

[54] SUSPENSION LATCH

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[22] Filed: **Oct. 12, 1972**

[21] Appl. No.: **296,899**

[52] U.S. Cl. **308/3.6; 308/3.8; 312/348**

[51] Int. Cl.² **F16C 17/00; A47B 88/00**

[58] Field of Search **308/3.6, 3.8; 312/348, 312/333**

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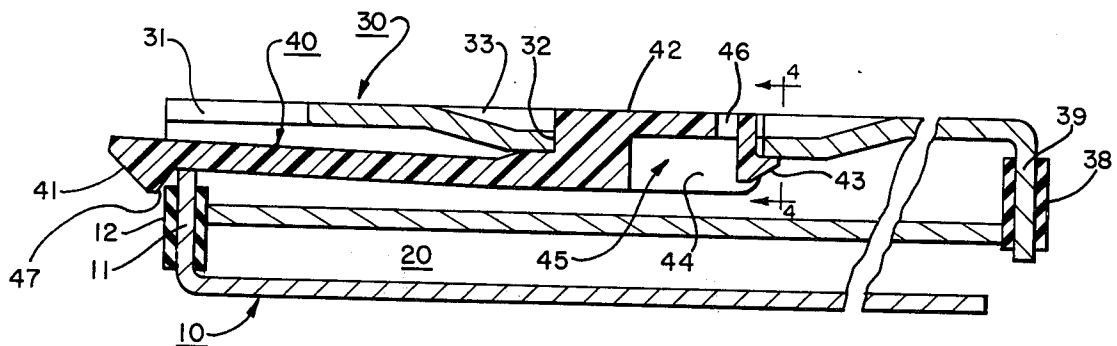
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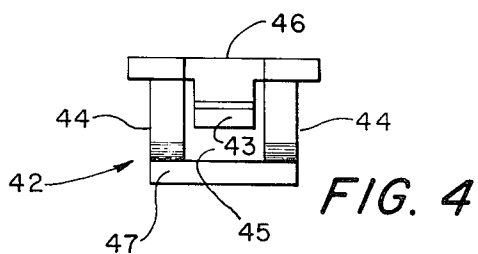
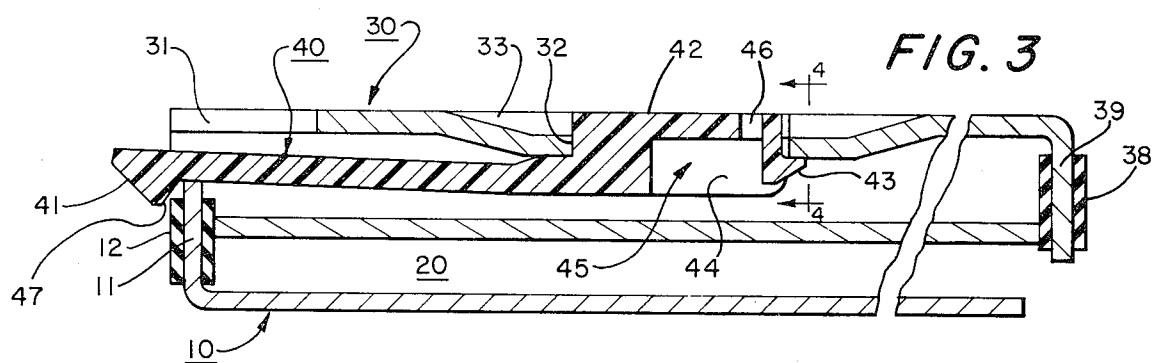
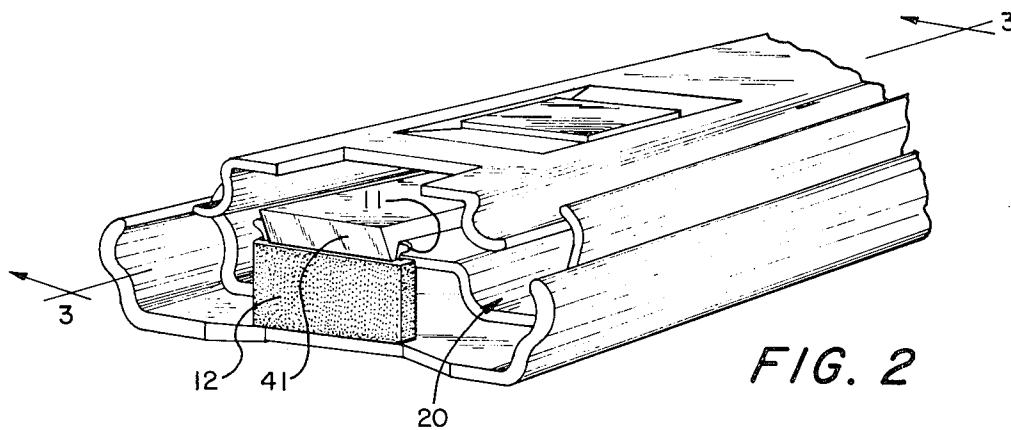
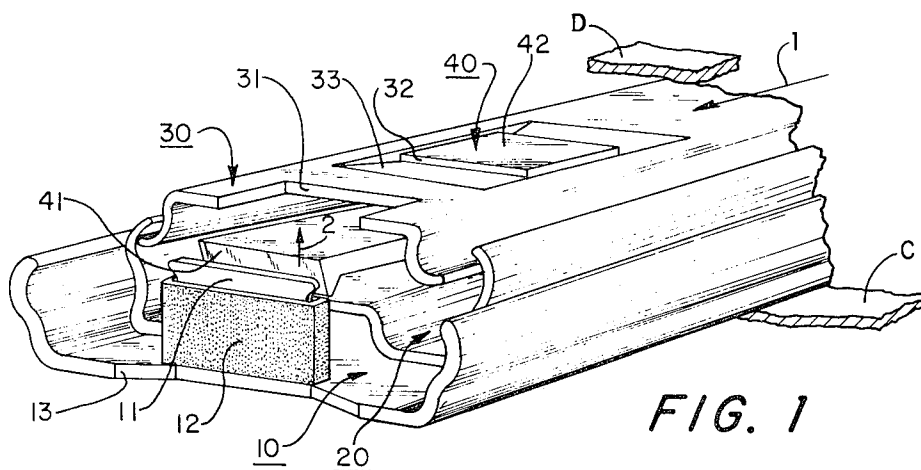
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ABSTRACT

A low friction sliding storage unit is locked against inadvertent opening by a latching key mounted on a slide member which engages a latching detent mounted on a track member when the slide and track are moved into a fully nested position corresponding to closed position of the storage unit.

8 Claims, 4 Drawing Figures





SUSPENSION LATCH

BACKGROUND OF THE INVENTION

The present invention relates generally to storage apparatus and more particularly to low friction sliding storage units.

Sliding storage units such as media storage cabinets [cabinets storing film reels, magnetic tape reels, magnetic disks, heavy ledgers on pull-out shelves or racks], concealable door consoles, electronic relay racks, and other sliding storage structures often provide a pull-out slide allowing a drawer, shelf or stored item support of other form to be pulled out for access and pushed back into the cabinet for storage. Such structure provides efficient use of space and usually provides friction reducing or mechanical advantage enhancing assistance to the user for handling heavy stored items, singly or in groups, consistent with efficient utilization of space.

The suspension supporting structures of such equipment generally embody a primary track and a primary slide one of which is fixed to an enclosure wall or other supporting wall or fixed supporting structure and the other of which is secured to the sliding storage unit such as a drawer, shelf, rack or the like. The primary slide may be mounted for sliding motion in the primary track directly, or indirectly via a secondary slide/track which acts as a slide with respect to the primary track and as a track with respect to the primary slide. Such slide and track means form a compact, nested array in the closed position of the storage means and an elongated partially nested array in the open position. The various track and slide elements are constructed to have minimum sliding contact with each other, consistent with high load-bearing capability and generally comprise additional friction-reducing means such as lubricants and/or bearings between their mating surfaces.

Apparatus of this type is vulnerable to the problem of inadvertent opening movement of the sliding storage units.

It is an important object of the present invention to provide an improvement in apparatus of the class described which prevents such inadvertent opening motion while negligibly interfering with desired opening.

It is another object of the invention to achieve the preceding object with negligible additional effort in closing.

It is a further object of the invention to achieve the preceding object without detracting from the low friction, good balance and high load bearing capability of the apparatus.

It is a further object of the invention to achieve one or more of the preceding objects without disturbing the geometric design envelope of the suspension support in apparatus of the class described.

It is a further object of the invention to provide latching apparatus which makes a high degree of utilization of existing structure of the suspension supporting means with a minimal addition of extraneous components consistent with one or more of the preceding objects.

It is a further object of the invention to provide a reliable, long life latching arrangement consisting with one or more of the preceding objects.

It is a further object of the invention to provide an easily assembled latching arrangement consistent with one or more of the preceding objects.

It is a further object of the invention to provide a simple and economic latching arrangement consistent with one or more of the preceding objects.

SUMMARY OF THE INVENTION

One of the primary slide and primary track members of a suspension support is provided with yieldable latch key means mounted thereon and the other of said members is provided with corresponding latching detent means mounted thereon.

The latching key means and latching detent means are provided internally of the nexted arrangement of slide and track members in the elongated volume defined by such members. Preferably, the latching detent is provided as a turned-up tang endmost extension of the primary slide at its end remote from the opening portion of the cabinet and the yieldable latching means are provided as an elongated, springy latching arm mounted at a mounting end thereof to the said slide member and having a latching key portion at its opposite end with a camming surface arranged to cause pivoting of the arm about its cantilever mounting in response to closing forces pushing the primary slide into the fully nested arrangement. The primary slide has a recessed groove accommodating a base support for the latching key which is held therein by a combination of friction and keying engagement. This base also comprises a cavity backing up a key to allow insertion of the base into the said recessed cutout. The mounting of latching detent and key can be reversed with the detent on the slide and the key on the track. Alternatively, intermediate slide/track members can carry the detent or key elements of the latching mechanism for making a partial latching possible. The base may, alternatively, be screwed to its support rather than frictionally held.

The latching detent is more rigidly mounted than the latching key, the latter giving way upon engagement with the detent. The latching detent may be a portion of the metal track and the latching key may be a thermoplastic synthetic resin or spring steel.

Numerous other objects, features and advantages and the foregoing are now particularly described in the following detailed description of preferred embodiments taken in connection with the accompanying drawings in which,

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an isometric view of the end of a nested array of primary and secondary slide and track members containing a suspension latch in accordance with a preferred embodiment of the invention, the apparatus being shown in the course of closing movement just before latching; and

FIG. 2 is a similar view of the same apparatus after a further increment of closure movement to complete latching, the apparatus being shown in closed and latched position; and

FIG. 3 is a longitudinal section view cut as indicated by arrows 3—3 in FIG. 2; and

FIG. 4 is an end view in the direction indicated by the arrows 4—4 in FIG. 3 of the latching key element of the FIG. 1—3 embodiment.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to FIGS. 1 and 2, the suspension latching apparatus usable in cabinet apparatus as described

above, comprises a primary track 10, a secondary track/slide 20 and a primary track 30. The member 20 acts as a slide with respect to track 10 and as a track with respect to slide 30. The primary track 10 is mounted in a cabinet along a top or side wall thereof and runs in a horizontal line path parallel to the direction of opening movement and may be a sole support or one of multiple sliding supports for a sliding storage unit in the cabinet. The primary track 30 is connected to the sliding storage unit.

The end portion, shown in FIGS. 1 and 2, is at the back wall of the cabinet and the parts are moving into closed position along the arrow 1 in FIG. 1. A part C of a cabinet wall mounts the track 30 and slide 10 supports a drawer, a portion of which is indicated at D, in this embodiment.

The primary track 10 comprises an end cutout 13 and a turned-up tang 11 to act as the latching detent. The tang 11 is surrounded by an elastomeric buffer sheath 12. The track/slide member 20 butts up against sheath 12 in the fully closed position of the suspension apparatus shown in FIG. 2 and is restrained from further movement in closing direction by such butting engagement.

The primary slide 30 comprises a surface recess 33 and a cutout port 32 therein. The slide also has an end recess 31.

At the moment in time captured in FIG. 1, the primary slide 30 is moving as indicated by the direction of the arrow 1. In FIGS. 2 and 3, the slide has moved further to engage the latch 40 with detent 11.

Referring now to FIGS. 3 and 4, the latching key member 40 comprises a ramp surface 41 and a mounting base 42. The base is jammed into cutout port 32 of slide 30. Additionally the base has a hook 43 engaging the under side of recess 33. The hook together with side extensions 44 of the base forms a recess 45. The base also has a slit 46 behind hook 43. The recess 45 and slit 46 allow compression of the base for insertion through port 32 from underneath and sufficient resilience to provide frictional engagement therein once inserted.

The slide 30 has a front end tang 39 with a sheath 38, similar to the arrangement 11/12 at the back end of track 10, to transmit closing motion of track 10 to intermediate track/slide 20.

In addition to its closing assisting ramp 41, the key end of latch 40 has an opening assist ramp 47. In either opening or closing the respective ramp slides up and over the top end of detent 11 with cutout 31 providing space to accommodate the lateral movement of the latching key.

It is evident that those skilled in the art may now make numerous uses and modifications of, and departures from the specific embodiments described herein without departing from the inventive concepts herein. Consequently, the invention is to be construed as embracing each and every novel feature and novel combination of features present in, or possessed by the apparatus and techniques herein disclosed and limited solely by the scope and spirit of the appended claims.

What is claimed is:

1. Suspension slide apparatus comprising in combination:
 - an elongated track member having front and rear ends,

an elongated slide member for sliding suspension mounting with said track member having front and rear ends,

the said track and slide members being arranged for fully nested closure and partially nested opening and forming an elongated volume therebetween, one of said track and slide members having a latching detent mounted thereon and the other of said track and slide members having a latching key mounted thereon for engaging said latching detent to lock said track and slide members in nested closure position against inadvertent opening movement, and wherein, the latching key has a cantilever mounted resilient key end which is movable laterally in response to and in a direction perpendicular to a longitudinal actuating force while engaging said latching detent to ride over the latching detent during locking and unlocking, and the said latching detent and latching key are located essentially entirely within the said elongated volume.

2. Apparatus in accordance with claim 1 wherein, the said latching key has a base portion frictionally engaged in a cutout in one of said slide and track members and said key portion is cantilever mounted from said base portion and extends between said slide and track members and parallel thereto,

the other of said slide and track members having said lateral detent as a turned up end thereof extending between said slide and track members and juxtaposed to said latching key.

3. Apparatus in accordance with claim 2 wherein, the one of said slide and track members supporting said latching key base has an end cutout laterally aligned with the latching detent in the fully nested position to allow for lateral movement of said resilient latch key end over the end of the latching detent.

4. Apparatus in accordance with claim 3 wherein, the one of said slide and track members supporting said latching key base has a recessed surface portion therein with a port in the recess accommodating said base, the base has an internally relieved construction to pass through said port for assembly and to expand against the edges of said port for frictional holding, and

the base is further in laterally hooked engagement with the port edges.

5. Apparatus in accordance with claim 1 further comprising:

an elongated intermediate slide/track member having front and rear ends and being nestable between said slide and track members and when so nested between said track and slide members acting as a slide with respect to said track member and as a track with respect to said slide member.

6. Apparatus in accordance with claim 6 wherein, one of said slide and track members comprises a rear end barrier and the other of said slide and track members comprises a front end barrier, the said barriers laterally overlapping respective front and end rear ends of the intermediate slide/track member.

7. Apparatus in accordance with claim 6 further comprising:

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a sliding storage device with at least one slidable storing element and a support structure therefor, one of the said slide and track members of the suspension slide apparatus being connected to the support structure and the other of said slide and track being connected to said slidable storage element, the suspension slide apparatus thereby forming a lockable suspension mount for said slidable storage element.
8. Apparatus in accordance with claim 1 further comprising:

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a sliding storage device with at least one slidable storing element and a support structure therefor, one of the said slide and track members of the suspension slide apparatus being connected to the support structure and the other of said slide and track being connected to said slidable storage element, the suspension slide apparatus thereby forming a lockable suspension mount for said slidable storage element.

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