

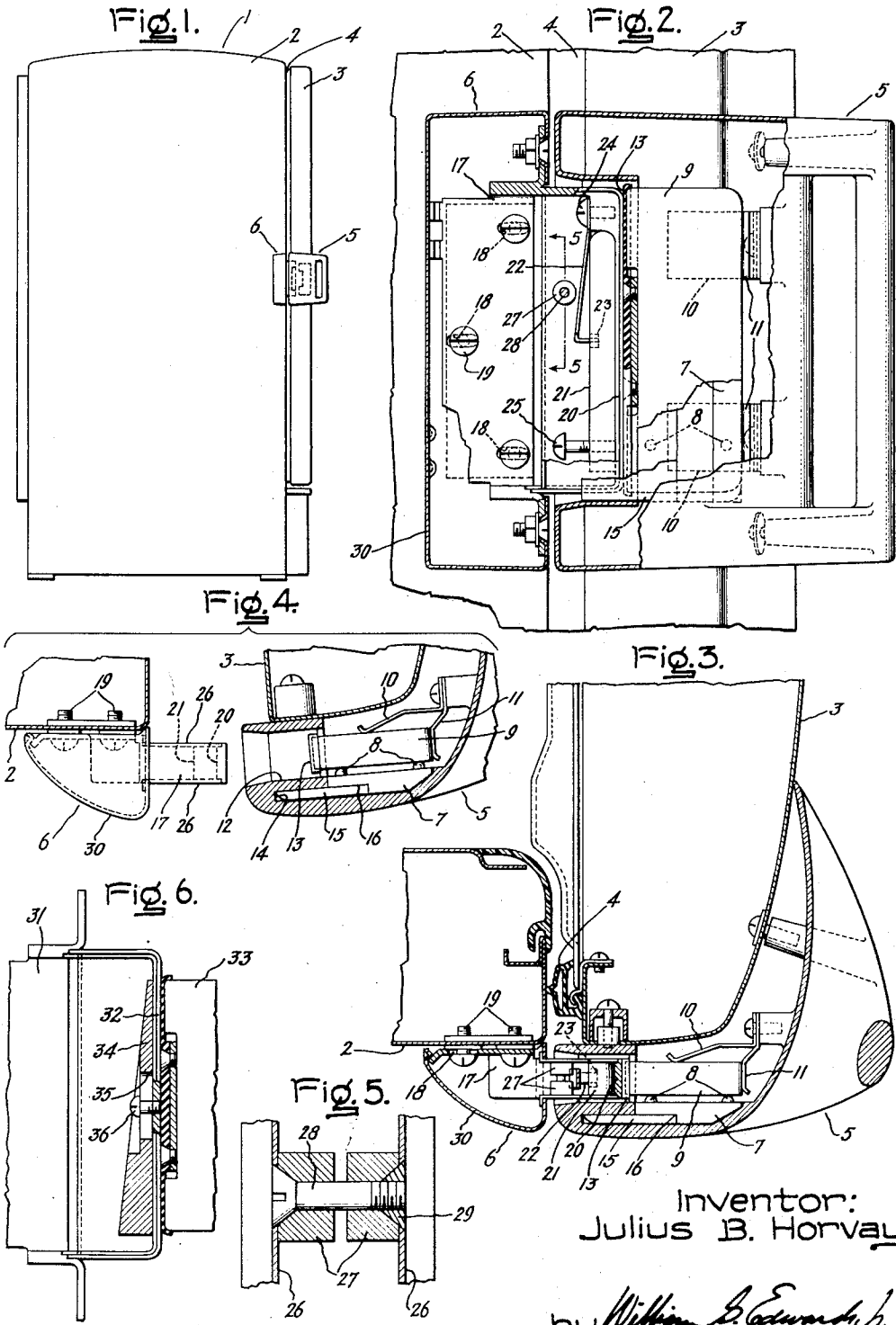
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MAGNETIC LATCH

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## MAGNETIC LATCH

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My invention relates to magnetic latches and pertains more particularly to a magnetic latch for use on refrigerator cabinets and the like.

It is one object of my invention to provide an improved magnetic latch employable on a refrigerator cabinet and adjustable to hold the door closed and compress a sealing gasket to a prescribed degree for maintaining a satisfactory seal.

It is another object of my invention to provide in a magnetic latch an improved arrangement for adjusting the amount of pull required for the release thereof.

It is a further object of my invention to provide an improved method for mounting and adjusting a magnetic latch on a refrigerator cabinet.

Still another object of my invention is to provide a magnetic latch including an improved shielding arrangement for protecting watches and the like from the effects of stray magnetic flux.

Further objects and advantages of my invention will become apparent as the following description proceeds and the features of novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

For a better understanding of my invention, reference may be had to the accompanying drawings in which Fig. 1 is a side elevation illustrating an embodiment of my invention applied to a refrigerator cabinet; Fig. 2 is a fragmentary side elevation, partially broken away, and illustrating the relative disposition of elements comprising a first embodiment of my invention; Fig. 3 is a fragmentary sectional plan view wherein certain elements of the first embodiment are shown in closed position; Fig. 4 is a fragmentary sectional view wherein certain elements are shown in open position; Fig. 5 is a fragmentary sectional view taken along the lines 5—5 in Fig. 2; and Fig. 6 is a fragmentary sectional elevation view illustrating a second embodiment of my invention.

Referring to Fig. 1, there is shown a refrigerator 1, the construction of which includes a cabinet 2, a closure member or door 3 and a compressible sealing member such as a gasket 4 between said door and cabinet. Suitably affixed to the door is a member which shall be herein generally referred to as a handle 5 and which is formed of a non-magnetic material. Mounted on the cabinet for cooperation with the handle is a member which shall be generally referred to as a strike 6. Now by reference to Figs. 2 and 3, it will be seen that carried in a recess provided in the handle 5

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is a non-magnetic bar 7 formed with four ball-like protrusions 8 against which rests the side of a permanent horseshoe magnet 9 arranged with its poles directed toward the cabinet 2. Provided for holding said magnet in this position is a pair of resilient and non-magnetic side retainers 10 and a pair of similar front retainers 11, all of which are suitably anchored to the handle 5.

Also formed in the handle and best seen in Fig. 4 is a socket 12 for receiving the strike 6 and suitably retained in the handle between the socket 12 and the magnet 9 is a non-magnetic pole protecting cap 13.

Carried in an elongated recess 14 also formed in the handle is a bar 15 composed of a magnetic material. The bar 15 is so disposed as to be laterally adjacent the magnet 9 and in a flux shunting relation to the poles thereof for minimizing stray magnetic flux which might otherwise tend to magnetize watches or other delicate instruments inadvertently brought in the region of the latch. This bar is retained in the mentioned recess by engagement with a step 16 cut in the above-mentioned non-magnetic bar 7.

As also seen in Figs. 2, 3, and 4, the strike 6 includes a magnetic bracket 17 having three horizontal slots 18 which permit it, when mounted to the side of the cabinet by screws 19, to be adjusted relative to the magnet 9. The bracket 17 is also formed with a forward extension which includes a magnet keeper or first armature 20 adapted to be received in the socket 12 in the handle 5. Provided for being fully engageable with the first armature on the side opposite the magnet is a complementary magnet keeper or second armature 21. This second armature is biased for full engagement with the first armature by a leaf spring 22, one end of which is retained in a notch 23 in said second armature and the other end of which is secured to the bracket, as indicated at 24. Carried in and passing through the free end of the second armature is an adjusting screw 25 by which the gap between that end and the first armature may be varied. By this arrangement, the flux path presented to the magnet and therefore the attraction of the strike as a whole to the magnet may also be varied.

Provided for enclosing the sides of the strike bracket 17 is a pair of non-magnetic side plates 26 formed with inwardly extending and opposed bosses 27 each of which includes a bore counter-sunk on the outer side in the manner seen in Fig. 5. With this arrangement, a flat head screw 28 and a flush nut 29 are utilized for retaining the side plates 26 in position.

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Free of the cabinet and removably secured to the strike bracket 17 is a non-magnetic strike cover 30. This cover, in addition to enhancing the appearance of the latch assists in fully enclosing the strike mechanism.

In hanging the door, it is held closed and the gasket 4 is compressed until a satisfactory seal is attained. Then with the second armature in the position seen in Fig. 2 and the screws 19 loose the bracket 17 is moved forward or adjusted so that the first armature engages the magnet cap 13. Thereafter the screws are tightened and in this manner, the first armature 20 and second armature 21 are positioned to provide a flux path effective for holding the door closed and in a position giving the necessary gasket compression for a satisfactory seal.

Subsequently, the adjustment screw 25 may be turned to move one end of the second armature 21 away from the first armature 20 and thereby affect the flux path and vary the door opening pull required on the handle without substantially affecting the gasket compression and seal.

The magnet 9 is located relatively deep in the handle construction. Also, the magnetic bar 15 serves to shunt a substantial amount of the flux between the magnet poles when the door is open. In this manner the danger of magnetizing watches and like mechanisms is minimized.

When the door is closed, however, the non-magnetic gap between the permanent horseshoe magnet 9 and the first armature 20 is considerably smaller than the non-magnetic gap between the permanent horseshoe magnet 9 and the magnetic bar 15. Thus, most of the flux from the magnetic poles of the horseshoe magnet 9 will pass through the armature 20 and not the magnetic bar 15. Consequently, magnetic bar 15 does not substantially reduce the magnetic pull or door holding force when the door is in the closed position.

My second embodiment, as seen in Fig. 6, includes a magnetic strike bracket 31 having a first armature 32 adapted for attraction to a magnet 33, and is identical to the first described embodiment except for the provision of modified means for adjusting the door opening pull. In this form a complementary wedge-shaped magnet keeper or second armature 34 is provided to associate with the first armature 32. By means of a slot 35 in the second armature 34 and a locking screw 36 threaded in the first armature 32, the second armature is slidingly adjustable along the first armature. By this arrangement, the cross section of the magnetic material providing a flux path between the poles of the magnet 33 may be varied to adjust the door opening pull required.

While I have shown specific embodiments of my invention, I do not desire my invention to be limited to the particular forms shown and described and I intend by the appended claims to cover all modifications within the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A magnetic latch adapted for use in constructions including a cabinet member and a closure member therefor comprising; a magnet carried fixedly by one of said members, and a pair of complementary magnet keepers mounted on the other of said members and adjustable relative to said magnet, one of said keepers being adjustable relative to the other.

2. A magnetic latch adapted for use in con-

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structions including a cabinet, a door therefor, and a compressible gasket between said cabinet and door comprising; a magnet mounted on said door, and a pair of complementary magnet keepers mounted on said cabinet and adjustable relative to said magnet for holding said door closed and compressing said gasket to a prescribed degree, one of said keepers being adjustable relative to the other for varying the door holding force and thereby adjusting the door opening pull required.

3. A magnetic latch adapted for use in constructions including a cabinet, a door therefor, and a compressible gasket between said cabinet and door comprising; a magnet fixedly mounted on said door, a magnetic bracket mounted on said cabinet and formed to include a first armature, and a second armature carried by said bracket in complementary relation to said first armature, said bracket being adjustable relative to said magnet whereby said first and second armatures are positioned for holding the door closed and compressing said gasket to a prescribed degree, said second armature being adjustable relative to said first armature for varying the door holding force and thereby adjusting the door opening pull required.

4. A magnetic latch adapted for use in constructions including a cabinet, a door therefor, and a compressible gasket between said cabinet and door comprising; a magnet fixedly mounted on said door, a magnetic bracket mounted on said cabinet and formed to include a first armature, a second armature carried by said bracket in complementary relation to said first armature, said bracket being adjustable relative to said magnet whereby said first and second armatures are positioned for holding the door closed and compressing said gasket to a prescribed degree, and a magnetic bar carried by said door adjacent said magnet for shunting the flux thereof when the door is open.

5. A magnetic latch for use in constructions including a cabinet, a door, and a gasket between said cabinet and door comprising; a magnet fixedly mounted on said door, a magnetic strike bracket mounted on said door and formed to include a first armature, a second armature carried by said bracket in complementary relation to said first armature, said bracket being adjustable relative to said magnet whereby said first and second armatures are positioned for holding the door closed and compressing said gasket to a prescribed degree, said second armature being adjustable for pivoting said second armature about one end thereof for varying the door holding force and thereby adjusting the door opening pull required.

6. A magnetic latch for constructions including a cabinet, a door, and a gasket between said cabinet and door comprising; a handle supported by said door and including a socket, a permanent magnet fixedly housed in said handle behind said socket, a strike bracket mounted on said door and formed to include a first armature, and a second armature carried by said bracket, said first and second armatures being in complementary relation and receivable in said handle socket when said door is closed, said bracket being adjustable relative to said magnet for positioning said first and second armatures to provide a flux path effective for holding the door closed and compressing the gasket a desired amount, said second armature being biased toward said first armature and carrying adjusting means

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whereby said second armature may be pivoted about one end thereof and thereby variably positioned relative to said first armature to affect the flux path between the magnet poles for adjusting the door opening pull required on said handle.

7. A magnetic latch for constructions including a cabinet, a door, and a gasket between said cabinet and door comprising; a handle supported by said door and including a socket, a permanent magnet fixedly housed in said handle behind said socket, a strike bracket mounted on said cabinet and formed to include a first armature, a second armature carried by said bracket, said first and second armatures being in complementary relation and receivable in said handle socket when said door is closed, said bracket being adjustable relative to said magnet for positioning said first and second armatures to provide a flux path effective for holding the door closed and compressing the gasket a desired amount, said second armature being biased toward said first armature and carrying adjusting means whereby said second armature may be pivoted about one end thereof and thereby variably positioned relative to said first armature to affect the flux path between the magnet poles for adjusting the door opening pull required on said handle, and a magnetic bar carried in said handle adjacent said magnet for shunting the flux thereof when said door is open.

8. A magnetic latch for constructions including a cabinet, a door, and a gasket between said cabinet and door comprising; a door handle, a magnet fixedly mounted in said door handle, a strike bracket mounted on said cabinet and formed to include a first armature, and a second armature carried by said bracket, said first and second armatures being in complementary relation, said bracket being slidably adjustable relative to said magnet for positioning said first and second armatures to provide a flux path effective for holding the door closed and compressing the gasket a desired amount, said second armature being wedge-shaped and slidably adjustable along said first armature for varying the cross section of the flux path between the magnet poles to adjust the door opening pull required on said handle.

9. A magnetic latch for constructions including a cabinet, a door and a gasket between said cabinet and door comprising; a handle supported by said door and including a socket, a permanent magnet fixedly housed in said handle behind

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said socket, a magnetic strike bracket mounted on said cabinet and formed to include a first armature, and a second armature carried by said bracket, said first and second armatures being in complementary relation and receivable in said handle socket when said door is closed, said bracket being slidably adjustable relative to said magnet for positioning said first and second armatures to provide a flux path effective for holding the door closed and compressing the gasket a desired amount, said second armature being wedge-shaped and fastened to said bracket by a screw and slot connection whereby said second armature is variably positionable along said first armature for affecting the flux path between the magnet poles for adjusting the door opening pull required on said handle.

10. A magnetic latch for constructions including a cabinet, a door, and a gasket between said cabinet and door comprising; a handle supported by said door and including a socket, a permanent magnet fixedly housed in said handle behind said socket, a magnetic strike bracket mounted on said cabinet and formed to include a first armature, a second armature carried by said bracket, said first and second armatures being in complementary relation and receivable in said handle socket when said door is closed, said bracket being slidably adjustable relative to said magnet for positioning said first and second armatures to provide a flux path effective for holding the door closed and compressing the gasket a desired amount, said second armature being wedge-shaped and fastened to said bracket by a screw and slot connection whereby said second armature is variably positionable along said first armature for affecting the flux path between the magnet poles to adjust the door opening pull required on said handle, and a magnetic bar carried in said handle adjacent said magnet for shunting the flux thereof when said door is open.

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## References Cited in the file of this patent

## UNITED STATES PATENTS

Number	Name	Date
2,252,144	Taylor et al. -----	Aug. 12, 1941

## FOREIGN PATENTS

Number	Country	Date
544,110	Great Britain -----	Mar. 27, 1942
573,454	Great Britain -----	Nov. 21, 1945