A bin construction includes a series of vertical, pivotally mounted bins in a frame which include projecting mounting pans from each side of the bin that snap fit into slots of a frame. The bins are interconnected by means of an auxiliary bar which includes detent slots that engage and receive auxiliary pins associated with the sides of the bins to permit simultaneous opening and closing of the bins.
REMOVABLE TILTING BIN SYSTEM

BACKGROUND OF THE INVENTION

[0001] In a principal aspect, the present invention relates to a storage bin construction and, more particularly, to a construction comprised of two or more storage bins which may be easily inserted into a frame assembly or cabinet so that the bins may be tilted either singly or in unison to reveal the contents of the bins.

[0002] Craftsmen, hobbyists, mechanics and others typically use a storage chest or storage cabinet to store tools, component parts and other items. Most storage chests include a number of drawers, bins and other storage areas or receptacles in which to place such items. Desirable characteristics of such storage containers include the capability to be easily opened, to be easily replaced and accessible. A further feature often desired in containers or storage chests is a feature which will enable opening and closing a series of bins or drawers simultaneously. Yet another feature for inclusion in chests or storage cabinets is a design for bins which enable the utilization of storage bins having different sizes and shapes. These features among others have led to the development of the present invention.

SUMMARY OF THE INVENTION

[0003] Briefly the present invention comprises one or more molded plastic bins which are tiltable mounted in a cabinet frame or housing. Each bin includes lateral sides and a front side as well as a bottom side, back side and an open top. Projecting from each of the lateral sides are pivot mounting pins. The laterally projecting mounting pins fit into pockets defined in opposed sides of the cabinet frame or housing. The pockets are defined by generally semi-cylindrical slots for receipt of the axial mounting pins of the bins. The bins may then be slipped into or out of the housing by engagement of the axial pins with the semi-cylindrical pockets. The pins include radial or tangential projecting flanges which limit the degree of rotation of the pin in the associated pocket and thus limit the tilt or rotation of the bin mounted in the cabinet frame or housing.

[0004] Also, one or more auxiliary pins is incorporated with each bin projecting from the lateral sides of the bin. Each of the auxiliary pins engage with a slot in a vertically movably, sliding bar and, more particularly, with a detent slot in the bar. The bar is slidably mounted in the housing so that bins mounted vertically above each other in the housing will move in unison. That is, rotation of one bin will cause an auxiliary pin associated with that bin to engage and translate the bar thereby effect movement of all of the bins having auxiliary pins engaging the vertical, slideable bar.

[0005] Each of the bins may be removed from the housing by disengaging the pins, both auxiliary and mounting pins, from their respective pockets or slots. This is accomplished by withdrawing the bins from the cabinet frame or housing by movement radially from the mounting slots or pockets. Thus by appropriately aligning the pins in the slots it is possible to remove one or more bins by pulling them from the housing and, more particularly, from engagement with the slots. With the described construction it is also possible to eliminate the vertically slideable bar and thereby permit each of the bins to pivot independently. Thus with the described bin and cabinet frame construction, the bins may be interconnected to move simultaneously between an open tilt position and a closed position or move individually. Typically the bins are open on their top side. In a preferred embodiment the bins may be molded from a polypropylene plastic material.

[0006] Thus it is an object of the invention to provide an improved removable storage bin drawer construction.

[0007] It is a further object of the invention to provide a removable storage bin drawer construction comprised of multiple bins or drawers wherein pivotal movement or rotation of one bin or drawer between the open and closed positions will effect a similar movement of adjacent drawers.

[0008] Yet another object of the invention is to provide a removable storage bin drawer construction comprised the bins accessible from the top and which are pivotal to move the top access opening from a storage position to a position of open access by virtue of tilting of the bin about a pivot axis through the lateral, opposite sides of the bin.

[0009] Another object of the invention is to provide a removable storage bin drawer construction which enables easy removal of separate storage bins retained within a housing for the bins without significant disassembly of the housing.

[0010] Another object of the invention is to provide an inexpensive, durable, rugged, and easily assembled combination of storage bin drawers mounted in a single housing wherein the bins may be individually pivoted to reveal the contents thereof or pivot ed as a group to reveal the contents of each and every bin without interference of access to adjacent bins.

[0011] Another object of the invention is to provide a bin or drawer construction comprised of bins mounted one above the other in a housing wherein the bins are pivotal in the housing to reveal the contents thereof.

[0012] These and other objects, advantages and features of the invention will be set forth in the detailed description which follows.

BRIEF DESCRIPTION OF THE DRAWING

[0013] In the detailed description which follows, reference will be made to the drawing comprised of the following figures:

[0014] FIG. 1 is an isometric view of a four bin drawer construction made in accord with the invention;

[0015] FIG. 2 is an isometric view of a housing for the drawer bin construction of the invention;

[0016] FIG. 3 is an isometric view of a typical bin utilized in combination with the housing of FIG. 2;

[0017] FIG. 4 is a back side view of the bin of FIG. 3;

[0018] FIG. 5 is an isometric view of the vertically movable bar member utilized in combination with the bin of FIG. 3 and the housing of FIG. 2 to facilitate simultaneous movement of a series of bins depicted in FIG. 1; and

[0019] FIG. 6 is a side section view of the construction of a bin as utilized in combination with a housing and a vertical bar member in the assembly of the drawer construction of the invention.
DESCRIPTION OF THE PREFERRED EMBODIMENT

[0020] FIG. 1 depicts the bin or drawer construction of the invention in an assembled condition. The bin or drawer construction may be incorporated in a larger storage container such as a locker, cabinet or chest. The bin construction includes an outer housing and a series of four separate bin containers 12, 14, 16 and 18. Though there are four bin containers 12, 14, 16, and 18 depicted in the embodiment, any number of bins may be utilized in the practice of the invention. In a preferred embodiment at least two bins are utilized inasmuch as the bins include a mechanism for their simultaneous rotational or pivotal movement. However, the invention is not limited to the utilization of two bins or more. Rather, a single bin may incorporate the invention in combination with a housing or frame.

[0021] Each of the bins 12, 14, 16, 18 has a substantially identical construction. Each one of the bins 12, 14, 16, 18 may be slidably inserted into the housing 10 and will pivot between an open position as depicted in FIG. 1 and a closed position as depicted in FIG. 6. The bins 12, 14, 16, and 18 as well as the housing 10 are preferably manufactured from a molded plastic material such as polypropylene. In the further description which follows, discussion of the construction of a single bin 12 will be set forth, but such discussion is applicable to the remaining bins 14, 16 and 18.

[0022] When assembling the bin construction, the bin 12 is inserted into the housing 10 with the bin 12 in the open or forward pivotal position as depicted in FIG. 1. Referring to FIGS. 3 and 4 as well as FIG. 6, the bin 12 includes a front panel 20, a first lateral side panel 22, a second lateral side panel 24, a back panel 26 and a bottom panel 28. The back side panel 26 and the bottom side panel 28 are connected together by a radius wall 30. The front side panel 20 is preferably planar and includes along its top edge a molded handle 32. The particular configuration, shape and size of the molded handle 32 may be varied in accord with desires of the maker of the bin.

[0023] The lateral sides 22 and 24 of the bin 12 include axially, outwardly projecting pins such as pin 34 and pin 36 in FIGS. 3 and 4. The pins 34 and 36 are axially aligned and define a pivot axis 38 for the bin 12. In a preferred embodiment, as depicted in FIG. 4, the axial pin 36 is a generally cylindrical, molded member. It may include a flat surface 40 along its back side. It further includes a tangential or radial projecting flange 42 as more clearly shown in FIG. 6. Axial pins 34 and 36 have a substantially identical construction and extend outwardly, in opposite directions from the respective lateral side walls 22 and 24 along axis 38.

[0024] Each of the lateral side walls 22 and 24 or at least one of the lateral sides 22 and 24 includes an auxiliary pin 50 projecting generally parallel to and outwardly from the lateral side 22 parallel to the pin 36 and defining an axis 82 which is generally parallel to the axis 38. In the preferred embodiment only one auxiliary pin 50 is required. However such auxiliary pins may be provided with respect to each of the lateral walls 22 and 24.

[0025] Referring to FIG. 2 there is depicted the housing or frame 10. The housing 10 includes spaced vertical side rails 60 and 62 connected together and spaced by crossmembers 64 and 66 to define a rectangular frame into which the bins 12, 14, 16 and 18 are inserted. The inside of each side rail 60, 62 includes a pocket 68, 70 respectively. The pockets 68, 70 for the sides 60 and 62 are axially aligned along axis 72. When the bin 12 is inserted into the frame 10, axis 72 is aligned with the axis 38 of the bin 12. The pin projections 34 and 36 fit into the slots defined by the generally semi-cylindrical projections 68 and 70 in the frame members 60 and 62 respectively. The manner in which the component parts slide together is depicted in FIG. 6 which is a side section view of a bin 12 as inserted into a frame 10.

[0026] In the embodiment depicted, the frame 10 includes four sets of semi-cylindrical pocket members 68 and 70 which are opposed and aligned, each set adapted to receive pivot pins of a separate bin 12, 14, 16 and 18. As depicted in FIG. 6, the pin 36 slides into the pocket 68 and the flange 42 will serve to limit the rotational movement of the pin 36 in the pocket 68. Thus as the bin 12 is rotated in a counterclockwise direction as depicted in FIG. 6 the bin 12 will move to a fully closed position which is limited in movement by engagement of the flange 42 with top edge 80 of the slot projection 68. Rotation of the bin 12 in the clockwise sense is also limited by virtue of the engagement of the flat side of the flange 42 with the projection 82 of the pocket or slot 68. The bin 12 may be moved to the clockwise open position and removed from the frame merely by pulling outwardly. Thus with the construction as described, the amount of rotational movement of the bin 12 is controlled within the frame 10.

[0027] As another feature of the invention, a vertically movable bar member 90 as depicted in FIGS. 5 and 6 may be inserted in the frame 10 for movement vertically in response to interaction between the auxiliary pins 50 and detent slots 92 defined in planar projections 94 of the bar member 90. Thus, bar member 90 includes end flanges 96 and 98 which may engage in slots defined in the frame 10 and, more particularly, in slot 100 of the bottom frame member 66 and in slot 102 of the top frame member 64. The auxiliary pins 50 of each of the bins 12, 14, 16 and 18 engage with the slots 92 of the vertically movable auxiliary bar member 90. As a result upon rotation of one of the bins 12, all of the bins 14, 16, 18 will be rotated to the open or closed position in unison. Thus the vertically movable bar member 90 provides for simultaneous movement and interaction of the bins 12, 14, 16 and 18. The use of the vertically movable bar member 90 is optional. Note also that the slot 92 does not interfere with the removal and replacement of the bins such as bin 12. That is as depicted by the arrow 110 in FIG. 6, the bin 12 may be easily moved in the direction of the arrow into or out of engagement with the frame 10. In practice one auxiliary bar member 90 or two auxiliary bar members associated with each lateral side of the bins may be used.

[0028] Various other optional features may be incorporated including the size and extent of the various lateral pins and the size and shape and extent of the slots 68, 70 associated with the frame 10. The shape of the handle 32 and of the shape of the front panel 20 may be varied. The number of bins and associated pins and lockbar notches may also be varied. The auxiliary pin 50 may be incorporated in a side or a back panel for cooperation with a bar member 90. Thus the invention is to be limited by the claims and equivalents thereof.
What is claimed is:

1. A removable storage bin construction comprising, in combination:
   a. a bin including a front panel, a back panel, first and second lateral side panels projecting at right angles from the front panel;
   b. first and second pivot mounting pins projecting respectively laterally outwardly from the first and second lateral side panels, along a bin pivot axis at least one of said pins including a radial tab extending from the pin;
   c. a bin enclosure housing for receipt of the bin, said enclosure including first and second housing sides spaced apart to receive the bin lateral sides in opposed relation thereto, the first and second bin housing sides including a pivot mounting pin pocket for receipt respectively of the first and second mounting pins, said pin pockets defining a partial cylindrical pocket with a pocket slot for sliding engagement of the pins into the pockets, at least one of said pockets including a flange to engage the pivot pin radial tab to limit rotation of the pin in the pocket and thereby limit rotation of the bin in the bin housing.

2. The construction of claim 1 further including an auxiliary outwardly projecting pin on a panel of the bin; and said housing including a vertically movable bar member with a detent slot for engagement and vertical movement by the auxiliary pin in response to pivoting of the bin about the axis.

3. The construction of claim 2 wherein the pocket slot and detent slot are aligned to permit removal of the bin from the enclosure.

4. The construction of claim 2 wherein the construction includes at least two bins mounted in the enclosure vertically one above the other and wherein each bin includes an auxiliary pin and the bin enclosure includes a single vertical bar member cooperative with each auxiliary pin whereby pivoting of one of the bins to the open position effects pivoting of the other bin simultaneously.

5. The construction of claim 2 wherein said auxiliary pin is projecting from a lateral side panel.

* * * * *