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FILING CABINET WITH IMPROVED CANTILEVER HINGE TYPE DRAWER SUPPORT SYSTEM

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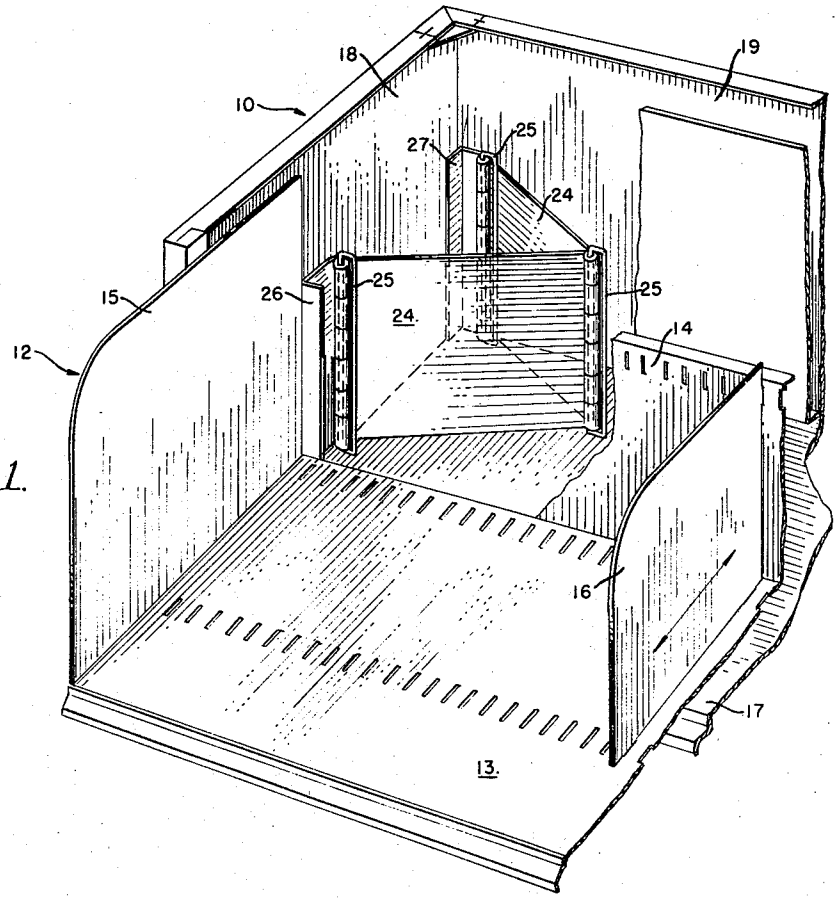
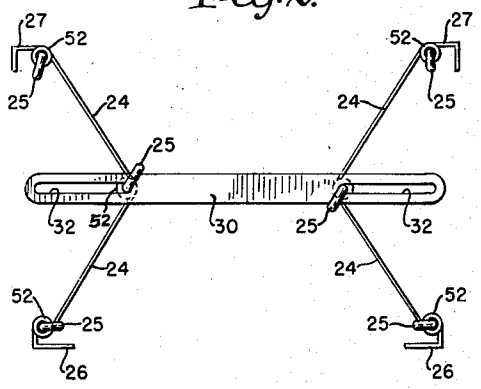


Fig. 1.

Fig. 2.



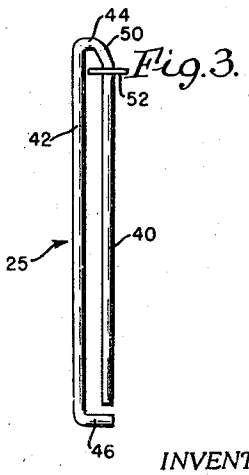


Fig. 3.

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FILING CABINET WITH IMPROVED CANTILEVER HINGE TYPE DRAWER SUPPORT SYSTEM

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ABSTRACT OF THE DISCLOSURE

A filing cabinet drawer suspension device featuring in combination, paired hinge leaves which provide cantilever extensible-retractable support for the drawer, and which are hingedly interconnected by special self-locking hinge pin devices which are simple and inexpensive in construction and which are installed in the assembly with utmost facility, and which thereupon remain in properly operative positions without further attention.

BACKGROUND OF THE INVENTION

This invention relates to improvement in filing cabinets or the like as shown for example in co-assigned U.S. Patent No. 3,291,547; and more particularly the invention relates to improved hinge means for interconnecting the drawer support hinge leaves thereof. It is well known that hinge leaves are conventionally interconnected by means of simple straight pin type devices, as shown for example in the above referenced patent at **27**. Such pins are readily fabricated so as to be headed at one end whereupon they may be simply slip-fitted through the interdigitated leaf portions as shown in the aforesaid referenced patent; thereby hingedly interconnecting the cantilever support hinge leaf members **24—24** of the drawer support system. Theoretically, such hinge pin devices will at all times remain under the influences of the forces of gravity in properly operative positions, thereby maintaining the requisite hinge leaf interconnection system for proper support of the cabinet drawer as it moved inwardly and outwardly of the cabinet's structure.

However, actual experience with such devices has demonstrated that incidental to typical use of filing cabinet drawer suspension systems such as illustrated in the aforesaid referenced patent, hinge pins of the type illustrated at **27** therein are propense to being "jacked" upwardly and out of properly operative positions thereof as shown in the patent; thereby disrupting the critically essential feature of the entire drawer support system. Such results are apparently due to a peculiar see-sawing type action which is imposed on the pins by the knuckles of the hinge leaves **24** during each cycle of drawer motion. Upwardly and downwardly levering forces are applied alternately to the pins incidental to each extension-retraction motion of the drawer, but the upward forces on the pins are greater than the downward forces; thus "jacking" the pins upwardly and out of operative positions. Hence, it has been determined through actual experience that it is necessary to provide the hinge pin elements of such systems to be positively locked in place.

Obviously, to provide the lower ends of such hinge pins so as to receive lock nuts or cotter pins or the like during the cabinet assembly process; or to be hammered at their lower ends subsequent to the assembly process so as to provide a rivet type locking head, would necessarily involve additional and expensive fabrication and assembly operations. It is the primary object of the present invention to avoid the difficulties and disadvantages of the prior art as recited hereinabove by the provision

of a novel form of hinge pin for interconnecting the hinge leaves of the cantilever support system in a filing cabinet or the like as referred to hereinabove.

Another object is to provide in a filing cabinet as aforesaid an improved hinge pin device which is simple and inexpensive to fabricate, and which may be assembled relative to the hinge leaves with utmost facility and ease, and which is self-locking when installed in operative position so as to be henceforth immovable from properly operative position except and whenever such removal may be intended and accomplished by the simplest of manual operations. Other objects and advantages of the invention will appear from the specification hereinafter wherein, by way of example, one form of the present invention is illustrated by the accompanying drawing wherein:

FIG. 1 is a fragmentary top perspective view of a filing cabinet and drawer assembly employing a cantilever support and hinge pin combination of the present invention;

FIG. 2 is a top plan view illustrating, in disassembled form, a filing drawer cantilever hinge support system comprising paired hinge leaf members located behind opposite ends of the drawer and interconnected by a motion equalizer device, and employing hinge pins of the present invention; and

FIG. 3 is an enlarged scale, disassembled, side elevational view of a hinge pin device of the invention.

As shown by way of example herein at FIGS. 1, 2, the invention is illustrated as being embodied in a filing cabinet which is designated generally at **10** and which accommodates in forwardly-rearwardly extendable-retractable relation a filing drawer as indicated generally at **12**. The drawer **12** is illustrated as being of the open front "transverse filing" type, and thus comprises a bottom plate **13**; a back plate **14**; opposite side plates **15**; and a positionally adjustable file support plate **16**. Thus the drawer is of open tray-like form, adapted to accommodate in side-by-side vertically standing relation pluralities of correspondence filing folders, booklets, or the like. The cabinet casing **10** is illustrated to be of the open front shell type comprising essentially a bottom plate **17**; opposite side plates **18**; and a back plate **19**. It will be appreciated that pluralities of modular type cabinets as shown herein may be readily disposed in vertically stacked relation simply by resting one cabinet on top of another, and that suitable detachable interconnection devices or the like may be employed to lock the meeting surfaces of adjacent cabinets together so as to hold the cabinets in vertically aligned relation and against forward tipping of the upper modules when their drawers are pulled outwardly.

As shown at FIG. 2, the drawer **12** is supported relative to the cabinet shell by means of a pair of cantilever hinge type support mechanisms disposed at opposite sides thereof; only one of which is shown in the drawing at FIG. 1 herewith. Each mechanism comprises a pair of hinge plates designated **24—24**. One end of each front hinge plate is connected by means of a vertical pivot pin **25** to a corresponding rear corner hinge support **26** of the filing drawer; and each rear hinge plate is connected at its rear end by means of a similar pivot pin **25** to the corresponding rear vertical corner portion of the cabinet shell by means of a hinge support **27**; each pair of hinge plates **24—24** being in turn pivotally interconnected by similar pins **25** (FIG. 2). The cabinet and filing drawer components are relatively dimensioned so that when the drawer **12** is disposed fully inside the cabinet the folded hinge devices **24—24** are nested in only partially open condition inside the space between the rear wall of the drawer and the rear wall of the cabinet shell. However, as illustrated by FIGS. 1, 2, as the drawer is pulled outwardly through the open front portion of the cabinet, the

hinge leaves open up into progressively flatter attitudes and extend in cantilever manner from the rear corner portions **27—27** of the cabinet to the rear corner portions **26—26** of the drawer. A drawer motion limiting device is preferably provided in the form of a bar **30** (FIG. 2) to rest transversely upon the top edges of the plates **24** and to be pivotally mounted on the center hinge pins **25—25** by means of slot formations **32—32**.

According to the present invention the hinge pin devices **25** are fabricated to be of identical construction so as to comprise in each case a pintle leg portion **40** (FIG. 3) and a side-by-side parallel guard portion **42**; the two portions being joined at the top end of the pin by means of a reverse bent section **44**, and the lower end of the guard leg portion **42** being terminated in a laterally bent finger portion **46**. Thus it will be apparent that the pin device **25** may be readily fabricated by simply bending it into the form illustrated at FIG. 3 from a single suitable length of spring wire or rod stock.

The material from which the pin is fabricated will of course be of suitable hardness and wear resistance characteristics so as to provide a long life and relatively friction-free hinge pin support for the interconnected hinge leaves **24—24**. Also, the metal comprising the pin device **25** will be selected so as to have the requisite resiliency characteristics to permit the lower ends of the legs **40–42** to be slightly spread apart during the equipment assembly operation. Thus, the hinge pin leg portion **40** of the device may be slip-fitted (beginning at its lower end) downwardly through the interdigitated eye portions of the members **24—24** and of the hinge supports **26, 27**, during the assembly process. Then, when the pin is disposed fully in its operative position as shown at FIG. 1 the leg portion **42** is released, whereby it snaps back into its normal attitude as shown in FIG. 3. Hence, the finger portion **46** now operates to maintain the device against any upward "jacking" dislodgement from the assembly.

It is also a particular feature of the invention that, as best shown at FIG. 3, the pintle leg portion **40** of each of the hinge pin devices includes at its upper end portion a laterally inclined portion **50** which provides a "stop" device for positioning thereunder a washer **52** which is preferably made of "Teflon" or the like because of its frictionless characteristics; and which is thereby positioned to rest on top of the uppermost eye portion of the hinge device. Thus, the washer **52** holds the upper end of the hinge pin **25** upwardly and out of interfering relation with the hinging action of the plates **24—24** relative to one another and relative to the hinge supports **26, 27**. By virtue of this arrangement any "binding" stresses on the hinging actions such as might otherwise be imposed thereon, are eliminated.

Thus, it will be understood that the drawer support system of the present invention provides a mechanically simplified and inexpensively manufactured mechanism which is capable of supporting the loads of the drawer and its contents at all positions in improved manner; and that the pins **25** are permanently guarded against any accidental dislodgements away from their fully operative positions. It is also to be understood that, whereas the invention has been illustrated and described in detail in

conjunction with an open tray-type drawer, it is equally applicable to any other type of cabinet-drawer combination; and that although only one form of the invention has been illustrated and described in detail hereinabove, various changes may be made therein.

What I claim as my invention is:

1. In a filing device comprising a cabinet housing and a filing drawer adapted for horizontal bodily movement in and out of said housing, an improved drawer suspension mechanism comprising, in combination:

a pair of hinge support devices fixedly mounted in horizontally spaced relation on said cabinet housing and on the rear end portion of said drawer respectively, each of said hinge support devices including a plurality of vertically aligned eye portions;

first and second pairs of hinge plates each hingedly interconnected by means of a first hinge pin having its pintle portion thereof slide-fitted through interdigitated eye portions extending from said hinge plates of each pair respectively;

said hinge plates also having pluralities of spaced apart eye portions in mutual alignments at their front and rear ends so dimensioned and positioned thereon as to slip-fit into interdigitated relation with the aligned eye portions of a respective pair of said hinge support devices;

and second and third hinge pins slide-fitted through the interdigitated eye portions of each pair of said hinge plates and said support devices respectively;

each of said hinge pins comprising a straight-line pintle portion leading into a reverse-bent head portion and thence into a parallel guard leg portion terminating in a laterally bent finger portion normally underlying the free end of said pintle portion, each reverse-bent head portion including an angularly bent stop portion at the head of the hinge pintle portion, a washer on each pintle portion under said angularly bent stop portion, said pins being formed of spring wire material and manually deformable to uncover the free end of said pintle portion for assembly and disassembly purposes only; and

a motion limiting bar having elongate slots at its opposite ends, said slots receiving the respective heads of the pintle portions of said first hinge pins above the respective washers thereon whereby said first pins positively retain said motion limiting bar in operative position.

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JAMES T. McCALL, Primary Examiner

U.S. Cl. X.R.

16—169; 312—110