May 13, 1952

A. T. SWIMMER

2,596,185

LOCKING MEANS FOR DESK DRAWERS

Filed Jan. 12, 1949

3 Sheets-Sheet 1

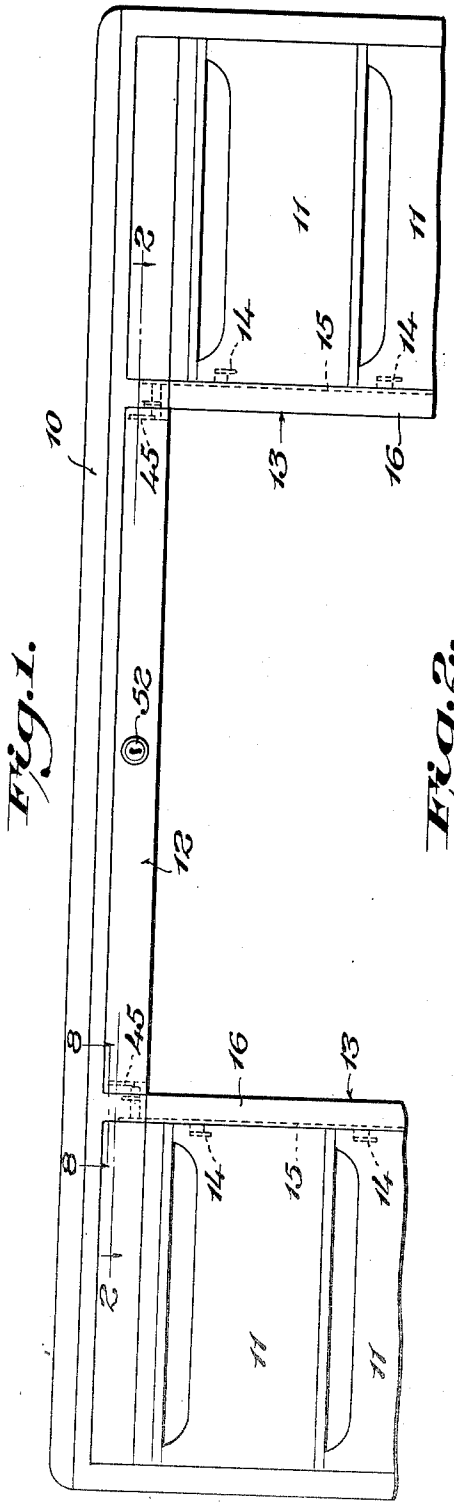


Fig. 1.

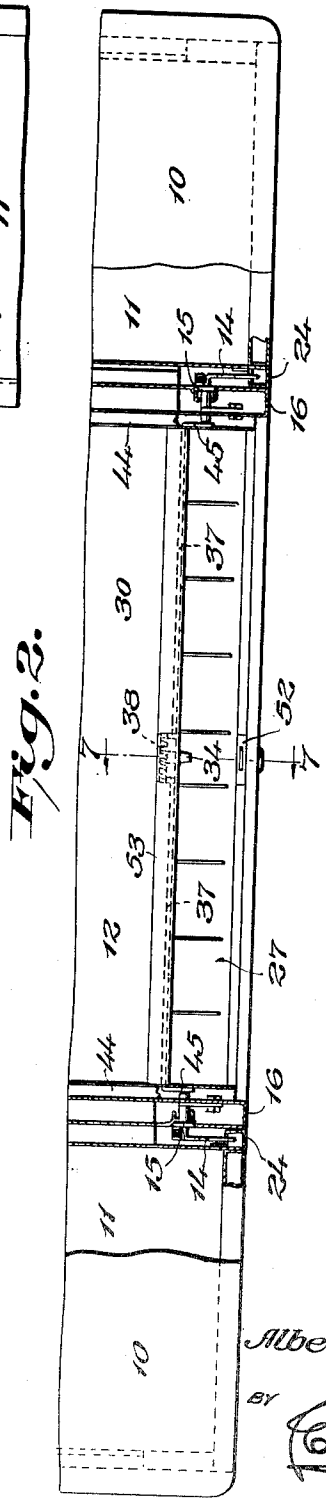


Fig. 2.

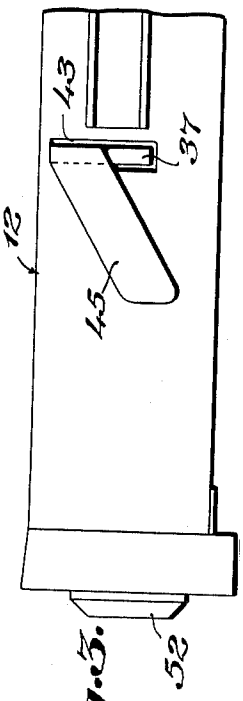


Fig. 3.

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May 13, 1952 A. T. SWIMMER 2,596,185

LOCKING MEANS FOR DESK DRAWERS

Filed Jan. 12, 1949 3 Sheets-Sheet 2

Fig. 4.

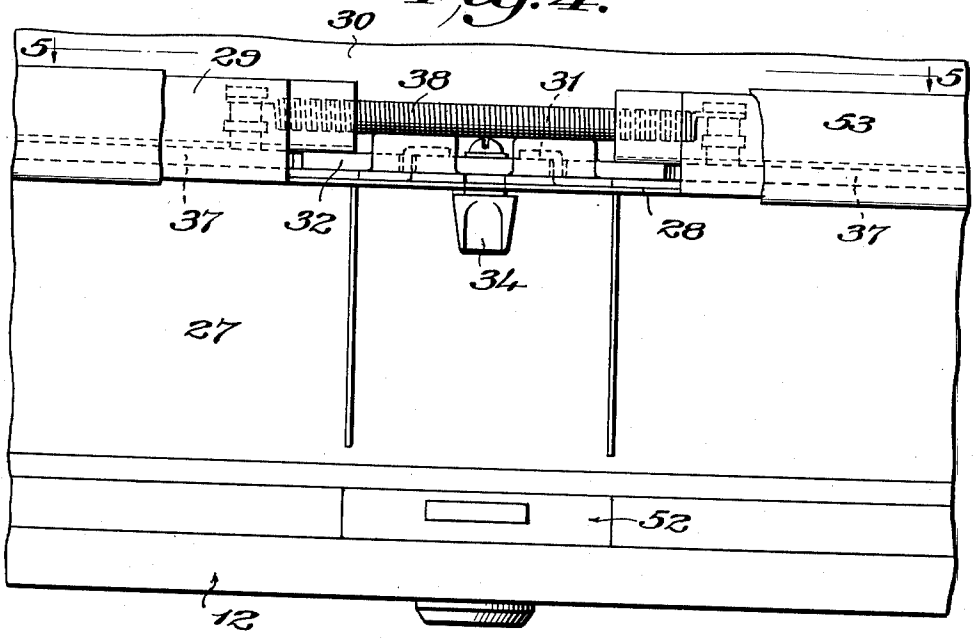


Fig. 5.

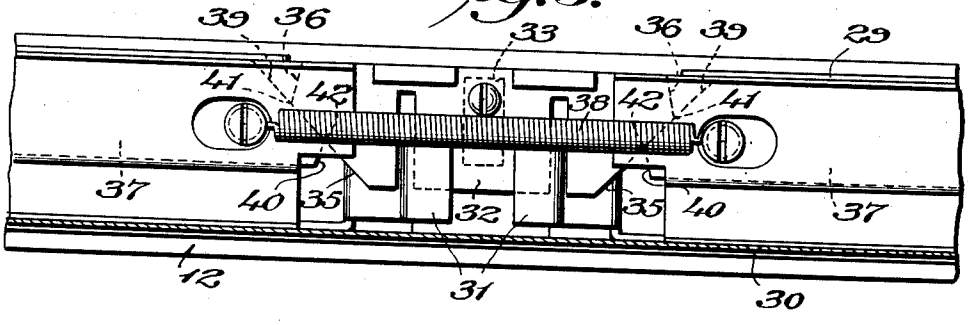
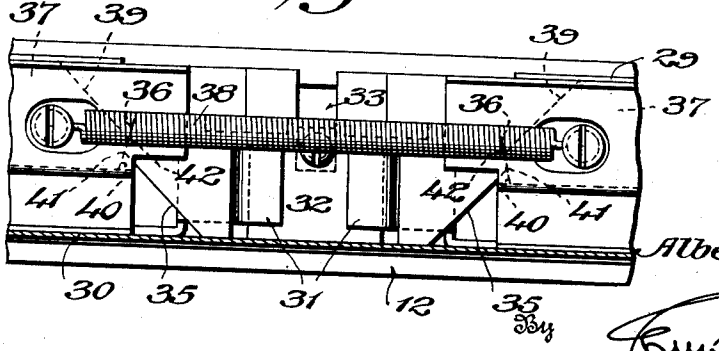


Fig. 6.



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LOCKING MEANS FOR DESK DRAWERS

Filed Jan. 12, 1949

3 Sheets-Sheet 3

Fig. 7.

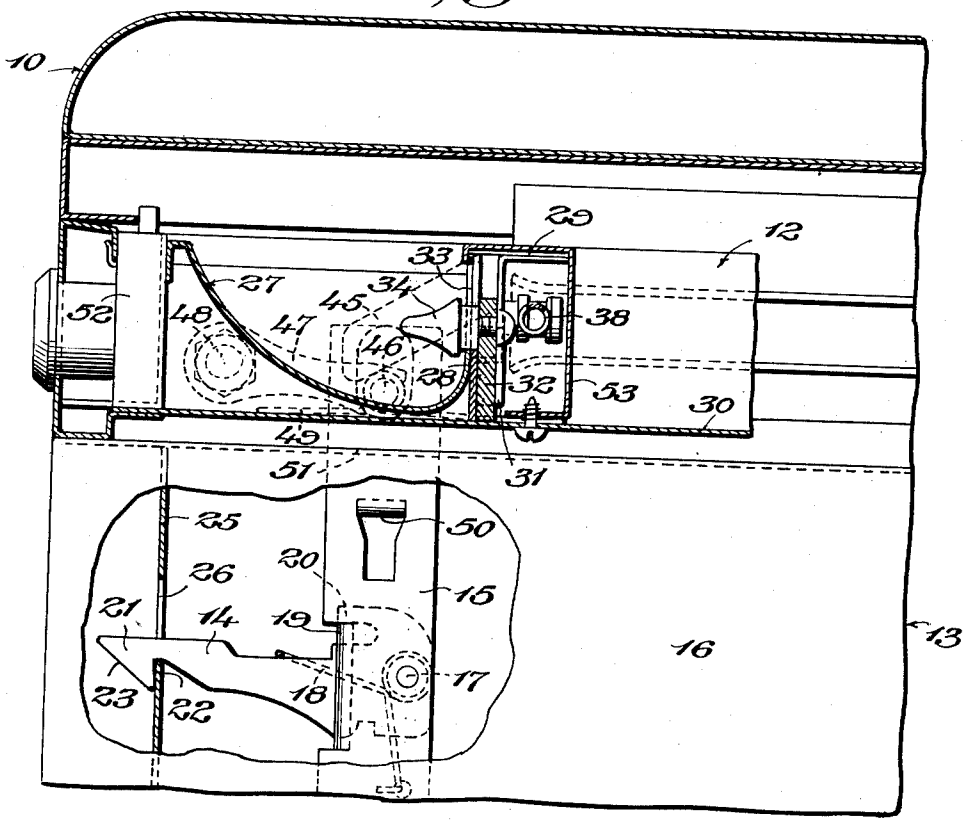
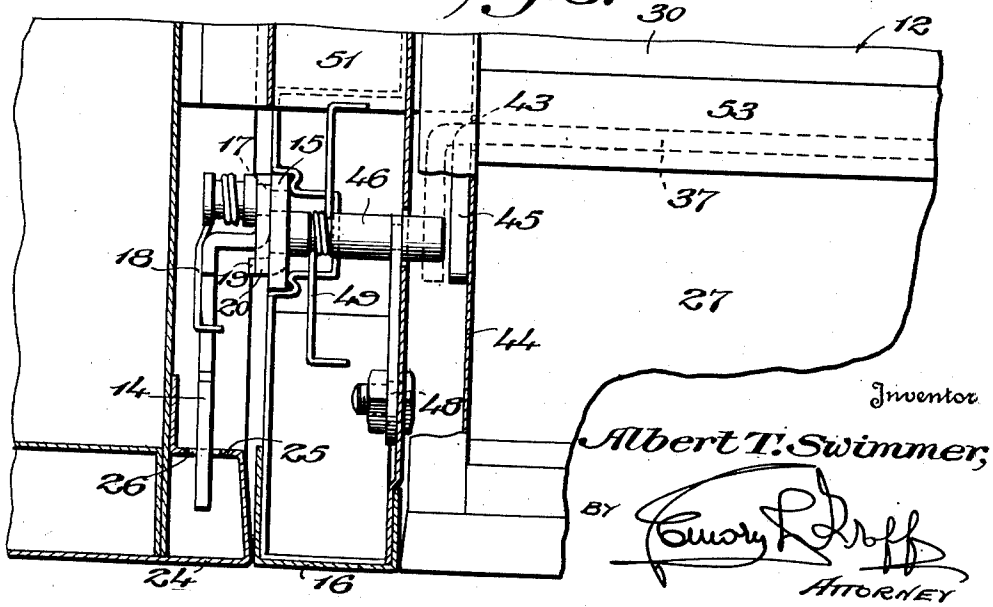


Fig. 8.



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UNITED STATES PATENT OFFICE

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LOCKING MEANS FOR DESK DRAWERS

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Application January 12, 1949, Serial No. 70,453

4 Claims. (Cl. 312—221)

1

This invention relates to an improvement in desks, and more particularly to a locking mechanism for the drawers thereof.

Heretofore, in desks of the type having a center drawer and banks of drawers in one or more pedestals, it has been the general practice to lock the pedestal drawers by a locking arrangement actuated solely by the inward movement of the center drawer, and to unlock them by pulling said drawer outwardly. In other words, the locking and unlocking of the pedestal drawers is entirely beyond the control of the operator except through the movement of the center drawer, and the latter is locked and unlocked by a key controlled lock. Thus, with this arrangement, in order to have access to the pedestal drawers, it has been necessary to first unlock the center drawer with the key and pull it forwardly a sufficient distance to release the locking mechanism for the said pedestal drawers. Therefore, the center drawer must be partially projected outwardly continuously while the desk is in use in order to have free access to the pedestal drawers. In desks now in general use, the top of the desk projects beyond the face of the pedestal and, therefore, when the center drawer is partially pulled out to give free access to the pedestal drawers, the front of said center drawer still lies substantially inwardly of the plane of the outer edge of the top of the desk and presents no projection or obstruction to the user of the desk. Manifestly, however, in a desk construction where all of the drawers are flush with the outer edge of the desk top, it would be objectionable to have the center drawer projecting beyond the plane of the outer edge of the desk top where it would obstruct or interfere with the arms of the user, especially in secretarial desks where a typewriter is supported at the location of one of the pedestals and such projection of the center drawer would restrict the elbow room of the typist.

Accordingly, a distinctive object of the present invention is to provide a desk drawer locking mechanism involving a construction such that the locking of the side drawers must be placed under or removed from control of the central drawer at will, whereby a single key-controlled lock associated with the central drawer may be employed for locking all of the drawers closed whenever desired, and whereby the side drawers may be left unlatched for opening and closing at will without the necessity of opening or otherwise manipulating the center drawer.

A further and more specific object of the invention is to provide manually operated means within the center drawer for controlling the locking and unlocking of the pedestal drawers, as distinguished from making the locking means for the pedestal drawers dependent solely on the movement of the center drawer to its full inward position. That is to say, according to the present invention, the flush type center drawer is provided with a key-controlled lock in the conventional manner, but inside of the drawer itself there is provided a manually operated element, which when set in one position while the center drawer is open, will cause said center drawer when fully pushed inwardly to automatically lock all of the pedestal drawers. The center drawer may then be locked with a conventional key. When it is desired to use the desk, the key is used to unlock the center drawer and the same is pulled open to provide access to said manually controlled means which may then be moved to another position so that when the center drawer is again pushed fully inwardly, the locking means for the pedestal drawers is rendered ineffective and free access may be had to the pedestal drawers even though the center drawer is fully closed, and out of the way of the user of the desk in the sense that there is nothing projecting from the center of the desk which will interfere with arm movements, or otherwise provide a garment catching hazard, while at the same time preserving a neater appearance for the desk while in use.

2

In that connection, the range of flexibility with respect to selectively locking the center drawer and pedestal drawers, is increased over arrangements heretofore known in the respect that if the pedestal locking means within the center drawer is not manually set to locking position before the center drawer is pushed in, the pedestal drawers will remain unlocked and therefore accessible, while the center drawer only is then merely locked by the key.

Another object of the invention is to provide a simple, practical mechanism according to which the latching of the side drawers may be manually and selectively placed under the control of a central drawer at will, merely by finger manipulation of a button located within the central drawer.

With the foregoing and other objects in view, which will become more fully apparent as the nature of the invention is better understood, the same consists in a desk drawer locking mechanism embodying the novel features of construc-

tion, combination and arrangement of parts as are illustrated by way of example in the accompanying drawings and as will be hereinafter more fully described and claimed.

In the acompanying drawings, wherein like characters of reference denote corresponding parts in the different views:

Figure 1 is a front elevation of the upper portion of a desk equipped with a drawer locking mechanism in accordance with the invention.

Figure 2 is a horizontal section on the line 2—2 of Figure 1.

Figure 3 is a side elevation of the front portion of the central drawer of the desk.

Figure 4 is a top plan view of the central portion of the central drawer of the desk showing in detail the push button settable elements of the drawer locking mechanism.

Figure 5 is a section on the line 5—5 of Figure 4 with the cover element for the push button settable parts to view, said parts being shown in the positions they occupy when the central drawer lacks control of the side drawers.

Figure 6 is a view similar to Figure 5 showing the push button settable parts of the drawer locking mechanism in the positions they occupy when latching of the side drawers is under the control of the central drawer.

Figure 7 is a transverse section on an enlarged scale on the line 7—7 of Figure 2; and

Figure 8 is a horizontal section on an enlarged scale on the line 8—8 of Figure 1.

Referring to the drawings in detail, Figure 1 illustrates the upper portion of a sheet metal desk of the type with which the present invention is concerned and which includes, as usual, a top 10, side banks of drawers 11 and a central, shallow drawer 12 located between said banks of drawers directly beneath the top 10.

The side banks of drawers 11 are mounted for inward and outward sliding movements between closed and open positions in casings or pedestals 13, and to latch them closed a plurality of latches 14 are provided, one individual to each drawer.

There are two sets of the latches 14, one set for each bank of the drawers 11, and the latches of each set are carried by a related, vertically disposed bar 15 which is suitably mounted for limited vertical sliding movement in the hollow, inner side wall 16 of the related casing or pedestal 13.

The bars 15 are disposed near the front of the desk and the latches 14 are disposed substantially horizontally and extend forwardly from said bars, being pivoted at their rear ends to said bars, as indicated at 17, for vertical swinging movements.

Suitable springs 18 tend constantly to swing the latches 14 downwardly to their limits of downward swinging movement as determined by suitable stop means which may comprise, for example, tongues 19 bent laterally from the bars 15 for engagement by fingers 20 carried by said latches.

The front end portions of the latches 14 are formed as downwardly extending hooks 21 which have rear, substantially vertically disposed edges 22 and front, upwardly and forwardly inclined edges 23.

At their front ends the drawers 11 have hollow side flanges 24 and in the rear walls 25 of these flanges are openings 26 into which the hooked front end portions of the latches 14 enter when the drawers 11 are closed. In this connection, the relationship of the bars 15 and the latches 14 to the openings 26 is such that when the bars 15 are at their limits of upward movement and the latches are at their limits of downward swinging movement, the openings 26 are alined with the hooked front ends of said latches and no latching cooperation between said latches and the drawers 11 occurs. In other words, under such conditions, the drawers 11 are free to be opened and closed, the hooked front ends of the latches 14 merely passing freely through the openings 26. When, however, the bars 15 are at their limits of downward movement, the latches 14 are disposed so that their hooked front ends extend below the openings 26. Therefore, under such conditions, closing of the drawers 11 will result in the edges of the drawer walls 25 at the bottoms of the openings 26 engaging the inclined edges 23 of the latches 14 and thereby lifting said latches, with the result that when the drawers are fully closed and the latch hooks 21 are disposed entirely forwardly of the drawer walls 25, the latches will be caused by their springs 18 to swing downwardly. This, of course, will result in disposition of the rear edges 22 of the latch hooks 21 in front of the drawer walls 25 directly beneath the openings 26 in said drawer walls and in consequent latching of the drawers 11 in their closed positions so that they cannot be opened until the bars 15 and the latches 14 are elevated.

In the front portion of the central drawer 12 and extending from side to side thereof is, as usual, a tray structure, designated generally as 27, which is formed from sheet metal and which includes a vertically disposed rear wall 28 terminating preferably, but not necessarily, at its top in a rearwardly directed flange 29.

At a point preferably, but not necessarily, midway between the sides of the drawer 12 and welded or otherwise suitably secured against the rear face of the tray wall 28 and, if desired, to the bottom wall 30 of the drawer 12, are suitable retaining and guiding elements 31 for a vertically disposed, vertically movable wedge plate 32.

The wedge plate 32 is disposed parallel to and against or adjacent to the rear face of the tray wall 28 and has secured thereto and extending forwardly therefrom, through a vertical slot 33 in said tray wall 28, a button 34 by means of which it may be elevated and depressed. To limit elevation and depression of said wedge plate, any suitable stop means may be provided. For example, the slot 33 may be of limited length for this purpose.

The lower portions of the ends of the wedge plate 32 are inclined downwardly and inwardly, as indicated at 35, and the upper portions of the ends of said plate are inclined downwardly and outwardly as indicated at 36.

The wedge plate 32 is disposed between the inner ends of a pair of bars 37 which are horizontally disposed, extend transversely of the drawer 12 and are suitably mounted at the rear side of the tray wall 28 for longitudinal projection and retraction. A helical tension spring 38 connects said bars 37 together and constantly urges them inwardly relative to each other so that their inner ends are maintained engaged with the ends of the wedge plate 32. The upper portions of the inner ends of said bars 37 are inclined downwardly and inwardly, as indicated at 39, at the same inclination as the end portions 35 of the wedge plate 32. On the other hand, the lower portions of the inner ends of said bars are inclined downwardly and outwardly, as indicated at 40, at the same inclinations as the end portions 36 of the wedge plate 32.

Moreover, said bars 37 are disposed at elevations relative to the wedge plate 32 so that when the latter is at its limit of upward movement, its lower inclined end faces 35 are engaged with the upper inclined end faces 39 of said bars, and so that when said wedge plate is at its limit of downward movement, its upper inclined end faces 36 are engaged with the lower inclined end faces 40 of said bars.

From the foregoing, it will be apparent that if the wedge plate 32 is in an elevated position, as shown in Figure 5, and is depressed from that position, the lower inclined end faces 35 thereof will wedgingly cooperate with the upper inclined end faces 39 of the bars 37 to urge said bars outwardly until the apices 41 at the junctions of the inclined faces 35 and 36 of said wedge plate pass below the apices 42 at the junctions of the inclined faces 39 and 40 of said bars. It will be equally apparent that after the apices 41 have passed below the apices 42, the inward pressure of the inner ends of the bars 37 against the ends of the wedge plate 32 induced by the spring 38 will result in the inclined end faces 36 and 40 of said wedge plate and said bars wedgingly cooperating with each other to urge the wedge plate to its limit of downward movement, as shown in Figure 6, with a snap action and to hold the same at its limit of downward movement until it is elevated by finger pressure exerted upwardly upon the button 34. Obviously, when the wedge plate 32 is elevated from its depressed position shown in Figure 6, the reverse action will occur; i. e., the inclined faces 36 and 40 will cooperate to urge the bars 37 outwardly until the apices 41 pass above the apices 42, whereupon the wedging cooperation between the inclined faces 35 and 39 under the influence of the spring 38 will cause the wedge plate 32 to be elevated to its limit of upward movement by a snap action and to be held elevated until it is depressed by finger pressure exerted downwardly upon the button 34.

The inclined faces 35 and 39 have considerably greater degrees of inclination than the inclined faces 36 and 40. Consequently, the overall effect of depressing the wedge plate 32 is to project the bars 37 outwardly, while the overall effect of elevating said wedge plate is to permit the spring 38 to retract said bars 37.

The bars 37 extend outwardly through openings 43 in the side walls 44 of the drawer 12 and have their outer end portions 45 bent to be parallel to said side walls 44.

When the wedge plate 32 is elevated and the bars 37 are retracted the outer end portions 45 of said bars are disposed against or closely adjacent to the side walls 44 of the drawer 12, as shown by full lines in Figure 8. On the other hand, when the wedge plate 32 is depressed and the bars 37 are projected, the outer end portions 45 of said bars are spaced outwardly from the side walls 44 of the drawer 12, as shown by dotted lines in Figure 8. In this connection and as best illustrated in Figure 3, the lower edges of the portions 45 are inclined downwardly and forwardly to constitute cams for cooperation with the inner end portions of horizontally disposed pins 46 which extend inwardly from the upper end portions of the latch-carrying bars 15.

The pins 46 may be fixed at their outer ends to the bars 15. Preferably, however, they are pivotally connected at their outer ends to said bars 15 and are carried by the rear or free ends of forwardly and rearwardly extending arms 47 which are pivoted at their front ends as indicated at 48, to the inner side walls 16 of the casings or pedestals 13.

The inner end portions of the pins 46 are disposed so that they are spaced outwardly with respect to the portions 45 of the bars 37 when the wedge plate 32 is elevated and said bars 37 are retracted, and so that they underlie and are engageable by the lower inclined edges of said portions 45 of said bars 36 when the wedge plate 32 is depressed and said bars 37 are projected. Consequently, when the wedge plate 32 is elevated and the bars 37 are retracted, there is no effective cooperative relationship between the portions 45 of said bars 37 and the pins 46. When, however, the wedge plate 32 is depressed and the bars 37 are projected, effective cooperative relationship between the portions 45 of the bars 37 and the pins 46 is established.

Suitable springs 49 tend constantly to elevate the bars 15 to their limits of upward movement as determined by suitable stop means which may consist, for example, of stop lugs 50 struck outwardly from said bars 15 for engagement with suitable fixed abutments constituted, for example, by the top walls 51 of the hollow inner sides 16 of the casings or pedestals 13. As best shown in Figure 8, the springs 49 may be carried by and may act through the pins 46 to elevate the bars 15. In other words, said springs may be medially coiled about said pins 46 and may have legs extending from their medially coiled portion and resting upon the top walls 51 of the inner sides 16 of the casings or pedestals 13 in order to accomplish their purposes. In any event, when the wedge plate 32 is elevated and the bars 37 are retracted, the portions 45 of said bars 37 do not interfere with upward movement of the bars 15 and consequently said bars 15 are maintained elevated by the springs 49.

When the bars 15 are elevated, the hooked ends 21 of the latches 14 are, as aforesaid, alined with the holes 26 in the flanges 24 of the drawers 11 and therefore said drawers 11 are free to be opened and closed at will regardless of whether the central drawer 12 is closed or open. In other words, the central drawer 12 lacks control over the side drawers 11 when the wedge plate 32 is elevated. When, however, the wedge plate 32 is depressed and the bars 37 are projected, control of the side drawers 11 by the central drawer 12 is established. In other words, closing of the central drawer 12 while the bars 37 are projected will result in the inclined under edges of the portions 45 of said bars 37 riding over the inner end portions of the pins 46 and depressing said pins with consequent depression of the bars 15. With depression of the bars 15 the latches 14 will be moved downwardly so that their hooked front ends 21 will engage in front of the walls 25 of the drawers 11 below the openings 26 in said walls 25 if the drawers 11 are closed, and in the same result if any drawer 11 is closed after the central drawer has been closed. It will thus be apparent that as long as the wedge plate 32 is elevated and the bars 37 are retracted, the drawers 11 are free to be opened and closed at will, regardless of the position of the drawer 12. It will likewise be apparent that when the wedge plate 32 is depressed and the drawers 11 and 12 are closed, the drawers 11 cannot be opened without first opening the drawer 12.

A suitable key-controlled lock 52 is provided for locking the central drawer 12 closed and thus locking all of the drawers closed.

The arms 47 serve to hold the pins 46 against

endwise movement and also serve to resist rearward thrust of said pins by the inclined under edges of the portions 45 of the bars 37 when the central drawer is closed while said bars 37 are projected so that the bars 15 are relieved of any such thrust.

The mechanism at the rear of the tray structure 27 is housed by a suitable cover plate 53, best shown in Figure 7 of the drawings.

Summarizing, the present locking mechanism provides for locking all of the drawers closed by means of a single, key-controlled lock associated with the central drawer 12, and for removal of control of the drawers 11 from the drawer 12 whenever desired so that said drawers 11 may be opened and closed at will without manipulating said drawer 12 and while the latter is closed, all by the mere easy finger depression or elevation of the button 34 before the drawer 12 is closed.

While the present mechanism has been illustrated and described as incorporated in a desk having both right and left hand banks of drawers 11, it is apparent that the same is readily capable of use in connection with a desk having only a single right or left hand drawer or bank of drawers 11. Moreover, some desks have at one side thereof, in lieu of a bank of drawers, a typewriter compartment which is closed at its front by a hinged door, and in this connection it is apparent that the present mechanism may readily be used to control opening of such a door.

From the foregoing description, considered in connection with the accompanying drawings, it is believed that the construction and operation of the present desk drawer locking mechanism will be clearly understood and its advantages appreciated. It is desired to point out, however, that while only a single, specific structural embodiment of the invention has been illustrated and described, the same is readily capable of specifically different structural embodiments within its spirit and scope as defined in the appended claims.

I claim:

1. In a desk having at least two drawers, latch means for securing one of said drawers closed, a vertically movable bar by which said latch means is carried, means whereby said bar is caused to be moved vertically to a position in which said latch means is ineffective to secure said drawer closed when the other drawer is open, a projectable and retractable bar carried by and disposed horizontally and transversely relative to said other drawer, a cam carried by said second mentioned bar and effective when the latter is projected and ineffective when the latter is retracted and upon closing of said other drawer to move said first mentioned bar to a position in which said latch means is effective to secure said first mentioned drawer closed, yieldable means for retracting said second mentioned bar, and manually operable cam means for projecting said second mentioned bar and for holding the same projected.

2. In a desk having at least two drawers, latch means for securing one of said drawers closed, means whereby said latch means is rendered ineffective to secure said drawer closed when the other drawer is open, a projectable and retractable bar carried by the other drawer, means whereby said bar is rendered effective when projected and ineffective when retracted to render said latch means effective to secure said first mentioned drawer closed when said other drawer is closed, spring means for retracting said bar, and a depressible cam carried by said other drawer for cooperation at one end thereof with the inner end of said bar for projecting the latter, the upper portion of the inner end of said bar being inclined downwardly and inwardly, the lower portion of the inner end of said bar being inclined downwardly and outwardly, the lower portion of said end of said cam being inclined downwardly and inwardly, and the upper portion of the said end of said cam being inclined downwardly and outwardly whereby upon depression of said cam the lower inclined end portion thereof and the upper inclined end portion of said bar initially cooperate to cause said bar to be projected and then the upper inclined end portion of said cam and the lower inclined end portion of said bar cooperate to hold said cam against elevation and thus hold said bar projected.

3. In a desk having at least two drawers, latch means for securing one of said drawers closed, a vertically movable bar by which said latch means is carried, means whereby said bar is caused to be moved vertically to a position in which said latch means is ineffective to secure said drawer closed when the other drawer is open, a projectable and retractable bar carried by and disposed horizontally and transversely relative to said other drawer, means guiding said last-mentioned bar for straight line projective and retractive movements, a cam carried by said second mentioned bar and effective when the latter is projected and ineffective when the latter is retracted and upon closing of said other drawer to move said first mentioned bar to a position in which said latch means is effective to secure said first mentioned drawer closed, and a cam element mounted for straight line vertical movements in said other drawer and cooperable with said second mentioned bar to project the same and to hold the same projected.

4. In a desk having a center drawer and a pedestal drawer at each side of said center drawer, latch elements for securing said pedestal drawers closed, vertically movable members to either side of said center drawer by which said latch elements are carried, means whereby said members are moved vertically to positions in which said latch elements are ineffective to secure said pedestal drawers closed when said center drawer is opened, a pair of projectable and retractable bars carried by said center drawer and disposed transversely and horizontally relative thereto in alinement with each other, means guiding said bars for straight line projective and retractive movements, cams at the outer ends of said bars effective when the latter are projected and ineffective when the latter are retracted and upon closing of said center drawer to move said members vertically to positions in which said latch elements are effective to secure said pedestal drawers closed, spring means for retracting said bars, and a cam mounted in said center drawer for straight line vertical movement and interposed between the inner ends of said bars for cooperation at its ends with the inner ends of said bars to effect their projection and for holding them projected, the upper and lower portions of the inner ends of said bars being inclined downwardly and inwardly and downwardly and outwardly, respectively, the lower and the upper portions of the ends of said cam being inclined corresponding to the inclinations of the upper and the lower portions of the inner ends of said bars, respectively, whereby upon depression of said cam the lower portions of its ends

first cooperate with the upper portions of the inner ends of said bars to project the latter and then the upper portions of the ends of said cam cooperate with the lower portions of the inner ends of said bars to hold the latter projected and to hold said cam against elevation.

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