Feb. 24, 1970 A. R. OLREE ET AL 3,497,280

GANG LOCK CABINET CONSTRUCTION

Filed Feb. 15, 1968 2 Sheets-Sheet 1

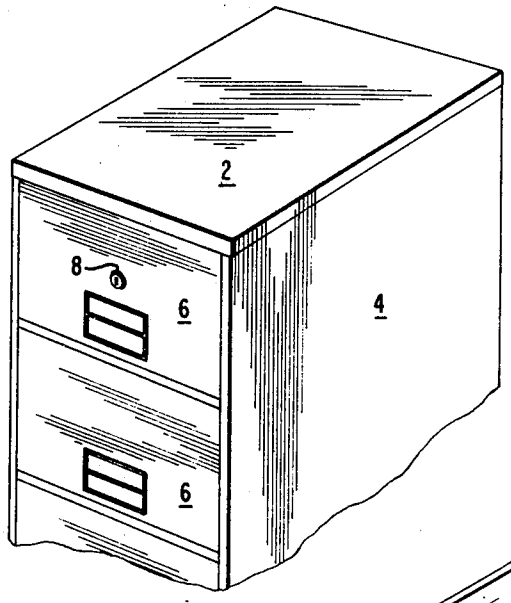


FIG. 1

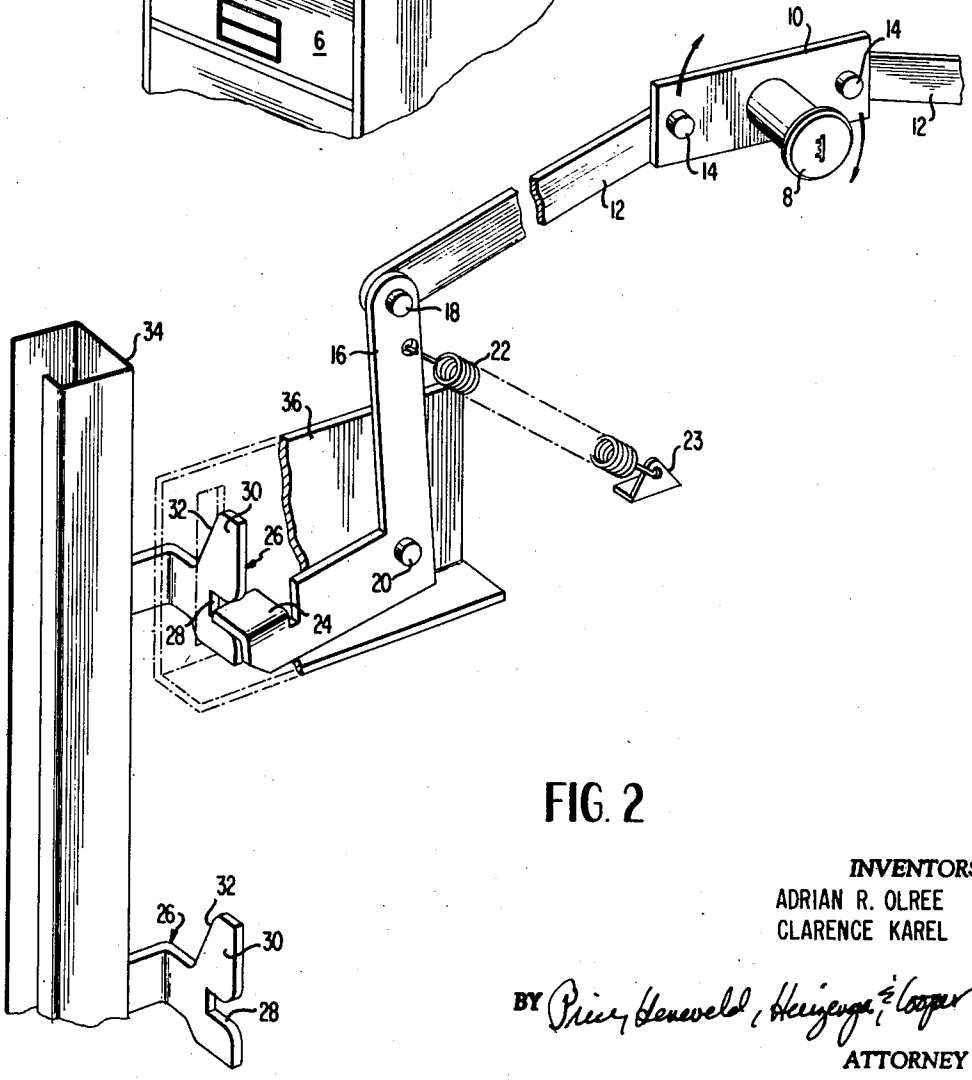


FIG. 2

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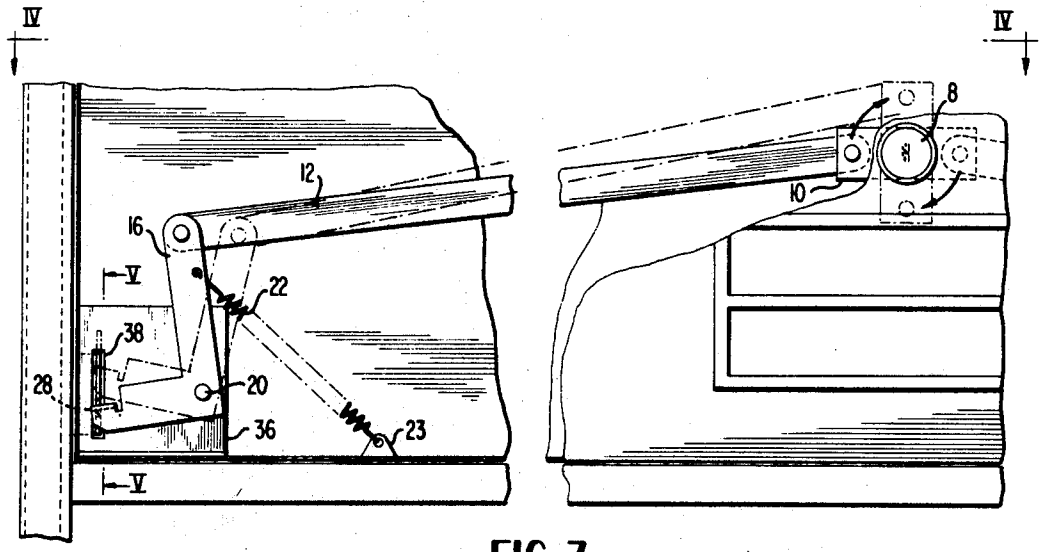


FIG. 3

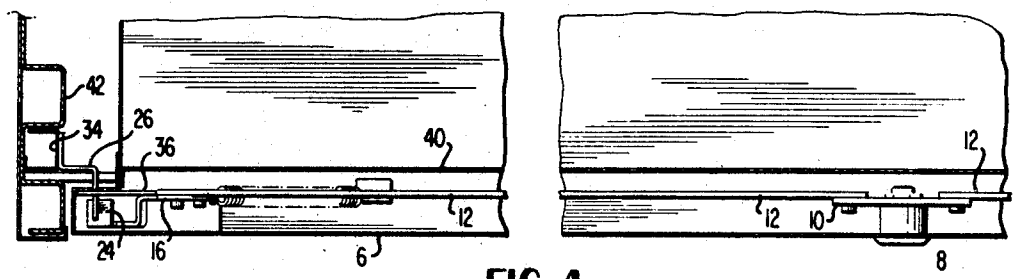


FIG. 4

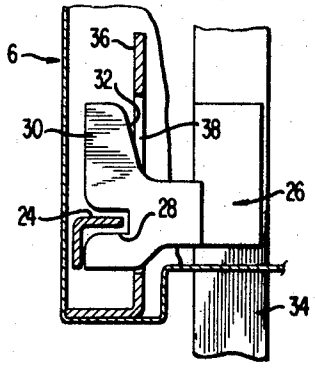


FIG. 5

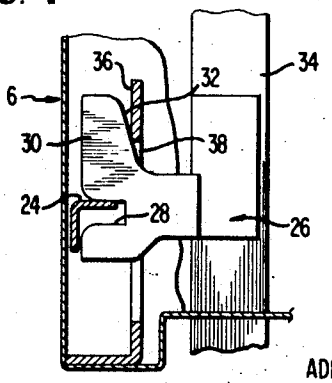


FIG. 6

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GANG LOCK CABINET CONSTRUCTION

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Int. Cl. E05b 65/46
U.S. Cl. 312—219 10 Claims

ABSTRACT OF THE DISCLOSURE

This disclosure relates to a gang lock mechanism for a cabinet construction in which a plurality of closures such as drawers or movable doors for example, are locked by a locking mechanism in a single closure. The locking mechanism comprises a rotatable cam in one of the closures and a plurality of vertically spaced movable latches which are connected so that the actuation of one latch locks all of the closures in place. The latches engage latch receiving members in the closures and are all similarly shaped so that the closure containing the rotatable cam can be interchanged with the non-cam containing closures.

This invention relates to a gang lock cabinet construction. In one of its aspects it relates to a locking mechanism for a cabinet construction having an open front and a plurality of vertically aligned closures in the open front wherein the locking mechanism comprises interconnected latches on the cabinet, receiving members for the latches on the closures, so that all of the latches can be actuated by the movement of a single latch into locking position, a latch actuating means on one of the closures, the closure and cabinet interlocking means being so shaped and positioned so as to permit the one closure with the latch actuating means to be interchanged with any of the other closures while retaining the ability to lock all of the closures by actuating the latch on the one closure.

Cabinets with a plurality of drawers or movable doors for example, are provided with gang locks such that all the drawers or doors are locked by locking of a single closure. Many gang lock mechanisms have been proposed for this purpose. Some of the gang locks are on the cabinet structure and some of the locking mechanisms are on the closures themselves.

When the locking mechanism or lock actuating mechanism is on the cabinet, the position of this mechanism is generally limited to the top or the bottom of the cabinet. When the cabinets are tall, it becomes impractical to put the lock on top of the cabinet and must be inconveniently placed on the bottom of the cabinet.

Heretofore, all of the gang lock mechanisms in which the locking actuator is positioned on a drawer are restricted to the given predetermined position. In other words, the drawer which contains the actuating mechanism is set at the factory.

The customer is not free to interchange the lock actuating drawer with other drawers.

I have now discovered a gang lock mechanism in which the lock actuating means is positioned on the closure and the closure containing the lock actuating means can be interchanged with other closures in the cabinet without loss of the gang locking function.

By various aspects of this invention one or more of the following, or other, objects can be obtained.

It is an object of this invention to provide a gang locking mechanism for cabinets and the like in which a locking closure is interchangeable with other non-locking closures.

It is a further object of this invention to provide a gang locking mechanism for cabinet closures such as doors and drawers wherein the closures are drawn into locking position as they are locked.

It is a further object of this invention to provide a unique closure lock for a cabinet and closure therefor. Other aspects, objects, and the several advantages of this invention are apparent to one skilled in the art from a study of this disclosure, the drawings, and the appended claims.

According to the invention there is provided a locking mechanism for a cabinet construction having an open front. The invention is particularly adapted to gang locking of a plurality of closures in which a cabinet has a plurality of vertically aligned closures which are movable relative to the cabinet opening within the cabinet. According to the invention the closures are locked in place by an interlocking means between the cabinet and the closure. The interlocking means comprises interconnected latches on the cabinet and receiving members for the latches on the closures so that all of the latches can be actuated by the movement of a single latch into a locking position. A latch actuating means is positioned in one of the closures and is provided with means for engaging the latch. The latch and the latch actuating means are so shaped and positioned so as to permit the one closure containing the latch actuating means to be interchanged with any of the other closures while retaining the ability to lock all of the closures by the latch actuating means in the one closure.

Further, according to the invention, there is provided an interlocking system between a closure and a cabinet wherein a rotatable camming member is attached to the inside of the closure and actuated by means on the closure. A movable latch is attached to the cabinet for locking the closure to the cabinet, the movable latch containing a cam receiving means and a locking member. A locking member engaging means is positioned on the closure and is engaged by the locking member when the latch is in the locking position so as to retain the closure member locked in the cabinet opening.

The closures can be rotatable doors in front of shelves, or can be drawers in a file cabinet, or can be any combination of doors and drawers.

The invention will now be described with reference to the accompanying drawings in which:

FIG. 1 is a perspective view of a cabinet having a plurality of closures;

FIG. 2 is a schematic perspective view of a closure locking mechanism according to the invention which can be used in the cabinet shown in FIG. 1;

FIG. 3 is a front elevational view, partly in section, showing the locking of the cabinet mechanism in a single closure;

FIG. 4 is a plan view in section, taken along lines IV—IV of FIG. 3;

FIG. 5 is a side elevational view taken along lines V—V of FIG. 3; and

FIG. 6 is a side elevational view similar to FIG. 5 showing the mechanism in locked position.

Referring now to the drawings, there is illustrated a cabinet having a top panel **2** and side panels **4** forming an open front area. Movable closure panels **6** are positioned within the front closure area. A key lock **8** is provided in one of the closure panels. The cabinet is of conventional shell construction having a bottom and back panels (not shown).

The locking mechanism comprises a plate **10** which is fixed to the key lock **8** and autuated thereby to be rotatable about an axis passing through the key lock **8**. Links **12** are connected to plate **10** through pins **14**. A cam linkage **16** is connected to the other end of linkage **12** through pins **18**. The cam linkage **16** is pivotable about pivot pin **20** which is generally perpendicular to the

face of the closure **6**. The cam linkage thus rotates in a plane parallel to the plane of the closure panel **6**. The cam linkage **16** has a rearwardly extending tab **24**. A spring **22**, fixed at **23** to the closure **6**, biases the cam linkage **16** to aid in rotating the linkage **16** clockwise (as seen in FIG. 2) about pivot pin **20**.

The cam linkage **16** engages cam receiving slot **28** of movable latch **26** when the closure is in the cabinet opening. A locking member **30** having an upwardly and outwardly sloping surface **32** is positioned above cam receiving slot **28** on movable latch **26**. A plurality of the movable latches **26** are rigidly attached to slidable attaching bar **34** which is restrained within a channel formed from a frame member **42** (FIG. 4). Suitable means (not shown) are provided to retain the attaching bar **34** within the channel. The locking member **30** is insertable into slot **38** of locking plate **36** when in the unlocked position. When the latch is moved upwardly by cam linkage **16**, the locking member **30** will be positioned forwardly of locking plate **36**. In other words, the locking member **30** will be positioned between plate **36** and panel **6** of the closure to thereby prevent the closure from moving away from the cabinet structure.

In operation, as the closure containing cam linkage **16** is positioned in place in the cabinet openings, tabs **24** will be inserted into slots **28** and the locking member **30** will be positioned within the plate **36** of the closure to thereby prevent the closure from moving away from the cabinet structure.

In operation, as the closure containing cam linkage **16** is positioned in place in the cabinet openings, tabs **24** will be inserted into slots **28** and the locking member **30** will be within slot **38**. As the key lock **8** is rotated, for example, in a clockwise direction as seen in FIGS. 2 and 3, plate **10** will rotate to pull the linkages **12** toward the center of the closure. As the linkages **12** move toward the center, cam linkage **16** will rotate about pivot pin **20** in a clockwise direction (as seen in FIGS. 2 and 3). This movement will be aided by the spring **22**. As the cam linkage **16** rotates in the clockwise direction, tabs **28** will force latch **26** upwardly to position locking member **30** behind locking plate **36**. In the event that the closure is not completely positioned as far as possible within the cabinet, the upwardly and outwardly sloping surface **32** will cam against the upper portion of slot **38** to pull the closure into the cabinet. As the upper movable latch **26** moves upwardly, all of the latches will be moved upwardly to position all of the locking members **30** behind locking plates in all of the closures. All of the other closures are constructed as the closure shown in detail in FIGS. 3 through 5, except that the other closures do not have cam linkages and associated activating means.

Since all of the latches are similarly shaped and positioned, the closure containing the key lock **8** can be interchanged with any of the other closures without loss of the locking function. Therefore, the customer can position the locking drawer at whatever height which he chooses.

Whereas the invention has been specifically described with reference to a cabinet containing a plurality of drawer-like closures, it is also possible within the scope of the invention to use the gang lock mechanism on other types of closures such as movable doors which, for example, rotate about a horizontal axis at the top portion of the doors and can be pushed back into the cabinet when in a horizontal position. Such door constructions are well known to the cabinet art.

Thus, the gang lock mechanism of the invention is adaptable to different kinds of cabinet construction without changing the construction of the lock mechanism of the closures.

Whereas the invention has been specifically described with reference to a cabinet containing a plurality of closures, it is within the scope of the invention to employ the lock mechanism of the invention in a single drawer in a cabinet.

Reasonable variation and modification are possible within the scope of the foregoing disclosure and the drawings without departing from the spirit of the invention.

The embodiments of the invention in which an exclusive property or privilege is claimed are denfied as follows.

1. In a cabinet construction having an opening in the front of said cabinet, at least one closure member positioned in front of said opening adapted to move away from said opening to permit access to the interior of said cabinets, locking means between said closure member and said cabinet, the improvement in said locking means comprising:

a movable latch adjacent said closure having cam receiving means and a locking member, said movable latch being supported by said cabinet at a side thereof such that said cam receiving means is movable into a locking and unlocking position;

camming means attached to said closure, said camming means being rotatable about an axis generally perpendicular to said closure said camming means being engageable with said cam receiving means such that rotation of said camming means about said axis causes movement of said cam receiving means into said locking and unlocking position when said cam receiving means engages said camming means;

said cam receiving means being so shaped so as to permit said closure member to be removed or replaced in front of said opening without restraint between said latch and said camming means;

actuation means extending through said closure member to the outside surface thereof for said camming means to rotate said camming means about an angle from an unlocked position to a locking position and vice versa and by said rotation of said camming means, thereby moving said cam receiving means to said locking and unlocking position;

locking member engaging means adjacent to and attached to said closure member, said locking member engaging means being so shaped and positioned so as to be free from engagement with said locking member when said cam receiving means is in said unlocking position so that said closure member can freely move away from said opening of said cabinet and being engageable with said locking member when said cam receiving means is in said locking position.

2. A cabinet construction according to claim **1** wherein there is provided a plurality of vertically spaced closure members, each containing at least one said locking member engaging means and each closure member adapted to move away from and into an opening in said cabinet;

a plurality of movable latches adjacent each closure member, each latch containing at least a locking member adapted to engage one of said locking member engaging means of one of said closures when in locking position;

a vertical attaching member attached to each of said movable latches such that the movement of one of said latches will cause like movement of one of said latches so that when one of said closures is locked in front of said opening, the remainder of said closures, which are in positon in said cabinet, will be locked into said closed position in said cabinet in front of said openings.

3. A cabinet construction according to claim **2** wherein each of said movable latches has a cam receiving means in the same relative position so that said closure containing said camming means can be interchanged with any other of said closures in said cabinet and all of said closures can be locked in said closed position by locking said closure member containing said camming means.

4. A cabinet construction according to claim **3** wherein each closure member contains a locking member engag-

ing means at each side thereof, a movable latch containing a locking member is positioned adjacent each locking member engaging means, and vertical attaching means are positioned at each side of said cabinet, said vertical attaching members being attached to each of said movable latches at the respective sides of said cabinet such that the movement of said vertical attaching members causes movement of all of said latches attached thereto.

5. A cabinet construction according to claim **1** wherein said camming means comprises a rearwardly extending, open slot wherein said laterally extending bar is positioned within said open slot when said closure is positioned in front of said opening.

6. A cabinet construction according to claim **5** wherein said movable latch is vertically reciprocatable:

said locking member comprises a flange extending forwardly and upwardly on said movable locking means;

said locking member receiving means comprises a plate parallel to the closure member;

a vertical slot in said plate is positioned so that said locking member flange fits within said plate slot when said closure is in front of said opening, and a portion of said forwardly and upwardly extending flange is positioned behind a portion of said plate when said locking member is in locking position.

7. A cabinet construction according to claim **6** wherein said locking member has a surface sloping upwardly and outwardly so that as said locking member is moved into locking position within said slotted plate, said locking members draw said closure member inwardly.

8. A cabinet construction according to claim **1** wherein said closure is a drawer front attached to a drawer which slides into and out of said cabinet.

9. A cabinet construction according to claim **1** wherein said closure member is a door which is rotatable about an upper portion thereof and positionable above said opening.

10. In a cabinet construction having an open front construction wherein a plurality of vertically aligned closures are movable relative to cabinet openings within a cabinet and means are provided to lock the closures of the cabinet in locked position with a single locking operation, the improvement comprises: interconnected movable latches attached to said cabinet; receiving means for said latches on said closures, said receiving means being engageable by said latches only when said closures are positioned within said openings, whereby all said closures can be locked by a movement of a single latch into locking position; latch actuating means attached to one of said closures, each of said latches containing engagement means for said latch actuating means, said engagement means being shaped to permit said actuation means to engage and disengage said actuation means as said closures are moved into and out of said openings in said cabinet, whereby said one closure can be interchanged with any of the other closures in said cabinet while retaining the ability to lock all of said closures in said cabinet with said latch actuating means of said one closure.

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U.S. Cl. X.R.

312—221