

Oct. 9, 1962

A. W. AHLGREN

3,057,650

MAGNETIC CATCH

Filed Sept. 21, 1959

2 Sheets-Sheet 1

Fig. 1

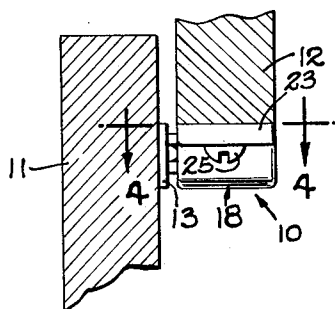


Fig. 2

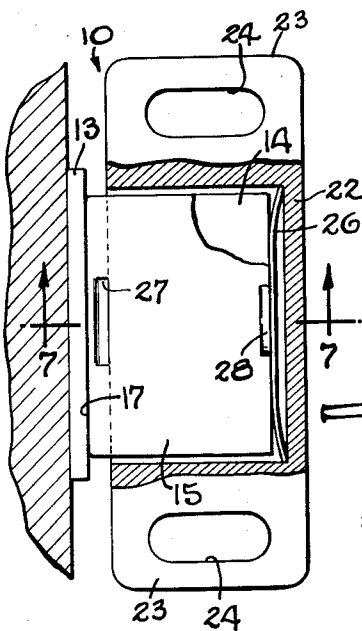
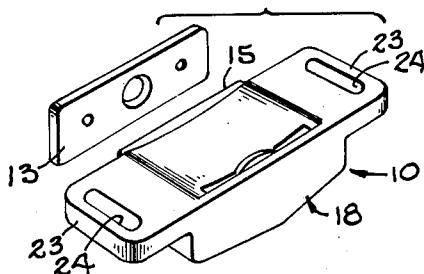


Fig. 4

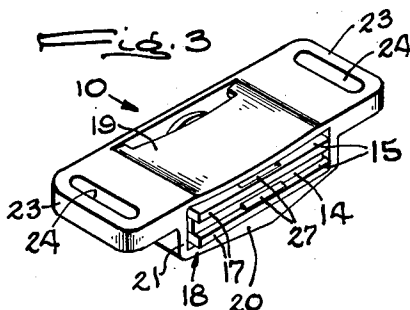


Fig. 5

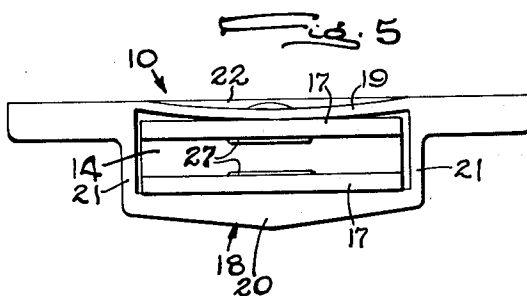
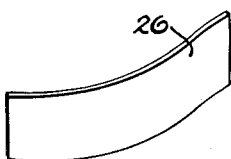


Fig. 6



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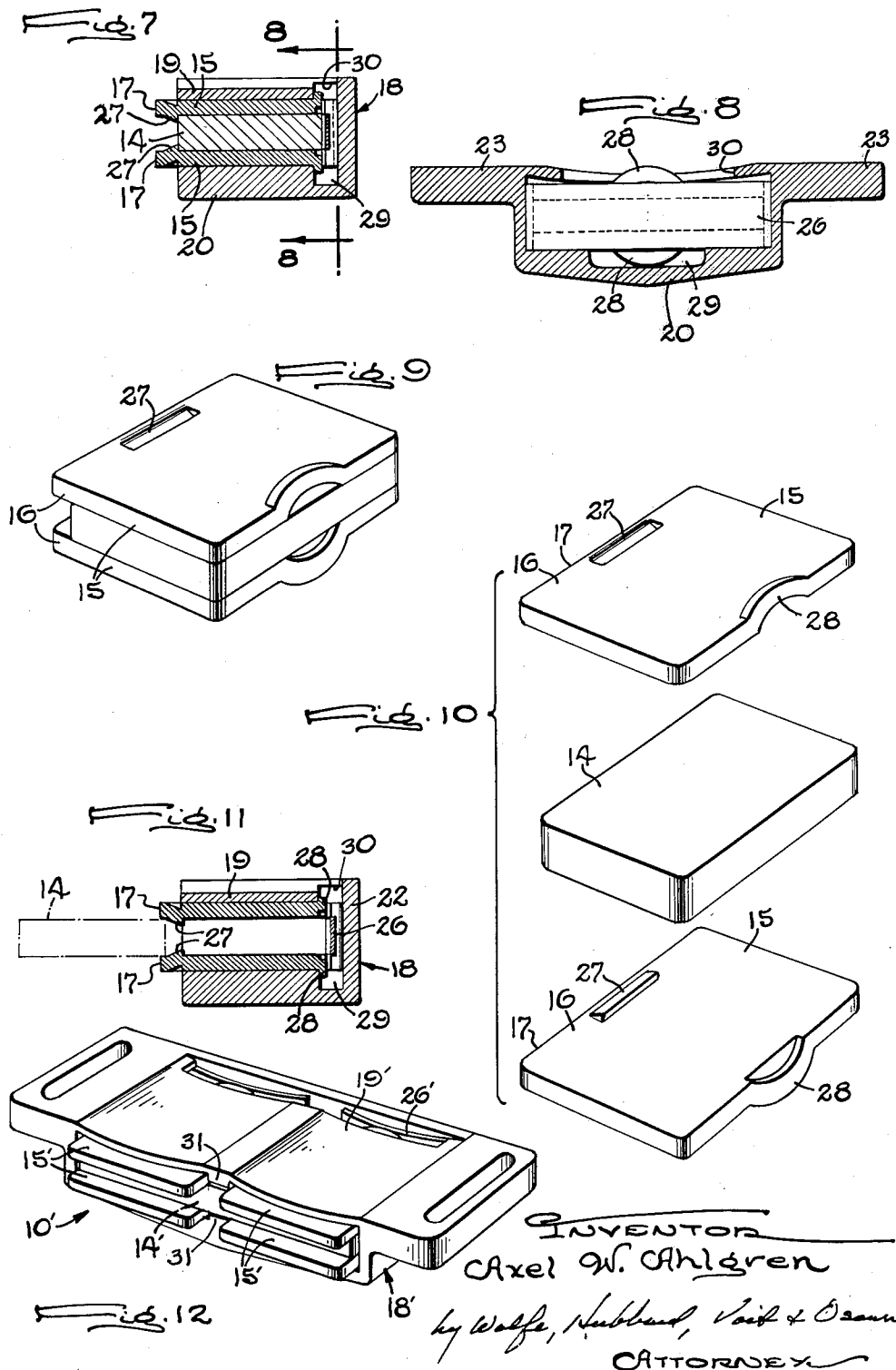
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3,057,650

MAGNETIC CATCH

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1 Claim. (Cl. 292—251.5)

This invention relates to a magnetic catch for latching a cabinet door or the like in a closed position and, more particularly to a magnetic catch in which plates are disposed on opposite sides of a permanent magnet and project beyond one edge of the magnet to form pole pieces therefor, the magnet and the plates being disposed within a housing.

The general object of the invention is to provide a new and improved catch of the above character having a novel housing which is comparatively simple and inexpensive in construction and which enables the catch to be assembled easily.

A more detailed object is to employ a novel arrangement of abutment surfaces which hold the parts in the assembled position without the use of additional fastening elements and to use a resilient housing which permits insertion of the magnet and pole plates and then holds the abutting surfaces in engagement with each other.

Other objects and advantages of the invention will become apparent from the following detailed description taken in connection with the accompanying drawings, in which—

FIGURE 1 is a fragmentary side elevation of a cabinet and a magnetic catch embodying the novel features of the present invention, parts being broken away and shown in section.

FIG. 2 is a perspective view of the catch and the strike.

FIG. 3 is a perspective view of the catch showing the open end of the housing.

FIG. 4 is a sectional view taken along line 4—4 in FIG. 1 with parts broken away and shown in action.

FIG. 5 is a plan view of the front side of the catch.

FIG. 6 is a perspective view of the leaf spring utilized in the catch.

FIG. 7 is a sectional view taken along line 7—7 in FIG. 4.

FIG. 8 is a sectional view taken along line 8—8 in FIG. 7.

FIG. 9 is a perspective view of the magnet and pole pieces.

FIG. 10 is an exploded perspective view of the magnet and pole pieces.

FIG. 11 is a sectional view similar to FIG. 7 showing the magnet removed and shown in phantom.

FIG. 12 is a perspective view of a modified form of the invention.

The present invention is shown in the drawings for purposes of illustration embodied in a magnetic catch 10 for latching cabinet doors 11 or the like in a closed position. The catch 10 is adapted to be mounted on a stationary part of the cabinet structure such as a shelf or the edge of a door frame 12 and to cooperate with a strike 13 secured to the inside of the door 11 (FIG. 1).

In the present instance, the catch includes a flat rectangular permanent magnet 14 sandwiched between flat plates of magnetic material lying along the opposite poles of the magnet to constitute pole pieces 15 and extending beyond one end of the magnet to provide overhanging portions 16 which terminate in pole faces 17. The pole faces project toward and engage the strike 13 when the door 11 is in the closed position. The strike 13 comprises a flat plate of magnetic material mounted on the door 11 to bridge the pole faces 17 when the door is closed and thereby complete a flux path through the magnet 14, the pole pieces 15 and the strike 13 to hold the door closed.

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The magnet 14 and the pole pieces 15 are disposed in a rectangular non-magnetic housing 18 having an inner wall 19, an outer wall 20, side walls 21 and one end wall 22. One end of the housing 18 is open to provide access to the interior of the housing and to enable the pole pieces 15 to project outwardly to engage the strike 13. Flanges 23 extend laterally from either side of the housing adjacent the inner wall 19 thereof and are formed with elongated slots 24 therein whereby the catch 10 may be secured to the cabinet frame 12 as by screws 25 extending through the slots and threaded into the frame.

The spacing between the side walls 21 of the housing is greater than the width of the pole pieces 15 and the magnet 14 whereby the latter may move relative to the housing 18 enabling the pole faces 17 to align themselves with the strike 13 as the door is closed. To reduce the shock imparted to the magnet 14 by the door 11 upon closing of the latter, a resilient shock absorbing means is disposed within the housing 18 between the end wall 22 and the inner ends of the magnet 14 and pole pieces 17. In the present instance, the shock absorbing means comprises a curved leaf spring 26 acting between the end wall 22 and the magnet 14 to urge the magnet outwardly and to yield to absorb the shock resulting from closing the door. In addition, the spring 26 prevents the magnet 14 from moving inwardly relative to the pole pieces 15.

The magnet is prevented from moving outwardly relative to the pole pieces by stops 27 struck out of the pole pieces 15 to project inwardly and engage the edge of the magnet 14. The stops 27 thus form an abutment against which the magnet is biased by the spring 26.

In accordance with the present invention, the housing 18 of the catch 10 is molded in one piece from a resilient material and has abutting surfaces formed in the interior of the housing which coact with projections formed on the pole pieces to hold the latter and the magnet in position in the housing by preventing edgewise shifting of the magnet and plates relative to the housing. Assembly of the catch is accomplished by merely inserting the plates and the magnet into the housing through the open end thereof. The resilient inner wall 19 of the housing yields to permit insertion of the plates and the magnet and snaps into place with the abutting surfaces engaging the projections and thus holding the component parts in position.

Herein, projections in the form of arcuate ears 28 are struck laterally outwardly from each plate 15 at the inner edge thereof. When the magnet 14 and plates 15 are inserted in the housing, the ears 28 are received in a groove 29 in the outer wall 20 and a slot 30 in the inner wall 19 and thus are prevented from moving outwardly by abutment with the sides of the groove and the slot. The magnet 14 and plates 15 are biased outwardly with the ears 28 abutting the groove 29 and the slot 30 by the leaf spring 26 acting between the end wall 22 of the housing and the plates and magnet.

The inner wall 19 of the housing is bowed inwardly to bear yieldably against the outer side of the adjacent plate 15 thereby securely holding the plates against the outer wall 20 and insuring that the ears 28 remain in the groove 29 and the slot 30. By forming the housing 18 so the spacing between the inner and outer walls is less than the thickness of the plates and the magnet, compensation is made for variations in the thickness of the magnets from catch to catch.

To assemble the catch 10, the spring 26 is dropped into position against the end wall 22 of the housing. The plates 15 are inserted in the housing 18 with the ears 28 projecting outwardly into the groove 29 and the slot 30. With the parts thus disposed, the magnet is inserted between the plate forcing the inner wall outwardly as the magnet passes between the stops (FIG. 11). As the outer edge of the magnet passes the stops, the inner wall and

plate snaps into place with the magnet locked in place behind the stops. When assembled, the inner wall closely engages the inner plate urging the latter to bear against the magnet to prevent separation of the component parts and to prevent the latter from rattling as the door is opened and closed.

A modification of the catch described above is illustrated in FIG. 12 wherein four pole pieces 15', similar to those described, are used with one magnet 14' and are disposed within a housing 18' mounted on the frame so as to cooperate with strikes mounted on two cabinet doors pivoted on the frame to swing toward and away from the catch. Ridges 31 are formed on the inner sides of the inner and outer walls to divide the housing into two compartments each adapted to receive one set of the pole pieces. The ridges are spaced apart sufficiently to permit the magnet to extend substantially along the entire width of the housing. The inner wall 19' of the housing bows inwardly on each side of the ridge to engage both of the inner pole pieces and yields to permit insertion of the magnet 14' and the pole pieces 15' into the housing. The leaf spring 26' urging the pole pieces and magnet forwardly bows outwardly adjacent each set of pole pieces.

It will be apparent that a magnetic catch constructed as described may be simply constructed and assembled and at the same time will not rattle upon opening or closing the door. The housing may be simply molded in one piece and yields whereby assembly of the catch comprises merely inserting the magnet and pole pieces into a cavity formed in the housing. The interfitting abutment surfaces and projections formed on the housing and pole pieces respectively securely anchor the parts in position while permitting sufficient relative movement between the two to allow the pole faces to become aligned with the strike.

I claim as my invention:

A catch having, in combination, a generally flat rectangular magnet, two flat rectangular plates of magnetic material disposed on opposite sides of said magnet to con-

stitute pole pieces therefor and projecting beyond one side edge of the magnet to terminate in spaced pole faces, said magnet and said plates constituting a magnetic assembly, a housing made as a single piece of molded plastic material and having top and bottom walls extending across the outer sides of said plates, one of said walls being relatively rigid and the other of said walls being relatively thin to be yieldable and bowed inwardly to bear against the corresponding plate and urge said magnetic assembly against the other wall, said housing including end walls and a side wall extending across the side of said magnetic assembly opposite said pole faces and the pole faces projecting through the open side of the housing, inwardly projecting ears formed on the outer side edges of said plates adjacent said pole faces to abut the adjacent side edge of said magnet and prevent the magnet from moving outwardly relative to the plates, said housing having slots formed in said top and bottom walls and extending along said side wall, the slot in said rigid wall terminating short of the outer surface thereof, and outwardly projecting ears formed on the inner side edges of said plates, said bowed wall being adapted to yield as said magnetic assembly is inserted through the open side of said housing and said outwardly projecting ears extending into said slots upon complete insertion to hold the assembly in the housing, and a flange projecting laterally from said housing adjacent said bowed wall and having a surface adapted to be mounted against a support whereby the bowed wall is concealed when the catch is mounted on the support.

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