United States Patent [19]

Chovanec et al.

[11] **3,774,985**

[45] **Nov. 27, 1973**

[54] **FILE LOCKING MECHANISM**

[75] Inventors: **William Chovanec**, Montvale; **Peter Heck**, Teaneck, both of N.J.

[73] Assignee: **Art Steel Company, Inc.**, Bronx, N.Y.

[22] Filed: **Nov. 3, 1971**

[21] Appl. No.: **195,103**

[52] **U.S. Cl.** **312/217**

[51] **Int. Cl.** **E05b 65/46**, E05c 15/04

[58] **Field of Search** 312/216, 217, 218, 312/219; 70/361, 360, 70, 8

[56] **References Cited**

UNITED STATES PATENTS

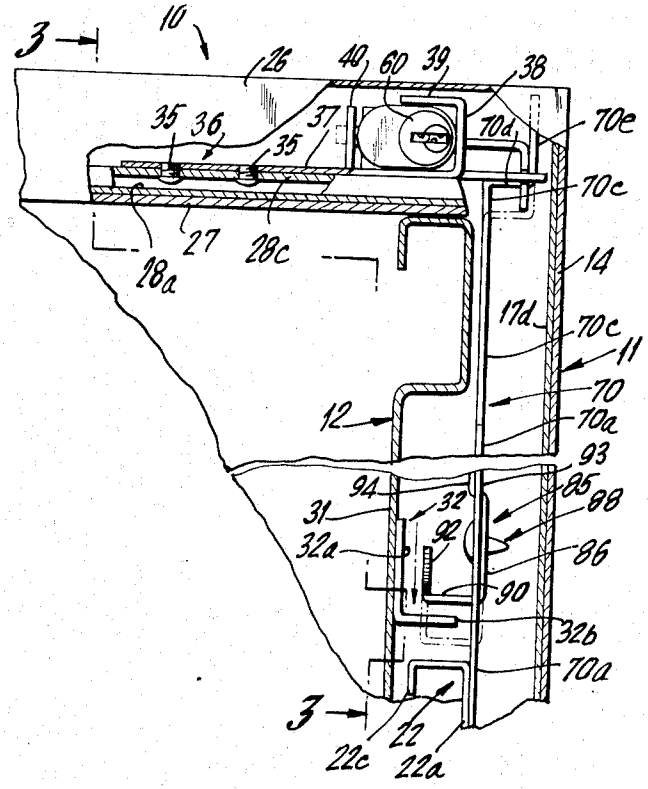
1,574,712	2/1926	Stone	312/219 UX
1,193,955	8/1916	Watson et al.	312/217
1,806,643	5/1931	Ohnstrand	312/217
2,743,149	4/1956	Abrahamson et al.	312/219
3,238,003	3/1966	Stark	312/219
3,325,234	6/1967	Lewin	312/219

Primary Examiner—Paul R. Gilliam
Attorney—J. B. Felshin

[57] **ABSTRACT**

When the lock is pushed-in, a cam which moves with the lock, causes a vertical lock rod, on which catches are mounted, to be cammed down and a spring to be loaded. Catches on the lock rod then fall in front of drawer stops of closed drawers, to lock said drawers. When the lock of the file cabinet is unlocked with a key, it is projected forwardly and the loaded spring then raises the lock rod to cause the catches to clear the draw stops, to unlock the drawers and allow them to be pulled to open positions. If the projected lock is pushed-in while the drawer is open, and the open drawer is thereafter shut, the drawer will be automatically locked, because a cam on a catch of the lock rod, is engaged by the drawer stop of the pushed-in drawer, to cause the lock rod to be moved down, and allow the drawer to be fully closed. When the drawer stop clears the cam on a catch, the lock rod is snapped up by the loaded spring to bring the catch in front of the retracted drawer stop, to lock the drawer in closed condition.

8 Claims, 9 Drawing Figures



PATENTED NOV 27 1973

3,774,985

SHEET 1 OF 3

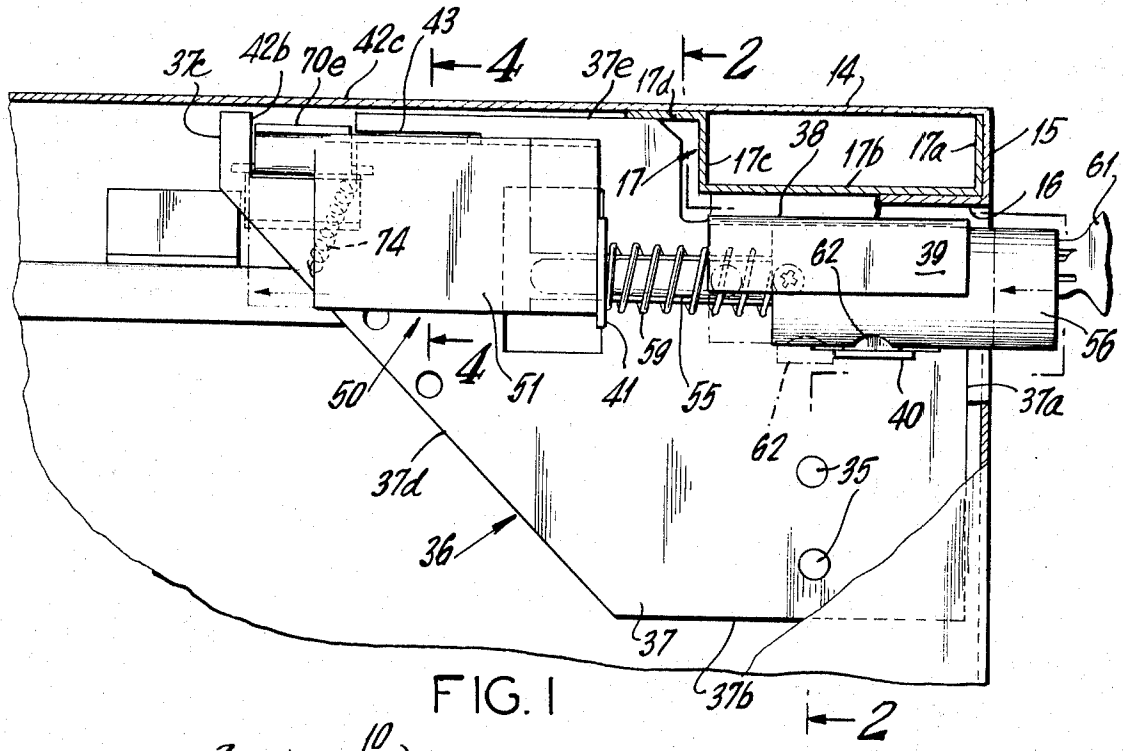


FIG. 1

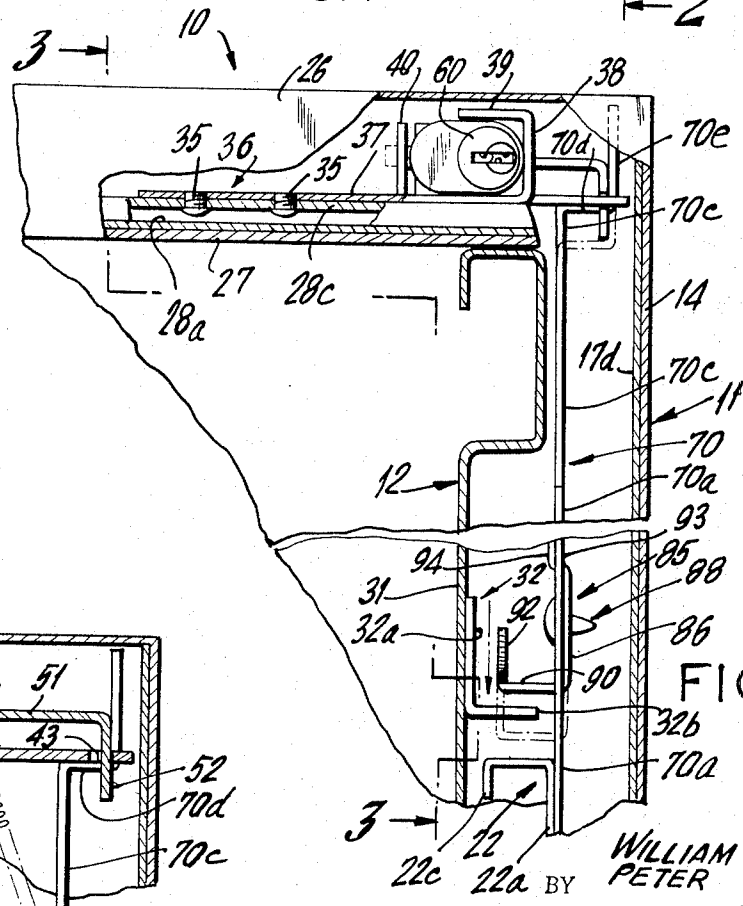


FIG. 2

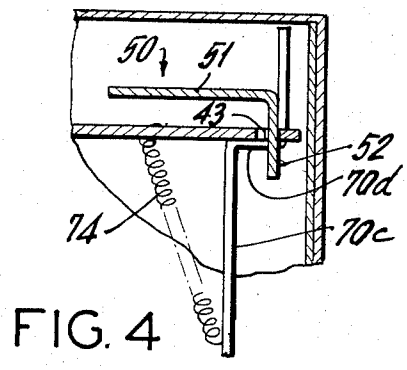


FIG. 4

INVENTORS
WILLIAM CHOVANEC
PETER HECK
BY
J.B. Felshin
ATTORNEY

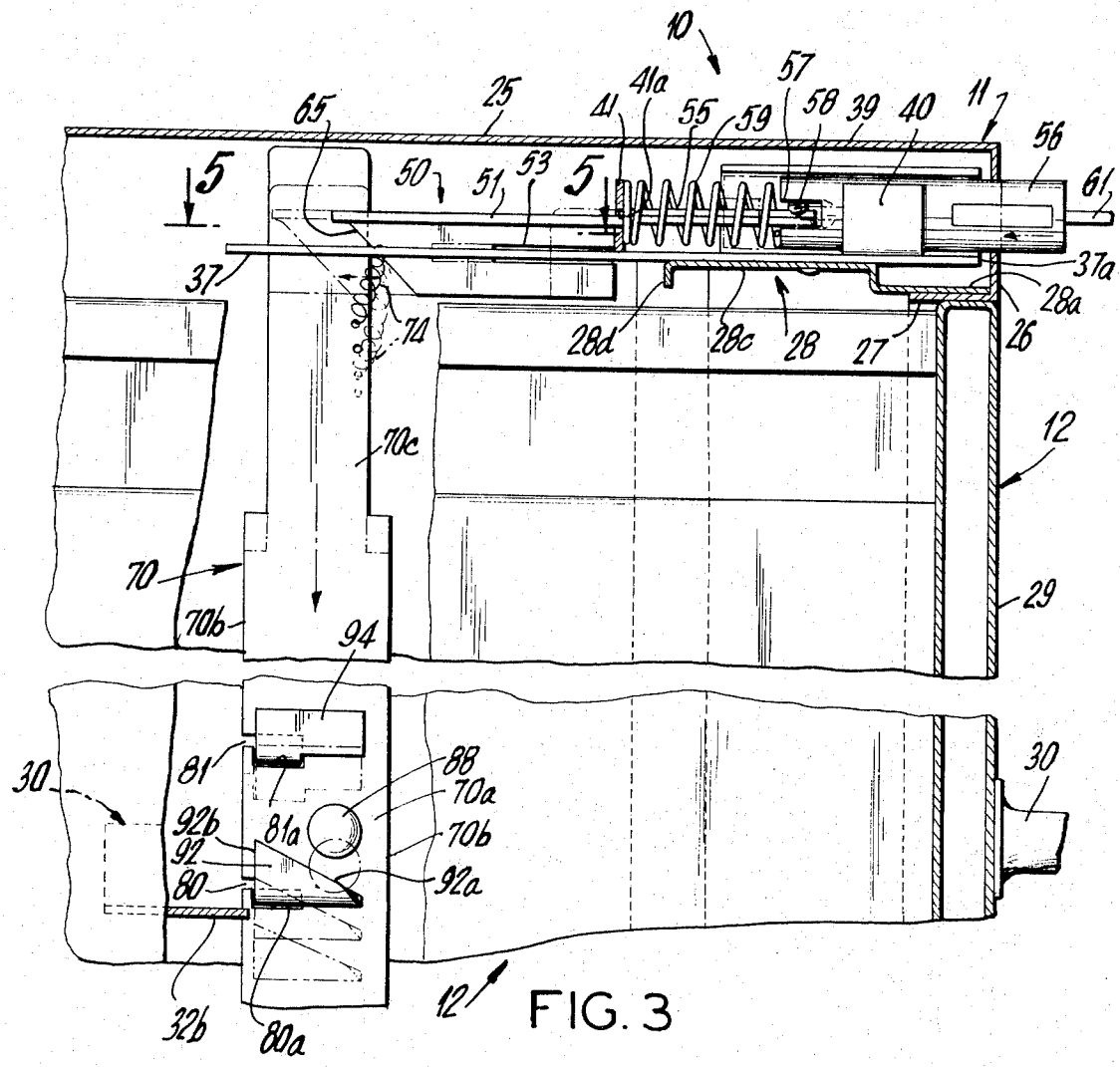


FIG. 3

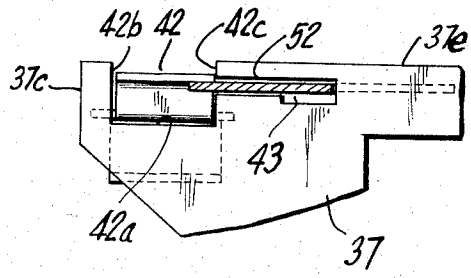


FIG. 5

INVENTORS
WILLIAM CHOVANEC
BY PETER HECK
J.B. Felshin
ATTORNEY

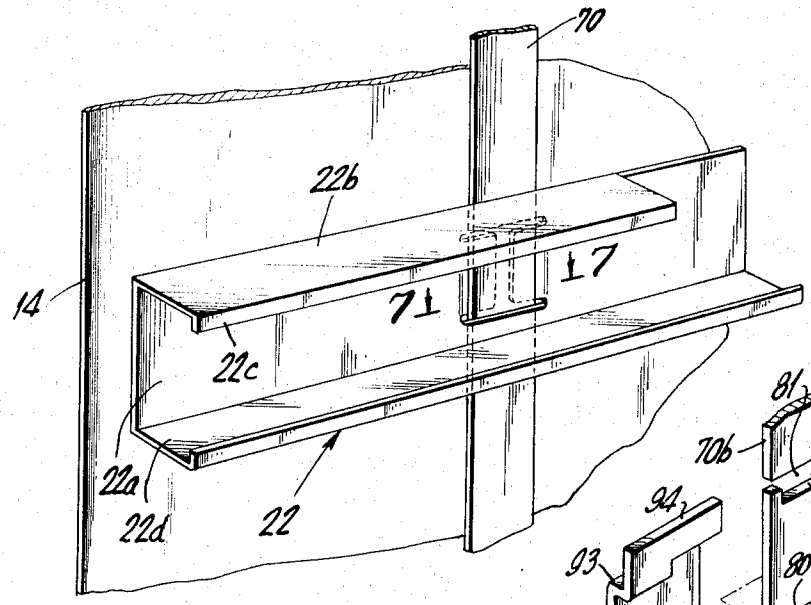


FIG. 6

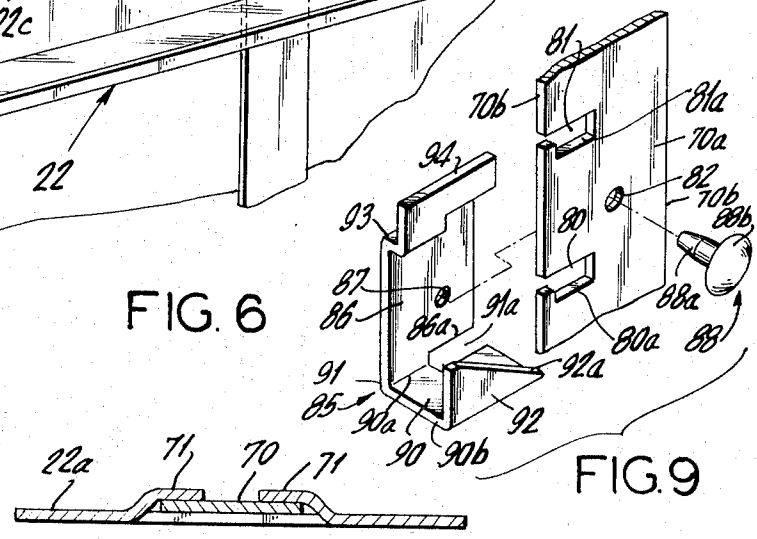


FIG. 9

FIG. 7

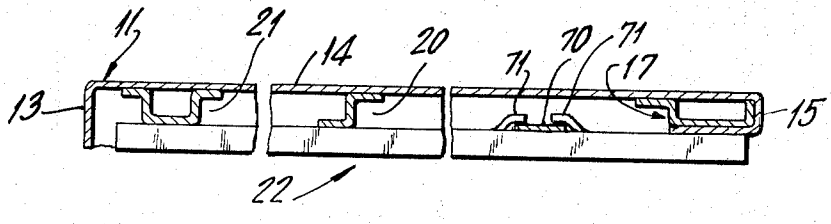


FIG. 8

INVENTORS
WILLIAM CHOVANEC
PETER HECK
BY J. B. Felshin
ATTORNEY

FILE LOCKING MECHANISM

An object of this invention is to generally improve earlier drawer file constructions which allow one to shut a drawer of a file cabinet while the file lock is pushed-in and in locked condition, and automatically lock the pushed-in drawer.

Another object of this invention is to provide file lock construction of the character described which is self-contained and can be installed in the field on non-lock file cabinets, without any additional welded brackets.

Still another object of this invention is to provide locking means for drawer file cabinets having highly improved interlocking means, including a slider movable with the lock housing and having a groove to receive part of a plate fixed to a wall of the cabinet, which plate has a groove to receive a wall of the slider, and said slider having a cam to move a vertical lock rod slidably mounted on the cabinet and carrying catches which cooperate with drawer stops to lock the drawers.

Yet another object of this invention is to provide in a drawer file cabinet of the character described, catches which assemble easily with the lock rod, after the lock rod is in place, by means of plastic pins which do not take the pressure of camming action of cam means on the catches, the pressure being on the lock rod itself and not on the plastic pins.

A further object of this invention is to provide in a drawer file construction of the character described, a lock rod controlled by the lock, and catches on the lock rod, which act as locking means for the drawer, because the catches are in front of the drawer stops when the lock is in locked condition, and further provided with cam means to cause the lock rod to move down, if the drawer is shut while the lock is in pushed-in locked position until the drawer stop clears the catch, to allow a spring to raise the lock rod to bring the catch again into locking position in front of the drawer stop, and to hence automatically lock the drawer in closed position if it is closed while the lock is in said pushed-in, locked condition.

Still a further object of this invention is to provide a smoothly operating and positive file drawer lock mechanism of the character described comprising a support plate fixed to the cabinet, a lock housing slidably mounted on said plate for movement between a retracted, pushed-in or locked position, and a projected unlocked position, a slider assembled with said lock housing for reciprocatory movement therewith, with spring means to project said lock housing when it is unlocked, and with cam means on said slider to depress a lock rod which carries catches to lock the drawers in closed position.

Yet a further object of this invention is to provide in a drawer file locking construction of the character described, means on said supporting plate to guide the lock rod for vertical movement, spring means interconnecting said lock rod and plate to raise said lock rod when said lock is unlocked and projected, and to raise said lock rod after it has been depressed by engagement of the drawer stop with a cam on a catch mounted on the lock rod, when a drawer is shut while the lock is pushed-in and in locked condition, after the drawer stop clears the catch cam.

Another object of this invention is to provide in a drawer file construction of the character described, improved means to guide the lock rod for vertical movement relative to the cabinet.

A still further object of this invention is to provide a strong and durable drawer file construction of the character described which shall be relatively inexpensive to manufacture, easy to assembly and which shall yet be practical and efficient to a high degree in use.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts, which will be exemplified in the construction hereinafter described, and of which the scope of invention will be indicated in the following claims.

In the accompanying drawings in which is shown various illustrative embodiments of this invention,

FIG. 1 is cross-sectional view taken just below the top wall of a drawer cabinet, looking down, which cabinet is provided with locking means and embodying the invention;

FIG. 2 is a cross-sectional view taken on line 2—2 of FIG. 1;

FIG. 3 is a cross-sectional view taken on line 3—3 of FIG. 2;

FIG. 4 is a cross-sectional view taken on line 4—4 of FIG. 1;

FIG. 5 is a cross-sectional view taken on line 5—5 of FIG. 3;

FIG. 6 is a partial perspective view illustrating the case track and means to guide the lock rod for vertical sliding movement;

FIG. 7 is a cross-sectional view taken on line 7—7 of FIG. 6;

FIG. 8 is a horizontal partial cross-sectional view showing how a case track is fixed to a side wall of the cabinet; and

FIG. 9 is an exploded perspective view of a catch and portion of the lock rod to which it is attached.

Referring now in detail to the drawing, 10 designates a drawer file cabinet comprising a housing 11 in which one or more drawers 12 are slidably mounted.

The housing or casing 11 is made of sheet metal and comprises a rear wall 13 and side walls 14 from the front end of each of which there extends a front web 15 provided with a rearwardly extending flange 16. Welded to each side wall 14, at the front of the casing, is a front vertical post 17 comprising a flange 17*a* contacting the inside of web 15. Extending from flange 17*a* is a web 17*b* contacting flange 16 and disposed parallel to wall 14. Extending from web 17*b* is a wall 17*c* parallel to flange 17*a*. Extending from wall 17*c* is a flange 17*d* contacting the inside surface of wall 14.

In FIG. 1, only one side wall 14 is shown, it being understood that the opposite side wall 14 is similar and symmetrically disposed relative thereto.

Welded to the inside of each of the side walls 14 are welded vertical intermediate posts 20 and vertical rear posts 21. Posts 20 and 21 as well as posts 17 are of usual, well known construction. Welded to the posts 17, 20, 21 at the insides of the side walls 14 of the cabinet, are parallel, horizontal aligned pairs of case tracks 22, there being one pair for each drawer 12 for supporting the drawer for opening and closing movement in the well known manner.

Each case track 22 has an outer web 22*a* in a vertical plane. Extending from the upper end of wall 22*a* is a horizontal wall 22*b* extending inwardly (away from wall 14). Extending downwardly from wall 22*b* is a flange 22*c*. Extending from the lower side of web 22*a* is a hori-

zontal wall 22*d* parallel to wall 22*b*, and extending upwardly from wall 22*d* is a flange 22*e* in the plane of flange 22*c*.

Housing 11 has a top wall 25 provided at the front, with a downwardly extending wall 26 formed with a rearwardly extending horizontal flange 27. Welded to the top of flange 27 is a plate support 28 having a lower flange 28*a* contacting the top of flange 27. Extending upwardly from wall 28*a* is a vertical web 28*b*, from which a horizontal wall 28*c* extends rearwardly. At the rear end of wall 28*c* is a downwardly extending rib or flange 28*d*.

The drawer 12 has a double front wall 29 to which a handle 30 is fixed. Drawer 12 has a side wall 31 of usual construction provided with a drawer stop 32. Drawer stop 32 has a vertical flange 32*a* welded to the outside of wall 31. Extending from the lower end of flange 32*a* is a horizontal flange 32*b* which projects sideways, toward side wall 14 and is located just above the associated case track 22. Thus, there is a drawer stop for a case track 22 at each level.

Screwed to the top of wall 28*c* of member 28 by means of screws 35, is a bracket 36 comprising a flat horizontal wall 37 having a front edge 37*a*, an inner edge 37*b*, a rear edge 37*c*, an inclined edge 37*d* interconnecting edges 37*b* and 37*c*, and an outer edge 37*e*. Extending upwardly from wall 37 is a web 38 spaced from and parallel to rear edge 37*e*. Extending from web 38 is a horizontal flange 39. Cut from the wall 37 is a flange or keeper 40 which projects upwardly in spaced parallel relation to web 38 and disposed between the ends of said web. Also cut from wall 37 is an upstanding flange 41 disposed in a plane perpendicular to flange 40 and between the planes of flange 40 and web 38, and spaced rearwardly of web 38. Flange 41 is formed with a transverse, centrally located slot 41*a* for the purpose hereinafter appearing.

Wall 37 is formed, at its edge 37*e* and near its rear edge 37*c*, with a notch 42 having an edge 42*a* parallel to edge 37*e* and from the ends of which extend edges 42*b*, 42*c* leading to edge 37*e*. Extending from edge 42*c* is a narrow slot 43 parallel to edge 37*e*.

Slidably mounted on said member 36 is a slider or cam member 50. Said member 50 comprises a top wall 51 of rectangular shape disposed above wall 37. Extending downwardly from the outer side of top wall 51 is a flange 52 formed with a slot 53 receiving part of wall 37. Part of flange 52 is received in slot 43.

Extending forwardly from the forward end of top wall 51 is a horizontal tongue or rod 55 which passes through slot 41*a* and passes beneath top flange 39.

Slidably mounted between wall 37 and flange 39, and between the web 38 and flange 40 is a cylinder barrel lock housing 56 formed at its rear end with a slot 57 receiving the forward end of tongue 55. Said tongue is attached to lock housing 56 by means of a screw 58 passing through registering openings in said tongue and housing. A coil compression spring 59 surrounds tongue 55 and is interposed between flange 41 and the rear end of lock housing 56 to bias the housing and slider 50 forwardly.

In housing 56 is a cylinder barrel 60 controlled by a key 61, which is inserted in a key opening in the barrel 60. When the housing 56 is in the outward, projected or unlocked position of FIGS. 1 and 3, a bolt or latch 62 held in retracted position by the flange 40 and spring 59 retains said housing in projected position. When the housing 56 is pushed rearwardly, sufficiently for the bolt 62 to clear the rear edge of flange 40, said bolt will spring out and engage said flange to retain the housing 56 in retracted, pushed-in condition.

When the housing 56 is in pushed-in condition, the closed drawers are locked by mechanism to be described hereinafter. When a key is inserted into the barrel, and turned, the bolt 62 is retracted to permit the spring 59 to project the housing 56. Means is provided as will be explained hereinafter, to release the drawers for opening movement when the lock housing is projected. Means is also provided, as will be explained, to automatically lock any drawer which is shut while the lock housing is in pushed-in condition.

To this end, flange 52 at its rear end has a downwardly and forwardly inclined camming under edge 65. When the lock housing is in projected position, cam edge 65 crosses the wall 37 substantially at the edge 42*c* of notch 42, so that the upper part of said cam edge is disposed rearwardly of said edge 42*c* and above wall 37 and notch 42, and the lower part of said cam edge is disposed forwardly of said edge 42*c* and below wall 37. When said lock housing 56 is pushed rearwardly, slider 50 moves rearwardly therewith to the dot-dash position of FIG. 3 where the lower end of cam edge 65 is disposed somewhat rearwardly of edge 42*c* of notch 42, for the purpose hereinafter appearing.

Slidably mounted in the cabinet for vertical reciprocation in the space between the case tracks 22 on the right side of the cabinet and the right side wall 14 of the cabinet casing, is an elongated lock rod 70 of flat bar stock. Lock rod 70 comprises an elongated bar 70*a* of uniform width contacting the outer surfaces of the webs 22*a* of the case tracks 22. A vertical plane perpendicular to bar 70*a* and equally spaced from the side edges 70*b* of said bar, passes through the notch 42 and is equally spaced from the notch edges 42*b*, 42*c*. The lock rod 70 is hence located between the posts 17 and 20. The lock rod 70 crosses each of the case tracks 22 and is guided for up and down vertical movement by outwardly embossed angle-shaped guides 71 cut from the metal of webs 22*a*, of the case tracks.

Extending up from the upper end of bar 70*a* is a bar portion 70*c* narrower in width relative to bar 70*a* and centered with respect thereto. Extending outwardly from the upper end of bar portion 70*c*, toward adjacent side wall 14 is a horizontal bar portion 70*d*, from which an end bar portion 70*e* extends upwardly through the notch 42, and against the outer side of flange 52 of slider 50.

A coil tension spring 74 is connected at its lower end to bar portion 70*c*, and at its upper end to wall 37, to bias the lock bar 70 upwardly. When the lock 56 is unlocked and projects forwardly (under influence of spring 59), as shown in full lines in FIGS. 1 and 3, bar portion 70*c* is pressed up against the underside of wall 37 under the influence of spring 74.

As the lock housing 56 is pushed-in to locking position, the slider 50 is moved rearwardly from the full line position of FIGS. 1 and 3 to the dot-dash line position of said figures. During such movement, cam edge 65 moving to the left, as shown in FIG. 3, depresses the lock rod 70 for the purpose hereinafter appearing.

The bar 70*a* of lock rod 70 is formed at each drawer stop 32 level, with a lower slot 80 and an upper slot 81 both extending to the rear edge 70*b* of the bar (see FIG. 9). Slot 80 has a depressed edge; 80*a* and slot 81 has

a depressed edge 81*a*. The depressed edges 80*a*, 81*a* are closer to the rear edge 70*b* than to the front edge 70*b* of bar 70*a*. Said bar 70*a* is also formed with a through opening 82 between each pair of slots 80, 81 and centrally located between edges 70*b* of bar 70*a*.

Attached to the bar 70*a* at each level is a catch 85 comprising a vertical web 86 lying against the outer surface of bar 70*a*. Said web 86 is formed with a central opening 87 registering with opening 82. A nylon pin or catch fast 88 has a shank 88*a* passing through registering openings 82, 87, and a head 88*b* contacting the inner face of bar 70*a*. The shank 88*a* of the catch fast or pin 88 has a tapered outer end to facilitate insertion of the shank into said openings 82, 87, and shoulders to engage the outer surface of web 86 of the catch 85, to releasably hold the catch in place.

Extending from the lower end of web 86 is a bottom wall 90 forming a corner 91 with said web. The forward portion of said corner is cut away as at 91*a* to form a narrow portion 90*a* of wall 90 adjacent the rear edge 90*b* of said wall, and a lower edge 86*a* at the lower end of web 86 and beyond the narrow wall 90*a*. Extending up from the inner end of bottom wall 90 is an upwardly extending flange 92 provided with an upper, downwardly and forwardly inclined cam edge 92*a*. Flange 92 is spaced from web 86 and lies in a vertical plane crossing the associated drawer stop flange 32*b* (FIG. 2).

Extending from the upper end of web 86 is a narrow horizontal wall 93 from which a flange 94 extends upwardly.

In assemblying the catch with the bar, narrow web 93 passes into slot 81 and comes down to rest on the depressed edge 81*a* of said slot. At the same time narrow portion 90*a* of wall 90 passes through slot 80 and comes down to rest on depressed edge 80*a*. The flange 94 rests against the inner surface of bar 71*a*.

When the lock is unlocked and projects forwardly, and the lock rod 70 has been raised by spring 74, the drawer stop 32 of any shut drawer is behind the catch 85 at that level and the horizontal flange 32*b* of said drawer stop is just below the level of wall 90 of the adjacent catch, so that said drawer can be pulled out or opened without hindrance.

If the drawer is shut and the lock 56 is pushed-in to lock and depress the lock rod 70, the flange 92 of the catch will be lowered so that its rear edge 92*b* will cross the flange 32*b* and wall 90 of the catch will be located below said flange 32*b*. The drawer is now locked and cannot be opened because the forward edge of flange 32*b* will strike the rear edge 92*b* of cam 92.

If the lock is opened and projected, the lock rod is raised and the drawer can then be opened. If while the drawer is open, the lock housing 56 is pushed-in, the drawer can thereafter be shut and will then automatically lock. This is so because the lock rod is then in lowered position, due to engagement of the lower end of the cam edge 65,, (and lower edge of flange 52) with the top of wall 70*d* of the lock rod. At this time the drawer being open, the drawer stop 32 is in front of the catch 85 and flange 92 of the catch 85 is in the upper of its dot-dash positions of FIG. 3. As the drawer is pushed-in to closed position, the rear edge of flange 32*b* of the drawer stop, will engage the inclined cam edge 92a of vertical flange 92 of the catch 85 to further lower the lock rod 70, against the tension of spring 74, to bring flange 92 to the lower dot-dash position of FIG. 3. As the flange 32*b* passes beyond flange 92, the lock rod 70 will snap up to its upper dot-dash position of FIG. 3, in which position wall 70*d* of the lock rod will again contact the lower edge of flange 52 of the slider 50. The flange 92 will now again be in front of flange 32*b* and the drawer is again locked.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative.

I claim:

1. A drawer file comprising a drawer file cabinet, a key controlled lock comprising a lock housing, means to support said lock housing in said cabinet for axial reciprocation, first spring means to project said lock housing from said cabinet when the lock is unlocked, means to retain said lock housing in retracted position when it is pushed-in to non-projecting position, a slider attached to said lock housing for reciprocal movement therewith, means to mount said slider on said support means for sliding movement together with said lock housing, a vertical lock rod in said cabinet, means in said cabinet to support said lock rod for vertical reciprocation, second spring means interconnected from said lock rod to said cabinet to bias said lock rod upwardly, means on said slider to move said lock rod downwardly, when said lock housing is being pushed-in from projected to retracted position, and to allow said second spring means to bias the lock rod upwardly when the lock housing is projected upon unlocking said lock, a drawer slidably mounted in said cabinet, and means to lock said drawer against opening when said lock housing is in retracted condition, and to allow said drawer to be opened when said lock housing is in open, projected position, and to automatically lock said drawer against being pulled open should the drawer be pushed-in to shut position while the lock housing is in pushed-in, retracted position.

2. The combination of claim 1, said support means comprising a plate, means to fix said plate to said cabinet, said plate having a slot slidably receiving part of said slider, said slider having a slot slidably receiving part of said plate.

3. The combination of claim 1, said means on the slider to move said lock rod downwardly when said lock housing is pushed-in from projected to retracted position, comprising cooperating cam means on said slider and lock rod.

4. The combination of claim 1, said plate having a notch, and the upper end of said lock rod slidably engaging in said notch.

5. The combination of claim 1, a drawer stop fixed on said drawer, said last means comprising means fixed on said lock rod and disposed in a position to be clear of said drawer stop and below said door stop, when the lock housing is in projected position and said lock rod is in raised position under influence of said second spring means, to allow the drawer to be moved from shut to open position, and said means on said lock rod, being in the path of said drawer stop and in front thereof, when said lock housing is in retracted condition and said lock rod has been moved down by said

cam means, to prevent opening of the drawer, and cooperating cam means on said lock rod and drawer stop to lower said lock rod when the drawer is moved from open to closed position, while the lock housing is in retracted position, to allow the drawer to be closed, and to allow the lock rod to be raised by said second spring means when said drawer stop has passed beyond said means on said lock rod, to allow said means on said lock rod to again move into position in front of, and in the path of, said drawer stop, to automatically lock said drawer against being opened.

6. The combination of claim **5,** said support means comprising a plate, means to fix said plate to said cabinet, said plate having a slot slidably receiving part of said slider, said slider having a slot slidably receiving part of said plate.

7. The combination of claim **6,** said means on the slider to move said lock rod downwardly when said lock housing is pushed-in from projected to retracted position, comprising cooperating cam means on said slider and lock rod.

8. The combination of claim **1,** a draw stop fixed on said drawer, said last means comprising a catch fixed on said lock rod having a vertical flange formed with a rear vertical edge, said drawer stop comprising a horizontal flange having a front edge, said vertical edge of said flange on said catch being in front of and in the path of said front edge of said drawer stop when the drawer is closed and said lock housing is in retracted condition.

* * * * *