

W. O. JACOBI & C. HARRIS.

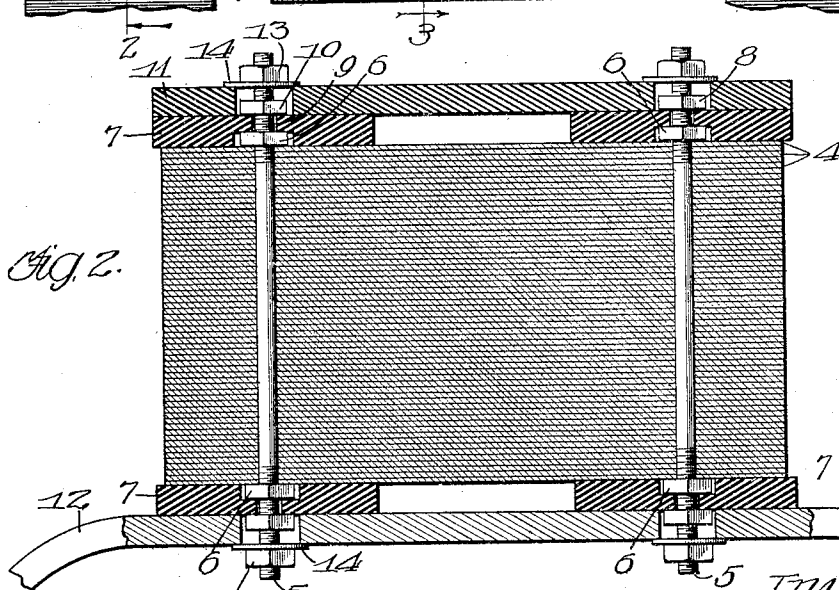
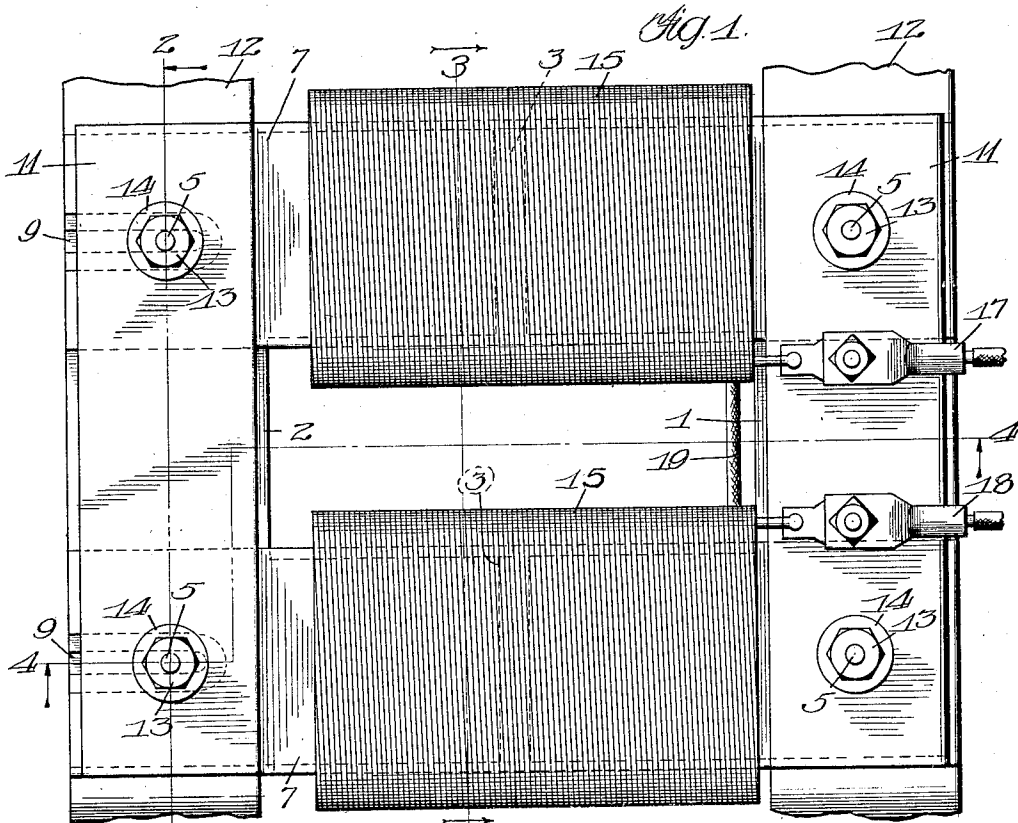
REACTANCE COIL.

APPLICATION FILED MAY 4, 1908.

Patented Nov. 7, 1911.

4 SHEETS-SHEET 1.

1,008,270.



Witnesses:
Ed. J. [illegible]
Robert [illegible]

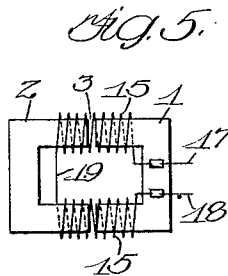
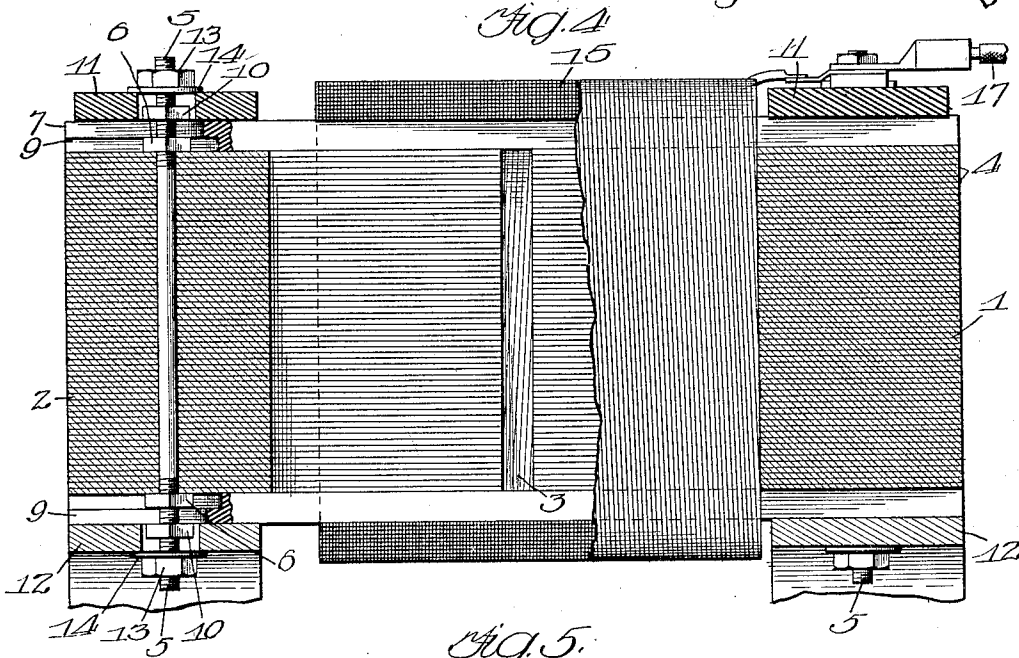
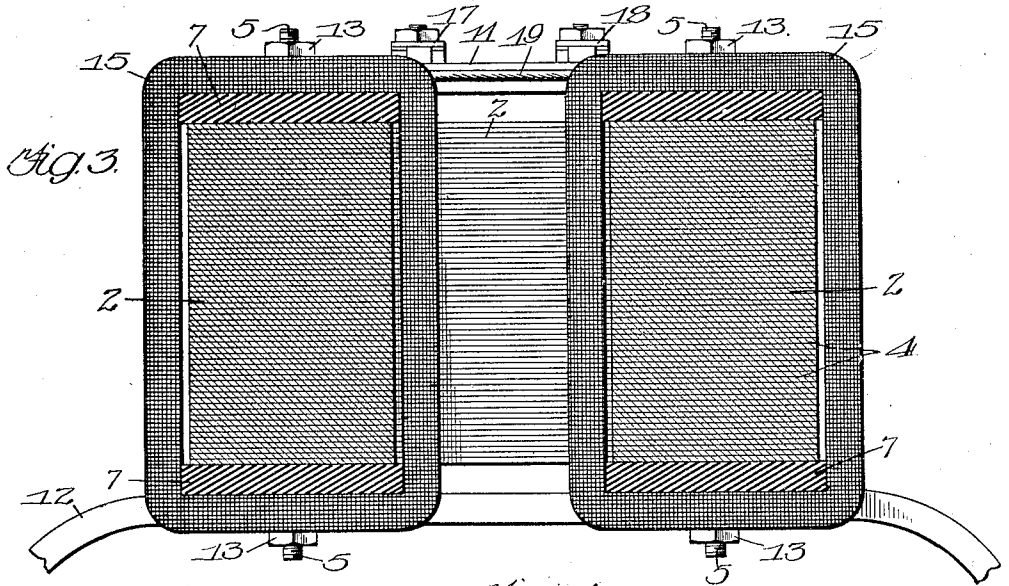
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

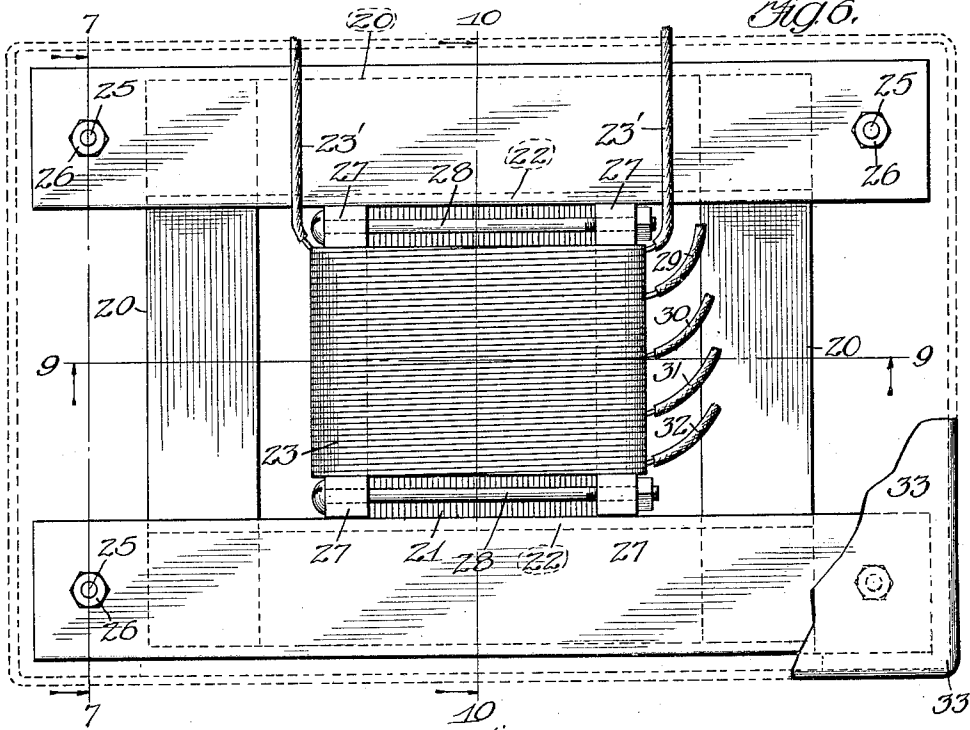


Fig. 7.

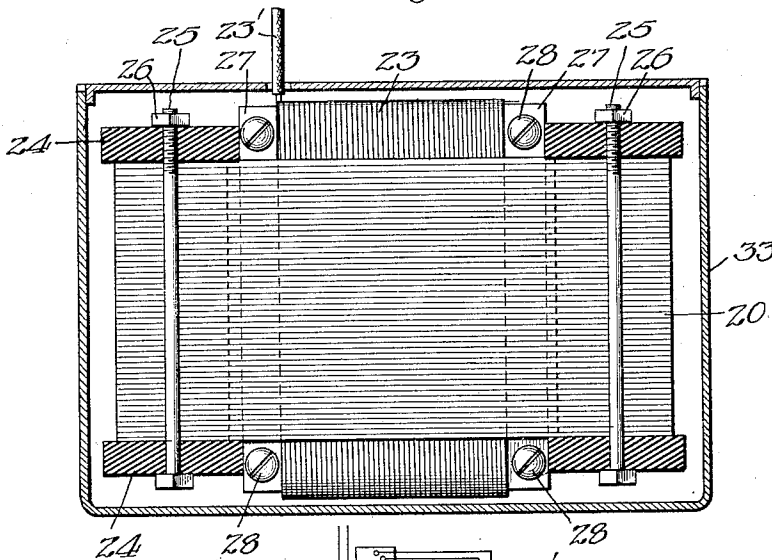
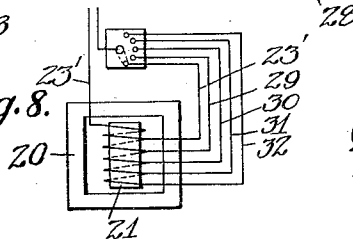


Fig. 8.



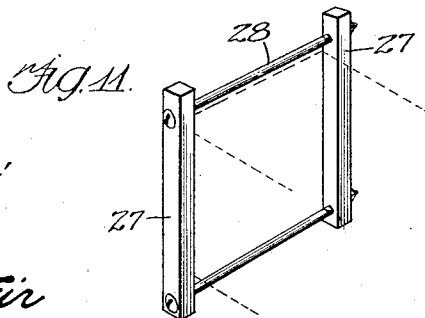
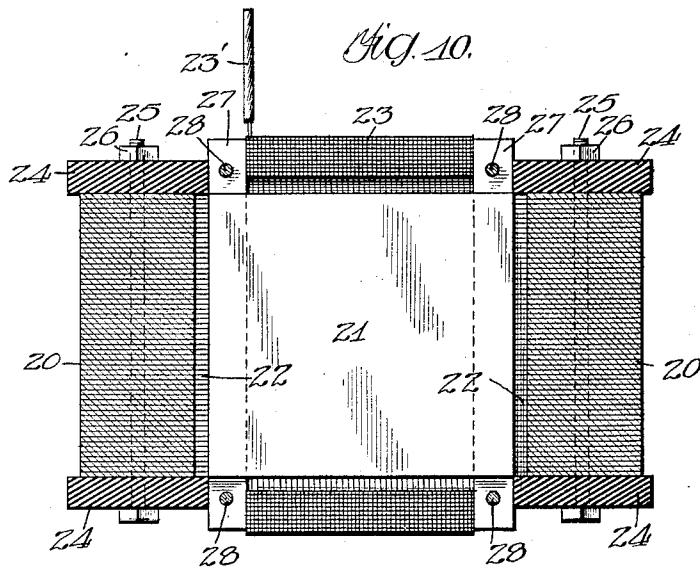
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REACTANCE COIL.

Patented Nov. 7, 1911.

4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

WILL O. JACOBI AND CHARLES HARRIS, OF CHICAGO, ILLINOIS; SAID HARRIS ASSIGNOR TO SAID JACOBI.

REACTANCE-COIL.

1,008,270.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed May 4, 1908. Serial No. 430,882.

To all whom it may concern:

Be it known that we, WILL O. JACOBI and CHARLES HARRIS, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Reactance-Coils or the Like, of which the following is a description.

Our invention belongs to that class of devices known as reactance or choke coils, and has for its objects the production of a simple, satisfactory and efficient device of the kind described, for use wherever applicable. It is particularly designed for alternating current arc lamps or the like, giving a more steady arc particularly in a hand-fed lamp. The flux in the coil is localized and magnetic leakage practically eliminated, thereby making our device applicable for use in the metallic casing or in a cooling solution.

To this end our invention consists in the novel construction, arrangement and combination of parts herein shown and described and more particularly pointed out in the claims.

In the drawings wherein like reference characters indicate like or corresponding parts, Figure 1 is a view in elevation of our preferred form of coil, Fig. 2 is a cross sectional view of the same taken substantially on line 2—2 of Fig. 1, Fig. 3 is a cross sectional view of the same taken substantially on line 3—3 of Fig. 1, Fig. 4 is a longitudinal, sectional view taken substantially on line 4—4 of Fig. 1, Fig. 5 is a diagrammatic view of the same, Fig. 6 is a view in elevation of a slightly modified form of device, Fig. 7 is a cross sectional view of the same taken substantially on line 7—7 of Fig. 6, Fig. 8 is a diagrammatic view of the same, Fig. 9 is a longitudinal, sectional view of the same taken substantially on line 9—9 of Fig. 6, Fig. 10 is a cross sectional view taken substantially on line 10—10 of Fig. 6, and Fig. 11 is a perspective view of a portion of the same.

Referring particularly to Figs. 1 to 5, the drawings in which our preferred construction is shown, 1 and 2 are substantially U-shaped core members arranged together with the free ends of the sides of the U adjacent, but with a space or air gap 3 therebetween. The core member is therefore substantially continuous but provided with one or more air gaps therein. The core member

parts 1 and 2 are preferably made up of laminations 4, the same being secured together in any suitable or preferred way. As shown in the preferred construction the U-shaped core member parts are adjustably secured together so that the air gaps 3 may be of the desired length or width. Any suitable means may be employed to secure parts 1 and 2 together, preferably members 7 extending along the faces of the sides of the U members.

Referring particularly to Figs. 1 and 2 in which the same is most clearly shown, we secure the laminations 4 together by means of bolts 5—5, etc., and nuts 6—6. The bolts 5—5 extend beyond the nuts 6—6 and are adapted to pass through the members 7—7 as shown so that the core member parts 1 and 2 are secured together by the members 7 and the bolts 5 and nuts 10. One end of the members 7—7 are preferably slotted as at 9 so that the parts 1 and 2 of the core may be adjusted relatively to each other. The members 7—7, etc., may be made of any suitable material, preferably slow burning insulating material such as fiber or fire-proofed wood.

If desired cross bars 11 and 12 of any suitable material may be secured to the core members by making the bolts 5 of sufficient length and employing nuts 13 and washers 14 or their equivalent, as shown. The cross bars 12 on one face of the device may be made in the form of brackets, if desired, the true ends of the brackets being omitted in the drawings. It should be particularly noted that in this preferred construction the cross bars 11 and 12 may be removed without removing any of the other parts, the core members and members 7—7 being securely held in the desired positions, or the members 7 may be removed without loosening the laminations.

On the two sides of the core members 1 and 2, are positioned coils 15 and 16 composed of any suitable sized wire and insulated in any preferred manner. Coils are preferably secured to one of the core member parts, as shown, to part 1 sufficient space being allowed to permit the readjustment of the core member part 2 relatively to part 1. As shown in this construction the coil is not only proximate to the air gap but surrounds the same, the air gap being preferably midway between the two ends of the coil.

By this construction the flux is localized within the coil and by adjusting the core member parts relatively to each other and widening or narrowing air gaps 3, the current passing through the coil may be substantially controlled or regulated, and also owing to the increased area of radiating surfaces the device may be satisfactorily air-cooled. The connections to the coil are represented by the numerals 17 and 18, the two coils being connected as at 19.

It is obvious that if desired, suitable means may be employed to give a more accurate adjustment of the core member parts relatively to each other, that is, screw cam or equivalent means may be provided to force the core members together or apart (controlling or adjusting mechanism not shown).

In the slightly modified form of device shown in Figs. 6 to 11, the core member parts are made in a slightly different form. Referring to these figures the core comprising parts 20 and 21, may be made up of suitable laminations with air gaps 22 between the parts as shown. The laminations of part 20 of the core, are secured together by means of the members 24 and bolts and nuts 25 and 26 or their equivalents for the purpose. The laminations of part 21 are secured together by means of the members 27 and bolts 28 or their equivalents, the member or part 21 of the core being retained in position by contact with the members 24 and 27. The members 24 and 27 may be of any suitable or desired material, preferably of fiber or fireproofed wood as in the preferred construction. The air gaps 22 may be increased or decreased by moving the laminations of part 20 of the core toward or away from the ends of part 21. This is possible owing to the fact that the laminations of parts 20 lap at the corners so that some adjustment is possible.

As shown, only one coil is preferably used in this construction, the same being arranged on the part 21 of the core. While in this construction the coil does not surround the air gap, the same is proximate thereto. If desired, leads 29, 30, 31 and 32 may be taken off so that the number of turns of the coil may be varied to suit, it being obvious that the preferred construction shown in Fig. 1 may be so arranged if so desired. The air gaps being made the same length or width, the coil will be balanced and there will be no humming.

This form of device as well as the preferred construction may be placed in any suitable receptacle such as a metallic casing 33 or in a cooling solution. Owing to the localizing of the flux the same is practically entirely through the core members and there is no heating of the receptacle due to stray flux.

Having thus described our invention it is obvious that various immaterial modifications may be made in the form, design or construction shown without departing from the spirit of our invention, hence we do not wish to be understood as limiting ourselves to the exact construction, arrangement or combination of parts herein shown and described.

What we claim and desire to secure by Letters Patent is:

1. A reactance coil of the kind described comprising two substantially U-shaped laminated core members, means for securing the laminations together, means for securing the core members together with the free ends of the sides of the U members adjacent but with air gaps therebetween, comprising a plurality of members of insulating material secured on the face sides of the U members but arranged to permit the adjustment of the same relatively to each other, and a plurality of coil members arranged on the sides of the core members surrounding said air gaps.

2. A reactance coil of the kind described comprising two substantially U-shaped laminated core members, means for securing the laminations together, means for securing the core members together with the free ends of the sides of the U members adjacent but with air gaps therebetween, comprising a plurality of members of insulating material secured on the face sides of the U members, said insulating members having at one end a slotted portion, and securing bolts passing through said slotted portions for adjustably securing the core members relative to each other.

3. A reactance coil of the kind described comprising two substantially U-shaped laminated core members, means for securing the laminations together, means for securing the core members together with the free ends of the sides of the U members adjacent but with air gaps therebetween, comprising a plurality of members of insulating material secured on the face sides of the U members, cross plates overlying the base of said U-shaped members and said insulating members having at one end slotted portions, and securing bolts passing through said slotted portions of said insulating members and through said plates, substantially as and for the purpose described.

4. A reactance coil of the kind described, comprising two substantially U-shaped laminated core members, means for securing the laminations together, means for securing the core members together with the free ends of the sides of the U members adjacent but with air gaps therebetween, comprising a plurality of members of insulating material secured on the face sides of the U members, said insulating members having relatively

fixed connections at one end and a slotted
portion at their opposite ends, cross plates
overlying the base of the U-shaped members
and said insulating members, bolts passing
5 through the base of said U-shaped members
and through said insulating members and
plates, said bolts being threaded at their
ends, nuts threaded to the bolts and engag-
ing within recessed portions of the plates
10 and contacting with the insulating members,
and auxiliary nuts also threaded to said

bolts and engaging the outer surface of said
cross plates.

In witness whereof, we have hereunto
signed our names in the presence of two sub- 15
scribing witnesses.

WILL O. JACOBI.
CHARLES HARRIS.

Witnesses:

ROY W. HILL,
CHARLES I. COBB.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."