other. The metallic elements of each electrode are connected by bus bars or other metal bars 15^b and 16^b which may be spot welded or otherwise secured to the metallic elements which comprise the electrodes. In this case, also, the metallic elements of each electrode are widely spaced, and those of one electrode offset or staggered relative to those of the other electrode. In this case also the electrodes are insulated from each other, as, for instance, by strips of insulating material 21^b contained in the frame 10 and interposed between the edge portions of the electrodes. The two electrodes are connected to a transformer by conductor wires 19 and 20.

In the form of the invention illustrated in Figs. 8 and 9, one of the electrodes 11^c is illustrated in the form of a metal grille which is disposed in one plane, and the other electrode may also take the form of the grille 11^c, if desired, or it may take the form of wires, rods or ribbons 12^c electrically connected by a bar 16^c. As in the other forms, the metallic elements of each electrode are disposed in a single plane, and those of each electrode are offset or staggered with respect to the metallic elements of the other electrode. In this case also the electrodes are insulated from each other, as, for instance, by strips of insulating material 21^c contained in the frame 10 and interposed between the edge portions of the electrodes. The two electrodes are connected to a transformer by conductor wires 19 and 20.

It is to be observed that in the various forms of the invention illustrated, all of the metallic elements of each electrode are disposed in a single plane, and that the spark gap is bridged across the space intervening the two planes. One particular advantage of this arrangement is that the metallic elements of either electrode may be touched, or objects may come in contact with each electrode, without causing a spark. In cases where electrodes of opposite polarity are disposed in a single plane, as in many of the insect electrocutors now on the market, there is always the danger of shock being occasioned when a person touches the device, or by reason of objects coming in contact therewith. This danger is entirely eliminated in the present device.

The device is adapted for use wherever screen doors or window screens are used, and may be employed as walls of insect traps, show cases, receptacles, and in any other place from which it is desired to exclude insects.

By the term "widely spaced" in this specification and in the appended claims is meant such spacing as will freely admit the passage of insects between the metallic elements of each electrode.

I am aware that attempts have been made heretofore to use two and three electrodes composed of wire mesh or wire screen in an insect electrocutor, but these devices are impractical because they interfere with the passage of light and air. Where two wire mesh screens are used, they are closely spaced, and where three electrodes are used, the middle one is composed of fine mesh or wire mesh. The result accomplished with the present invention is not accomplished by such devices.

I claim as new, and desire to secure by Letters Patent:

1. An insect electrocutor comprising in combination a support, two electrodes of opposite polarity supported thereby in two spaced planes and insulated from each other, each electrode comprising widely spaced electrically connected metallic elements, the elements of one electrode being staggered with respect to those of the other electrode and providing wide open passageways from one side to the other through the area traversed by said electrodes, each metallic element of one electrode being spaced a sufficient distance away from an associated metallic element of the other electrode to provide a spark gap capable of being bridged by a relatively small insect entering the zone between them and not contacting with either of them, and a transformer electrically connected with said electrodes.

2. An insect electrocutor comprising in combination a support, two electrodes of opposite polarity supported thereby and insulated from each other, each electrode comprising a series of widely spaced electrically connected metallic elements arranged in a common plane and spaced from the metallic elements of the other electrode, the metallic

elements of each electrode being staggered with relation to those of the other electrode and providing wide open spaces from one side to the other through the area traversed by said electrodes, each metallic element of one electrode being spaced a sufficient distance away from an associated metallic element of the other electrode to provide a spark gap capable of being closed by a relatively small insect entering the zone between them and not contacting with either of them, and a transformer electrically connected with said electrodes.

3. An insect electrocutor comprising in combination a support and two electrodes of opposite polarity supported thereby in two planes and insulated from each other, each electrode comprising widely spaced electrically connected parallel lengths of metallic elements, the metallic elements of the two electrodes being disposed in staggered relation and providing wide open spaces from one side to the other through the area traversed by said electrodes, each metallic element of one electrode being spaced a sufficient distance from an associated metallic element of the other electrode to provide a spark gap capable of being closed by relatively small insects entering the zone between them and not contacting with either of them, and a transformer electrically connected with said electrodes.

4. An insect electrocutor comprising in combination a support, two electrodes of opposite polarity supported thereby in two spaced planes and insulated from each other, each electrode comprising course mesh reticulated metallic fabric, the metal strands of one fabric being staggered with respect to those of the other and providing wide open spaces from one side to the other through the area traversed by said electrodes, the metallic elements of one electrode being spaced a sufficient distance from those of the other electrode to provide a spark gap capable of being closed by a relatively small insect entering the zone between them and not contacting with either of them, and a transformer electrically connected with said electrodes.

ROSS L. RENWICK.