Oct. 19, 1965 F. R. ROESINGER ETAL 3,212,801

LATCH MEANS

Filed Feb. 20, 1963 2 Sheets-Sheet 1

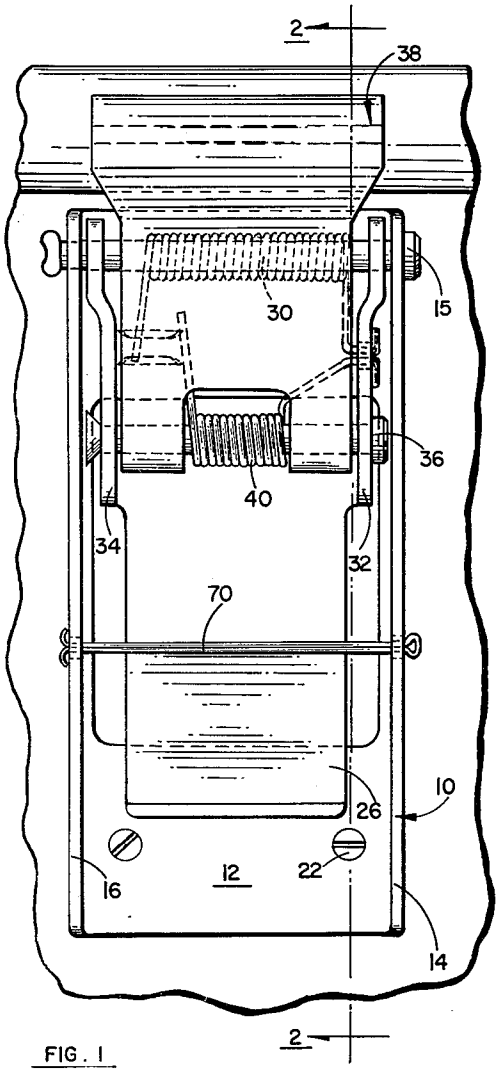


FIG. 1

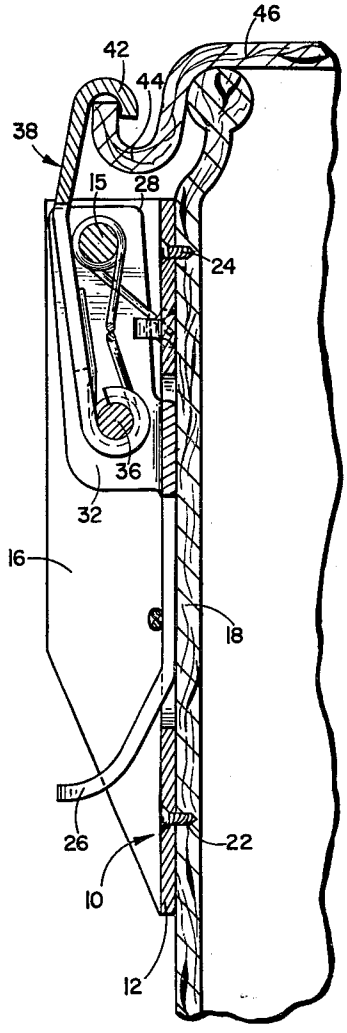


FIG. 2

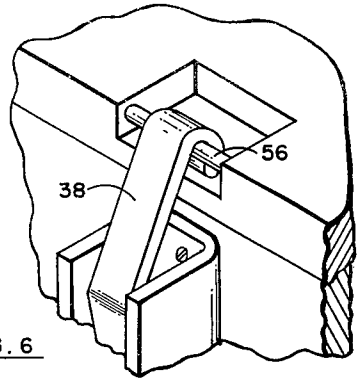


FIG. 6

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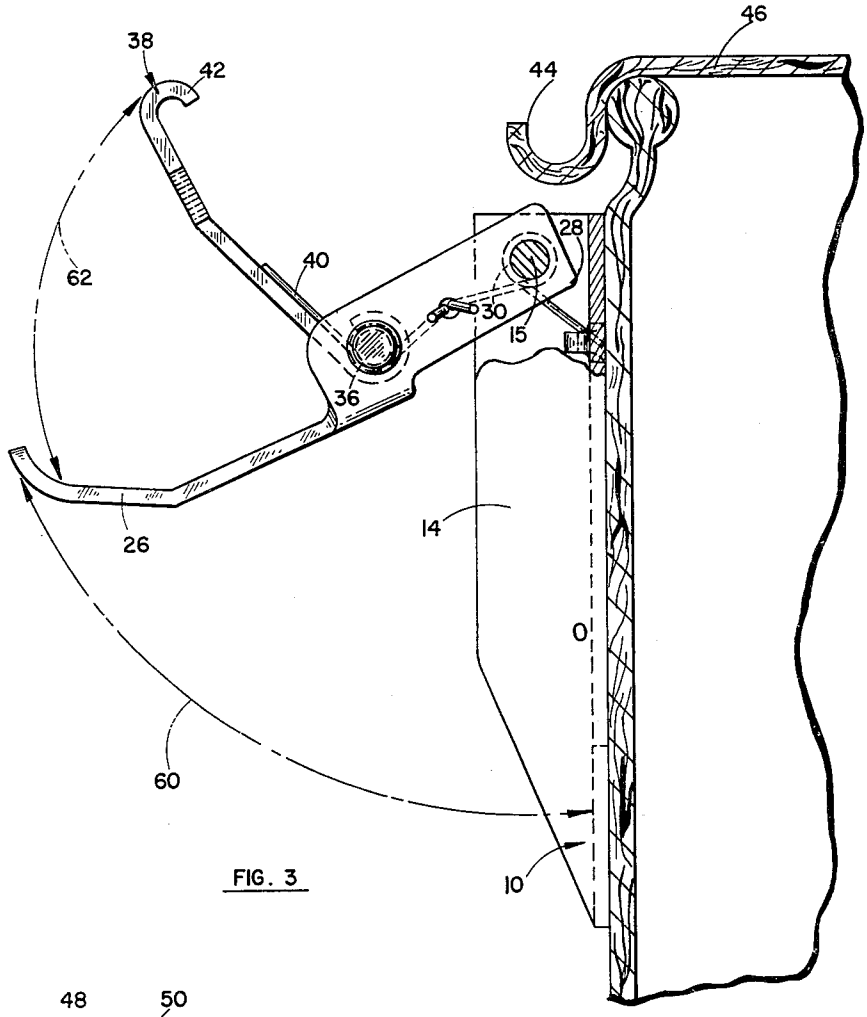


FIG. 3

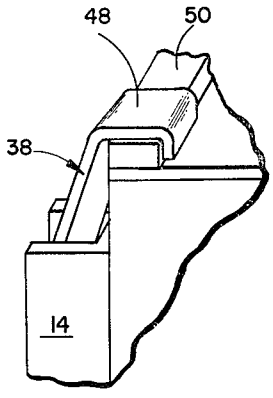


FIG. 4

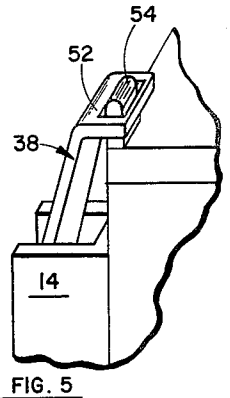


FIG. 5

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LATCH MEANS

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5 Claims. (Cl. 292—66)

The device of this invention is a latch means, and more particularly an improved toggle latch assembly.

In holding the top and bottom covers of electronic drawers in place, when latches of the prior art are used, if the latches are inadvertently left opened when the drawer is being closed, damage to both the latch and the console frequently results.

It is desirable to use a latch mechanism which has a quick and positive release. It is also desirable that the latch have a positive open position so that the latch does not rattle when the box is handled. It is also desirable to have a latch which conforms as closely as possible to the shape of the box to which it is attached.

No known latches of the prior art have the advantages set forth above which result from the use of the new and novel latch described herein.

It is therefore an object of this invention to latch together, in an improved fashion, two mechanical members.

It is also an object of this invention to quickly and positively release a toggle catch.

It is another object of this invention to hold a toggle catch in a positively open position.

It is also an object of this invention to enclose the catch of a toggle latch assembly in a shallow protective base member.

It is a more particular object of this invention to provide a toggle latch assembly which is adapted to achieve the above objects.

Other objects will become apparent from the following description taken in connection with the accompanying drawings in which:

FIGURE 1 is a plan view of the latch mechanism of this invention with the catch in its fully extended position;

FIGURE 2 is a view, partially in section, taken at 2—2 of FIGURE 1;

FIGURE 3 is a partially broken view showing the release lever and the catch of the latch of this invention in a partially extended position;

FIGURE 4 is an oblique view of a second catch type used with a latch mechanism of this invention;

FIGURE 5 is an oblique view of a third embodiment of a catch used with the latch mechanism of this invention;

And, FIGURE 6 is an oblique view of a fourth embodiment of a catch used with the latch mechanism of this invention.

In FIGURES 1 and 2, a base member **10** has a base plate **12** and a pair of opposing upstanding side members **14** and **16**. Members **14** and **16** are adapted to support a hinge member such as—for example—a pin **15**. Upstanding members **14** and **16**—in the preferred embodiment of this invention—are also adapted to shelter the mechanism of this invention by partially enclosing them thus preventing accidental damage.

Base plate **12** is shown attached to the side of a box **18** by screws **22** and **24**. It may be appreciated that the base plate **12** may be attached to any other desired surface by other means such as—for example—riveting, gluing, or welding.

Hinge member **15** is supported by upstanding members **14** and **16** of base means **10**. Hinge member **15** is adapted to support a release lever **26** for rotation about the axis of member **15**. Release lever **26** is shaped and

positioned, in its retracted position shown in FIGURES 1 and 2, to nestle within the protection of upstanding members **14** and **16** to protect it from accidental motion and damage. Sufficient clearance is provided at **28** to allow lever **26** to be moved into the position shown in FIGURE 3. Release lever **26** is biased into mechanical contact with base plate **12** by means of a spring **30**. In the preferred embodiment, spring **30** is a spiral torsion spring which is connected between release lever **26** and base means **10** to bias lever **26** into the position shown in FIGURES 1 and 2.

Release lever **26** has a pair of upstanding sidewalls or members **32** and **34** which are adapted to receive a hinge member such as—for example—pin **36**. The axis of pin **36** is positioned or offset toward base plate **12** when release lever **26** is in its fully retracted position shown in FIGURES 1 and 2.

A catch member **38** is mounted for rotation about the axis of hinge member **36**. Spring means such as—for example—a spiral torsion spring **40** is connected between release lever **26** and catch member **38** to bias member **38** into mechanical engagement with release lever **26** between upstanding walls **14** and **16**. Catch member **38** is contoured to avoid interference with spring **30** and pin **15** and to nestle within the contour of release lever **26** between walls **14** and **16** when latch member **38** is in its fully retracted or disengaged position.

Catch means **38** is shown in FIGURES 1, 2, and 3 with a hook member **42** on the end thereof adapted to engage a hook flange **44** of lid **46**.

In the embodiment shown in FIGURE 4, catch **38** has a flat hook **48** adapted to engage a flange **50**.

In the embodiment of FIGURE 5, catch **38** has a recess **52** in the end thereof adapted to engage a stud **54**.

In the embodiment of FIGURE 6, catch **38** has a hook member similar to that shown in FIGURES 1, 2, and 3 but adapted to engage a rod **56** instead of a hook **44**.

The embodiments of FIGURES 4, 5, and 6 are exemplary of several typical catch means. The catch means are not intended to be limited to the embodiments of the figures. It is only necessary that the two parts of the catch be complementary, i.e., that they are adapted to engage each other.

Referring again to FIGURES 1, 2, and 3, when release lever **26** and catch **38** are in their retracted positions, the latch is disengaged. The movement of latch **26** is shown by arrow **60** of FIGURE 3 and the movement of catch **38** is shown by arrow **62** of FIGURE 3. In its retracted position, release lever **26** is fully counterclockwise in FIGURE 3 as shown in FIGURES 1 and 2. In its fully retracted position, catch **38** is turned fully counterclockwise about the axis of pin **36** into engagement with lever **26**.

To engage hook **38** with hook **44**, release lever **26** is moved into the position shown in FIGURE 3. Hook **38** may then be manually turned clockwise about the axis of pin **36** into engagement with hook **44**. Catch **38** is then held with the fingers while release lever **26** is moved into the position shown in FIGURES 1 and 2. In the position of catch **38** and release lever **26** shown in FIGURES 1 and 2, catch **38** clamps lid **46** into its closed position. When the latch means of this invention is attached to some kinds of boxes, the lid **46**, shown in FIG. 2, may have some give which causes it to tend to move to the right in FIG. 2. Such motion might occur, for example, with a different kind of lid and lip. Further, such motion might might occur if the lid and lip were fabricated of elastic material i.e., plastic, fiber board, and the like. Any motion to the right in FIGURE 2 of lid **46** does not release catch **38** because a line drawn between the point of contact between hooks **42** and **44** and the center of pin **36** is to the right of the center of pin **15**. That is, the

axis of rotation of pin **15** is offset from a line between the axis of rotation of pin **36** and the point of contact of hook **42**.

In the position shown in FIGURES 1 and 2, catch **38** is in its fully extended position while release lever **26** is in its fully retracted position. A fastener such as—for example—a cotter pin **70** or safety wire may optionally be inserted between upstanding walls **14** and **16** to hold release lever **26** into its fully retracted position which locks hook **42** into its clamped position.

To release the latch of this invention, pin **70** is removed. Latch **26** is then rotated about the axis of hinge **15** in a clockwise direction in the view shown in FIGURE 3. motion of release lever **26** about the axis of pin **15** moves the axis of pin **36** which lifts hook **42** clear of hook **44**. As soon as hook **42** clears hook **44**, spring **40** causes catch means **38** to rotate as shown in the FIGURE 3 in a counterclockwise direction to snap into nestled mechanical engagement with release lever **26**. Release lever **26** may then be released by the hand. The biasing action of spring **30** causes both catch **38** and lever **26** to nestle between the upstanding walls **14** and **16** of the base member **10**.

Thus the device of this invention has a quick, positive release because of the biasing action of the springs. Merely inserting the finger and lifting allows instant positive release of the latch. The hook **42** withdraws completely from the vicinity of the drawer lid **46** so that it does not interfere with lid removal.

Further, the device of this invention has a positive open position. Springs **30** and **40** cause the latch to take a positive open position so that the latch cannot rattle when the box is handled. The hook **42** is entirely withdrawn from the edge of the box **18** so that box **18** can be placed on a supporting surface without resting on hook **42**. Hook **42** is enclosed by upstanding members **14** and **16** of base means **10** so that it cannot snag hands or clothing.

In both the open and closed positions, i.e., the extended and retracted positions, the entire latch is substantially enclosed by the planes described by the top edges of the base means **10** and the side of the box **18**. This permits the actuation of drawers with latches without danger of damaging the latches or the cabinets.

Although the device of this invention has been described in detail above, it is not intended that the invention shall be limited by this description but only by the spirit and scope of the appended claims.

We claim:

1. A toggle latch comprising:
a base member;
a release lever hinged upon said base member;
first spring means, loaded to bias said lever toward said base member;
a catch member adapted to engage a complementary catch, pivoted upon said lever and having a fully extended position;
second spring means biased to urge said catch member to an open position into contact with said lever;
the axis of rotation of said lever being offset from a line between the point of said catch member which is adapted to engage a complementary catch when in its fully extended position and the axis of rotation of said catch member.

2. A toggle latch comprising:
a base member, including means upstanding from said base member adapted to receive a first hinge member;
a first hinge member mounted upon said upstanding means;
a release lever, including second upstanding means mounted upon said lever and adapted to receive a hinge means, mounted for rotation upon said first hinge means about the axis thereof;

a first spring means adapted to urge said release lever into a mechanical engagement with said base means;
second hinge means mounted upon said second upstanding means;
a latch member, including catch means adapted to engage a complementary catch, mounted for rotation upon said second hinge means;
and second spring means adapted to bias said latch member to an open position into mechanical engagement with said release lever;
the axis of rotation of said second hinge means being nearer to said base means than the axis of rotation of said first hinge means when said release lever mechanically engages said base means.

3. In combination:
a base member, including a pair of aligned upstanding sides adapted to receive a hinge pin;
a first hinge pin mounted upon said first upstanding side,
a release lever mounted for rotation upon said hinge pin and engaging said base means when in its retracted position;
first spring means mounted between said base means and said lever to bias said lever into its retracted position;
second upstanding means mounted upon said lever and adapted to receive a second hinge pin;
a second hinge pin mounted upon said second upstanding means, the axis of said second hinge pin being positioned closer to said base means than the axis of said first hinge pin when said lever is in its retracted position;
a latch mounted for rotation upon said second hinge pin;
second spring means mounted between said lever and said latch to bias said latch into its retracted position in mechanical engagement with said release lever.

4. In combination:
a pair of upstanding members;
a first hinge member mounted upon said upstanding members;
a release lever adapted to receive a second hinge member, mounted for rotation upon said first hinge member;
a first spring means adapted to urge said release lever into a first rotational direction;
second hinge means mounted upon said release lever;
a latch member mounted for rotation upon said second hinge means;
and second spring means adapted to bias said latch member substantially parallel and in contact with said release lever.

5. In combination:
a pair of upstanding members adapted to receive a first hinge member;
a first hinge member mounted upon said upstanding members;
a release lever adapted to receive a second hinge member, mounted for rotation upon said first hinge member;
a first spring means adapted to urge said release lever into a first rotational direction;
a second hinge member mounted upon said release lever;
a latch member, including catch means adapted to engage a complementary catch, mounted for rotation upon said second hinge member;
and second spring means adapted to bias said latch member in said first rotational direction in contact with said release lever;
the axis of rotation of said first hinge member being off-set from a line between the point of said latch member which is adapted to engage a complementary catch when in its fully extended position and the axis of rotation of said second hinge member.

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