

1,058,687.

Fig. 1.

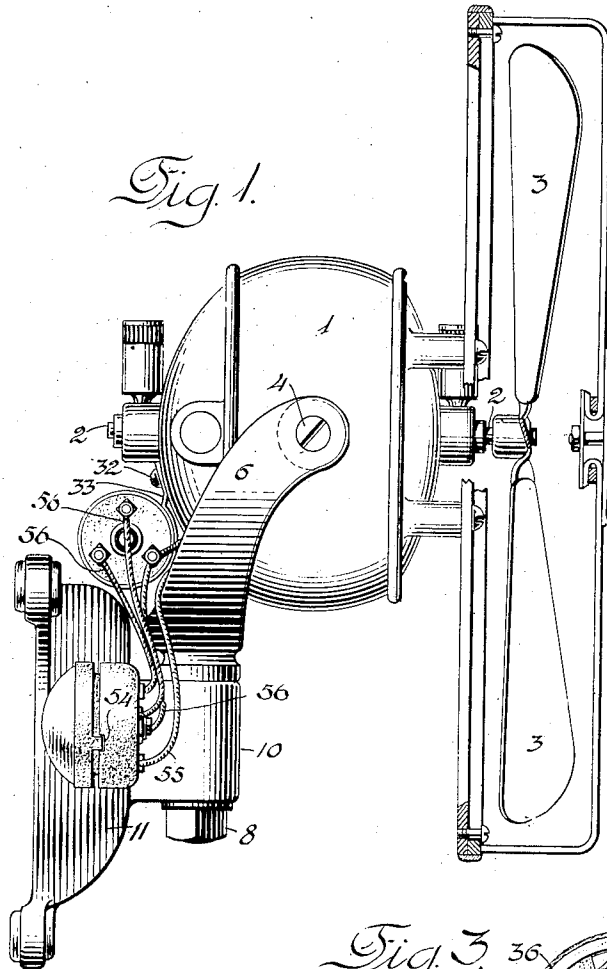


Fig. 3.

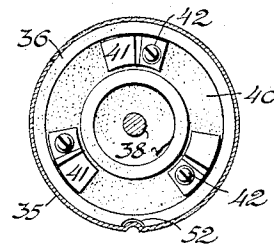
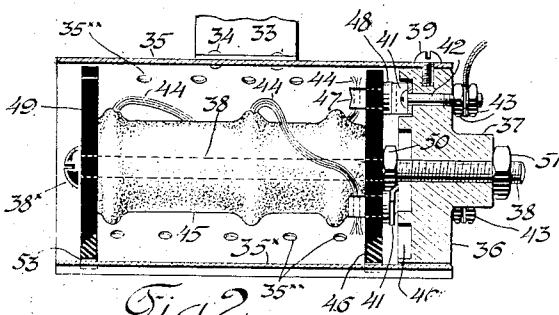
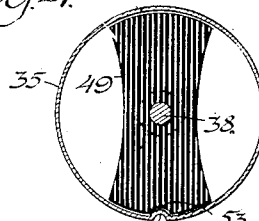


Fig. 21.



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UNITED STATES PATENT OFFICE.

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ELECTRICAL RESISTANCE DEVICE.

1,058,687.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed December 17, 1909. Serial No. 533,644.

To all whom it may concern:

Be it known that I, GUSTAVE C. MARX, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Electrical Resistance Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

10 In connection with the employment of electric propeller fans for ventilating purposes requiring interchangeability at certain times, and particularly in connection with their use in railway cars running over
15 different railway systems employing electric currents of varying intensities, it is important that the fans and the devices by which they are connected with the main circuits may be readily changed by those un-
20 skilled in electrical matters; and it is the primary object of the present invention to provide means whereby these changes may be effected, and whereby the resistances by which the speed of operation of the fans is
25 controlled may be renewed by the unskilled workmen in charge of the cars.

The present invention consists in the devices herein shown and described and recited in the appended claims for accomplish-
30 ing these objects.

In the accompanying drawings, Figure 1 is a side elevation of an electric fan provided with the present improvements, and Fig. 2 a sectional side elevation of a re-
35 sistance coil and its means of connection to the fan motor; Fig. 3 is a sectional view of the cylindrical housing of the resistance coil, representing the inner end of the same; and Fig. 4 is a transverse sectional view of
40 the cylinder showing the guard-plate at the outer end of the resistance coil.

The fan is constructed as usual with a motor-frame 1 in which is journaled the armature-shaft 2 carrying the fan-blades
45 3, and is pivotally mounted by means of screws 4 in the yoke 6, which has a depending stud having the nut 8 by means of which it is adjustably secured within a suitably socketed lug 10 extending from the
50 bracket 11, which latter is provided with means for securing it to a suitable support.

Attached to the back of the motor-frame by means of screws 32 is a bracket-piece 33 to which is secured by means of rivets 34 or

otherwise the metallic housing cylinder 35 55 for the resistance coil. This cylinder is shown open at one end and closed at the other end by means of a disk 36 having a central boss 37 through which passes the threaded end portion of the resistance coil 60 supporting stud or spindle 38 arranged in axial relation with the cylinder 35. The disk 36 may be secured in the end of the cylinder 35 by means of screws 39 or by any other suitable means, and it is shown formed 65 in its inner face with an annular channel 40 in which are secured the spring contact-plates 41, by means of conducting screw-bolts 42 passing through the disk 36 and having upon their outer threaded ends the 70 clamp-nuts 43 between which are secured the bared ends of the insulating conducting wires forming a part of the system of wiring. The disk 36 carrying the relatively insulated contact points or members 42 thus 75 constitutes an insulated support for the resistance coil sustained by the stud or spindle 38.

The resistance coils herein shown are in the form of insulated spools of the class 80 well known commercially in the art and each comprising a coil of wire of low conductivity wound upon a tubular insulating arbor and having leading therefrom at intervals, as represented in Fig. 2, connecting 85 wires 44 leading to suitable contact studs; the sectional resistance coil thus formed having molded thereon a covering 45 of porcelain.

As shown in Fig. 2, the cover 45 has at 90 its inner end a central perforated disk 46 of insulating material, preferably formed separately from the covering 45 and of less brittle material, such as fiber, through which pass a series of preferably soft copper con- 95 tact studs 47 corresponding in number and arrangement with the contact plates 41 of the disk 36, and having apertures entered by the ends of the connecting wires 44 mechanically secured in position therein by 100 pinching the ends of the studs 47 thereon. The heads 48 of the studs 47 normally rest in contact with the flat outer ends of the contact plates 41.

The resistance coil has at its opposite end 105 a central perforated steadying guide-plate 49 of insulating material, the plates 46 and 49 being firmly secured upon the ends of the

resistance coil between the head 38* of the stud 38 and a clamp-nut 50 thereon, while the stud 38 is removably secured within its aperture in the disk 36 by means of the nut 51 whose position determines the degree of pressure between the contact-plates 40 and the heads 48 of the conducting studs 47. The guide-plate 49 is made comparatively narrow, as represented in Fig. 4 to afford apertures on opposite sides to permit the free circulation of air through the housing 35 to insure against overheating of the resistance coil. The cylinder 35 is provided upon its inner wall with a longitudinal rib 35* formed by indenting the side of the cylinder, and to this rib are fitted correspondingly shaped notches 52 and 53 in the insulating disks 46 and 49, whereby the contact studs 47 are guided and maintained in proper relation with the spring contact plates 41.

The motor bracket 11 is shown provided with a connection box 54 which is in practice connected with conductor wires from the source of supply and from which are led the wire 55 directly to one of the motor terminals and a series of wires 56 each leading to one of the terminal screw-bolts 42 of the resistance-coil housing.

While it is preferable to form the disk 36 constituting the end of the resistance coil housing cylinder, and the plates 46 and 49, all of porcelain, especially when the members 46 and 49 are made integral with the insulating covering of the resistance coils, it will be understood that these several insulating parts may be made of any suitable materials, so long as the live members for conducting current carried thereby are suitably insulated.

The resistance coils are supplied for application to the fan-motor with the stud or spindle 38 between the head 38* and nut 50 of which are clamped the coil 45 with its end plates 46 and 49, the former carrying the contact-studs 47 permanently connected with the ends of the conductor wires 44. In renewing the coil, therefore, it is merely necessary for the attendant to remove the nut 51 from the stud 38 of the previously used resistance coil, withdraw the latter from the open end of the housing cylinder or casing 35 and introduce a new coil to be secured in position by application of the nut 51.

As represented in Fig. 2, the housing cylinder 35 is provided in the side walls with perforations 35** to facilitate the circulation of air around the resistance coil.

It is evident that, while the embodiment herein shown and described is preferable, the present improvement is susceptible of considerable modification in the specific construction and arrangement of its component parts without departure from the present invention.

Having thus set forth the nature of the invention, what I claim herein is:—

1. The combination with a support provided with a plurality of relatively insulated contact-points having means of attachment to electric-current conductor-wires, of a sectional resistance coil having a member carrying a plurality of relatively insulated contact-points to which its sections are respectively connected, and means for removably securing said resistance coil to said support with its contact-points each in electrical connection with one of those of the support.

2. The combination with a support provided with a plurality of relatively insulated contact-points having means of attachment to electric-current conductor-wires, of a sectional resistance coil having a member carrying a plurality of relatively insulated contact-points to which its sections are respectively connected, means for removably securing said resistance coil to said support, and an interposed yielding connection between each of the contact-points of said resistance coil and a corresponding contact point of the support.

3. The combination with a support provided with a plurality of relatively insulated contact-points having means of attachment to electric-current conductor-wires, of a sectional resistance coil in the form of a spool with an insulating covering of heat-resisting material and a disk at one end composed of non-fusible insulating material carrying a plurality of contact-points connected respectively with the several sections of the resistance coil, and means for removably securing said resistance coil to said support with its contact-points in electrical connection with those of the support.

4. The combination with a housing having side-walls and a centrally apertured end provided with a plurality of contact-points having means of attachment to electric-current conductor-wires, of a sectional resistance coil in the form of a spool having end flanges loosely fitted to the side walls of said housing, contact-studs carried by one of said flanges in substantially the arrangement of and adapted for electrical connection with the contact-points of the housing and connected respectively with the sections of said coil, and a longitudinally disposed supporting stud for said resistance coil entering the aperture in the end of the housing and detachably secured therein.

5. The combination with a cylindrical housing having a longitudinal guide-rib upon its inner wall and a centrally apertured end provided with a plurality of contact-points having means of attachment to electric-current conductor-wires, of a sectional resistance coil in the form of a spool having end flanges loosely fitted to the walls of said housing and peripherally notched to

embrace said guide-rib, contact-studs carried by one of said flanges and adapted for electrical connection with the contact-points of the cylinder-end and connected respectively with the sections of said coil, and a central supporting stud for said resistance coil entering and detachably secured within the aperture in the end of the housing.

6. The combination with a cylindrical housing having a longitudinal guide-rib upon its inner wall and a centrally apertured end provided with a plurality of contact-points having means of attachment to electric-current conductor-wires, of a sectional resistance coil in the form of a spool having end flanges loosely fitted to the walls of said housing and peripherally notched to embrace said guide-rib, one of said flanges being narrower than the housing to afford ventilating apertures for the latter, contact-studs carried by the other of said flanges and adapted for electrical connection with the contact-points of the cylinder-end and connected respectively with the sections of said coil, and a central supporting stud for said resistance coil entering and detachably secured within the aperture in the end of the housing.

7. The combination with a housing having side-walls and an end provided with a central aperture and carrying a plurality of contact-studs having means of attachment to electric-current conductor-wires, and spring contact-plates secured by means of said studs to the inner face of the end of the housing, of a sectional resistance coil in the form of a spool having end flanges loosely fitted to the side-walls of said housing, contact-studs carried by one of said flanges in substantially the arrangement of said spring contact-plates with which they are normally in contact and connected respectively with the sections of said coil, a central supporting stud for said resistance coil entering the aperture in the end of said housing, and means for detachably securing the same to the end of the housing.

8. The combination with a housing provided with a plurality of contact-points, a sectional resistance coil having a plurality

of contact-points to which its sections are respectively connected, means whereby said resistance coil is removably secured within said housing, interposed yielding connections between the contact-points of said coil and those of the housing, respectively, and means whereby the contact-points of the housing may be connected with a source of current supply and a current-receiving device.

9. The combination with a cylindrical housing open at one end and having the other end closed by a disk of insulating material, a plurality of contact-bolts passing through said insulating disk and provided upon the outer face of the same with means for securing conductors thereto, a spring contact member attached to the inner end of each of said contact-bolts, a sectional resistance coil in the form of a spool having end flanges, contact-studs carried by one of said flanges in substantially the arrangement of the spring contact members of the cylinder-end and connected respectively with the sections of said coil, and means for detachably securing said resistance coil within the housing with said contact studs in engagement with the respective spring contact members of the cylinder-end.

10. The combination with a housing permanently open for the free circulation of air and provided with a plurality of contact-points, of a sectional resistance coil having a plurality of contact-points to which its sections are respectively connected, means whereby said resistance coil is removably secured within said housing with its contact-points in electrical connection with those of said housing, and means whereby the contact-points of the housing may be connected with a source of current supply and a current-receiving device.

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

GUSTAVE C. MARX.

Witnesses:

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