

[72] Inventor **Otto D. Lewin**
 210 Elmwood Boulevard, York, Pa. 17402
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[54] **FILING CABINET**
 10 Claims, 13 Drawing Figs.

[52] U.S. Cl. 312/220,
 312/222, 312/219
 [51] Int. Cl. **A47b 88/16**
 [50] Field of Search..... 312/320,
 321, 219, 216, 222

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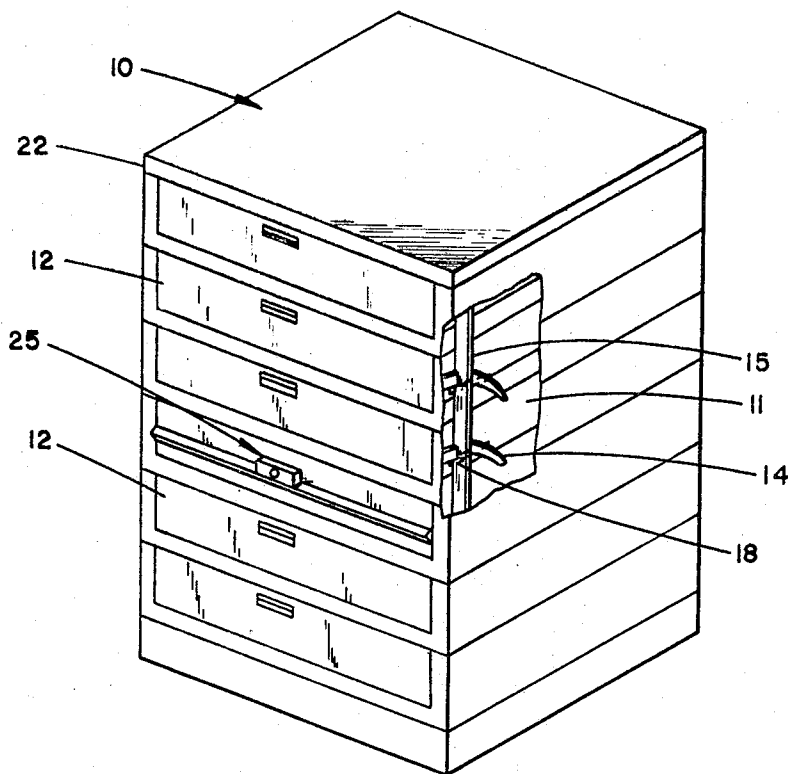
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Primary Examiner—James T. McCall
Attorney—Sidney N. Rosenfeld

ABSTRACT: A filing cabinet containing a plurality of independently operable sliding compartments, each having its own door, in which all of the unopened doors in the cabinet are

locked and prevented from opening in response to the opening of any one of the doors of the cabinet. The cabinet contains a pair of vertically slidable locking bars, which span the various compartments. Each locking bar has a plurality of notches through which move various fall supports supporting each of the doors in its open horizontal position. Each of the fall supports has a first camming surface on it which momentarily cams the locking bars upwardly when a door is moved to its open position. At the same time that a door is moved into open position, a combined friction catch-interlock moves to a position underlying its respective fall support and within its respective notch, the effect being to prevent the locking bars from being moved upwardly. When any of the remaining doors is to be opened, the cams contact the locking bars and, being unable to move them upwardly, in effect prevent the door from opening; i.e., the cams cannot pass the locking bars. Upon closure of the opened door, each friction catch-interlock is cammed from its underlying position beneath a fall support, thereby again permitting the locking bars to be moved in an upward vertical position through the space formerly occupied by the friction catch-interlocks. The invention also encompasses a single locking unit by which all of the doors can be maintained in a locked position. The door containing the locking unit can be at any level to accommodate easy access. The locking unit includes a lock arm, which is received within a notch in each locking bar such that when the lock is closed, the locking arm maintains the locking bars in their downward cam locking position. When the lock is opened, the lock arm is moved to a second position such that the locking bars can be vertically raised.



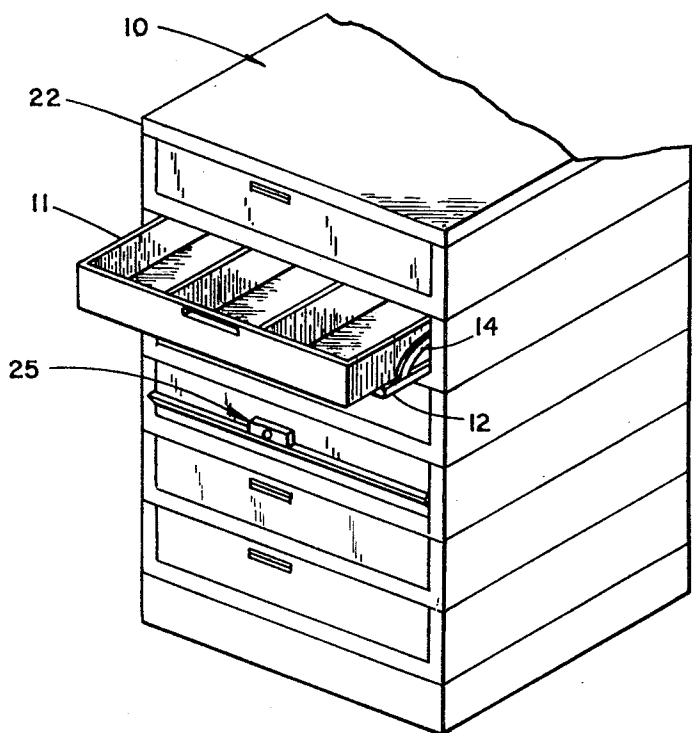
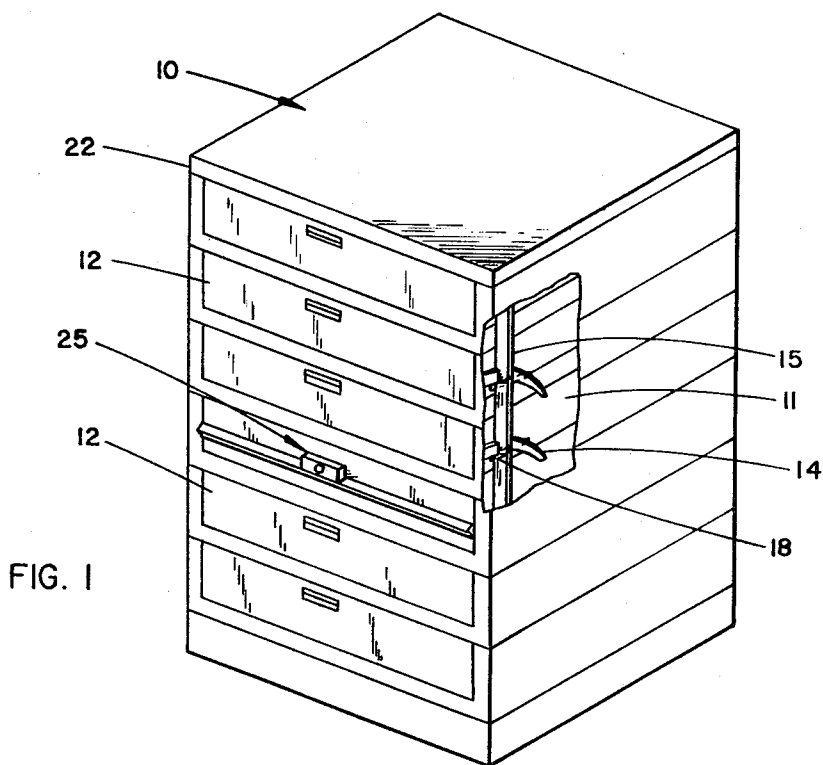


FIG. 2

INVENTOR.
OTTO D. LEWIN

BY
Sidney N. Rosenfeld

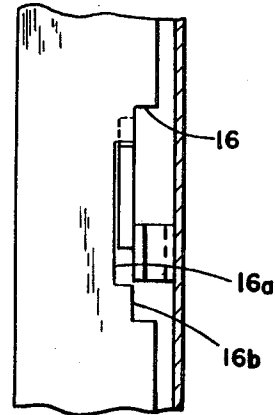
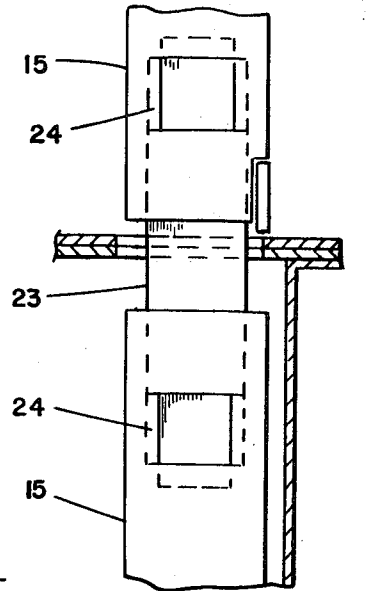
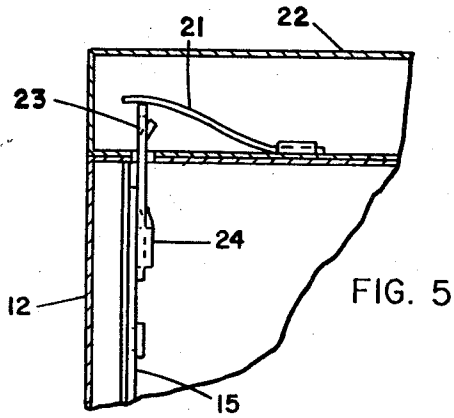


FIG. 4

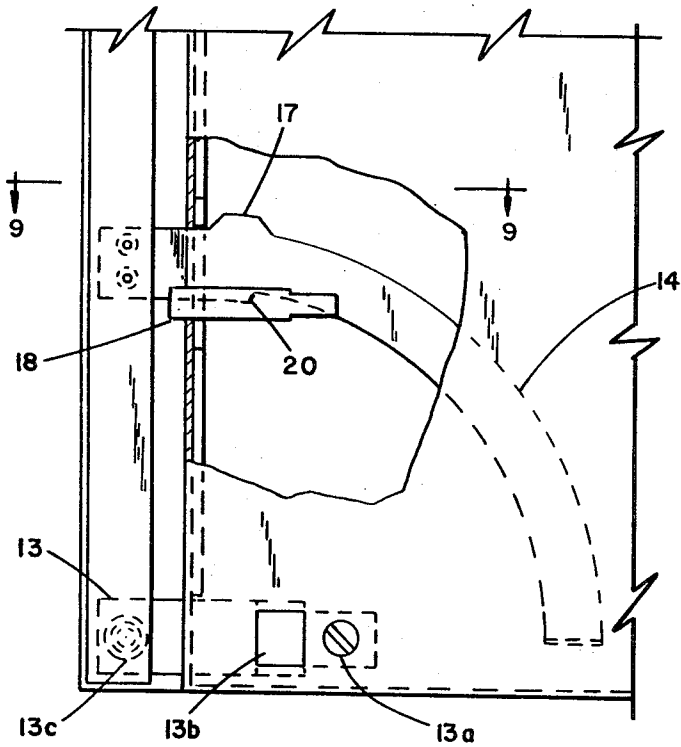


FIG. 3

INVENTOR.
OTTO D. LEWIN

BY

Edmund N. Rosenfeld

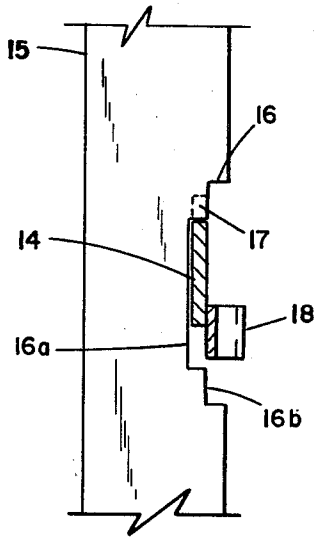


FIG. 6

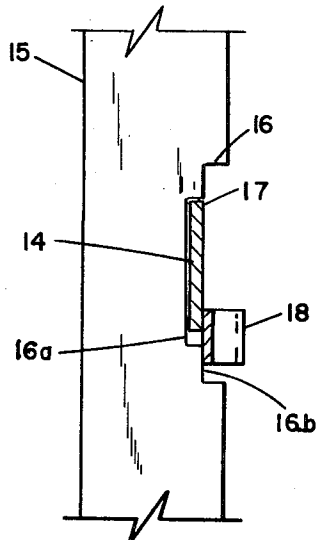


FIG. 7

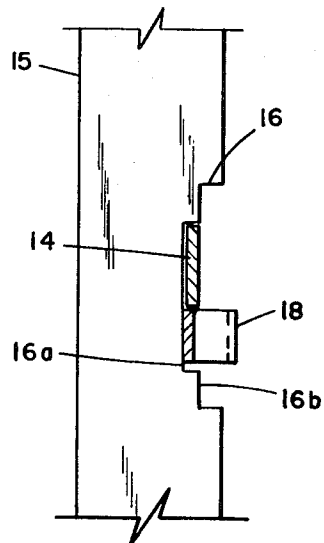


FIG. 8

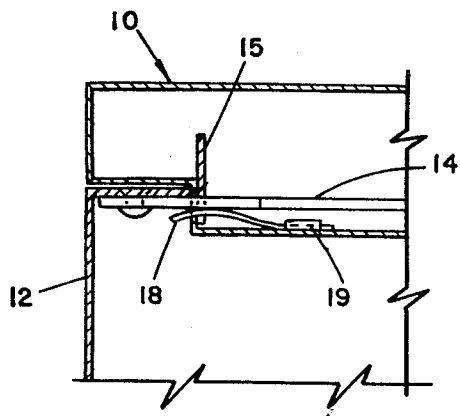


FIG. 9

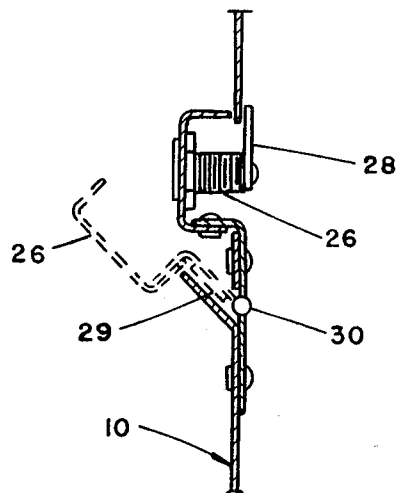


FIG. 11

INVENTOR.
OTTO D. LEWIN

BY

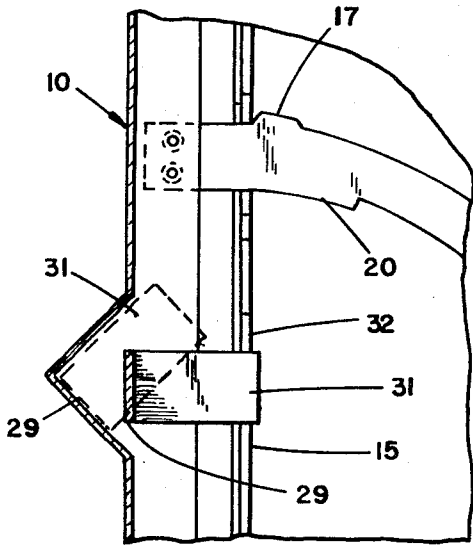


FIG. 12

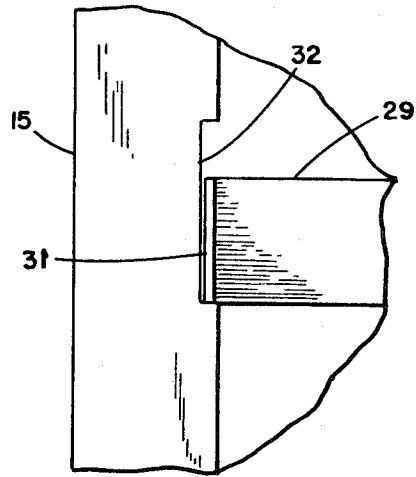


FIG. 13

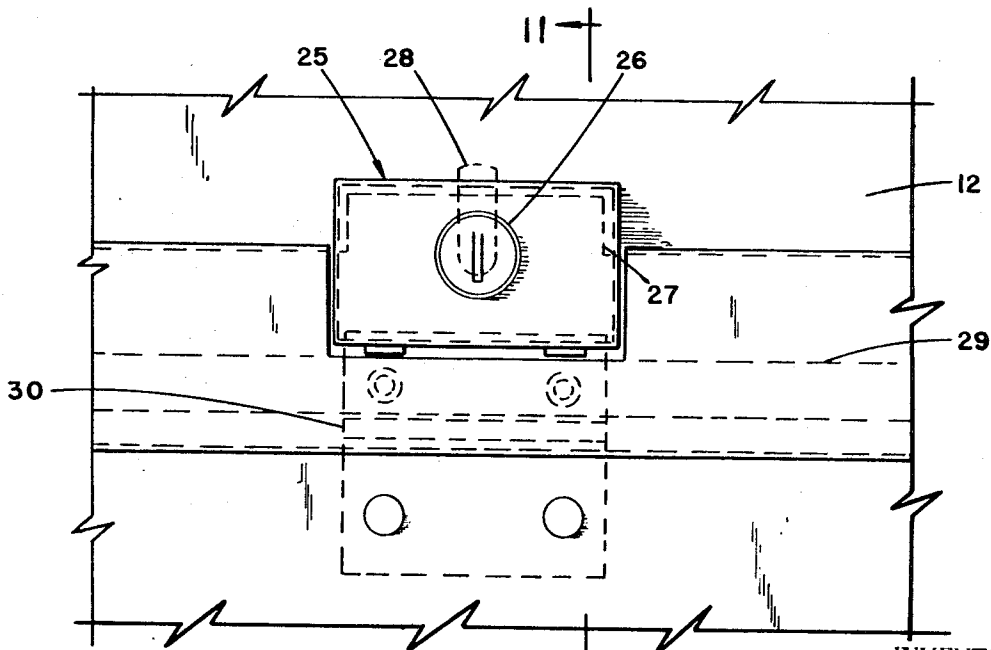


FIG. 10

INVENTOR.
OTTO D. LEWIN

BY

Sidney N. Rosenfeld

FILING CABINET

BACKGROUND OF THE INVENTION

The invention relates to the interlocking of all the remaining doors of a filing cabinet when one of the doors is opened, thereby preventing the opening of more than one door at a time.

It has long been the practice to provide filing cabinets with some mechanism for preventing the opening of more than one door or drawer at a time. This is to prevent the accidental toppling or tipping of the cabinet when more than one door is opened, with the consequent possibility of injury, and also the disruption of the papers contained in the cabinet. This problem of tipping is particularly acute in the modern file cabinet, which is generally of considerable vertical height. It will be apparent that the opening of more than one of the uppermost doors or drawers could quite easily result in the tipping of the entire unit.

There have been many techniques devised to prevent the opening of more than one door; one such technique is to provide each door with its own locking mechanism. This suffers from two defects. One being the expense, and the second being the possibility of two doors being inadvertently or otherwise unlocked, thereby permitting the opening of two doors at the same time. Desirably, the unit should be so constructed that this is not possible.

Other techniques have been devised which accomplish the desired purpose but which, however, are often expensive, quite cumbersome in operation with various protruding parts, pins, notches, adding to the complexity of the design and cost. Further, many of such designs do not have a positive lock, which oftentimes could permit a second door to be opened when the unit is jarred.

Accordingly, it is an object of this invention to provide a filing cabinet of the type having a selected number of slidable compartments, each maintained within the cabinet by its own individual door and in which the opening of one door has the positive effect of locking all other doors until such time as the one opened door is closed.

A further related object is to achieve the locking of the doors of the filing cabinet of the type just above mentioned by an arrangement, simple in design and which acts to lock the doors in a positive fashion. A still further object is to achieve the desired effect by an arrangement, which is simple in design and of low cost.

A still further object is to provide, in a filing cabinet of the type above mentioned, means for locking all the doors of the cabinet by a single locking mechanism.

SUMMARY OF THE INVENTION

In accomplishing the objects of the invention, there is provided a filing cabinet, containing a plurality of sliding compartments, each compartment being maintained in its closed position by a hinged door. The door opens to a horizontal position and is maintained in its horizontal position by the cooperation between the filing cabinet compartment and two fall supports, one on either side of each door. When the door is opened to its horizontal position, it forms a base for receiving an opened compartment. A pair of slidable locking bars are provided having a plurality of notches therein, each of the notches adapted to receive one of the fall supports for each door. The action of the two locking bars is identical, therefore, to facilitate understanding, the invention will be described with reference to one locking bar and its fall supports. Each of the fall supports contains a first camming surface, which is adapted in its opening position to cam its locking bar momentarily upward. It can be appreciated that, in the event a bar is prevented from upward movement, it acts as a locking mechanism preventing the passage of the fall support, maintaining the door in its closed position. To accomplish this, there are provided a plurality of combined friction catch-interlocks, one each positioned adjacent each of the fall

supports. The interlocks are spring mounted with the spring force being such that, when a door is moved to its open position, the spring forces the friction catch-interlock underneath the fall support and within the respective notch. In this position, the entire space within the notch is filled and the locking bar cannot be raised, having the effect, as aforesaid, of maintaining the other doors closed. Each fall support has a second camming surface, which cams the friction catch-interlock out from beneath the fall support when the door is returned to its closed position, thereby permitting the locking bar to be vertically raised.

In addition, a single locking mechanism is provided for maintaining all of the doors of the cabinet locked. This is accomplished by way of a locking mechanism having a lock arm received within a lock arm notch in each vertical locking bar. The effect is such that when the locking mechanism is in its locked position, the lock arm prevents the vertical locking bars from being raised; in its unlocked position, the vertical locking bars are permitted to be raised by the camming surface on any one of the fall supports.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an isometric view of the file cabinet with a portion broken away to show the interior.

FIG. 2 is an isometric view of the file cabinet with one compartment extended and the compartment door in its opened compartment supporting position.

FIG. 3 is a partially broken view in side elevation showing a compartment door in closed position.

FIG. 4 is a partial vertical elevation of a slidable locking bar—with interconnecting means shown to larger scale than FIG. 3.

FIG. 5 is a partial vertical section to same scale as FIG. 3—showing slidable locking bar and spring loading.

FIGS. 6, 7 and 8 are vertical sections to scale of FIG. 4—showing the slidable locking bar in various operative positions.

FIG. 9 is a partial horizontal section taken on the line 9—9 of FIG. 3.

FIG. 10 is a partial front elevation of the main locking mechanism.

FIG. 11 is a section taken on the line 11—11 of FIG. 10.

FIG. 12 is a partial vertical section showing the locking arm interlock.

FIG. 13 is a partial view in forward elevation of the locking bar.

DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE DRAWINGS

FIG. 1 shows a file cabinet 10 of the type containing a plurality of sliding compartments 11, each compartment 11 being maintained in its closed position by an individual door 12. File cabinet 10 may be of the unitary casing-type or may be assembled from a plurality of individual single compartment units. Door 12 is of the type which rotates from a closed vertical position to a horizontal open position. Each door 12 is attached to the cabinet by a pair of hinges 13 attached to the sidewalls of the cabinet 10 by a bolt 13a. Hinge 13 comprises a hinge mounting 13b receiving the arm (not shown) of a pivot 13c, all as is typical in the art. Door 12 is maintained in its open position by a pair of fall supports 14, only one of each pair being shown.

File cabinet 10 is provided with a pair of slidable locking bars 15, spanning the compartments 11 and extending the full height of the file cabinet, only one such locking bar being shown. While for convenience hereinafter we refer to but one locking bar and its fall supports, it will be appreciated that the action of both locking bars is identical.

Locking bar 15 is slidably mounted on the side panel of the unit for vertical movement by any conventional means. Locking bar 15 contains a plurality of two-step notches 16 therein, comprising an inner notch 16a and an outer notch 16b, each inner notch 16a being adapted to receive one of the

fall supports 14 for each door 12. Since the action of the notches and the associated fall supports are identical, only one set will be described. Fall support 14 has a first camming surface 17 thereon for momentarily camming locking bar 15 vertically upward. Adjacent each fall support 14 is a combined friction catch-interlock 18, which is positioned within outer notch 16b and attached to a side panel of cabinet 10 by a bracket 19. Fall support 14 has a second camming surface 20 thereon, which, in the closed position of door 12, maintains friction catch-interlock 18 in its FIG. 6 position. Friction catch-interlock 18 is spring biased to its locking position underlying a fall support 14, as shown particularly in FIG. 8.

To maintain locking bars 15 in a downward position, a pair of leaf springs 21 are provided within a top cover 22 of cabinet 10, each resting on a lock bar connector 23 received within a bracket 24 at the vertically uppermost position of locking bar 15. Leaf spring 21 acts to continuously bias locking bar 15 to its downward position by the pressure on lock bar connector 23. Lock bar connector 23 serves a second purpose, which is to permit the addition of compartments to filing cabinet 10. Each compartment contains its own individual locking bars 15 complete with a locking bracket 24. To add a compartment, it is merely necessary to remove top cover 22 and place a new compartment on top of the assembled unit. The lock bar connector 23 of the unit in place will be received within the corresponding bracket 24 of the new unit being added, locking the assemblage into a completed whole. Top cover 22 is replaced and the assemblage is completed.

A locking mechanism 25 is provided for locking all of the doors 12 in their closed vertical position. Locking mechanism 25 comprises a lock 26 inserted within an opening 27 in any one selected door 12. The door 12 selected will be at the convenience of the purchaser to place the locking mechanism 25 at whatever height is desired. Lock 26 extends within opening 27 and terminates in a lockpin 28. Lock 26 is attached to a lock arm 29 by way of a spring loaded hinge 30. Lock arm 29 has a pair of lock arm ears 31, which are received within a notch 32 in each locking bar 15. When lock 26 is in its locked position, as seen in full lines in FIG. 11, lock arm ears 31 are received within notches 32, as is shown particularly in full lines in FIG. 12, preventing upward movement of locking bar 15. To open lock 26, lock pin 28 is rotated so that it may pass through opening 27. When this occurs, spring loaded hinge 30 forces the lock 26 to its open position, as shown in dotted lines in FIG. 11. This, in effect, rotates lock arm 29, see FIGS. 11 and 12, thereby also effectively rotating lock arm ears 31 to their dotted line FIG. 12 position, permitting locking bars 15 to be moved vertically upward. The hinged motion of lock arm 29 makes for great simplicity of operation and is relatively inexpensive.

OPERATION

In operation, for any one of the doors 12 to be opened, it is necessary for its particular camming surface 17 to be rotated past locking bar 15. So long as locking bar 15 is permitted to move upward, any camming surface 17 will cam it upwardly and immediately thereafter locking bar 15 will be biased to its downward vertical position by leaf spring 21. Assume a door 12 is opened and camming surface 17 cams locking bar 15 momentarily upwardly (see FIG. 6). After camming surface 17 has passed from beneath its respective notch 16, locking bar 15 again assumes its downwardly biased position (see FIG. 7). A moment later, camming surface 20 passes from adjacent friction catch-interlock 18 and friction catch-interlock 18 is spring biased to a position underlying fall support 14 (see FIG. 8). As will be seen from an inspection of this latter figure, when friction catch-interlock 18 underlies a fall support 14, the combined width of the two effectively fills inner notch 16a with the bottom of friction catch-interlock 18 resting on the bottom of inner notch 16a preventing locking bar 15 from being raised upwardly. In this position, when someone attempts to open a second door 12, it will be apparent that

camming surface 17 on the respective fall support 14 will contact locking bar 15. Unable to raise locking bar 15, camming surface 17 then acts to prevent the passage of fall support 14 through the notch 16 maintaining door 12 in its closed position. When the open door 12 is closed, second camming surface 20 acts to force friction catch-interlock 18 to its outward disengaged position, as shown in FIG. 6. When this is accomplished, locking bar 15 is again able to be vertically raised, thereby permitting the opening of another door 12 by allowing a particular camming surface 17 to cam locking bar 15 upwardly.

I wish it to be understood that my invention is not to be limited to the specific constructions and arrangements shown and described, except only insofar as the claims may be so limited, as it will be apparent to those skilled in the art that changes may be made without departing from the principles of the invention.

What is claimed is:

1. In a filing cabinet containing a set of slidable compartments, apparatus for maintaining the remaining compartments of said cabinet in a closed position when a selected one of said compartments is opened comprising a slidable locking bar spanning said compartments, means for momentarily camming said locking bar vertically to an upper position when any one of said compartments is opened, and means for locking said slidable locking bar when it has reached its lower position after being momentarily cammed upwardly by any one of said compartments being opened thereby preventing opening of a second compartment.

2. The filing cabinet as set out in claim 1, and further including a locking mechanism for maintaining said slidable locking bar immovable when said locking mechanism is in a locked position, and permitting movement of said slidable locking bar when said locking mechanism is in an unlocked position.

3. In a filing cabinet containing a set of slidable compartments, apparatus for maintaining the remaining compartments of said cabinet in a closed position when a selected one of said compartments is opened comprising a slidable locking bar spanning said compartments, means for vertically raising said locking bar to an upper position when any one of said compartments is opened, means cooperating with each of said compartments permitting opening of a compartment when said slidable locking bar is in its vertically raised position, and means for locking said slidable locking bar in a lower position when any one of said compartments is opened thereby preventing opening of a further compartment.

4. In a filing cabinet containing a set of sliding compartments and including hingedly mounted doors, one for each compartment, apparatus for maintaining the remaining doors of said cabinet in a closed position when a selected one of said doors is opened comprising a slidable locking bar spanning said compartments, a plurality of fall supports attached one each to each of said doors, each of said fall supports being provided with a camming surface for momentarily camming said locking bar vertically upward when any one of said doors is opened, means on each of said fall supports cooperating with said filing cabinet for maintaining said door in a horizontal open position, and means for preventing vertical movement of said locking bar after any one of said compartment doors is opened thereby preventing passage of any further fall support camming surface past said locking bar to maintain the remaining compartment doors closed.

5. The filing cabinet as set out in claim 4, and further including a locking mechanism for maintaining said slidable locking bar immovable when said locking mechanism is in a locked position and permitting movement of said slidable locking bar when said locking mechanism is in an unlocked position.

6. In a filing cabinet containing a set of slidable compartments and including hingedly mounted doors, one for each compartment, apparatus for maintaining the remaining doors of said cabinet in a closed position when a selected one of said doors is opened comprising a slidable locking bar spanning said compartments and including a plurality of notches

therein, a plurality of fall supports attached one each to each of said doors and each adapted to pass within one of said notches, each of said fall supports being provided with a camming surface for momentarily camming said locking bar vertically upward when any one of said doors is opened, means on each of said fall supports cooperating with said filing cabinet for maintaining said door in a horizontal open position, and means for preventing vertical movement of said locking bar after any one of said compartment doors is opened thereby preventing passage of any further fall support camming surface through said notches to maintain the remaining compartment doors closed.

7. In a filing cabinet containing a set of slidable compartments and including hingedly mounted doors, one for each compartment, apparatus for maintaining the remaining doors of said cabinet in a closed position when a selected one of said doors is opened comprising a slidable locking bar spanning said compartments, a plurality of fall supports attached one each to each of said doors, means for momentarily camming said locking bar vertically upward when any one of said doors is opened, means one each of said fall supports cooperating with said filing cabinet for maintaining said door in a horizontal open position, and means for preventing vertical movement of said locking bar after any one of said compartment doors is opened to maintain the remaining compartment doors closed.

8. In a filing cabinet containing a set of slidable compartments and including hingedly mounted doors, one for each compartment, apparatus for maintaining the remaining doors of said cabinet in a closed position when a selected one of said doors is opened comprising a slidable locking bar spanning said compartments and including a plurality of notches therein, a plurality of fall supports attached one each to each of said doors and each adapted to pass within one of said notches, means for momentarily raising said locking bar vertically upward when any one of said doors is opened, means on each of said fall supports cooperating with said filing cabinet for maintaining said door in a horizontal open position, a combined friction catch-interlock positioned adjacent each of said fall supports, means for maintaining said friction catch-interlock in a disengaged position when any one of said doors is moved from an open to a closed position and permitting each of said friction catch-interlock to move to a locking position underlying any one of said fall supports when any one of said doors is moved from a closed to an open position, the height of said notches being only sufficient to receive a fall support and a friction catch-interlock when underlying one of said fall sup-

ports, whereby when any one of said friction catch-interlock underlays one of said fall supports as the result of the opening of its respective door the slidable locking bar is prevented from movement thereby preventing the first camming surface on any of said closed doors' fall supports from camming said locking bar upwardly, the effect being that said then immovable locking bar acts to prevent the passage of any camming surface to maintain the respective door in a closed locked position.

9. In a filing cabinet containing a set of slidable compartments and including hingedly mounted doors, one for each compartment, apparatus for maintaining the remaining doors of said cabinet in a closed position when a selected one of said doors is opened comprising a slidable locking bar spanning said compartments including a plurality of notches therein, a plurality of fall supports attached one each to each of said doors and each adapted to pass within one of said notches, each of said fall supports being provided with a first camming surface for momentarily camming said locking bar to an upper position when any one of said doors is opened, means on each of said fall supports cooperating with said filing cabinet for maintaining said door in a horizontal open position, a combined friction catch-interlock positioned adjacent each of said fall supports, said fall supports each being provided with a second camming surface for camming and maintaining said friction catch-interlock in a disengaged position when any one of said doors is moved from an open to a closed position and permitting each of said friction catch-interlock to move to a locking position underlying any one of said fall supports when any one of said doors is moved from a closed to an open position, the height of said notches being only sufficient to receive a fall support and a friction catch-interlock when underlying one of said fall supports, whereby when any one of said friction catch-interlock underlays one of said fall supports as the result of the opening of its respective door the slidable locking bar is prevented from movement thereby preventing the first camming surface on any of said closed doors' fall supports from camming said locking bar upwardly, the effect being that said then immovable locking bar acts to prevent the passage of any camming surface to maintain the respective door in a closed locked position.

10. The filing cabinet as set out in claim 9, and further including a locking mechanism for maintaining said slidable locking bar immovable when said locking mechanism is in a locked position, and permitting movement of said slidable locking bar when said locking mechanism is in an unlocked position.

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