M. M. KOHN

VENTILATOR FAN.

APPLICATION FILED MAR. 19, 1918.

1,337,560.

Patented Apr. 20, 1920.

2 SHEETS—SHEET 1.

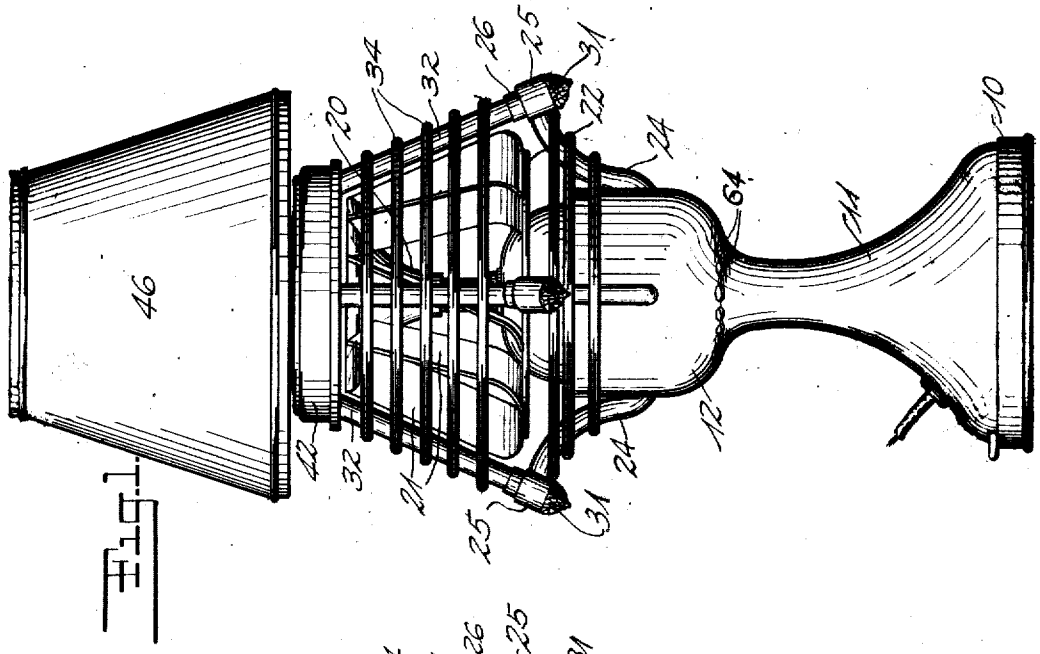


Fig. 1.

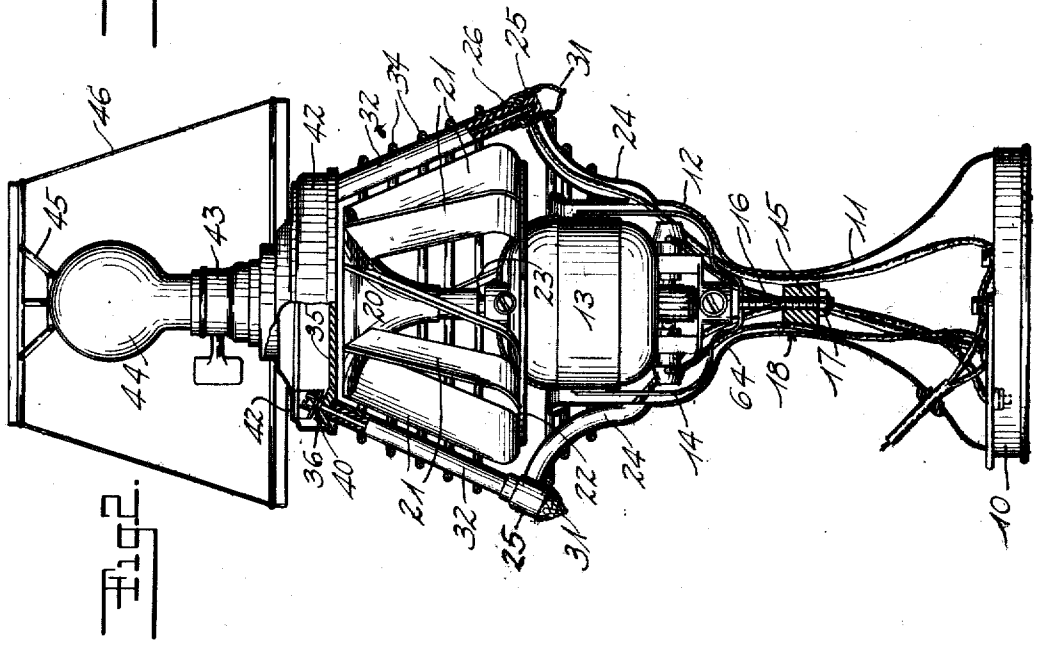


Fig. 2.

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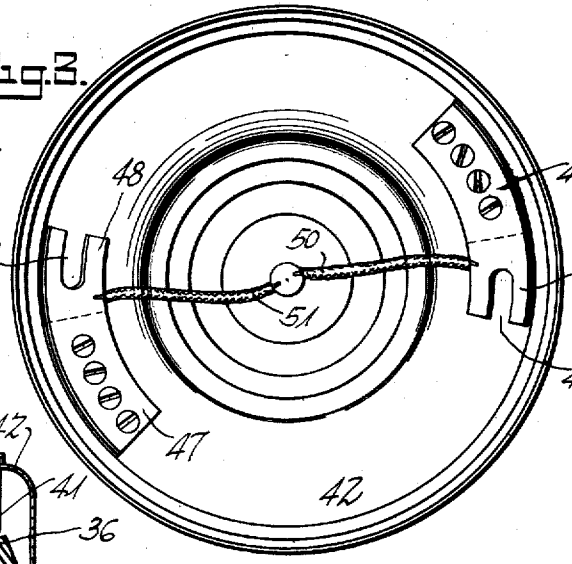
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2 SHEETS—SHEET 2.

Fig. 3.



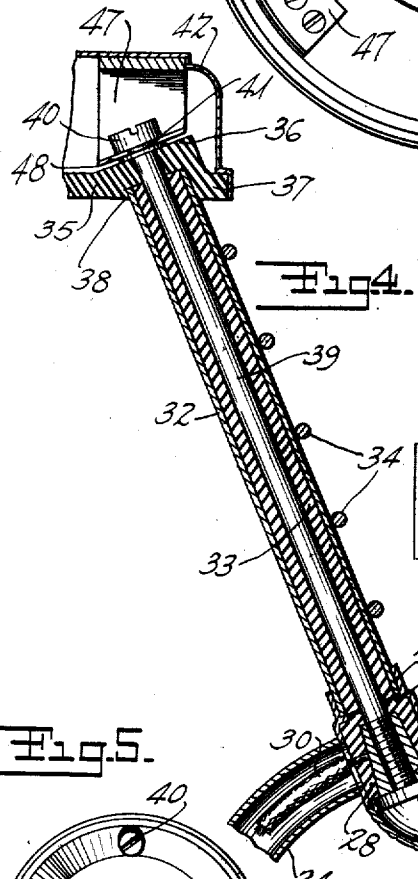


Fig. 4.

Fig. 7.

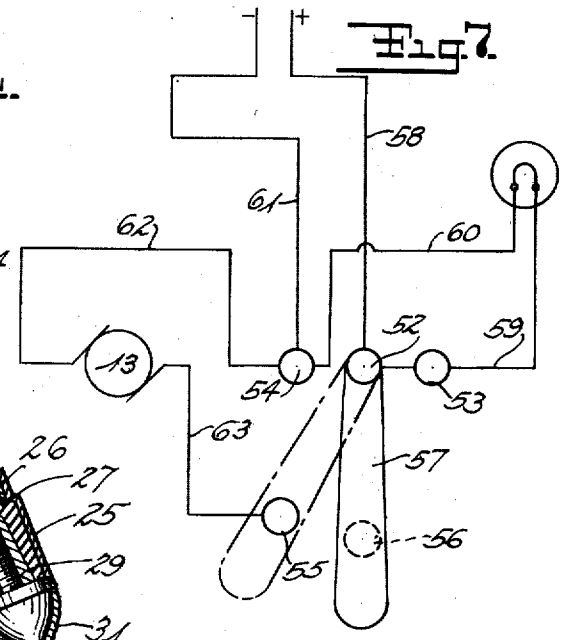


Fig. 5.

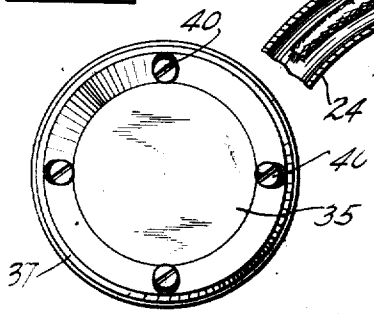
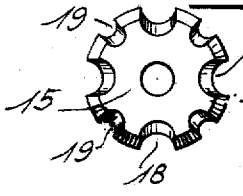


Fig. 6.



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MILTON M. KOHN, OF NEW YORK, N. Y., ASSIGNOR TO THE VENTILATOR FAN CO., INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

VENTILATOR-FAN.

1,337,560. Specification of Letters Patent. Patented Apr. 20, 1920.

Application filed March 19, 1918. Serial No. 223,387.

To all whom it may concern:

Be it known that I, MILTON M. KOHN, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented an Improvement in Ventilator-Fans, of which the following is a specification.

This invention relates to a ventilator fan and more particularly to that type of such apparatus which is shown and described in my co-pending application Serial No. 166,604, filed May 5, 1917, and in which there are devices employed for diffusing the air currents so as to direct them in predetermined paths and create a circulation of air in contradistinction to merely creating an agitation of the air. This type of ventilator fan is constructed for ornamental purposes as well as practical uses, and hence may be made in a casing of ornamental configuration and provided with means for producing different lighting and other effects.

The present invention does not relate however to the construction of the parts of the apparatus which produce the currents of air, but has to do more particularly with a guard or cage member surrounding the air current producer in order to add to the ornamental effect, to guard against injury by contact with the revolving blades of the air producer and also to serve the purpose of conduits for containing the leads or electric circuits by which the current is conveyed to the lamps or other devices employed for producing the ornamental effects as will be hereinafter more particularly described.

In the drawing:

Figure 1 is an elevation of my improved ventilator fan.

Fig. 2 is a partial elevation and central longitudinal section thereof.

Fig. 3 is an enlarged inverted plan of the cap member and parts associated therewith.

Fig. 4 is an enlarged longitudinal cross section illustrating the construction of the hollow rods or tubes forming part of the cage member.

Fig. 5 is a plan of the top plate of the cage member.

Fig. 6 is a plan of the block employed to assist in maintaining the motor in position in the casing, and

Fig. 7 is a diagrammatic plan of the circuits employed in the apparatus.

Referring to the drawing, it will be seen that in carrying out this invention I employ a base 10, which may be made of wood or any other suitable and preferably insulating material, together with a casing or frame suitably made of metal in any desired configuration and which as shown may include a neck portion 11 connected to the base 10 and culminating in a cup portion 12. Within the cup portion 12 an electric or any other motor 13 is mounted on a U-shaped frame or strap 14, resting upon the base of the cup portion of the casing and secured in position therein by means of a block 15 made to fit within the neck 11 of the casing together with a bolt 16 fixed at one end in the yoke of the U-shaped strap member and adapted to be passed through a bore provided therefor on the block 15 with the parts secured in place by means of a nut 17 or otherwise. The peripheral surface of the block 15 is provided with recesses 18 and 19 for a purpose hereinafter described.

The air current producer of the apparatus, as illustrated, comprises a cone-shaped member 20, blade members 21, and a ring 22, the blade members 21 being connected at one end in the cone-shaped member and at their opposite ends to the ring 22. While these parts are thus connected together they are also secured to and mounted upon the motor shaft 23 in any suitable manner so as to be turned thereby. As hereinbefore intimated the air current producer is so constructed that by the revolution thereof air currents are caused to move first in a direction parallel to the axis of rotation and then in predetermined paths at an angle thereto in order to diffuse the air as moved, and thus cause complete circulation of the air in the space, room, or other place to be ventilated. These features however, form no part of my present invention and are more particularly described in my copending application Serial No. 225,435, filed March 29, 1918.

The guard or cage portion of the apparatus comprising one of the features of the present invention includes a series of spaced hollow arms 24 which as illustrated form part of and extend outwardly, and upwardly from the cup shaped portion 12 of the casing, although as will be understood, these hollow arms may be supported in any desired manner without departing from the

nature of this invention. At its outer end each hollow arm 24 terminates in a cup member 25 provided with a reduced extremity 26 and an internal flange 27. Within each cup member 25 there is a lining 28 of insulating material recessed to receive a metal cone 29 provided with a screw threaded bore as clearly indicated in Fig. 4. A lead wire 30 passes through each of the hollow arms 24 and is electrically connected in a suitable manner to the corresponding metallic cone 29. At the opposite or lower end as illustrated, each of the cup members 25 is fitted with a plug 31 having an ornamental exterior configuration and secured in any desired way to the cup member or the metal cone secured within the same. This case or frame structure also includes a series of tubes 32 corresponding in number with the hollow arms 24, and each tube 32 is provided with a lining 33 of insulating material having a bore therethrough. The series of tubes 32 is suitably connected to a plurality of bands or rings 34 preferably of different diameters so as to cause the tubes 32 to assume an inclined position in order to conform generally to the inclination at which the blades of the air current producer are set. The guard or cage member also includes a disk top 35 preferably of insulating material, the upper surface adjacent the periphery of which is raised as indicated at 36 while the edge thereof is flanged as indicated at 37 and the under surface recessed as indicated at 38. The surface of the raised portion is such as to preferably be at right angles to the axis of the tubes 32 while as will be understood the cup members 25 are so placed or the arms 24 so bent, as to cause these cup members 25 to be in alinement with the tubes 32 when the parts are assembled. It will now be understood that the frame or cage member comprises the supporting arms 24 with their cups 25, the connected tubes 32 and rings or bands 34, and the top 35. In assembling these parts the connected tubes and bands are placed over the blades of the air current producer and fitted at their lower or inner ends into the reduced portions 26 of the corresponding cup members 25, while at their upper ends the tube members 33 fit within the recesses 38 of the top 35 which are so made as to receive them. These parts are connected by means of bolts 39 which pass through openings in the raised part 36 on the top 35 and through the bores in the linings 33 of the tubes 32 there being a bolt provided for each of these tubes and each bolt having a head at one end as indicated at 40 with a circumferential recess 41 therein while at the other end each bolt is screw threaded so as to be turned down into the screw threaded bore of the corresponding metal cone 29. By this means as will be readily apparent the guard or cage which is an integral structure and separately removable from the casing is connected thereto mechanically and electrically to secure these parts together and provide means for electrical circuits to electric lamps or other devices which may be employed for producing a desired decorative effect.

Of course it will be understood that the bolts 39 may be made with permanent insulating covering, so as to be fitted into the tubes 32 instead of constructed as hereinbefore described, in which instance as will also be understood, the opening in the flanged portion of the top plate 35 is sufficiently large to receive the bolt with its insulating covering being of substantially the same diameter as the diameter of the insulation on the bolt.

With the structure as herein described I may also employ suitable means for changing the condition of the air as it is discharged from the fan. The air may be changed by heating, cooling, perfuming, disinfecting, humidifying, ozonizing, or otherwise treating it in the same or equivalent manners as are described in my copending application to which reference has hereinbefore been made. For example, the rings or bands indicated at 34 may be in the form of tubes and provided with resistance coils which are suitably connected and disconnected in and from one of the electric circuits to heat the tubes and thus raise the temperature of the air as it is delivered from the fan. Suitable means also may be provided in these tubes for cooling the air or as hereinbefore stated, means may be employed for perfuming, disinfecting, humidifying or ozonizing the air, but these various means form no part of the present invention, the same being made the subject matter of separate applications.

As illustrated in the present case the ventilator fan is also fitted with a cap 42 adapted to fit down over the top 35 so as to rest upon and be supported by the flange 37 thereof. This cap member 42 is provided with a socket 43 for a lamp bulb 44, and this is fitted with a frame 45 for supporting a shade 46 or other ornamental device which surrounds the lamp bulb. The electrical connections are made from the bolts 39 to the lamp socket and lamp bulb by means of contacts 47 which are secured to and preferably insulated from the cap 42 by screws and an intervening layer of insulating material or otherwise. The contacts 47 are preferably offset at the corresponding ends thereof as indicated at 48 and in these offset ends the contacts are recessed as indicated at 49, the said recesses being adapted to receive the circumferentially recessed portions of the heads 40 of oppositely disposed con-

ductor bolts 39, and lead wires 50 and 51 extend from the respective contacts 47 to the corresponding terminals of the lamp socket 43. In making these connections as will be apparent it may be advisable to employ one bolt 39 and the corresponding contact 47 as a positive conductor and the others irrespective of their number as negative conductors in order to produce different lighting effects. It will furthermore be apparent that as illustrated in the smaller types of ventilator fans the guard or cage member may be made conical but in larger types thereof it may be advisable to make it hexagonal or octagonal, or even spherical, or in some other configuration which however, has no bearing on the subject matter of this invention.

In the base 10 I prefer to employ a series of terminals indicated at 52, 53, 54, together with contacts indicated at 55 and 56, and a switch arm 57 which at one end is pivotally connected to the terminal 52 and intermediate of its ends is adapted to bear against either the contact 55 or the contact 56. The positive lead wire from the source of electricity to the ventilator fan is indicated at 58 and is carried and connected to the terminal 52. A lead wire 59 extends from the terminal 52 to the terminal 53 and to one of the terminals of the light socket, and as will be understood, this lead wire as diagrammatically indicated in Fig. 7 includes the lead wire 30, a conductor bolt 39, a contact 47, and either of the lead wires 50 or 51 as hereinbefore described. A lead wire 60 extends from the other terminal of the lamp socket to the contact 54 which is connected by a lead wire 61 to the negative line, and the lead 60 of course includes either one of the lead wires 50 or 51 and the other side of the circuit includes one or all of the other conductor bolts forming part of the guard or cage. A lead wire 62 extends from the contact 54 to one of the motor terminals while the other motor terminal is connected by a lead 63 to the contact 55. From the diagrammatic plan as shown in Fig. 7 it will be apparent that the light may be used independently of the motor and the motor independently of the light, or both may be used simultaneously.

The lead wires from the base 10 are carried through the block 15 so as to lie in the recesses 19 therein while the intermediate recesses 18 in the peripheral surface of this block are employed for ventilating purposes in order to cool the motor while in operation. It will be noted that the motor is mounted entirely within the casing, and notwithstanding the fact that the motor shaft is in a vertical position and at its lower end made to turn in a thrust bearing, if it were not properly ventilated it would overheat in a comparatively short time unless a motor of considerably larger capacity were employed than is necessary to operate the fan or air current producer, which even then if not ventilated would produce an excessive amount of heat. In the structure as herein indicated it is to be noted that a series of openings 64 are provided in the casing beneath the motor for the admission of air so that through the operation of the fan or air current producer there is a positive draft or current of air circulated around the motor at all times so as to adequately ventilate the interior of the casing and maintain the motor at an efficient working temperature by cooling the interior as well as the exterior of the motor, which of course permits the use of a motor of smaller capacity than would otherwise have to be employed, the air currents passing through the openings 64 and through the ventilating recesses 18 in the block 15 as hereinbefore described, as well as through the space provided for this purpose between the exterior of the motor and the interior of the casing.

As herein described the casing or frame is an ornamental structure in which the motor is mounted and the device supported, but as will be understood in some instances this casing may be dispensed with and the guard or cage connected to the frame of the motor either directly or through arms or other suitable supports projecting therefrom in the same manner as the arms herein described extend or project from the casing.

I claim as my invention:

1. In an apparatus of the class described and in combination, a frame, an air current producer, and a guard and a rigid independently acting conducting means both of which are attached to and are removable from the said frame.

2. In an apparatus of the class described, a frame, an air current producer, a guard member and conducting devices by which the said guard member is mechanically connected to the said frame.

3. In an apparatus of the class described, a casing, an air current producer, a guard member and conducting devices by which the guard member may be mechanically connected to and disconnected from the said casing.

4. In an apparatus of the class described, a casing, an air current producer associated with the casing, terminals carried by the said casing, a guard member surrounding the air current producer, and means for electrically connecting the guard member mechanically to the said terminals.

5. In an apparatus of the class described, a casing, an air current producer supported by the casing, arms extending from the said casing, a terminal at the end of each arm, a guard surrounding the air current producer, and means for connecting the guard me-

chanically to the terminals at the ends of said arms by an electrical conductor.

6. In an apparatus of the class described, a casing, an air current producer, a guard comprising a top of insulating material, and open work sides adapted to surround the air current producer, and means for connecting the said top and open work side of the guard mechanically to the casing by an electrical conductor.

7. In an apparatus of the class described, a casing, an air current producer mounted to turn therein, a plurality of arms extending outwardly from the casing, a terminal at the end of each of said arms, a guard including an insulating top and open work sides surrounding the said air current producer, and means for mechanically connecting the said top and open work side of the guard to the said terminals at the ends of the said arms by an electrical conductor.

8. In an apparatus of the class described, a casing, an air current producer, a guard comprising an insulating top, a plurality of rings and tubes to which the said rings are secured, and means passing through the said top and tubes for mechanically connecting the guard to the casing by an electrical conductor.

9. In an apparatus of the class described, a casing, an air current producer, a guard comprising a top of insulating material and sides including a plurality of rings and tubes to which the said rings are connected in spaced positions, a plurality of arms extending from the said casing, a terminal fixed at the end of each of said arms, and rods passing through the said top of insulating material, through the said tubes, and engaging in the said terminals to connect the said guard to the said arms.

10. In an apparatus of the class described, a casing, an air current producer, a guard comprising a top of insulating material and sides including a plurality of rings and tubes to which the said rings are connected in spaced positions, a plurality of arms extending from the said casing, a terminal fixed at the end of each of said arms, rods passing through the said top of insulating material, through the said tubes and engaging in the said terminals to connect the said guard to the said arms, a cap adapted to fit the said top of insulating material, an electric lamp mounted in the said cap, and electrical connections from the said rods to the terminals of the said lamp.

11. In an apparatus of the class described, a casing, an air current producer, a guard comprising a top of insulating material and sides including a plurality of rings and tubes to which the said rings are connected in spaced positions, a plurality of arms extending from the said casing, a terminal fixed at the end of each of said arms, rods passing through the said top of insulating material, through the said tubes and engaging in the said terminals to connect the said guard to the said arms, a cap adapted to fit the said top of insulating material, contacts secured to and insulated from the said cap and adapted to engage the said rods, and electrical connections from the said contacts to the terminals of the said lamp.

12. In an apparatus of the class described and in combination, an air current producer, a motor casing at one side thereof, a structural member at the other side thereof, a terminal carried by the structural member, a terminal carried by the motor casing, and a conducting member connected at its opposite ends to the said terminals.

13. In an apparatus of the class described and in combination, an air current producer, a motor casing at one side of the air current producer, a structural member at the opposite side of the air current producer and a portion of which surrounds the said air current producer, terminals carried by the structural member, terminals carried by the motor casing, and a plurality of unitary conducting members connected at their opposite ends to the said terminals.

14. In an apparatus of the class described and in combination, a motor, an air current producer on one side of the said motor, a casing, a structural member on the side of the air current producer opposite the motor, a terminal carried by the said structural member, a terminal carried by the said casing, and a conducting member connected at its opposite ends to the said terminals.

15. In an apparatus of the class described and in combination, an air current producer, a support therefor, a structural member connected to the said support, and conducting devices by which the said structural member may be mechanically connected to and disconnected from the said support.

16. In an apparatus of the class described and in combination, a support member, an air current producer carried thereby, a guard member and conducting devices by which the guard member may be mechanically connected to and disconnected from the said support member.

17. In an apparatus of the class described and in combination, a support member, an air current producer carried thereby, a guard member surrounding the said air current producer and also carried by the said support member, terminals carried by the said support member, a cap associated with the said guard member, an electric translating device mounted in the said cap member, and electrical connections from the said electrical translating device to the said terminals.

18. In an apparatus of the class described and in combination, a casing, an air current

producer, a guard member comprising a top and sides including a plurality of rings and tubes to which the said rings are connected in spaced positions, a plurality of arms extending from the said casing, a terminal fixed at the end of each of the said arms, a cap adapted to fit the said guard member, an electric translating device mounted in the said cap, and a plurality of rods connected to the said terminals, extending through the said tubes and also connected to terminals in the said cap for making electrical connections to and from the said electrical translating device.

Signed by me this 18th day of March 1918.

MILTON M. KOHN.