April 28, 1964 R. E. McCLELLAN 3,130,732

FOLLOWER FOR FILING CABINET DRAWERS

Filed Nov. 15, 1961 2 Sheets-Sheet 1

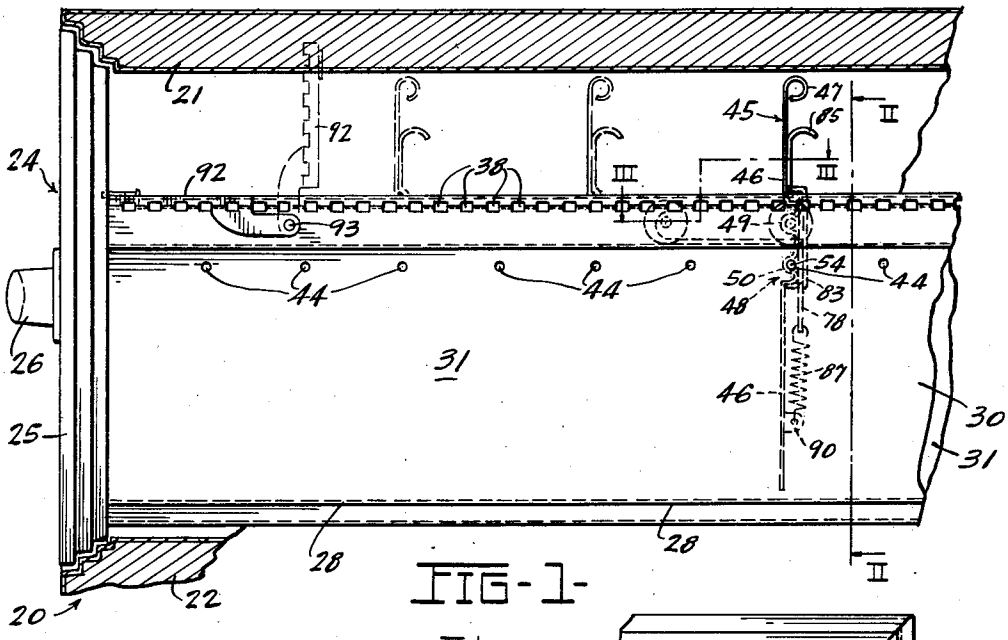


FIG-1-

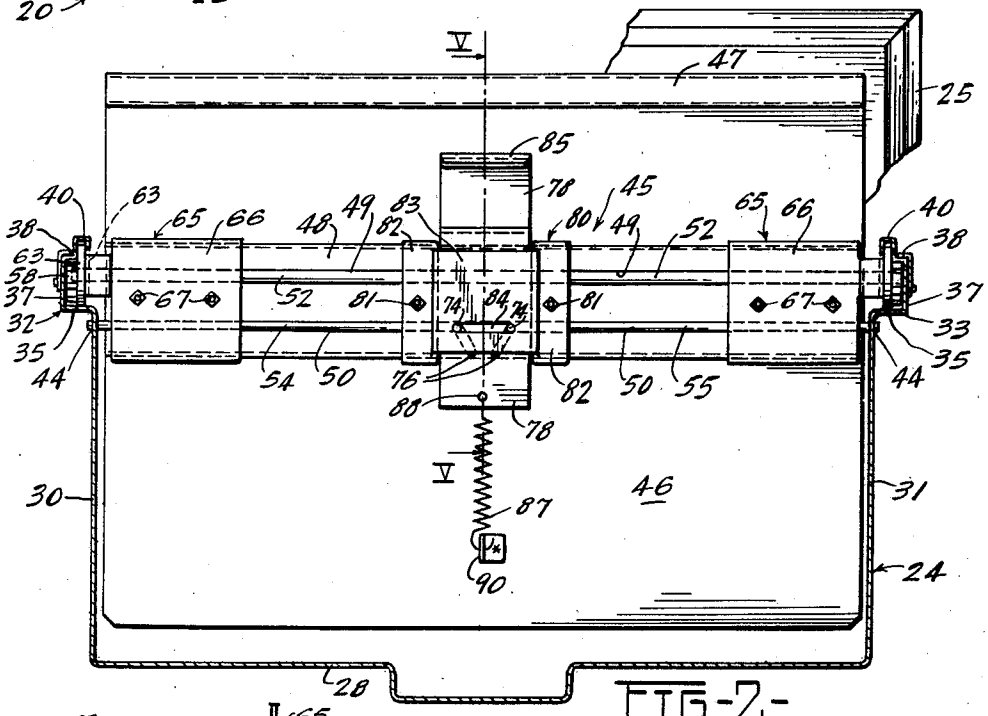


FIG-2-

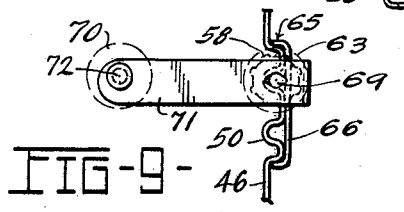


FIG-9-

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FOLLOWER FOR FILING CABINET DRAWERS

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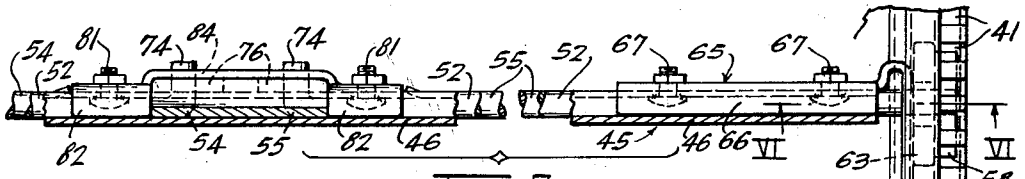


FIG-3-

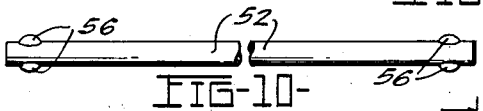


FIG-10-



FIG-11-

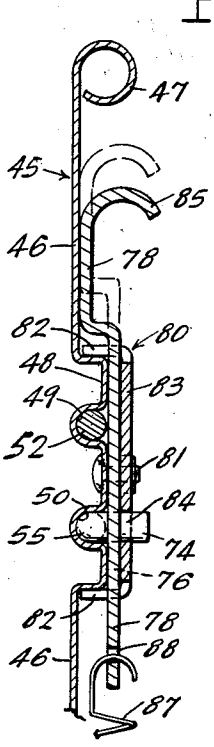


FIG-5-

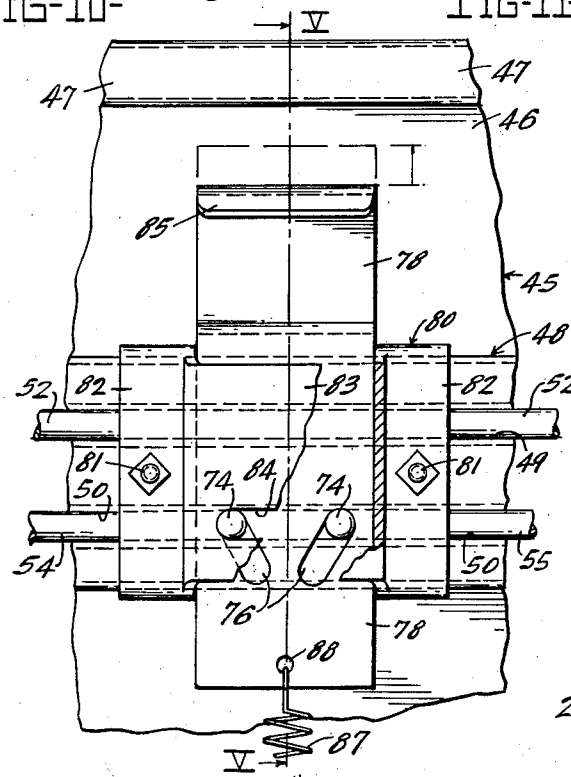


FIG-4-

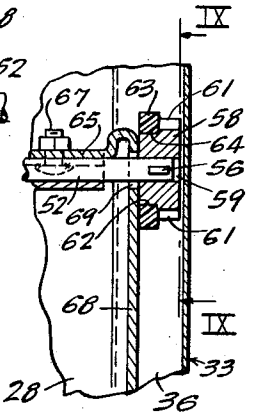


FIG-8-

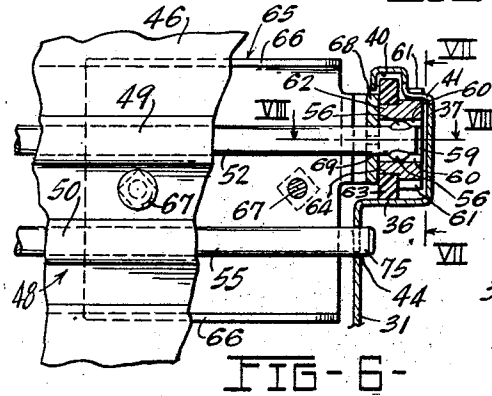


FIG-6-

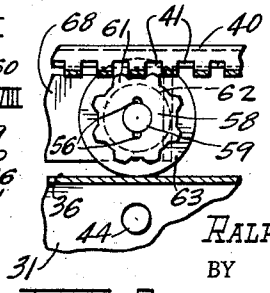


FIG-7-

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FOLLOWER FOR FILING CABINET DRAWERS

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5 Claims. (Cl. 129—28)

This invention relates to filing cabinets and is particularly directed to followers for filing cabinet drawers, which followers are adapted to hold the contents of the drawer in a compact, upright position.

An object of the present invention is to provide a file drawer with an easy and smooth manually movable follower having means to maintain the follower in a vertical position in a plane normal to the side walls of the drawer during and after adjustment of the follower along the drawer.

Another object of the invention is to provide a file follower with guiding and supporting means for substantially frictionless and noiseless motion including uniform motion gear means at the sides of the follower on which are freely mounted rollers to support the weight of the follower and absorb thrust loads, the guiding and supporting means being located outwardly of the side walls of the drawer so that they do not interfere with the contents of the drawer.

Another object of the invention is to provide a follower with lock or latch means separate from the shaft and/or guiding and supporting means for positively locating the follower in adjusted positions longitudinally of the drawer.

Generally speaking, the structure of this invention is inclusive of a drawer pan having its parallel side walls formed with inwardly open, outwardly extending channels adjacent their upper edges. Each of these channels is uniformly apertured along one side thereof to provide a toothed rack, the side opposite from each rack providing a smooth track. The drawer side walls are also provided with a series of spaced stops in the form of apertures along and parallel to each channel. A vertically arranged follower located in the drawer pan is movable longitudinally thereof, being supported by means of a shaft freely journalled to the follower and having its ends terminating in the channels and provided with gears keyed to said shaft and meshing with the racks, the hubs of the gears freely rotatably supporting rollers for supporting and guiding the follower along the tracks. Bracket means are attached to opposite ends of the follower adjacent the shaft having arms in the channels on which additional roller means are mounted to maintain the follower upright, and in cooperation with the first rollers to support the follower for free translatory movement in the drawer.

Means, independent of the shaft and/or gears, are provided to lock the follower in various positions of adjustment in the drawer, which means may comprise a central cam plate movable vertically in a bracket secured to the follower to which plate a pair of outwardly projecting locking rods, having adjacent terminal ends engaging in convergent cam slots in the plate, are coupled for movement into and out of engagement with the cooperating series of spaced stops in the drawer side walls. The locking rods are normally spring biased outwardly into locking position, a hand-piece being formed on the upper end of the cam plate to facilitate raising the latter to disengage the locking rods from the stops.

The above mentioned and other features and objects of this invention and the manner of attaining them will become more apparent and the invention itself will be best understood by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a fragmentary vertical sectional view of a portion of a filing cabinet in which a file drawer incorporating a form of the present invention is shown in side elevation;

FIG. 2 is a slightly enlarged vertical sectional view taken substantially on a line II—II of FIG. 1 illustrating the follower in one position of adjustment in the file drawer;

FIG. 3 is a further enlarged fragmentary sectional detail view taken substantially on a line III—III of FIG. 1;

FIG. 4 is an enlarged fragmentary rear elevation of the cam plate part of the lock operating mechanism with portions broken away to illustrate details of construction;

FIG. 5 is a vertical sectional detail view taken substantially on a line V—V of FIG. 4;

FIG. 6 is a fragmentary detail view taken substantially along line VI—VI of FIG. 3 illustrating one gear and roller on a shaft end in its guiding channel and one locking rod in locking position;

FIG. 7 is a sectional detail view taken substantially on a line VII—VII of FIG. 6 illustrating the gear, rack, roller and track relationship;

FIG. 8 is a fragmentary sectional detail view taken substantially along line VIII—VIII of FIG. 6 showing the front roller bracket;

FIG. 9 is a fragmentary side elevation showing details of the front roller bracket and showing the rollers and gears in dotted lines thereon;

FIG. 10 is a plan view of the gear and roller shaft with a central part thereof broken away; and

FIG. 11 is a plan view of one of the locking rods with a central part thereof broken away.

I.—The Drawer

Referring to the drawings and particularly to FIGS. 1 and 2 thereof a form of the invention has been illustrated as incorporated in a drawer type filing cabinet, a portion of which is indicated generally at **20**, including an insulated top **21** and a spaced intermediate wall or partition **22** to provide an opening for receiving a slidable drawer **24**. The drawer **24** is provided with front panel **25** having the usual handle or pull **26** and may have conventional suspension slides (not shown).

As more particularly shown in FIG. 2, the drawer **24** is of sheet metal and comprises a pan having a bottom **28** and spaced parallel side walls **30**, **31** the upper edges of which are formed with outwardly extending inwardly open channels **32**, **33**, respectively. Each channel extends longitudinally, the length of its side wall and has a lower side or wall **35**, the inner surface of which provides a smooth track **36**. Spaced vertically above wall **35** by a web **37** is upper side or wall which comprises a toothed rack portion **38** and an upwardly extending downwardly open groove or channel portion **40**. As will be seen in FIGS. 3, 6 and 7 the rack portion **38** is an in-

tegral part of the upper side wall and is formed by a plurality of equally spaced rectangular apertures 41. Located along and parallel to each channel 32 and 33 is a series of stops in the form of spaced apertures 44 in side walls 30 and 31.

II.—The Follower

A follower member 45 is positioned within the drawer 24 between the side walls 30 and 31 thereof and comprises a sheet metal plate 46 having a rolled upper edge 47 and an intermediate channelled section 48 arranged to provide a pair of vertically spaced grooves 49 and 50 opening rearwardly of the plate 46 and extending between the side edges thereof. Upper groove 49 freely journals a shaft 52 so that its ends lie within the channels 32 and 33, while lower groove 50 slidably receives centrally spaced locking rods 54 and 55 for movement into and out of apertures 44 as will later appear.

II–1.—Guiding and Supporting Means

The outer ends of shaft 52 may have ears 56 (see FIG. 10) tabbed out of opposite sides to act as keys for locking gears 58 thereto, the gears 58 being cored or apertured as shown with a central hole 59 from which extend diametrically opposite slots 60 (see FIGS. 6, 7 and 8). Each gear 58 has teeth 61 and a hub portion 62 on which a roller 63 having central hole or bore 64 is freely rotatable, the roller 63 being of a diameter greater than that of gear 58 and approximating the distance between track 36 and the base of groove 40 so as to support the gear 58 so that teeth 61 will be maintained in mesh with the rack 38 in the upper wall of channels 32 and 33. To facilitate meshing of teeth 61 in the rack apertures 41, the shaft 52 terminates inwardly of channel webs 37 (FIG. 6) so that the gears 58 may float laterally to locate themselves with respect to the racks 38. Thus the roller 63 rotates on the hub 62 in the opposite direction from the hub and gear 58, in that they roll on opposite walls of the channels 32 and 33. As particularly shown in FIG. 7 the pitch line of each gear 58 is preferably at the rolling surface of the rack 38 to reduce backlash to a minimum and provide smooth operation between the gear and rack.

Adjacent each side edge of the plate 46 is a bracket 65 having a channel portion 66 overlying the channelled portion 48 of the plate 46 and a forwardly extending arm 68 of reduced width disposed at right angles to the channel portion 66. Brackets 65 are secured to plate 46 by suitable fasteners such as nut and bolt assemblies 67, the heads of the bolts being fixed to the plate 46 as by induction welding. The arm 68 is apertured at 69 for passage therethrough of shaft 52, and has a roller 70 (see FIG. 3) mounted on the leading end 71 thereof by means of a shouldered rivet or stud 72. Thus two rollers 70 ride on tracks 36 and together with the two rollers 63 guide, support and maintain the follower 45 vertical or perpendicular to the drawer bottom 28. Due to the positive meshing of gears 58 with racks 38 which gears are keyed together through shaft 52 from opposite sides of the drawer 24, uniform motion of both edges of the follower is insured and the follower is maintained in a plane normal to both sides of the drawer both during and after movement. The gears 58 and rollers 63 and 70 are preferably of non-lubricating and noiseless plastic such as "nylon" or "Delrin" although other material as, for example, powdered metal may be used.

II–2.—Locking Means

Means for locking the follower 45 in adjusted positions corresponding to stop holes 44 are provided, and as above indicated, include locking rods 54 and 55 having their inner ends bent at right angles to the rods to form followers 74 (see FIGS. 4, 5 and 11) projecting through cam slots 76 in a cam plate 78. Cam plate 78 is mounted in a bracket 80 having spaced channelled end portions 82 bridged by an outwardly spaced strap 83 having an

elongated slot 84 overlying groove 50. Slot 84 receives the ends of followers 74 and serves to guide the movement of ends 74 of rods 54 and 55. Cam plate 78 is provided at its upper end with a hand engaging portion 85 of arcuate cross section and is normally urged downwardly by reason of a tension spring 87 having one end connected at 88 to the plate 78 and its other end 89 connected to angle bracket 90 spot welded or otherwise secured to plate 46. Cam slots 76 converge downwardly so that upon raising cam plate 78 by lifting on portion 85, the rods 54 and 55 are moved inwardly by reason of the cam action of slots 76 on followers 74, to withdraw the outer ends 75 thereof from the apertures 44 to permit manual translatory movement of the follower with respect to the drawer. Releasing portion 85 permits spring 87 to again spread cam followers 74 to lock the follower in adjusted position. The spacing between the stop holes 44 in the side walls 30 and 31 of the drawer pan may be at a relative greater or lesser distance, as desired, for providing correspondingly less or more rest positions for the follower 45 along the drawer 24. Bolt and nut assemblies 81, similar to those at 67, hold the bracket 80 in position against the channelled section 48 of plate 46.

II–3.—Assembly

In order to assemble the follower 45 in the drawer 20, a section 92 of the upper side or wall of each channel 32 and 33 may be hinged at 93 so as to be swung to one side during insertion of bracket arms 68 having the rollers 63 and 70 and gears 58 assembled thereon.

While there is described above the principles of this invention in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation to the scope of this invention.

What is claimed is:

1. A file drawer having
   - (I) spaced parallel side walls and a bottom,
     - (A) an inwardly open channel adjacent the top of each side wall having vertically spaced sides,
       - (1) a rack in the upper side of each of said channels,
       - (2) a track along lower other side of each channel,
     - (II) a follower in said drawer between said side walls,
       - (A) a shaft freely journalled in said follower and extending between and into said channels,
         - (1) a gear keyed to each end of said shaft in mesh with its corresponding rack in said channels, and
         - (2) a roller rotatably mounted on said shaft adjacent each gear coaxial with said shaft and said gear, said roller being in rolling engagement with said track for guiding said follower along said track, said engagement of the roller with the track maintaining said gear in mesh with said rack and spaced from said track,
       - (B) a bracket attached to each side of said follower having an arm projecting into and extending longitudinally of an adjacent channel,
         - (1) a second roller mounted on the outer end of each said arm in rolling engagement with said tracks maintaining said follower at a fixed angle with respect to said side wall, and
       - (C) means to lock said follower in selectively adjusted positions in said drawer.

2. A file drawer according to claim 1 wherein said gears have hubs and said rollers are freely rotatable on said hubs.

3. A file drawer according to claim 1 in which said means to lock said follower is separate from said shaft and said gears.

4. A file drawer according to claim 1 in which said

means to lock said follower includes stops in said drawer and cooperating retractable lock means carried by said follower.

5. A file drawer according to claim 1 wherein said roller adjacent each said gear has a greater diameter than said gear.

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