

[54] **ANTI-TILT LOCK MECHANISM** 3,187,602 6/1965 Cousins..... 74/110  
 3,259,444 7/1966 Friend..... 312/221  
 [75] Inventors: **Thomas R. Hegg**, Michigan City; 3,323,849 6/1967 Stark..... 312/221  
**Michael D. McCormack**, Portage, 3,622,216 11/1971 Haunost..... 312/222  
 both of Ind.

[73] Assignee: **Interstate Industries, Inc.**,  
 Mundelein, Ill.

*Primary Examiner*—James T. McCall  
*Attorney, Agent, or Firm*—Kegan, Kegan & Berkman

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[21] Appl. No.: **410,763**

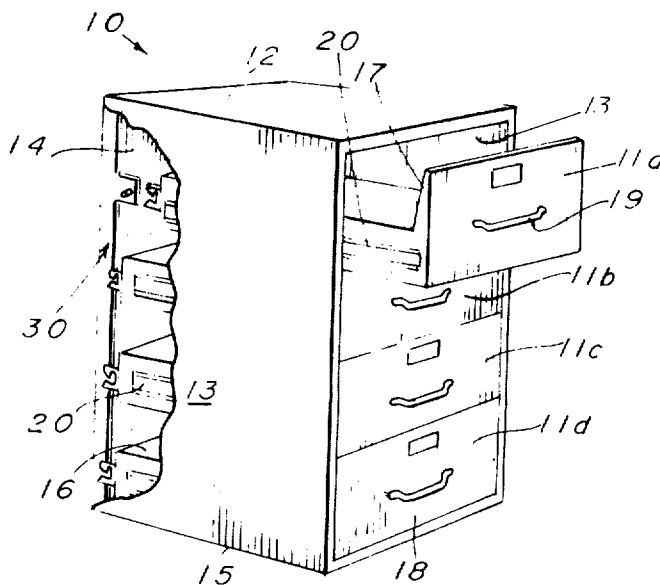
[57] **ABSTRACT**

[52] U.S. Cl..... 312/221, 312/107.5, 312/222  
 [51] Int. Cl..... E05b 65/46, E05c 15/04  
 [58] Field of Search ..... 312/216, 221, 222, 107.5,  
 312/273, 333, 218, 220; 403/107, 328, 327,  
 343; 292/146, 138; 49/395, 307; 74/567,  
 569, 110

An anti-tilt mechanism for locking the remaining drawers of a filing cabinet in a closed position when one of the drawers is pulled open. Catch-plates affixed to each rod drawer are adapted to engage pins affixed to a lock rod suspended within the cabinet frame. When one drawer is pulled outwardly the lock rod is raised upwardly, automatically sliding pins corresponding to the remaining drawers into locking engagement with their respective catch-plates. Fail-safe means are also provided to correct inadvertent downward shifting of the lock rod when one drawer is opened.

[56] **References Cited**  
**UNITED STATES PATENTS**  
 2,719,770 10/1955 Roberts..... 312/221

**5 Claims, 5 Drawing Figures**



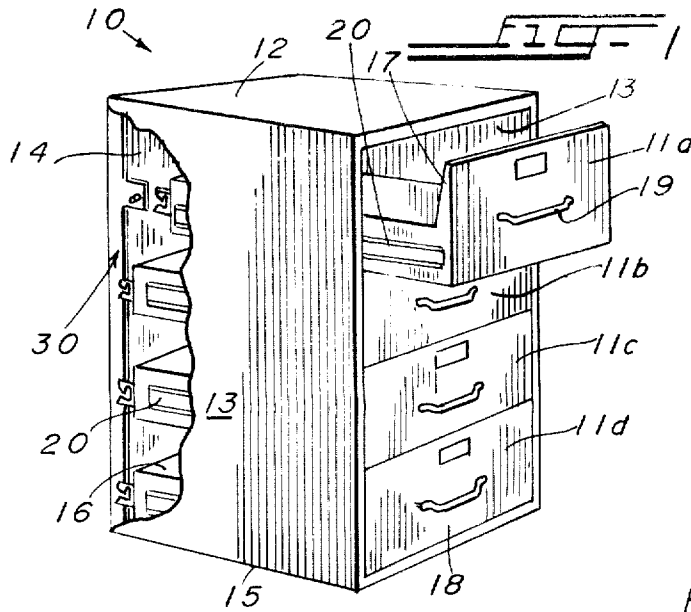


FIG. 2

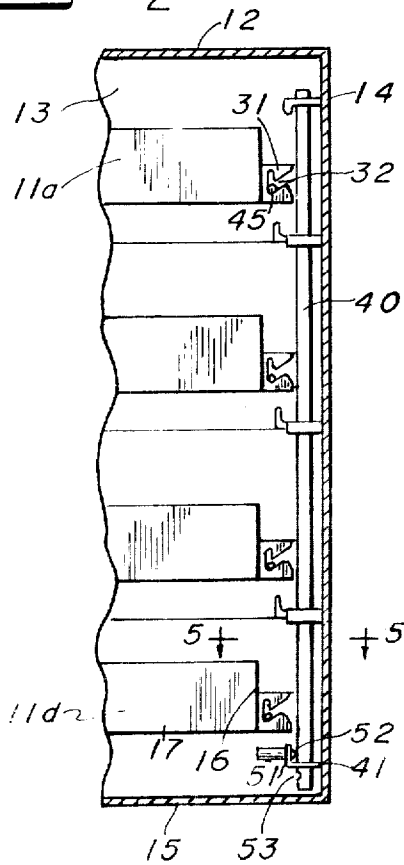
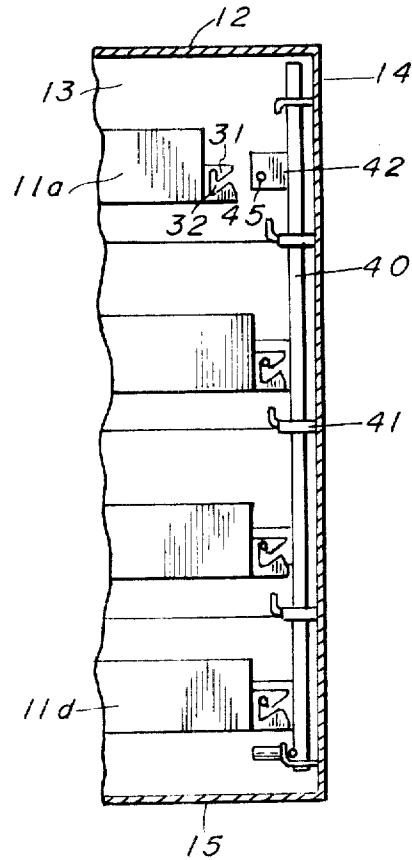
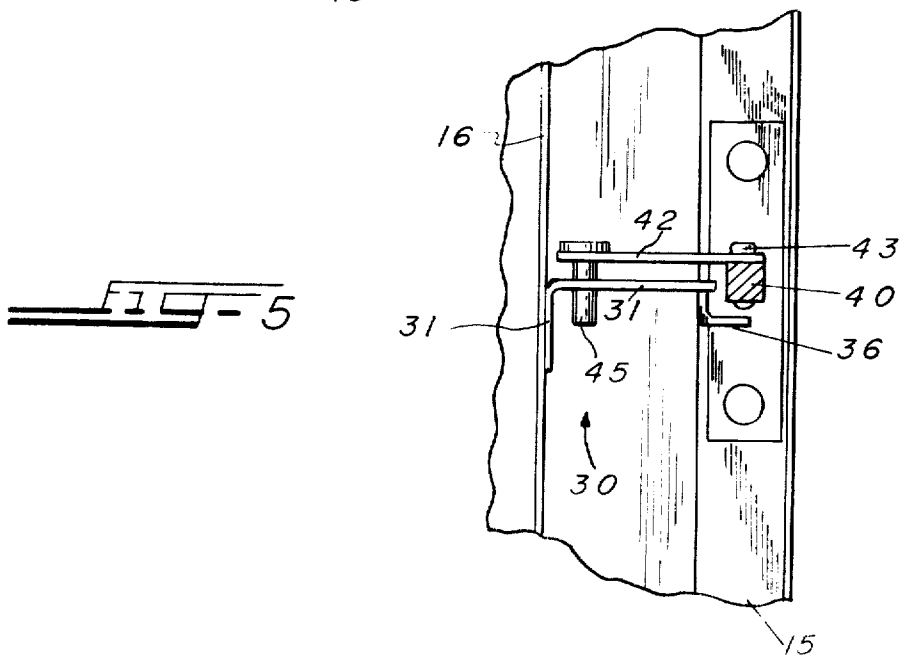
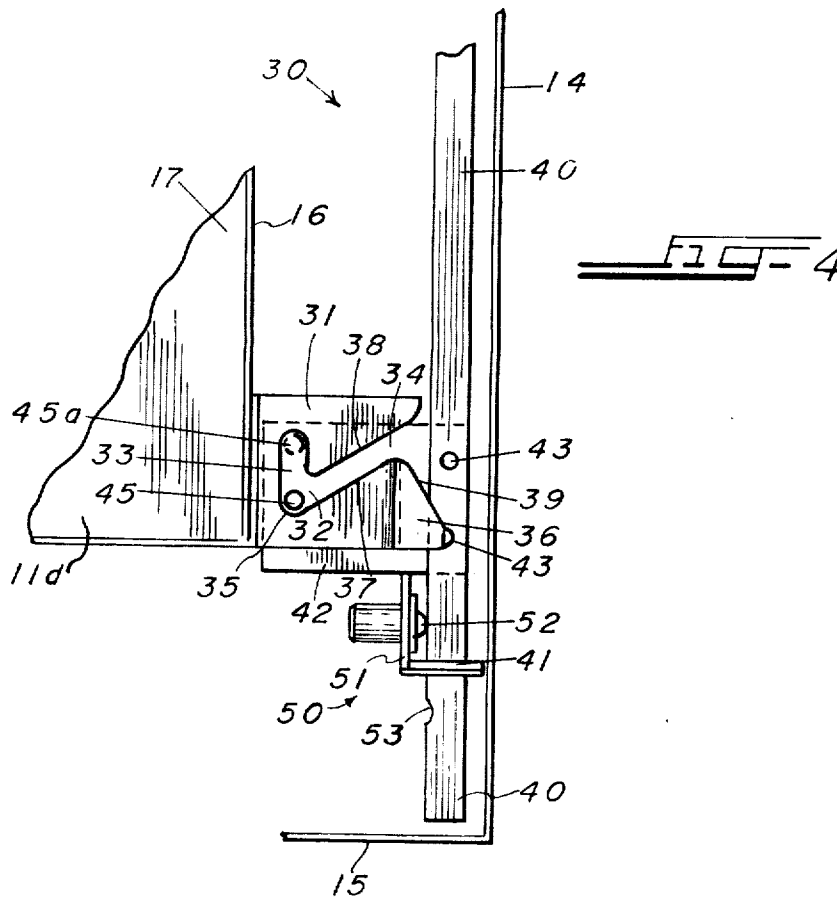


FIG. 3





## ANTI-TILT LOCK MECHANISM

## BACKGROUND OF THE INVENTION

This invention relates to filing cabinets of the type holding several drawers in a vertically stacked array. When drawers in such cabinets are fully loaded with files, their weight is so substantial that pulling out more than one drawer at a time causes a significant shift in weight distribution. If the cabinet is not anchored to an outside structure, this weight shift can cause the entire cabinet to tilt in the direction of the user with consequent danger of spillage of cabinet contents and of injury to the user.

It is possible to eliminate such dangers by bolting the file cabinet to a floor, wall, or other adjacent structure. However, this technique prevents the cabinet from being moved readily and also is likely to mar the appearance of the structure to which the cabinet is fastened. It is a principal object of the present invention to prevent undesired tilting of a filing cabinet without fastening the cabinet to any external structure.

It is a related object of the present invention to provide a filing cabinet with a self-contained lock mechanism for prevention of tilting by allowing only one drawer to be opened at a time. When one drawer is opened, each of the remaining drawers is automatically locked until the open drawer is shut. Several prior art devices operate on a similar principle, but these prior art structures all suffer from one or more disadvantages making them less than completely suitable for their intended purpose. For example, Roberts U.S. Pat. No. 2,719,770 teaches an anti-tilt mechanism including a lock bar which shifts downwardly when one drawer is opened, thereby preventing the remaining drawers from opening. A principal disadvantage of this mechanism is that if the lock bar inadvertently slips downward while all drawers are closed, all of the drawers are locked shut and none can be opened without disassembling the entire cabinet. It is an important object of the present invention to overcome this disadvantage of prior art cabinets by providing a lock rod which is shifted upwardly rather than downwardly when one drawer is opened, thereby locking the remaining drawers in place. The present invention also includes fail-safe means for returning the lock rod to its proper position in case of inadvertent downward shifting of the lock rod after one drawer has been opened.

Other prior art mechanisms for prevention of filing cabinet tilting have included an excessive number of moving parts, thus increasing the probability of mechanical failure. It is an object of the present invention to provide an anti-tilt mechanism for a filing cabinet which is simple in construction and which includes few moving parts, thus minimizing any possibility of structural failure and decreasing construction costs.

Other and further objects and advantages of the invention will become apparent upon inspection of the following specification, taken in conjunction with the drawings, in which:

FIG. 1 is a fragmentary perspective view of a filing cabinet of the invention, with one side wall partially cut away to show the anti-tilt lock mechanism;

FIG. 2 is a fragmentary cross sectional view of the filing cabinet of FIG. 1, with all drawers closed;

FIG. 3 is a fragmentary cross-sectional view of the filing cabinet of FIG. 1, with the top drawer partially

opened and the remaining drawers locked in the closed position;

FIG. 4 is an enlarged, fragmentary side view of the anti-tilt lock mechanism shown in FIGS. 2 and 3; and

FIG. 5 is an enlarged, fragmentary cross-sectional view of the anti-tilt lock mechanism taken substantially on the line 5—5 of FIG. 2. The detent catch shown in FIG. 4 has been removed from FIG. 5 to facilitate understanding of the drawing.

In effectuating the objects of the present invention, a filing cabinet is provided with an anti-tilt lock mechanism which automatically locks all remaining drawers within the cabinet when one drawer is opened. When the one open drawer is closed, all of the drawers are automatically unlocked. This system avoids any cabinet imbalance and resultant tilting which might occur if more than one drawer were allowed to be pulled outwardly to an open position.

Referring now to the drawings, there is shown in FIG. 1 a filing cabinet 10 including four vertically arranged drawers 11a, 11b, 11c and 11d. The four drawers are slidably supported within a cabinet frame comprising a top wall 12, two side walls 13, a rear wall 14, and a floor 15. Each drawer includes a rear 16, opposed lateral sides 17, a front 18, and a handle 19 affixed to the outer surface of each front 18. The drawers are suspended within the cabinet frame by channel-shaped raceways 20 affixed to both sides 17 and adapted to engage telescopic roller supports (not shown) affixed to interior surfaces of the cabinet side walls 13. Each drawer can be opened for inspection or removal of its contents by pulling outwardly on a handle 19. In FIG. 1 the top drawer 11a has been opened and the remaining drawers have all been locked shut by the anti-tilt mechanism 30 situated near the rear wall 14 of the cabinet frame. In the preferred embodiment shown and described herein, the cabinet frame and drawers are each constructed of sheet metal.

The structure and mode of operation of the anti-tilt lock mechanism of the invention are shown in FIGS. 2 through 5, and particularly in FIG. 4. A generally L-shaped metal catch-plate or catch-plate means 31 is spot welded to the rear 16 of each drawer 11d. Each catch-plate 31 is formed with a generally V-shaped, rearwardly opening slot 32 including an upward channel 33 and a rearward channel 34. The two channels diverge upwardly from a junction 35. An angle plate 36 formed integrally with the catch-plate 31 extends rearwardly therefrom.

The rearward channel 34 is bounded by a first bearing edge 37 constituting a lower marginal edge, and a second bearing edge 38 constituting an upper marginal edge. The upper edge of the angle plate 36 is a third bearing edge 39 pitched generally rearwardly and downwardly of the rearward opening of the slot 32.

An important element of the anti-tilt lock mechanism is a metal lock rod 40 carried by the rear wall 14 of the cabinet frame. A vertically spaced series of collars 41 affixed to the rear wall 14 encircle the lock rod 40 and constitutes guides preventing lateral movement of the lock rod 40 when it is shifted vertically upwardly and downwardly.

At vertically spaced positions along the lock rod 40 correlated with the catch-plates 31 affixed to the drawers, a series of lock plates 42 are affixed to the lock rod 40 by rivets 43. Pins 45 inserted through and extending laterally outwardly from each lock-plate 42 are sized

and positioned to enter the slots 32 formed in the catch-plates 31 to bear upon the three bearing edges 37, 38, 39.

As shown in FIGS. 2, 3 and 4, the anti-tilt lock mechanism 30 also includes a detent 50 adapted to detain the lock rod 40 and each of the lock plates 42 and pins 45 carried thereby in an elevated, drawer locking position when one of the drawers is opened. The detent 50 includes a spring 51 affixed to a collar 41 and resiliently urging a lug 52 carried by the spring 51 into contact with the lock rod 40. The lock rod 40 is formed with a socket or recess 53 adapted to receive and to frictionally secure the lug 52 when the lock rod 40 is raised to bring the socket 53 into mating correspondence with the lug 52.

The mode of operation of the anti-tilt lock mechanism of the invention is shown in FIGS. 2, 3 and 4. When all four drawers are closed (FIG. 2) the pins 45 attached to the lock rod 40 each rest at the junction 35 of the upward and rearward channels of the slot 32. When a drawer 11a is pulled outwardly (FIG. 3), the pin 45 corresponding to that drawer slides upwardly along the first bearing edge 37 of the catch-plate 31. Elevation of this pin 45 raises the attached lock rod 40, so that pins 45 corresponding to each of the remaining drawers are raised upwardly into drawer locking positions within their respective upward channels 33 (See 45a on FIG. 4). The remaining drawers 11b, 11c, 11d are thereby prevented from moving outwardly, thus obviating excessive imbalance and tilting of the cabinet 10. The lock rod 40 is retained in its elevated, drawer locking position by operation of the afore-described detent 50.

When the single open drawer 11a is closed, a second bearing edge 38 of the catch-plate 31 abuts against the pin 45, thereby lowering the lock rod 40 to the position shown in FIGS. 2 and 4. The force applied by the catch-plate 31 of the first drawer 11a is sufficient to overcome the frictional force of the lug 52 and socket 53 detaining the lock rod 40 in an elevated position. After the lock rod 40 is lowered, the mechanism is in the position shown in FIG. 2 and any one of the drawers can again be pulled forwardly.

Experience with other anti-tilt mechanisms in filing cabinets has shown that lock rods or bars will occasionally inadvertently slip downwardly from the position corresponding to FIG. 3. This problem can be caused by an imperfect mating fit between the lug and socket in the detent holding the rod or bar in place. When this problem occurs in conventional filing cabinets, corrections can be made only through the time-consuming expedient of disassembling the entire cabinet to restore the lock bar to its proper position.

The above-described problem can be corrected with relatively little effort in the anti-tilt mechanism of the present invention by operation of a fail-safe means in the form of an angle catch 36 formed integrally with the catch-plate 31. If the lock rod 40 should inadvertently shift downwardly when one of the drawers is in a forward, open position, the pins 45 will be automatically restored to their proper positions within their respective slots 32 merely by closing the open drawer. When the open drawer is closed, the third bearing edge 39 on an angle catch 36 will bear against and lift a corresponding pin 45. As the lock rod 40 is raised, each of the pins is restored to its respective slot 32. The pins 45

are each returned to their normal resting positions, shown in FIG. 2.

The foregoing invention has been described and illustrated with reference to one preferred embodiment. Various changes and modifications can be made without departing from the spirit and scope of the following claims. For example, it is possible to modify the detent shown herein by interchanging the positions of the lug and socket so that the lug is affixed to the lock bar rather than the spring. The following claims are intended to cover this and other modifications falling within the spirit and scope of the invention.

What is claimed is:

1. In a filing cabinet comprising a cabinet frame, a plurality of vertically stacked drawers slidably supported within said frame for inward and outward movement with respect thereto, and an anti-tilt lock mechanism for maintaining the remaining drawers fixed within said cabinet when one of said drawers is pulled outwardly from said cabinet, said anti-tilt lock mechanism comprising

a lock rod carried by said cabinet and extending generally vertically therewithin,

collar means affixed to said cabinet frame and constituting guide means for said lock rod during vertical shifting thereof;

a plurality of pin means secured to and extending laterally outwardly from said lock rod at vertically spaced positions therealong correlated with respective said drawers for locking engagement therewith;

vertically disposed catch-plate means affixed to each said drawers and projecting outwardly therefrom, each said catch-plate means being formed with a rearwardly opening, generally V-shaped slot adapted to receive therewithin and across a corresponding pin means carried by said lock rod; and

detent means affixed to said cabinet frame and said lock rod and adapted to retain said lock rod and each of the pin means connected thereto in an elevated position when said lock rod is shifted upwardly;

the improvement wherein said slot includes upward and rearward channels diverging upwardly from a junction thereof, said rearward channel opening rearwardly of said catch-plate means;

and wherein walls bounding said slot include a first bearing edge for said pin means, said first bearing edge being pitched rearwardly and upwardly and constituting a lower margin of the rearward channel of said slot;

whereby upon pulling one of said drawers outwardly from said cabinet frame said first bearing edge abuts against a corresponding pin means to elevate said pin means and the lock rod connected thereto, thereby to raise said pin means in each said upward channel of said catch-plate means of each remaining drawer of the cabinet and to lock the remaining drawers within the cabinet against withdrawal therefrom.

2. The improvement as set forth in claim 1, wherein said detent means comprises

a lug affixed to said cabinet frame;

spring means resiliently urging said lug against said lock rod; and

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a socket in said lock adapted to receive said lug thereby to detain said lock rod and each said pin means connected thereto in an elevated, drawer locking position when one of the drawers is pulled outwardly from the cabinet to bring said lug and said socket into mating engagement.

3. The improvement as set forth in claim 1, wherein walls bounding said slot further include a second bearing edge for said pin means, said second bearing edge being pitched rearwardly and upwardly and constituting an upper margin of the rearward channel of said slot;

whereby upon pushing an open drawer inwardly into said cabinet frame said second bearing edge abuts against a corresponding pin means to force said pin means and the lock rod connected thereto downward, thereby to release said lock rod from said detent means and to lower said pin means in each said upward channel of said catch plate means of each remaining drawer of the cabinet and to free the re-

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maining drawers for selective withdrawal from the cabinet.

4. The improvement as set forth in claim 1, wherein said catch-plate means further comprises fail-safe means for lifting said lock rod upwardly to engage each said pin means within corresponding slots in case of inadvertent downward shifting of said lock rod while one of the drawers is open, said fail-safe means comprising a vertically disposed angle plate affixed to said catch-plate means, said angle plate being characterized by a third bearing edge pitched rearwardly and downwardly of a rearward opening of said slot, said third bearing edge being adapted to abut against said pin means and to lift said pin means upwardly into the rearward channel of said slot upon rearward shifting of an open drawer to a closed position within said cabinet.

5. The improvement as set forth in claim 4, wherein said angle plate is integrally formed with said catch-plate means.

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