May 2, 1933. J. E. BALES ET AL 1,906,832

VERTICAL FILING CABINET

Filed Feb. 25, 1931 4 Sheets-Sheet 1

FIG. 1.

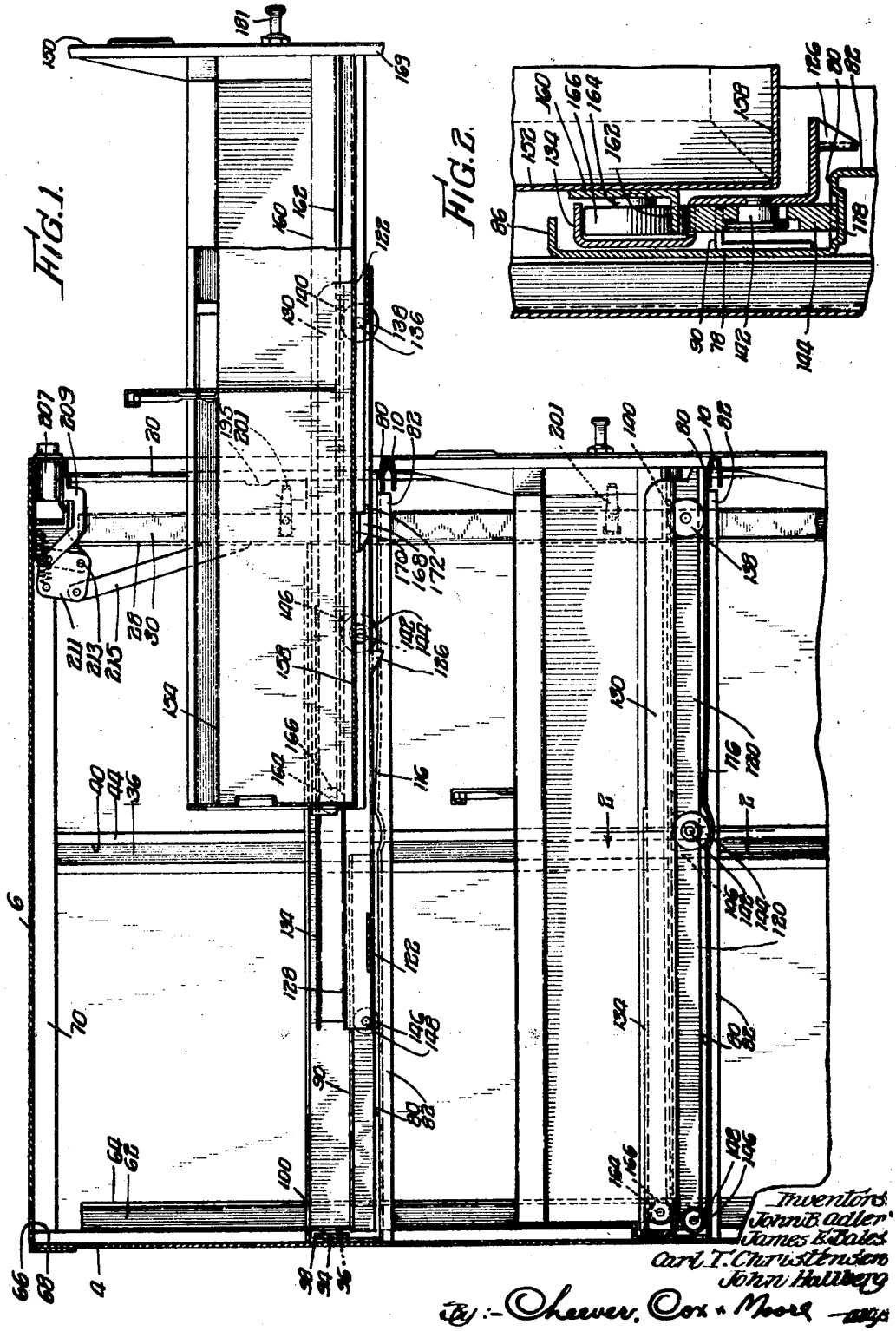


FIG. 2.

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FIG. 3.

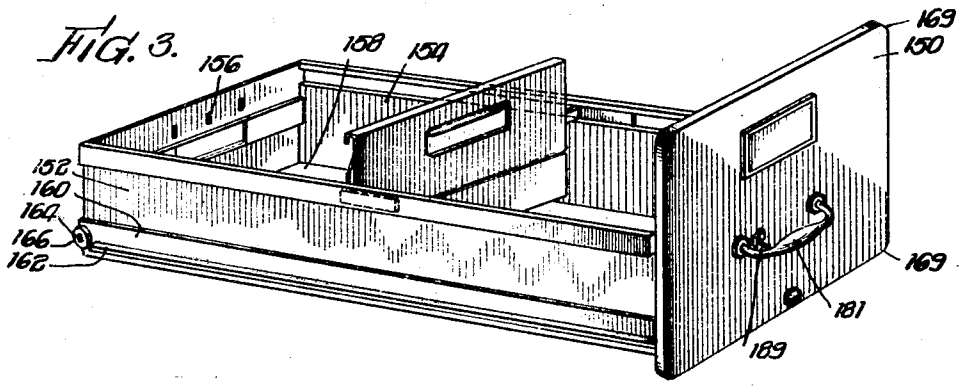


FIG. 4

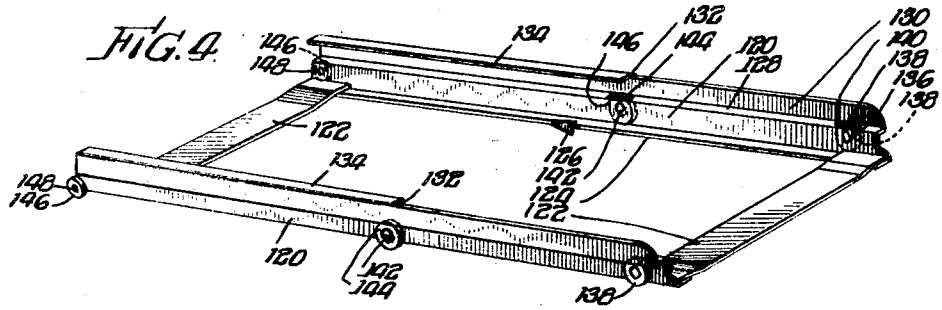
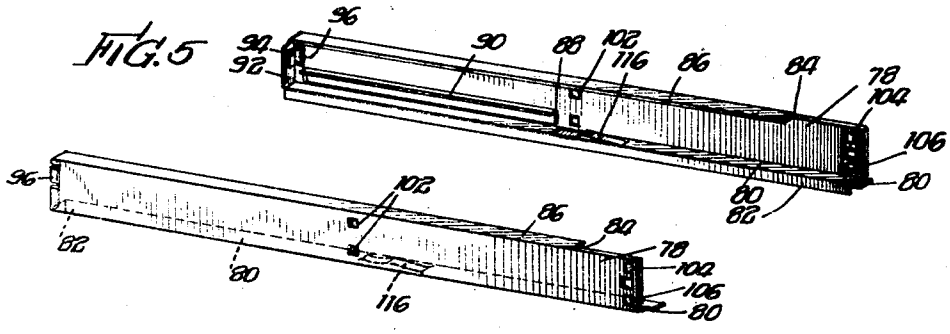


FIG. 5



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FIG. 6.

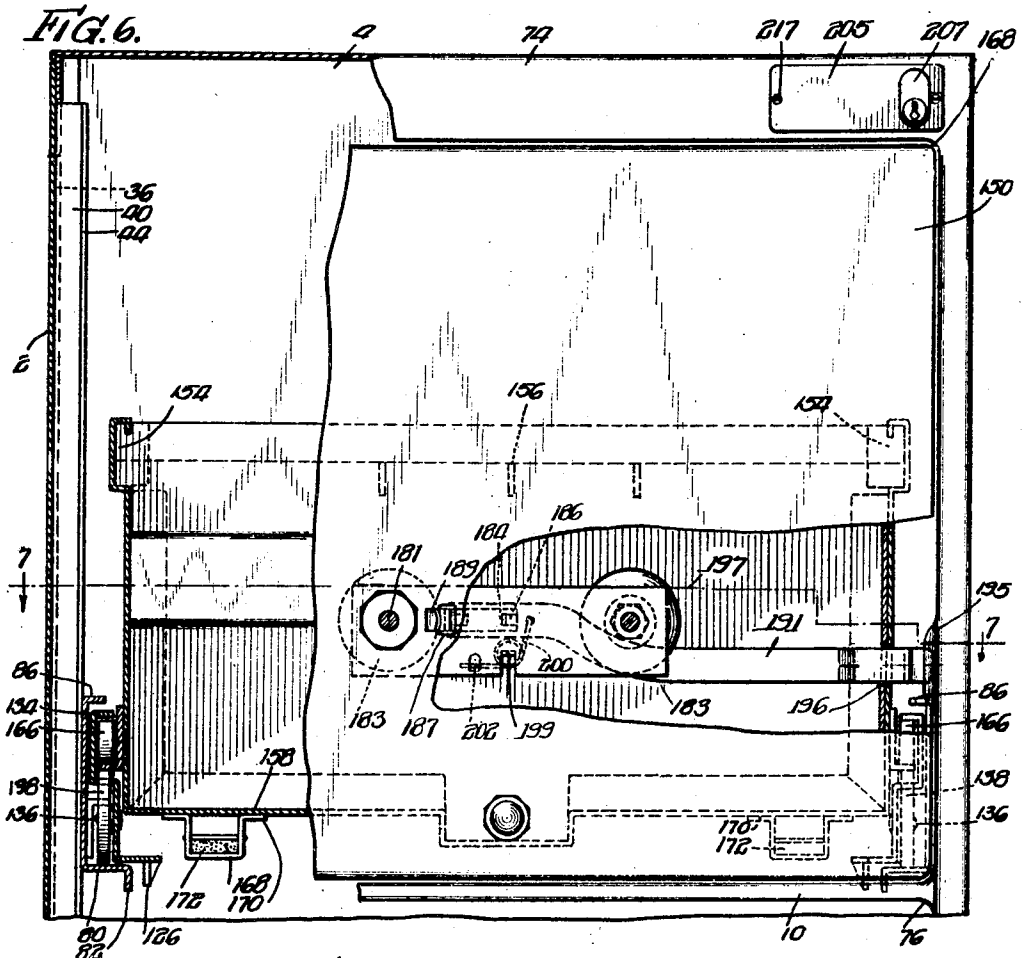
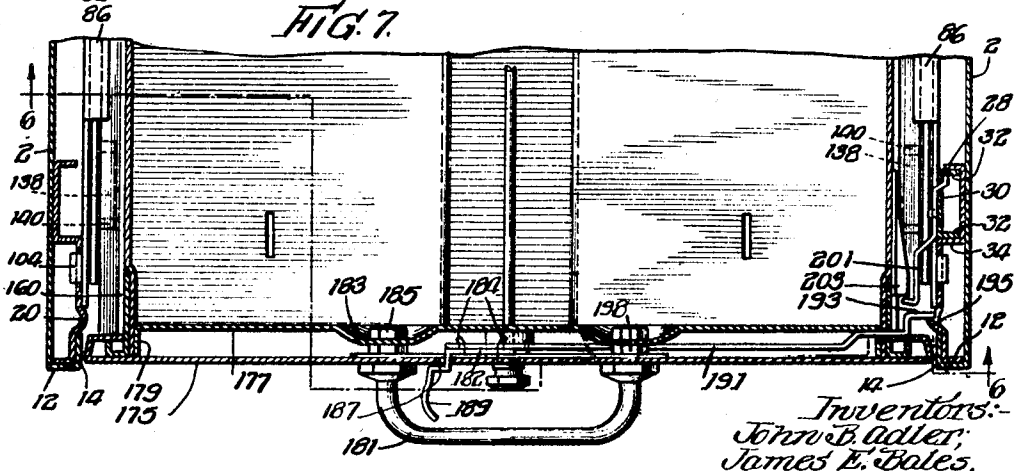


FIG. 7.



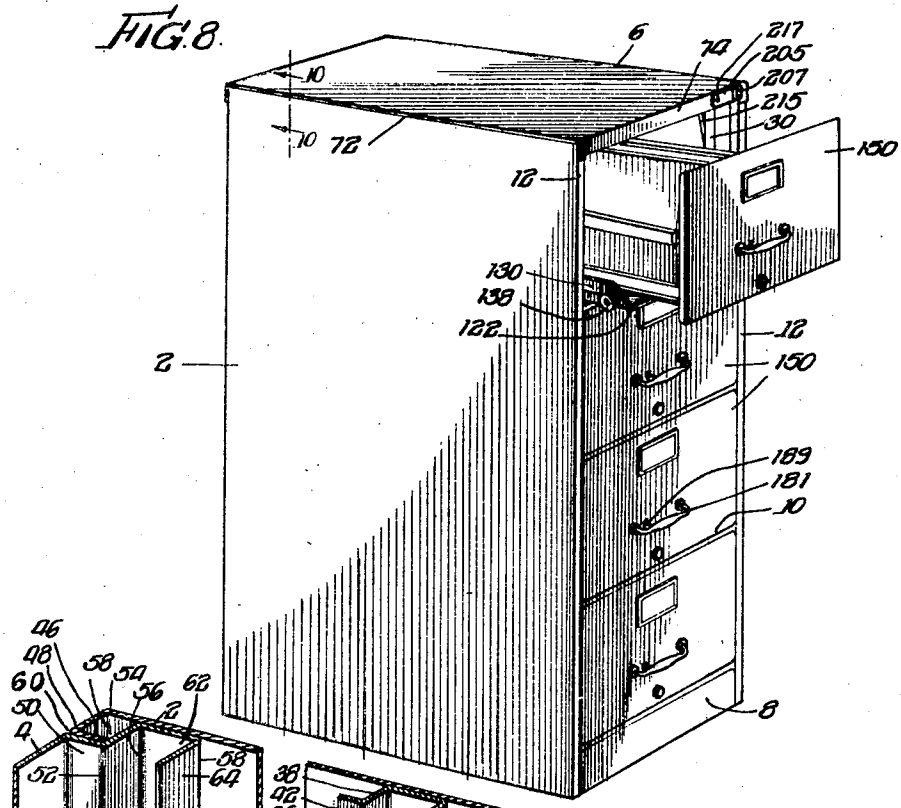
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FIG. 8.



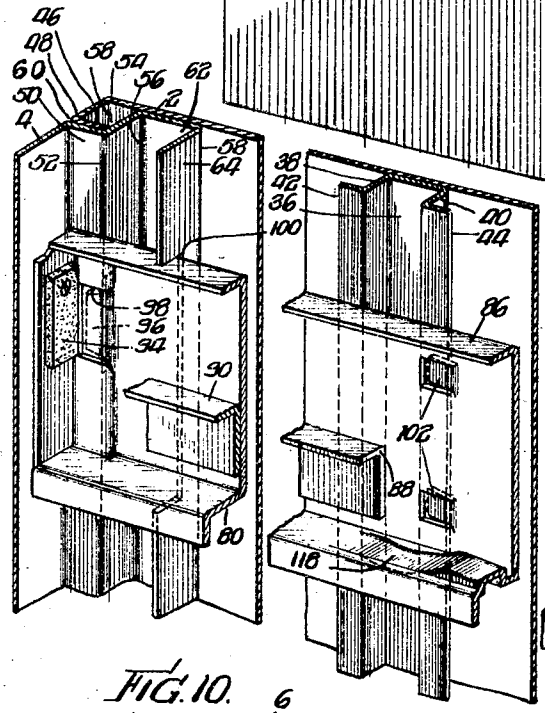


FIG. 9.

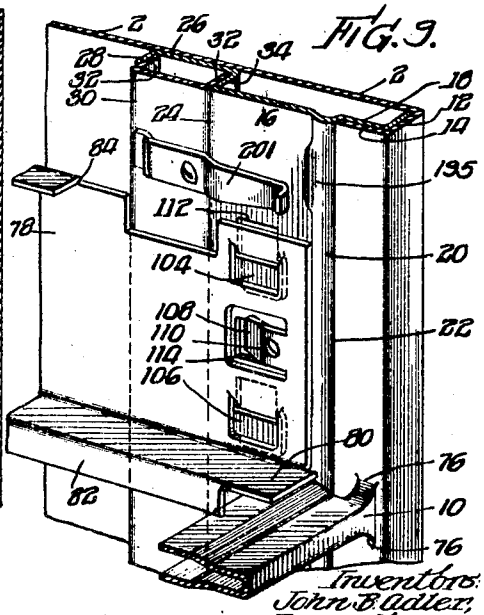
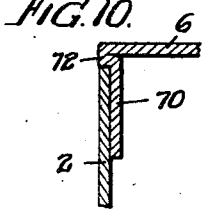


FIG. 10.



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Patented May 2, 1933 1,906,832

UNITED STATES PATENT OFFICE

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VERTICAL FILING CABINET

Application filed February 25, 1931. Serial No. 518,088.

Our invention relates to filing cabinets having a projectable drawer and drawer suspension mechanism, and the invention relates particularly to the type wherein the drawer and its suspension mechanism are progressively and simultaneously projected from the drawer casing, whereby to project the drawer as rapidly and as far as possible from its closed position in the casing.

Among the objects of our invention are to provide an improved drawer construction which will permit the drawer to be moved out as quietly, quickly, and easily as possible; to provide a construction wherein the drawer itself is quickly and easily removable from the cabinet mechanism, and wherein the drawer suspension mechanism also is quickly and easily removed from the casing; to provide a construction wherein the drawer is supported in level position not only when within the casing, but in all projected positions from the casing; to provide a projectable drawer of the suspension type wherein the drawer will not tip or tilt when either the front or back portion of the drawer is heavily loaded; to provide a construction wherein the drawer, when closing, will be properly positioned with respect to the drawer-head opening of the casing, to the end that each drawer and drawer-head will exactly fit any other drawer-head opening in the casing, and particularly to provide, in association therewith, a spacing construction related to the track, the suspension mechanism, and the drawer, whereby perfect interchangeability of the drawer is secured; to provide a construction whereby the drawer tends to automatically close itself when approaching the drawer-closing position; to provide means for slightly raising the forward end of the drawer during its initial opening movement and then gradually returning the raised front of the drawer to its normal level condition as the same moves forwardly for the dual purpose of releasing the lower edge of the drawer from any binding engagement which its front may have with the lower edge of the drawer opening and which might slightly impede the opening movement of the drawer, and to create a "floating" effect during the drawer opening movement, said floating effect being accomplished by slightly lowering the center of gravity of the drawer in the cabinet as the drawer moves outwardly, whereby to provide means for slightly elevating the front of the drawer when approaching its inward or closing position, whereby to insure that the drawer-head in closing will safely clear the lower edge of the drawer-head casing opening, even when heavily loaded, and will have a settling motion as it assumes closed position, whereby to snugly seat the drawer in closed position, and in connection with such construction, to insure the traction of the drawer and drawer slide during such closing movement, as well as during all other movements of the drawer and drawer slide; to provide suspension mechanism, preferably in the form of a pan readily removable from the drawer casing and having independently operating track rollers for the purpose of co-operating with cam means in the casing to impart the floating or settling movements referred to above, in the drawer during its opening and closing movements; to provide an improved pan construction; to provide an improved drawer construction; to provide an improved drawer locking mechanism for each separate drawer; to provide an improved group drawer locking mechanism; to provide an improved front construction for each drawer and its associated casing opening; and to provide these and other objects of my invention, as will be apparent from a perusal of the following specification when taken in connection with the accompanying drawings, wherein:

Figure 1 is a side sectional view of the preferred type of our improved filing cabinet, showing one of the drawers projected to outward position, and showing another of the drawers in completely closed position;

Figure 2 is a section taken on the line 2—2 of Figure 1 through one of the drawers and through the suspension mechanism and the track therefor;

Figure 3 is a projection view of one of the drawers;

Figure 4 is a projection view of the improved suspension pan;

Figure 5 is a projection view of the casing tracks;

Figure 6 is a sectional view through the front of the casing, and through one of the drawers of the improved drawer latching mechanism;

Figure 7 is a section on line 7—7 of Figure 6;

Figure 8 is a perspective view of a complete casing unit showing a casing with four drawers to a tier;

Figure 9 is a fragmentary perspective view which shows the interior construction of one lateral side of our improved casing, and showing the manner in which the side wall fits the rear wall of the casing, and showing the manner in which the various track members are mounted on the inside of said wall; and

Figure 10 is a section along line 10—10 in Figure 8.

Our present invention is exemplified in connection with a casing, adapted to receive a tier of four drawers in a vertical direction, but the invention is equally adaptable to a casing, having one or more drawers of any desired size or shape. In the construction which we have selected for the exemplification of our invention, the casing comprises two side members 2 which are of corresponding construction, a rear member 4, a top member 6, a bottom member not shown, and suitable front members 8 and 10, all rigidly interconnected, in the manner hereinafter described, to provide an upstanding, rugged casing of simple yet pleasing lines, and practically free of external seams or sheet metal junction lines.

By particular reference to Figures 8 and 9 of the drawings, it will be seen that each of the sheet metal side members 2 at its front end is bent at right angles as at 12, and thence inwardly as at 14, in a direction parallel to the lateral side 2, whereby to provide two vertically extending and spaced-apart front walls 12 for the cabinet, these front walls being of some width to provide ruggedness. These two front inner walls of the cabinet or casing are given rigidity and a pleasing appearance by a vertically extending re-enforcing member 16, which has its front portion 18 lying within and overlapping the inwardly extending flanges 12 and 14 of the lateral wall 2 of the casing. The front portion of this reenforcing member is provided with a vertically extending bead 20, which abuts the inner edge 22 of this inwardly extending flange 14, so as to give the front vertical edge of the casing a finished appearance. The re-enforcing member 16 extends rearwardly of the cabinet to a point 24, where it bends laterally somewhat in parallelism to the flange wall 12 of the front of the casing to provide a spacing flange 34. This member 16 then bends into parallelism and contact with the wall 2, as at 26. It then bends again inwardly at right angles as at 28 to provide a rectangular pocket. Said metal portions 2 and 26 of the wall 2 and this re-enforcing member 16 may be suitably welded together at their junction, and may be suitably welded together, if desired, at the junction of the forward edge 18 of the member 16 and the inwardly extending flange 14 of the front wall portion. The pocket-shaped portion formed by the flanges 28 and 34 of the re-enforcing member 16 is adapted to receive a slidable group drawer locking member 30 extending from near the bottom portion of the casing to near the top. This member 30 is provided with two laterally extending flanges 32, which are parallel and abut the two spaced-apart flanges 34 and 28 of the re-enforcing sheet 16, and this group locking bar 30 is adapted to be slidingly operated as hereinafter described.

The side walls 2 of the cabinet are each provided with an additional bracing member comprising a channel-shaped sheet metal vertically extending member 36, which has two inwardly extending flanges, 38 and 40, each of which in turn is provided with a laterally extending wing 42 and 44. These wings 42 and 44 extend parallel to the lateral wall 2, and are spaced somewhat therefrom by the flanges 38 and 40. The wings 42 and 44 lie in the same plane as the re-enforcing member 16. The function of these wings 44 will be hereinafter described.

The rear portion of the lateral wall 2 of the casing is interlocked with the rear wall 4 of the casing, preferably in the following manner. Side wall 2 is bent laterally at right angles, as at 54, thence again laterally at right angles as at 48 to form a channel 58 at the rear edge of the side wall 2 and to provide a flange 46 spaced from the wall 2 and adapted to meet and contact with a similarly bent flange 50 of the rear wall 4. The wall 4 is again bent laterally as at 52 at the edge of the flange 50 and thence again laterally as at 56 and 58, to provide a rectangular channel 62 which in combination with the channel 58 gives great rigidity to the rear corner portions of the upright casing. In addition, this construction gives a very finished appearance to the outside of the rear and side walls of the casing, since there is presented only the vertical seam 60. In this manner the entire side walls of the casing are formed as a single unbroken surface, giving a very pleasing and finished appearance to the cabinet.

The channel 62 forms additional re-enforcing means and provides vertical support for the track member hereinafter described. The portions 2 and 62 may be additionally interconnected as by welding.

The top 6 has a rear depending flange 68, which overlies and is or may be welded or

otherwise secured to the upper edge of the back wall 4. The lateral edges of the top 6 of the cabinet are folded over, inwardly as at 72 and thence downwardly as at 70, and lie within the top edges of the side walls 2 of the cabinet to provide a side seam 72, wherein the plane of the lateral side walls is flush with the lateral wall of the top of the casing. The inner meeting edges of the side walls 2 and the flanges 70 of the top are suitably welded together, thus to provide an exterior finish of great simplicity and beauty of line.

At the front the top member 6 is provided with a depending flange 74, which overlaps the front walls 12 of the casing, and lies substantially flush therewith, said front faces 12 and overlapping flange 74 being suitably welded together. The bottom edges of the casing are suitably held together by a bottom plate of the casing. The bottom side walls of the casing are turned in to provide a narrow flange extending parallel with the side walls, and the rear wall 4 is likewise turned in to provide a narrow flange, and the bottom edge of the front wall portion 8 is likewise turned in to provide a narrow flange, and the corner portions of these turned-in members are reenforced by angularly disposed channel irons of considerable width, which lie across the four corners, said re-enforcing angular strips having laterally bent wings lying within the channel portions of the side walls and end walls and front walls, and being welded thereto to provide a very rugged basal structure. Above these channel shaped strips there is a base member which is welded to the side walls and to these channel shaped strips, thereby to provide a dust-proof bottom for the cabinet, spaced slightly above the bottom-most portions of the cabinet. The inwardly extending flange 14, the re-enforcing plate 16, the vertically extending locking member 30, the wing-shaped re-enforcing member 36 and the re-enforcing plate 62, all preferably terminate at the dust-proof bottom plate hereinbefore referred to.

The two vertically extending and spaced-apart front members 12 are provided at suitable vertically disposed distances with horizontally and transversely extending fillets 10, which are preferably spaced apart in a vertical direction the distance of a standard size drawer head. Each of these fillets, as shown clearly in Figure 9, is preferably of channel-shaped sheet metal construction, being folded upon itself so that the fold thereof faces the front, and the two open ends extend rearwardly and face toward the interior of the casing. These fillets have their ends rigidly connected to the vertical side bars 12, preferably welded, although other means may be provided. In the manner illustrated, the upper and lower portions at each end of these fillets are somewhat gusset-shaped as at 76, so that the drawer-head opening produced in the casing has somewhat rounded corners. In addition, by utilizing these gusset-shaped ends of the fillet, a more rugged connection of each fillet to the side bars 12 is provided.

Each opening formed between intervening fillets 10 and between the intervening fillets of the top and bottom, provides a drawer-head opening into which a drawer is adapted to be inserted, as is well known in the art. The manner in which a drawer and the drawer suspension mechanism is operatively associated with a casing will now be described.

By reference to Figures 1, 2, and 9 it will be seen that directly opposite each drawer-head opening in the casing and level with each fillet 10 we provide each side wall 2 of the casing with a detachably connected side bar, which provides a track member on which the rollers of each drawer suspension mechanism operate, and also with other associated means for cooperation with the drawer and the drawer suspension mechanism. As shown clearly in Figures 5 and 9, each one of these bars is preferably formed of sheet metal and extends horizontally substantially from the front of the side wall to the rear thereof. Each such bar comprises a vertically extending portion 78, which at its bottom bends laterally to provide a horizontal stationary track portion 80, and then bends downwardly to provide a depending skirt 82. The top edge of each member 78 rearwardly of the point 84 is bent laterally to provide an overhanging horizontal detent strap 86. At a point such as at 88 there is provided another detent strap which comprises a piece of sheet metal of angular or L-shaped construction, having an overhanging horizontal ledge 90 and a vertical wall, which is secured to the side wall 78 of the bar, as by spot welding. This bar 90 is disposed at the rear-most portion of the bar 78. The rear end of the bar, at least the vertical portion 78 thereof, is bent laterally as at 92, and has affixed at the front face thereof, 94, a stop of leather or other non-metallic material which is affixed thereto by means of a suitable fastening member such as a rivet.

The rear side wall 78 of this bar is slotted adjacent the stop member 94 to provide a free tongue 96, which constitutes a locking member to interlock with a suitable slot 98 in the vertically extending tubular wall portion 50 of the rear cabinet wall. The vertically extending re-enforcing member 64 is provided with a horizontal notch 100 and a corresponding lower notch forming a horizontal shoulder upon which the horizontal track member 80 is adapted to rest and to be supported. The front portion of this track member of each bar is adapted, when attached to the side of the cabinet, to rest upon and overlie the inwardly extending flange of a channel shaped member 10 constituting each horizontal fillet. In this man-

ner each track member is not only supported, by the locking tongues, from the vertically extending members of the side wall, but is likewise supported by the front fillet 10, a horizontal shoulder on the vertical portion 64, and the front and rear locking members. By having the front edge of each track member 80 lying upon the fillets 10, the stationary track member 80 will be operatively associated with the suspension mechanism and the drawer, so as to permit the facile insertion and withdrawal of the drawer and the suspension mechanism from the casing track.

Substantially midway of its length, the vertical portion 78 of the stationary track bar is provided with two free tongues 102 extending in a horizontal direction. These tongues are adapted to lock under the vertically extending wing 44 (see Figure 9). The front of the vertically extending portion 78 of each bar is likewise provided with three tongues. The upper tongue 104 and the lower tongue 106 extend downwardly, while the central tongue 108 extends in a horizontal direction and is provided with an aperture 110. The tongues 104 and 106 are adapted to project into a series of vertically spaced-apart locking notches 112 formed on the intermediate wall portion of the re-enforcing and locking member heretofore referred to and showed clearly in Figure 9. The horizontally bendable locking tongue 108 is adapted to be bent inwardly in a horizontal plane to lock in a larger slot 114, which is disposed between the upper and lower slots 112. It is to be understood that between each adjacent fillet 10 and between the top and bottom fillets and the top and bottom portions of the casing, there is a double set of these locking notches so as to permit each drawer-head recess to receive two of such locking bars on each side at spaced-apart intervals, whereby any one drawer-head recess may be provided on each side wall with two of such tracks, so as to accommodate two drawer-heads, each exactly one-half the size of the standard size drawer-heads. In other words, if it be desired to insert two small card-filing cabinets in place of a standard file, the same can be done by inserting another set of tracks on each side above the present track shown, and they can be locked in place in the manner above described and the large standard size drawer taken out and replaced by two half-size filing cabinet drawers which will operate in the manner hereinafter disclosed.

The hole 110 in the locking tongue 108 is adapted to permit the insertion of a sharp, pointed instrument to bend the tongue outwardly to permit release of the locking bar. Every stationary track portion 80 of one of these locking bars is provided with a cam-shaped portion substantially intermediate its length. This cam-shaped portion comprises the upwardly inclined bead 116 and the rearwardly disposed depression 118, which have a function hereinafter described. Each track has one of these inclines and depressions.

The drawer suspension mechanism, which is adapted to operate along the stationary track 80 of the cabinet or casing, is preferably in the form of a pan. Each one is formed of sheet metal and comprises the two spaced-apart side members 120, joined by the horizontal end straps 122. Each vertically extending side portion at its bottom is bent horizontally as at 124 to provide a horizontal flange, which at its mid portion is notched to provide a bent downwardly depending stop 126, as hereinafter described. Substantially midway of its height each vertical portion 120 is bent outwardly and horizontally as at 128 to provide a movable track extending from the front of the pan to the rear thereof, and above this movable track 128 is another vertical wall 130, the rear portion of which, from the point 132, is provided with a horizontal overhanging flange 134, constituting a longitudinal drawer-interlocking member. The two opposite sides of the pan are of corresponding construction.

At the front of the pan the side wall portion 120 is provided with a shaft 136 on which revolves a track roller 138. The track roller is of greater diameter than the height of the vertical wall 120, so that the front portion of the track 128 is suitably slotted, as at 140, to permit the roller 138 to project through this slot with the upper surface of the roller slightly extending above the upper surface of this track 128. In the same manner the intermediate portion of the vertically extending wall 120 is provided with a shaft 142 on which is mounted an actuating or intermediate track roller 144, which likewise projects through a slot 146 in the track 128, so that in certain positions the actuating roller 144 will project above the level of the track 128. This actuating roller has a larger bearing than the diameter of the shaft 142, so that the roller is capable of vertical movement relative to its shaft 142, i. e. "floats" on the shaft so that in lowered position the top of the roller will not project above the track 128, whereas in raised position it will.

The rearmost end of the vertical portion 120 of the side of each pan is provided with a rear roller 146 rolling on a shaft 148. All of these rollers are mounted on the outside of the vertical wall 120. The rear roller 146 is smaller than either of the rollers 138 and 144. This rear roller is positioned so that its bottom periphery will roll upon the track member 80 of the side bars, but the track member 128 is not slotted at the rearmost portion, because this smaller roller does not project up to the level of the track 128. Each of the rollers 144 and 146 is disposed so that in any position whatsoever it will extend below the level of the pan portion 120, so

that the pan will always roll upon the three rollers if the same are upon the track, with one exception, however, and that is the case when the floating actuating roller lies directly over the depression 118, at which time it is inoperative, the pan rolling on the front and rear rollers only, or when the actuating or floating roller is on the cam portion 116, at which time the front roller 138 will be slightly raised from the track and rendered inoperative, all as hereinafter described.

By reference to Figures 1, 2, 3, 6, and 7, it will be seen that each drawer comprises a front drawer-head 150 and a drawer proper, comprising side members 152 and 154, the rear member 156 and the bottom 158. These members are preferably all formed of sheet metal, and with the exception of certain constructions which are adapted to cooperate with the mechanism hereinafter described, may be of standard construction. However, every side wall of the drawer is provided with a horizontally extending track herein shown in the form of an angular bar having one wall 160 thereof welded or otherwise secured to the outer wall 152 of the drawer, and with the shorter horizontal leg thereof, 162, extending laterally outwardly in a horizontal plane near the bottom edge of the drawer. At the rear of the drawer the side wall 160 is provided with an outwardly extending shaft 164, on which a locking roller 166 is revolubly mounted. The bottom periphery of these rollers preferably extends below the level of the under side of the track 162. Each side of the drawer is provided with a similar track mechanism, and with a similar rear detent roller.

The under side of the bottom of each drawer is provided with a U-shaped angular bar 168 fastened to the under side of the drawer by means of the wings 170. This channel-shaped portion is adapted to hold a non-metallic or resilient stop member 172 for cooperation with the front bar 122 of the pan, whereby to limit the outward movement of the drawer relatively to the pan. The drawer-head 150 is provided with rounded corners 169, which are adapted to cooperate with the four truss-like filleted corners of the drawer-head opening of the casing. These rounded corners eliminate any possibility of scratching a person when using the cabinet. In addition, each drawer-head is provided with latching mechanism which will be hereinafter described.

The cooperation of the drawer with its suspension mechanism and the cooperation of the drawer suspension mechanism with the stationary track mechanism of the cabinet, whereby many new advantageous features are secured, will now be described. When the suspension pan shown in Figure 4 is inserted in a drawer-head opening, it is done in the following manner. The rear end of the suspension pan is inserted on the two opposed horizontal tracks 80, one on each side of the cabinet. The pan is slightly tilted, with its front end raised up. In this position the pan is then shoved in until the two stop members 126 clear the rear edge of the horizontal fillet 10. The pan can then be moved down to horizontal position, so that the stop members 126 will lock behind the front edge of the fillet 10 so as to limit the outward movement of the pan. In this position the pan will be projected out of the casing but the intermediate floating rollers 144 and the rear roller 148 of the pan will be rolling upon two tracks 80 of the casing.

With the suspension pan thus projected, when it is desired to insert the drawer, the drawer is now pushed into the pan in such a position that the rollers 166 from the rear end of the drawer will roll along the track 128 of the pan. In this inward movement of the drawer, these rollers 166 will roll under the front or forward edge of the rolling straps 134 at the top and rearmost portion of each upstanding wall portion 120 of the pan, and in this rearward movement of the drawer relative to the suspension mechanism, the drawer will be slightly raised until the stop members 172 on the under side thereof will clear the front cross strap 122 of the pan, at which point the drawer will then be rolled to horizontal position and then pushed in. In being pushed in, the track member 162 on each side of the drawer will roll upon the upper surface of the track and supporting rollers 138 and 144 in a manner now to be described.

When in closed position the drawer, as illustrated in the lower portions of Figure 1, is supported by the carriage at its front and rear extremities, the traction members 166 of the drawer resting upon the traction flanges 128 on either side of the carriage to support the hind end of the drawer, the forward ends of the drawer flanges 162 resting upon the rollers 138 of the carriage to support the forward end of the drawer, said rollers 138 in turn resting upon the track portions 80 of the casing members 78 on either side of the casing. The intermediate floating rollers 144, when the drawer and carriage are in fully closed position, rest in the depressions 118, immediately behind the inclined cam surfaces 116, and do not engage or support the drawer. The carriage also is supported, when in closed position, at its forward and rearward extremities, the rollers 146 and 138 resting upon the flanges 80 of the casing members 78 to support the carriage therefrom. The actuating rollers do not operate to support the carriage or the drawer when the parts are in fully closed position.

As the drawer is initially impelled forwardly from fully closed position, the roll-

ers 166 will move forwardly along the tracks 128, the drawer flanges 162 will roll forwardly on the rollers 138, which in turn will roll forwardly on the flanges 80 of the casing members 78. The rollers 138 act as traction rollers to draw the carriage forwardly in the casing. This forward movement causes the actuating rollers 144 on each side of the drawer to ride out of the depression 118 on to the highest portion of the cams 116. The actuating rollers are of such a size that when resting on the highest point of the cams, they engage the lower surfaces of the drawer flanges 162. Since the rearmost rollers 166 of the drawer are confined against vertical movement by and between the flanges 128 and 134 of the carriage, the front of the drawer will be slightly elevated, rotating about the rearmost rollers 166 acting as pivots, when the actuating rollers reach the high point of the cam portions 116. The forward edge of the drawer flanges 162 also will disengage the front carriage rollers 138 so that the forward portions of the drawer will be supported by the intermediate actuating rollers 144 instead of by the rollers 138, as when the drawer is in fully closed position.

The actuating rollers are now also operating as traction rollers to draw the carriage forwardly in the casing. In other words, the function of the forward rollers 138 has now been assumed by the actuating rollers 144, which co-operate with the cam portions 116 to effect the elevation of the front end of the drawer slightly as it is initially projected. The principal advantage accomplished by initially raising the front of the drawer is that the lower edge of the drawer front is positively disengaged from the fillet 10 on which it might otherwise frictionally rest, particularly if the forward portion of the drawer is heavily loaded. Thus the opening of the drawer is accomplished in a smooth, frictionless, silent and easy manner.

As the drawer is projected still further toward open position, the actuating rollers 144 gradually descend the inclined surfaces 116. This results in a gradual rolling of the forward end of the drawer to its normal level position, which is reached when the actuating rollers reach the lower forward end of the cam portions 116. A beneficial result of thus lowering the forward portions of the drawer as the same moves outwardly, is that a certain coasting action is accomplished by the downward and forward movement of the drawer in opening, whereby a minimum effort is required in throwing the drawer to fully opened position. We prefer to call this feature the coasting action, but it will be noted that the drawer is never at any time tipped forwardly below the horizontal. When the drawer reaches the horizontal position, that is to say, when the actuating rollers arrive at the lower forward end of the cams, the drawer will be in horizontal position and will again rest upon the forward rollers 138 of the carriage. These rollers have, however, by this time become projected forwardly of the front of the cabinet, as shown clearly in the upper portions of Figure 1. The forward rollers therefore do not support the carriage on the cabinet members 78, but do have the function of assisting in supporting the drawer in its horizontal projected position. The actuating rollers also are of a size such that they furnish support for the drawer by engaging the flanges 162 of the drawer and the flanges 80 of the cabinet members 78 when the drawer is in projected position.

The drawer becomes fully projected when the drawer stop 172 engages the forward strip 122 of the carriage, at which time the stops 126 of the carriage are arranged to engage behind the fillets 10 of the casing. When the parts are in this position, the rollers 166 of the drawer will be slightly behind and above the actuating rollers 144, said rollers 166 being still engaged by and between the flanges 134 and 128 of the carriage, and thereby confined against vertical movement. The rollers 146 also of the carriage are at all times confined against vertical movement with respect to the casing by and between the rearmost portions of the flanges 80 and the flanges 90, so that when in extended position, the carriage is fulcrumed about the axes of the rollers 146, the forward portions of the carriage being supported in horizontal position by the floating rollers, and the drawer is fulcrumed in the carriage about the axes of the rollers 166, the forward portions of the drawer in turn being supported in horizontal position by the forward rollers 138 of the carriage, and partially by the floating rollers 144.

When the drawer is in extreme outward position, the track members 162 of the drawer will rest upon the rollers 138 of the suspension pan. In this position it will be noted that the front rollers 138 of the suspension pan do not rest on the stationary tracks 80, but will be projected out of the drawer so that the suspension pan will be supported by the intermediate actuating rollers 144 and the rear rollers 146, and hence the drawer proper will be supported by these rollers, but the rear rollers 166 of the drawer will be under the overhanging locking ledges 134 of the suspension pan, and in turn the rear rollers 146 of the suspension pan will be under the overhanging locking ledges 90 of the track bars 78 affixed to the inside walls of the casing. Thus the drawer will be supported in extreme outwardly projecting position.

As the drawer moves inwardly, the actuating rollers 144 will contact not only with the stationary tracks 80, but will also contact with the under side of the tracks 162

on the drawer, so that when the drawer is pushed inwardly it will move along the tracks 128 of the suspension pan, rolling over the front rollers 138 and the floating rollers 144. As it does so, the track rollers 144 will move along the stationary tracks 80, whereby the suspension pan will likewise move inwardly, but it approaches half the speed of the inward movement of the drawer. During the first portion of this inward movement the drawer continues to be operated and supported on the foremost rollers 138, and the floating intermediate rollers 144 of the suspension pan. This relation continues until the floating intermediate rollers 144 reach the inclined track portions 116, at which point these track rollers will ride up the inclines, and by reason of this fact, the front portion of the suspension pan will be slightly elevated. When this happens, the weight of the slide is then thrown upon the middle track rollers 144, and the rear rollers 146. The inclined track portions 116 have the function, in connection with the suspension pan and the drawers, of slightly raising the front end of the suspension pan, and hence the drawer head, just when the drawer-head is about to enter its recess in the front of the cabinet, so that the drawer-head will always be positioned exactly within said recess, and there is no possibility that the lower portion of the drawer head will strike the bottom portion of the fillet 10 immediately below the bottom edge of the drawer-head. This exact positioning movement of the drawer-head relative to the drawer-head recess insures the exact interchangeability of the various drawers and drawer-heads, and as thus interchanged the drawer will work perfectly.

At the time that the track rollers 144 are moving up the inclined portions 116 of the stationary tracks 80, the front rollers 138 of the suspension pan are being elevated and are now approaching the front portion of the track 80, which is lying on the rear edge of the fillet 10, so that the roller is positioned above the front portion of the track, but as yet has no bearing engagement upon the front edge of this track. A continued inward movement of the drawer will cause the track roller 144 to descend into the depression 118 immediately to the rear of the incline 116, and at this moment the front portion of the suspension pan and the drawer also will be lowered to normal position so that the track rollers 138 will directly contact with the track 80. The device thus operates during closing movement to slightly raise the front of the drawer and suspension pan in order to surely clear the lower edge of the drawer opening until the front rollers are in position over the track, and then to lower the drawer and pan to permit the front rollers to do the guiding. At the point where the track rollers 144 drop off the inclined track 116 and into the depression 118, the effect is to slightly impel the suspension pan and the drawer carried thereon rearwardly. This occurs at a point where the drawer is approaching a closed position so that this tendency to pull the drawer inwardly with a final snap will bring the drawer-head to accurately centered and fully closed position in the drawer-head recess of the cabinet without fail, and will insure the operation of the locking and latching mechanism hereinafter more fully described.

After the track rollers 144 have run up the inclined track portions 116, as the drawer is then pushed farther inwardly, the track rollers 144 will drop into the depressed portion 118 of the track. At this minute the weight of the pan and the supported drawer is thrown upon the extreme front and extreme rear rollers of the pan, in other words, upon the rollers 138 and 146. The track roller is then inactive, due to the fact that when in the depression, as shown in the lower portion of Figure 1, the diameter of the track roller is such that the upper portion of the periphery of said roller will not contact the under side of the track 162 on the drawer. Thus the floating roller 144 can be spun idly, showing that it is inactive. By thus throwing the weight of the drawer upon the extreme forward and rear rollers 138 and 148 of the suspension pan, the entire weight carried by the drawer is equally balanced and supported on the tracks 80 when the drawer is fully closed, so that there is no tendency for the drawer to teeter about the middle roller.

We have provided therefore latching means for securing the drawers in closed position, said latching means being manually operable in a most convenient manner to permit the opening of the drawer. We have also provided key-operated gang locking means for locking the drawers against access by unauthorized persons. A feature of the locking means is that the filing cabinet may be furnished either with or without the key-operated lock if desired. The latching means also may of course be omitted.

The front of each drawer comprises spaced wall portions, the forward wall 175 of which forms the visible front of the drawer, and the rear wall 177 is spaced behind the forward wall by having offset flanges 179 formed at its edges, the edges of which flanges bend against the front wall inside the locker to hide the latch bolt hereinafter more particularly described. Each drawer has a handle 181 of any suitable or preferred form, the forward handle preferably having threaded extremities extending through perforations formed in the front and rear walls 175 and 177 forming the drawer front. The rear wall portion 177 is or may be depressed to form brackets 183 around the perforations formed

by the ends of the handles, so that the fastening nuts 186 with which the handle is secured in place may be countersunk behind the inner surface of the drawer. The front wall 175 also is provided with a slot 187 near one side of the handle 181. The formed end 189 of a latch bar 191 extends through the slot 187 and is formed to fit within the contour of the handle 181, in position to be engaged by the fingers of a person grasping the handle, whereby an operator, in pulling on the handle to open the drawer, may shift the formed finger piece 189 toward the left (viewed in Figure 7 of the drawings) to thereby release the drawer latch with a minimum of effort so that the drawer may be unlatched and opened in a single one-handed motion. The body of the latch member 191 extends between the spaced walls forming the front of the drawer from the slot 187 to one edge of the drawer, the same being formed as a detent 193 projecting slightly beyond the side of the drawer in position to engage a struck-out lug 195 formed in the bead 20 of the re-enforcing member 16, or other convenient part of the cabinet.

The latch bar 191 is slidingly carried at one end through a perforation 196 in the side of the drawer and at the other end is supported by a plate 197. The plate 197 is supported on the arms of the handle 181 against the inner face of the front wall 175 of the drawer and between said wall 175 and the inner front wall 177 by means of nuts 198 threaded on the said arms. It will thus be seen that the latching lug is slidingly supported by and between the spaced wall portions 175 and 177, forming the drawer front, and is normally urged to latching position by means of the spring 200. The latching member has a formed finger piece 189 extending through the front wall 175 and the plate 197 preferably adjacent the left-hand end of the handle 181, so that an operator need only employ one hand to unlatch and open the drawer. The finger piece has a portion 182 extending behind and sliding upon the plate 197 in front of the inner end of the latching member 191 and this portion 182 has struck out lugs 184 which extend through slots 186 formed in the latch bar 191. The plate 197 also has a struck out portion 199 around which is coiled a spring 200 one end of which is secured to the plate by being clinched behind a lug 202 formed in the plate and the other end of which extends to and is fastened to the latch bar 191 to normally urge it outwardly toward latching position so that when the drawer is pushed to closed position, the detent portion will snap behind the latching lug 195 under the influence of the spring 200. One side of the cabinet, preferably the right-hand side, is, as aforesaid, provided with means to slidably receive the group drawer locking member 30, comprising a vertically shiftable bar extending adjacent to the forward end of each drawer.

The bar carries latching fingers 201 opposite each drawer to be locked, which fingers are adapted, when the latch bar is in depressed position, to engage struck-out portions 203 formed in the side walls of the drawer. The latching fingers 201 are resilient and depressible, and the struckout portions 203 are provided with a sloping or cam surface along which the lugs 201 may ride as the drawers approach closed position. The bar 30 may be raised from depressed or locking position to elevate the lugs 201 to a position in which they do not engage the struck-out portions 203 of the drawers. When the bar is in such raised position, the drawers may be freely opened and shut. Resilient means may, if desired, be employed to normally urge the bar 30 toward drawer-releasing position, and means comprising a lock 207 having a slidable key-controlled member 209 is arranged preferably at the upper end of the latch bar 30. The lock is preferably mounted on a detachable plate 205, which may be secured to the casing by means of suitable fastening members 217, so that if the drawer locking mechanism is not desired, the lock may be removed by demounting the plate 205 and substituting therefor a name plate carrying no lock. The shiftable member 209 of the lock extends to and is pivotally connected with a plate 211 which in turn is pivoted as at 213 on a suitably formed portion of the casing, so that rearward motion of the portion 209 will rotate the plate 211 about its pivot 213 in a counter-clockwise direction, viewing Figure 1 of the drawings. The plate in turn is connected by means of a link 215 or in any other suitable manner to impart sliding movement in the latch bar 30, so that when the sliding member 209 of the lock is shifted, the latch bar 30 also will be moved. Any suitable or preferred lock construction may be employed to secure the member 209 in its inwardly shifted position, and in turn to secure the latch bar in depressed drawer-locking position.

It is thought that the invention and numerous of its attendant advantages will be apparent from the foregoing description, and it is obvious that numerous changes may be made in the form, construction and arrangement of the several parts without departing from the spirit or scope of the invention, or sacrificing any of its attendant advantages, the form hereinbefore described being a preferred embodiment for the purpose of illustrating our invention.

We do not herein claim the drawer latching mechanism since the same forms the subject-matter of a co-pending application for United States Letters Patent, Serial Number 579,850, filed December 9, 1931.

Having thus described my invention, what we claim as new and desire to secure by Letters Patent is:

1. A cabinet having means forming a drawer casing, a drawer in said casing, means for shiftably supporting the drawer in the casing, said means including a roller and track means for said roller, said track having a depression into which the roller falls when the drawer is in closed position and an adjacent hump intermediate the ends of the track and over which the roller travels as soon as it leaves the depression during opening movement of the drawer.

2. A cabinet having means forming a drawer casing, a drawer in said casing, means for shiftably supporting the drawer in the casing, said means including a roller operable during the opening or closing movement to provide a rolling support for said drawer, and means rendering said roller inoperative as a drawer support when the drawer is in closed position and means forming a hump intermediate the ends of the track and over which the roller may coast downwardly after leaving the depression when the drawer is opened.

3. A cabinet having means forming a drawer casing, a drawer in said casing, means for shiftably supporting the drawer in the casing, said drawer support means comprising a carriage, roller means for supporting the carriage from the casing at its front and rear extremities, means preventing vertical movement of the rear portions of the carriage while permitting the horizontal movement in the casing, means to slidingly cradle the drawer in said carriage, said means including a roller bearing member operating at the hindmost end of the drawer, means comprising a roller on the drawer and cooperating track means for preventing relative vertical movement of the hind end of the drawer with respect to the casing while permitting horizontal movement thereof, the forward portions of the drawer resting upon roller means carried at the forward end of the carriage, and a floating roller mounted on the carriage for horizontal movement therewith, said roller cooperating directly between the cabinet and the drawer and normally operable during the opening and closing movement of the drawer to rollingly support the central portions of the drawer in the casing.

4. A cabinet having means forming a drawer casing, a drawer in said casing, means for shiftably supporting the drawer in the casing, said drawer support means comprising a carriage, roller means for supporting the carriage from the casing at its front and rear extremities, means preventing vertical movement of the rear portions of the carriage while permitting horizontal movement in the casing, means to slidingly cradle the drawer in said carriage, said means including a roller-bearing member operating at the hindmost end of the drawer, the forward portions of the drawer resting upon roller means carried at the forward end of the carriage, and a floating roller mounted on the carriage for horizontal movement therewith, said roller cooperating directly between the cabinet and the drawer and normally operable during the opening and closing movement of the drawer to rollingly support the central portions of the drawer in the casing, and a cam portion formed on the track in the path of the floating roller to initially elevate and thereafter lower the roller during its movement on the track during the initial drawer opening movement.

5. A cabinet having means forming a drawer casing, a drawer in said casing, means for shiftably supporting the drawer in the casing, said drawer support means comprising a carriage and cooperating means formed in the drawer, drawer carriage and casing, and including a roller carried by the drawer to support the hind end of the drawer against vertical movement during the horizontal movement of the drawer in the cabinet, a floating roller mounted on the carriage for horizontal movement therewith, said floating roller cooperating directly between the cabinet and the drawer and normally operable to support the center portions of the drawer during its opening and closing movement in the casing, said casing having a track for said floating roller and a cam portion formed on the track to initially elevate and thereafter lower the roller on the track during the initial drawer opening movement.

6. A cabinet having means forming a drawer casing, a drawer in said casing, means for shiftably supporting the drawer in the casing, said drawer support means comprising a carriage and cooperating means formed in the drawer, drawer carriage and casing, and including a track on the casing having a cam portion, a roller cooperatively associated with the drawer and the cam portion to elevate the drawer front in the cabinet during the initial portion of its opening movement therein and thereafter to lower the drawer front with respect to the casing during the drawer opening movement, said roller being normally operative to support the drawer directly from the casing, and means rendering the roller inoperative to support the drawer when the same is in closed position, and means remote from said roller for supporting the drawer in the casing when in closed position.

7. A cabinet having means forming a drawer casing, a drawer in said casing, means for shiftably supporting the drawer in the casing, said drawer support means comprising a carriage and cooperating means formed in the drawer, drawer carriage and casing, and including a roller cooperatively asso-

ciated with the drawer and the casing to support the drawer in the cabinet during a portion of its movement therein, a track against which said roller operates, said track being formed with a depressed portion to render the roller inoperative as a drawer support when the roller reaches a predetermined point in said track and with an inclined elevated portion adjacent the depressed portion to elevate the drawer from its normal position and impart a gravity actuated gliding movement to the drawer when the roller is on said portion.

8. A cabinet having means forming a drawer casing, a drawer in said casing, means for shiftably supporting the drawer in the casing, said drawer support means comprising a carriage and cooperating means formed in the drawer, drawer carriage and casing, and including a roller on the drawer cooperatively associated with the carriage to prevent vertical movement of the rear end of the drawer on the carriage and means to prevent vertical movement of the rear end of the carriage in the cabinet, and a second roller cooperatively associated with the drawer and casing to support the drawer in the cabinet during a portion of its movement therein, a track against which said second roller operates, said track being formed with a cam portion intermediate its ends to elevate the drawer when the second roller reaches a predetermined point in the track during the drawer opening movement and thereafter to lower the drawer with a gliding movement as the drawer continues to open.

9. A cabinet having means forming a drawer casing, a drawer in said casing, means for shiftably supporting the drawer in the casing, said drawer support means comprising a carriage and cooperating means formed in the drawer, drawer carriage and casing, and including a roller carried by the carriage and cooperatively associated with the drawer and the casing to support the drawer in the cabinet during a portion of its movement therein, a track against which said roller operates, said track being formed with cam means whereby the roller will operate to shift the drawer vertically in the casing when the roller engages said cam means, said cam means being forwardly inclined to impart a gravity actuated drawer opening impulse to the drawer support means when the roller engages said cam means.

10. A cabinet having means forming a drawer casing provided with a drawer-head opening, a drawer having a drawer-head adapted to fit the opening, carriage means for shiftably supporting the drawer in the casing, and cooperating means formed in the drawer, carriage means, and casing, and including a cam in the casing substantially opposite the middle of the drawer when in closed position, to elevate the drawer during the initial opening movement and thereafter to gradually lower the same during further outward movement to impart a gravity actuated opening movement in the drawer.

11. A cabinet having means forming a drawer casing with a drawer-head opening, a drawer, carriage means for shiftably supporting the drawer in the casing, and means for slidingly supporting the carriage in the casing whereby the drawer moves outwardly and inwardly relative to the casing in a horizontal plane, and means formed in the casing substantially opposite the middle of the drawer when in closed position, for slightly raising the forward portion of the drawer during its initial opening movement and thereafter to lower same along an inclined path during further outward movement to impart a gravity actuated opening movement in the drawer.

12. A cabinet comprising a casing having a track way and a substantially horizontal guide bar, a pan having three supporting members, one at each end, and one intermediate the ends, for supporting the pan in substantially horizontal position, one of said members cooperating with the horizontal guide bar for preventing the vertical movement of the rear end of the pan, and a drawer supported by the pan and having a roller at its rearmost portions, said pan having track means cooperating with the roller at the rearmost portions of the drawer for preventing vertical movement of the rear end of the drawer with respect to the pan, said drawer cooperating with a supporting member of the pan, whereby to insure the propulsion of the drawer and pan simultaneously at different rates of speed, and means formed in the casing for rendering one of the pan-supporting means inoperative when the pan is in a predetermined position.

13. A cabinet having means forming a drawer casing, a drawer in said casing, support means for shiftably carrying the drawer in the casing, said supporting means including a track mounted in the cabinet and having a cam substantially opposite the middle of the drawer when closed, and means cooperatively associated between the track and the drawer and operable in conjunction with the cam to initially lift the drawer at its approximate center with respect to the casing and thereafter to gradually lower the drawer as the same moves toward open position in order to provide a free running coasting effect during the opening movement of the drawer.

14. A cabinet having means forming a drawer casing, a drawer in said casing, support means for shiftably carrying the drawer in the casing, said support means including a track mounted in the cabinet and having a cam substantially opposite the middle of the drawer when closed, and roller means

cooperatively associated between the track and the drawer and operable in conjunction with the cam to initially lift the drawer at its approximate center with respect to the casing and thereafter to gradually lower the drawer as the same moves toward open position in order to provide a free running coasting effect during the opening movement of the drawer.

15. A cabinet having means forming a drawer casing, a drawer in said casing, means for shiftably supporting the drawer in the casing, said drawer support means comprising a carriage and cooperating means formed in the drawer, drawer carriage and casing, and including a roller carried by the carriage and cooperatively associated with the drawer and the casing to support the drawer in the cabinet during a portion of its movement therein, a track against which said roller operates, said track being formed with cam means substantially opposite the middle of the drawer when the same is in closed position whereby the roller will operate to lift the drawer vertically in the casing when the roller engages said cam means during its travel along the track, said cam means being inclined to impart a gravity actuating drawer-opening impulse to the drawer support means when the roller engages the cam means.

16. A cabinet having means forming a drawer casing, a drawer in said casing, means for shiftably supporting the drawer in the casing, said drawer support means comprising a carriage and cooperating means formed in the drawer, drawer carriage and casing, and including a roller carried by the carriage and cooperatively associated with the drawer and the casing to support the drawer in the cabinet during a portion of its movement therein, a track against which said roller operates, said track being formed with cam means substantially opposite the middle of the drawer when the same is in closed position whereby the roller will operate to lift the drawer vertically in the casing when the roller engages said cam means during its travel along the track, said cam means being inclined to impart a gravity actuating drawer-opening impulse to the drawer support means when the roller engages the cam means, and means formed in the track adjacent said cam means for rendering said roller inoperative to support the drawer when seated in said means.

In witness whereof we have hereunto subscribed our names this 19th day of February, 1931.

JAMES E. BALES.
CARL T. CHRISTENSEN.
JOHN HALLBERG.
JOHN B. ADLER.