MULTICORE TRANSFORMER INCLUDING INTEGRAL MOUNTING ASSEMBLY

Forrest G. Hibbits, San Diego, Calif., assignor, by mesne assignments, to Honeywell Inc., Minneapolis, Minn., a
corporation of Delaware

Filed Nov. 5, 1964, Ser. No. 409,080
1 Claim. (Cl. 336—84)

The present invention relates to multicore transformers, and more particularly to shielding and coupling between
the cores of multicore transformers.

According to the invention, a multicore transformer having at least two magnetic cores with central openings
therethrough are mounted on opposite sides of an electrostatic shield or guard. The two cores and their respective
windings are coupled by single loop links, one member
of which is passed through the centers of the cores and
an aperture in the shield. This member is preferably a
mounting bolt for mounting the said cores in axial align-
ment with each other, and on opposite sides of the said
shield. The mounting bolt can be insulated or electrically
connected for an electrical contact with the shield as
ddicted by the design requirements of the associate
equipment. To complete the single turn coupling loop an
insulated lead is connected to each end of the mounting
bolt and taken through a second aperture in the shield
allowing the shield to be electrically connected to the
loop at only one point. This eliminates the possibility of
any currents being set up in the shield itself or coupling
between adjacent transformers.

An object of the invention is the provision of a high
degree of electrostatic shielding between adjacent windings in
multicore transformers.

A further object is the provision of effective electro-
static shielding in multicore transformers which is simple,
compact and relatively inexpensive.

Other objects and many of the attendant advantages of
this invention will be readily appreciated as the same
becomes better understood by reference to the following
detailed description when considered in conjunction with
the accompanying drawing in which like reference nu-
merals designate like parts throughout the figures thereof
and wherein:

FIG. 1 illustrates the present invention in a partially
sectioned perspective view;

FIG. 2 illustrates the preferred embodiment of the
present invention in schematic form.

Referring to FIG. 1, transformer cores 11 are mounted
on one side of electrostatic shield 12, and transformer
cores 13 are mounted opposite transformer cores 11 on
the other side of the capacitive shield 12. The cores
directly opposite each other form one transformer. A con-
ductor, for example a bolt 14, passes through the central
openings 16 of opposite cores and an aperture 17 in elec-
trostatic shield 12. Leads 18 are connected at each end
to mounting bolts 17 and passed through apertures 19 in
electrostatic shield 12 to complete the single turn coupling
for each transformer. Circuit boards 21 are mounted on
the other ends of the cores 11 and 13 to constitute a
compact electronic assembly with inductive coupling be-
tween the two chassis and excellent electrostatic shielding
between the two chassis.

As shown in FIG. 2, cores 11 and 13 are coupled by
a single turn loop comprising conductor leads 14 and 18,
lead 14 being electrically connected at 17 to shield 12,
and lead 18 passing through aperture 19 of shield 12.
The connection at 17 is the aperture which can be
threaded for a threaded engagement with the coupling
bolt 14. In this embodiment, the shield 12 is shown
grounded. As previously mentioned, if desired, the cou-
pling bolt 14 could be insulated from the electrostatic
shield 12 instead of electrically connected as shown. The
other windings on the cores (shown as, but not limited
to, multiple turn windings) may be utilized to provide
means for supplying input or output signals to the
transformer.

It should be understood of course that the foregoing
disclosure relates to only a preferred embodiment of the
invention and that it is intended to cover all changes and
modifications of the example of the invention herein
chosen for the purpose of the disclosure, which do not
constitute departures from the spirit and scope of the
invention.

What is claimed is:

Apparatus for producing a plurality of multicore trans-
formers comprising, a plurality of pairs of magnetic cores,
said cores being generally toroidal in configuration and
having a central aperture therein, electrostatic shielding
means having a planar configuration and including a first
plurality of apertures therein, a first plurality of elec-
trically conductive means individually passing through
said central apertures of each pair of said magnetic cores
and through a separate one of said first plurality of ap-
ertures in said shielding means to mount each pair of mag-
netic cores in axial alignment on said electrostatic shield-
ing means, said shielding means disposed between said
magnetic cores of each said pair, a second plurality of el-
ectrically conductive means individually connected in
parallel with separate ones of said first plurality of elec-
trically conductive means and disposed external of said
magnetic cores thereby to effect a plurality of multi-
core transformers each of which is linked by a single
turn winding, said electrostatic shielding means including
a further plurality of apertures therein, each of said sec-
ond electrically conductive means being disposed to pass
through one of said further plurality of apertures, and a
plurality of circuit boards adapted for supporting electrical
components thereon, said circuit boards disposed adjacent
said multicore transformer apparatus to form a compact
assembly which permits electrical interconnection between
components of said circuit boards and said transformers
thereby providing inductive coupling and electrostatic
isolation therebetween.

References Cited

UNITED STATES PATENTS

1,837,245 12/1911 Wheeler .............. 336—84 X
1,953,779 4/1934 Sclater ......... 336—82
2,827,615 3/1958 Henderson ............ 336—212 X
2,907,965 10/1959 Mercier .............. 336—84
2,968,807 1/1961 Troost et al. ............ 336—212 X

LEWIS H. MYERS, Primary Examiner.
T. J. KOZMA, Assistant Examiner.