Sept. 3, 1963 D. HEYER 3,102,749

MAGNETIC DOOR CATCH

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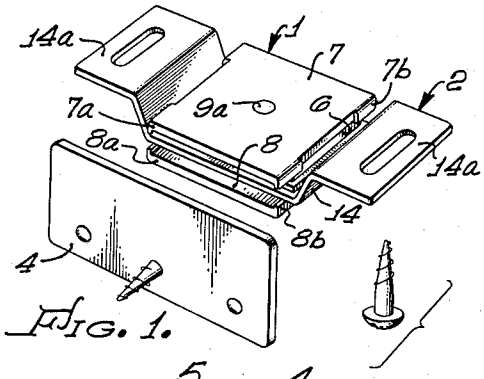


FIG. 1.

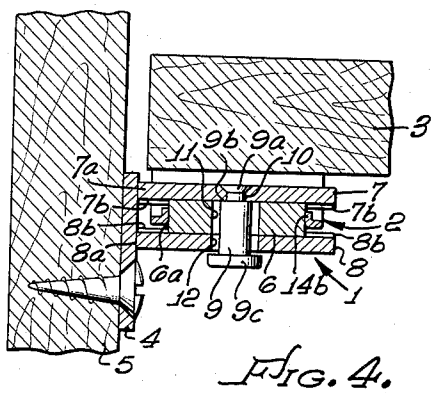


FIG. 4.

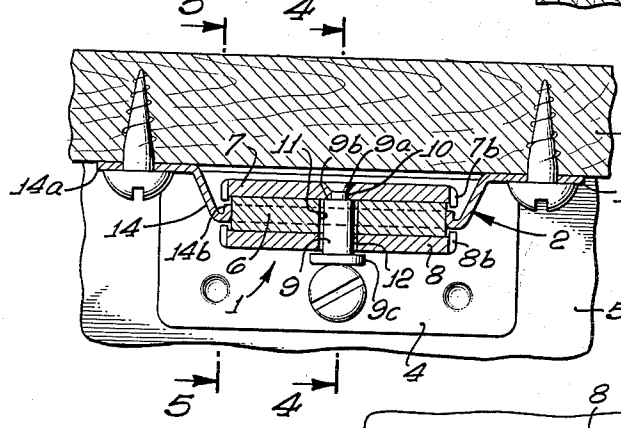


FIG. 3.

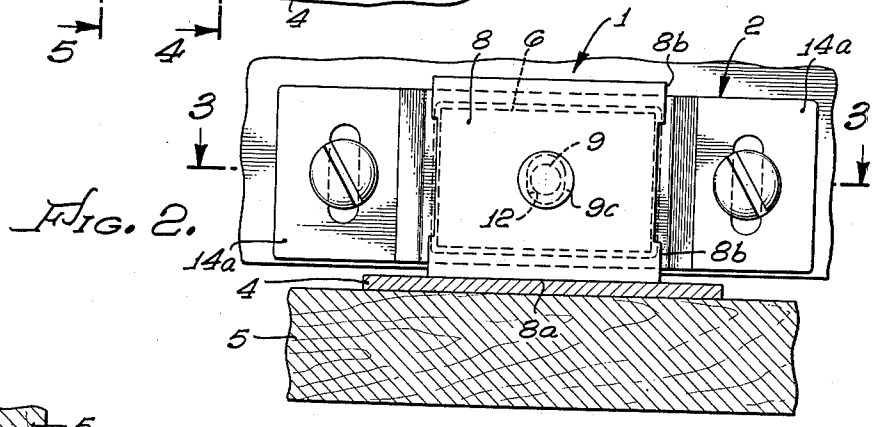


FIG. 2.

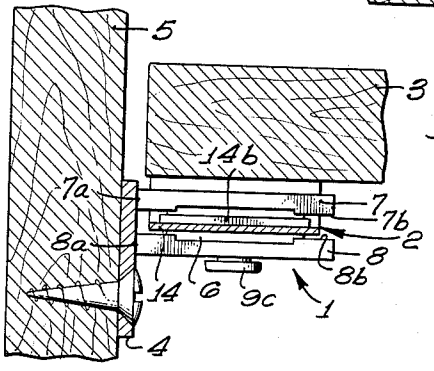


FIG. 5.

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MAGNETIC DOOR CATCH

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This invention relates to a magnetic door catch for cabinet doors and similar closures.

It is an object of this invention to provide an improved magnetic catch wherein a magnet supports pole pieces and simply constructed mounting means for installing the assembly, thereby providing a small, compact and inexpensive unit which takes up comparatively little space and eliminates the use of a costly, complex and bulky case or housing such as heretofore employed in magnetic catch assemblies.

It is another object of this invention to provide a magnetic catch assembly such as described wherein the simply constructed mounting means in the form of a bracket is carried by a small plate-like magnet at margins of the latter so as to be spaced from contact with plate-like pole pieces mounted on faces of the magnet.

It is another object of this invention to provide a magnetic catch assembly such as described wherein the simple form of mounting bracket is frictionally engaged with the plate-like magnet to hold the magnet and bracket permanently assembled with the pole pieces supported on the magnet for limited movement relative to one another as well as relative to the magnet and mounting bracket.

A further object of this invention is to provide a magnetic catch assembly wherein the simple form of mounting bracket is particularly well suited for use in connection with magnets in which the bodies thereof include a plastic material, rubber or similar material, in that the mounting bracket may be economically made of sheet metal or other sheet material having greater inherent strength and durability than the plastic or other moldable material forming the bodies of the magnets.

It is a further object to provide a magnetic catch assembly such as described wherein the plate-like pole pieces mounted flatwise on the plate-like magnet have marginal stop portions which are opposed to and overhang margins of the magnet for engagement therewith to limit movement of the pole pieces with respect to the magnet.

An additional object is to provide a magnetic catch assembly such as next above described wherein the overhanging stop portions of the pole pieces are opposed to and spaced from portions of the mounting bracket in a manner which will prevent the magnet from being moved out of place with respect to the bracket in the event of loosening of the connection between the magnet and the bracket.

Other objects and advantages of the invention will be hereinafter described or will become apparent to those skilled in the art, and the novel features of the invention will be defined in the appended claims.

Referring to the drawings:

FIG. 1 is an exploded perspective view of the magnetic catch assembly and strike plate;

FIG. 2 is a bottom plan view of the magnetic catch assembly applied to a support and showing a strike plate in section applied to a door and magnetically held in contact with the catch assembly;

FIG. 3 is a sectional view taken on the line 3—3 of FIG. 2;

FIG. 4 is a sectional view taken on the line 4—4 of FIG. 3; and

FIG. 5 is a sectional view taken on the line 5—5 of FIG. 3.

As shown in the accompanying drawings, a magnetic door catch assembly embodying the present invention generally comprises a plate-like, preassembled magnet and pole piece unit 1 permanently united in a novel manner with a simple form of mounting means 2 that affords a quick and easy installation of the assembly, for example as here shown, on the underside of a cabinet shelf 3, with the pole pieces disposed to contact and magnetically hold a strike plate 4 of magnetic metal or magnetic metallic material mounted on a cabinet door 5.

The plate-like magnet 6, as here shown, is somewhat elongate and preferably of the type that is molded or otherwise formed of a body of plastic, rubber or similar material including the necessary elements embodied therein to constitute a magnet. However, the magnet obviously could be of a form other than elongate and of the steel type, the preference here expressed as to the plastic type being in favor of the comparatively lower cost thereof and the particular adaptability of the mounting means 2 to plastic and similar magnets.

The pole pieces 7 and 8 are plate-like, elongate and mounted flatwise on opposite faces of the magnet 6 by means of a rivet 9 of non-magnetic material. The rivet 9, magnet 6 and pole pieces 7 and 8 are constructed and arranged to permit the pole pieces to move relative to one another and the magnet in a manner assuring that the outer edges 7*a* and 8*a* of the pole pieces will be self-adjusting and disposed for proper contact with the strike plate 4 in the event the face of the latter is not squarely presented to these edges when the cabinet door 5 is closed.

The rivet 9 is connected at its ends to the pole pieces 7 and 8 and as here shown, extends through openings 10, 11 and 12 in the pole piece 7, the magnet 6 and pole piece 8, respectively. One end 9*a* of the rivet 9 is riveted immovably to the pole piece 7 with a shoulder 9*b* on the rivet abutting the inner surface of this pole piece, thereby making the rivet and pole piece 7 movable only as a unit. The head 9*c* of the rivet is slightly spaced from the outer face of the pole piece 8, thereby making the rivet 9 and pole piece 7 capable of limited bodily movement axially of the rivet relative to the magnet and pole piece 8, the latter being also capable of limited movement axially of the rivet and relative to the magnet.

In order that the rivet may move with the pole piece 7 relative to the magnet in a direction transversely of the magnet, also angularly about the axis of the rivet, the opening 11 in the magnet is of greater diameter than the rivet and is preferably somewhat elongated in a direction transversely of the magnet to afford greater movement in that direction.

The opening 12 in the pole piece 8 is formed similarly to the opening 11 to permit relative movement between the rivet and pole piece 8 as well as angular movement of the pole piece 8 about the axis of the rivet. However, it should be noted that the differences in diameters of the openings 11 and 12 and the rivet 9 are such that the rivet is limited as to movement to the extent that at all times the edges 7*a* and 8*a* of the pole pieces 7 and 8 will be disposed in outwardly spaced relation to the adjacent edge 6*a* of the magnet.

The simply constructed mounting means 2 which is carried by the magnet 6 has portions of less thickness than the magnet, engaged with margins of the magnet in a particular manner to assure that the mounting means and the magnet are immovably fixed to one another, with the portions of the mounting means that engage the magnet disposed so as not to interfere with movement of the rivet 9 or the pole pieces 7 and 8. As here shown, the mounting means 2 is in the form of a bracket body 14 preferably, but not necessarily, made of non-magnetic sheet metal or non-magnetic metallic material or other suitable sheet material having requisite strength to be capable of being securely fric-

tionally engaged with the magnet and to be provided with suitable slotted mounting ears 14*a* so offset from the bracket body 14 as to space the magnet 6 and pole pieces 7 and 8 from the shelf 5 or other support on which the assembly is mounted.

It is to be understood that the bracket body 14 may be of any suitable form provided it constitutes in effect extensions of margins of the magnet and will be securely connected with the magnet in supported relation thereto. As here shown, the bracket body 14 is in the form of a rectangular frame and has a continuous reinforcing flange 14*b* on the margin thereof disposed for frictionally engaging margins of the magnet without extending close to the opposed faces of the magnet and the pole pieces thereon, the flange providing requisite strength permitting use of comparatively light and thin sheet material. With the mounting means 2 formed in this manner, it is apparent that the magnet and the mounting means may be permanently assembled at the factory at a low cost and with the bracket of a very simple formation which may be inexpensively produced.

Provision is made for limiting the angular movement of the pole pieces 7 and 8 about the axis of the rivet 9. As here shown, this is accomplished by providing these pole pieces with inwardly bent stop portions 7*b* and 8*b*, that overhang margins of the magnet 6 in position to contact such margins only after the pole pieces have been permitted the desired limited angular movement about the axis of the rivet 9 and relative to the magnet. These overhanging stop portions 7*b* and 8*b* also constitute means for preventing the magnet and pole piece unit 1 from moving out of an operative position relative to the bracket body 14 inasmuch as they are opposed to the flange 14*b* and will contact this flange should the magnet and pole piece unit 1 work loose in the bracket body.

While specific structural details have been shown and described, it should be understood that changes and alterations may be resorted to without departing from the spirit of the invention as defined in the appended claims.

I claim:

1. A magnetic door catch assembly comprising: a plate-like magnet; pole pieces on said magnet; fastening means retaining said pole pieces and magnet assembled as a unit with said pole pieces disposed for contact by a door-carried strike plate to magnetically hold the latter; and a bracket constituting in entirety opposed magnet gripping portions and mounting ears carried by such portions; said magnet gripping portions being engaged with opposed edges of said magnet so that the magnet and said magnet gripping portions are immovably in contact with one another; said mounting ears being extended outwardly from opposite edges of said magnet for connection with a support for the assembly.

2. A magnetic door catch assembly comprising: a plate-like magnet; pole pieces on opposite faces of said magnet; fastening means retaining said pole pieces and magnet assembled as a unit with said pole pieces disposed for contact by a door-carried strike plate to magnetically hold the latter; and a bracket constituting in entirety pairs of opposed magnet engaging members and ears carried by one pair of said engaging members; said pairs of magnet engaging members being frictionally engaged with margins of said magnet in such a manner that the magnet and said magnet engaging members are immovably joined one to the other and said magnet engaging members are spaced from contact with said pole pieces; portions of said pole pieces extending outwardly beyond portions of at least one of said magnet engaging members; said mounting ears being joined to said pair of magnet engaging members and offset therefrom for connection of the support of the assembly.

3. A magnetic door catch assembly comprising: a plate-like magnet; pole pieces supported on faces of said magnet; fastening means retaining said pole pieces and magnet assembled as a unit with said pole pieces and magnet relatively bodily movable and said pole pieces disposed for contact by a door-carried strike plate to magnetically hold the latter; and mounting means carried by said magnet for installing the unit on a support; said mounting means having mounting portions adapted to be fastened to said support and other portions having a flanged edge of less thickness than the magnet disposed to contact edges only of said magnet for holding said magnet against movement relative to said mounting means; said pole pieces having portions extended beyond an edge of said magnet and past said flanged edge.

4. A magnetic door catch assembly comprising: a plate-like magnet; a pole piece on each of opposed faces of the magnet; fastening means joining said magnet and pole pieces for relative movement; mounting means for the assembly carried by the magnet and including magnet-engaging portions projecting from opposite margins of the magnet and provided with mounting portions offset from the magnet and adapted to be secured to a support; and stop portions on margins of said pole pieces disposed in opposed and spaced relation to said margins of said magnet so as to be engageable with said margins of said magnet to limit movement of said pole pieces relative to said magnet.

5. A magnetic door catch assembly comprising: a plate-like magnet; a pole piece on each of opposed faces of the magnet; fastening means joining said magnet and pole pieces for relative movement; mounting means for the assembly carried by the magnet and including magnet-engaging portions projecting from opposite margins of the magnet and provided with mounting portions offset from the magnet and adapted to be secured to a support; and stop portions on margins of said pole pieces disposed in opposite and spaced relation to said margins of said magnet to limit movement of said pole pieces relative to said magnet; said stop portions being opposed to and spaced from said magnet-engaging portions of said mounting means.

6. A magnetic door catch assembly comprising: a plate-like magnet; a pole piece supported on each of opposed faces of said magnet; fastening means retaining said pole pieces and magnet assembled as a unit with said pole pieces disposed for contact by a door-carried strike plate to magnetically hold the latter; and mounting means carried by said magnet including a body in the form of an open frame having side and end members surrounding and contacting the edges of said magnet in spaced relation to said opposed faces and said pole pieces; said end members having mounting portions adapted to be secured to a support.

7. A magnetic door catch assembly comprising: a plate-like magnet; a pole piece supported on each of opposed faces of said magnet; fastening means retaining said pole pieces and magnet assembled as a unit with said pole pieces disposed for contact by a door-carried strike plate to magnetically hold the latter; and mounting means carried by said magnet including a frame having a marginal continuous flange engaging edges of said magnet and disposed in spaced relation to said faces of said magnet and said pole pieces; said pole pieces extending outwardly beyond edges of said magnet and past portions of said marginal continuous flange at said edges of said magnet.

8. A magnetic door catch comprising: a plate-like magnet having spaced pole portions projecting from one marginal edge; and means for mounting said magnet on a support with said pole portions disposed for engagement by a magnetic strike plate; said mounting means comprising a bracket having mounting portions and an intermediate magnet engaging portion offset from said mounting portions and engaged with edges of said magnet in a position such that no part of said bracket is in contact with either of said pole portions; said intermediate magnet engaging portion engaging the entire marginal edge

of said magnet and extending between said pole portions.

9. A magnetic catch comprising: a bracket having spaced mounting portions attachable to a support; magnet supporting means intermediate said mounting portions including a frame having an opening; said frame having a flanged edge; a magnet disposed in said opening and engaged by said flanged edge about the edges of said magnet; and said magnet having pole portions extending from edges of the magnet on opposite sides and clear of

contact with and beyond said flanged edge for engagement with a magnetic strike plate.

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