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A. R. LANG

3,508,182

READILY REPLACEABLE ELECTROMAGNET

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Fig. 1.

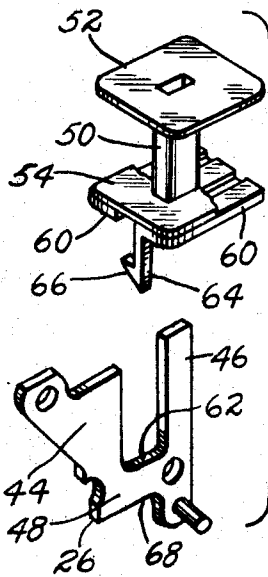
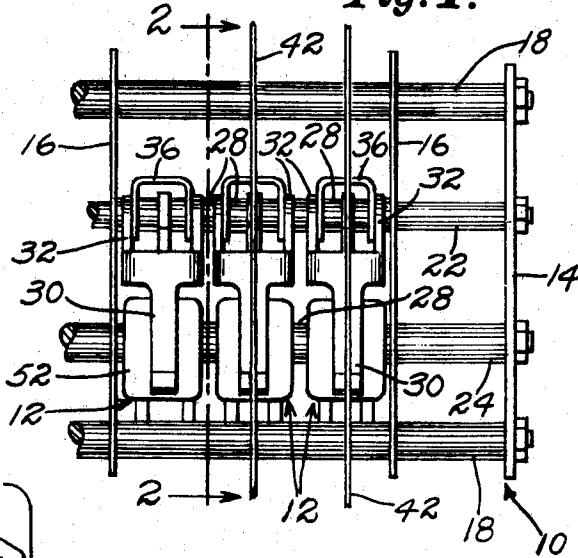


Fig. 3.

Fig. 2.

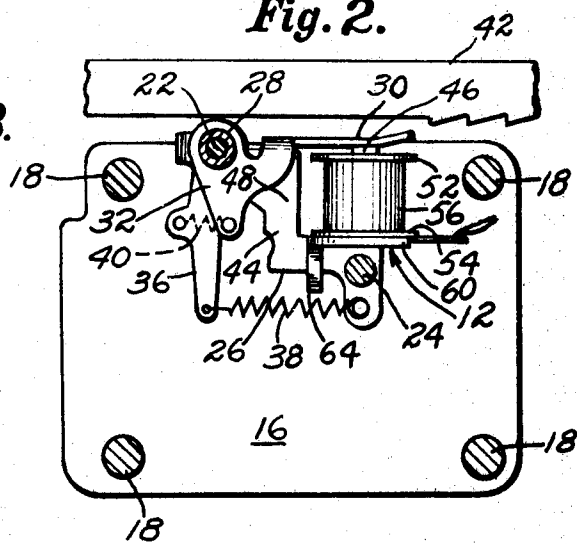
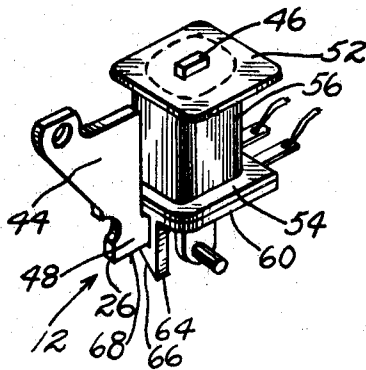


Fig. 4.



INVENTOR.
ANDREW R. LANG

BY
Wallace P. Lantz
ATTORNEY.

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READILY REPLACEABLE ELECTROMAGNET
 Andrew R. Lang, Detroit, Mich., assignor to Burroughs Corporation, Detroit, Mich., a corporation of Michigan
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1 Claim

ABSTRACT OF THE DISCLOSURE

An electromagnetic device in which the core and coil are rigidly held together by a snap-action latch member which is readily releasable to allow easy removal of the coil from the core. The snap-action latch member is carried by a resilient pad which is affixed to one end of the spool on which the coil is wrapped. In the assembled device the resilient pad is interposed between the spool and a web which extends laterally from the magnetic core.

SUMMARY OF THE INVENTION

The invention resides in the provision of an electromagnet in which the core and coil are rigidly held together by a snap-acting latch member which is readily releasable to remove the coil for replacement without need of removing the core, thus avoiding the need for disassembling the supporting structure for the electromagnet.

In the drawings:

FIG. 1 is a fragmentary plan view of a device embodying features of the invention;

FIG. 2 is a vertical sectional view partly in elevation, taken along the line 2—2 of FIG. 1;

FIG. 3 is an exploded perspective view of the electromagnet; and

FIG. 4 is a perspective view of an electromagnet.

Referring to the drawing by characters of reference, a supporting structure 10 for a row of solenoids 12 preferably comprises a pair of end plates 14 and a plurality of intermediate plates 16 rigidly secured together by parallel rods 18. The plates 16 are spaced apart and are spaced from the end plates 14 by suitable tubular spacer members. An additional rod 22 extends through and is supported by the plates 14 and 16 and above and offset from the rod 22 there is a stationary shaft 24 which also extends through and is supported by the plates.

A plurality of supporting members 26 are provided for individually supporting the electromagnets 12 and are in turn mounted on the stationary shaft 22 and the rod 24, as illustrated in FIG. 2. Suitable spacers 28 on the shaft 22 and on the rod 24 hold the supporting members rigidly in spaced apart relationship. An armature or clapper 30 is provided for each of the electromagnets 12 and has downwardly directed side flanges 32 pivotally mounted on the stationary shaft 22, the clappers each overlying the upper ends of their respective electromagnets 12. Pivoted on the shaft 22 there is a lever 36 for each of the clappers 30, the levers being pivoted at their upper ends respectively between the flanges 32 of the clappers 30, as shown in FIG. 1. Depending from the shaft 22, the levers 36 are biased counterclockwise by springs 38 which have one end connected to the lower end of the lever 36 and the other end anchored to the supporting member 26. Another spring 40 connects the lever 36 to one of the side flanges 32 of the clapper 30.

Overlying each of the clappers 30 there is an amount rack 42, the amount racks extending longitudinally of the clappers, as shown. Each of the amount racks 42 is provided on its lower edge with a plurality of notches or teeth

which represent positions in which the racks may be stopped by the clappers 30. As is well known, the positions in which the racks 42 are stopped by the clappers 30 represent amounts which may be printed and also may be stored in a register (not shown). For a more detailed description of the printing and storing of amounts representative of the positions of the racks 42, reference may be had to the patent of Robert S. Bradshaw, No. 2,822,752, issued Feb. 11, 1958.

In order to expedite the assembly of the supporting structure 10 and the electromagnet 12 and to make it possible to replace an electromagnet without need of disassembling the support structure 10, I provide an electromagnet in which the coil is readily separable from the core. To accomplish this, I form the supporting member 26 such that it has a U-shaped portion comprising upstanding legs 44 and 46 joined by a horizontal web 48. The leg 46 serves as the core and a tubular spool 50 is readily slid down onto the core 46, the core being of sufficient length to project slightly above the spool for engagement by the clapper 30. The spool 50 has upper and lower end flanges 52 and 54 respectively to retain the required coil winding 56 therebetween. The spool may be made of any suitable non-magnetic material, such as a suitable plastic material.

Molded flat to the bottom of the spool flange 54 there is a plastic sheet 60 which rests on a seat 62 provided by the upper edge of the web 48, and carried by the spool 50 there is a depending latch member 64. The latch member is formed out of the sheet 60 which is a resilient plastic material so as to provide a resilient latch member which will flex laterally when its cam end portion 66 engages the seat 62 as the electromagnet is pressed downward. When the cam 66 clears the lower edge 68 of the web, the latch member 64 will snap into place under such edge which thus functions as a keeper. To remove the electromagnet 12 from its core 46 it is only necessary to press the upper end of the core downwardly while pressing upwardly against the bottom of the spool.

What is claimed is:

1. In an electromagnetic device, a mounting plate having a magnetic leg to function as a magnetic core, a web joining said leg to the plate proper, a seat on said web laterally of said leg and defining a U-shape with the opposed edges of said leg and the plate proper, a coil wrapped spool structurally independent of and surrounding said leg, a resilient pad affixed to one end of said spool and apertured to receive said leg, said resilient pad resting on said seat, a latch keeper on the edge of said web opposite said seat, and a resilient latch member carried by said resilient pad offset from the aperture and operable to snap into latching relationship with said keeper by and upon pressing said spool against said seat.

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BERNARD A. GILHEANY, Primary Examiner

D. M. MORGAN, Assistant Examiner

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