

[54] LATCH MECHANISM

[75] Inventors: John L. Remington, Coplay; Willard J. Benner, Quakertown, both of Pa.

[73] Assignee: The Stanley Works, New Britain, Conn.

[22] Filed: June 22, 1972

[21] Appl. No.: 265,337

[52] U.S. Cl. 312/333, 312/348

[51] Int. Cl. A47b 88/16

[58] Field of Search 312/333, 348, 346, 312/347, 349, 330; 308/3.6

[56] References Cited

UNITED STATES PATENTS

2,486,764	11/1949	Singer	312/348 X
2,561,295	7/1951	Stone	312/333
3,123,419	3/1964	Maxwell	312/333
3,142,517	7/1964	Ward	312/348 X
3,259,447	7/1966	Deutsch	312/348
3,371,968	3/1968	Loake	312/348 X

Primary Examiner—James T. McCall

Attorney—Robert B. Washburn

[57] ABSTRACT

A latching arrangement for a reciprocable drawer or chassis assembly operable to securely hold the individual drawers in the fully open position once opened and in the fully closed position, when closed, until released manually. Latch stops are secured on the front and rear of one side of each drawer itself, each of which cooperates with a single latch member having a locking arm which is pivotally secured to the side of the stationary frame member. Alternate embodiments of the invention are disclosed showing camming surfaces, which cause the latch member locking arm to engage the stops, as being either on the latch stop or on a portion of the latch member itself. A release lever which is used to release the latch arm from either of the stops may be easily reached when the drawer is in either the open or closed position. When in the closed position, the release lever protrudes through a notch in the front of the drawer and is thus readily accessible.

11 Claims, 7 Drawing Figures

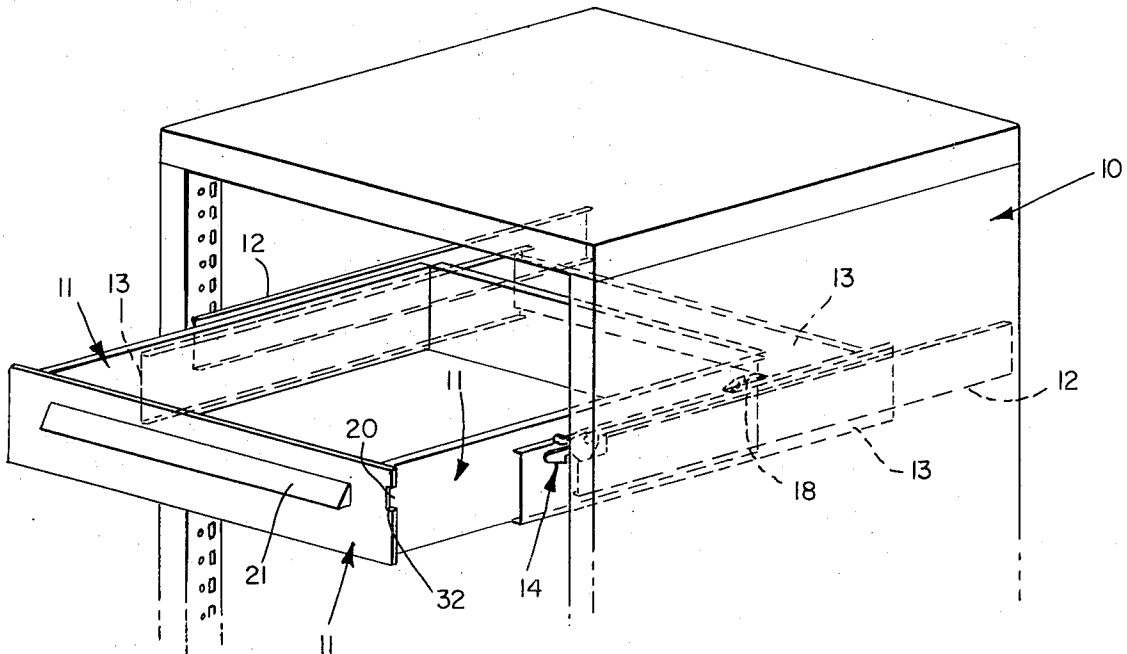


Fig. 1

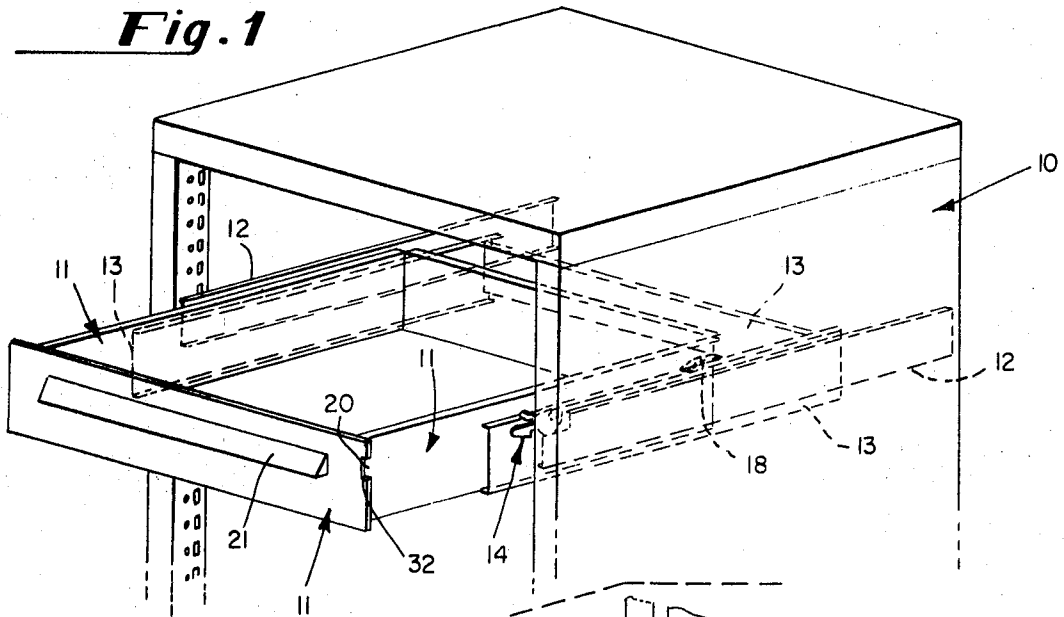


Fig. 2

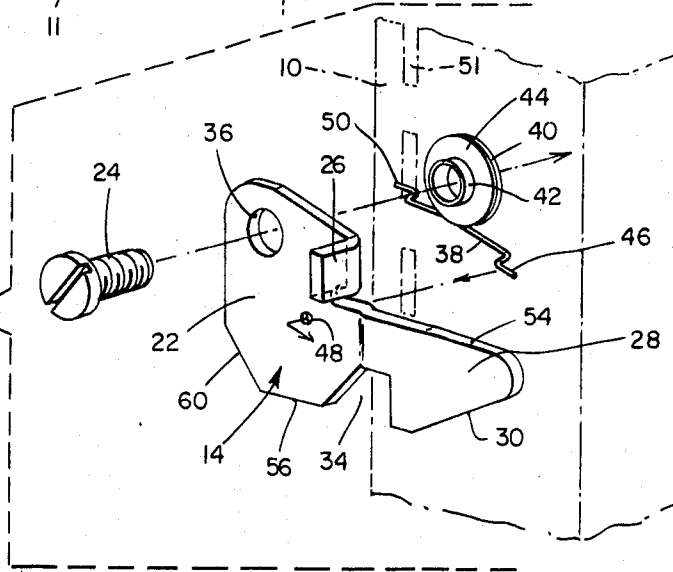
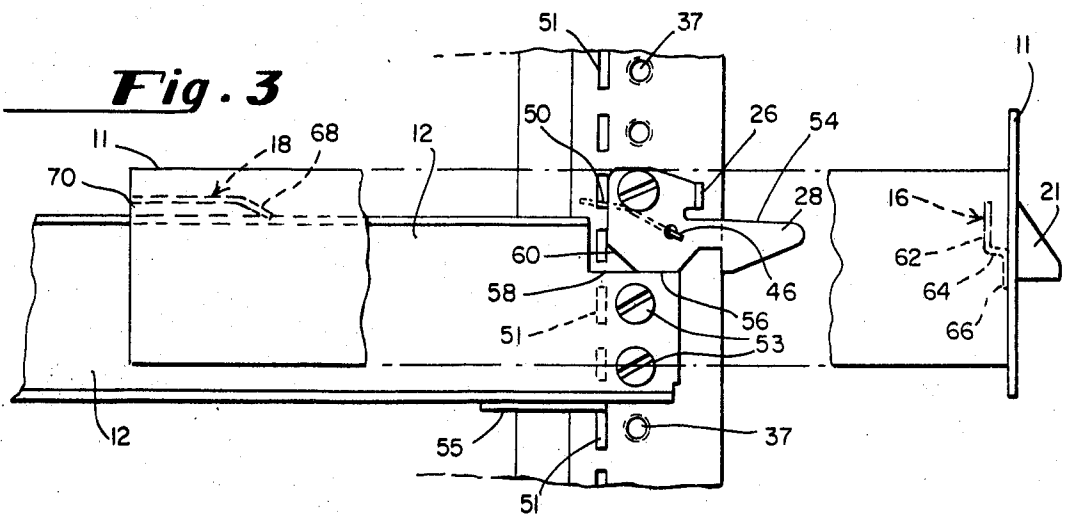


Fig. 3



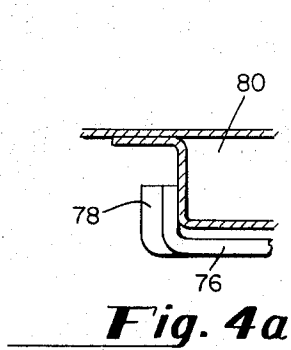


Fig. 4a

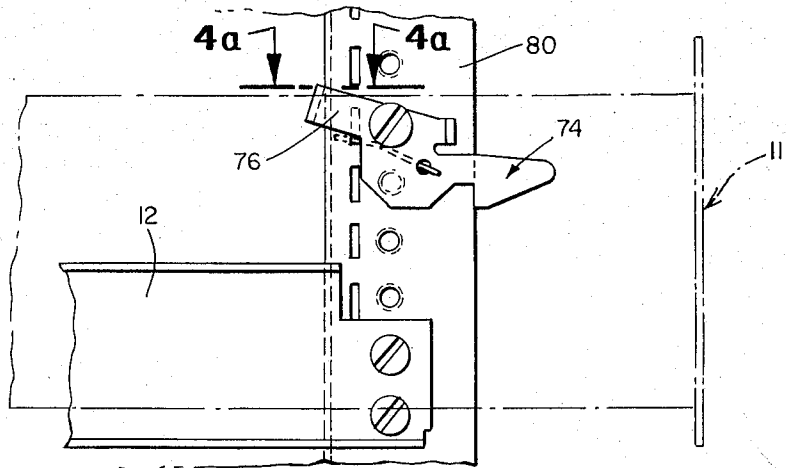


Fig. 4

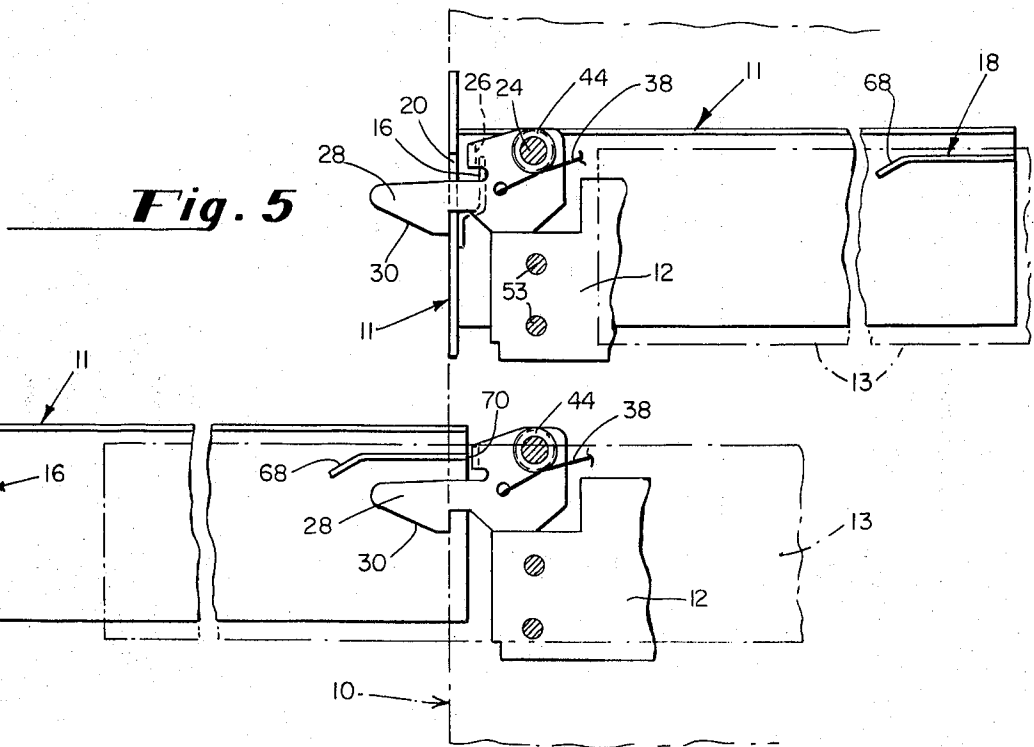


Fig. 5

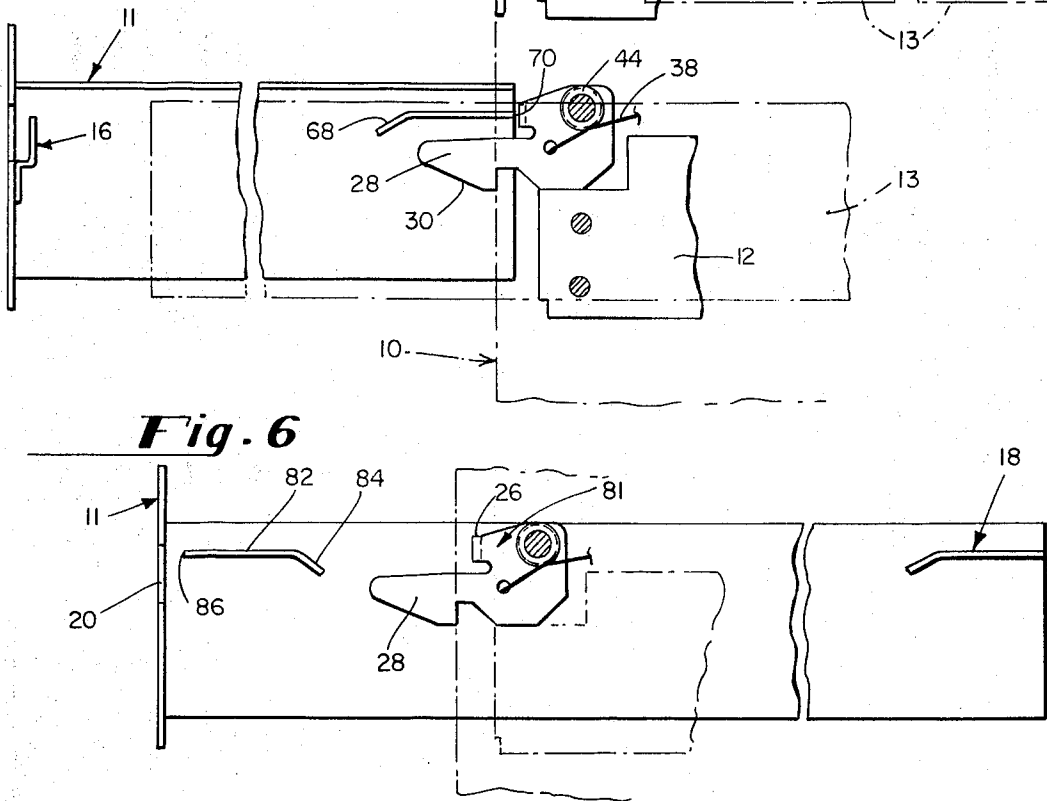


Fig. 6

LATCH MECHANISM

BACKGROUND OF THE INVENTION

1. Field of the Invention

The subject invention has utility whenever it is desired to equip drawer and chassis assemblies with mechanisms by which the drawers may be secured in both closed and opened positions. The invention has particular utility when used on cabinets and the like which are designed for ships, trucks, mobile carts, aircraft and in other environments where a rocking or tilting action will cause closed but unlocked drawers to open and open drawers to close under the influence of gravity during periods of motion. Not only is this an annoyance and the cause of inefficient operations, but also presents a safety problem in that bystanders may be jolted by drawers sliding open and the fingers and hands of persons working or filing in the open drawers may be pinched as drawers slide shut.

Many key-lock cabinets are of such a design that the drawers will slide open as soon as the cabinet or its environment is tilted somewhat. The necessity to lock or unlock all drawers in a cabinet at one time means the cabinets must as a rule be left unlocked during working hours at which time the drawers if otherwise unrestrained are free to slide. The subject invention provides a means of preventing this unwanted and dangerous shifting.

PRIOR ART

In the past, locking and release mechanisms for securing drawers in both fully open and closed positions have been cumbersome and complex making their installation costly and unattractive. For example, U.S. Pat. No. 2,630,364 which issued on Mar. 3, 1953 to H. S. Gleason discloses a locking and releasing mechanism for both open and closed positions. The Gleason mechanism utilizes camming surfaces on latch members which cooperate with a pin 12 secured to the stationary housing. Each of the latches 18 and 64 are operated by push buttons 23 which project from the front of the drawer. When the buttons 23 are manually pushed, arms 18 and 64 are lifted over the stationary pins 12 such that, in the case of pin 64 the drawer may be opened and in the case of arm 18 the drawer may be closed. Arms 18 and 64 must be responsive to the actuation of buttons 23 necessitating the chain of part as can be readily seen from FIG. 2 of the Gleason patent.

Other patents, such as U.S. Pat. No. 3,092,429 which issued on June 4, 1963 to G. W. Barnes, disclose an apparatus for holding a cabinet drawer open in an extended position but do not disclose apparatus which also secures a drawer in its locked position or could be readily adapted to do so with a single operating mechanism.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the subject invention to provide an improved latching arrangement for use particularly on ships, mobile installations, and the like in which a single cabinet drawer latching mechanism is effective to secure the drawer in both closed and opened positions to prevent the drawer from sliding open or closed during a tilting or rocking motion.

It is still another object of the subject invention to provide a latching mechanism that can be constructed and installed at less cost and at the same time is more

durable than latching mechanism complexes used in the past to secure drawers in both closed and fully opened positions.

It is yet another object of the subject invention to provide a latching mechanism for securing a cabinet drawer in both closed and fully opened positions wherein the latching release means is the same for both operations and is thus located in one position.

It is still a further object of the subject invention to provide a latching mechanism for securing the cabinet drawer in both closed and fully opened positions in which the release means is conveniently located and accessible when the drawer is both closed and fully opened.

Another object of the subject invention is to provide a latching arrangement for use on individual drawer assemblies of a key-lock type cabinet which relieves the necessity to lock the entire cabinet to prevent drawers from sliding open as a result of tilting motion.

Another object of the subject invention is to provide a latching arrangement for use on individual drawer assemblies which prevent the drawer(s) from closing as a result of tilting motion.

In accordance with the above objects, a latching arrangement is provided in which one operating mechanism is used to both secure the drawer in a closed position as well as to secure it in an open position. The latch or operating mechanism or member comprises a pivotal body portion mounted on the stationary side frame of the cabinet which has a latching arm extending perpendicularly from the body portion for engaging latch stops which are secured on the front and rear of one side of each individual cabinet drawer. In one preferred embodiment the rear latch stop has a camming surface which causes the latching arm to pass over the stop and be secured in a lock position. The same latching arm engages the front latch stop, however, the arm reaches its locking position by means of a camming surface on the latch mechanism itself, rather than on the latch stop, which engages a notch in the front of the drawer to cause the latching arm to seat in a lock position. The latching arm is released from both its open lock position and its closed lock position by manually raising an extended lever of the latch member, which is easily accessible regardless of the position of the drawer, to pivot the front of the latch member and its latching arm upwardly to unseat the latching arm while at the same time sliding the drawer so that the latching arm will be free of the particular latch stop in which it was engaged. When in the closed position, the opening lever protrudes out in front of the drawer while in the open position, the lever is to the side of the opened drawer.

The utility of the latching mechanism may be further increased by stretching a spring member from the latch mechanism to the stationary side frame where the latch is attached, although the latch mechanism will operate without such a spring. Several embodiments of the latch mechanism may be used which depend on the size, particularly the height of the drawers. If a drawer is used of a size in which the latch member may be installed adjacent to a portion of the carriage track, then the latch arm may be caused to seat in its locking position as the side of the latch is pivoted to an abutting position against the carriage track. On the other hand, if the drawer is of a size whereby the latch member cannot be installed adjacent the carriage track, the latch member may be equipped with an arm member which

can be secured against a portion of the cabinet frame when the latch is in its locking position.

In an alternate embodiment, the front and rear latch stops may be substantially of the same design both having camming surfaces over which the latching arm of the latch mechanism passes as it seats into its locking position as opposed to the earlier embodiment where the latch mechanism itself had a camming surface which passed over a notch on the drawer to cause the locking arm to secure the drawer in its closed position. In this latter embodiment the release lever operates in the same fashion to release the latch locking arm from either the front or rear latch stops.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an isometric view of a cabinet showing a drawer with latching member and rear latch stop installed;

FIG. 2 is an exploded isometric view showing the latching member with its spring member;

FIG. 3 is a side elevational view showing the latching member and latch stops as seen from inside of the cabinet;

FIG. 4 is a side elevational view of another embodiment of a latching member as seen from inside of the cabinet; which may be positioned independently of the carriage bracket;

FIG. 4a is a cross sectional view of a portion of the latching member of FIG. 4 taken along section line 4a;

FIG. 5 is a side elevational cutaway view of the latching arrangement of FIG. 1 as seen from the outside of the cabinet showing an upper drawer in its closed position with the latching member protruding through the notch in the front of the drawer and the latching arm engaging the front latch stop, and a lower drawer in its fully opened position with the latching arm engaging the rear latch stop; and

FIG. 6 is a side elevational cutaway view showing an additional embodiment of a latching arrangement as seen from the outside of the cabinet in which both front and rear latch stops are provided with camming surfaces.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to FIG. 1 a cabinet 10 is shown having a standard type drawer or chassis 11 which is reciprocally slidable from closed to open position on supporting structure. The supporting structure may comprise generally stationary supporting members or carriage brackets 12 mounted on each of the cabinet sides, and an intermediatè moveable member or carriage 13 reciprocally supported with respect to member 12. Drawer 11 may be reciprocally supported by the carriage 13. Various means and mechanisms for drawer reciprocation are well known to the art and thus will not be described in detail since the subject invention is not limited to any particular means. A latching member 14 is secured to the side of the cabinet in a manner as will be described. Secured to the drawer 11 itself are front and rear latch stops 16 (see FIG. 3) and 18 respectively. As drawer 11 is pushed to its closed position the latching member 14 automatically engages the front latch stop 16 to secure the drawer in the closed position with mechanism 14 protruding through drawer notch 20 as will be subsequently described in detail. As the drawer 11 is pulled to its fully open position by

means of drawer-pull 21, latching mechanism 14 automatically engages rear latch stop 18 to secure the drawer in its fully open position.

With reference to FIG. 2 the latching member 14 is shown as having a central body pivot portion 22 which will be pivotally secured to the side of the storage cabinet 10 by means of screw 24. The latching member 14 further has a latching arm 26 which extends at approximately a right angle from body portion 22 and is the part of the latching member which engages latch stops 16 and 18 as will be explained. Extension 28 serves as a lever arm and permits the latching member 14 to be pivoted manually to release the latching arm 26 from the latch stops 16, 18. Extension 28 has a lower camming surface 30 which will engage the bottom surface 32 of notch 20 as the drawer 11 is closed (see FIG. 1). The indented area 34 of the latching member 14 is designed to allow the latching arm 26 to drop into locking position after camming surface 30 has passed over the notch surface 32 as the drawer 11 is closed.

The latching member 14 is attached to the side of cabinet 10 by passing the screw 24 through a hole 36, drilled in latch body 22 and into a threaded screw hole 37 (see FIG. 3) in the side of the cabinet. Sleeve portion 42 of a washer 44 is of a size to fit compatibly in drill hole 36 of the latching body 22 and allows the latch member 14 to pivot although secured tightly in place by screw 24. An optional spring means 38 may be attached to cause the latching arm 26 to be biased to a locking or otherwise down position as will be described, in which case washer member 44 will have a groove 40 on its outer periphery into which spring member 38 is secured. When the washer 44 is secured in place on the cabinet wall side of latch member 14 as the unit is assembled and mounted, spring tip 46 is hooked in aperture 48 of latching mechanism 14. The other tip 50 of the spring member 38 is secured to a receiving means which may be bracket support slots 51 in the side of the cabinet 10.

With reference to FIG. 3, the latching member 14 as described in FIG. 2 is mounted in close proximity to carriage bracket 12 which is firmly secured to the side of cabinet 10 by screws 53 in screw holes 37 and by bracket supports 55 lodged in slots 51. It will be noted that when the top edge 54 of extension lever 28 is approximately horizontal, edge 56 abuts against edge 58 on the corner of bracket member 12. As can be visualized notch 60 has been made in latching member 14 for clearance purposes to enable the front lever 28 of latching member 14 to pivot upwardly around screw member 24 which is the pivot point.

Front latch stop 16 is shown on the cutaway front portion of drawer 11 in FIG. 3 as comprising a top portion 62 which extends rearwardly from the drawer front by horizontal arm 64; the stop 16 being mounted by welding lower portion 66 to the drawer front or securing by other means.

Rear latch stop 18 includes a camming surface 68 which faces to the front of drawer 11 and is aligned to engage latching arm 26 as drawer 11 is pulled open; and a rear surface 70 behind which latching arm 26 will assume a locking position. The rear latch 18 may be mounted to the drawer side by welding or other means, preferably made easier by a lower extension (not shown) which is perpendicular to the stop portion which engages locking arm 26. The lower extension

may be received by a groove in the drawer to aid in its placement.

As can be seen from FIGS. 1, 2 and 3 as drawer 11 is pushed to a closed position lever 28 of latching member 14 which is aligned with notch 20 will protrude through the notch as the front of the drawer 11 nears its closed position within cabinet 10. As this happens camming surface 30 of latch 14 engages the bottom portion 32 of the notch 20 which causes extension portion 28 of latch member 14 to raise upward. This motion also causes the latching arm 26 which is rigidly secured to the latching member 14 to raise upward as latch stop 16 approaches latching arm 26 as the drawer 11 is closed. The dimensions of the latch camming surface 30 are such that as a top portion 62 of the front stop 16 reaches the locking bar 26, the locking bar is raised to allow the upper portion 62 of the front stop 16 to pass under the locking bar 26. After this occurs, the indented portion 34 of the latching member 14 reaches the notch bottom 32 and the forward extension portion 28 of latch mechanism 14 abruptly drops downwardly with latch member edge 56 engaging edge 58 of the carriage bracket once again. This movement causes locking bar 26 to lower into locking position in the space between the upper portion 62 of front stop 16 and the front of drawer 11. Spring member 38 aids in causing the quick return of the latch mechanism 14 to its down position. Thus the drawer 11 will be secured firmly in place and will remain so despite a pulling force which may be exerted on the drawer or a tilting motion of the cabinet.

When it is desired to open drawer 11, lever 28 which protrudes through notch 20 as best seen in FIG. 5 (top drawer) may be used as a release handle and manually lifted upwardly to raise locking bar 26 free of front stop 16. As this is done, drawer 11 may be pulled outwardly from the cabinet.

The same latching member 14 is also used to lock a drawer in a fully open position to prevent it from closing which could otherwise be expected if the cabinet were subjected to a tilting motion. As the drawer 11 nears its fully open position, cam surface 68 on the front of the rear stop 18 engages latching arm 26 of latching member 14. As the drawer 11 opens fully, the locking arm slides over rear latch stop 18 and drops down on the rear side of member 18 as permitted by the pivoting of latch member 14 about screw member 24 (see lower drawer of FIG. 5). The drawer is of course prevented from coming out further by standard carriage mechanism which prevents drawers from falling out. Thus the drawer 11 cannot slide outward nor can it slide or be pushed inwardly since the latching arm 26 will abut against the rear surface 70 of the latch stop 18. When it is desired to close the drawer, extension lever 28 of the latching member 14 is used once again as a release handle. Thus, manually raising lever 28 will raise the locking arm 26 to a height above stopping member 18 and allow the drawer 11 to be pushed inwardly to a closed position.

As seen in FIGS. 1 and 3 the down position of latching member 14 is achieved when surface 56 abuts against notch edge 58 of the carriage bracket 52. An alternate latching mechanism is also shown in FIG. 4. Latching member 74 is substantially identical to latching member 14, however, latching member 74 has an upper arm 76 with a perpendicular portion 78 (see FIG. 4a) which is designed to fit around and abut the

column 80 of the cabinet side. Upward extension 76 and its arm 78 have dimensions which when the locking arm 26 is in its down position, arm 78 will abut against the column 80 preventing the front extension 28 as well as the latching arm 26 from pivoting further downward than what was permitted in the FIG. 3 embodiment by the interaction of edge 56 of latching member 14 with carriage bracket surface 58. When manual pressure is exerted on lever extension 28 to raise latching arm 26, arm 78 swings downwardly free of the column restraint to allow latching arm 26 to be raised to clear either latch stop 16 or 18 as previously described. Thus, extension 76 with its perpendicular arm 78 replaces the lower edge 56 function of latching member 14 and enables latching member 74 to be placed in position irrespective of the positioning of carriage bracket 12. The notched area 60 of latching member 14 which enables that mechanism to be pivoted clear of bracket 12 is no longer necessary. Latching member 74 has utility with drawers having more depth than the drawer of FIG. 1 since the placement of latching member 14 is determined by the carriage bracket positioning.

With reference to FIG. 6 an alternate latch stop embodiment is shown. The latching member 81 may be substantially identical to members 14 or 74 and the rear latch stop 18 may be the same and operate in conjunction with the latching member 14 and 74 as previously described. In place of front latching member 16 a latching stop 82 substantially identical to rear latching stop 18 is used only with the camming surface 84 facing toward the rear of the drawer 11 rather than toward the front as described for the rear latching stop 18. Thus as the drawer 11 is closed, latch arm 26 will be cammed upwardly by camming surface 84 causing the latching arm 26 to slide over the latch stop 82 and drop into a locked position between the edge 86 of latch stop 82 and the front of drawer 11.

To release the latch, the front lever 28 of latching member 81 is manually raised upwardly to cause the latching arm 26 to rise above latching stop 82 and when force is applied outwardly to the drawer, it will slide open free and clear of the locking restraint of latching arm 26. In this modification the need for camming surface 30 of the latching member and its mating camming surface 32 on the drawer front are eliminated since the camming upward of the latching arm 26 is accomplished by the interaction between latching arm 26 and camming surface 84.

While various embodiments of the invention have been shown and described it will be understood that various modifications may be made. The appended claims are therefore intended to define the true scope of the invention.

We claim:

1. A latching arrangement for use in securing a drawer of a cabinet in either an open or closed position comprising:

- a latching member pivotally secured to the cabinet frame adjacent the position of the drawer, said latching member having a latching arm;
- a rear latch stop mounted on the rear portion of the side of said drawer nearest said latching member and positioned to be engageable by said latching arm of said latching member;
- a front latch stop mounted on the front portion of the side of said drawer nearest said latching member

and positioned to be engageable by said latching arm of said latching member; and camming means in which said latching arm is cammed into locking engagement with said rear latch stop as said drawer reaches an open position and in which said latching arm is cammed into locking engagement with said front latch stop as said drawer reaches a closed position, said latching member further including a release means by which said latching arm may be released from locking engagement with said rear latch stop and said front latch stop.

2. The latching arrangement of claim 1 wherein said camming means comprises:

- a. in the case of the engagement of the latching member with said rear latch stop in which said drawer is secured in its open position, a camming surface on the forward portion of said latch stop which is engaged by said latching arm as said drawer is opened; and
- b. in the case of the engagement of the latching member with said front closed position, a camming surface of said latching member which engages a part of said drawer to cause said latching arm to engage said front stop as said drawer is closed.

3. The latching arrangement of claim 2 wherein the part of said drawer which is engaged by the camming surface of said latching member comprises a notch in the front of said drawer of which the bottom surface is aligned to cam up the camming surface of said latching member as said drawer is closed.

4. The latching arrangement of claim 2 wherein the means to release said latching member comprises a latching release lever which is accessible on the side of said drawer when said drawer is in its fully open position and which extends forward through said notch in the front of said drawer when said drawer is in its fully closed position.

5. The latching arrangement of claim 4 wherein said latching member camming surface is the lower surface of said latching release lever.

6. The latching arrangement of claim 1 wherein the camming means includes camming surfaces on said front latch stop and said rear latch stop which are engageable by said latching arm as said front latch stop is engaged as said drawer is closed and as said rear latch stop is engaged as said drawer nears its fully open position.

7. The latching arrangement of claim 1 including a spring means which is engageable between said latching member and said cabinet frame and is effective to bias said latching arm to its locking position.

8. A latching arrangement for use in securing a drawer of a cabinet in either an open or closed position comprising:

- a latching member pivotally secured to the cabinet frame adjacent to position of the drawer, said latching member having a latching arm;
- a rear latch stop mounted on the rear portion of the side of said drawer nearest said latching member and positioned to be engageable by said latching arm of said latching member and of a configuration so that the latching arm will pass over and drop into locking position as said drawer is opened;
- a front latch stop mounted on the front portion of the side of said drawer nearest said latching member and positioned to be engageable by said latch arm of said latching member and of a configuration so that the latching arm will pass over and drop into locking position as said drawer is closed;

means to restrain said latching member to enable said latching arm to drop only as far as a locked position with respect to said latch stops and during the times said latching arm is free of said latch stops; and

camming means in which said latching arm is cammed into locking engagement with said rear latch stop as said drawer reaches an open position and in which said latching arm is cammed into locking engagement with said front latch stop as said drawer reaches a closed position, said latching member further including a release means by which said latching arm may be released from locking engagement with said rear latch stop and said front latch stop.

9. The latching arrangement of claim 8 in which said restraining means comprises a stationary bracket member for said drawer upon which the bottom surface of said latching member abuts as said latching member and attached latching arm pivot to the down position.

10. The latching arrangement of claim 8 in which said restraining means comprises an engaging arm which abuts against a side column of said cabinet as said latching arm reaches the down position.

11. The latching arrangement of claim 8 further comprising a washer member which is used in pivotally securing said latching member to the cabinet frame, said washer member having a sleeve which is insertable in a drill hole in said latching member and further having a groove around which a spring is wrapped, said spring being attached to said latching member at one end and said cabinet at the other to bias said latching arm to a down position.

* * * * *

55

60

65

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,782,800

Dated January 1, 1974

Inventor(s) Remington et al

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 4, line 14, change "th" to read "the".

Column 6, line 65, change "saie" to read "said".

Column 7, line 17, change "cammin" to read "camming";
line 22, delete "closed position" and substitute
"latch stop in which said drawer is secured in its closed
position,"

line 23, change "sai" to read "said";

line 23, change "membre" to read "member"

line 24, change "latchin" to read "latching"

line 26, change "Th" to read "The"

change "th" to read "the"

line 29, change "wich" to read "which"

line 32, change "2" to read "3"

line 34, change "wich" to read "which"

line 36, change "forward" to read "forwardly"

line 44, change "fron" to read "front"

line 50, change "sprin" to read "spring".

Column 8, line 8, change "nearese" to read "nearest".

line 16, change "membre" to read "member"

line 19, change "membre" to read "member"

line 21, change "th" to read "the"

line 28, change "sai" to read "said"

line 29, change "mans" to read "means"

line 31, change "engagment" to read "engagement"

line 34, change "statioary" to read "stationary"

line 37, change "pivotto" to read "pivot to"

line 40, change "sai" to read "said"

lines 43 and 44, change "seucring" to read "securing"

line 48, change srping" to "spring"

Signed and sealed this 14th day of May 1974.

(SEAL)

Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents