

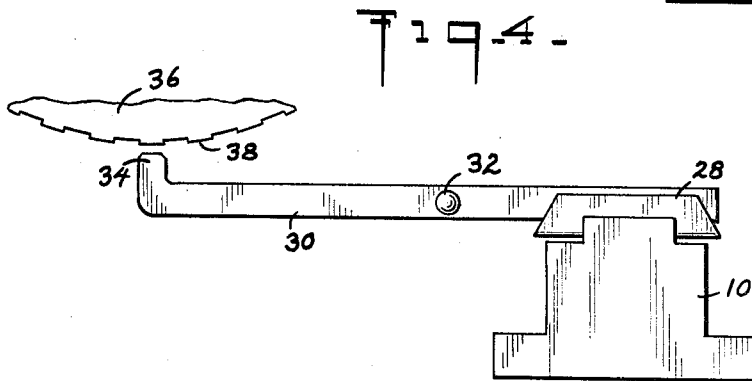
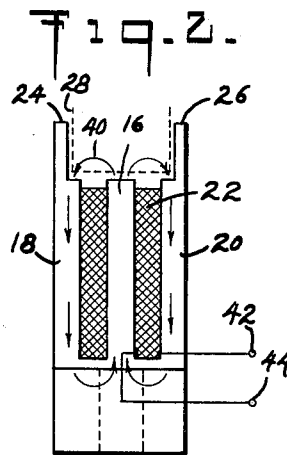
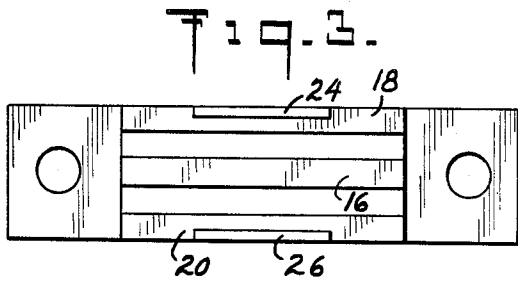
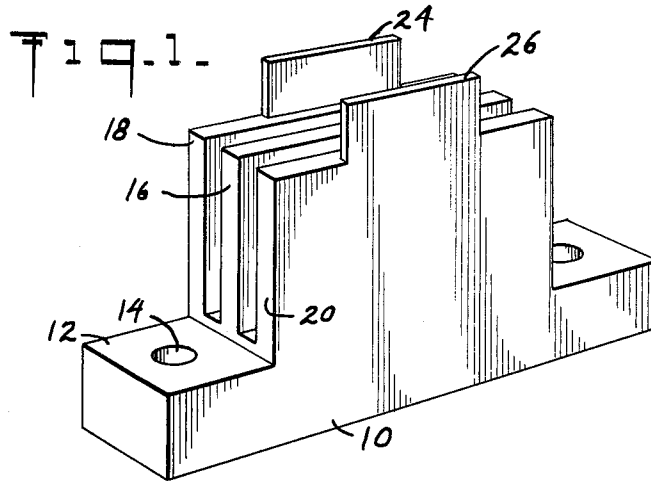
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PRINTER MAGNET CORE

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3,196,783

PRINTER MAGNET CORE

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5 Claims. (Cl. 101-109)

This invention relates to an improved core structure for high speed printing hammers.

High speed printers in which printing hammers are provided with an armature at one end thereof and are actuated by an electromagnetic field established by a core in close proximity to the armature are known to the art. Since the hammers must be actuated with extremely short actuation times, the energizing pulse supplied to the core must be of short duration and the resultant magnetic field must be high in amplitude. Further, since such printing hammers are brought into sharp impact against drums containing the alpha-numeric symbols imprinted thereon in close proximity, the hammers must be very close together for any practical assembly.

Because of the proximity of adjacent hammers in a module, the interaction of the high amplitude magnetic fields between hammers will often occur with the core constructions known to the art. For example, the high amplitude magnetic field will often create stray fields which cause adjacent hammers to be moved out of their normal reference position, thereby changing the striking force and the actuation time of the adjacent hammer. At the extremely high printing speed now necessary, such interference has become a serious drawback.

It is, therefore, a primary object of this invention to provide an improved magnetic core for high speed printing hammers.

Other objects and advantages of the invention will be described hereinafter in the detailed description of a preferred embodiment of this invention which may best be understood by reference to the accompanying drawings, in which:

FIG. 1 is a perspective view of a core in accordance with the present invention;

FIG. 2 is a section view of the core illustrating flux paths established by a coil therein;

FIG. 3 is a top view of the core shown in FIG. 1; and

FIG. 4 is an elevation view of a printing hammer assembly utilizing the core of FIG. 1.

Referring first to FIGS. 1-3, there is shown a core 10 for a high speed printing hammer module which comprises a base having extensions 12 through which mounting holes 14 are formed for the purpose of mounting the core securely. The core itself is somewhat of an E-shaped configuration having a central core leg 16 disposed between outer legs 18 and 20. The coil 22 is positioned about the central leg 16.

Vertical extensions 24 and 26 are formed on the legs 18 and 20, respectively.

In FIG 4 there is shown a printing hammer 30 pivotally mounted about an axis 32. At one end of the printing hammer assembly, an armature 28 is fixedly mounted, and a printing hammer head 34 is positioned at the other end. The printing hammer head is positioned adjacent a rotating drum 36 carrying the desired alpha-numeric characters 38 on the face thereof.

The drum 36 is rotated at high speed, and as the desired character reaches the printing position, the ham-

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mer 30 is actuated to strike the recording medium, such as a paper strip, positioned between the hammer head 34 and the drum 36 against the desired character. In order to trip the hammer, the coil within core 10 is energized to generate a magnetic field of high amplitude and short duration which field will pass through the armature 28, as indicated by arrow 40 in FIG. 2 to attract the armature 28 to the core 10.

As is best shown in FIG. 2, the magnetic field, indicated by arrow 40, must pass through the armature 28, shown in dotted outline, and preferably is completely contained within the core structure when the coil 22 is energized by a voltage pulse applied across terminals 42 and 44.

With the vertical extensions 24 and 26, containment of the flux is maintained since the vertical extensions will prevent the establishment of stray flux fields which might act upon adjacent hammer modules as, for example, to move the adjacent printing hammer assembly from its rest or reference position. The vertically extending flux shields 24 and 26 need not extend the full length of the core since the flux concentration is highest in the central position.

This invention may be variously modified and embodied within the scope of the subjoined claims.

What is claimed is:

1. A magnetic core for a high speed printing hammer which comprises,
 - a printing hammer pivotally mounted for rotation about an axis,
 - said printing hammer having an armature at one end thereof and a printing hammer head at the other end thereof,
 - an actuating coil assembly positioned adjacent said armature,
 - said coil assembly comprising
 - an E-shaped core formed of a magnetizable material and having a central leg positioned between a first and second outer leg,
 - end surfaces formed on each of said first and second legs and said central leg forming air gaps with said armature of said high speed printing hammer, and
 - an extension formed of core material extending from the outermost edges of each of the outer legs beyond the termination of said central leg to prevent stray fields from adversely affecting an adjacent, similar magnetic core.
2. A core in accordance with claim 1 in which said extension is provided only at a central portion of said outer legs.
3. A core in accordance with claim 1 which includes a coil wound about said central leg.
4. A core in accordance with claim 1 in which said extensions form a channel about a portion of said end surfaces receiving said armature of said printing hammer to be actuated by said core.
5. A high speed printing hammer assembly comprising,
 - a printing hammer pivotally mounted for rotation about an axis,
 - said printing hammer having an armature at one end thereof and a printing hammer head at the other end thereof,
 - an actuating coil assembly positioned adjacent said armature,
 - said coil assembly comprising,
 - a core having an E-shaped structure with a

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central leg positioned between and parallel to a first and second outer leg,
 a coil wound on said central leg including electrical connections therefor,
 said outer legs being provided with extensions to form a channel adapted to receive in overlapping relationship the sides of said armature, and
 said extensions being provided at a central portion of said legs.

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