Aug. 22, 1967 T. WALHOUT 3,337,281

CABINET LOCKING DEVICE

Filed Oct. 21, 1965

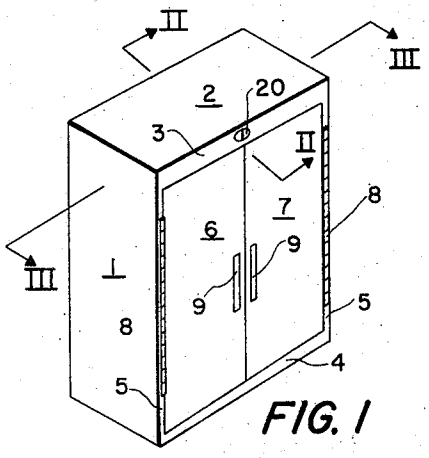


FIG. 1

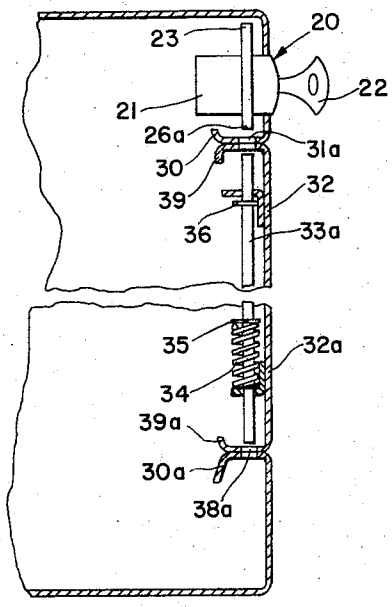


FIG. 2

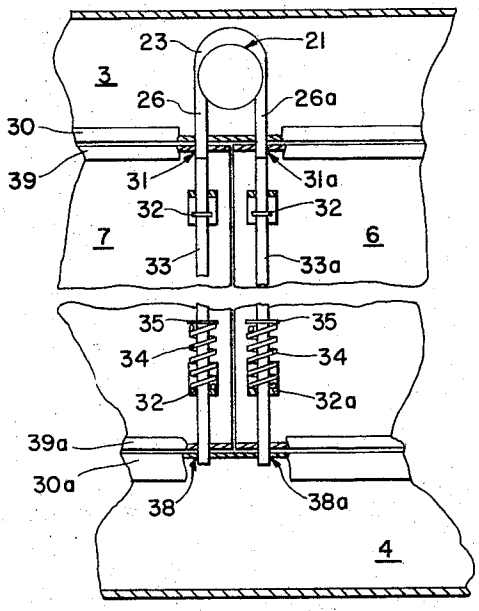


FIG. 3

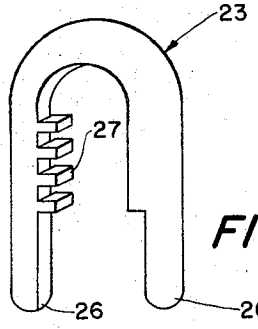


FIG. 4

INVENTOR.
TOM WALHOUT

BY Price & Heneveld

ATTORNEYS

United States Patent Office 3,337,281 Patented Aug. 22, 1967

3,337,281

CABINET LOCKING DEVICE

Tom Walhout, Muskegon, Mich., assignor to Browne-Morse Company, Muskegon, Mich., a corporation of Michigan

Filed Oct. 21, 1965, Ser. No. 500,010
5 Claims. (Cl. 312—217)

This invention relates to cabinet locking devices and, more particularly, to cabinet locking devices for use in cabinets having double doors opening at the center of the cabinet.

When relatively wide cabinets are utilized in a particular storage environment it is generally desirable to have two doors opening at the center instead of only one door hingedly mounted at a side of the cabinet. The reason for this preference is that by utilizing such an arrangement the necessity of providing an open space at the front of the cabinet sufficient to allow the wide door to swing open is eliminated. Also, smaller doors are less likely to become racked in usage. Normally they are more convenient to manipulate. A number of locking devices for such cabinets are currently in use. Each of these locking devices suffers from one or more of a number of disadvantages.

To provide a positive and rigid locking action it is necessary either that a center post be included on the front of the cabinet or that some apparatus be provided whereby the center sections of the doors may be locked directly to the upper and lower cabinet frame. A mere pinning of the two doors is not generally satisfactory as there is insufficient rigidity to prevent the locking device from failing under relatively slight pressures.

To provide locking action without utilizing a center post it has become customary to provide some sort of means for pinning the top and bottom of at least one of the doors to the upper and lower frames of the cabinet. If only one door is so pinned then the other door is locked by means of a conventional locking mechanism to the door so pinned. If both doors are pinned no such connection is necessary. Where only one door is pinned to the upper and lower frame it is necessary that some separate locking means be provided to thereafter pin or connect the two doors together. This is usually accomplished by securing one of the doors to the frame by means of spring loaded clips which are located on the inside of that door and then securing the other door to the rigid door by means of a conventional locking device. Thus, two distinct steps are necessary to secure the doors of cabinets embodying these types of locking devices.

Another type of double door locking device currently in use eccentrically pivots two locking rods to the door handle of the cabinet. The pivot plate also contains a latching mechanism for engaging the other door. In this type of device, as the handle is rotated the eccentrically mounted locking members extend and pass through apertures in the top of one of the doors and the face of the cabinet. At the same time the latching mechanism engages or grips the other door. The main difficulty with these types of locking devices is that after a short period of use the eccentric action tends to deform or cut away the metal in the locking apertures, thus rendering the handles difficult to turn and the locking mechanism impositive and unreliable.

It is an object of this invention to provide a cabinet locking device which is not subject to the above noted disadvantages.

More particularly, it is an object of this invention to provide a double door locking device which does not necessitate a center post to achieve positive and secure locking of the doors to the cabinet frame.

It is an object of this invention to provide a locking device whereby a set of double doors may be secured to the frame of the cabinet by the execution of a one step procedure.

It is an object of this invention to provide a cabinet locking device which does not have eccentrically mounted locking members and thus, to eliminate the wear and friction problem inherently associated with such components.

It is a further object of this invention to provide a cabinet locking device which is not dependent on the initial turning of a handle.

It is another object of the invention to provide a cabinet locking device which, although having relatively few and simple components, is effective to secure both of the doors to the cabinet frame at both the top and the bottom.

These and other objects of this invention will be readily understood by reference to the following specification and drawings in which:

FIG. 1 is a perspective view of a cabinet embodying the locking device which is the subject of this invention;

FIG. 2 is a partially broken cross-sectional view taken along line II—II of FIG. 1 showing the locking device in its unlocked position;

FIG. 3 is a partially broken cross-sectional view taken along line III—III of FIG. 1 showing the cabinet locking device in its locked position; and

FIG. 4 is a perspective view of the cam apparatus which forms one component of the locking device.

Briefly, the invention consists of a pair of parallel vertical rods, one slidably mounted on each door near its free vertical edge. Each of these rods is mounted on the inner face of a door by a pair of backets and is biased into a door release position by a spring. Openings aligned with both ends of both rods are provided in the upper and lower lips of the doors and the upper and lower flanges of the cabinet. A U-shaped locking plunger having a pair of fingers extending toward and aligned with the top ends of the rods is mounted at the top of the cabinet. The plunger when raised or retracted is withdrawn from the upper lips of the doors and the rods are positioned entirely within the doors and disengaged from the lower flanges of the cabinet. The plunger when lowered or extended projects through the top flange of the cabinet into both doors and forces the rods down through the bottom flange of the cabinet to effect simultaneously a positive lock for both doors at both the top and bottom.

Referring now to the figures a preferred embodiment of this invention will be described in detail. FIG. 1 shows a double door cabinet having sides **1**, a top **2** and a back and bottom (not shown). The front of the cabinet has an upper facing **3**, a lower facing **4**, and side facings **5**. A pair of doors **6** and **7** are hingedly mounted at **8** on the side facings **5** in such a manner that they open and close at the center of the cabinet. A pair of door pulls **9** are provided for opening and closing the cabinet doors. Preferably, a locking cam assembly **20** is mounted in the upper facing **3** of the cabinet. Depending upon the necessity for security, this may or may not be key operated.

Referring now to FIGS. 2, 3 and 4 the details of the locking device will be illustrated and discussed. The locking cam assembly **20** comprises a standard lock cylinder **21** suitably mounted through the upper face **3** of the cabinet. The cylinder may be secured to the face by any suitable means as, for example, by means of an expanding clip. As is well known the locking cylinder **21** has a removable key **22** which, when inserted, may be rotated to actuate the lock cylinder. Mounted to and operatively associated with the locking cylinder **21** is a plunger **23** having a rack **27** cooperating with a

suitable pinion on the locking cylinder in such a manner that rotation of the key will raise or lower the plunger. The rack and pinion arrangement for transmitting the key's motion to a lock operation is well known in the art. Plunger **23** is U-shaped and has a pair of depending fingers **26** and **26***a*. The use of a rack and pinion is illustrative only since other motion translating arrangements could be utilized.

Extending inwardly from the edges of the facings at the top and bottom of the door opening are flanges **30** and **30***a*. Also extending inwardly from the top and bottom edges of the doors are lips **39** and **39***a*. These lips are parallel to and spaced sufficiently from the flanges **30** and **30***a* to eliminate physical contact when the doors are manipulated.

Mounted on the inside face of each door is a vertically extending rod, rod **33** being on one door and **33***a* on the other door. These rods are closely adjacent the free edge of the doors and so positioned that when the doors are closed they are vertically aligned with the fingers **26** and **26***a* of the plunger **23**. Suitable aperatures are provided in the upper and lower flanges **30** and **30***a* and the upper and lower lips **39** and **39***a* to permit the rods **33** and **33***a* and the fingers **26** and **26***a* to pass through. This will be seen on the drawings (FIGS. 2 and 3) wherein the aperture pair **31** through the upper flange **30** and the upper lip **39** of one door aligns with the finger **26** and the aperture pair **31***a* through the upper flange **30** and the upper lip **39** of the other door aligns with the finger **26***a*. Similarly, the aperture **38** through the lower flange **30***a* and the lower lip **39***a* of one door aligns with the lower end of the rod **23** and the aperture pair **38***a* through the lower flange **30***a* and the lower lip **39***a* of the other door aligns with the rod **33***a*.

Each of the rods is mounted on the door by a pair of support brackets **32** and **32***a* through which the rods are freely slidable. Each of the locking rods is equipped with stop washer **35** and a limit washer **36**. A compression spring **34** is mounted between the lower brackets **32***a* and the stop washer to bias the rods upwardly. The limit washers **36** are so positioned on the rods that they limit upward travel of the rods before their upper ends enter the apertures in the upper flange **30**. Contact between the limit washers **36** and the upper brackets **32** effect this action. It is evident that other conventional limit means may be substituted for the limit washer arrangement.

In operation, when the doors are unlocked compression springs **34** maintain limit washers **36** against the upper brackets **32** as shown in FIG. 2. When so positioned neither of the locking rods have any section of their axial length extending through the apertures **31** and **31***a* in the upper flange **30** and the lower ends of the rods are withdrawn from the apertures **38** and **38***a* in the lower flange **30***a*.

When it is desired to lock the cabinet the doors are closed and the key inserted into locking cylinder **21**. As key **22** is rotated plunger **23** is forced to move downwardly as viewed in FIGS. 2 and 3. The fingers **26** and **26***a* pass through apertures **31** and **31***a* in the overlapping surfaces of the upper flange **30** and the upper door lips **39**. The size of the apertures **31** and **31***a* is approximately that of the fingers **26** and **26***a*. Thus, the fingers effectively secure both cabinet doors to the upper cabinet frame as shown in FIG. 3.

As the plunger **23** is lowered further, the fingers **26** and **26***a* contact the ends of the locking rods **33** and **33***a* respectively and push them downwardly against compression springs **34**. The lower ends of the locking rods pass through apertures **38** and **38***a* and thus secure the bottom of the doors **6** and **7** to the lower cabinet frame. Depending on the tolerance of the components, it is sometimes desirable to utilize tubular guide sleeves affixed to the cabinet flanges and door lips to guide the fingers **26** and **26***a* and the locking rods **34** and **34***a* into their respective locking apertures.

When it is desired to open the cabinet, key **22** is inserted into locking cylinder **21** and rotated in the opening direction. This rotation raises plunger **23** and thus withdraws fingers **26** and **26***a* from aligned apertures **31** and **31***a*. As fingers **26** and **26***a* are withdrawn the compression springs **34** cause the locking rods **33** and **33***a* to follow the fingers upwardly until the limits **36** abut the upper brackets **32**. This results in the rods being held in a neutral position. The doors may then be closed and opened freely.

While the preferred embodiment of this invention has been disclosed as incorporated within a double door cabinet, it should be noted that unique features of this invention may also find use where it is desired to secure only a single door. In such a situation, it is necessary only to provide a cam having a single depending insert. In such a situation, it is obvious that only one locking rod and attendant positioning equipment would be necessary.

While a preferred embodiment of this invention has been described together with minor modifications, it will be recognized that other modifications may be made without departing from the scope and spirit of the invention. Such modifications are to be deemed as included within the scope of the following claims unless these claims, by their language, expressly state otherwise.

I claim:

1. In a cabinet having upper and lower door facings and a pair of center opening doors hingedly mounted therebetween, said facings having inwardly extending flanges and the adjacent edges of said doors each having inwardly extending lips which overlap said flanges when said doors are closed, the combination comprising:

two series of apertures, the first of said series running through said inwardly extending flanges and lips on one of said doors and the second of said series running through said inwardly extending flanges and lips on the other of said doors, each of said series being aligned when said doors are closed;

a plunger having a pair of depending fingers, the spacing between said fingers being equal to the distance between said two series of apertures;

means supporting said plunger in one of said faces with its fingers aligned with said two series of apertures;

a locking rod slidably mounted on each of said doors, each said rod being longitudinally movable along the axis of one of said series of aligned apertures;

means biasing each said rod into a neutral position withdrawn from the apertures in said flanges; and

means for selectively moving said locking plunger such that said fingers pass into their respective series of aligned apertures, said fingers passing through the apertures in one said flange and is adjacent door lips and engaging the ends of said locking rods urging them against said biasing means so as to move the other ends of said locking rods through the apertures in the other said flange and its adjacent door lips.

2. The apparatus as set forth in claim **1** wherein the means for slidably mounting said rods on said doors comprises a pair of support brackets mounted to each said door, each said pair having rod receiving apertures centered along the axis of one of said series of aligned apertures.

3. The apparatus as set forth in claim **1** wherein said biasing means comprises:

a spring retaining stop means on each of said locking rods;

a helical spring surrounding each of said locking rods, said springs being positioned between said spring retaining stop means and one of said support brackets on each said door.

4. The apparatus as set forth in claim **3** wherein said biasing means further comprises a limit means on each

of said locking rods, said limit means being positioned such that they abut the other of said supporting brackets on each of said doors when said locking rods are in their neutral positions.

5. The apparatus as set forth in claim 1 wherein said means for selectively moving comprises a lock cylinder means for moving said plunger when a mating key is inserted therein and turned.

References Cited

UNITED STATES PATENTS

732,971	7/1903	Stoeffler	312—219
1,220,882	10/1916	Schaefer	312—107.5
1,966,272	7/1934	Vance	70—118
3,199,937	8/1965	Mitchell	312—221

CHANCELLOR E. HARRIS, *Primary Examiner.*

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,337,281 August 22, 1967

Tom Walhout

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 3, line 32, for "23" read -- 33 --; column 4, line 54, for "is" read -- its --.

Signed and sealed this 26th day of November 1968.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents