

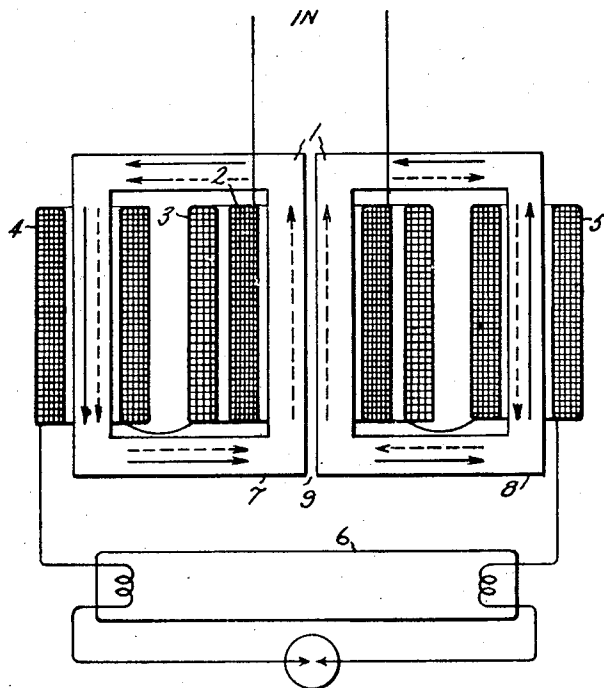
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HIGH REACTANCE TRANSFORMER

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HIGH REACTANCE TRANSFORMER

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2 Claims. (Cl. 171-242)

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This invention relates to electric transformers adapted to produce a high reactance effect. Such transformers are required for many purposes, among which may be mentioned the operation of electric discharge lamps where they are designed to produce the required voltage for operating the lamps and for limiting the current taken by the lamp as the voltage drop across it diminishes.

An object of the invention is to provide a transformer which will provide a necessary degree of high reactance without unduly increasing the difficulties in the manufacture of the transformer.

The invention will be better understood from the following description taken in connection with the accompanying drawing and its scope will be pointed out in the appended claims.

A high reactance transformer according to the invention is illustrated diagrammatically in the single figure of the drawing as comprising a three-limbed core 1 having primary and secondary windings 2 and 3 located on the center limb thereof, the outer limbs carrying an auxiliary winding comprising coils 4 and 5 which are connected in series with one another and with the secondary winding 3 and are so arranged that flux is circulated around the outer limbs and yokes of the core as a result of secondary current flowing in the auxiliary windings, whereby to produce a reactive effect in the auxiliary windings. The reactance flux is indicated by the full line arrows.

Since the primary and secondary windings 2 and 3 are located on the center limb of the core, the flux caused by current flow in the primary winding at any instant passes through the center limb, and then divides and flows through the yokes connecting the center limb with the outer limbs, passes in the same direction through the outer limbs, and returns to the center limb through the other pair of yokes in the usual manner. The transformer flux is indicated by the dashed arrows. Since the auxiliary windings 4 and 5 located on the outer limbs are connected in series with the secondary winding 3 and are so arranged as to circulate flux through the outer limbs and the yokes connecting them, the flux caused by the secondary current flowing in the auxiliary windings will be in the same direction as the main or transformer flux due to the primary current in one limb and will oppose that flux in the other outer limb, and thus produce a reactive effect in the auxiliary windings which are, of course, connected with the secondary winding to the load, which is illustrated as a discharge lamp 6.

According to the power factor of the secondary load 6 the main flux and the reactance flux arising from secondary current flowing in the auxiliary windings will add or subtract vectorially in the outer limbs and yokes, and it may some-

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times be desirable to adjust the section of these yokes and limbs in order to obtain the maximum economy in weight of magnetic material.

In some cases it may be desirable also to provide for the introduction of an air gap into the magnetic circuit in which the reactance flux circulates. This may be obtained by making the three-limbed core in the form of two separated rectangular cores 7 and 8, corresponding limbs of which are embraced by the primary and secondary windings, these limbs being separated from one another to form the air gap 9 in the yokes through which the reactive flux circulates. This air gap will, of course, not affect the main flux caused by the primary current as this will circulate through the two separated sections of the core independently of the air gap. The amount of reactance flux will be adjusted by the separation of the two sections of the core whereby the adjustment in width of the air gap is effected.

While there has been shown and described a particular embodiment of this invention, it will be obvious to those skilled in the art that various changes and modifications can be made therein without departing from the invention and, therefore, it is aimed in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

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

1. A three-legged magnetic core, primary and secondary transformer windings on the center leg of said core, separate reactance windings on the outer legs of said core, and means for connecting said reactance windings in series with said secondary winding and in series opposition with each other relative to voltages induced in them by the primary winding.

2. A three-legged magnetic core, primary and secondary transformer windings on the center leg of said core, separate reactance windings on the outer legs of said core, and means for connecting said reactance windings in series with said secondary winding and in series opposition with each other relative to voltages induced in them by the primary winding, said center leg being longitudinally split so as to provide an air gap in the magnetic circuit of the reactance windings without introducing an air gap into the magnetic circuit of the transformer windings.

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REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
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