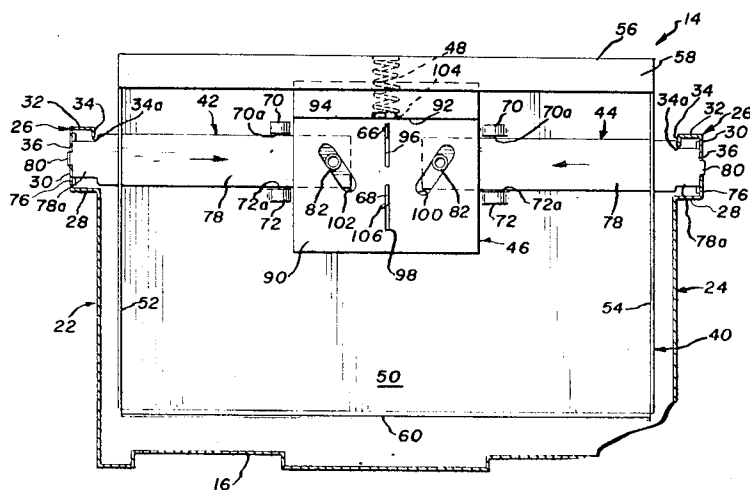


Belknap et al.

[45] **Aug. 29, 1972**

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16 Claims, 10 Drawing Figures



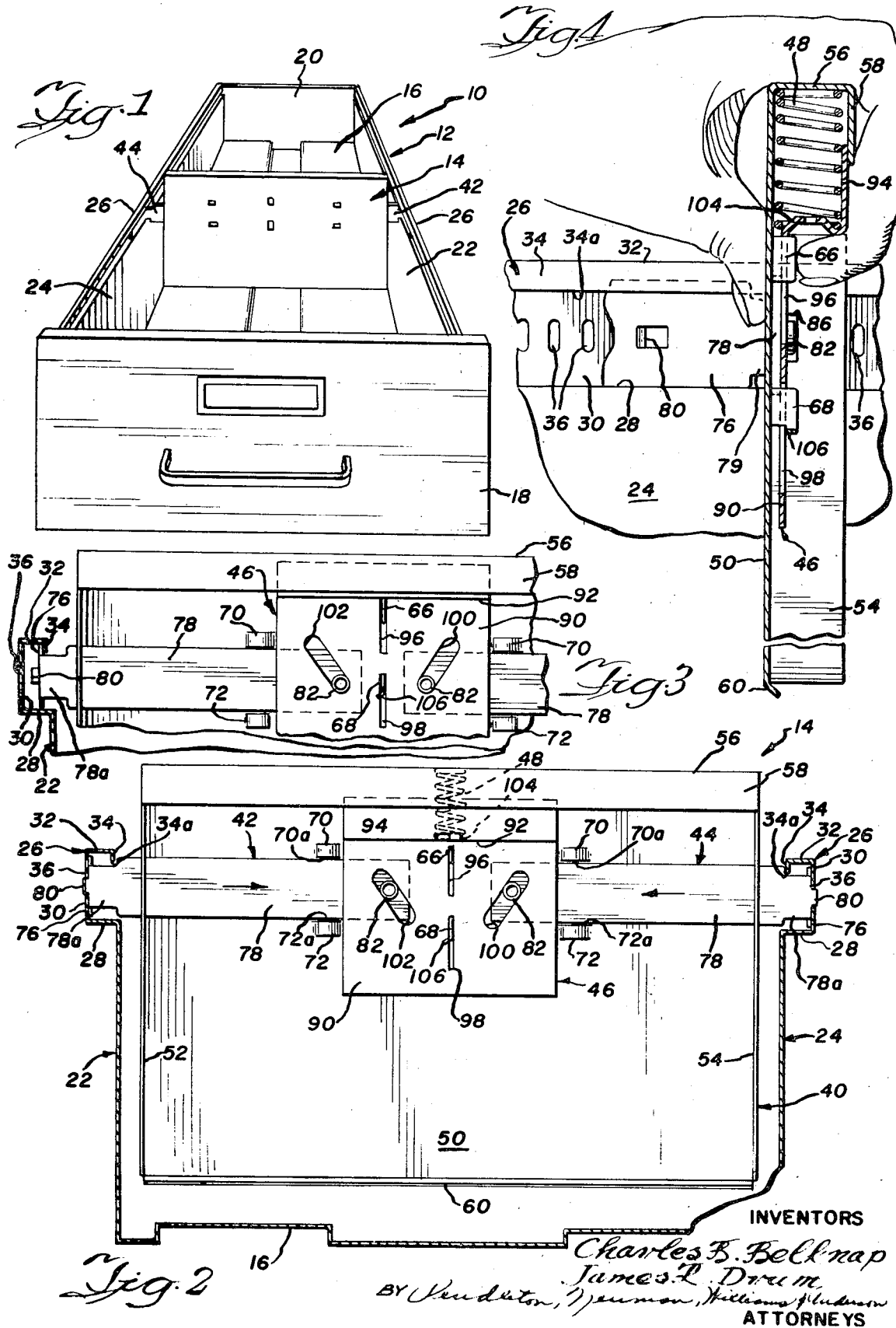


Fig. 5

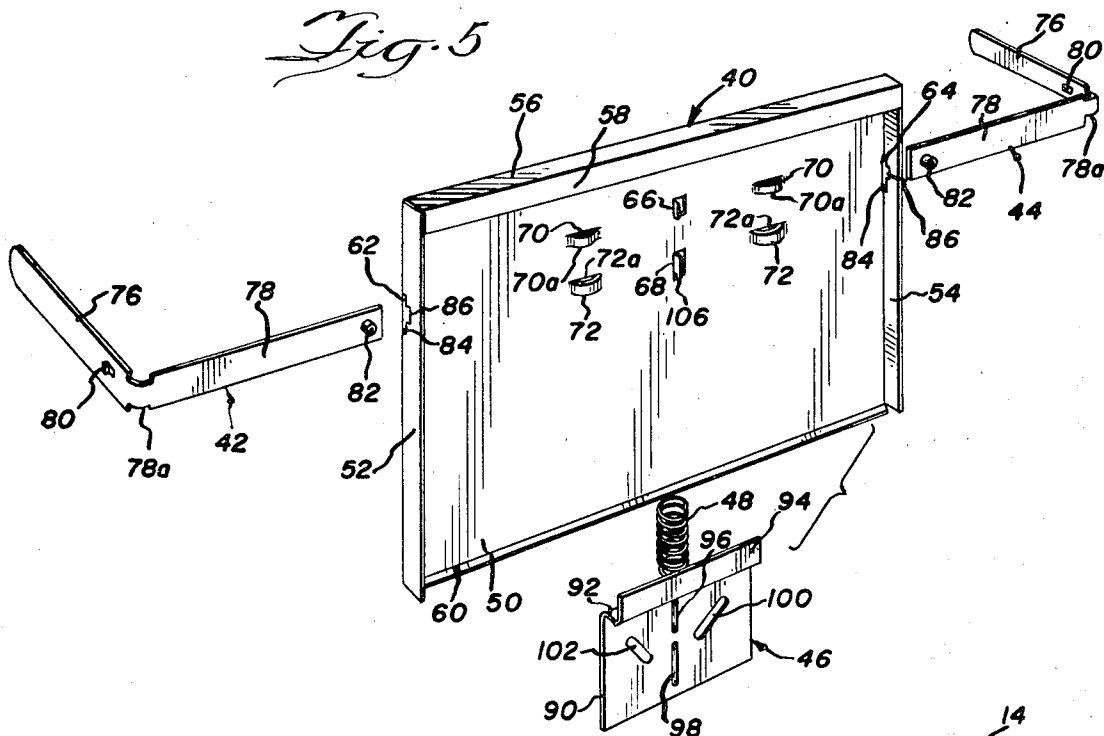
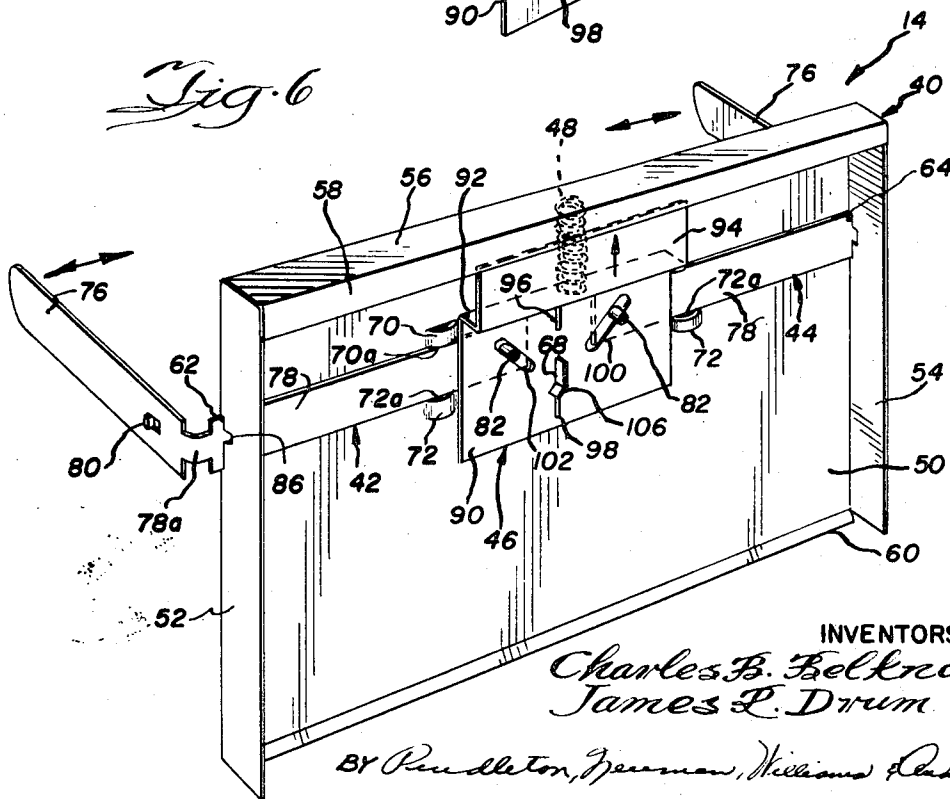


Fig. 6

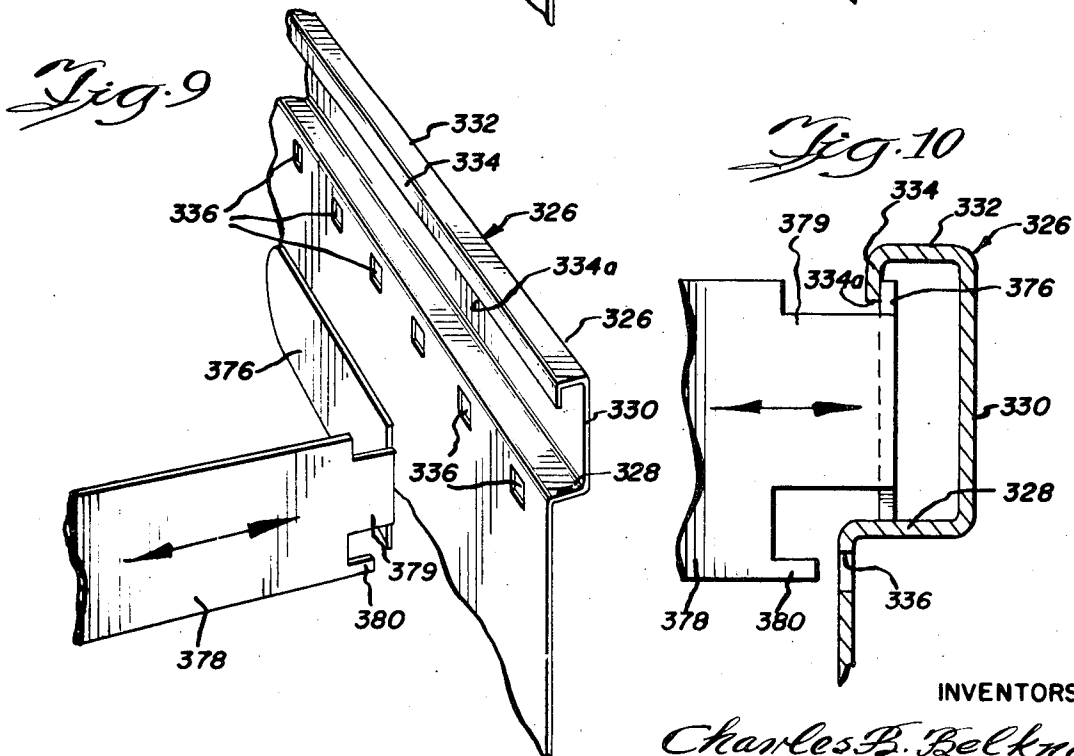
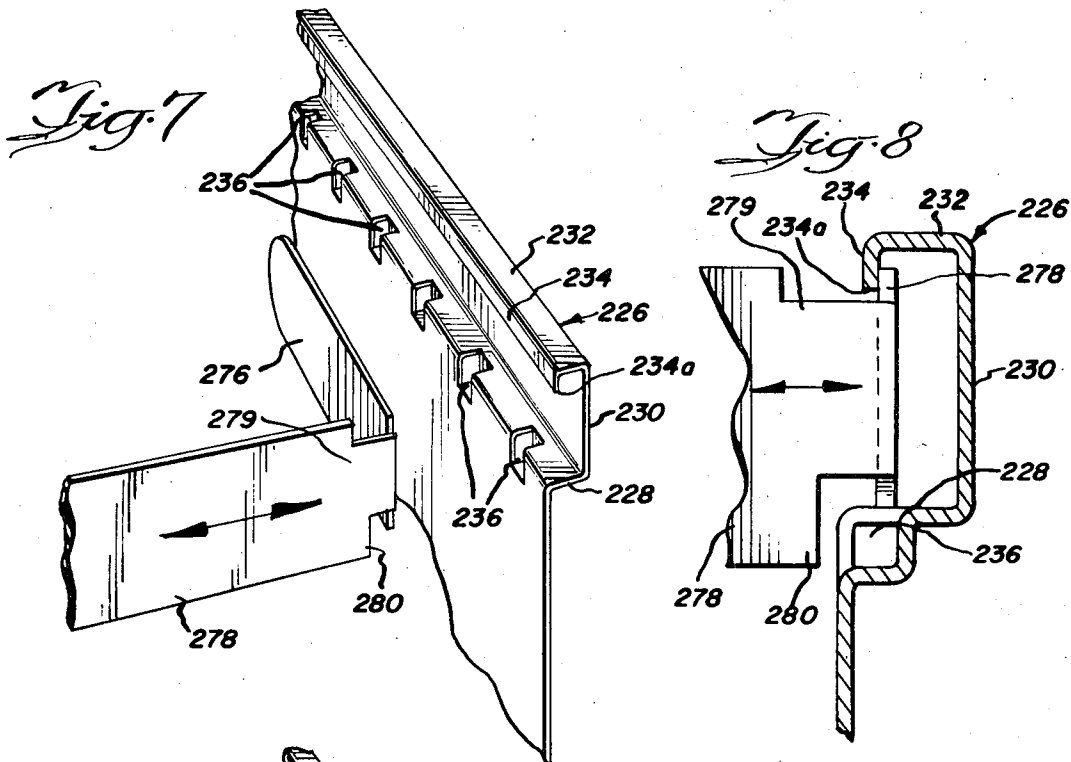


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FOLLOWERS FOR FILING UNITS

This invention pertains to follower assemblies for use in file receptacles such as file drawers, and more particularly pertains to improvements in follower assemblies of the type having a pair of guide arms engaging channel-type guideways in the side walls of a file receptacle.

Many arrangements have been proposed for selectively positioning a follower assembly in a file receptacle such as a file drawer. By way of example only, these include rotary locking, cam or pawl mechanisms as disclosed for instance in U.S. Pat. Nos. 2,560,428, 2,585,612 and 2,689,573, rollers and cam flanges as shown in U.S. Pat. No. 2,607,352, and laterally reciprocable latching arrangements with various support and guide arrangements as shown in U.S. Pat. Nos. 974,601 and 3,130,732.

Prior guiding and latching arrangements designed to provide positive securement of the follower against undesired rearward movement have tended to be rather complex, requiring follower assemblies including many components and of rather intricate operation, as will be apparent upon perusing the prior art. Also, prior devices usually have required a relatively high degree of precision in obtaining appropriate matching of the follower assembly with the related drawer components to insure the desired locking operation while preserving freedom of movement of the follower when desired by the operator.

It is an object of this invention to provide an improved follower assembly for use in file receptacles such as file drawers.

It is another object of this invention to provide a follower assembly which will provide positive locking in a desired predetermined position and which will assure free sliding movement by the operator when desired.

It is a further object of this invention to provide an improved follower assembly which will attain the foregoing objects without requiring a high degree of accuracy or close dimensional tolerances in the follower assembly or in the receptacle in which it is utilized.

It is a further object of this invention to provide a follower assembly of extremely simple construction, utilizing a minimum number of parts and which is economical to produce and easy to assemble.

It is a further object of this invention to provide a follower assembly which can be easily assembled and installed in the field, including assembly and installation by customers in files in use.

It is a further object of this invention to provide file units including a cooperating follower assembly meeting the aforementioned objects.

Further and additional objects and advantages of this invention will appear from the description, accompanying drawings and appended claims.

In carrying out this invention in one illustrative form, a file unit is provided including a file receptacle having side walls with guideways extending longitudinally of the receptacle, and a follower assembly. The follower assembly includes a follower plate and a pair of laterally reciprocable L-shaped members. These members include guide arms disposed in the guideways at opposite edges of the follower plate and slide arms which extend inwardly along the follower plate. A spring and cam operating mechanism biases the mem-

bers outward, and protuberances on the guide arms engage receiving openings in the side walls to secure the follower assembly in predetermined position longitudinally of the receptacle. Manipulation of the operating means retracts the two members inward to disengage the protuberances from the openings, with the guide arms remaining within the guideways for guided sliding movement of the follower assembly longitudinally of the file receptacle.

For a more complete understanding of this invention reference should now be had to the embodiments illustrated in the accompanying drawings and described below by way of examples of the invention. In these drawings:

FIG. 1 is a perspective view of a file unit comprising a file drawer and follower assembly employing teachings of this invention;

FIG. 2 is a transverse cross-sectional view through the file unit of FIG. 1, showing a rear elevation of the follower assembly;

FIG. 3 is a partial view, similar to FIG. 2, showing the parts in retracted position;

FIG. 4 is an enlarged partial longitudinal sectional view illustrating a portion of the unit of FIG. 1, with the release mechanism of the follower assembly being manipulated by an operator;

FIG. 5 is an exploded view of the follower assembly from the file unit of FIG. 1;

FIG. 6 is a perspective view of the follower assembly;

FIGS. 7 and 9 are partial perspective views of modified locking arrangements of other embodiments employing certain teachings of this invention; and

FIGS. 8 and 10 are end views of the components of FIGS. 7 and 9 respectively, assembled in unlocked positions.

Referring to the drawings, the filing unit 10 comprises a drawer type receptacle 12 and a follower assembly 14. The drawer includes a bottom 16, a front 18, a rear wall 20 and side walls 22 and 24. In the illustrated embodiment, the bottom 16 and the side walls 22 and 24 are formed of a unitary piece of sheet metal, see FIG. 2. However, it will be appreciated that the drawer may be of other construction, e.g., separate sides and bottoms secured together, as by spotwelding, to form the drawer body.

Each of the side walls 22 and 24 is formed with a channel-shaped guideway 26 extending longitudinally along its upper edge. Each of these guideways includes a lower outwardly projecting section 28, a vertical outer wall 30 which is generally parallel to the major section of the respective side wall 22 or 24, an upper edge 32 parallel to the outwardly projecting portion 28 and a return lip portion 34 which extends downwardly in parallel spaced relation to the outer wall 30. The outer wall 30 is provided with a longitudinally extending series of spaced locking apertures 36 (FIG. 4). As best seen in FIGS. 2 and 3, the lower horizontal section 28 is of greater width than the top section 32, whereby the section 28 forms a support track for guide arms, as referred to further below. Each return lip or flange 34 is disposed outwardly from the plane of the respective side wall 22 or 24.

The follower assembly 14 consists of follower plate unit 40, a pair of L-shaped members 42 and 44 reciprocally mounted on this plate and an operating

mechanism comprising a reciprocal member 46 and a compression spring 48. The base plate or follower plate unit 40 is formed of a single unitary piece of sheet metal and comprises a central planar plate section 50, a pair of rearwardly extending side flanges 52 and 54, a top edge strip 56, a downwardly extending return flange 58, and a rearwardly extending bottom flange 60. The top edge strip 56 extends from plate 50 rearwardly over the upper end edges of flanges 52 and 54, and the return flange 58 overlies the upper portions of the rear edges of flanges 52 and 54, in spaced parallel relation to the front plate 50. The side flanges 52 and 54 are formed with apertures 62 and 64 (FIGS. 5 and 6) above the horizontal center line of the follower plate section 50 to receive the members 42 and 44.

A pair of tabs 66 and 68 are struck from the center plate 50, approximately along its vertical center line. These tabs are bent to an upright position wherein they extend rearwardly, perpendicular to the plane of the plate 50, and are in longitudinal alignment with one another. The plate 50 also is formed with a button-type tab 70 at each side of its vertical center line. Each of these tabs 70 is provided by lancing the plate 50 along parallel horizontal lines and deforming the intervening strip rearwardly to provide a protruding abutment edge at 70a. A similar tab 72 is struck and formed from the plate 50 in spaced opposed relation to each of the respective button tabs 70, each tab 72 having an upper abutment edge at 72a. Tabs 70 and 72 thus form guide passages for supporting and guiding the inner ends of slide arms of the L-shaped members 42 and 44.

Each of the L-shaped members 42 and 44 is formed of flat sheet metal and comprises a guide arm 76 and a slide arm 78 extending at a right angle to the arm 76. These L-shaped members are mounted on the follower plate unit 40 by having each arm 78 slidably engaged in the respective aperture 62 or 64 and between the respective tabs 70 and 72. Thus, each aperture and the adjacent tabs 70 and 72 effectively form a guide channel or passage wherein the respective arm 78 is supported, for reciprocating sliding movement of the guide members 42 and 44 laterally of the plate 50.

Each of the outer guide arms 76 is wider than the space between the horizontal support strip 28 and the distal edge 34a of the return flange 34, with arms 78 including adjacent narrower neck portions 78a to clear the flanges 34. The arms 76 are designed to slide along the respective guideways 26, resting on the horizontal strips 28, to guide and support the entire follower assembly in its longitudinal sliding movement along the receptacle 12. A tine or prong 80 is struck from each arm 76 along its longitudinal centerline. These prongs project outwardly to engage in the openings 36 in the adjacent side walls 30 when the arms 42 and 44 are in their outward positions. The illustrated prongs 80 extend generally at right angles to the respective arms 76 and engage right angular edges of the apertures 36 to lock the follower against movement in either direction longitudinally of the receptacle 12.

A short stud-like protrusion 82 is extruded from the inner end portion of each arm 78, and projects rearwardly. In order to accommodate these components during assembly, and to effect proper positioning of the arms 78, each aperture 62 and 64 includes an elongated narrow portion 84 contiguous to the rear surface

of plate 50, of the approximate dimensions of the cross section of arm 78, with an enlarged center portion 86 to accommodate passage of the protrusions 82, see FIG. 4.

The element 46 is a generally Z-shaped plate including a lower main body section 90, a rearwardly projecting step section 92 and an upwardly projecting flange 94. The body section 90 is formed with a pair of aligned elongated slots 96 and 98 in which tabs 66 and 68 are received. The slots are substantially longer than the length of the tabs to permit vertical reciprocation of the unit 46. A pair of angularly disposed cam slots 100 and 102 also are provided in section 90.

The slide element 46 and compression spring 48 comprise the operating mechanism to effect the desired positioning movement of the guide members 42 and 44. With the follower mechanism assembled as in FIGS. 1-4 and 6, the arms 78 extend through the respective apertures 62-64 and between the respective tabs 70 and 72, adjacent the rear surface of the plate 50. The section 90 of the operating unit 46 overlies the inner end portions of the arms 78, with the protrusions 82 received in the respective slots 100 and 102. Flange 94 extends upwardly beneath and adjacent the lower edge portion of the return flange 58. The spring 48 is confined and compressed between the center portion of the top edge strip 56 and the step section 92 of the operating unit 46. An upwardly extending dimple 104 formed in section 92 (see FIGS. 2 and 4) serves as a locator for positioning and retaining the spring in the desired position.

The guide tabs 66 and 68 project through the respective slots 96 and 98. A finger-like tab section 106 of the tab 68 is bent to one side as shown in FIGS. 2 and 6 to retain the operating unit on the tabs 66 and 68, thereby holding all of the components of the assembly 14 in their assembled relation. It should be noted particularly that this is the only securing step required to complete the assembly of all of the components of the follower.

The compression spring 48 urges or biases the operating plate 46 downward. Since the cam slots 100 and 102 extend upwardly and outwardly in upwardly diverging relationship, this downward urging of plate 46 results in spring 48 constantly urging the guide members 42 and 44 to their extreme outward position. Referring further to FIG. 2, the position and lateral extent of the cam slots 100 and 102 relative to the protrusions 82 is such that the guide arms 76 will be pressed against the respective side walls 30 of the guideways by the spring 48, without the protrusions 82 reaching the upper outer ends of the cam slots. This insures that the prongs 80 will be fully engaged in the apertures 36 to positively lock the follower assembly in the desired position whenever the operating member 46 is released and within considerable variation of the spacing between the wall sections 30.

The lateral spacing between walls 30 and return flanges 34 is greater than the length of the prongs 80 plus the thickness of an arm 76. Also, the cam slots are of sufficient inward extent to permit drawing of arms 76 against the flanges 34 by lifting of the operating unit 46, see FIG. 3.

Each of the guide arms 76 is of a width (vertical height) somewhat greater than the vertical clearance between the support strips 28 and the lowermost or

distal edge 34a of the opposing return flange 34, whereby the arms 76 engage flanges 34 when retracted inward. As best seen in FIG. 3, this feature, along with the inward lateral extent of the support strip 28 beyond the respective flanges 34, insures that both guide arms 76 will remain engaged in the guideways and on support strips 28 at all times. Inadvertent release or removal of one or both sides of the assembly from the guideways is thereby precluded.

The follower assembly 14 may be assembled with the file receptacle 12 by sliding the assembly into position, with the arms 76 in the guideways 26, prior to positioning and securing of one or both of the end walls 18 and 20. Alternatively, the upper strip 32 and return flange 34 may be eliminated at the forward end of the file receptacle to permit insertion and/or removal of a follower assembly or assemblies 14 subsequent to the fabrication of the file receptacle.

In operation, when an operator desires to reposition the follower assembly 14 longitudinally of a file unit 12, the top of the follower plate unit 40 normally is gripped with one hand. As shown in FIG. 4, the step section 92 of the operating unit 46 is conveniently exposed and accessible at the rear side of the assembly, slightly beneath the upper strip 56, for convenient and natural gripping by the fingertips of the operator. Accordingly, the operator slides the unit 46 upward by a natural gripping action and thereby conveniently and naturally releases the locking mechanism so that the follower assembly can be moved to a new position as desired. By way of one specific example, an upper strip 56, $\frac{3}{4}$ inch wide and a step section 92 about 0.6 inch wide, with the step section 92 about 1 $\frac{1}{4}$ inches beneath the strip 56 when unit 46 is in its normal lower position, provides for convenient gripping to release the locking mechanism by a hand squeezing action as shown in FIG. 4.

The inward movement of the guide arms 76 to release the latches will insure that the arms are clear of the outer walls 30 to avoid any binding between the arms and side walls as the follower assembly is moved. The required amount of such inward movement will be provided in response to the natural "feel" of the operator in moving the assembly. Also, upon release of the operating mechanism to effect locking engagement of the prongs 80 in apertures 36, the guide arms automatically will be pressed outward by the spring 48 into firm contact with the walls 30 to avoid movement between these parts and consequent rattling or squeaking. Thus, the described follower arrangement insures free and easy movement when repositioning the follower assembly without requiring a high degree of accuracy of alignment of the side walls or close tolerance of spacing between the side walls. Thus, in effect, a self-regulating action is obtained in terms of insuring adequate clearance for free movement while also obtaining firm outward pressure contact between the arm 76 and walls 30 in the locking position.

FIGS. 7-10 illustrate two alternative locking arrangements which may be used in the aforescribed assembly. In the modified embodiments, parts are identified by numerals in the 200 and 300 series corresponding to the numerals assigned to similar parts in FIGS. 1-6.

In the embodiment of FIGS. 7 and 8, a series of spaced notches or strike-outs 236 are formed in the support section 228 and adjacent portions of the side walls. The arms 278 of the cooperating guide members are provided with shoulder sections 280 along their lower outer ends. These shoulder sections 280 engage the notches 236 when the guide members are in their outward, released positions to lock the follower assembly in position, and are disengaged as in FIG. 8 upon inward movement, in the same general manner as in the embodiment of FIGS. 1-6.

In the embodiment of FIGS. 9 and 10, a series of spaced apertures 336 are provided in each side wall beneath the respective guideway 326. The arms 378 of the cooperating guide members are provided with prong sections 380 along their lower outer ends. These prongs engage the openings 336 upon outward movement of the guide members to lock the follower assembly in position and are disengaged therefrom upon inward movement in the same general manner as in the other described embodiments, see FIG. 10.

In each of the embodiments of FIGS. 7-10, the protruding locking elements are beneath and shielded by the guideways when in their outward locking positions.

In the embodiment of FIGS. 1-6, the prongs 80 are on the centerline of arms 76, and the two guide units 42 and 44 are identical and interchangeable. This feature contributes to simplicity and economy of this preferred embodiment.

It will be obvious that certain other modifications of the specific embodiments shown may be made without departing from the spirit and scope of this invention. For example, the locking prongs may have angular forward faces, as by forming prongs 80 to a position wherein they extend rearwardly at an angle, e.g., 45°, to the respective arms 76. Thereby the follower assembly could be pulled forward without deliberately releasing the locking mechanism as the forward angle surfaces of the prongs would result in a ratchet-like cam lifting and releasing of the prongs from the locking apertures. The prongs would still positively engage the rearward edges of the apertures to preclude rearward movement of the assembly, thereby supporting material in front of the assembly 14. Other modifications and revisions will be apparent to those skilled in the arts.

It will thus be seen that a follower assembly and file unit have been provided which meet the objects of this invention. It should be particularly noted that the guides are also the locking or stop mechanism. Further, automatic operator-regulation of the release movement and of the clearance of the guide arms and the guideways is provided to avoid needs for dimensional accuracy and avoiding binding, while affording ease of movement and positive selective locking. The entire follower assembly comprises only five parts which are easily assembled. The slide arms are merely extended inward through the side apertures, the spring is placed in position along with the operating plate which mates with the mounting tabs and the cam follower protrusions, whereupon the locking tab is bent to maintain the assembled relationship. There is no welding or any other securing means other than the bending of one securing tab. This greatly facilitates field assembly and installation of the follower assemblies, while also providing a very economical unit.

While particular embodiments of this invention are illustrated and/or described herein, it will be understood, of course, that the invention is not to be limited thereto since many modifications may be made by those skilled in the art, particularly in light of the foregoing teachings. It is contemplated, therefore, by the appended claims, to cover any such modifications as fall within the true spirit and scope of this invention.

What is claimed is:

1. A file unit comprising a file receptacle including side walls having guideways extending longitudinally of said receptacle, said guideways including outer walls spaced outward from the planes of the respective side walls and extending generally parallel to said side walls, and a follower assembly, said follower assembly including a file retainer base and a pair of guide arms, said guide arms being disposed at opposite edges of said base and extending generally perpendicular to the plane of said base, said guide arms being slidably engaged in said guideways for supporting and guiding said follower assembly as said assembly is moved longitudinally of said receptacle, said arms being linearly reciprocable laterally relative to said base between outward positions wherein each of said arms is in contact with the respective outer wall and inward positions wherein said arms are clear of said outer walls, means yieldably urging said arms outward from said base into firm contact with the respective outer walls, said receptacle and said arms including cooperative locking means engageable upon such outward movement of said arms to prevent sliding movement of said follower assembly in at least one direction longitudinally of said receptacle and disengageable upon such inward movement of said arms, and operating means for moving said arms inward to such inward positions against the force of said yieldable means for disengaging said locking means and simultaneously clearing said arms from said outer walls to permit free sliding movement of said follower assembly longitudinally of said receptacle.

2. A file unit as in claim 1 including an outwardly extending protuberance associated with each of said guide arms, and said side walls being provided with apertures for receiving said protuberances.

3. A file unit as in claim 1 including a prong extending outward on each of said guide arms, and said outer walls being formed with apertures for receiving said prongs.

4. A file unit as in claim 1 wherein said arms maintain guiding engagement with said guideways when moved inward to disengage said locking means.

5. A file unit as in claim 1 including a slide arm joined to each of said guide arms, said slide arms being disposed adjacent said base and reciprocable toward and away from one another for effecting such lateral movement of said guide arms.

6. A file unit as in claim 5 wherein said side walls are provided with apertures along the lower edges of said guideways, and each of said slide arms having a shoulder engageable with the respective adjacent apertures when said slide arms are in their outward positions.

7. A file unit as in claim 5, wherein said side walls are provided with apertures beneath said guideways, and a prong on each of said slide arms disposed to engage the respective adjacent apertures when said slide arms are in their outward positions.

8. A follower assembly for use in file receptacles provided with side walls having guideways therein, comprising a base plate, a pair of L-shaped members mounted on said plate, each of said members including a slide arm disposed generally parallel to said plate and a guide arm extending generally normal to the plane of said plate for engaging such guideways for supporting and guiding said follower assembly as said assembly is moved longitudinally of such a receptacle, said guide arms being disposed along opposite edges of said plate, said members being linearly reciprocable laterally of said plate between outward and inward positions, operating means yieldably urging said members outward relative to said base plate for firm contact of said guide arms with outer walls of such guideways, means on said members for locking engagement with such side walls when in such outward positions relative to said plate to prevent sliding movement of said follower assembly in one direction longitudinally of such a receptacle, and said operating means including means for moving said members inward against the force of said yieldable means for disengaging such locking engagement and moving said guide arms to inward positions clear of such outer walls for free sliding movement of said follower assembly longitudinally of such a receptacle.

9. A follower assembly as in claim 8 wherein said means for locking engagement comprises an outwardly extending protuberance on each of said members.

10. A follower assembly as in claim 9, wherein each of said protuberances comprises a prong located along the longitudinal center line of the respective guide arm.

11. A follower assembly as in claim 9, wherein each of said protuberances comprises a shoulder on the respective slide arm.

12. A follower assembly as in claim 9, wherein each of said protuberances comprises a prong on the respective slide arm.

13. A follower assembly for use in file receptacles provided with side walls having guideways therein comprising a retainer plate, means defining a pair of laterally extending guide channels along said plate, a pair of L-shaped members each having a slide arm extending inward along one of said guide channels and a guide arm, said guide arms being disposed outward of opposite edges of said plate and extending generally normal to the plane of said plate for engaging such guideways for supporting and guiding said follower assembly as said assembly is moved longitudinally of such a receptacle, operating means engaging the inward end portions of said slide arms for linearly reciprocating said members along said channels between outward and inward positions and including means yieldably urging said members outward relative to said plate for firm contact of said guide arms with outer walls of such guideways, means on said members for gripping engagement with such side walls when in an outward position relative to said plate to prevent sliding movement of said follower assembly in one direction longitudinally of such a receptacle, and said operating means including means for moving said members inward against the force of said yieldable means for disengaging such gripping engagement and moving said guide arms to inward positions clear of such outer walls for free sliding movement of said follower assembly longitudinally of such a receptacle.

14. A follower assembly as in claim 13 wherein said gripping engagement means comprise protuberant means on said members for engaging protuberance receiving means of such side walls.

15. A follower assembly as in claim 13 wherein said operating means includes an operating plate member overlapping the inner end portions of said slide arms, said operating plate and said slide arms including cooperative means for reciprocating said L-shaped members along said channels in response to reciprocation of said operating plate toward and away from the upper edge of said retainer plate, said yieldable means urging said operating plate away from said upper edge and said cooperative means thereby urging said L-shaped members outward for effecting such gripping engagement, and said operating plate member including a gripping section spaced beneath the upper edge of said retainer plate for grasping by an operator to move said operating plate upward toward said upper edge and thereby to move said L-shaped members inward.

16. A follower assembly for use in file receptacles provided with side walls having guideways therein, comprising a retainer plate including a top edge strip extending rearward from the main portion of said plate and a return flange extending from the distal edge of said strip in spaced parallel relationship to such main portion; means defining a pair of laterally extending guide channels along said plate; a pair of L-shaped

members each having a slide arm extending inward along one of said guide channels and a guide arm, said guide arms being disposed outward of opposite edges of said plate and extending generally normal to the plane of said plate for engaging such guideways; an operating plate of generally Z-configuration in cross section and including a first section overlapping the inner end portions of said slide arms, a second section extending outwardly therefrom, and a third section engaging the inward surface of said return flange; said first section of said operating plate and the inner end portions of said slide arms including cooperative engaging means for reciprocating said members along said channels in response to reciprocation of said operating plate toward and away from the upper edge of said retainer plate; means on said members for gripping engagement with such side walls of such a file receptacle when in an outward position; and a compression spring confined between said top edge strip and said second section for normally urging said operating plate away from said strip, and said cooperative means thereby urging said L-shaped members outward from said retainer plate into such gripping engagement, said second section of said operating plate member being spaced beneath the upper edge of said retainer plate for grasping by an operator to move said operating plate upward and thereby to move said L-shaped members inward.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,687,326 Dated August 29, 1972

Inventor(s) Charles B. Belknap and James R. Drum

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Abstract, line 8 "opening plate" should read
-- operating plate --. Column 2, line 3, after "in" insert
-- a --. Column 7, line 63 (claim 7), delete the comma after
"5". Column 8, line 31 (claim 10), delete the comma after
"9". Column 8, line 34 (claim 11), delete the comma after
"9". Column 8, line 37 (claim 12), delete the comma after
"9".

Signed and sealed this 15th day of May 1973.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents