Oct. 14, 1952 H. H. OLSON ET AL 2,614,019

FILING CABINET DRAWER.

Filed May 23, 1950 2 SHEETS—SHEET 1

Fig. 1.

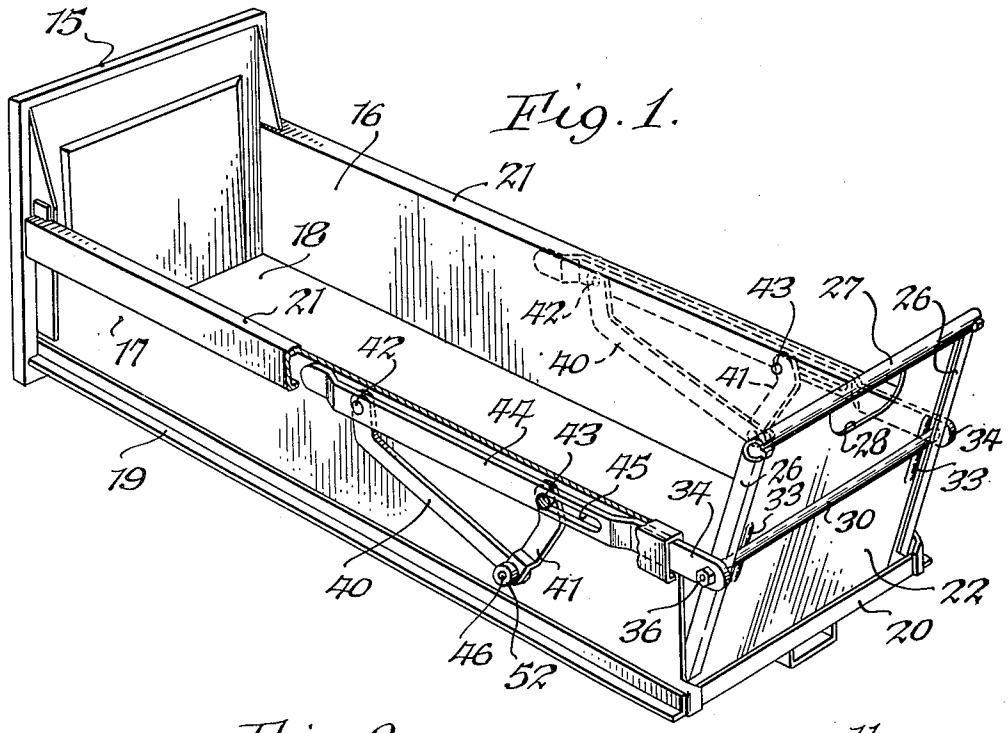
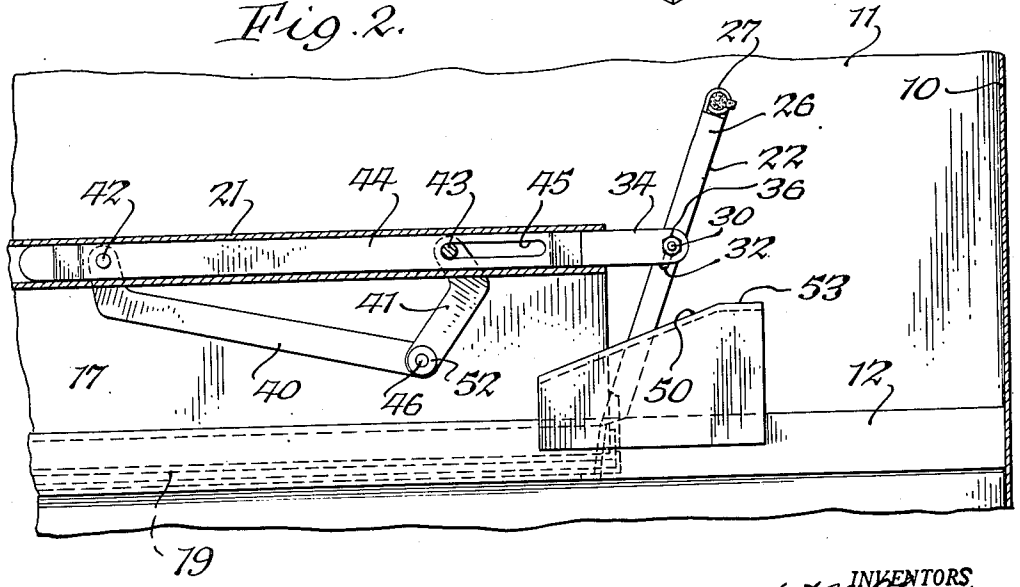


Fig. 2.



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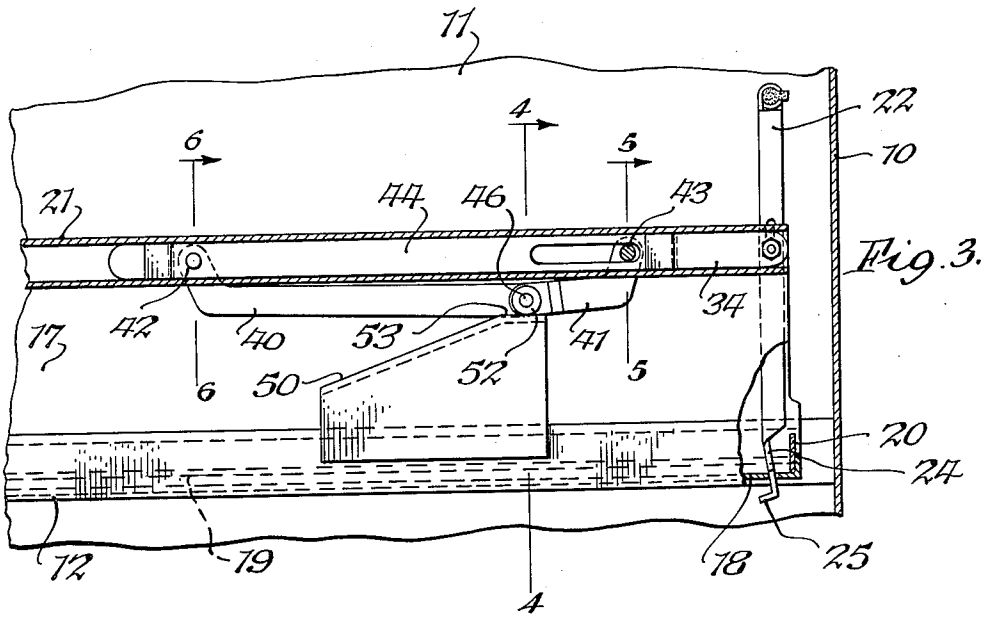


Fig. 3.

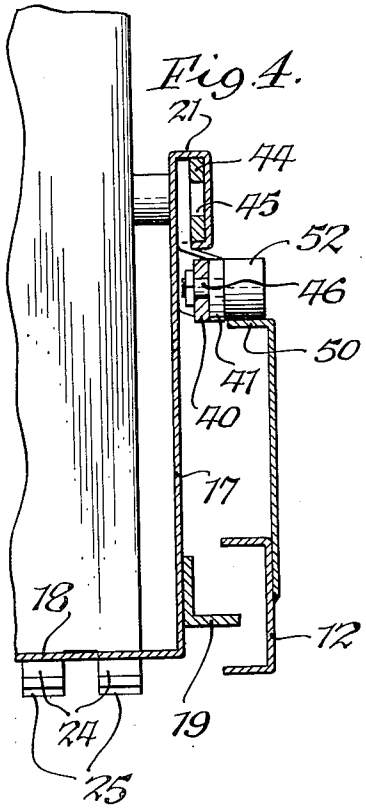


Fig. 4.

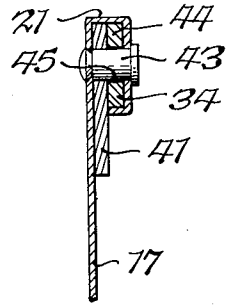


Fig. 5

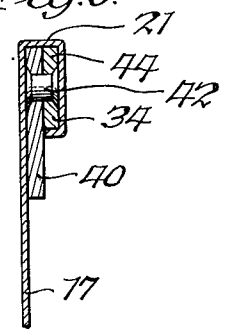


Fig. 6.

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FILING CABINET DRAWER

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12 Claims. (Cl. 312—273)

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This invention relates to filing cabinet drawers having compression plates disposed at the rear ends thereof mounted to permit the files in the drawers to be rendered more readily accessible when the drawers are open, and for compressing the files when the drawers are closed.

One of the objects of this invention is to provide a filing cabinet drawer with a hinged back or compression plate, which when the drawer is opened, will freely swing rearwardly to render the files more accessible, and which is automatically moved into a vertical position to compress the files during the closing movement of the drawer, and in which this movement of the compression plate is effected by an improved mechanism which requires very little effort on the part of the user of the filing cabinet. Another object of this invention is to provide a toggle mechanism connected with the compression plate in such a manner that the compression plate is moved automatically into its file compressing position during the movement of the drawer into closed position.

Other objects and advantages will be apparent from the following description of one embodiment of the invention and the novel features will be particularly pointed out hereinafter in connection with the appended claims.

In the accompanying drawings:

Fig. 1 is a perspective view of a filing cabinet drawer embodying this invention.

Fig. 2 is a fragmentary side elevation thereof, partly in section, showing the drawer in the position in which the compression plate is in rearwardlly swung position to render the contents of the drawer readily accessible.

Fig. 3 is a similar fragmentary view showing the drawer in closed position, in which the files are compressed.

Figs. 4, 5 and 6 are respectively fragmentary transverse sectional elevations thereof, on lines 4—4, 5—5 and 6—6 of Fig. 3.

Filing cabinet drawers embodying this invention may be mounted in cabinets of any desired construction. A steel cabinet is shown by way of example in the drawings in which 10 represents the rear wall of the casing of the filing cabinet and 11 represents the side walls.

The cabinet is provided with the usual frame members (not shown) to the outer surfaces of which the side walls 11 may be welded or otherwise secured. Suitable guide rails 12 are provided at opposite sides of the cabinet in the lower portion of each drawer compartment and these guide rails are secured to the inner surfaces of the frame members of the cabinet. These guide rails

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are preferably of channel shape as shown in Fig. 4, with their flanges extending inwardly into the cabinet, and may be provided with means of any suitable kind for guiding a drawer in its movement into and out of the cabinet. Such means, if desired, may include intermediate slides which slide relatively to the guide rails 12 and relatively to which the drawer may slide, so that the drawer may be moved completely out of the cabinet. Any other means for guiding the drawer in its movement into and out of the cabinet may, however, be provided.

The filing drawer, except as hereinafter specified, may also be of any suitable or desired construction, that shown by way of example including a drawer front 15 which is rigidly secured to drawer sides 16 and 17, and 18 represents the drawer bottom which may be of any suitable construction. The drawer sides may also be provided at or near their outer edges with longitudinally extending angle bars 19 which may cooperate with suitable rollers or tracks (not shown) for guiding the drawer while sliding into and out of the cabinet relatively to the guide rails 12. The lower portions of the side walls of the drawer are preferably connected at the rear ends thereof by means of a strip 20 which may be welded to parts of the side walls 16 and 17 of the drawer. The upper edges of the side walls of the drawer may be turned over to provide channelled portions 21 which stiffen the side walls.

The rear end of the drawer is closed by means of a compression or back plate 22, the lower end of which may be hinged in any suitable manner on the drawer. In the construction shown for this purpose, the compression plate 22 is provided at the lower end thereof with a plurality of downwardly extending tongues 24, which may extend through slots formed in the bottom 18 of the drawer near the rear end thereof. The lower ends of these tongues may be bent to lie substantially parallel to the bottom, thus forming projections or offsets 25 which serve to hold the tongues against withdrawal from the slots and thus prevent the lifting of the compression plate 22 out of operative relation to the bottom 14 of the drawer. Any other suitable means for hinging the lower end of the compression plate to the drawer may be provided, if desired.

The sides of the compression plate are preferably bent into substantially channel form as shown at 26 to reinforce the same and the upper end of the compression plate may be turned over or beaded as shown at 27. The compression plate may also have an opening 28 therein, by means of which the bead 27 of the compression plate

may be readily grasped by the hand of the operator.

The pivotal connection between the compression plate and the drawer bottom enables the compression plate to be swung into a rearwardly inclined position as shown in Figs. 1 and 2, in which the files contained in the drawer are readily accessible, and into an upright position as shown in Fig. 3, in which the contents of the drawer are compressed. It is desirable to provide means for moving the compression plate into upright or compressing position when the drawer is closed and for holding the same in that position until the drawer is again opened, whereupon the compression plate should be released so that it may swing into the inclined positions shown in Figs. 1 and 2. In order to accomplish these purposes, the compression plate or drawer back is provided intermediate of its ends with a transversely extending rod **30** which extends through upright slots **32** in the channel portions **26** at the sides of the compression plate. In order to space the rod **30** from the back surface of the compression plate, rearwardly extending beads **33** are preferably provided on the compression plate **22** against which the rod may bear and on which the rod may roll while moving lengthwise of the slots **32**.

The opposite ends of the rod **30** extend through apertures formed in the rear ends of a pair of slide bars **34** which are guided for longitudinal movement in the channelled upper portions **21** of the sides **16** and **17** of the drawer, which form guides in which the slide bars **34** may move lengthwise of the drawer. The rods **30** may have their opposite ends threaded and may be provided with nuts **36** for maintaining the ends of the rod **30** in correct relation to the slide bars **34**, or other means may be provided for holding the rods in correct relation to the slide bars.

In accordance with this invention, means are provided for moving the slide bars **34** forwardly in the channelled portions **21** for moving the hinged compression plate positively into its upright or compressing position. In the construction shown for this purpose, a link **40** is employed for each slide bar **34**, one end of which extends into the channel-shaped portion **21** of the drawer side through an elongated slot or opening in the lower face thereof as clearly shown in Figs. 4 to 6, and is pivoted at **42** to the slide bar **34**. Suitable means are provided for pushing the link **40** forwardly with reference to the drawer when the drawer is being moved into its closed position, for example, by having the link engage a stationary part of the cabinet. Preferably this is accomplished by means of a toggle mechanism of which the link **40** forms a part. In the construction shown by way of example, the other end of the link **40** is pivotally connected to one end of another link **41**. The other end of the link **41** is pivotally connected with the drawer side, for example to the channel-shaped portion **21** of the drawer side, by means of a pivot pin **43**. In order to provide space for the upper ends of the links **40** and **41** within the channelled portion **21**, the slide bar **34** is provided with an offset portion **44**, and in order to permit longitudinal movement of the slide bar **34** relatively to the pivot **43**, the slide bar is provided with a slot **45** through which the pivot **43** extends. The slots **45** also serve to limit the extent to which the slide bars **34** may move back and forth within the channelled portions **21** of the sides of the drawer. As shown in Figs. 1 and 2, when the slide bars are moved rearwardly so that the compression plate **22** is in the inclined position, the front ends of the slots **45** will engage the stationary pivots **43** and when the compression plate is in upright position as shown in Fig. 2, the other ends of the slots will engage the stationary pivots **43**. Any other means for limiting the movement of the compression plate may be employed, if desired. The links **40** and **41** are pivotally connected with each other by means of a pivot pin **46**. A similar mechanism is provided on each side of the drawer, so that both slide bars **34** may be moved simultaneously to move the compressor plate into its upright position.

From the construction described, it will be obvious that if upward pressure is applied to the links at or adjacent to the pivot pin **46**, the links will be swung by a toggle action from the positions shown in Figs. 1 and 2 into the position shown in Fig. 3. Since the pivots **43** are fixed relatively to the drawer sides, upward movement of the pivots **46** will force the links **40** to move toward the drawer front **15**, and consequently, to carry the slide bars **34** toward the drawer front, thus moving the compression plate **22** about its pivot into the upright position shown in Fig. 3.

Means are also provided for automatically moving each pivotal connection **46** between the toggle links upwardly as the drawer is moved into its closed position. In the construction shown for this purpose, the toggle mechanisms are actuated by means of inclined surfaces or tracks which are fixed with relation to the cabinet side walls **11** and so positioned as to move the pivotal connections between the links **40** and **41** upwardly. These inclined surfaces may be provided in any desired manner, for example, by means of upwardly inclined flanges **50** provided on plates **51**, the lower ends of which may be suitably secured, for example, by welding the same to the outer surfaces of the guide rails **12**. In order to facilitate the movement of the toggle links, each pivot connecting the links may be provided with a roller **52**.

In the operation of the mechanism described, it will be obvious that when the drawer is being moved from its partly open position shown in Fig. 2 into the closed position shown in Fig. 3, each of the rollers **52** will move into engagement with the lower portion of the inclined flange **50** and as the movement of the drawer into its closed position continues, the roller **52** together with the pivotal connection **46** between the links **40** and **41** will be moved upwardly, thus forcing the slide bar **34** rearwardly and drawing the compression plate into its upright position. At its upper end the inclined portion or flange **50** terminates in a straight or horizontal portion **53** on which the roller **52** will rest when the drawer is in fully closed position, thus securely holding the compressor plate in upright or compressing position.

The mechanism described has the advantage that very little effort on the part of the user of the drawer is required to move the compression plate in its upright position. When a drawer is filled with files or other materials which are to be compressed, it is obvious that the initial movement of the compressor plate from its inclined position toward its upright position will require comparatively little effort. However, the final movement of the compressor plate into its upright position will require considerable force since during the latter part of this movement compression is applied to the files or contents.

By means of the toggle links described, as the roller moves upwardly along the inclined flange 50, the two links 40 and 41 move more nearly into alinement, and it is, of course, fundamental in toggle mechanisms that as the links approach alinement with each other, very little force on the pivotal connection of the links will result in a greatly increased force on the opposite or free ends of the links. Consequently, as greater force is required to move the compression plate into compressing position, the toggle mechanism exerts such increased force without a corresponding increase in the force acting on the pivotal connection 46.

It will be noted that when the compression plate is in upright position, as shown in Fig. 3, the pivot 46 is out of alinement or below a line connecting the pivots 42 and 43. Consequently, when the drawer is pulled out to a sufficient extent to move the roller 52 out of engagement with the incline 50, the links 40 and 41 can be easily moved into the positions shown in Figs. 1 and 2, so that the compression plate will readily move into its inclined position.

The mechanism described has the further advantage that when the compression plate is in upright position, it is maintained in such position by the toggle links and by means of a downward force acting on the horizontal portion 53 of the flange of the plate 51. There is, consequently, no tendency due to the pressure exerted on the compression plate by the contents of the drawer, to move the drawer toward open position.

It will be understood that various changes in the details, materials, and arrangements of parts which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention, as expressed in the appended claims.

We claim as our invention:

1. A filing cabinet provided with a drawer having a compression plate at the rear thereof for compressing the contents of the drawer and having the lower portion thereof pivotally mounted on said drawer to swing into a rearwardly inclined position to render the drawer contents readily accessible and into a substantially upright position to compress said contents, a slide bar slidable lengthwise of said drawer and having the rear end thereof connected with said compression plate, a toggle mechanism including a pair of pivotally connected links, one of said links having its free end pivoted on said slide bar and the other link having its free end pivoted on said drawer, said links extending downwardly toward their pivotal connection with each other when said compression plate is in rearwardly inclined position, and a part on said cabinet acting on said last mentioned pivotal connection to raise the same when said drawer is moved into closed position to move said slide bar in a direction to swing said compression plate into upright position.

2. A filing cabinet provided with a drawer having a compression plate at the rear thereof for compressing the contents of the drawer and having the lower portion thereof pivotally mounted on said drawer to swing into a rearwardly inclined position to render the drawer contents readily accessible and into a substantially upright position to compress said contents, a slide bar slidable lengthwise of said drawer and having the rear end thereof connected with said compression plate, a toggle mechanism including a pair of pivotally connected links, one of said links having its free end pivoted on said slide bar and the other link having its free end pivoted on said drawer, said links extending downwardly toward their pivotal connection with each other when said compression plate is in rearwardly inclined position, and a part on said cabinet having a rearwardly and upwardly inclined track which acts on said pivotally connected portions of said links to move the same upwardly when said drawer is moved into its closed position, to move said slide bar in a direction to swing said compression plate into upright position.

3. A filing cabinet and drawer according to claim 2, in which said inclined track on said cabinet is in the form of a plate secured to said cabinet and having an inclined track at its upper edge which cooperates with those ends of said links which are pivotally connected with each other.

4. A filing cabinet and drawer according to claim 2, in which said inclined track on said cabinet is in the form of a plate secured to said cabinet and having an inclined track at its upper edge which cooperates with those ends of said links which are pivotally connected with each other, said inclined track terminating in a substantially horizontal surface which holds said links in their raised positions when said drawer is closed.

5. A filing cabinet and drawer according to claim 2, in which said inclined track on said cabinet is in the form of a plate secured to said cabinet and having an inclined track at its upper edge which cooperates with those ends of said links which are pivotally connected with each other, and in which said links at their pivotal connection with each other have a roller which rolls on said inclined track.

6. A filing cabinet provided with a drawer having a compression plate at the rear thereof for compressing the contents of the drawer and having the lower portion thereof pivotally mounted on said drawer to swing into a rearwardly inclined position to render the drawer contents readily accessible and into a substantially upright position to compress said contents, that improvement for swinging said compression plate into upright position to compress the contents of the drawer which includes a pair of slide bars slidable lengthwise at opposite sides of said drawer, a transversely extending rod connecting said slide bars and said compression plate, a toggle mechanism at each side of said drawer, each of said toggle mechanisms comprising a pair of links each having one end thereof pivotally connected to the other link, a pivot fixed to said drawer and about which one of said links may turn, the other link being pivotally connected with said slide bar, and parts on said cabinet at opposite sides of said drawer engaged by said toggle mechanisms to swing said toggle links in a direction to move them toward alinement with each other for moving said slide bars forwardly with reference to said drawer to swing said compression plate into substantially upright position.

7. A filing cabinet and drawer according to claim 6, and which includes means mounted on said cabinet and engaged by said toggle mechanisms to hold said compression plate in upright position when said drawer is closed.

8. A filing cabinet and drawer according to claim 6, in which said slide bars are provided with longitudinally extending slots through which said

pivots connecting one of the links of each toggle mechanism to said drawer extend, the ends of said slots engaging said pivots for limiting the swinging movement of said compression plate.

9. A filing cabinet provided with a drawer having a compression plate at the rear thereof for compressing the contents of the drawer and having the lower portion thereof pivotally mounted on said drawer to swing into a rearwardly inclined position to render the drawer contents readily accessible and into a substantially upright position to compress said contents, said drawer having sides provided at their upper edges with channelled portions for reinforcing said drawer sides, that improvement which includes slide bars slidable in said channelled portions of said drawer sides and connected with said compression plate, a toggle mechanism for each slide bar, each toggle mechanism comprising a pair of links each having one of its ends pivotally connected to an end of the other link, a pivot connecting the other end of one of said links to said drawer and extending through said channelled portion of a drawer side, a pivotal connection between the other end of the other link and said slide bar, and means on the cabinet for swinging said toggle links toward alinement with each other when the drawer is moved into closed position for moving said slide bars to swing said compression plate into substantially upright position.

10. A filing cabinet and drawer according to claim 9, in which each of said slide bars is provided with a longitudinal slot through which said pivot extends, said slots limiting the extent of movement of said slide bars and said compression plate.

11. A filing cabinet and drawer according to claim 9, in which said means on said cabinet for actuating said toggle links comprise upwardly and rearwardly inclined tracks which are engaged by said toggle mechanisms when said drawer is moved into closed position, said inclined tracks terminating at their rear ends in substantially horizontally extending portions with which said toggle mechanisms engage when said drawer is in closed position, to hold said compression plate in substantially upright position.

12. A filing cabinet provided with a drawer having a compression plate at the rear thereof for compressing the contents of the drawer and having the lower portion thereof pivotally mounted on said drawer to swing into a rearwardly inclined position to render the drawer contents readily accessible and into a substantially upright position to compress said contents, a slide bar slidable lengthwise of said drawer and having the rear end thereof connected with said compression plate, a link connected at one end thereof with said slide bar, another link having one end thereof pivotally connected to the other end of said first mentioned link, the other end of said other link being pivotally connected with said drawer, and a rearwardly and upwardly inclined track secured on a fixed part of said cabinet and which cooperates with the pivotal connection of said links with each other to move said pivotal connection upwardly when said drawer is moved into its closed position and thereby move said slide bar in a direction to swing said compression plate into upright position.

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