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FRICTION DOOR CATCH

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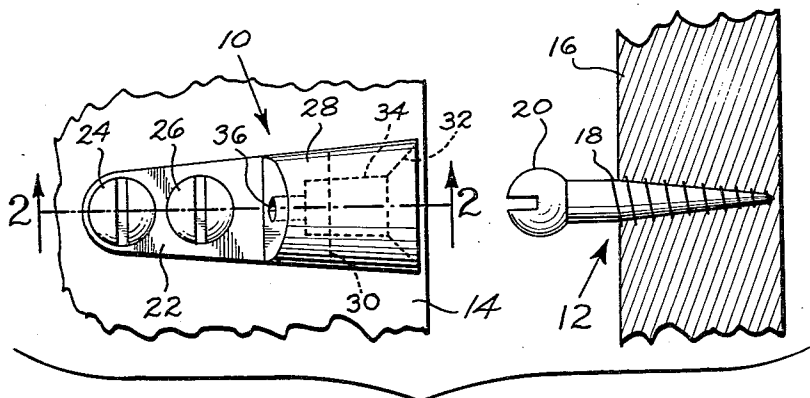


Fig. 1.

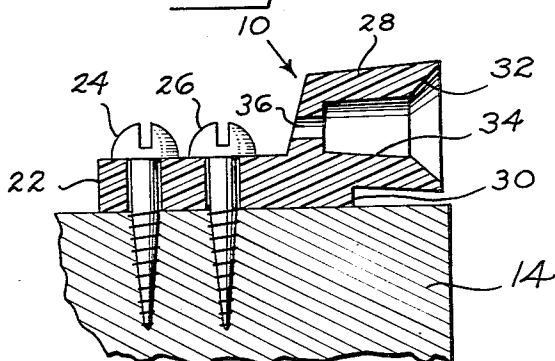


Fig. 2.

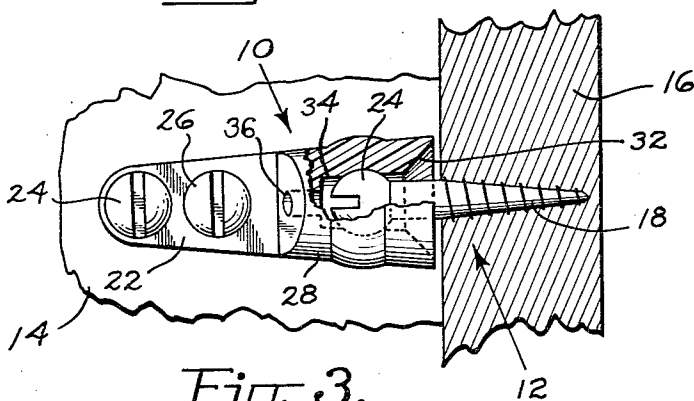


Fig. 3.

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FRICION DOOR CATCH

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2 Claims. (Cl. 292—70)

This invention relates to friction door catches of the class used in conjunction with a door strike for holding a door in open or shut position. Although not limited to such applications, it is particularly designed for use in holding closed the doors of kitchen cabinets.

It is a primary object of this invention to provide a friction door catch which will hold a door securely and positively irrespective of the speed of motion of the door when it engages the catch.

It is another object of this invention to provide a friction door catch which automatically compensates for wear of the holding member, thereby insuring a long service life.

It is another object of this invention to provide a friction door catch which automatically compensates for misalignment of the catch and the strike occurring because of faulty installation, or because of subsequent sagging or warping of the members to which the strike and catch are affixed.

It is another object of this invention to provide a friction door catch which is easily installed.

It is another object of this invention to provide a friction door catch which is silent in operation.

It is another object of this invention to provide a friction door catch, the tension of which is adjustable so that the door may be released from the catch with a predetermined force.

It is another object of this invention to provide a friction door catch which is inexpensive, of attractive appearance, and applicable for use with various types of doors.

The manner in which the foregoing and other objects of this invention are accomplished will be apparent from the following specification and claims considered together with the drawings wherein:

Figure 1 is a plan view of the presently described friction door catch in unengaged position illustrating the manner of mounting it with respect to a door and a door strike;

Figure 2 is a sectional view in side elevation of the catch illustrated in Figure 1; and

Figure 3 is a plan view, partly broken away, illustrating the door catch and strike members of Figure 1 in engaged position.

As is apparent from the drawing, the presently described friction door catch illustrated generally at 10 is adapted to be used in conjunction with a strike indicated generally at 12. The catch and strike are mounted one on each of two relatively movable members. In the conventional installation it is preferred to mount the catch on a stationary member such as a shelf 14 of a kitchen cabinet and the strike on the movable element of the assembly, such as the door 16 of the cabinet.

The strike 12 may assume various configurations but preferably comprises a ball-headed screw having a threaded shank 18 and a round slotted head 20. This may conveniently be inserted in the door at a station opposite the catch member.

The catch 10 is provided with a base portion 22 which

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is transversely perforated to accommodate a pair of screws 24, 26 by means of which the catch may be affixed to the shelf 14. Connected to the base portion, and preferably formed integrally therewith, is the socket portion

28. For the present purposes this is formed from a hard material which is somewhat flexible or deformable at ordinary room temperatures. Although it may be fabricated from various sorts of materials fulfilling these requirements, I have discovered that the plastic material polyethylene has properties such as to be suited uniquely for the contemplated purpose.

Polyethylene is a solid substance which is extremely resistant to wear and abrasion, but which is flexible or deformable at ordinary room temperatures. It is made by polymerizing ethylene in the presence of a suitable catalyst at a pressure of the order of 1000 pounds per square inch and a temperature of the order of 200° C. Under these conditions the ethylene forms a high molecular weight, branched chain polymer having the general formula $(-CH_2-)_n$.

It has been described as a synthetic paraffin wax and resembles the latter material in being somewhat deformable and normally having a somewhat waxy surface. Also, it is substantially free from the rebound which characterizes a rubbery material. These properties are of primary importance in connection with the presently described application and make polyethylene almost ideally suited for the fabrication of the socket member of the friction door catch described herein.

As is further apparent from the drawing, the socket 28 is offset vertically from the base when the catch is in operative position. This forms a shoulder or step 30 and makes possible the automatic adjustment of the socket for vertical misalignment of the socket and the strike, which may occur because of faulty installation, or more usually, because of sagging of the door.

The outer end 32 of the opening in socket 28 is outwardly flared to provide a guiding section which guides the rounded head 20 of the strike within the catch even though the two members be misaligned.

The inner section 34 of the opening in the socket member has a slight inward taper. It comprises a holding section which frictionally engages the head of the strike and holds it within the socket. This action is facilitated and made positive by the deformability of the plastic material of which the socket section is made. Thus as the head of the strike enters the socket, it pushes the walls thereof outwardly as is particularly evident in Figure 3, although somewhat exaggerated in degree. The resulting tension then securely locks the strike within the socket until it is removed by force exerted against the door.

It is to be observed (Figure 3) that the length of the socket bore 34 is substantially greater than the radius of the striker head 20 and that the wall of the bore engages and grips the strike head over a surface which terminates closely adjacent the forward, slotted, end of said head. Thus, while the strike head remains gripped by the wall of the bore, said head may be moved to various depths within the bore, as by adjusting the length of extension of the strike member from the door 16. It will be apparent that correspondingly greater force is required to move the strike head deeper into the bore and also to retract it therefrom, because of the greater length of travel of the strike head in frictional contact with the bore wall. In addition, these force requirements are increased substantially when the bore is tapered in the manner illustrated. Accordingly, the force required to open and close the door 16 may be adjusted as desired by varying the depth to which the strike head penetrates the bore of the socket.

Because of the close fit between the strike and the socket, means are afforded for venting air to and from

the socket behind the strike. To this end there is provided an opening 36, which relieves any vacuum or pressure which might otherwise be built up within the socket. It thus facilitates movement of the strike and the smooth operation of the catch.

Thus it will be apparent that the presently described friction catch has several important advantages. In the first place, it is easily installed. This is accomplished by fastening the catch 10 in the desired position on the shelf or other support member and then inserting the strike until the head is firmly seated against the rear wall of the socket. The door then is closed with some force against the projecting spur of the strike. This makes a mark indicating the exact location on the door where the strike is to be fastened.

The installation is readily accomplished, furthermore, even though made on diverse types of cabinets. For example, if the cabinet is fitted with a flush door, the catch member may be stationed on the shelf with its front face substantially flush with the front face of the shelf. However, if it is to be installed on a lipped door, the front face of step 30 may be placed substantially flush with the front face of the shelf. This projects the socket forwardly of the shelf by an amount sufficient to compensate for the lip on the door, since during manufacture of the catch the position of the step may readily be made to conform to the offset of the lip.

Then after the catch assembly has been installed, it automatically adjusts itself for misalignment of the socket and the strike. As has been indicated above, this may occur because of a faulty original installation or because of sagging or warping of the door or shelf.

Correction of such misalignment is achieved first because the outwardly flared guiding section 32 will guide the head of the strike toward the interior of the socket even though the two members are not exactly aligned. Furthermore, the socket will align itself with the head of the strike during the closing operation since the deformable material of which it is made flexes vertically or horizontally as required to effect the alignment.

Thus the strike is guided within the socket, its motion being facilitated by the somewhat waxy, self-lubricating properties of the latter when it is made from polyethylene. Its entry also is facilitated by the presence of the perforation 36 which exhausts or admits air as required to relieve a pressure pocket or a vacuum within the socket.

After the strike has entered the socket, it is held securely therein by the holding tension exerted by the slightly bulging walls of the socket. The degree of tension is adjustable because of the inward taper of the socket, since by advancing or retracting the position of the strike relative to the socket, the strike may be caused to enter the socket to a greater or less extent as required to increase or decrease the holding effect. This factor also may be employed to advantage in adjusting the catch to compensate for any wear which may occur, enlarging the bore of the socket. Thus by advancing the strike

toward the socket the head of the strike necessarily is forced further toward the rear of the socket opening, which is of restricted diameter and accordingly tends increasingly to engage the head of the strike. All of the foregoing important operating advantages are achieved, furthermore, through the use of a catch which is simple and inexpensive in construction and of attractive design.

It is to be understood that the form of my invention, herewith shown and described, is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of my invention, or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A frictional door catch comprising a frictional socket member made of resiliently deformable plastic material and having a bore extending inwardly of the forward end thereof, air passageway means in the socket member adjacent and communicating with the rearward end of the bore, and a base integral with and extending rearwardly of the socket member for securing the latter to a support rearwardly of the socket member, the plane of the contact surface of the base being substantially parallel to the axis of the socket member, the portion of the socket member which extends forwardly from the base being offset from the plane of the contact surface of the base to space said forwardly extending portion from said support whereby the forwardly extending portion of the socket member may deflect resiliently from normal position toward the support.

2. The frictional door catch of claim 1 wherein the resiliently deformable plastic material comprises polyethylene.

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