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GUIDE ROD LATCH FOR CARD FILE DRAWER

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Fig. 1.

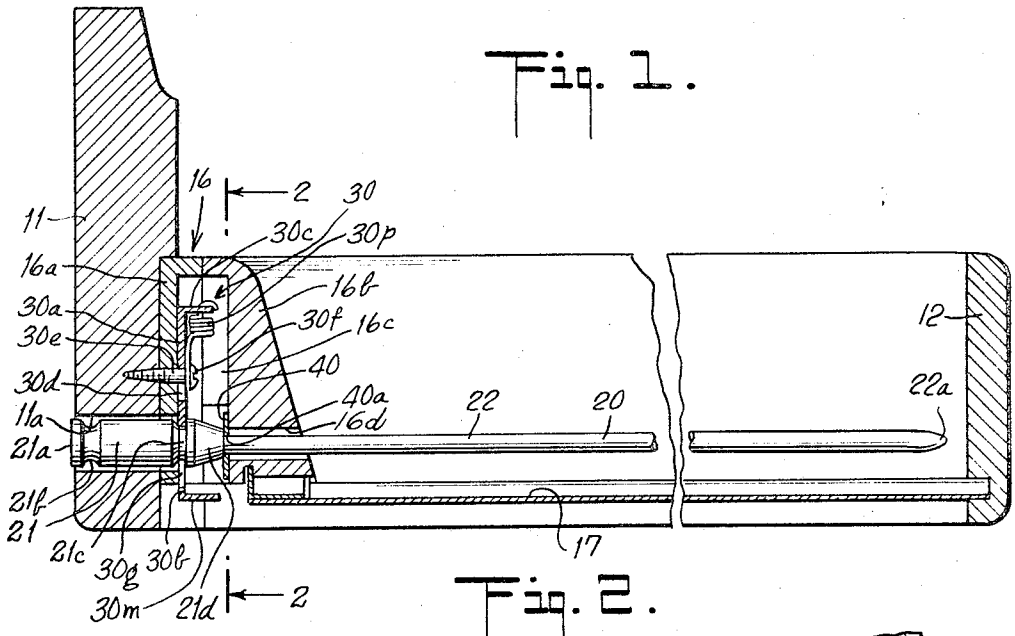
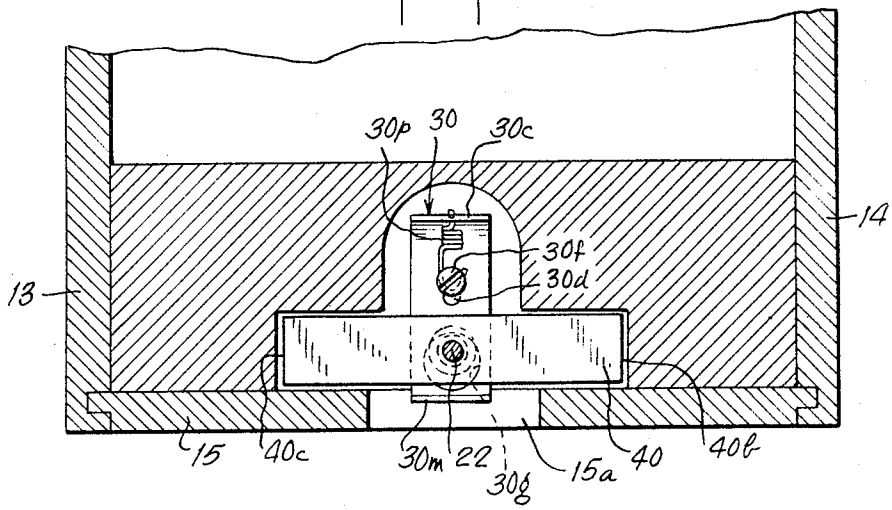


Fig. 2.



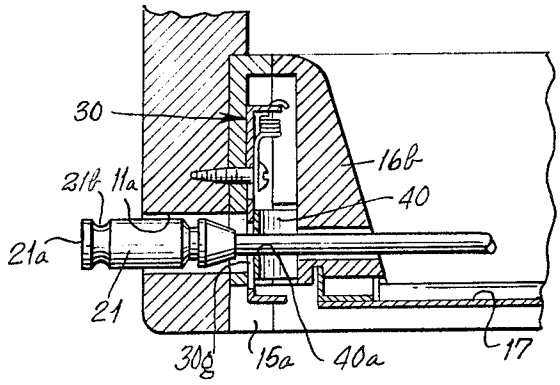


Fig. 3.

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GUIDE ROD LATCH FOR CARD FILE DRAWER

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ABSTRACT OF THE DISCLOSURE

A card file drawer of the type including a guide rod running from the front to the rear of the drawer at the lower portion thereof for the purpose of extending through apertures near the lower mutual edges of a plurality of cards filed in the drawer, wherein a latch is provided between the drawer front and the head of the guide rod, such that when the guide rod is latched the foremost portion of the head thereof lies essentially flush with the forward surface of the drawer front, the latch mechanism including a keeper groove on the guide rod head and a latch member comprising a rigid plate member extending in first and second opposed directions relative to said front panel aperture, the plane of said plate being essentially perpendicular to the axis of said guide rod when the latter is latched thereto, the plate portion adjacent said front panel aperture including a plate aperture larger in said first and second directions than any transverse dimension of said head adjacent said keeper groove, and including a location where the plate aperture is additionally larger in all other dimensions than any transverse dimension of aid head adjacent said keeper groove, the plate portion extending in said first direction including the portion of the run of said plate aperture which enters said keeper groove, and the plate portion extending in said second direction including a finger button located adjacent said bottom panel; means defining an opening in said bottom panel adjacent to and rearward of said front panel, for access to said finger button; means biasing said latch member in said second direction; and means biasing said guide rod head forwardly toward the forward face of said front panel.

Background of the invention

Card file drawers are well known, and it is common in such devices to employ a guide rod which passes through the drawer front and adjacent the bottom of the inside of the drawer to the rear panel of the drawer. The purpose of the guide rod is the pass through apertures in the plurality of cards within the drawer adjacent mutual lower edges thereof so that the cards cannot become mixed in sequence. Typically, the ability to add or take out cards is afforded by removability of the guide rod, which is usually screwed into the drawer front.

With the advent of modern, clean-lined office furniture design, it has become desirable to attain an uncluttered appearance of visible parts. Accordingly, it is highly desirable to provide a card file drawer having a front in which the head of the guide rod has a forward surface which is essentially flush with the forward surface of the drawer front. It is further desirable that the means for causing the guide rod to emerge from that flush position so that its head can be grasped to remove the guide rod for addition or subtraction of cards, should itself be completely hidden from view and yet should function simply and efficiently.

It is known to latch a guide rod head, and to spring bias it outwardly of the drawer front, so that when unlatched, the guide rod will be moved a short distance in the withdrawal direction by the spring bias. This concept

is shown in the Yawman patent, 850,990, issued Apr. 23, 1907.

However, the Yawman construction provides (FIG. 3) a lock cylinder 22 which when turned one-quarter turn in either direction moves a spring 41 out of a detent 42 on the head 12 of the guide rod, the spring member 41 being tangentially engageable with the groove 42. It is singularly undesirable to employe the spring member itself as the latch as is done in Yawman because the spring member is liable to yield if there is appreciable friction at the latching point, so that failure to unlatch can occur. This is particularly true when the spring (employed as the latch) is tangentially engageable rather than axially, and indeed tangential latches operating on the lever principle are unreliable when actuated at a point between the fulcrum and the latching point as is done in Yawman, and the fact that the lever-latch is also a spring and therefore resilient only makes the construction even more undesirable. Furthermore, the head shown in Yawman is not formed to have its forward face lying essentially flush with the forward face of the drawer front even when latched. Finally, and most importantly, there is no teaching in Yawman of a hidden latch release at the bottom of, and rearwardly of the drawer front, but rather Yawman teaches an unsightly lock barrel release which is visible from the forward face of the drawer front.

Summary of the invention

In a card file drawer including front, rear, and bottom panels, and a guide rod running through an aperture in the front panel toward the rear panel adjacent the bottom panel for stringing aperture cards within the drawer, the improvement in latching mechanisms, in combination therewith, comprising an enlarged head portion of said guide rod adapted to be carried within said front panel aperture and including a keeper groove lying in a plane transverse to the axis of said rod and at the upper portion of said head, and an end face spaced from said keeper groove; a latch member comprising a rigid plate member extending in first and second opposed directions relative to said front panel aperture, the plane of said plate being essentially perpendicular to the axis of said guide rod when the latter is latched thereto, the plate portion adjacent said front panel aperture including a plate aperture larger in said first and second directions than any transverse dimension of said head adjacent said keeper groove, and including a location where the plate aperture is additionally larger in all other dimensions than any transverse dimension of said head adjacent said keeper groove, the plate portion extending in said first direction including the portion of the run of said plate aperture which enters said keeper groove, and the plate portion extending in said second direction including a finger button located adjacent said bottom panel; means defining an opening in said bottom panel adjacent to and rearward of said front panel, for access to said finger button; means biasing said latch member in said second direction; and means biasing said guide rod head forwardly toward the forward face of said front panel, the distance from said head end face to said keeper groove being essentially equal to the distance from said latch member aperture to the forward face of said front panel, so that when said latch member and said keeper groove are engaged the end face of said head lies essentially flush with the forward face of said front panel.

Brief description of the drawings

FIG. 1 is a partial, cross-sectional, side elevation view of a card file drawer incorporating the principles of the invention, wherein the latch mechanism is in the latched position;

FIG. 2 is a section view of the apparatus shown in FIG. 1 taken along plane 2—2 therein; and

FIG. 3 is a detail view of a portion of the apparatus shown in FIG. 1, after the parts have been unlatched.

Referring now to the figures, there is shown a card file drawer indicated generally at **10** including a drawer front panel **11**, a rear panel **12**, a pair of side panels **13**, **14** and a bottom panel **15**. As is usual in such constructions, the front panel **11** has a much greater elevational dimension than the side panels **13**, **14** and the rear panel **12**.

Near the bottom of front panel **11** is situated a cylindrical aperture **11***a*, and at the rear face of front panel **11** is situated a latch housing indicated generally at **16** comprising a forward portion **16***a* and a cover portion **16***b* which mutually define a latch chamber **16***c*. A cylindrical aperture **16***d* through the lower portion of latch cover **16***b* is axially aligned with cylindrical aperture **11***a* in drawer front panel **11**.

A guide rod **20** extends from front panel **11** along the interior of drawer **10** near the bottom inner surface thereof essentially all the way toward rear panel **12**. The usual follower (not shown) is carried by a bottom channel **17** for slidable movement between rear panel **12** and front panel **11**, thereby holding any partial loading of cards upright within drawer **10**. Also, the plurality of cards (not shown) employed with drawer **10** each have an aperture near bottom mutual edges thereof through which the rod **20** passes for the usual reason already explained. Guide rod **20** includes an enlarged head **21**, which is generally cylindrical in outline, and which is normally located at drawer front panel **11**, and a smaller diameter rod portion **22**.

Head **21** includes a forward face **21***a* which is planar, and which, when the guide rod **20** is in the latched position within drawer **10** (FIG. 1), lies essentially flush with the forward face of drawer front panel **11**. An annular groove **21***b* appears on head **21** immediately behind face **21***a*, to assist grasping and withdrawal of the rod **20** when the head **21** has been ejected into the unlatched position (FIG. 3). At a position further remote from face **21***a*, head **21** includes an annular groove **21***c* which acts as the keeper of the latching mechanism, as will presently be described. The portion **21***d* of head **21** lying adjacent to groove **21***c* on the side thereof remote from face **21***a*, is generally conical in outline with the larger diameter portion being adjacent to groove **21***c*, and the smaller diameter portion being connected to the near end of rod portion **22**, and being slightly larger in diameter than rod portion **22**. The proportions of the various portions of head **21** are such that the major diameter thereof forms a loose sliding fit within cylindrical aperture **11***a* in front panel **11**, while, when face **21***a* is essentially flush with the forward face of drawer front panel **11** (i.e. the latched position), the groove **21***c* and the conical portion **21***d* lie within latch chamber **16***c* of latch housing **16** (FIG. 1). More specifically, the groove **21***c* lies, in the latched position of FIG. 1, at the extreme forward face of latch chamber **16***c* (i.e. closer to front panel **11**), while the end of conical portion **21***d* remote from groove **21***c* lies at the rearmost portion of latch chamber **16***c*, both for purposes presently to be described.

A latch member **30** comprises a rigid body located within latch chamber **16***c*, having a major portion **30***a* extending above drawer front aperture **11***a*, and a minor portion **30***b* extending below aperture **11***a*. Latch member **30** cooperates with groove **21***c* of head **21**, to form the latch mechanism of the invention. At the upper end of portion **30***a* is a right-angled portion **30***c*. Below portion **30***c* and above front panel aperture **11***a*, is located a vertical slot **30***d* through which a screw shank **30***e* having an enlarged head **30***f* wider than slot **30***d* passes and is secured to front panel **11**. The head **30***f* of screw shank **30***e* is spaced slightly from latch member **30** to allow sliding of latch member **30** upward and downwardly in the vertical direction at slot **30***d*. Intermediate upper portion **30***a* and lower portion **30***b*, is located a generally circular aperture **30***g*, shown in phantom outline in FIG. 2, the upper portion of the circumference of aperture **30***g* forming the working portion of latch member **30** adapted to engage and disengage from the upper, keeper portion, of groove **21***c* in head **21** of guide rod **20**. At the lower end of lower portion **30***b* is a right-angled portion thereof forming a finger button **30***m*. Finger button **30***m* extends into an opening **15***a* in bottom panel **15** which meets front panel **11**, thereby providing access to finger button **30***m* from below and immediately rearward of panel **11**. A tension coil spring **30***p* has one end engaged with upper right-angled portion **30***c* and the other end engaged with screw shank **30***e* immediately under head **30***f*, so that latch member **30** is biased downwardly thereby.

The proportions of latch member **30** are related to one another, and to the proportions and position of groove **21***c* in head **21** of guide rod **20** so as to effect smooth and efficient latching and unlatching operation. Specifically, the diameter of aperture **30***g* in latch member **30** is greater than the maximum diameter of head **21**, and the distance from the upper most portion of slot **30***d* to the uppermost portion of aperture **30***g* is essentially equal to the distance from the uppermost portion of the screw shank **30***e* to the uppermost portion of groove **21***c*. With that arrangement, the spring **30***p* urges the latch member **30** downwardly until both the aperture **30***g* bottoms on the upper portion of groove **21***c* and the slot **30***d* bottoms on the upper portion of the shank of screw **30***e*. Furthermore, the amount by which the vertical length of slot **30***d* exceeds the diameter of the screw shank **30***e* is only slightly greater than the depth of groove **21***c* relative to the adjacent portions of head **21**, and especially relative to the maximum diameter of conical portion **21***d*.

As aforesaid, the diameter of aperture **30***g* is greater than the maximum diameter of head **21** and especially the maximum diameter of conical portion **21***d*, and furthermore, the vertical diameter of aperture **30***g* exceeds the diameter of groove **21***c* by an amount greater than the excess of the vertical dimension of slot **30***d* over the diameter of the screw shank **30***e*. With this arrangement, when upward pressure is exerted on finger button **30***m*, the latch member **30** will move upwardly only to the extent that slot **30***d* allows, and that length of upward movement against the bias of spring **30***p* will be sufficient to cause radially upward withdrawal of the stock surrounding the upper portion of aperture **30***g* from groove **21***c* without intruding the stock surrounding the lower portion of aperture **30***g* into the lower portion of groove **21***c*.

A bow spring **40** is provided within latch chamber **16***c*, and includes a central aperture **40***a* sufficient to admit the rod portion **22** of guide rod **20** for slidable movement therethrough, but having a smaller diameter than the diameter of the small end of conical portion **21***d* of head **21**. As may best be seen in FIG. 2, bow spring **40** is rectangular in outline and has its major dimension laterally disposed. Bow spring **40** is fabricated of spring stock, and has its unstressed form in the outline of a bow, as may be seen in section view in FIG. 3, so that when released (as in the unlatched position), the lateral ends **40***b*, **40***c* remain in contact or at least adjacent to the rear face of latch chamber **16***c* while the central portion adjacent to aperture **40***a* is projected by the bowing of the entire spring **40** into a position adjacent to the forward surface of chamber **16***c* into contact with latch member **30**.

In operation, the parts are shown in latched arrangement in FIG. 1, and to unlatch them for withdrawal of guide rod **20**, a finger (not shown) is passed upwardly through opening **15***a* in bottom panel **15** immediately rearwardly of drawer front panel **11** to press finger button **30***m* upwardly against the spring bias of spring **30***p*. When the stock surrounding the upper portion of aperture **30***g* has been moved upward, outward radially, from the upper portion of groove **21***c*, sufficient to clear the maximum

diameter portion of conical portion **21***d* of head **21**, the latch member **30** and keeper groove **21***c* will attain a state of disengagement, upon which the bow spring **40** will move from the planar position shown in FIG. 1 to the bowed position shown in FIG. 3, thereby driving the head **21** forwardly relative to drawer front panel **11**. The bowing of spring **40** constitutes a snap action, and the head **21** will generally be propelled somewhat further forward than the actual forward movement of the center portion of spring **40** itself, as illustrated in FIG. 3. After unlatching, the head **21** may be grasped manually, at groove **21***b* if desired, to withdraw the entire rod **20**, or a portion thereof, from drawer **10** to add or subtract cards or the like. The latch member **30**, as may be seen in FIG. 3, will re-attain its position relative to latch chamber **16***c* as soon as the head **21** has been propelled forwardly by bow spring **40**, and this is facilitated by the conical configuration of portion **21***d* of head **21**.

Whether or not the rod **20** is completely withdrawn from drawer **10**, to relatch the parts the rod is moved rearwardly within drawer **10** until the relationship shown in FIG. 1 is again attained. If the rod **20** was completely withdrawn this will first require intruding tapered end **22***a* through aperture **40***a*. But normally the rod will not be entirely removed, it being under any circumstances sufficient to move end **22***a* no further than the vicinity of cover portion **16***b* when adding or subtracting cards. In any event, when rearward movement of the rod **20** proceeds until the parts are in the relationship shown in FIG. 3, relatching is accomplished when the head **21** is further driven into the flush relation with drawer front panel **11** illustrated in FIG. 1 by continued pressure at face **21***a*. It is not necessary to touch finger button **30***m*, or to do anything else to relatch the parts. This is so because conical portion **21***d* engages aperture **30***g* and by an inclined plane effect forces latch member **30** upwardly against the bias of spring **30***g* until the stock surrounding the upper portion of aperture **30***g* travels over the maximum diameter portion of conical portion **21***d* to enter the upper portion of groove **21***c*, thereby re-attaining latched relation between the latch portion and the keeper portion of the latch mechanism.

Thus movement from the latched relationship of FIG. 1 to the unlatched relationship of FIG. 3 requires only a light touch on finger button **30***m*, while the movement from the unlatched position of FIG. 3 to the latched position of FIG. 1 requires only an axial force at face **21***a* until face **21***a* lies essentially flush with the forward face of drawer front panel **11**.

It will be appreciated that when the parts are in the latched position shown in FIG. 1 the aesthetic appearance of the drawer front **11** is greatly improved by the flush character of face **21***a* with the forward face of panel **11**, and by the lack of visibility of finger button **30***m*.

Furthermore, it will be appreciated that the latch mechanism parts are so arranged that a positive, snag-free movement is afforded between the latch and keeper parts so that a light touch at button **30***m* suffices to unlatch the parts, upon which the head **21** is smoothly ejected forwardly of panel **11**. Again, because of the construction of the parts, relatching is also smooth and snag-free and is quite simple to effect.

While the invention has been described with reference to a presently preferred embodiment, it will be understood by those skilled in the art that the embodiment is merely illustrative of the principles of the invention, and that numerous changes in the arrangement and proportions of the parts can be practiced within the scope of the invention.

What is claimed is:

1. In a card file drawer including front, rear, and bottom panels, and a guide rod running through an aperture in the front panel toward the rear panel adjacent the bottom panel for stringing apertured cards within the drawer, the improvement in latching mechanisms, in combination therewith, comprising:

(a) an enlarged head portion of said guide rod adapted to be carried within said front panel aperture and including a keeper groove lying in a plane transverse to the axis of said rod and at the upper portion of said head, and an end face spaced from said keeper groove;

(b) a latch member comprising a rigid plate member extending in first and second opposed directions relative to said front panel aperture, the plane of said plate being essentially perpendicular to the axis of said guide rod when the latter is latched thereto, the plate portion adjacent said front panel aperture including a plate aperture larger in said first and second directions than any transverse dimension of said head adjacent said keeper groove, and including a location where the plate aperture is additionally larger in all other dimensions than any transverse dimension of said head adjacent said keeper groove, the plate portion extending in said first direction including the portion of the run of said plate aperture which enters said keeper groove, and the plate portion extending in said second direction including a finger button located adjacent said bottom panel;

(c) means defining an opening in said bottom panel adjacent to and rearward of said front panel, for access to said finger button;

(d) means biasing said latch member in said second direction; and

(e) means biasing said guide rod head forwardly toward the forward face of said front panel,

the distance from said head end face to said keeper groove being essentially equal to the distance from said latch member aperture to the forward face of said front panel, so that when said latch member and said keeper groove are engaged the end face of said head lies essentially flush with the forward face of said front panel.

2. In a card file drawer including front, rear, and bottom panels, and a guide rod running through an aperture in the front panel toward the rear panel adjacent the bottom panel for stringing apertured cards within the drawer, the improvement in latching mechanisms, in combination therewith, comprising:

(a) an enlarged head portion of said guide rod adapted to be carried within said front panel aperture and including a keeper groove lying in a plane transverse to the axis of said rod and at the upper portion of said head, and an end face spaced from said keeper groove;

(b) a latch member comprising a vertically disposed, rigid body extending above and below said front panel aperture, the portion extending below reaching essentially to said bottom panel and including a finger button, and the portion adjacent said front panel aperture including an aperture larger in any transverse dimension than any transverse dimension of said head adjacent said keeper groove, and a thickness small enough to enter said keeper groove;

(c) means defining an opening in said bottom panel adjacent to and rearward of said front panel, for access to said finger button;

(d) means biasing said latch member downwardly; and

(e) means biasing said guide rod head forwardly toward the forward face of said front panel.

3. In a card file drawer including front, rear, and bottom panels, and a guide rod running through an aperture in the front panel toward the rear panel adjacent the bottom panel for stringing apertured cards within the drawer, the improvement in latching mechanisms, in combination therewith, comprising:

(a) an enlarged head portion of said guide rod adapted to be carried within said front panel aperture and including a keeper groove lying in a plane transverse to the axis of said rod and at the upper portion of

said head, and an end face spaced from said keeper groove;

(b) a latch member comprising a vertically disposed, rigid body extending above and below said front panel aperture, the portion extending below reaching essentially to said bottom panel and including a finger button, and the portion adjacent said front panel aperture including an aperture larger in any transverse dimension than any transverse dimension of said head adjacent said keeper groove, and a thickness small enough to enter said keeper groove;

(c) means defining an opening in said bottom panel adjacent to and rearward of said front panel, for access to said finger button;

(d) means biasing said latch member downwardly; and

(e) means biasing said guide rod head forwardly toward the forward face of said front panel,

the distance from said head end face to said keeper groove being essentially equal to the distance from said latch member aperture to the forward face of said front panel, so that when said latch member and said keeper groove are engaged the end face of said head lies essentially flush with the forward face of said front panel.

4. Apparatus according to claim 3 wherein a groove extends peripherally around said head, so that any portion thereof may, when oriented uppermost, constitute said keeper groove.

5. Apparatus according to claim 1 wherein said means biasing said guide rod constitutes a bow spring, which in the released position includes a centrally located aperture surrounding said rod and projected forwardly toward said front panel forward face while the ends thereof are projected rearwardly thereof.

6. Apparatus according to claim 2 wherein rearwardly of said keeper groove, said head comprises a conical portion having the larger diameter end adjacent said keeper groove and the smaller diameter end spaced rearwardly thereof and of a diameter at least as small as the diameter within said keeper groove.

7. Apparatus according to claim 2 wherein said latch member slides vertically at a slot therein on a horizontal post therethrough; and the vertical length of said slot is greater than the vertical diameter of said post by an amount greater than the vertical depth of said keeper groove, but is smaller than the amount by which the vertical diameter of said latch member aperture is greater than the vertical diameter of said keeper groove, whereby said slot limits upward movement of said latch member under urging at said finger button so that the lower portion of said latch aperture cannot engage said keeper groove from below.

8. In a card file drawer including front, rear, and bottom panels, and a guide rod running through an aperture in the front panel toward the rear panel adjacent the bottom panel for stringing apertured cards within the drawer, the improvement in latching mechanisms, in combination therewith, comprising:

(a) a generally cylindrical enlarged head portion of said guide rod adapted to be carried within said front panel aperture, including a peripheral keeper groove lying in a plane transverse to the axis of said rod and spaced rearwardly of a forward end face of said head by a first distance, and a conical portion located adjacent to and rearwardly of said keeper groove and having the larger diameter end thereof adjacent said keeper groove and the smaller diameter end spaced rearwardly thereof and being of a diameter at least as small as the diameter within said keeper groove, the maximum diameter of said head being no greater than the portions immediately forwardly and rearwardly adjacent to said keeper groove, which portions are approximately equal in diameter;

(b) a latch member comprising a vertically disposed rigid body extending above and below said front panel aperture, the portion extending below reaching essentially to said bottom panel and including a finger button, the portion adjacent said front panel aperture including an aperture larger in any transverse dimension than said head adjacent said keeper groove and having a thickness at the upper portion thereof small enough to enter said keeper groove, said latch member aperture being spaced rearwardly of the forward face of said front panel a second distance, said second distance being essentially equal to said first distance, the portion of said latch member extending above including a vertical slot slidably carried on a horizontal post fixed to said drawer, the vertical length of said slot being greater than the vertical diameter of said post by an amount greater than the vertical depth of said keeper groove, but being smaller than the amount by which the vertical diameter of the latch member aperture is greater than the vertical diameter of said keeper groove, and the vertical distance from the upper portion of said latch member slot to the upper portion of said latch member aperture being less than the vertical distance from the top of said post to the smallest diameter portion of said head conical portion;

(c) means defining an opening in said bottom panel adjacent to and rearward of said front panel, for access to said finger button;

(d) means biasing said latch member downwardly; and

(e) means biasing said guide rod forwardly toward the forward face of said front panel.

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