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H. O. SCOTT ET AL

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MAGNETIC CATCH

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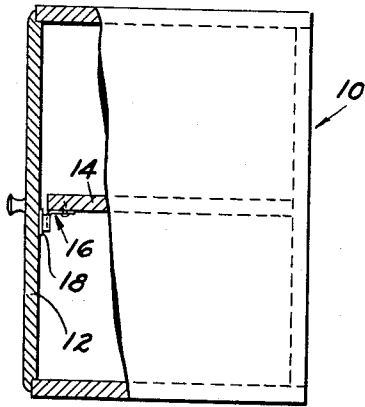


FIG. 1

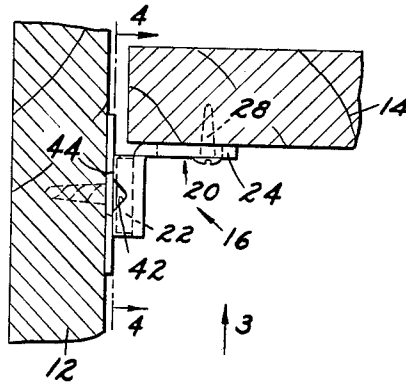


FIG. 2

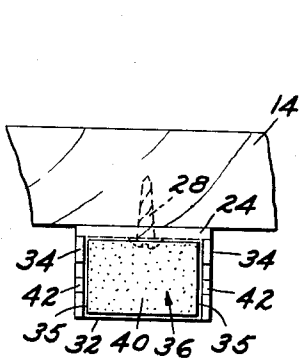


FIG. 4

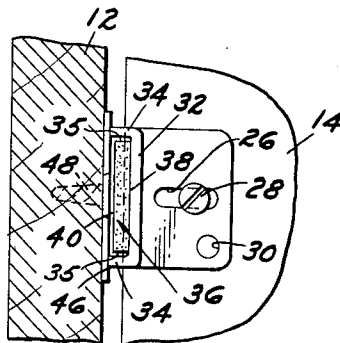


FIG. 3

INVENTORS
HAYES O. SCOTT
SIDNEY A. WHARRAM JR.

BY

Barner, Kisselle, Laughlin & Kirsch

ATTORNEYS

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MAGNETIC CATCH

Hayes O. Scott and Sidney A. Wharram, Jr., Flint, Mich.,
assignors to The Engineered Products Company, Flint,
Mich., a corporation of Michigan

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2 Claims. (Cl. 317-159)

This invention relates to a magnetic catch and more particularly to a magnetic catch for a cabinet door.

It is an object of this invention to provide a magnetic door catch which is of simple construction, which can be manufactured economically and which is designed to exert a relatively great magnetic attraction in relation to the size of the magnet.

Other features and advantages of the invention become apparent from the following description taken in conjunction with the drawings in which:

Fig. 1 is a fragmentary sectional view of a cabinet showing the manner in which the magnetic catch of this invention is arranged to be used thereon.

Fig. 2 is an enlarged sectional view of a portion of the cabinet shown in Fig. 1.

Fig. 3 is a sectional view of the cabinet as viewed along the arrow 3 in Fig. 2.

Fig. 4 is a sectional view taken along the lines 4-4 in Fig. 2.

Referring to the drawings, there is illustrated a cabinet 10 provided with a hinged door 12. Within the cabinet, there is arranged a shelf 14. For holding the door 12 in closed position, there is provided a magnetic catch 16 mounted on the underside of shelf 14 and an armature 18 mounted on the inner face of door 12 to cooperate with catch 16. Catch 16 includes a housing and support member 20 and a magnet 22.

In accordance with the invention, housing 20 is formed from a magnetic material such as steel and is designed to be fabricated as a relatively simple stamping. The housing includes a foot portion 24 provided with an elongated aperture 26 therein for mounting the housing in the desired position as by a screw 28. A second hole 30 may be provided in foot portion 24 through which a nail or the like may be driven for holding the housing in fixed position after it has been once adjusted. The housing 20 also includes a magnet support portion provided with a base 32 and upstanding side walls 34 along opposite sides thereof. Base 32 is bent into a plane perpendicular to the plane of leg portion 24. Within the U-shaped cradle formed by base 32 and the side walls 34, there is arranged a magnet 36. Magnet 36 is a permanent magnet of the type commonly referred to as a ceramic magnet as distinguished from the conventional magnet formed of iron. These magnets are usually formed from metallic oxide crystals bonded together as by sintering under pressure and are distinguished from conventional permanent magnets made of iron in that they are usually formed as thin flat magnets with the flat faces comprising the pole faces of the magnet.

Thus, in the arrangement shown, the faces 38 and 40 form the poles of the magnet. In a cabinet catch arrangement of the type disclosed, ceramic magnets are ideally suited for several reasons. They are relatively small, they provide a relatively great magnetic attraction in comparison to their size and because of their shape, they are adapted to be adhesively secured to the housing of the catch.

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In the arrangement shown, the magnet 36 is secured to the base 32 by means of an adhesive. Any adhesive adapted for this purpose may be used. An adhesive sold by Minnesota Mining & Manufacturing Company under the designation EC-1022 has been employed very successfully. This adhesive is of a dark brown color and comprises essentially an oil resistant elastomer in a suitable solvent. It has excellent adhesion to steel.

Referring more particularly to Fig. 3, it will be observed that the side walls 34 are spaced outwardly out of contact with the ends 35 of magnet 36 and that these side walls project slightly beyond the face 40 of magnet 36. In the arrangement shown, the side walls 34 actually provide the pole pieces for the catch. In order to provide for a concentration of flux and thus a high unit strength, each of the side walls 34 is fashioned with a V-shaped notch 42. The outer edges 44 of side walls 34 are both aligned in the same flat plane parallel to base 32 and are adapted to engage with a flat steel plate 46 forming an armature which is adapted to be mounted on the cupboard door 12 as by a screw 48. In the closed position of door 12, plate 46 overlies face 40 of magnet 36 in slightly spaced relation and engages the free edges of side walls 34.

Thus, it will be seen that I have provided a magnetic catch which is novel in construction and designed so that it can be fabricated very economically. The pole pieces are formed integrally with the housing for the magnet; and thus, the catch simply comprises two members, a housing member with integral pole pieces and a magnet adhered thereto. The pole pieces are formed integrally with the housing by a simple stamping operation and are shaped to provide a maximum concentration of flux for securely attracting and holding the armature 46.

The ceramic magnet 36, preferably an Indox magnet, is of relatively small size and the fact that its opposite flat faces 38 and 40 form the pole pieces makes it ideally suited to a magnetic catch of the described construction. Even though the magnet is relatively small, the provision of the pole pieces 34 insures a concentration of magnetic flux; and these pole pieces attract the armature 46 with considerable force.

We claim:

1. A magnetic catch comprising a one-piece magnetic sheet metal housing having a substantially flat foot portion and a substantially flat rectangular base portion extending from one edge of said foot portion in a plane perpendicular to the plane of the foot portion, said base portion having opposite free edge portions thereof turned upwardly perpendicular to the plane of the base portion in a direction away from said foot portion to form parallel side walls on said base portion, said side walls providing pole pieces terminating at their free edges in flat pole faces lying in a plane spaced from and parallel to the plane of said base portion, each of said pole pieces being provided with a notch therein extending to the free edge thereof, a rectangular ceramic magnet adhesively secured to said base portion between said side walls, said magnet being relatively thin as compared to its dimensions in a plane parallel to said base portion, said magnet having opposite flat faces forming the poles of the magnet, one of said flat faces of the magnet being in coplanar engagement with said base portion and the other lying in a plane spaced slightly inwardly of said pole faces of said pole pieces, said side walls being spaced apart a distance slightly greater than the corresponding dimension of the magnet, there being an air space between each end of the magnet and the adjacent pole piece.

2. A magnetic catch comprising a one-piece magnetic sheet metal housing having a substantially flat foot portion and a substantially flat rectangular base portion extending from one edge of said foot portion in a plane

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perpendicular to the plane of the foot portion, said base portion having opposite free edge portions thereof turned upwardly perpendicular to the plane of the base portion in a direction away from said foot portion to form parallel side walls on said base portion, said side walls providing pole pieces terminating at their free edges in flat pole faces lying in a plane spaced from and parallel to the plane of said base portion, each of said pole pieces being provided with a notch therein extending to the free edge thereof, a rectangular ceramic magnet secured to said base portion between said side walls, said magnet being relatively thin as compared to its dimensions in a plane parallel to said base portion, said magnet having opposite flat faces forming the poles of the magnet, one of said flat faces of the magnet being in coplanar engagement with said base portion and the other lying in a plane spaced slightly inwardly of said pole faces of

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said pole pieces, said side walls being spaced apart a distance slightly greater than the corresponding dimension of the magnet, there being an air space between each end of the magnet and the adjacent pole pieces.

References Cited in the file of this patent

UNITED STATES PATENTS

2,489,154	Relton	Nov. 22, 1949
2,609,221	Schultz	Sept. 2, 1952
2,627,423	Copeman	Feb. 3, 1953
2,694,592	Borchers et al.	Nov. 16, 1954
2,698,917	Van Urk et al.	Jan. 4, 1955

FOREIGN PATENTS

607,148	Great Britain	Aug. 26, 1948
814,855	Germany	Oct. 29, 1951