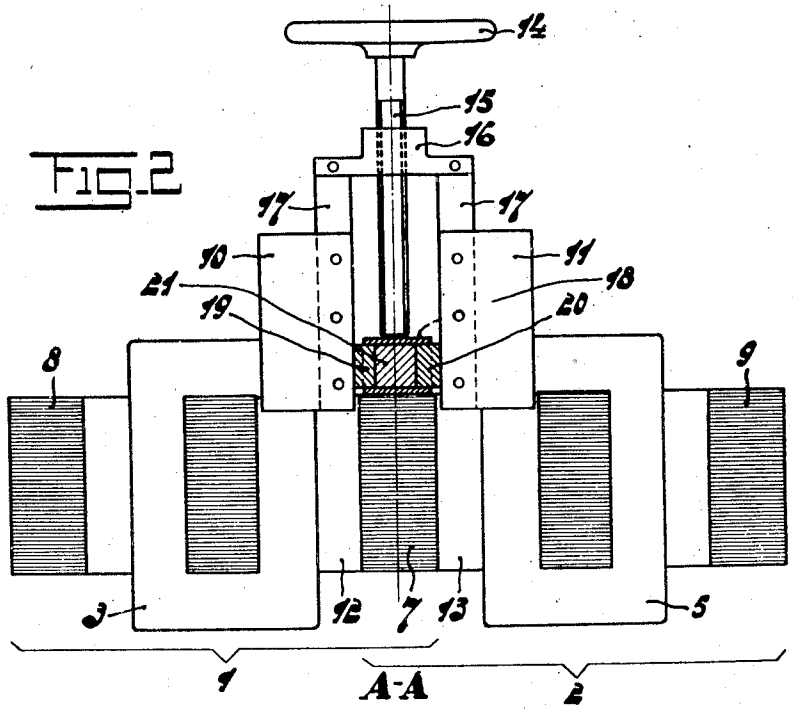
Oct. 5, 1948. H. A. W. KLINKHAMER 2,450,732

MOVABLE MAGNETIC SHUNT TRANSFORMER

Filed May 3, 1946

Fig. 2



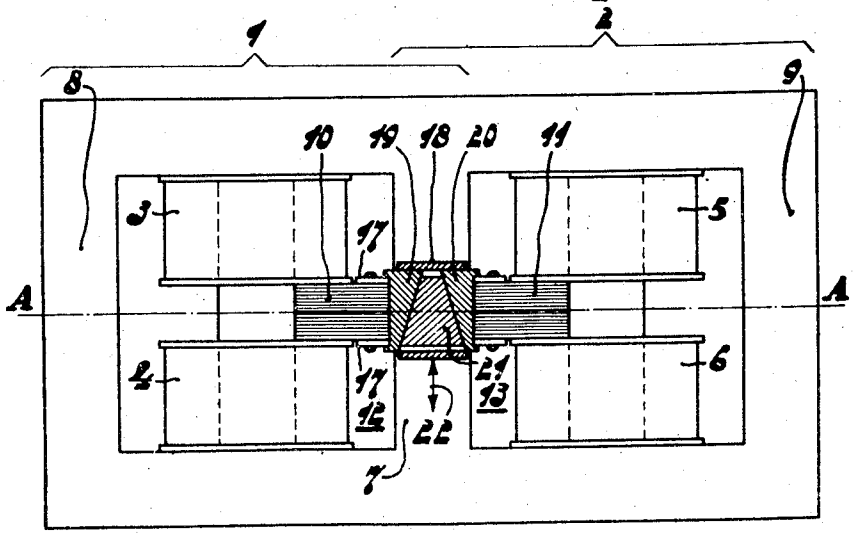


Fig. 1

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MOVABLE MAGNETIC SHUNT TRANSFORMER

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3 Claims. (Cl. 171—119)

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This invention relates to a transformer, which is controllable by means of movable magnetic shunts and consists of two shell transformers in Scott's arrangement and is more particularly characterized in that the transformer cores are assembled into a five-limb core having an unwound middle core and two unwound outer cores, shunts being provided solely in the two windows adjoining the middle core in a direction normal to the lamellation of the core, which shunts are movable and are so to be fastened, by means of a clamping device, as to be free from vibration.

When making use of the Scott circuit the advantage known per se is secured of obtaining a three-phase output voltage from a two-phase input voltage, or conversely. The contruction of a five-limb core having an unwound middle limb and two unwound outer limbs from two shell transformers yields a very simple contruction that can be manufactured at a low cost. The use of a magnetic shunt solely in each of the windows adjoining the middle limb by means of a total number of only two movable magnetic shunts capable of being clamped in installations not having an exaggerated control range, for instance, in cinema rectifiers or the like yields sufficient possibilities of control. Since only two shunts are shifted and clamped for simultaneous control of the three phases only a few running surfaces in the paths of the shunts need be finished with the required precision, whilst the devices for moving and clamping the shunts may have a simple construction.

In this respect it is still pointed out that the unwound middle core may consist of two separated parts each of which forms part of a separate shell transformer. However, it is advisable that the middle limb should be constructed as a unit, as shown in the drawing.

The displacing device consists, in a manner known per se, of a yoke-shaped coupling piece which is connected at its ends to the shunts and is provided at the middle with a rod having a screw thread, which can be screwed upward and downward.

According to another feature of the invention the clamping device is provided on the unwound middle limb between the two shunts and consists of two wedge-shaped members between which is provided an adjustable cuneiform pressing member. In this extremely simple device the shunts are clamped by pressing the central cuneiform pressing member.

According to another feature of the invention the wedge-shaped members and the cuneiform

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pressing piece are provided in such manner that clamping of the shunts takes place by moving the pressing piece in a longitudinal direction of the unwound middle core.

The invention will be more fully explained by reference to the accompanying drawing in which:

Fig. 1 is a plan view of a transformer according to the invention with a further feature of the invention illustrated in a sectional view; and

Fig. 2 is a section of the transformer according to the invention taken along the line A—A of Fig. 1.

Referring more particularly to Fig. 1 of the drawing, the transformer consists of two shell transformers 1 and 2 whose windings 3, 4 and 5, 6 are connected according to Scott. The transformer cores are united to form a five-limbed core having an unwound middle core 7 and two unwound outer cores 8, 9. Two movable shunts 10, 11, which are so to be secured as to be free from vibration by means of a clamping device, are solely provided in the two windows 12, 13 adjoining the middle core 7.

As can be seen from Fig. 2, the shifting device consists of a handwheel 14 with a screw spindle 15 which, by means of the nut 16 and the fastening plates 17, bring the shunts 10 and 11 into the desired position in a direction normal to the direction of lamellation of the cores, the spindle 15 resting on the housing 18 of the clamping device.

The latter consists of two wedge-shaped members 19, 20 between which is provided an adjustable cuneiform pressing piece 21. The pressing piece 21 is movable, by means of a screw spindle and handwheel or another suitable device (for the sake of simplicity not represented in the drawing) in a longitudinal direction of the core 7, i. e., into the direction of the arrow points of the arrow 22, as a result of which the wedge-shaped members 19 and 20 clamp the shunts 10 and 11 against the wound limbs of the transformer in such manner as to be free from humming. Consequently the screw spindle extends parallel with the unwound middle core 7 and may be fastened thereto, since sufficient space is available here.

What I claim is:

1. A transformer which is controllable by means of movable magnetic shunts comprising two shell transformers in Scott's arrangement, in which the transformer cores are united to form a five-leg core having an unwound middle core and two unwound outer cores, movable magnetic shunts being provided solely in the two windows adjoining the middle core in a direction normal

to the lamellation of the core, and a clamping device securing said shunts to said transformer in a vibration-free manner, said clamping device comprising two wedge-shaped members bearing on said shunts, a cuneiform pressing member between said wedge-shaped members, and means to position said cuneiform pressing member between said shunts to clamp said shunts to said transformer.

2. A transformer as claimed in claim 1, in which the wedge-shaped members and the conical pressing piece are provided in such manner that clamping of the shunts takes place by shifting the pressing piece in a longitudinal direction of the unwound middle core.

3. A transformer as claimed in claim 2, in which the direction of motion of the shunts is normal to the direction of motion of the pressing piece of the clamping device.

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REFERENCES CITED

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Number	Name	Date
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