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(54) **CEILING STORAGE CONTAINER MOUNTING SYSTEM**

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(60) Provisional application No. 60/836,945, filed on Aug. 11, 2006.

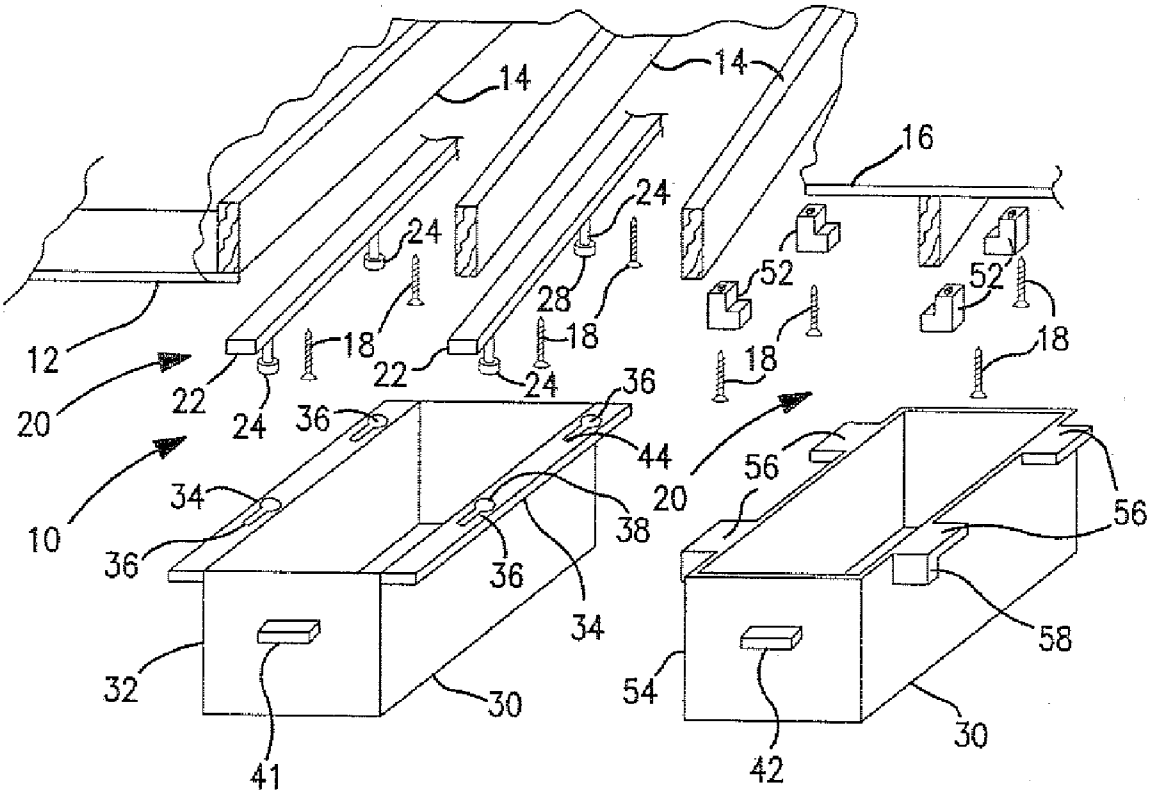
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(57) **ABSTRACT**

A ceiling storage mounting systems allows for unused ceiling space to be accessed and used for removably attaching storage containers. The system provides the storage of containers to be mounted entirely below the bottom surfaces of standard ceiling joists, whether exposed or finished with a hung ceiling. The mounting system includes a two part system of a mount and a storage container. The mount is anchored to the ceiling and the container is then attached to the mount by means of a plurality of gaps and protrusions. The gaps and protrusions are located between the mount and the storage container to mate and interlockingly engage the container to the mount. The storage container is mounted to the ceiling by aligning the gaps and protrusions, and sliding the gaps and protrusions relative to one another, thereby interlocking the gaps and protrusions. The container is then removably attached the ceiling.



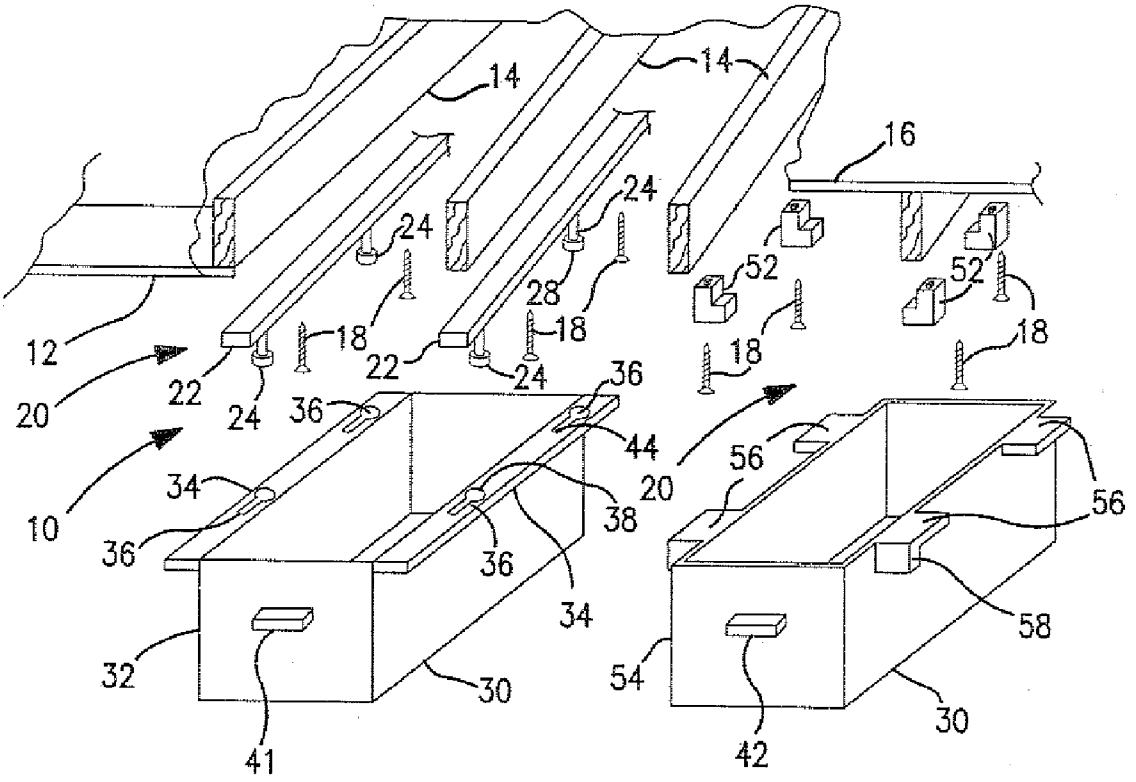

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FIG. 1

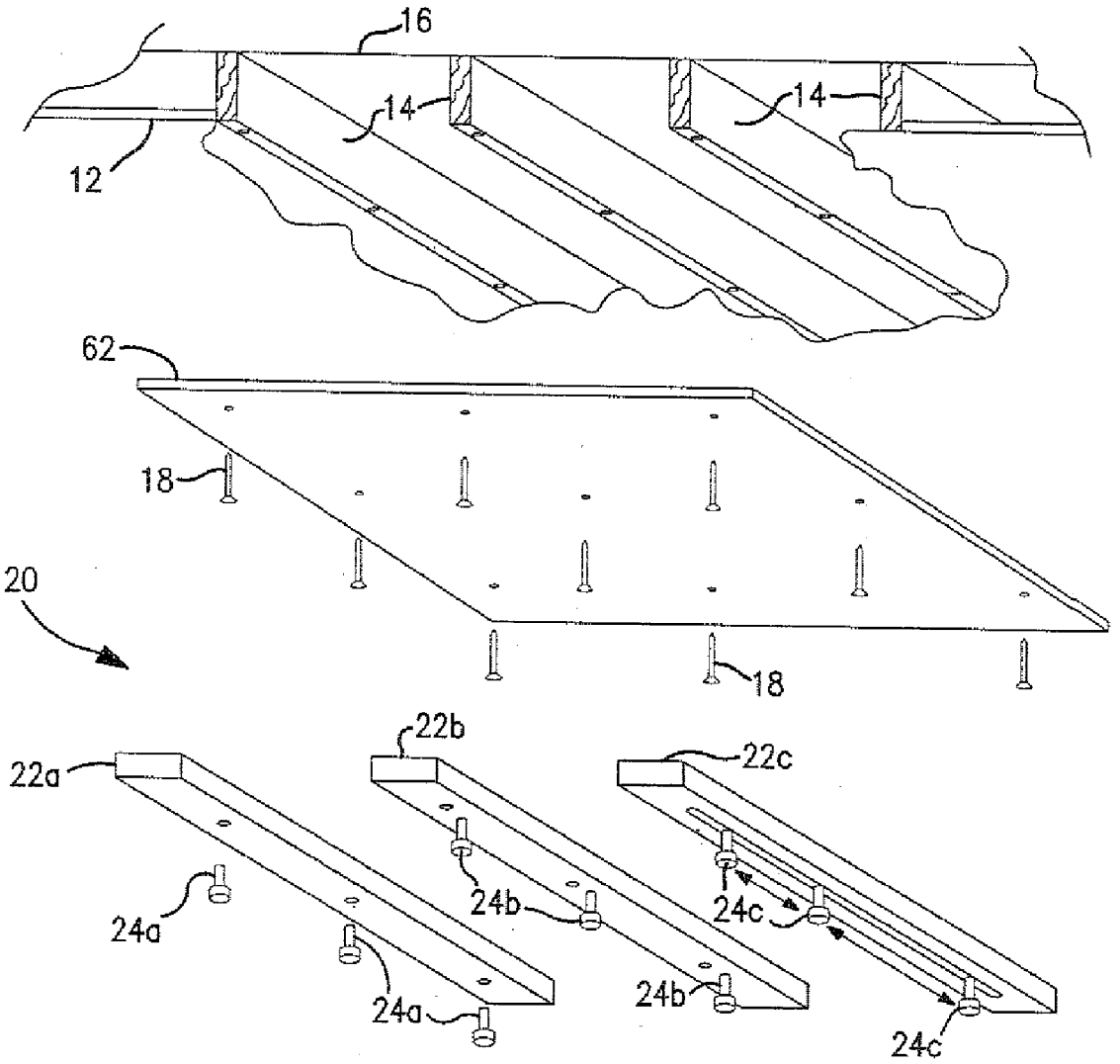


FIG. 2

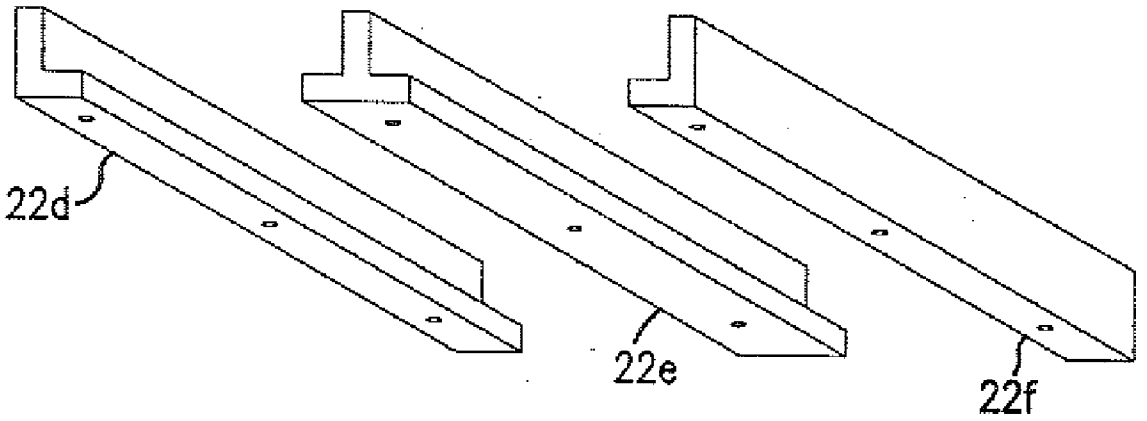


FIG. 3

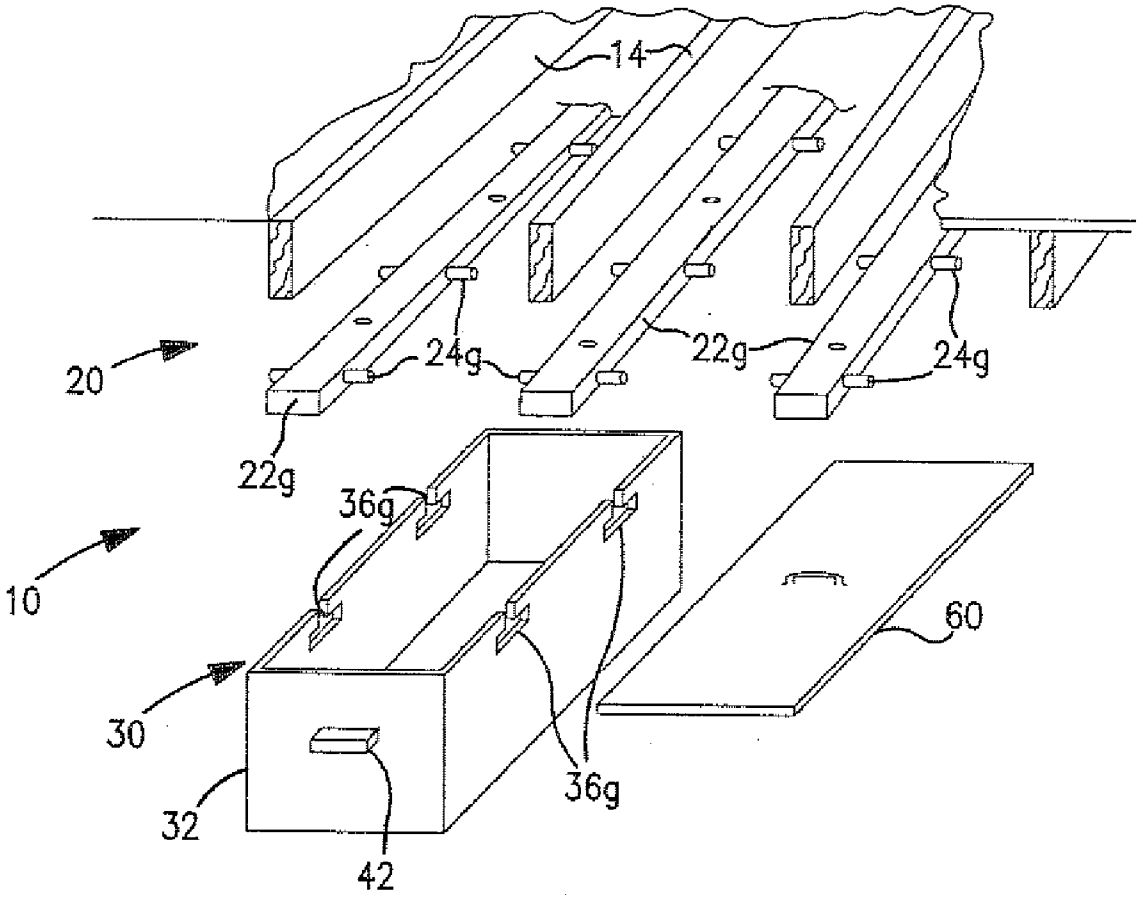


FIG. 4

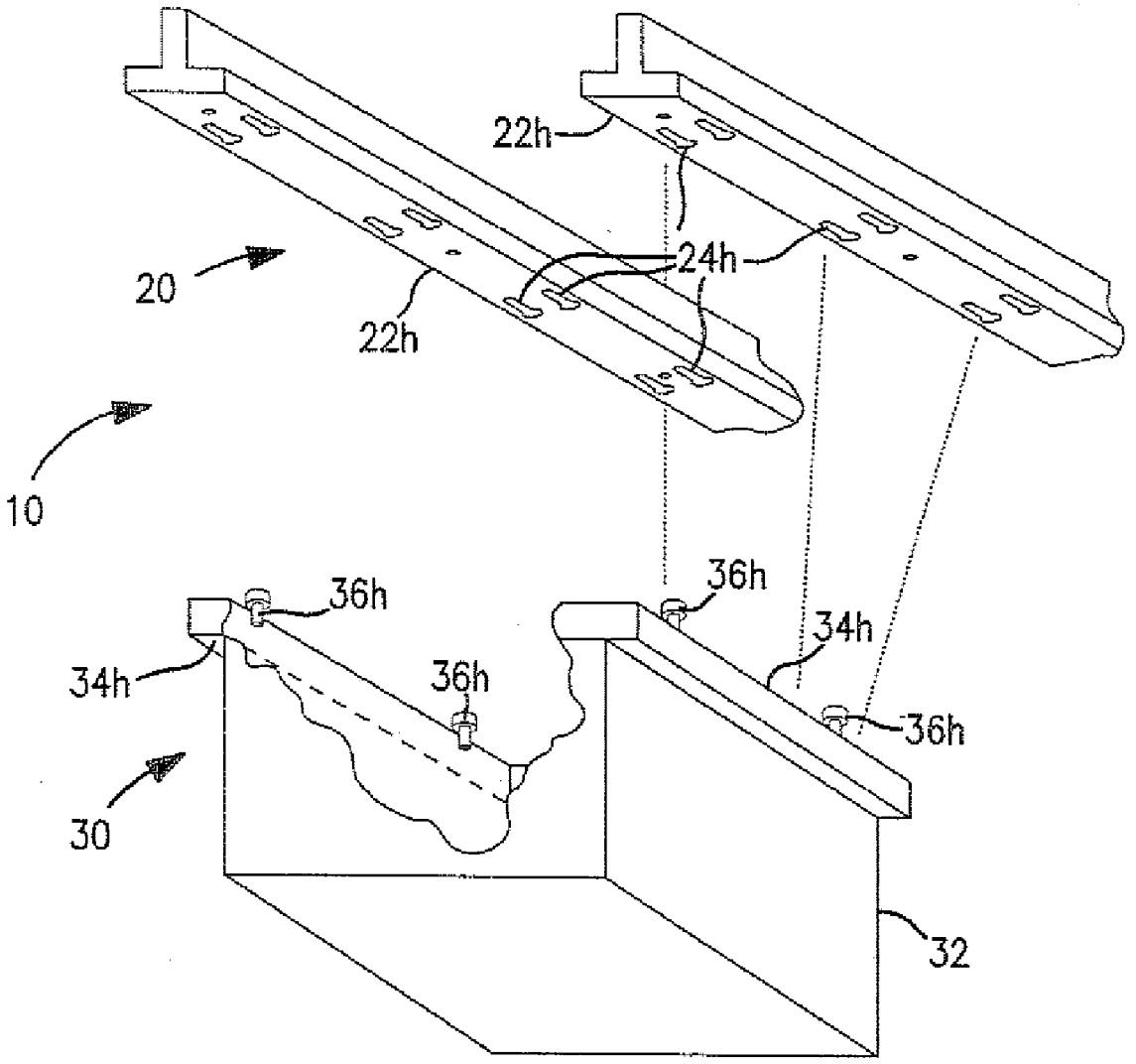


FIG. 5

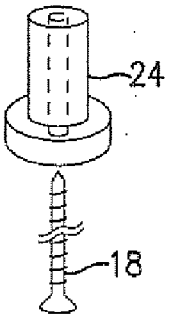


FIG. 6A

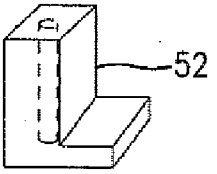


FIG. 6B

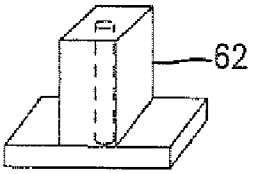


FIG. 6C

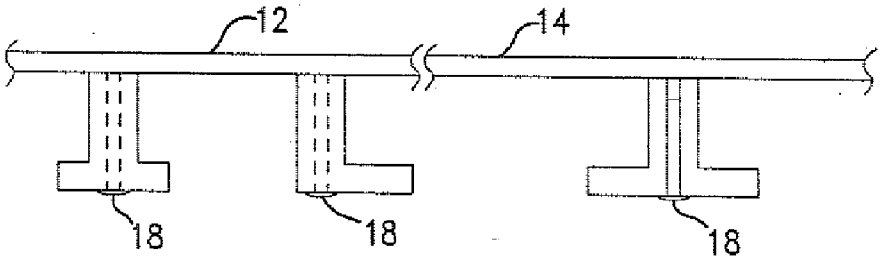


FIG. 6D

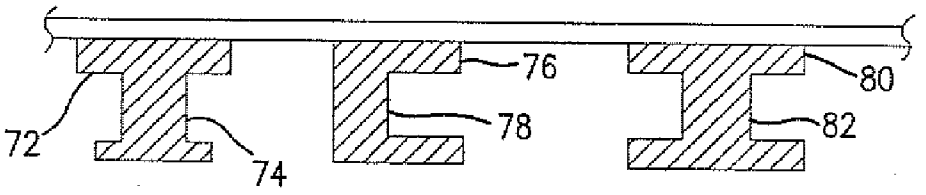


FIG. 6E

CEILING STORAGE CONTAINER MOUNTING SYSTEM

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application is based on Provisional Application 60/836,945 filed on Aug. 11, 2006.

BACKGROUND OF THE INVENTION

[0002] The invention relates to using wasted space on finished ceilings or exposed ceiling joists in basements, storage rooms, attics, or garages for instance. A substantial amount of space in these areas is inefficiently used. Typically storage in these areas includes boxes of stored items stacked corners, placed into attics, or left in rooms inside the house taking up invaluable living space. It is therefore and object of the invention to provide a storage container mounting system for a ceiling, finished or unfinished, which is easily installed. It is a further object to provide for easy mounting and removal of individual storage containers from an accessible storage space.

DESCRIPTION OF THE PRIOR ART

[0003] As general prior art in this field, there exist several patents directed to mounting storage containers between exposed ceiling joists or wall studs. In particular, U.S. Pat. No. 4,446,660, to Miller et al. mounts a container between two exposed ceiling joists on top of a panel that is adjustably secured. The container in Miller et al. engages the panel only by resting atop of the panel. Various other patents show storage containers mounted pivotally in the space between open ceiling joists to allow generally for a container storage position and a container access position. In these cases a mounting means pivotally mount the containers between the space provided between joists. All of these prior storage systems use the space between ceiling joists or wall studs to mount a storage container.

SUMMARY OF THE INVENTION

[0004] The invention is directed to an apparatus for removably attaching at least one storage container to a ceiling, including a mounting system and a storage container. The mounting system is attached to the ceiling so as to removably attach a storage container. The storage container is provided with an interlocking system for interlockingly engaging the mounting system to thereby mount the container to the ceiling. The storage container is mounted to the ceiling by aligning the mounting system with the interlocking system, and sliding the interlocking system relative to the mounting system thereby removably attaching the storage container to the ceiling.

[0005] The mounting system features a plurality of male or female engaging parts, and the interlocking system features a plurality of male or female engaging counterparts. These male and female parts of the mounting system and interlocking system matingly engage upon aligning the mounting system with the interlocking system and sliding the container relative to the mounting system.

[0006] The mounting system is comprised of a plurality of mounting rails anchored to a bottom side of a plurality of ceiling joists. A plurality of protrusions are provided on the mounting rails at spaced intervals, and a plurality of gaps are provided on the storage container. The protrusions are formed as pins and the gaps are formed as slotted keyholes, such that upon aligning the pins with the slotted keyholes, the pins matingly engage the keyholes, and upon sliding the keyholes relative to the pins, the container locks relative to the mounting rails.

[0007] Alternatively, the mounting system includes a plurality of individual mounts anchored to a bottom side of a plurality of ceiling joists at spaced intervals. These mounts provide the male engaging parts, and comprise a plurality of protrusions integral with the individual mounts. The container is provided with female engaging counterparts in the form of a plurality of gaps provided on opposing flanges of the storage container. The protrusions are formed as pins and the gaps are formed as slotted keyholes, such that upon aligning the pins with the slotted keyholes, the pins matingly engage the keyholes, and upon sliding the keyholes relative to the pins, the container locks relative to the individual mounts.

[0008] Alternatively, the mounting system includes a mounting panel anchored to a bottom side of a plurality of ceiling joists. The mounting system male or female engaging parts include a plurality of protrusions or gaps provided on the mounting panel at spaced intervals. The container is provided with male or female engaging counterparts in the form of a plurality of protrusions or gaps.

[0009] The invention is also directed to a method for removably attaching at least one storage container to a ceiling. This methods includes attaching a mounting system to a ceiling at spaced intervals, and providing a storage container with matingly spaced interlocking mechanisms to matingly engage with the mounting system and thereby attach the container to the ceiling. The mounting system includes a plurality of male or female engaging parts and the interlocking mechanisms includes a plurality of male or female engaging counterparts which matingly engage with the mounting system male or female engaging parts. The invention method includes aligning the interlocking mechanism with the mounting system, matingly engaging the mounting system with the interlocking mechanisms and then sliding the interlocking system relative to the mounting mechanisms thereby removably attaching the storage container to the ceiling.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The invention will be better understood and further objects and advantages thereof will become more apparent from the ensuing detailed description of preferred embodiments taken in conjunction with the drawings, in which:

[0011] FIG. **1** is a perspective view of a ceiling storage container mounting system according to a first embodiment of the invention, and according to a second embodiment of the invention;

[0012] FIG. **2** is a perspective view of a mounting system of a ceiling storage container mounting system according to a third embodiment of the invention;

[0013] FIG. **3** is a perspective view of a fourth embodiment of the invention;

[0014] FIG. **4** is a perspective view of a variation of a preferred embodiment of the invention;

[0015] FIG. **5** is a perspective view of another variation of a preferred embodiment of the invention; and

[0016] FIG. **6** shows various components of a mounting system according to the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0017] Referring to FIG. **1**, a ceiling storage container mounting system **10** according to the invention is shown for a typical ceiling **12**. The ceiling shown is cut way to show spaced apart ceiling joists **14** beneath a floor surface **16**. The invention **10** is comprised of generally a two part system comprising a mount system **20** and a storage container system **30**. The mount system, shown generally by reference numeral **20**, is attached to the underside of the spaced joists **14** directly, as for an unfinished ceiling, or through a finished ceiling surface **12** to the joists **14**. The mount system **20** is generally anchored to the joists **14** either directly or through a ceiling surface **12** via screws or other suitable fasteners by means of a power screwdriver or the like. The installation of the mount system is easily achieved by use of minimal tools, requiring at most a tape measure, a stud finder, and a power screwdriver. The mount system in FIG. **1** shows a preferred embodiment of the invention, which includes a plurality of spaced mounting rails **22** anchored to the ceiling via a plurality of screws **18**. Protruding downward from each of the mounting rails **22** are a plurality protrusions embodied as spaced pins **24** having each a pinhead **28**, which are intended to matingly engage with a plurality of counterparts (to be described) on the container system **30**. As depicted in FIG. **1**, the pins **24** are integrally formed with the mounting rails **22**, and the screws **18** are set spaced apart from the pins. It will be understood, and described hereinafter that the pins **24** may be individually mounted to the rails, or even having the screws set through the pins and rails together into the joists. Shown directly below the spaced rails **22** of the first embodiment is a storage container **32** having opposed flanges **34** which arc provided with a plurality of placed apart gaps, embodied as slotted keyholes **36**. The slotted keyholes **36** are the counterparts to the pins **24**, as they are designed to align with the pins **24** such that the pinheads **28** extend through a circular portion **38** of slotted keyholes. When it is desired to mount the storage container **32** to the ceiling, the storage container is lifted via handles **42** for instance, vertically toward the rails **22** such that the pins **24** and the keyholes **36** are aligned. The pinheads **28** are extended through the circular portion **38** of the keyholes **36** and then the storage container **32** is slid horizontally with respect to the rails **22**. At this point the pins **24** engage the slotted portion **44** of the keyholes and hit the end of the slotted portion to thereby "lock" the storage container **32** into place relative to the mounting system **20** and the ceiling joists **14**. It will be appreciated that multiple storage containers may be mounted in series along a pair of rails in a manner such that one container may be mounted or removed without disturbing another container mounted on the same pair of rails. Also, the mounting rails may be provided with adjacent pairs of pins (not shown) so that containers may be mounted in parallel below adjacent joists.

[0018] Referring still to FIG. **1**, a second embodiment of the storage container mounting system **10** according to the invention is shown for a typical ceiling **12**. In this embodiment, the mounting system **20** includes a plurality of spaced individual mounts **52** anchored to the ceiling via screws **18**. The spaced individual mounts shown are "L" shaped and are protruding downward from the ceiling joists **14**. The "L" shaped mounts **52** are intended to matingly engage with a plurality of counterparts (to be described) on the container system **30**. Shown directly below the "L" shaped mounts **52** of the second embodiment is a storage container **54** having a plurality of opposed ledges **56**. The ledges **56** are the counterparts to the "L" shaped mounts **52**, as they are designed to align atop of the "L" shaped mounts. When it is desired to mount the storage container **54** to the ceiling, the storage container **54** is lifted via handles **42** for instance, vertically toward the anchored "L" shaped mounts **52** such that the ledges are positioned slightly higher than the horizontal portion of the "L" shaped mounts. Then the storage container **54** is slid horizontally with respect to the rails "L" shaped mounts so that the ledges are aligned over that mounts **52** and the storage container is removable attached to the ceiling. Optionally, a stop **58** may be provided on one or more of the ledges **56**, so that during the horizontal positioning of the container, the "L" shaped mount engages the stop **58** on the ledge **56** and to thereby "lock" the storage container **54** into place relative to the mounting system **20** and the ceiling joists **14**. It will be appreciated that multiple storage containers may be closely mounted in series along a pair of rails to maximize previously unused storage space. Multiple containers may be mounted in a manner such that one container may be mounted or removed without disturbing another container mounted on the same pair of rails.

[0019] Referring to FIG. **2**, a ceiling storage container mounting system according to a third embodiment of the invention is shown for a typical ceiling **12** as above. The ceiling shown is cut way to show spaced apart ceiling joists **14** beneath a floor surface **16**. The mount system according to the third embodiment shown generally by reference numeral **20**, is attached to the underside of the spaced joists **14** directly, as for an unfinished ceiling, or through a finished ceiling surface **12** to the joists **14**. The mount system in FIG. **2** includes a mounting panel **62** anchored to the ceiling via a plurality of screws **18**. Anchored to the mounting panel **62** may be a variety of mounting elements most which have been heretofore described in part. More specifically, a plurality of mounting rails **22***a*, **22***b*, and **22***c*, are anchored to the mounting panel **62** by means of the screws **18** or by means of additional screws (not shown). Three examples of mounting rails are shown each having a plurality of spaced pins protruding downward, which are intended to matingly engage with a plurality of slotted keyholes in the flanges of the storage container **32** as described in the first embodiment of container system **30** and shown in FIG. **1**. Referring again to FIG. **2**, in the first example, mounting rail **22***a* is provided with individual mounting pins **24***a*. The individual mounting pins **24***a* are secured to the mounting rail **22***a* also means of screws **18** or by means of additional screws (not shown). In the second example, mounting rail **22***b* is provided with mounting pins **24***b* integrally formed with the mounting rail **22***b*. In the third example, mounting rail **22***c* is provided with adjustable mounting pins **24***c* which may slide horizontally with respect to the mounting rail **22***c* and the mounting panel **62** to which the rail **22***c* is mounted. The adjustable mounting pins may be constructed in any desirable manner. It will be understood that the third embodiment is specific to a mounting panel being anchored to the bottoms of a plurality of ceiling joists, which enables mounting apparatus of varying kinds to be attached thereto, and those without necessarily also being anchored into the joists.

[0020] Also shown in FIG. **2**, is an alternate form of the third embodiment of the invention. It will be understood, that the individual mounting pins **24***a*, may be mounted directly onto the mounting panel **62** via screws **18** or by means of other screws (not shown) to thereby eliminate the mounting rail **22***a*. In the ease of the individual mounting pins **24***a* being mounted onto the panel **62** by means of additional screws, the mounting pins **24***a* need not be necessarily anchored into the joists, provided enough support is available for mounting the storage containers.

[0021] FIG. **3** shows yet a fourth embodiment of the invention which includes a plurality of spaced mounting rails **22***d*, **22***e*, **22***f*. These mounting rails may anchored to the ceiling via a plurality of screws (not shown), and may be anchored directly to the joists, via a ceiling surface to the joists, or via a mounting panel, as described previously. These mounting rails have a continuous cross-sectional configuration, extending along the entire length of the mounting rail. Mounting rail **22***d* comprises a ledge having a left end "L" shape, mounting rail **22***e* comprises a double ledge having a middle inverted "T" shape, and mounting rail **22***f* comprises a ledge having a right end reverse "L" shape. It will be understood that the ledges of mounting rails **22***d*, **22***e*, and **22***f*, matingly engage with storage containers having opposing flanges, of the types shown in FIG. **1** and others (not shown). When it is desired to mount a storage container to the ceiling, the storage container is lifted vertically toward the rails such that the flanges of the storage container are positioned above the ledges of the mounting rails and at the open horizontal ends of the mounting rails, as viewed in FIG. **3**. Then the storage container is slid horizontally with respect to the rails. It will be appreciated that multiple storage containers may be mounted in series along a pair of rails, however accessing one container necessarily disturbs another container mounted on the same pair of rails, as the ledges of the mounting rails extend continuously along the mounting rails, and a container must be removed to access the previously mounted container(s).

[0022] FIG. **4** shows a variation of the a ceiling storage container mounting system **10**, which includes a mount system **20** and a storage container system **30**. The mount system **20** includes a plurality of spaced mounting rails **22***g* anchored to the ceiling **12** via a plurality of screws (not shown) as described above. Protruding outward from each side of the mounting rails **22** are a plurality protrusions embodied as spaced pins **24***g*, which are intended to matingly engage with a plurality of counterparts (to be described) on the container system **30**. Shown directly below the spaced rails **22***g* is a storage container **32** having opposed sides which are provided with a plurality of placed apart gaps, embodied as slotted holes **36***g* in the form of an inverted "T." The slotted holes **36***g* are the counterparts to the pins **24***g*, as they are designed to align with the pins **24***g* such that the pins **24***g* extend into the "T" of the slotted holes. When it is desired to mount the storage container **32** to the ceiling, the storage container is lifted via handles **42** for instance, vertically toward the rails **22***g* such that the pins **24***g* and the slotted holes **36***g* are aligned. The pins **34***g* are extended into the vertical portion of the slotted holes **36***g* and then the storage container **32** is slid horizontally with respect to the rails **22**. At this point the pins **24***g* engage the horizontal portion of the slotted holes and hit the end of the slotted portion to thereby "lock" the storage container **32** into place relative to the mounting system **20** and the ceiling joists **14**. It will be appreciated that multiple storage containers may be mounted in series along a pair of rails in a manner such that one container may be mounted or removed without disturbing another container mounted on the same pair of rails. Also, as the mounting rails are provided with adjacent pairs of pins so that containers may be mounted in parallel below adjacent joists. Also shown in FIG. **4** is a storage container lid **60** which is not described in detail but is exemplary in that all of the embodiments of the invention described herein may include a storage container lid for sealing the contents of the container.

[0023] FIG. **5** shows a variation of a ceiling storage container mounting system **10**, which includes a mount system **20** and a storage container system **30**. The mount system **20** includes a plurality of spaced mounting rails **22***h* anchored to a ceiling via a plurality of screws (not shown). In this variation of the invention, each of the mounting rails **22***h* are provided with a plurality of gaps embodied as slotted keyholes **24***h*, which are intended to matingly engage with a plurality of counterparts (to be described) on the container system **30**. Shown directly below the spaced rails **22***h* of the first embodiment is a storage container **32** having opposed flanges **34** which are provided with a plurality of placed apart protrusions, embodied as pins **36***h*. The pins **36***h* are the counterparts to the slotted keyholes **24***h*, as they are designed to align with the slotted keyholes **24***h* such that the pinheads extend through a circular portion of the keyholes **24***h*. When it is desired to mount the storage container **32** to the ceiling, the storage container is lifted vertically toward the rails **22***h* such that the keyholes **24***h* and the pins **36***h* are aligned. The pinheads are extended through the circular portion of the keyholes and then the storage container **32** is slid horizontally with respect to the rails **22***h*. At this point the pins **36***h* engage the slotted portion of the keyholes **24***h* and hit the end of the slotted portion to thereby "lock" the storage container **32** into place relative to the mounting system **20** and the ceiling. It will be understood that this variation of the invention is intended to demonstrate that the mount system can be provided with protrusions, or pins as in FIGS. **1**, **2**, and **4**, or with gaps, or slotted keyholes as in FIG. **5**. And vice versa, the containers can be provided with gaps, or slotted keyholes as in FIGS. **1** and **4**, and the mount system can be provided with the protrusions, or pins as in FIG. **5**.

[0024] FIG. **6** shows a detailed drawing of various individual mounting protrusions **6***a-c*. Mounting protrusion **6***a* and **6***b* are previously described with reference to FIG. **1** as mounting pin **24**, and "L" shaped mount **52**, and mounting protrusion **6***c* embodies an inverted "T" shaped mount **62**. These mounts can be mounted into a ceiling surface **12** or can be directly anchored into the joist **14**, if the ceiling is unfinished. Alternatively, these mounts can be mounted by screws into a mounting rail, as described previously with reference to FIG. **2**. The mounts are provided with screw holes to receive mounting screws **18**. FIG. **6** also shows each of these mounting protrusion embodied as integrally formed with a mounting rail **72**, **76**, and **80**, respectively. Pin **74** is

integrally formed with mounting rail **72**, shown in section, and a plurality of mounting pins **74** are spaced along the mounting rail **72** (shown in FIG. **1** as pins **24** and rail **22**). "L" shaped mount **78** is integral with mounting rail **76** and a plurality of "L" shaped mounts are spaced along the mounting rail (not shown). Similarly inverted "T" shaped mounts **82** are formed integrally with mounting rail **80** and a plurality of "T" shaped mounts are spaced along the mounting rail (not shown). These variations are similar to those shown in FIG. **3**, except that the mounts are spaced along the mounting rails, rather than extending along the rails as continuous ledges, so that multiple containers may be stored in series such that a container may be mounted or removed without disturbing and adjacent container.

[0025] The foregoing relates to preferred exemplary embodiments of the invention, it being understood that other variants and embodiments thereof are possible within the spirit and scope of the invention, the latter being defined by the appended claims.

We claim:

1. An apparatus for removably attaching at least one storage container to a ceiling comprising:

a mounting means attached to the ceiling for removably attaching a storage container; and

a storage container comprising interlocking means for interlockingly engaging said mounting means to thereby mount said container to said ceiling;

wherein said storage container is mounted to said ceiling by aligning said mounting means with said interlocking means, and sliding said interlocking means relative to said mounting means thereby removably attaching said storage container to said ceiling.

2. The apparatus according to claim **1**, wherein said mounting means comprise plurality of male or female engaging parts, and said interlocking means comprise a plurality of male or female engaging counterparts which matingly engage with the mounting means male or female engaging parts upon aligning said mounting means with said interlocking means and sliding said interlocking means relative to said mounting means.

3. The apparatus according to claim **2**, wherein said mounting means comprises a plurality of mounting rails anchored to a bottom side of a plurality of ceiling joists, wherein said mounting means comprises male engaging parts in the form of a plurality of protrusions provided on said mounting rails at spaced intervals, and wherein said interlocking means comprises female engaging counterparts in the form of a plurality of gaps provided on said storage container.

4. The apparatus according to claim **3**, wherein said protrusions are formed as pins and said gaps are formed as slotted keyholes, such that upon aligning said pins with said slotted keyholes, said pins matingly engage said keyholes, and upon sliding said keyholes relative to said pins, said container locks relative to said mounting rails.

5. The apparatus according to claim **2**, wherein said mounting means comprises a plurality of mounting rails anchored to a bottom side of a plurality of ceiling joists, wherein said mounting means comprises female engaging parts in the form of a plurality of gaps provided on said mounting rails at spaced intervals, and wherein said interlocking means comprises male engaging counterparts in the form of a plurality of protrusions provided on said storage container.

6. The apparatus according to claim **5**, wherein said protrusions are formed as pins and said gaps are formed as slotted keyholes, such that upon aligning said pins with said slotted keyholes, said pins matingly engage said keyholes, and upon sliding said pins relative to said keyholes, said container locks relative to said mounting rails.

7. The apparatus according to claim **2**, wherein said mounting means comprises a plurality of individual mounts anchored to a bottom side of a plurality of ceiling joists at spaced intervals, wherein said mounting means comprises male engaging parts formed as a plurality of protrusions integral with said individual mounts, and wherein said interlocking means comprises female engaging counterparts in the form of a plurality of gaps provided on said storage container.

8. The apparatus according to claim **7**, wherein said protrusions are formed as pins and said gaps are formed as slotted keyholes, such that upon aligning said pins with said slotted keyholes, said pins matingly engage said keyholes, and upon sliding said keyholes relative to said pins, said container locks relative to said individual mounts.

9. The apparatus according to claim **2**, wherein said mounting means comprises a mounting panel anchored to a bottom side of a plurality of ceiling joists, wherein said mounting means comprises male or female engaging parts in the form of a plurality of protrusions or gaps provided on said mounting panel at spaced intervals, and wherein said interlocking means comprises male or female engaging counterparts in the form of a plurality of protrusions or gaps provided on said storage container.

10. The apparatus according to claim **9**, wherein said mounting means further comprises a plurality of mounting rails anchored to a bottom side of said mounting panel, wherein said plurality of protrusions or gaps provided on said mounting panel are formed in or attached to said mounting rails.

11. The apparatus according to claim **9**, wherein said mounting means further comprises a plurality of individual mounts anchored to a bottom side of said mounting panel at spaced intervals, wherein said male engaging parts are formed as a plurality of protrusions integral with said individual mounts, and wherein said interlocking means comprises female engaging counterparts in the form of a plurality of gaps provided on said storage container.

12. The apparatus according to claim **1**, wherein said mounting means comprises a plurality of mounting rails anchored to a bottom side of a plurality of ceiling joists, wherein said mounting rails include an "L" shaped cross-section, wherein ledges are formed by a horizontal portion of the "L" shaped cross-section of the mounting rails, and wherein said interlocking means comprises engaging counterparts in the form of a plurality of flanges provided on said storage container, such that said flanges are aligned adjacent to and above said ledges and said flanges are slid relative to said ledges to thereby attach said storage container to said ceiling.

13. A method for removably attaching at least one storage container to a ceiling comprising the steps of:

attaching a mounting means to a ceiling at spaced intervals, wherein said mounting means includes a plurality of male or female engaging parts;

providing a storage container with matingly spaced interlocking means to matingly engage with said mounting means to thereby attach said container to said ceiling,

wherein said interlocking means includes a plurality of male or female engaging counterparts which matingly engage with said mounting means male or female engaging parts;

aligning said interlocking means with said mounting means;

matingly engaging said mounting means with said interlocking means; and

sliding said interlocking means relative to said mounting means thereby removably attaching said storage container to said ceiling.

* * * * *