June 6, 1961 H. FISCHER 2,987,337

LATCH MECHANISM

Filed July 14, 1958

FIG. 1.

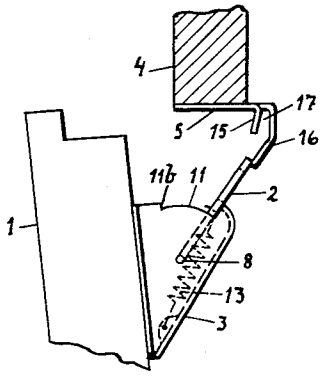


FIG. 2.

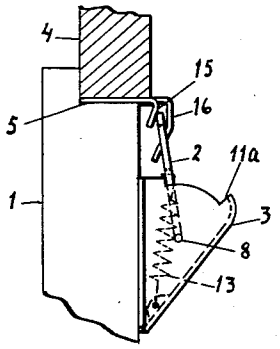


FIG. 3.

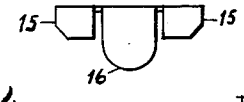


FIG. 4.

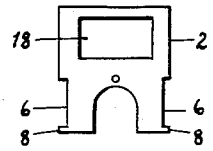
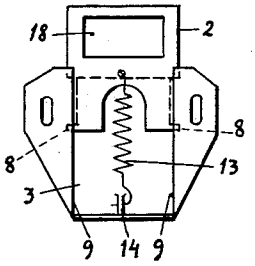


FIG. 5.



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LATCH MECHANISM

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The present invention relates to spring-loaded catch mechanisms for cupboards, wardrobes and the like of the type locating a door by means of a catch cooperating with an abutting means when the door is shut and freeing itself from said means when the door is forced open.

The object of the invention is to provide a catch mechanism of the above type of simple construction, easy to manufacture, long life and reliable construction.

Another object of the invention is to provide a catch mechanism of said type which will permit the door to be shut with a perfectly soundless oversnapping of the catch into closing position.

Still a further object of the invention is to provide a catch of said type which will consist of extremely few members comprising solely one movable member.

With these and other objects in view the invention essentially consists of a catch mechanism for a door of a cupboard, wardrobe and the like comprising a catch plate swingably mounted in a frame between two extreme positions and spring biased to one or other of said positions according to the direction in which said plate is urged over a dead-centre position in the action of opening or closing the door, said plate being snapped over by cooperating with abutting means including a substantially U-shaped member in which one limb is shorter than the other, the shorted limb providing a clearance for the catch plate and the longer limb snapping the catch plate over into engagement with the shorter limb when the door is shut, said shorter limb snapping the catch plate over to the released position when the door is subsequently opened.

One embodiment of the invention will now be described with reference to the accompanying drawing, wherein:

FIGURE 1 is a side view showing the catch mechanism on a door about to be shut;

FIGURE 2 is a similar view with the door shut;

FIGURE 3 is an end view of the abutting means;

FIGURE 4 is a plan view of the catch, and

FIGURE 5, a rear elevation of the catch and the catch frame.

A catch frame **3** carrying a catch **2** is attached to a cupboard door **1**. An abutting fitting **5** for cooperation with said catch is fixedly mounted on the door frame **4**. The catch **2** consists of a plate of metal or other suitable material swingably mounted in the sides **9** of the hollow catch frame **3**. Said plate is of generally U-shaped outline and the outer edges of the limbs are recessed at **6** so as to form end projections **8** at the extreme ends by means of which said plate can be pivotally mounted in bearing apertures in the sides **9** of frame **3**, said sides **9** being normal to the plane in which the frame is attached.

Recesses **6** in catch **2** are each provided with an upper edge which swings closely to an arcuate recess **11** at the upper end of the respective sides **9**, the recesses **11** having locating edges **11***a*, **11***b* arranged to restrict the angular displacement of catch **2** between two limit positions.

In the space between the limbs of the plate forming the catch is accommodated a tension spring **13**, the one end of which is attached centrally of said plate at the root of the limbs and the other end at **14** on catch frame **3** as shown in FIGURE 5. Thus a dead-centre action is prearranged and as member **2** is swung over the dead-centre in either direction it is always urged to one of its limit positions determined by the recesses **11**. The cooperating

fitting **5** is substantially U-shaped, its limbs, however, are of different length and are disposed on the inside of the door frame, the limb **15** next to the door opening being shorter than the other limb **16**, the latter being positioned more rear than the first mentioned one.

Thus the catch mechanism consists of the said three members only, viz.: the catch plate **2**, the frame **3** and the abutting fitting **5**, but for the tension spring **13** acting upon the catch plate. Said catch plate with its spring is the sole movable part of the catch mechanism.

When the door is open catch member **2** lies with its free leading end edge away from the door, said end edge being engaged by the long limb **16** on closing the door. This engagement forces the catch member **2** over the dead-centre and against the shorter limb **15**. In the fully closed position the clatch will lie between said limbs. The action of spring **13** opposes the movement of the door up to the dead centre while it assists said movement past the dead centre. In the fully closed position the door is held against the door frame by the pressure with which catch member **2** bears upon the back of the short limb **15**, said pressure being due to spring **13**. When forcing the door open, catch member **2** is swung over the dead centre to its other limit position in which it clears the short limb **15** as the door is swung.

In the embodiment shown in the drawing the shorter front limb **15** is divided in two portions with a space between them corresponding to the width of the rear centrally positioned longer limb **16** as to be seen in FIGURE 3, which will permit a symmetrical pressure abutting on the catch plate. The limbs are bent somewhat towards the door opening as indicated in FIGURES 1 and 2, and they are positioned and shaped in reference to each other so that the gap **17** between them will be fitted to the outer edge of the catch plate in such a way that the catch plate will be forcibly guided during its swinging movement from open to shut position and reversedly practically spoken without any free play between the catch plate and the limbs. The catch plates will according hereto be brought to lie close to the shorter limb **15** already before the plate reaches its final locking position, on account of which no clash will occur between the plate and the door frame fitting at the end of the door shutting. The free end of the forward bent rear limb **16** will during the said swinging movement come to pass through the surface of the plate which plate is for this reason provided with a corresponding opening **18**. The arrangement will ensure a perfectly soundless snapping of the catch plate into locking position. Comparably straight limbs with a broader gap can be used but will not show the same advantage.

A similar action is secured also if the catch assembly and the door frame fitting change place.

What is claimed is:

1. A latch mechanism for a hinged door comprising a frame adapted to be secured to an inner face of the door and comprising two walls extending in parallel planes normal to said door face, a pair of pivot bearings one on each said walls, a latch plate including integral pivot pins adjacent one edge mounted in said pivot bearing on said frame for pivoting movements about an axis parallel to the door hinge, an arcuate edge portion on each said wall of said frame having an abutment at each end of said arcuate portion for limiting the swinging movements of said plate, a spring tensioned between said frame and said plate at a point in a plane bisecting the arc of said arcuate edge portion biasing the plate to alternate positions over dead center toward engagement with one or other of said abutments, a keeper member adapted to be secured to a door frame, a limb carried by said keeper member projecting into the path of the arc of movement of the free end portion of said latch plate as the door is swung on

its hinges toward closed position, another limb carried by said keeper member having a free end terminating short of the arc of movement of said latch plate as the door hinges toward the closed position, and said second limb being spaced outwardly from the first limb and positioned to form an inwardly facing abutment to be engaged by the free end of said latch plate as it is pivoted by engagement of the first said limb to move said latch plate over dead center whereby said spring holds the free end of the latch plate against the second limb.

2. A latch mechanism for a hinged door according to claim 1, wherein the first limb on the keeper member is centrally located thereon, and the second limb comprises two elements one arranged at each side of the first limb.

3. A latch mechanism for a hinged door according to claim 1, wherein the first limb has an angular end portion extending in a direction opposite to the arc of movement of the door towards the closed position and said latch plate is provided with an opening for receiving said end portion of the first limb.

4. A latch mechanism for a hinged door according to claim 1, wherein the frame encloses said spring.

5. A spring-actuated latch for a hinged door, comprising a channel-shaped fitting including two side walls adapted to be secured to the inner face of a door, a latch element having the shape of a plane plate with a recess in each of the edges adjacent the two side walls of the frame, said recess at the inner edge of the latch terminating in a pin-shaped portion of the plane plate to serve as a pivot for the latch plate, a bearing bore in each opposing frame wall to receive said pin-shaped portion, a recess in the edge of each side wall of the frame, the ends of the latter recess constituting limiting abutments for swinging movement of the latch plate, a helical spring situated in such a way that the spring acting upon the latch plate will pass the pivot dead-center line by the swinging movement of the latch plate and thus normally bias the latch plate toward one or other of said abutments, and a keeper of U-shape section when viewed in the direction of the axis of pivoting of said latch plate adapted to be secured to a door jamb, said latch plate being adapted to engage with said U-shaped keeper on the jamb, into the gap of which the latch plate enters at the closing of the door, said gap being shaped to guide the latch plate without any snapping movement of said latch plate.

6. A latch mechanism for a hinged door comprising a frame formed of sheet material having parallel, upstanding sides, means to secure and hold said sides in position in planes normal to the edge of a cupboard door, an arcuate recess along the edge of each said sides toward said door edge, said arcuate recess having ends to provide stop means, a plate latch means having pivot means lying in the plane of said plate latch means, bearing means in said upstanding sides at the center of curvature of said arcuate recesses to receive said pivot means of said plate latch means, abutment means on said plate latch means to engage said ends of said arcuate recesses to limit the swing of said plate latch means about said pivot means, spring means secured at one end to said plate latch means and at its other end to said frame in a position lying in a plane bisecting the said arcuate recesses so that said plate latch means will be urged toward the nearest end of said arcuate recesses, said plane bisecting the said arcuate recesses constituting the dead center plane of said plate latch means, an opening in said plate latch means beyond said arcuate recesses, a portion of said plate outwardly of said opening constituting means to engage a keeper, and a keeper to be secured to the jamb of a cupboard, said keeper including a central finger hooked toward the latch means and adapted to engage said keeper engaging means, and at least one additional finger to be engaged by said means to engage a keeper after said plate latch means has been moved past dead center by said central finger.

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