

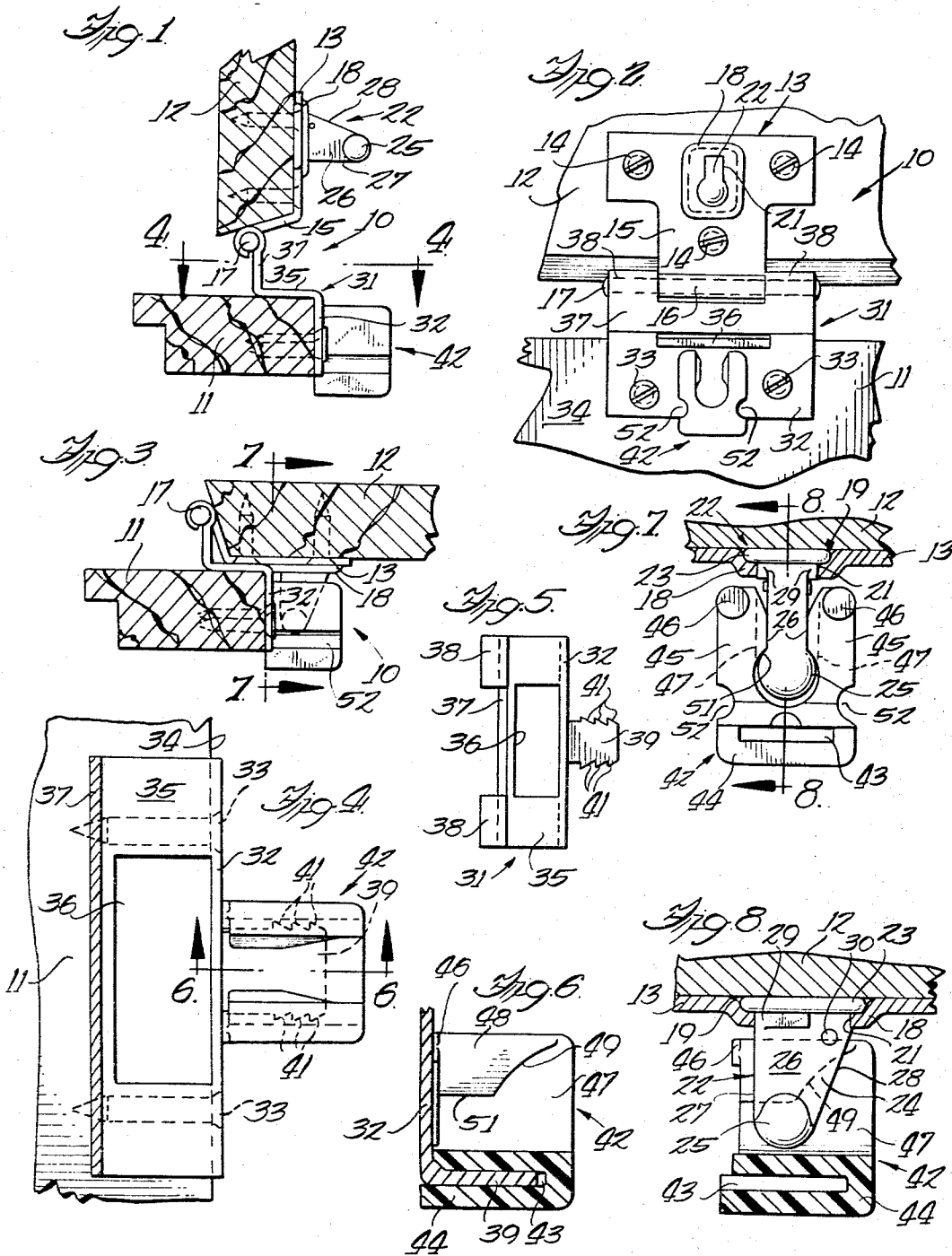
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HINGE AND CATCH ASSEMBLY

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HINGE AND CATCH ASSEMBLY

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ABSTRACT OF THE DISCLOSURE

A hinge and catch assembly for the door of a cabinet having a pair of hinge wings pivotally joined together and mounted on the cabinet door and the cabinet with one hinge wing carrying a catch member and the other hinge wing carrying a projecting strike cooperating with the catch member. The strike has a base mounted in a pocket in its associated hinge wing with a projection extending through and beyond the hinge wing to terminate in an enlarged spherical portion. The catch member is provided with a slot having a generally spherical recess to receive the strike, the walls of the recess forming camming ramps acting to engage the spherical portion of the strike and draw it inward.

The present invention relates to a hinge and catch combination and more particularly to a hinge unit for a cabinet or other enclosure for pivotal movement of a cabinet door or closure and a novel catch for the door combined with the hinge structure for retaining the door in closed position.

An important object of the present invention is the provision of a hinge for the door or closure of a cabinet or other enclosure having two hinge wings joined by a hinge pin with said hinge wings carrying a novel two-part catch assembly. One hinge wing carries a projecting strike of the catch assembly and the other hinge wing carries a catch member receiving the strike. The strike and catch are preferably formed of suitable plastic materials for ease of formation and long lasting operation.

Another object of the present invention is the provision of a hinge and catch combination where the catch assembly when partially engaged tends to draw the door through the remaining few degrees of arcuate movement to the fully closed position. The strike is shown secured to or carried by the door wing and is provided with an arm or projection terminating at its outer or free end in an enlargement or generally spherical portion. The catch is shown attached to or carried by the cabinet wing and is provided with a slot having a substantially spherical recess therein for conformably receiving the strike; the walls of the slot forming camming surfaces or ramps which will act to engage the enlarged or spherical end of the strike and urge and draw the strike inward to close the door.

A further object of the present invention is the provision of a hinge and catch combination where the strike and catch of the catch assembly are formed of dissimilar plastic materials to give improved results relating to the frictional contact and retention of the strike and catch in engaged position.

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 drawings:

FIGURE 1 is an end elevational view of the hinge and catch combination shown secured to a cabinet and door with the door in a 90° open position.

FIG. 2 is a front elevational view of the hinge and catch assembly in the same position as FIG. 1.

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FIG. 3 is an end elevational view of the hinge and catch combination of FIG. 1 but with the door closed.

FIG. 4 is a view of the cabinet hinge wing and catch taken on the line 4-4 of FIG. 1.

FIG. 5 is a side elevational view but on a reduced scale of the cabinet hinge wing from which the catch has been omitted.

FIG. 6 is a cross sectional view through the cabinet hinge wing and catch taken on the line 6-6 of FIG. 4.

FIG. 7 is an enlarged end elevational view of the strike and catch in closed position taken on the line 7-7 of FIG. 3.

FIG. 8 is a cross sectional view of the strike and catch in closed position taken on the line 8-8 of FIG. 7, the strike being shown in elevation.

Referring more particularly to the disclosure in the drawing wherein is shown an illustrative embodiment of the present invention, FIGS. 1, 2 and 3 disclose a hinge and catch combination 10 secured to a cabinet or other enclosure 11 and its door or closure 12. The hinge and catch assembly 10 includes a door hinge wing 13 of generally T-shape as seen in FIG. 2 with openings to receive suitable securing means or screws 14. The narrowed portion 15 of the wing is offset as seen in FIG. 1 and terminates in a curl or roll 16 to receive a hinge pin or pintle 17.

In the wide portion of the wing 13, an embossment 18 provides a pocket 19 between the raised surface of the embossment and the adjacent surface of the door 12. Centrally positioned in the embossment is a substantially key-hole slot 21 with an enlarged arcuate end to receive the projecting portion of a strike 22. The strike is preferably formed of a suitable plastic material, such as a polyacetal, and includes a generally rectangular base 23 (FIG. 7) which is conformably received and securely retained in the pocket 19 formed by the embossment or raised portion 18 in the door hinge wing 13, and a projection 24 terminating in a spherical or bulbous part 25, extending through the slot 21 in the embossment 18.

The projection 24 has a pair of generally parallel opposed side walls 26, 26, a wall 27 generally perpendicular to the base 23, and an inclined wall 28 providing the projection with a taper or convergence of walls 27 and 28 from the base 23 to the ball end 25 as seen in FIGS. 1 and 8. The projection 24 includes a pair of rounded ledges 29 adjacent the base 23 and directly below the ball end 25 so as to substantially fill in the enlarged portion at the one end of slot 21. Adjacent the inclined wall 28 are a pair of oppositely extending pins or projections 30, 30 in the parallel side walls 26, 26 and spaced from the base 23 a distance substantially equal to the thickness of the hinge wing 13. The projections 30, 30 provide that the strike snaps into position in the pocket 19.

A cabinet hinge wing 31 completes the hinge assembly and is provided with a mounting portion or flange 32 having openings for suitable securing means 33 to rigidly mount the portion 32 onto the edge 34 of the cabinet 11, an intermediate portion 35 at right angles to the first portion 32 and abutting the front of the cabinet 11, and a bifurcated portion 37. The intermediate portion 35 includes a generally rectangular opening 36 (see FIG. 5) to receive a portion of the narrowed portion 15 of the door wing 13 when the door is closed (see FIG. 3), and the bifurcated portion 37 is disposed at a right angle to the intermediate portion 35 and has bifurcations terminating in curled or rolled portions 38 providing hinge bearings to receive the hinge pin or pintle 17; the curl 16 on the door wing 13 being conformably received between the curled portions 38 on the cabinet wing 31.

At the outer edge of the mounting portion 32 is a centrally positioned narrow tongue 39 (FIG. 5) integral

therewith and having teeth or serrations 41 adjacent the outer end of and on the opposite edges of the tongue 39. This tongue is forced into a narrow mounting slot 43 formed in a catch 42. The catch is preferably formed of a suitable plastic material such as nylon; the plastic materials forming the strike and catch being of different compositions for improved results.

The catch 42 includes a base 44 containing a slot 43 into which the serrated tongue 39 is anchored to securely retain the catch on the hinge wing 31, and a bifurcated portion having spaced bifurcations or arms 45, 45. A portion of the base 44 and the bifurcations 45, 45 are recessed at the inner end to receive the mounting portion 32 as seen in FIG. 6, and the upper inner edges of the bifurcations are provided with pads or projections 46 adapted to abut the mounting portion 32.

The bifurcations 45, 45 have generally parallel interior facing walls 47 and formed thereon adjacent the top edges are ramps 48, 48 having downwardly and inwardly inclined guiding surfaces 49, 49, and lower retaining surfaces 51, 51 (FIG. 6) parallel the base. The configuration of the ramps 49, 49 provides for a positive and accurate engagement with the strike 22 to pull the door closed and retain the door in closed position. The ramp has a lower curved surface which engages the generally upper rounded surface of the ball or bulbous end 25 which, in view of the angle at which the ball enters the bifurcations, tends to draw the ball downward to pull the door closed. The ramp 49 (as seen in FIG. 8) begins the upward incline just to the right of center of the ball and terminates just short of the outer end of the bifurcation 45 but slightly beyond the point of entrance of the ball between the bifurcations 45, 45. Also, the bifurcations are provided on their exterior surfaces with grooves 52 parallel to and adjacent the base 44 to provide greater flexibility for the bifurcations or arms 45, 45 when the strike and catch engage.

A pull on the handle for the door requires a sufficient initial opening effort to cause the ball to slightly spread the flexible bifurcations 45, 45 for the initial opening movement, and then the door pivots effortlessly around the pivot pin 17 of the hinge.

I claim:

1. A hinge and catch combination for a door of a cabinet or other enclosure, comprising a door hinge wing and a cabinet hinge wing pivoted together, and a catch assembly including a strike mounted on one wing and a catch mounted on the other wing, said strike having a projection terminating in an enlarged spherical end, and said catch including a base and a bifurcated portion forming a pair of spaced apart generally resilient arms, an inwardly extending ramp on each arm adapted to engage and urge the spherical end of the strike into said catch, said ramp including a convex retaining surface parallel to said base and merging into an inclined curved guiding surface extending upwardly and outwardly away from said base and hinge wing to the upper edge of the arm,

said inclined guiding surface being slightly convex and intersecting said retaining surface slightly outwardly beyond the position of the spherical end of the strike in the catch when in closed position and terminating at the upper edge of the arm slightly beyond the point on the arm where said spherical end enters said catch.

2. A hinge and catch combination for a door of a cabinet or other enclosure, comprising a door hinge wing and a cabinet hinge wing pivoted together, and a catch assembly including a strike mounted on one wing and a catch mounted on the other wing, said strike having a projection terminating in an enlarged spherical end, and said catch including a base with a slot therein and a pair of spaced apart generally resilient arms, and an inwardly extending ramp on each arm adapted to engage and urge the spherical end of the strike into the catch, said other hinge wing having a serrated tongue received in the slot in the base of said catch.

3. A hinge and catch combination as set forth in claim 2, in which said one hinge wing has an embossment forming a pocket between said embossment and the supporting surface for said hinge wing, and said strike has an enlarged base received within said pocket, said embossment having a slot allowing said strike to project therethrough.

4. A hinge and catch combination as set forth in claim 3, in which said strike includes a projection on said base and tapering to said enlarged spherical end.

5. A hinge and catch combination for a door of a cabinet or other enclosure, comprising a door hinge wing and a cabinet hinge wing pivoted together, and a catch assembly including a strike mounted on one wing and a catch mounted on the other wing, said one hinge wing having an embossment forming a pocket between the embossment and the supporting surface for the hinge wing, said strike having an enlarged base received within said pocket and a projection on said base tapering to and terminating in an enlarged spherical end, said embossment having a slot allowing the strike to project therethrough, said projection of the strike having a pair of outwardly extending projections spaced from said base a distance substantially equal to the thickness of the hinge wing embossment and positioned above said embossment when the strike is assembled therewith, said catch having a pair of spaced apart generally resilient arms, and an inwardly extending ramp on each arm adapted to engage and urge the spherical end of the strike into the catch.

References Cited

UNITED STATES PATENTS

2,891,810	6/1959	Ahlgren	292—76
3,001,809	9/1961	Dieleman	16—86
3,203,031	8/1965	Youngdale et al.	16—145
3,328,061	6/1967	Whistler et al.	16—86

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