Aug. 23, 1960 R. A. STONE 2,950,140

MAGNETIC DOOR LATCH

Filed Nov. 28, 1958

Fig. 1.

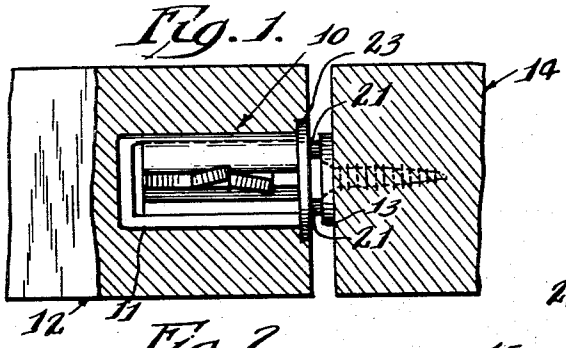


Fig. 2.

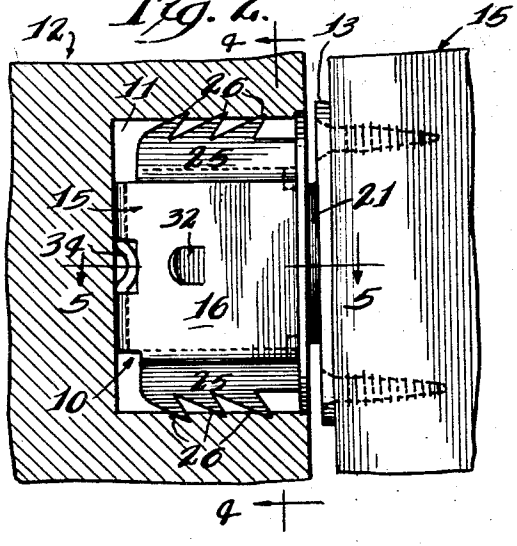


Fig. 3

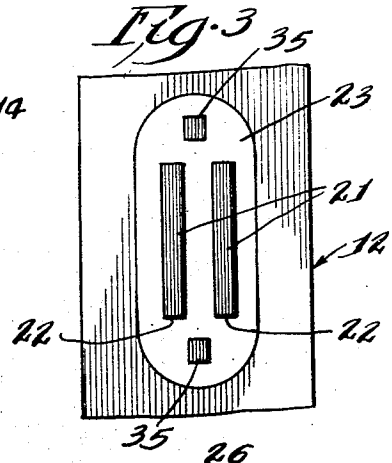
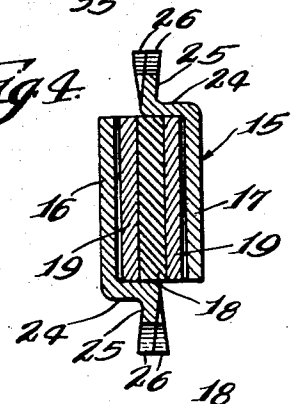


Fig. 4.



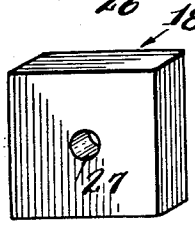


Fig. 6.

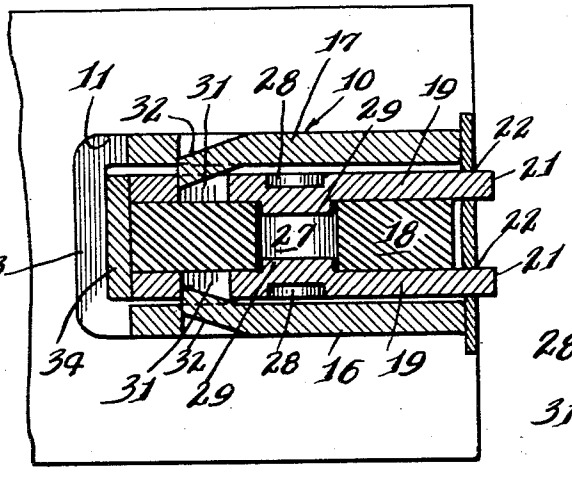


Fig. 5.

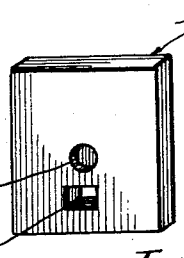


Fig. 7.

Inventor.
Roy A. Stone.
By. Wilson & Geppert
Attorneys.

United States Patent Office 2,950,140
Patented Aug. 23, 1960

2,950,140

MAGNETIC DOOR LATCH

Roy A. Stone, Rockford, Ill., assignor to National Lock Co., Rockford, Ill., a corporation of Delaware

Filed Nov. 28, 1958, Ser. No. 776,844

3 Claims. (Cl. 292—251.5)

The present invention relates to a magnetic door latch assembly and especially to a novel magnetic latch unit for retaining a door or other closure of a cabinet or enclosure in closed position.

Among the objects of the present invention is the provision of a novel magnetic catch unit in which the housing for the unit is so constructed and arranged as to require but a relatively narrow bore for receiving and mounting the unit in a door frame, cabinet or other support member.

In the present novel embodiment, the novel catch assembly includes a substantially rectangular casing for housing the pole pieces and magnet, the casing in one dimension being substantially reduced in width or thickness and thus capable of being assembled and retained in a narrow bore in a supporting member without weakening the structural characteristics of such member.

Another important advantage of the present invention is the provision of a novel housing for the magnetic catch having oppositely projecting end flanges each provided with spaced teeth or barbs for anchoring the housing and its contained component parts in a preformed opening in a supporting member.

The housing for the catch assembly is further provided with novel means for retaining the pole pieces and a magnet in proper operative position and a face plate or cover having spaced elongated slots through which project the ends of the pole pieces for magnetic coupling to a strike mounted on the door.

Further objects are to provide a construction of maximum simplicity, efficiency, economy and ease of assembly and operation, and such further objects, advantages and capabilities as will later more fully appear and are inherently possessed thereby.

In the drawing:

Figure 1 is a top plan view of the novel magnetic door latch with the magnetic catch assembly mounted in a supporting part of a door frame or cabinet and the door retained in closed position, the door and supporting part of the frame being broken away or sectioned to show the manner of mounting the catch assembly in the frame and the strike plate on the door.

Fig. 2 is a view in side elevation of the magnetic catch assembly and strike of Fig. 1, and showing the manner in which the catch assembly is anchored in a bore of the frame and the strike plate on the door.

Fig. 3 is a view in front elevation of the novel magnetic catch assembly mounted in operative position.

Fig. 4 is a view in vertical cross section through the magnetic catch assembly, the view being taken on approximately the line 4—4 of Fig. 2 and viewed in the direction of the arrows.

Fig. 5 is an enlarged view in horizontal cross section through the magnetic catch assembly, the view being taken on approximately the line 5—5 of Fig. 2 and viewed in the direction of the arrows.

Fig. 6 is a view in perspective of the permanent magnet.

Fig. 7 is a view in perspective of one of the pole pieces.

Referring more particularly to the drawing and to the novel embodiment therein shown as illustrative of the present invention, the magnetic catch assembly **10** is shown mounted in a bore **11** of a supporting member **12** of a door frame, cabinet, shelf or mullion for magnetic coupling to a strike plate **13** mounted on a door or other closure **14** for retaining the latter closed.

The novel magnetic catch assembly **10** comprises a pre-assembled unit including a metal housing **15** of substantially U-shape with its sides **16** and **17** encompassing and housing a centrally arranged permanent magnet **18** and a pole piece **19** at each side of said magnet, with the forward end **21** of these pole pieces projecting through spaced elongated slots **22** in a housing cover or face plate **23**, each slot being aligned with and conforming to the end of a pole piece.

Each of the sides **16** and **17** is shown provided at one end with an inturned extension **24** projecting to a position over and beyond an adjacent pole piece **19** and over the adjacent edge of the magnet **18** where it is again bent outwardly at an angle of approximately 90° to provide a projecting flange **25** having its outer edge serrated to provide sharp teeth or barbs **26** for anchoring and retaining the housing **15** in the wood or composition of the support about the bore **11** when the assembly is forced or driven into the bore. The construction and contour of the housing and flanged ends is clearly disclosed in Fig. 4.

To facilitate assembly of the magnet **18** and pole pieces **19** in the housing **15**, the magnet is provided with a central opening **27** and the pole pieces **19** are each indented at **28** to provide an embossment **29** on the opposite side with each embossment conformably received in a side of the opening **27** of the magnet (Fig. 5). Each pole piece is further provided with a slot **31** adapted to receive a prong or tongue **32** indented from each of the sides **16** and **17** of the housing. The rear or base **33** of the housing **15** (Fig. 2) is slotted and indented to provide an inwardly projecting stop or abutment **34** against which the rear edge of the magnet **18** and the pole pieces **19** abut.

When the magnet **18** and the pole pieces **19** are assembled in the substantially rectangular opening defined by the spaced sides **16** and **17**, the oppositely directed extensions **24** of these sides and the abutment **34** in the rear **33** of the housing, the face plate **23** is applied and riveted to a projection **35** on the forward end of each serrated flange **25** extending through an aligned opening adjacent each end of the face plate (Fig. 3). In this assembled position (Fig. 5), the ends **21** of the pole pieces **19** project through the slots **22** of the face plate **23**, the embossment **29** on each pole piece **19** is disposed in one side of the opening **27** in the magnet and the prong **32** on each side **16** and **17** of the housing is indented into its aligned slot **31** in the adjacent pole piece **19**. The component parts of the magnetic catch unit **10** are thus retained in assembled relation and the unit is ready to be mounted in a supporting member.

The assembled magnetic catch unit **10** is now ready to be inserted and anchored in a rectangular bore **11** in a supporting member **12** of a door or cabinet frame, shelf, mullion, etc. When inserted as shown in Fig. 2, the barbs or teeth **26** on the ribs **25** embed in the wood or material defining the bore and the housing of the unit is retained in anchored position.

The housing **15** being of substantially rectangular form and of substantially less width than height or length, fits conformably into a narrow bore and thus permits mounting in a relatively narrow supporting member **12** without danger of cracking or damaging the latter as

may occur when the shape of the housing requires a relatively large bore or of a size approaching the thickness of the support. Furthermore, where the bore must be large relative to the thickness of the support, care must be taken that the opening bored is perfectly straight so as not to approach too closely to the edges of the support.

The novel magnetic catch assembly of the present invention may be mounted with its greater dimension disposed in a substantially vertical or horizontal plane depending upon the support in which it is mounted.

The magnet is of the permanent, wafer type and preferably composed of a ceramic material. One such ceramic material for producing a permanent magnet suitable for use in the present assembly is produced by the Indiana Steel Products Company of Valparaiso, Indiana, and has as its basic ingredients barium carbonate and iron oxide and a chemical composition of $BaFe_{12}O_{19}$.

Having thus disclosed the invention, I claim:

1. In a magnetic door latch, a magnetic catch assembly adapted to be mounted in a bore of a support for magnetically coupling the catch to a strike plate, said assembly comprising a housing of substantially U-shape with each of its opposite spaced sides having at one end an inturned part provided with an outwardly projecting serrated flange with the serrations to be embedded in the material of the support when said assembly is mounted in the bore, said housing having a magnet and a pole piece at each side of said magnet, means on said magnet, pole pieces and housing for interengaging and retaining the magnet and pole pieces assembled between the sides of the housing, an inner abutment at the rear of said housing for locating the inner ends of said magnet and pole pieces, and a face plate affixed to and providing a closure for the open end of the housing and locating the assembly within the bore, said face plate having spaced slots through which the outer ends of the pole pieces project for magnetically coupling the latter to the strike plate.

2. A magnetic catch unit adapted to be mounted in a bore of a support for magnetically coupling the catch to a strike plate on a door for retaining the door closed, said unit comprising a casing of substantially rectangular cross section having an inturned extension at its opposite ends, a pair of spaced pole pieces and a magnet

therebetween all housed within the casing but with one end of the pole pieces projecting beyond the adjacent end of the magnet, a cover for said casing locating the unit within the bore and having spaced slots through which extend the projected ends of the pole pieces for magnetic coupling to the strike plate when the door is closed, a rib on each inturned extension and projecting from each of the opposite ends of the casing, and teeth on and projecting from said ribs for anchoring the casing and its contained magnet and pole pieces in the bore.

3. A magnetic catch unit adapted to be mounted in a rectangular bore of a support for magnetically coupling the catch to a strike plate on a door for retaining the door closed, said unit comprising a casing of substantially rectangular cross section conformably received in said bore, said casing having spaced sides and an inner base, an end of each of said sides being extended inwardly and then outwardly to provide an outwardly projecting rib, serrated edges on each rib providing teeth for anchoring said casing in the bore of the support, a magnet mounted in said casing having a central opening, a pole piece at each side of said magnet having an inner projection engaging the central opening in said magnet, a slot in each pole piece, indentations on the sides of the casing and engaging the slots in the pole pieces for anchoring the magnet and pole pieces in the casing, the inner base of the casing having an abutment for locating the inner end of said magnet and pole pieces, the outer end of each pole piece projecting beyond the adjacent end of the magnet, a cover for said casing having spaced slots through which extend the projected ends of the pole pieces for magnetic coupling to the strike plate when the door is closed, and means for rigidly attaching the cover to the casing to provide a self-contained unit assembly for placement in the bore.

References Cited in the file of this patent

UNITED STATES PATENTS

1,075,028	Frost	Oct. 7, 1913
2,203,580	Ronning	June 4, 1940
2,770,759	Ahlgren	Nov. 13, 1956
2,792,249	Saxton	May 14, 1957
2,877,040	Curtiss et al.	Mar. 10, 1959