United States Patent [19]

Little

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[54] CARD TRAY FOLLOWER

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[52] **U.S. Cl.** **220/22.3,** 220/22.4, 220/22.5

[51] **Int. Cl.** **B65d 1/24**

[58] **Field of Search**.....220/22.3, 22.2, 22.4, 220/22.5; 74/527

[56] **References Cited**

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Assistant Examiner—Steven M. Pollard
Attorney—John B. Bean et al.

[57] **ABSTRACT**

An improved follower for use in association with a card file or like tray of the type having a follower guide track and follower positioning teeth extending lengthwise of its bottom wall. The follower features a latching mechanism including a vertically reciprocating latch flange, which is normally spring biased downwardly for locking engagement with the positioning teeth. The latch flange carries adjacent its lower end a rearwardly directed flange defining a downwardly facing convex cam surface dimensioned to be received within a space between adjacent teeth and a pair of coplanar supporting surfaces. The supporting surfaces forwardly and rearwardly bound the cam surface to normal reside in engagement with upwardly facing edges of the teeth, whereby to limit the extent to which the cam surface projects into the space between the teeth.

5 Claims, 3 Drawing Figures

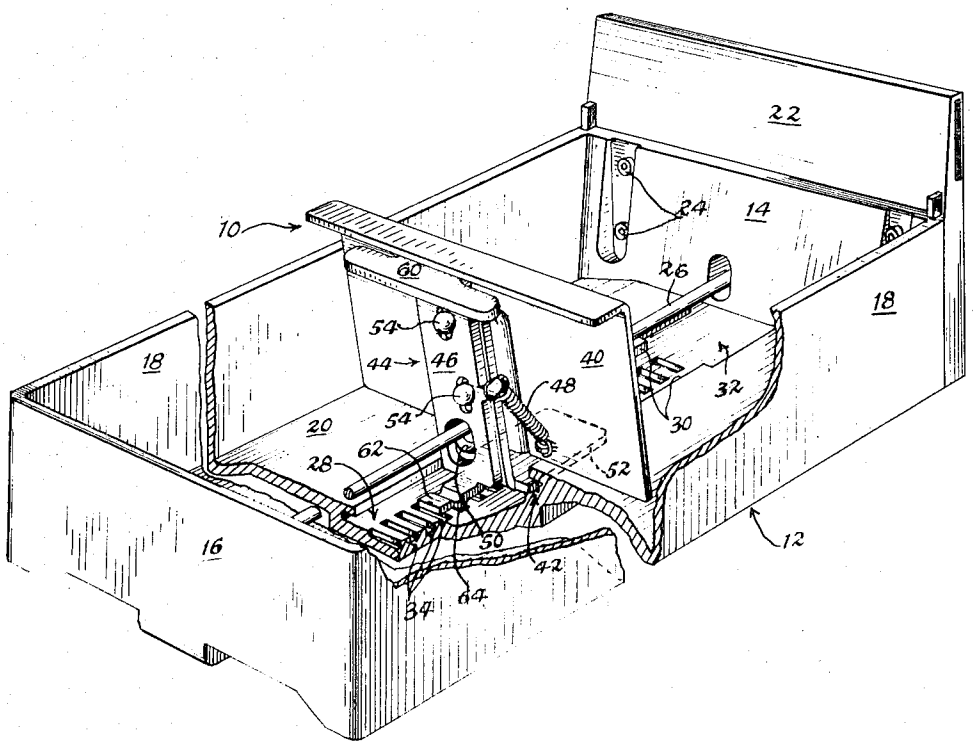
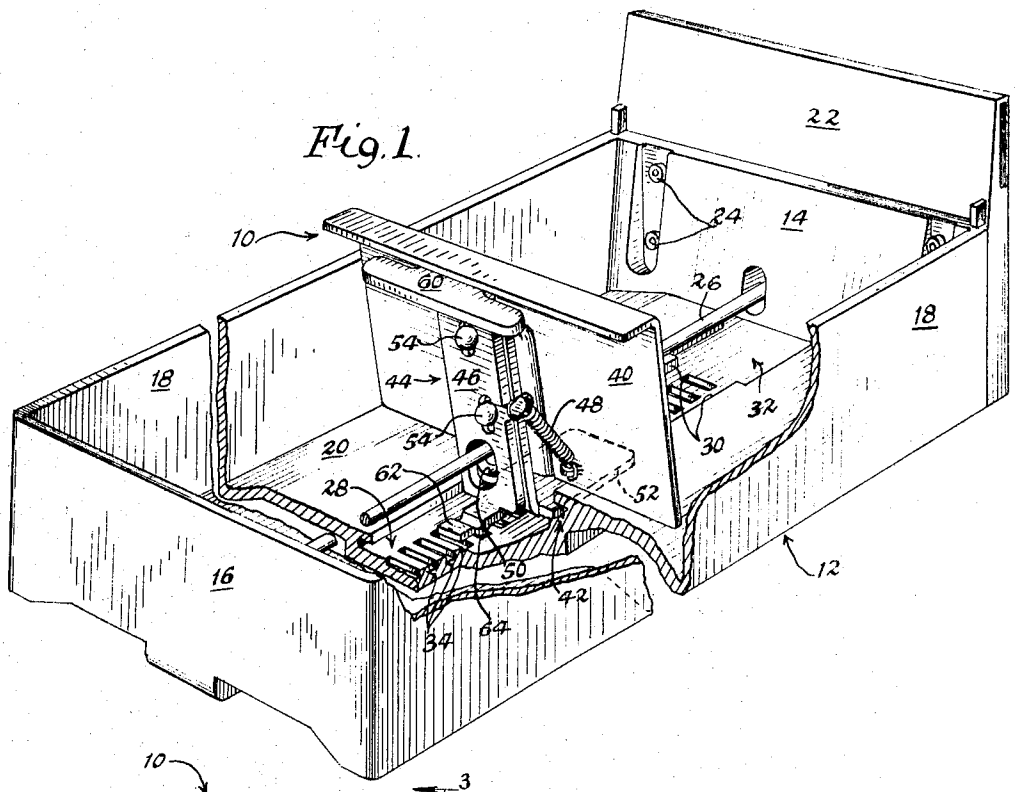


Fig. 1.



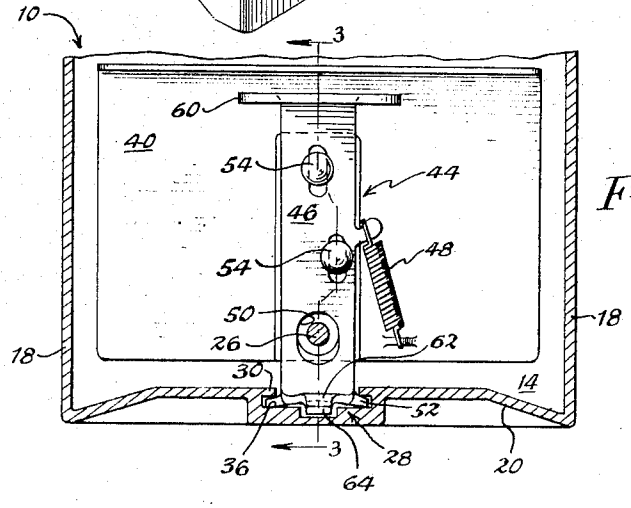


Fig. 2.

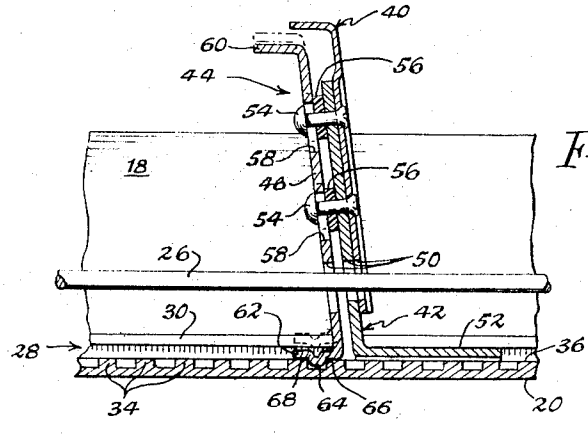


Fig. 3.

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CARD TRAY FOLLOWER

BACKGROUND OF THE INVENTION

Followers are conventionally provided as adjustable backups for a stack of cards filed in a tray, such as may be employed in a library. Usually these followers include an upstanding plate arranged to engage the rear of the stack of cards; a guide flange arranged to slide within a guide track extending lengthwise of the bottom of the tray; and a latch mechanism, which is movably carried adjacent the rear of the upstanding plate for locking engagement with positioning teeth spaced lengthwise of the bottom of the tray. As by way of further illustration, reference is made to U.S. Pat. No. 2,236,807.

A decided drawback of the above construction is that should a tray filled with cards be dropped, the weight of the stack of cards bearing against the upstanding plate will ofttimes cause the latching mechanism to be bent or, if the teeth are formed of a plastic material, it will cause one or more of the teeth to be sheared off.

SUMMARY OF THE INVENTION

The present invention relates to followers for card or like storage trays and more particularly to an improved follower construction for overcoming the disadvantages of the prior art.

The follower of the present invention is formed with an upstanding plate for engaging the rear of a stack of cards arranged within the tray, a depending follower guide or support flange for engaging with the guide slot or track of the tray, and a vertically reciprocating latching mechanism normally spring biased downwardly into locking engagement with the positioning teeth. Specifically, the latching mechanism features a rearwardly directed flange defining a downwardly facing convex cam surface dimensioned to be received within spaces between adjacent teeth and planar supporting surfaces, which forwardly and rearwardly bound the cam surface. These supporting surfaces normally reside in engagement with the upwardly facing edge surfaces of the teeth and serve to limit the extent to which the cam surface projects into the space between the teeth. Thus, should an impact force be applied to the upstanding plate, the cam surface is freed to move out of and into engagement with successive teeth, thereby to free the follower for movement rearwardly within the card tray.

DRAWINGS

The nature and mode of the present operation will now be more fully described in the following detailed description taken with the accompanying drawings wherein:

FIG. 1 is a perspective view of a card tray showing the follower of the present invention installed therewithin;

FIG. 2 is a sectional view of the tray of FIG. 1 showing the follower in rear elevation; and

FIG. 3 is a sectional view taken generally along line 3—3 in FIG. 2.

DETAILED DESCRIPTION

Reference is now made particularly to FIG. 1, wherein the follower of the present invention is generally designated as **10** and is shown in association with an elongated card tray **12** of the type adapted to store a stack of cards or the like, not shown. Tray **12** may be of any suitable construction, but is shown for the purposes of illustration as being of integral, molded plastic construction having a front wall **14**, a rear wall **16**, side walls **18** and a bottom wall **20**. If desired, a decorative front panel **22** may be affixed to front wall **14** as by fasteners **24** and a follower rod **26** may be removably inserted rearwardly through front **22**, front wall **14** and follower **10** for the purpose of retaining a stack of cards intermediate the follower and the front wall.

In FIGS. 1–3, tray bottom wall **20** is shown as being formed with a lengthwise extending, upwardly opening guide slot **28**, which is bounded by a pair of facing lips or flanges **30**; lips **30** being cut away or removed adjacent the front end of the guide slot, as at **32**, to permit insertion of follower **10** thereinto. A plurality of essentially equally spaced apart teeth **34** are arranged co-extensive with lips **30** and have their upwardly facing edge surfaces disposed essentially flush with the bottom surface **36** of slot **28**. As desired, teeth **34** may be of "square" cross-sectional configuration, as shown in FIG. **3**, or be tapered in a direction towards their upper edge surfaces.

Follower **10** generally includes a card stack engaging metal plate **40**, which is supported to extend transversely of tray **12** for movement between end walls **14** and **16** by a generally L-shaped metal mounting flange **42** receivable within guide slot **28**; and a latching mechanism **44** including a generally U-shaped metal latch flange **46** and a coil spring **48**. For tray constructions utilizing a follower rod, plate **40**, flange **42** and flange **46** are formed with aligned apertures **50**, which are dimensioned to freely receive the follower rod therewithin.

By referring to FIGS. **2** and **3**, it will be understood that flange **42** is formed with a generally rectangular foot portion **52**, which is provided with a slight upward bow such that its marginal edge portions engage surface **36** immediately beneath lips **30**, whereas its mid portion is disposed in a slightly spaced relationship relative to the upwardly facing edge surfaces of teeth **34**. Flange **42** is rigidly affixed to the rear surface of plate **40** by deeply peening the front or shank ends of a pair of headed fasteners or rivets **54**, which fasteners extend rearwardly through a pair of plastic anti-friction washers **56** and vertically extending slots **58** formed in latch flange **46**. By this means, flange **42** and plate **40** are rigidly joined together, whereas latch flange **46** is supported for vertical reciprocated movement relative thereto.

Latch flange **46** is rearwardly bent adjacent its upper end to define a finger lift portion **60** and adjacent its lower end to define a rearwardly directed flange portion **62**. As best shown in FIG. **3**, flange portion **62** is shaped to define a downwardly facing convex cam surface **64**, which is dimensioned to be received within the spaces between adjacent teeth **34**, and planer supporting surfaces **66** and **68**, which forwardly and rearwardly bound cam surface **64**. It will be understood that coil

spring **48** normally serves to resiliently bias surfaces **66** and **68** downwardly to lie in engagement with the upwardly facing edge surfaces of teeth **34**, thereby to limit the extent to which cam surface **64** projects downwardly into the space between teeth **34**. Preferably, the depth of each of the spaces is in excess of the height of the cam surface by at least an amount sufficient to accommodate for the total amount of teeth wear expected during the life of the file tray.

When it is desired to adjust the position of follower **10** lengthwise of slot **28**, it is merely necessary for an operator to lift finger tab portion **60** against the bias of spring **48** by an amount sufficient to lift cam surface **64** into a position above the upwardly facing edges of teeth **34**. Preferably, the width of cam surface **64** in the direction of follower movement, that is the distance between surfaces **66** and **68** is only slightly less than the spacing between adjacent teeth in order to minimize movements of the follower when in a latched condition.

A particularly important feature of the above described construction is that when a rearwardly directed impact force is applied to plate **40**, such as for instance when a tray full of cards is dropped on its rear end wall **16**, cam surface **60** is free to move or "cam" itself out of and into engagement with successive teeth **34** against the bias of spring **48** in order to free the follower for movement rearwardly within the card tray, whereby to prevent damage to either flange portion **62** or teeth **34**. In effect, successive tensionings of spring **48**, as latch flange **46** is vertically reciprocated, tends to absorb the impact load and to eventually arrest rearward movement of the follower.

An additional advantage of the present invention is that the effective height of teeth **34** relative to cam surface **64** is maintained constant regardless of anticipated teeth wear, due to engagement of surfaces **66** and **68** with the wearing surfaces of such teeth. In view of the diminutive changes in spring force occasioned by the progressive downward movement of the latch flange as the teeth wear, the constant height relationship of the teeth and the cam surface insures essentially uniform latch release operating characteristics over the anticipated life of the card tray.

I claim:

1. A card or the like file tray, wherein a card follower is mounted by a guide device within the tray for sliding movement lengthwise thereof and releasably locked in a desired position by a follower mounted latching mechanism arranged for releasable engagement with essentially equally spaced teeth of a rack extending essentially co-extensive with said guide device, the improvement for permitting movement of said follower rearwardly along said guide device upon application to the follower of the rearwardly directed impact force without damage to the latching mechanism or teeth of the rack, wherein:

said latching mechanism includes a vertically movable lower end portion disposed rearwardly of said follower and biased downwardly for releasable engagement with said teeth, said lower end portion defining a downwardly facing convex cam surface dimensioned to be received within the spaces between adjacent rack teeth and at least one supporting surface arranged adjacent said cam surface, said supporting surface limiting the extent to which said cam surface projects into said spaces.

2. The improvement according to claim **1**, wherein said portion defines a pair of essentially co-planar supporting surfaces, said supporting surfaces forwardly and rearwardly bounding said cam surface relative to the direction of sliding movement of said follower within said tray and being normally engageable with upwardly facing edge surfaces of said rack teeth to limit the extent to which said cam surface projects into said spaces as aforesaid.

3. The improvement according to claim **1**, wherein said cam surface has a dimension measured lengthwise of said rack essentially corresponding to the spacing between said adjacent rack teeth, whereby to prevent movements of said follower lengthwise of said rack when said cam surface is disposed in a space between adjacent teeth.

4. A follower for use in combinations with a card file or like tray, wherein said tray includes a guide track extending lengthwise of a bottom wall of said tray and a rack arranged to extend essentially co-extensive with said guide track, said rack defining a plurality of essentially equally spaced apart teeth, said follower comprising in combination:

a plate;

a mounting flange fixed to said plate, said mounting flange having a guide portion extending forwardly beneath of said plate for engagement with said guide track whereby to support said plate above said guide track to extend transversely of said guide track for sliding movements lengthwise of said tray; and

a latching mechanism including a latch flange supported on said plate and mounting flange for vertical reciprocating movements relative to said rack and spring means for normally biasing a lower end portion of said latch flange downwardly into engagement with said rack, said lower end portion carrying a downwardly facing convex cam surface dimensioned to be received within spaces between adjacent teeth and a supporting surface arranged adjacent said cam surface, said supporting surface limiting the extent to which said cam surface projects into said spaces by engagement with the upwardly facing edge surface of at least one of said teeth.

5. A tray according to claim **4**, wherein said lower end portion defines a pair of essentially co-planar supporting surfaces, said supporting surfaces forwardly and rearwardly bounding said cam surface relative to the direction of sliding movement of said follower within said tray and being normally engageable with upwardly facing edge surfaces of said rack teeth to limit the extent to which said cam surface projects into said spaces as aforesaid.

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