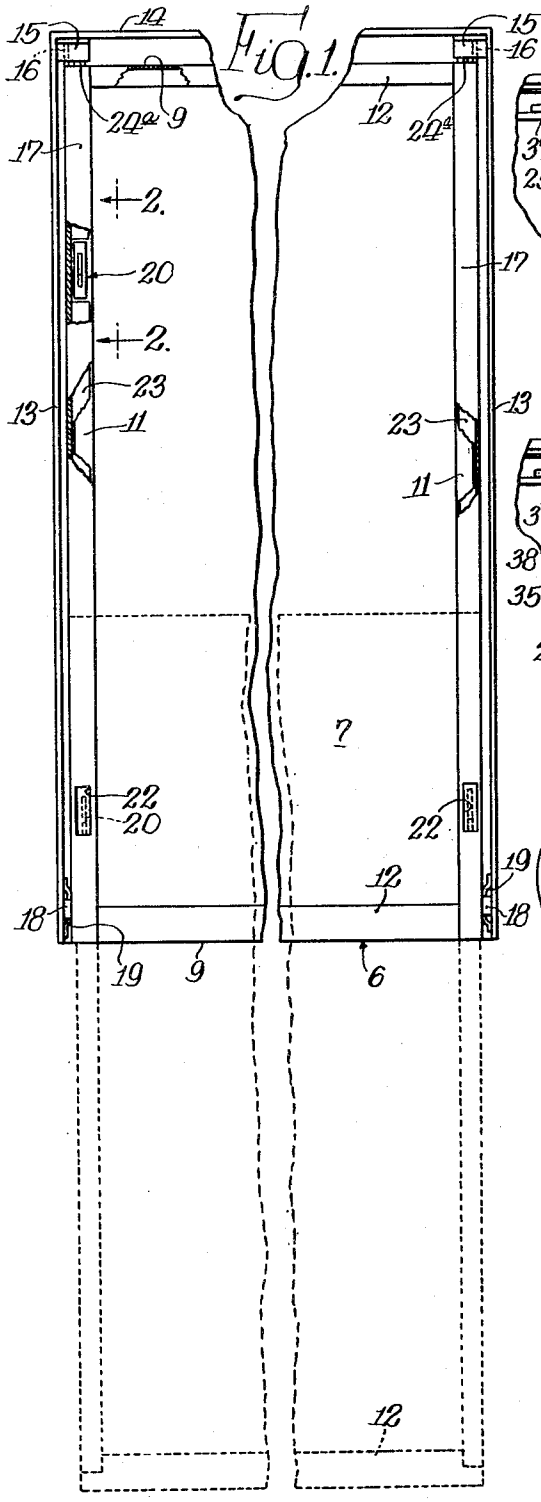
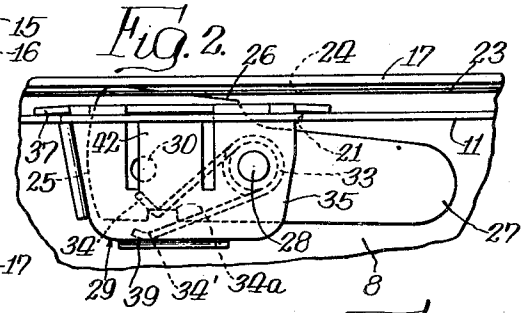
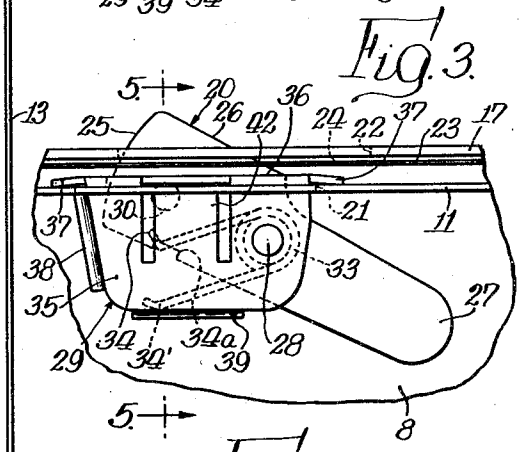
July 17, 1951 R. A. STONE 2,561,295

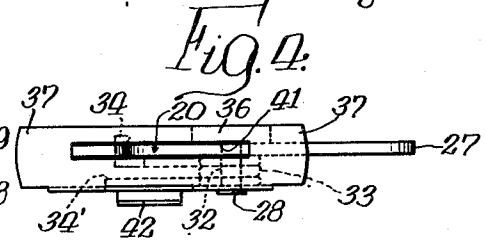
CATCH AND FRAME INSERT

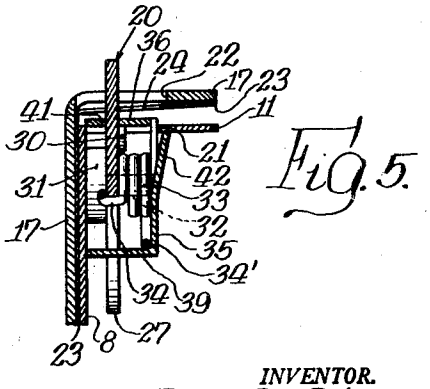
Filed June 24, 1947











INVENTOR.
Roy A. Stone,
BY
Thos. J. Wilson
Atty.

Patented July 17, 1951 2,561,295

UNITED STATES PATENT OFFICE

2,561,295

CATCH AND FRAME INSERT

Roy A. Stone, Rockford, Ill., assignor to National Lock Company, Rockford, Ill., a corporation of Delaware

Application June 24, 1947, Serial No. 756,587

5 Claims. (Cl. 312—333)

1

The invention pertains to devices, ordinarily classified in hardware lines of equipment, in the nature of accessory items for cabinets, shelving, drawers and similar and related constructions, and more particularly to an arrangement for the simplification of items of hardware such as latches, locks, and the like for use with constructions of the types mentioned. The invention also relates to special component parts of such and similar hardware and to a novel type of construction of sliding shelf and drawer and a particular latch cooperative therewith to provide certain desirable results.

One of the primary objects of the invention is to provide a housing or frame suitable to receive and retain a latch, lock, roller, or other mechanism to be carried thereby and to be mounted as a unit in some supporting structure such as a cabinet shelf, a drawer or other device. It is part of this purpose that the construction and arrangement shall be such as to have the frame or housing, which serves as a carrier for the mechanism, function as a unit to be inserted in and removed from a suitable recess or opening in the receiving or supporting structure and adapted, when disposed within such recess or opening, to be self-securing therein in a manner whereby the unit will be firmly "set" and will not rattle or have material movement from a desired position. The features of construction by which this objective broadly is attained are generally disclosed and generically claimed in my Patent No. 2,505,592.

Another important object is to provide a relatively less expensive housing or frame construction than earlier forms including that disclosed in said earlier filed application, although the form of the earlier application may be very useful in many situations and in some cases may be more satisfactory than the instant form where special uses and purposes are to be considered.

Still other principal purposes of the instant invention are to provide a novel and particularly useful latch or stop mechanism to be applied to metal shelving, slides, drawers and the like where it may be desirable to limit the extent to which the slide, shelf, or drawer and the like may be pulled out from a normal closed or retracted position and, to provide a construction whereby the frame or housing for the latch or other mechanism may be cooperatively associated with the supporting structure in such manner that the supporting structure may serve or be used as an otherwise necessary part of the frame for

2

such mechanism, the use of the supporting structure for such purpose permitting material simplification of the frame or housing and substantial reduction in the cost of manufacture.

Many other objects including novelties of construction whereby the operation of a drawer, shelf or slide may be facilitated and where parts may easily be replaced, will be or should become apparent and clearly understood after reading the following description and claims and after study of the accompanying drawings in which:

Fig. 1 is a top plan view of a sheet metal cabinet shelf or the like embodying a preferred form of the invention, parts being broken away for convenience of illustration;

Fig. 2 is an enlarged detail view of a special type of latch of which mention has been made above, utilized in the shelf construction of Fig. 1, and as the same would be viewed from the position of the section line 2—2 of Fig. 1. In this view the latch is shown in a retracted position;

Fig. 3 is a view of the latch corresponding to that of Fig. 2 but showing the latch in latching or stopping position;

Fig. 4 is a top plan view of the latch shown in the previous figures as the same appears removed from the supporting structure, i. e., the cabinet shelf, and

Fig. 5 is a sectional view of the latch and adjacent portions of the shelf as the same would appear if sectioned along the line 5—5 of Fig. 3.

Referring more particularly to the drawings, a shelf generally designated 6 formed of sheet metal, has a bottom panel 7 with integral side walls 8, correspondingly integral end walls 9, inturned flanges 11 integral with the top edges of the side walls and inturned flanges 12 integral with the top edges of the end walls 9.

This shelf construction is designed to slide in and out of a suitable recess in a cabinet, the side framing of which is represented at 13 and the rear wall of which is represented at 14. Within such cabinet recess and supported by the rear or side walls adjacent to the juncture of one with the other may be brackets or clips 15 which may have slots into which tongues 16 integral with U-section or channel guideway members 17 are adapted fairly snugly to be received. The forward ends of these channel guideways may have outwardly struck tangs 18 adapted to be hooked behind straps 19 welded, riveted or otherwise secured to the interior faces of walls 13 at the forward end of the cabinet thereby removably to fasten the guideways 17 firmly in place. The construction preferably is such that the guide-

ways which, of course, are right and left hand and have their channel sides facing towards one another at the same level in the cabinet, may easily be inserted or removed from the cabinet, insertion merely requiring that the tongues 16 be directed into the corresponding receiving slots in the brackets 15 with the front ends of the guideways in an upwardly tilted position until the tongues have been inserted in the slots, the front ends thereafter being lowered until the hook-like tangs 18 engage over and behind the straps 19. By reversing the motions described the guideways may be removed.

At a suitable distance from but forward of the rear end of the shelf, each flange 11 is provided with a longitudinally extending slot 21 into which a latch or stop mechanism with its frame or housing is to be disposed and secured, while at a place suitably disposed rearward of the front ends of the guideways but adjacent the front of the cabinet, each guideway is longitudinally slotted through its upper side wall as indicated at 22. The purpose of the slots 22 is to receive the latch dogs or detents when the shelf is pulled forwardly out of the cabinet recess thereby to prevent the shelf from being bodily removed from the cabinet except upon deliberate release of the latches.

The latch dogs, one of which is generally designated 20 in Fig. 1, project upwardly under spring pressure as will be more fully described hereinafter, and normally ride against the inside faces of the upper sides of the channels or guideways 17 and thereby react against such upper face of the channel to urge the shelf bottom toward the lower side of the guideway or channel. Any looseness of fit or play between the shelf and the guideway which would tend to cause rattling and possible rough operation, is avoided by placing a U-section or channel shaped wear and anti-rattle member 23 of thin sheet metal about the side edges of the shelf entirely along each of such side edges. Each anti-rattle member 23 is slotted as at 24 to correspond with the overall dimensions of the latch frame to be disposed in slot 21 so that the latch dog or detent may rise therethrough and into the slots 22 when the shelf is pulled to its forward or outermost position. The members 23 are made right and left hand and are releasably secured in a suitable manner to the shelf itself, preferably at the rear and forward ends thereof so that it will be moved with the shelf as the shelf moves in and out of the cabinet. Rubber or other material bumpers 24a may be carried by these two members to engage against the brackets 15 and thereby deaden the sound and soften the shock when the shelf is disposed in its rearward or closed position within the cabinet.

Now referring more particularly to Figs. 2 to 5 inclusive, it will be noted that each latch, generally designated 20, comprises a narrow sheet metal stamping of blade-like form having a detent part with a stop face 25 and a camming face 26, and having a tail piece or release arm 27. Each of these latches, one of which will be left hand and the other right hand, is mounted intermediate of its ends on a pivot pin 28, which is riveted or otherwise firmly secured to a side wall of a correspondingly respective left or right hand frame or housing generally designated 29. The axis of each pivot pin is disposed closer to the rear edge of slot 21 than to the front edge and the stop face 25 of each latch detent is directed toward the forward end of the shelf or cabinet. The pivot pin 28 may have an enlarged head 31 to serve as a bearing shoulder for the latch detent

and an elongated shank 32 about which are the coils of a coil spring 33, one end 34 of which is held in a notch 34a in the detent and the other end 34' of which abuts against a wall of the frame or housing by which the detent is carried. Under the tension of the spring the latch detent tends to assume the position shown in Fig. 3 but except when in registry with the slots 22 in the forward ends of the channel guideways, will be held depressed in the position illustrated in Fig. 2 by the channel member 17. A stop 30 integral with the latch member and projecting to one side thereof, is adapted to engage with the inside face of a top portion of the latch frame or housing to limit the extent to which the detent portion of the latch may project above the flange 11. The frame or housing carrying the latch will now be described.

A single piece of sheet metal preferably having a high characteristic of resilience such as spring steel is stamped or drawn after annealing to provide a side wall 35 somewhat of rectangular shape, a top wall 36 with extending flanges or wings 37, an end wall 38 and a bottom wall 39. Preferably, or at least in the embodiment illustrated, the top end and bottom walls extend at right angles to the plane of the side walls 35. The top wall also carries a slit or slot 41 through which the latch or detent 20 projects and, as will be noted in Figs. 2 and 3, the wings or flanges 37 are given a downwardly and outwardly inclined "pre-set" from positions substantially at the ends of the side wall 35, for purposes which will be described. The end wall 38 and the bottom wall 39 preferably extend at right angles to the side wall 35 and each, preferably, is of such depth or width as to contact and rest against the inner side or face of the side wall 8 of the shelf (the supporting structure) and the bottom wall also serves as the fixed abutment for the other end of the coiled spring. The pivot pin shank 32 may be riveted or otherwise secured to the side wall 35.

The side wall 35 is cut and formed at a central portion to provide a tang 42 which is upwardly and outwardly inclined as best illustrated in Figs. 4 and 5. Preferably the tang 42 is so proportioned and arranged with respect to the top wall 36 and the wings or flanges 37 that the vertical distance between the bottom or inner face of the top wall and the top edge of the tang 42 closely approximates the thickness of the flange 11 of the shelf or other supporting structure but such vertical distance should not be less than such flange thickness. Since the wings or flanges 37 incline outwardly and downwardly from the general plane of the top wall 36, a plane parallel to the plane of the top wall and tangent to the lower parts of the outer end edges of the flanges 37 will lie an appreciable vertical distance below the lower face of the top wall and therefore either closer to, coincident with, or below another parallel plane tangent to the upper edge of the tang 42, depending upon the extent of pre-set of wings or flanges 37.

The outward set of the tang 42 is such that the horizontal distance from its outer edge to the face of wall 8 (i. e. a vertical plane tangent to the free edges of walls 38 and 39) will be greater than the transverse width of either the top end or bottom walls of the frame and greater than the width of the slot 21 in the flange 11. After formation of the frame it is best treated and quenched to return its spring-like quality of resilience, whereupon the latch member, its pivot

pin, and spring 33 are assembled therein. The frame and latch assembly are then a unit ready to be disposed in a slot 21. At the start of an insertion the tang will be stressed by the side edge of the slot 21 to deflect it and to bring it toward the plane of side wall 35 as the frame is urged downwardly into the slot 21. Now the tang 42 will not clear the lower edge of the slot but will be retained in the plane of the wall 35 unless or until the wings or flanges 37 are also deflected upwardly toward the general plane of the top wall 36. However as soon as the wings or flanges 37 are so deflected from their pre-set downwardly and outwardly inclined positions the tang 42 will snap beneath the flange 11, and with the end and bottom walls 38 and 39 respectively resting against the inner face 8 of the supporting structure the latch and its frame will be securely fastened in place. The flanges or wings 37 being resiliently stressed when the tang 42 rests beneath the flange 11, effects a tight clamping of the flange 11 between the wings 37 and the tang 42 and with the end and bottom walls 38 and 39 resting against the face of the wall 8, the latch or other mechanism will be held firmly and rigidly in position. The latch with its frame may be released and removed from the supporting structure by depressing the tang 42 toward the plane of wall 35.

When the shelf or slide is pulled out of the cabinet in which it is disposed the detent of latch 26 is held depressed until it reaches a position where it may enter slot 22. At this time the forward or stop face 25 will engage the forward edge of slot 22 and the further outward movement of the shelf is prevented unless the operator releases the latches by raising the tail pieces 27. Since the cam faces 26 have a very low angle of slope, reinsertion of a slide or shelf in the guideways of the cabinet is very easy; likewise the shelf may be quickly and easily returned to closed position from its place when the latches are engaged in slots 22, merely by light pressure directed against the front of the shelf.

While I have illustrated and described a preferred embodiment of my invention, various changes and modifications may be made therein without departing from the spirit of the invention and the scope of the appended claims.

I claim:

1. A latch mechanism comprising a sheet metal body cut and formed to provide a single relatively flat side wall terminating along one edge in an integral top wall extending substantially at a right angle to the plane of the side wall, along an adjacent edge in an integral end wall and along a third edge in an integral bottom wall, all of said top, end and bottom walls extending in the same direction from one side of said side wall, said top wall having a slot therethrough of greater length than breadth, the slot length being substantially parallel to said side wall, a latch member pivotally mounted intermediate of its ends on said side wall beneath said top wall on an axis substantially perpendicular to said side wall at a place closer to one end of said slot than to the other and remote from said end wall and having one end portion adapted to swing through said slot and its other end portion projecting beyond said side wall and away from said end wall, and means normally urging said latch member about said pivot mounting and said portion upwardly through said slot.

2. A latch mechanism comprising a one-piece sheet metal body cut and formed to provide a single side wall terminating along one edge in a top wall extending substantially at a right angle to the plane of the side wall and terminating along other edges in a single end wall and a bottom wall, said end, top and bottom walls extending in substantially the same direction from the same side of said side wall and said bottom wall being spaced from said top wall, said top wall having a slot therethrough of greater length than breadth, the slot length being substantially parallel to said side wall, a blade-like latch member pivotally mounted intermediate of its ends on said side wall beneath said top wall on an axis substantially perpendicular to said side wall at a place closer to one end of said slot than to the other and having one end portion adapted to swing through said slot and its other end projecting beyond the side wall opposite to said end wall, resilient means normally urging said latch member about said pivot mounting and said one end portion upwardly through said slot and its other end portion downwardly toward said bottom wall, and a stop carried by said latch member and engageable with said top wall for limiting the extent of movement of said portion through said slot.

3. A latch mechanism comprising a one-piece sheet metal body cut and formed to provide a single side wall terminating along one edge in a top wall extending substantially at a right angle to the plane of the side wall and to provide a wall portion having a positioning edge spaced from the top wall and projecting from the side wall in the same general direction as the top wall, said top wall having an elongated slot therethrough, said slot length extending substantially parallel to the side wall, said top wall at places adjacent to opposite ends of the slot being extended and providing wings inclined outwardly and downwardly from the top surface of the top wall, said side wall having a tang struck outwardly therefrom at an angle less than a right angle with the free end of the tang on the opposite side of the side wall from said top wall and extending upwardly toward the general plane of the top wall, the vertical distance between the upper end of said tang and the bottom face of the top wall between said wings being substantially equal to the thickness of a wall to which the latch is to be secured, a latch member pivotally mounted on said side wall beneath said top wall on an axis substantially perpendicular to the side wall at a place closer to one end of said slot than to the other and having a portion adapted to swing through said slot, and means normally urging said latch member about said pivot mounting and said latch portion upwardly through said slot.

4. A latch mechanism comprising a one-piece sheet metal body cut and formed to provide a single side wall terminating along one edge in a top wall extending substantially at a right angle to the plane of the side wall and to provide a single end wall spaced from and extending substantially at right angles to the top wall and projecting from the side wall in the same general direction as the top wall, said top wall having an elongated slot therethrough, said slot length extending substantially parallel to the side wall, said top wall at opposite ends of the slot being extended to provide wings inclined outwardly and downwardly therefrom, said side wall having a tang struck outwardly therefrom at an angle less than a right angle with the free end of the tang on the opposite side of the side wall from said top wall and extending upwardly toward

the plane of the top wall, the vertical distance between the upper end of said tang and the lowermost portions of said wings being substantially less than the thickness of a wall to which the latch is to be secured, a latch member pivotally mounted intermediate of its ends on said side wall beneath said top wall on an axis substantially perpendicular to the side wall at a place closer to one end of said slot than to the other and having one end portion adapted to swing through said slot and its opposite end portion projecting beyond said side wall opposite to said positioning wall, and means normally urging said latch member about said pivot mounting and said one end portion upwardly through said slot and the other end portion projecting away from said end wall to a place beyond the bounds of said side wall.

5. The combination with a supporting structure having a pair of supporting walls joining one another to form a corner, one of said walls having an aperture therethrough, of a mechanism carrier disposed in said aperture and secured and supported by direct cooperative relationship with each of said walls, said carrier comprising a one-piece sheet metal body cut and formed to provide a single side wall, a single end wall, a top wall and a bottom wall, said top and bottom walls extending in spaced relation to one another from substantially opposite and parallel marginal edges of the side wall and in the same general direction, said end wall having its outermost terminus disposed at a predetermined distance from the adjacent face of the side wall, the top wall having resilient portions at its opposite ends initially pre-set to incline outwardly and downwardly against and overlapping margins defining

the aperture in said one of said supporting walls, said side wall having a resilient tang struck outwardly therefrom at an angle less than a right angle thereto with the free end of the tang on the opposite side of the side wall from said top and third walls and extending upwardly toward the plane of the top wall between said portions and engaged with a margin defining the aperture in said supporting wall on a face thereof opposite to the top wall end portions, the vertical distance between said plane and the free edge of said tang being substantially equal to but not less than the thickness of said apertured supporting wall and the corresponding vertical distance from the outer ends of said top wall to said tang being initially less than either of the other said distance measurements whereby said top wall end portions are stressed and deflected toward the plane of the top wall when the upper edge of the tang is engaged with the inner face margin of said apertured supporting wall, said carrier end wall having its free outer edge disposed against the adjacent face of the other supporting wall.

ROY A. STONE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,214,035	Hoyt	Jan. 30, 1917
1,279,353	Kelly et al.	Sept. 17, 1918
1,485,382	Foley	Mar. 4, 1924
1,662,422	Hodges	Mar. 13, 1928
1,999,194	Hubbell	Apr. 30, 1935
2,386,732	Wohlhieter	Oct. 9, 1945