Aug. 27, 1957 L. W. BELEW 2,804,364

FILING CABINET CONSTRUCTION

Filed Feb. 17, 1956 3 Sheets-Sheet 1

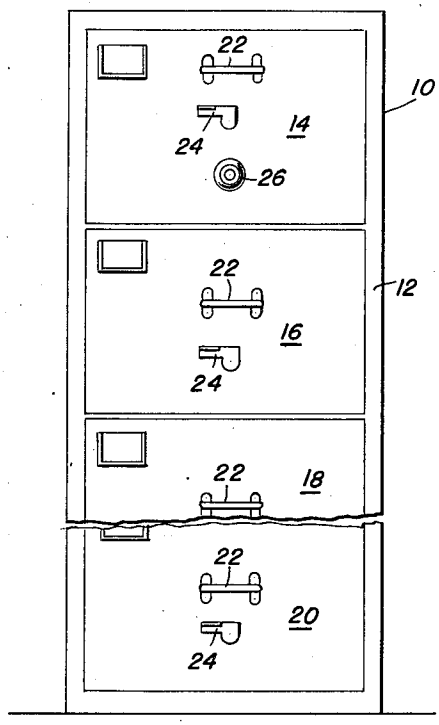


FIG. 1

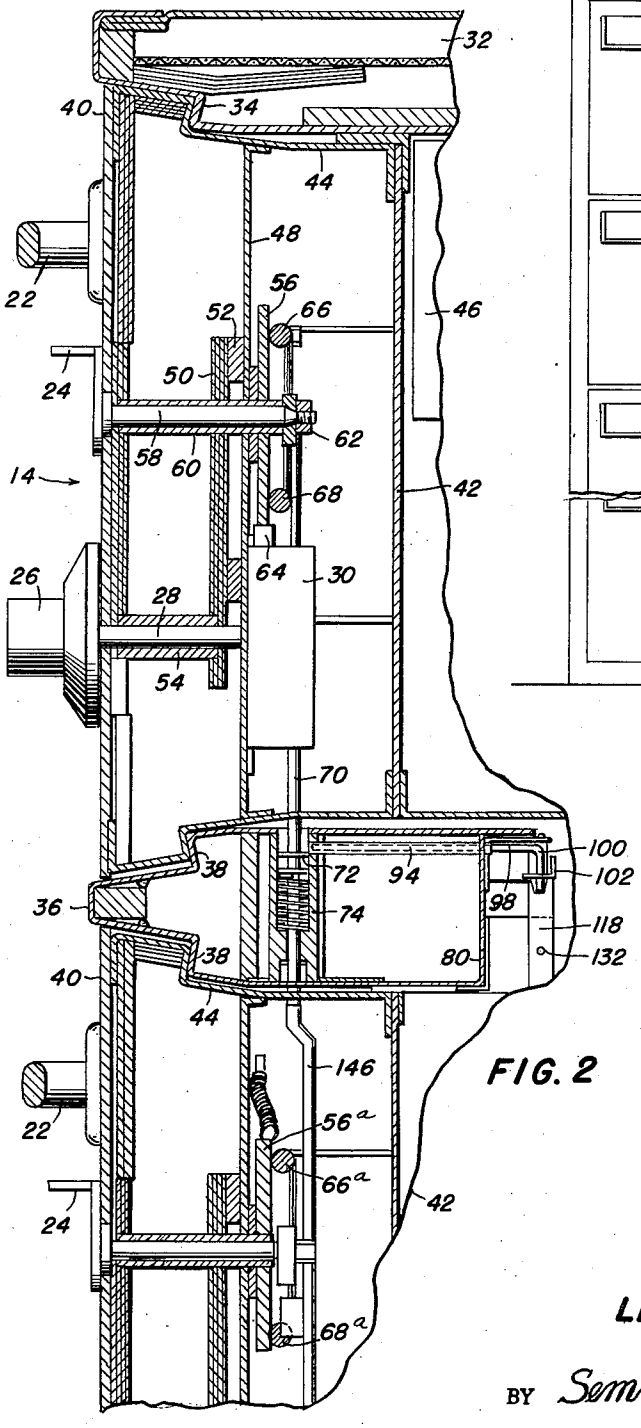


FIG. 2

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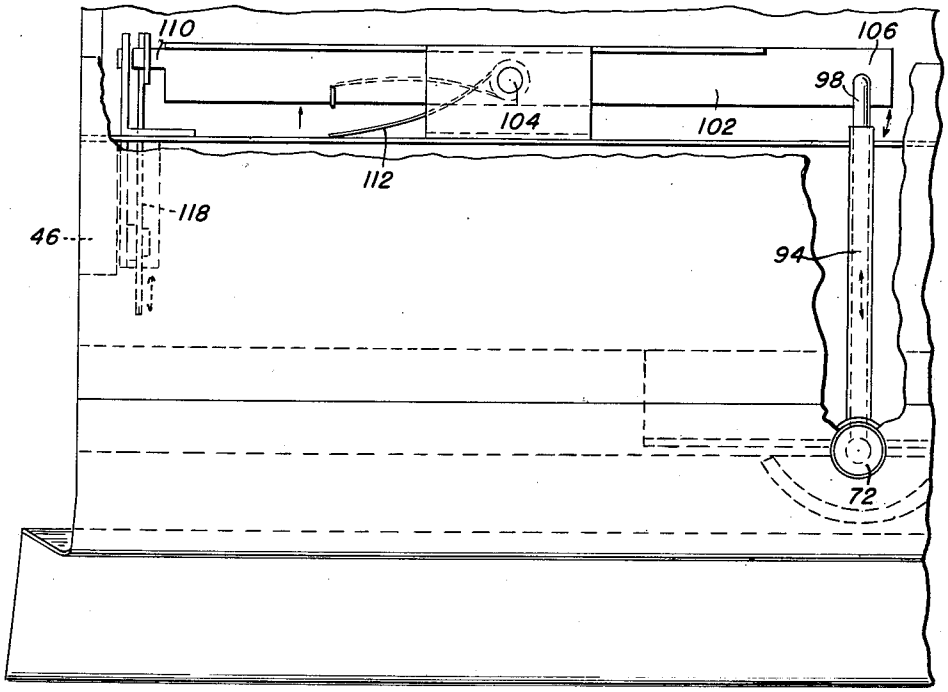


FIG. 3

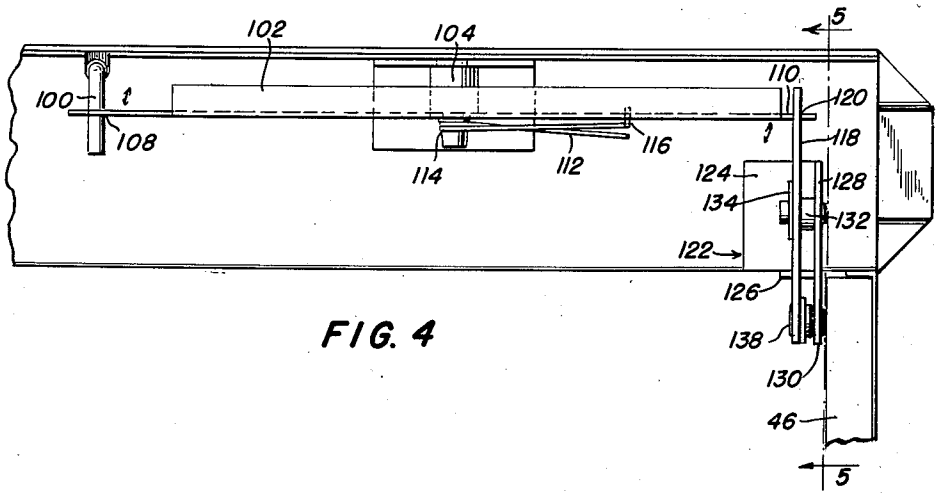


FIG. 4

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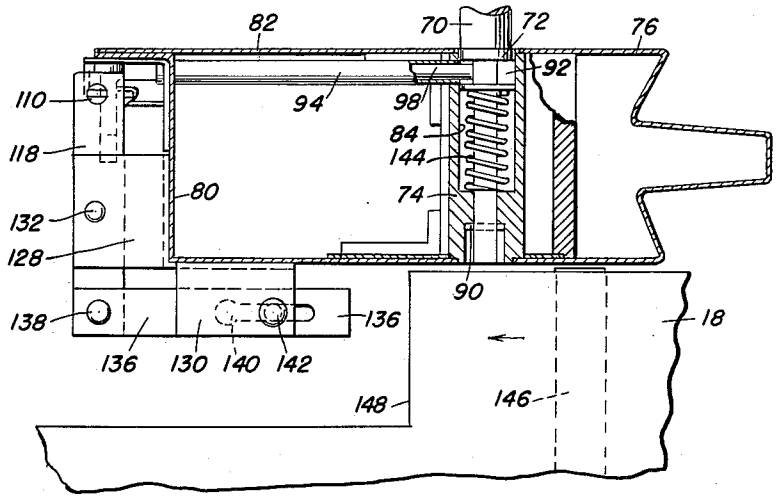


FIG. 5

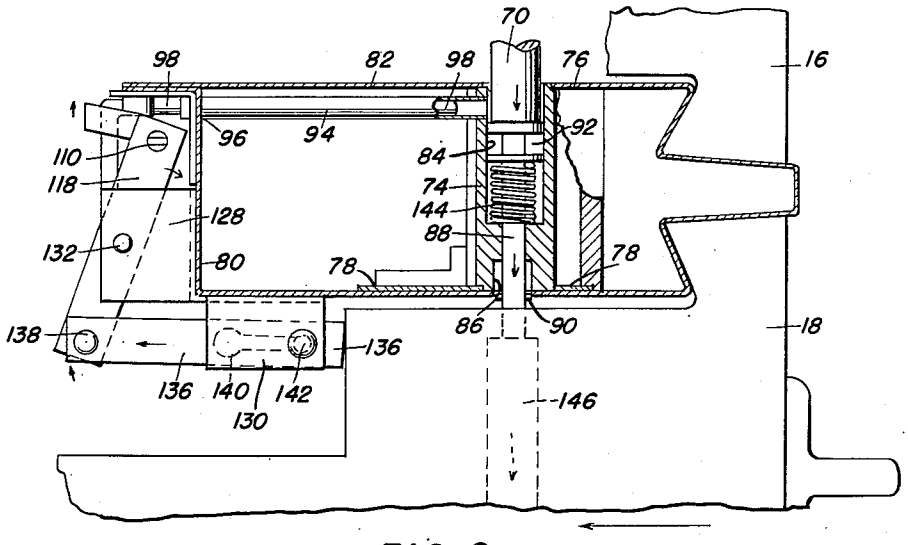


FIG. 6

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FILING CABINET CONSTRUCTION

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Application February 17, 1956, Serial No. 566,171

6 Claims. (Cl. 312—217)

The present invention relates broadly to filing cabinets of the type comprising a plurality of drawer sections arranged in superimposed relation, and wherein the individual drawers are provided with individual locking mechanisms collectively under the control of a single master lock. More specifically, the present invention relates to burglar-proof and fire-proof filing cabinets and represents improvements on the structures disclosed in the copending applications of Harvey L. Henkle, Serial No. 435,306, filed June 8, 1954, and Harvey L. Henkle et al., Serial No. 532,253, filed September 2, 1955, both for security files and relating to burglary-proof and fireproof cabinets and comprising improvements in reinforcements of certain critical areas of cabinet drawers, and both owned by the assignee of the present application.

While more specifically related to burglar-proof and fire-proof filing cabinets, the present construction embodying a safety latch mechanism is adapted for use with any type of file.

In security files of the type contemplated in the above-mentioned copending applications, certain critical areas of the cabinet casing and drawer fronts are provided with reinforcements so arranged with respect to the various components of the locking mechanisms as to afford maximum protection against surreptitious entry in the event an attack be made upon the locking mechanism of the file. This fact also plays an important part in the arrangement of the various mechanisms of the present invention.

File cabinets of the type in question are generally provided with gang lock mechanisms, located just inside the front faces of the drawers, each mechanism being equipped with an individual control knob or handle, whereby locking bolts are projected or retracted with respect to complementary locking recesses located in the front portion in the cabinet shelf adjacent the drawer fronts. The individual mechanisms are under the common control of a combination lock usually located in the front of the top drawer of the series.

In such previously known constructions, means have been provided in the nature of an automatic bolt catch assembly which prevents the throwing of the lock bolt so long as the drawer is in open position, and the catch being automatically released upon the closing of the drawer. Also one of the objects of the previous constructions was to include mechanism which rendered it impossible to lock the top drawer unless every drawer below had been closed, and additionally safety features to prevent unauthorized entry after a lock mechanism had been forced inwardly by a punch or the like.

It is a principal object of the present invention to provide a safety latch mechanism in files of the foregoing nature which will insure that the top drawer of a vertical file cabinet cannot be locked unless all of the drawers therebeneath are in closed and locked position.

Another object of the present invention is to provide a mechanism arranged in the front face of the drawers,

atop the inner compartment of each drawer, to prevent movement of the gang lock plunger downwardly while any one of a series of drawers is open.

A still further object of the present invention is to provide a safety latch mechanism incorporating means for preventing shearing of the gang lock plunger due to its extending downwardly into the path of a drawer head when a drawer is pulled out and an attempt is made to close the same.

A still further object of the present invention is to provide such a safety latch mechanism which prevents a plunger from extending when a drawer below the top drawer in a vertical file is pulled out, and which mechanism is actuated by the rear face of the drawer head but wherein the major portion of the mechanism are preferably located at the left side of a compartment of the drawer and through various transmission elements serve to transmit the rearward force to effect a translation of a bolt rearwardly as the drawer is closed.

A still further object of the present invention is to provide a safety latch mechanism of the nature described wherein the essential elements of force transmission are located on the left side of the compartment of each drawer, in view of the normal location of a plunger assembly slightly offset left of center of the drawer of the cabinet, and for simplication of assembly since the elements of the present invention can be assembled after the compartment has been substantially fully constructed.

An additional and important object of the present invention is to provide a safety latch mechanism of a simple and sturdy nature, and which can substantially be constructed and preset before attaching to the file construction.

With the above and other objects in view which will appear as the description proceeds, the invention consists in the novel features herein set forth, illustrated in the accompanying drawings and more particularly pointed out in the appended claims.

Referring now to the drawings in which numerals of like character designate similar parts throughout the several views:

Figure 1 is a fragmentary front elevational view of a sectional cabinet embodying the invention;

Figure 2 is an enlarged vertical sectional view, taken transversely through the drawer and cabinet front, illustrating the principles of the mechanism of the present invention;

Figure 3 is a fragmentary top plan view parts thereof being broken away to disclose portions of the safety latching mechanism of the invention;

Figure 4 is a fragmentary rear elevational view showing details of the safety latching mechanism;

Figure 5 is a vertical sectional view through a file shelf showing the safety latching mechanism and with a drawer fragmentarily shown in open position; and

Figure 6 is a view similar to Figure 5 but showing the drawer in closed position.

In the drawings, **10** generally represents a sectional file cabinet which may be basically of conventional structure, including a cabinet outer shell **12** of suitable metal and a series of superimposed drawers **14**, **16**, **18**, and **20**, slidably mounted in separate compartments therein. Obviously, any number of drawer sections may be employed as the occasion demands. The inner walls of the cabinet are preferably provided with the usual insulation and fire proofing material, not shown, filling the space between the outer and inner shells and completely surrounding the top, rear and bottom walls of the cabinet. Each of the drawers is, as per usual, provided with a pull or handle **22** as also thumb latch controls **24** permitting the opening of individual drawers as will be explained

hereinafter. A combination dial **26** is operatively associated through shaft **28** with a combination lock mechanism **30** of any conventional type.

The structural details of the shell of the cabinet are more clearly set forth in the above-mentioned copending patent applications but broadly includes a top shelf member generally indicated at **32**, having at its lower forward edge the usual angular offset portion **34** for coaction with a corresponding angular portion on the upper frame of the drawers. Interposed between each of the drawers in the frame is an additional shelf member **36** including angularly offset walls **38** forming rectangular grooves or recesses to receive complimentary walls bounding the respective drawer fronts, as will later appear. The shelves **32**, **36**, etc., together with the outer shell **12** of the cabinet provide a plurality of superimposed compartments adapted for receiving the plurality of superimposed drawers **14**, **16**, **18**, and **20**, etc.

As best seen in Fig. 2 of the drawings, the front of each drawer is formed with an outer skin **40** and a rearwardly spaced inner skin **42**, joined at top, bottom, and sides by a continuous web **44**. This web **44** is of an irregular cross-sectional profile which coincides with the complimentary profile of the portions **34** of the shelves which bound the respective drawer receiving compartments of the cabinet, adjacent the drawer receiving openings in the front thereof. Such a construction is more or less conventional in file cabinets of this type, to insure an interlocking of the drawer front and cabinet opening when the drawer is closed so as to effect a sealing engagement.

At the left and right hand sides of the compartments formed as hereinbefore set forth are fire blocks **46** which are adapted to prevent heat from entering behind the rear face **42** of the drawer and gaining access to the contents of the drawer.

The lock mechanisms of the drawers are housed in the spaces between the outer skins **40** and inner skins **42** and can vary in specific structure. For the purpose of the present invention one practical form of locking mechanism is illustrated in the drawings as an example only.

Referring to Fig. 2 of the drawings, it will be seen that the front wall of each drawer is provided with a vertically disposed lock supporting plate **48** located intermediate the front and rear skins of the drawer front. The plate **48** is vertically supported by any desired means, such as shown for example in the copending applications. In the upper drawer **14** the lock supporting plate **48** supports the combination lock mechanism **30**, and is drilled to receive the forwardly projecting operating shaft **28** which extends through a suitable opening in the front skin of the drawer and which carries on its projecting end the combination dial **26**. A laminated protecting shield **50** is located immediately in front of the supporting strip **48** and spaced therefrom by crossed strips **52** which, together with the shield **50** are welded in place to afford an auxiliary protection to the locking mechanism. A sleeve **54** encloses the shaft **28**, which penetrates the shield **50**, and this sleeve is preferably welded in place between the outer skin **40** and the protecting shield **50**.

Immediately above the combination lock **30** in the front of drawer **14**, is an operating cam plate **56**, rotatably mounted on a forwardly projecting shaft **58**, supported by the plate **48** and the front skin **40** of the drawer. A similar protecting sleeve **60** surrounds the shaft **58**. The thumb latch control **24** is fixed to the projecting outer end of shaft **58** and the inner end of the shaft and the sleeve **60** project through and extend beyond the cam plate **56** as shown in Fig. 4. The inner end of shaft **58** has secured thereto, preferably with a tapered fit, a radially extending crank arm **62**. As pointed out in the copending applications, this tapered fit provides a clutch action on slippage, should undue force be applied to the thumb latch control. As also shown in the copending applications above referred to, the opposite ends of the

radially extending crank arm **62** carry a cylindrical stud fitting loosely in complementary openings in the cam plate **56** so that as shaft **58** is rotated, the cam **56**, being freely mounted on the sleeve **60**, is caused to rotate through the action of the keyed crank arm **62**. The cam plate **56** is preferably rectangular in shape and can be provided with a projecting shoulder at its lower edge. A latch member **64** under control of the combination lock **30** projects upwardly into retractable engagement with the shoulder in such a manner that, until the latch **64** is retracted, the cam cannot be rotated by the thumb latch control **24**. Laterally projecting lock bars **66** and **68** are pivotally connected at opposed eccentric points to the cam plate **56**. These lock bars **66** and **68** are slidably supported by means of brackets or the like not shown. The outer ends of the lock bars form lock bolts which are slidably supported in registering openings in the sides of the drawers and are projectable and retractable into complementary recesses formed in the adjacent jamb frames of the drawer receiving recesses of the cabinet. Thus, upon rotation of the cam plate **56**, the lock bolts are either engaged or disengaged with their respective locking recesses.

Similar locking mechanisms are installed in each of the drawers of the series and all are under the collective control of the master combination lock **30**. To effect this collective control, the top drawer **14** is provided with a main actuating rod **70** which is pivotally connected, being offset at its upper end, to one side of the cam plate **56** and is supported for vertical sliding movement by any desired means, such as a bracket for example, in the lower portion of the drawer head. The rod **70** is preferably bent at right angles so that its lower end is in abutting relation with the upper end of a spring pressed plunger **72** slidably mounted in a supporting tube **74** carried in the shelf member **36** as will appear in more detail hereinafter.

The previously described mechanism is shown and described in more detail in the above-mentioned copending applications and only sufficient structure has been described herein to support a description and explanation of the essence of the present invention together with its operation.

The shelf members broadly designated **36** include a rail **76** forming the top of the compartment and connected to the lower portion of the rail by an overlapping reinforcement or splicing **78** is a shelf reinforcement **80** extending horizontally, rearwardly. The shelf itself **82** connects the upper portion of the rail to the rear horizontal portion of the shelf reinforcement. The various flanges utilized in the construction are adapted to prevent peening the shelf from the vertical plunger shaft cylinder.

The plunger **72** is housed, as hereinbefore set forth in supporting tube **74** which has an upper enlarged opening **84** and a lower enlarged opening **86**. Intermediate of and between the openings **84** and **86**, the body of the supporting tube **74** is drilled to substantially the exact dimension of the shaft **88** of the plunger. A pin or detent **90** passes through the shaft in the region extending into lower opening **90** and serves as a positive positioning detent for retaining the plunger in spring loaded condition. The upper end or head of the plunger **72** is peripherally recessed at **92** to provide a shoulder for engagement with a retractable rod as will be explained hereinafter.

Attached to the supporting tube **74** of the plunger, and at right angles thereto, is another tube **94** of smaller dimensions extending rearwardly in the shelf member and resting in a recess **96** of the shelf reinforcement. The tube **94** constitutes a housing for slidably mounting a bolt **98** which is a rod bent at its rearward end **100** at 90° to its longitudinally extending axis. The bolt or rod **98** is freely movable within the tube **94**, and the free end thereof engages in the peripherally recessed head **92**. As will appear hereinafter, this bolt is ac-

tuatable by a lever into or out of engagement in the recessed head of the plunger.

Transverse lever **102** for actuating the bolt **98** is mounted by means of stud **104** attached to the shelf reinforcement by means of a flange-like construction. One end **106** of the transverse lever engages with bolt **98** by means of hole **108** therein. The transverse lever engages the bolt for reciprocal movement and locking movement. The opposite end **110** of the transverse lever is adapted to engage a vertical lever for reciprocal movement and locking movement in a manner similar to that of the bolt. It will be noted that transverse lever **102** is of L-shaped construction. In order to retain the transverse lever in position there is provided a unique spring **112** which is of spring wire bent around the stud **104** and seated in the recess **114**, and edgewise upon itself at **116**, securing against the wall of the shelf reinforcement and at the bent end engaging the transverse lever to provide resistance to movement thereof. This spring eliminates the use or necessity for extraneous means of retaining the lever in position, since being seated in recess **114** rearward of the head of the stud **104**.

At the opposite end **110** of transverse lever **102**, the end closest to the left side of the compartment when facing the cabinet, there is a vertical lever **118** connected by means of a circular hole passing over and around the reduced end **110** of the transverse lever. For mounting the vertical lever, there is provided a vertical lever and actuator bracket generally designated **122** and which is bent in two planes. This bracket consists of two arms, **124** and **126** bent at right angles to one another. The arm **124** has an edge **128** bent at right angles thereto and in the direction of and over the arm **126**. The arm **126** has an edge **130** thereof bent at right angles thereto and in a direction away from the arm **124**. This bracket is secured to the shelf reinforcement but not in engagement with the fire block as seen from Fig. 4 of the drawings. By means of a centrally located hole in vertical lever **118** a stud **132** centrally mounts and supports the vertical lever on the vertical lever and actuator bracket. A hairpin retainer spring or clip **134** coacts with stud **132** to retain lever **118** on the stud.

An actuator **136** is secured to the opposite end of vertical lever **118** by means of a rivet **138** or the like. As can be seen from Figs. 5 and 6 of the drawings, actuator bar **136** has a key hole slot formed therein at **140**. A shoulder rivet **142** slidably and pivotally mounts the actuator on the edge **130** of vertical lever and actuator bracket **122**. It is to be noted that the actuator pivots and its end moves in a small arc as well as slides when moved in the direction of the arrow in Fig. 6 due to the fixed pivot point **132** of vertical lever **118**, and the interconnection by rivet **138** of the end of actuator **136** and vertical lever **118**. This is substantially the same type of movement that occurs with respect to the transverse lever and bolt **98**.

The relationship of the positions of the actuator stud or fulcrum and the vertical lever fulcrum is critical. For this reason the vertical lever and actuator bracket has been devised as a single unitary piece of material in which the various fulcrums or fulcrum points can be preset before being attached to the remainder of the construction.

In operation, the present invention functions as follows. When all of the drawers in the file are closed, the shaft **88** of plunger **72** can be extended downwardly below the shelf against the spring action of spring **144** normally biasing the plunger **72** to retracted position, due to the main actuating rod **70** having been depressed upon clockwise rotation of the cam plate **56**. Under such circumstances, the plunger **72** acts as a connecting link between the main actuating rod **70** and a second control or actuating rod **146** in the drawer **16**, next below. With this second rod **146** depressed, counter-clockwise rotation of a lock cam **56***a* is prevented by engagement

of the bolt end with an abutment thereon similar to that on the plate **56** and retraction of lock bolts **66***a* and **68***a* is prevented.

It will be apparent that when the rods **70** and **146** are in their lowermost positions then, as shown, the lock bolts of all drawers are in locking engagement. The thumb latch control **24** of the top drawer cannot be operated until the combination lock **30** is released and the corresponding thumb latch controls of the lower drawers cannot operate until the rods **146**, etc., are moved upwardly by the release of the main actuating rod **70** to clear the abutments from the paths of the locking bolts. When, however, by means of proper positioning of the combination lock **30**, the thumb latch controls are free to operate and a drawer is opened, which is permitted by retraction of the spring pressed plungers to retracted position within the shelf structure, release of pressure by the rear face **148** of the drawer front on the end of actuator **136** will permit the actuator, vertical and transverse levers and bolt **98** to assume the position shown in Fig. 5 and plunger **72** will be in retracted position.

Upon closing of the drawer, pressure of the rear face **148** of the drawer front on the free end of actuator **136** will cause a rearward sliding of actuator **136** as also a slight upward arcuate movement of the inner end for reasons hereinbefore set forth. This pivots vertical lever **118** clockwise in Fig. 6 which in turn slidably pivots transverse lever **102** to thereby slidably retract bolt **98** in tube **94**. This movement of bolt **98** removes the end thereof from the peripheral recess **92** in the bolt to permit downward movement thereof under actuation of the main actuating rod **70**. Since it is not possible for the spring pressed plungers in the various drawers below the top one to be depressed into the position shown in Fig. 6 until the bolts **98** have been released from the peripheral recesses **92**, it will be apparent that each and every drawer in the entire stack assembly must be closed prior to locking the top drawer of the vertical file.

The mechanism as described prevents the plungers from extending downwardly below the shelves when any drawer below the top one is pulled out and in order to permit locking of the top drawer each drawer must first be closed so that the rear face of the drawer head through contact with the actuator releases the bolts **98** from the respective recesses.

Also due to this construction, it will be apparent that no inadvertent locking movement is permitted so that the individual plungers cannot be sheared through closing of the drawers when the locked condition is in effect.

Manifestly, minor changes in details of construction can be effected without departing from the scope and spirit of the present invention as defined and limited solely by the appended claims.

I claim:

1. In a vertical file cabinet including a plurality of superimposed file drawers separated by a plurality of shelves, severally operable gang locking means including a lock plunger slidably mounted in each said drawer, control means commonly controlling operation of all said gang locking means, a safety latch mechanism including means for preventing downward extension of the gang lock plunger, a spring pressed plunger vertically and slidably mounted in each said shelf, said plunger being actuable by said gang lock plungers and being governed by said safety latch mechanism to prevent extension of said spring pressed plunger below said shelves when one of said drawers is open, said spring pressed plunger having peripherally recessed heads, slidably mounted bolts adapted for extension into or retraction from the recesses in said heads and means connected to said bolts and coactable with the rear faces of said drawers upon closure thereof to retract said bolts and permit downward extension of said spring pressed plunger.

2. In a file cabinet as claimed in claim 1, said bolts having right angled bends at the rearward ends thereof,

transverse levers connected to said bent bolt ends, studs pivotally and arcuately mounting said transverse levers, vertical levers connected to the free ends of said transverse levers, fixed pivots for said vertical levers intermediate the ends thereof, and actuators slidably and arcuately mounted and connected to the free ends of said vertical levers and coactable with the rear faces of the drawers to pivot said vertical levers, and said transverse levers to retract said bolts through rotation of said bent ends thereon.

3. In a file cabinet as claimed in claim 2, vertical lever and actuator brackets mounting said vertical levers and said actuators, said brackets comprising two arms at right angles to one another an edge of each said arm being bent at right angles to the respective arm, pivot studs on each said bent edge and respectively mounting said vertical levers and said actuators.

4. In a file cabinet as claimed in claim 3, said actuators having elongated slots thereon slidably and pivotally engaging said actuator pivot studs.

5. In a file cabinet as claimed in claim 4, springs carried on said studs mounting said transverse levers, said springs biasing said levers against turning movement of said bent ends on said bolts and resultant translational movement thereof.

6. In a file cabinet as claimed in claim 5, said studs mounting said transverse levers, each having a peripheral recess spaced rearward from the head thereof, said springs being seated in and torsionally engaging said recesses and retaining said transverse levers in position.

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