

Fig. 1.

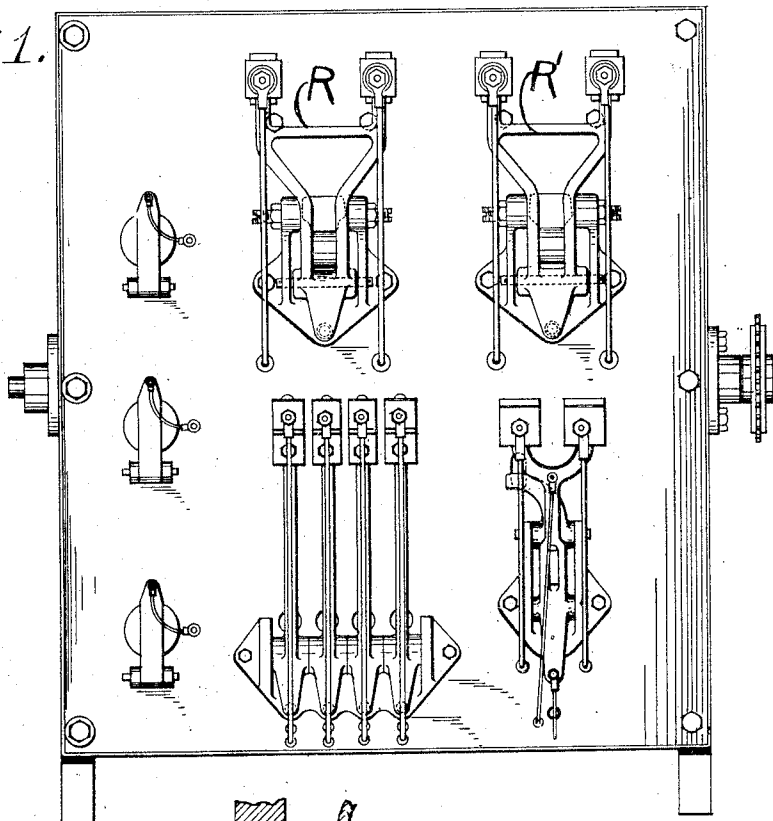
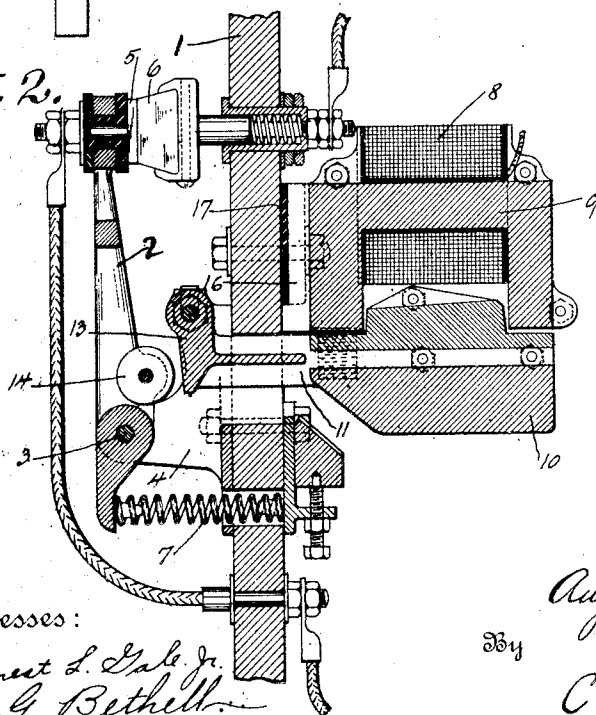


Fig. 2.

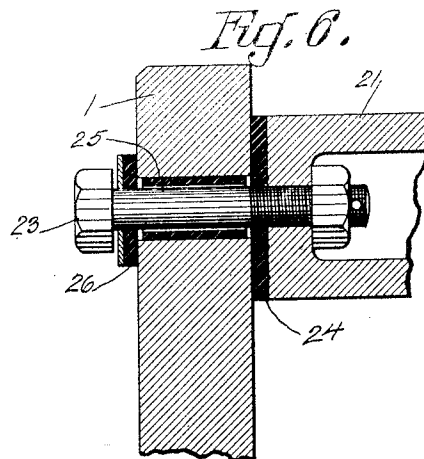
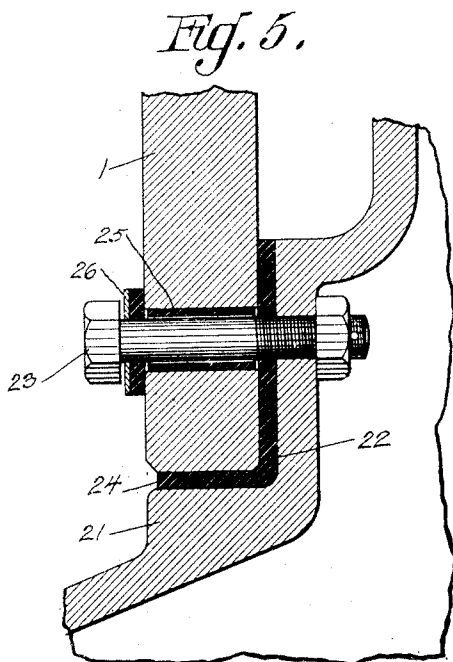
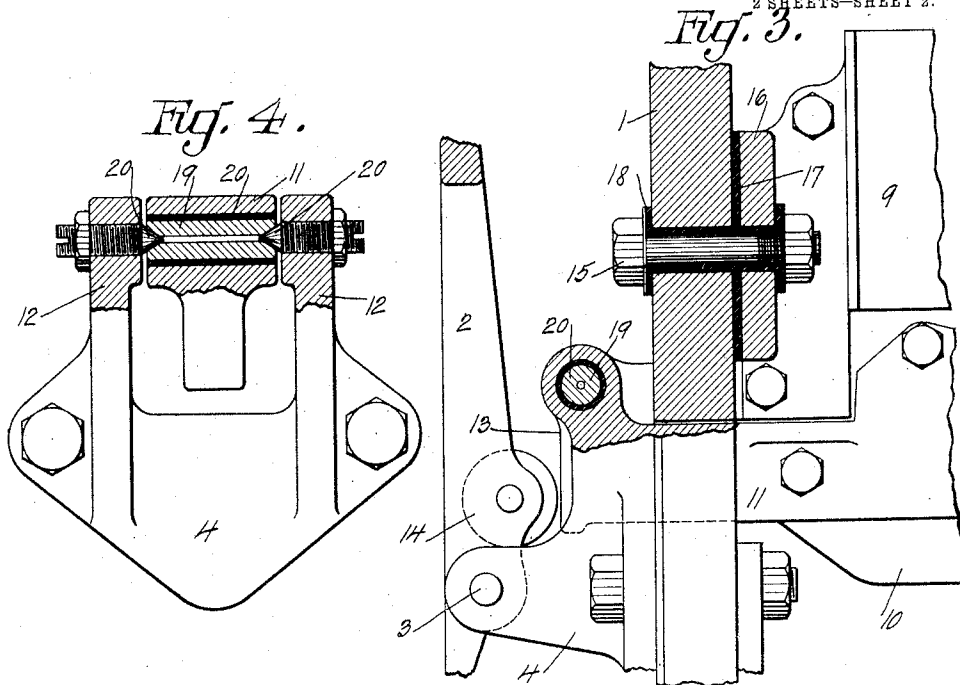


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1,011,662.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

AUGUST SUNDH, OF YONKERS, NEW YORK, ASSIGNOR TO OTIS ELEVATOR COMPANY,
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SWITCHBOARD CONSTRUCTION FOR ALTERNATING-CURRENT CONTROLLERS.

1,011,662.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed May 27, 1908. Serial No. 435,356.

To all whom it may concern:

Be it known that I, AUGUST SUNDH, a citizen of the United States, residing at Yonkers, in the county of Westchester and State of New York, have invented a new and useful Improvement in Switchboard Construction for Alternating-Current Controllers, of which the following is a specification.

My invention relates to means for reducing and absorbing vibrations in alternating current electrical apparatus.

In apparatus of this character, especially where electromagnets are energized by alternating currents, the rapid vibrations produced in the magnet and parts connected thereto result in a humming noise which is objectionable in many places where such magnets might be used. This noise is due principally to the vibration of parts to which the electromagnet is connected. For instance, if a magnet which is excited by an alternating current is mounted on a switch-board, the vibrations set up in the magnet-frame are transmitted to the switch-board which acts as a resonator or sounding-board to magnify the sound. The vibrations of the switch-board are transmitted to the walls, floor or other part on which the switch-board is mounted, and still further increase the noise.

One of the objects of the present invention is to reduce or practically eliminate such noise by interposing between the magnet and parts associated therewith means for absorbing or reducing such vibrations.

Other objects of the invention will appear hereinafter, the novel combinations of elements being set forth in the appended claims.

Referring to the drawings, Figure 1 is a front elevation of a switch-board and switch mechanism mounted thereon to which my invention is adapted to be applied; Fig. 2 is a sectional side elevation of a portion of the switch-board and an electromagnetic switch mounted thereon; Fig. 3 is a fragmentary view, partly in section, showing means interposed between the magnet frame and switch-board and also between the armature and switch-board for absorbing vibrations; Fig. 4 is a front elevation, partly in section, of a portion of Fig. 3; Fig. 5 is a sectional elevation of a corner of the

switch-board and the standard on which it is mounted; and Fig. 6 is a sectional plan view of parts shown in Fig. 5.

To illustrate a specific application of the present invention, a switch-board 1 is herein shown, on which is mounted controlling mechanism for an electric elevator system. A description of such mechanism need not be given herein, except in so far as necessary to clearly set forth the present invention as applied thereto. The electromagnetic reversing switches R, R' mounted on the switch-board each comprises a switch lever 2 pivoted at 3 to a bracket 4 secured to the switch-board 1. The switch lever carries at its upper end a contact 5 adapted to engage a contact 6 mounted on the switch-board. The switch is normally held closed by a spring 7. The electromagnet for opening the switch is mounted on the back of the switch-board and comprises a magnet coil 8, a magnetic frame 9 secured to the switch-board. The magnet is deenergized the armature is secured to or forms part of a lever 11 which extends through an opening in the switch-board and is pivoted between the lugs 12 formed on the bracket 4. When the magnet is deenergized the armature drops and a shoulder 13 formed on the lever 11 strikes the antifriction roller 14 on the switch lever and opens the switch.

The method of securing the magnet frame 9 to the switch-board in order to deaden the vibrations due to current alternations will now be described. The magnet frame is in this instance secured to the switch-board by means of bolts 15, one of which is shown in detail in Fig. 3. This bolt extends through the switch-board and a flange 16 formed on the magnet frame. The flange 16 instead of being clamped directly against the switch-board in the usual way, is separated therefrom by a section 17 of material which will absorb the vibrations of the magnet-frame and prevent their being transmitted to the switch-board. It has been found in practice that rubber is well adapted for this purpose, although various other materials, such as leather, paper, asbestos, lead, metal springs, etc., will serve the same purpose to a greater or less degree. The bolt 15 is also isolated from the switch-board and magnet-frame by a tube or spool 18 of the same material so that no vibrations

can be transmitted from the magnet-frame to the switch-board directly through the bolt.

The armature 10 and lever 11 which are also subject to vibration are isolated in a similar manner from the bracket 4. As shown in Figs. 3 and 4, the lever 11 is provided with a transverse opening extending therethrough to receive a cylindrical plug 19 with a sleeve 20 of rubber or other suitable material between said plug and lever for absorbing vibrations. The ends of the plug 19 are recessed to receive the conical bearings 20 adjustably mounted in the lugs 12. It will thus be seen that the magnet and its armature have no connection whatever with the switch-board, except through rubber or other material for absorbing vibrations.

In Figs. 5 and 6 is shown a means for connecting the sounding board 1 and the standards or supports 21 with rubber or the like interposed. The standard 21 is formed with an L-shaped recess 22 to receive the corner of the switch-board, the parts being secured in position by a bolt 23, with a section of rubber or other sound absorbing material 24 in position between the parts. The body and head of the bolt 23 are separated from the switch-board 1 by the sleeve 25 and washer 26, respectively, the parts 25 and 26 being made of sound absorbing material as above described.

The means shown in Figs. 3 and 4 for absorbing vibrations may be used in conjunction with the means shown in Figs. 5 and 6, or either of said means may be used alone as may be desired.

It will be understood that the specific applications of my invention as herein disclosed are merely illustrative of the various ways in which my invention may be used, and that in general the invention is adapted for use wherever it is desirable to reduce or prevent the vibrations produced by alternating current magnets.

Various changes in the details of construction and arrangement of parts herein disclosed might also be made by those skilled in the art without departing from

the spirit and scope of the invention. I wish therefore not to be limited to the precise construction disclosed.

What I claim as new and desire to have protected by Letters Patent of the United States is:—

1. The combination with a magnet-frame, of a support therefor, a bolt securing said parts together, and a sleeve on said bolt of material for absorbing vibrations.

2. The combination with an electromagnet, of an armature therefor, a support to which the armature is pivotally connected, and means interposed between the armature and its support for absorbing vibrations produced in the armature.

3. The combination with a lever, of means for producing mechanical vibrations therein, a bearing block secured to said lever but separated therefrom by material for preventing the transmission of said vibrations, and a support for said lever provided with stationary bearings.

4. The combination with a lever, of means for producing vibrations therein, a bearing plug carried by said lever but separated therefrom by a sleeve of vibration-absorbing material, and a carrying member having journal bearings for said plug.

5. The combination with a switch-board, of an electromagnet carried thereby, an armature for said electromagnet having pivoted connection with the switch-board, and material for absorbing mechanical vibrations interposed between the switch-board and the magnet-frame and armature.

6. The combination with a switch board, of an electromagnet frame mounted thereon, means interposed between said parts for absorbing vibrations, an armature lever, a support for said lever secured to the switch board, and sound deadening material interposed between said lever and its support.

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

AUGUST SUNDH.

Witnesses:

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