Sept. 16, 1969 H. P. ACKER 3,467,460

RETRACTABLE CLOTHES STORAGE APPARATUS

Filed Aug. 11, 1967 2 Sheets-Sheet 1

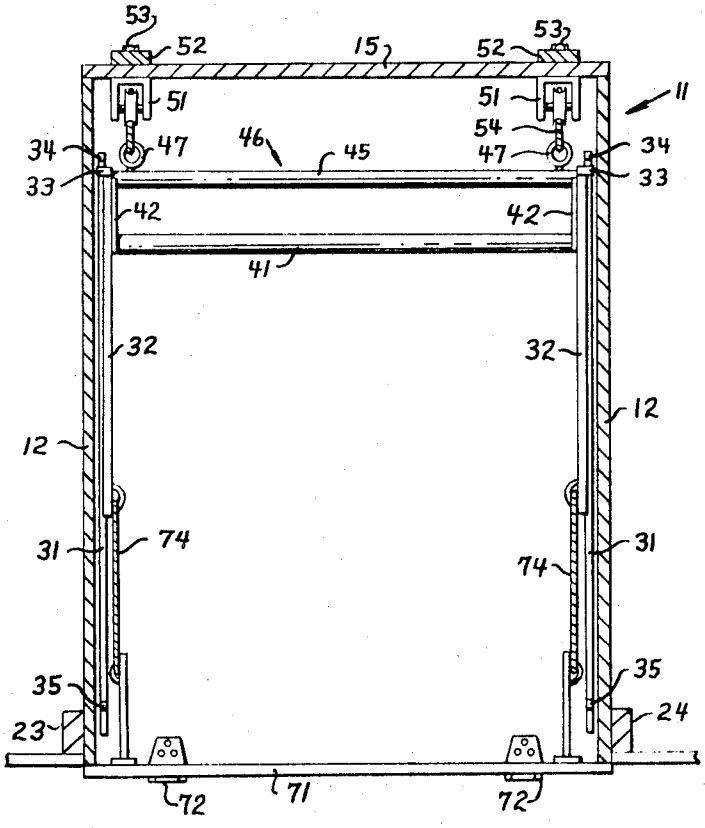


Fig. 1

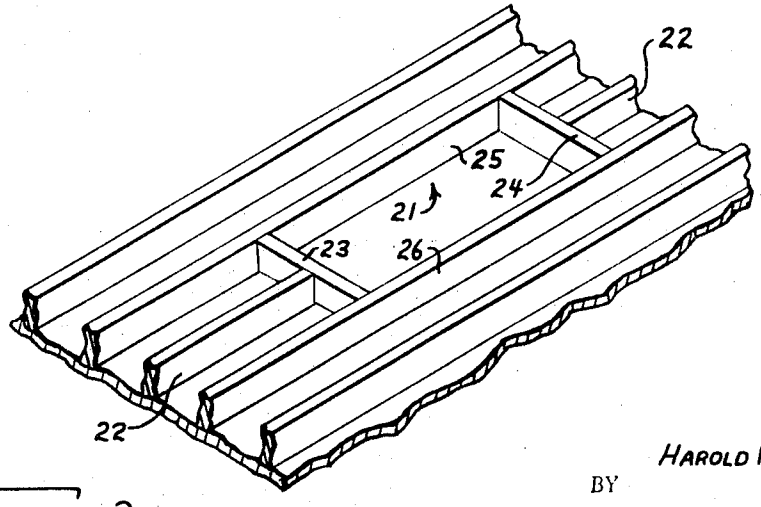


Fig. 3

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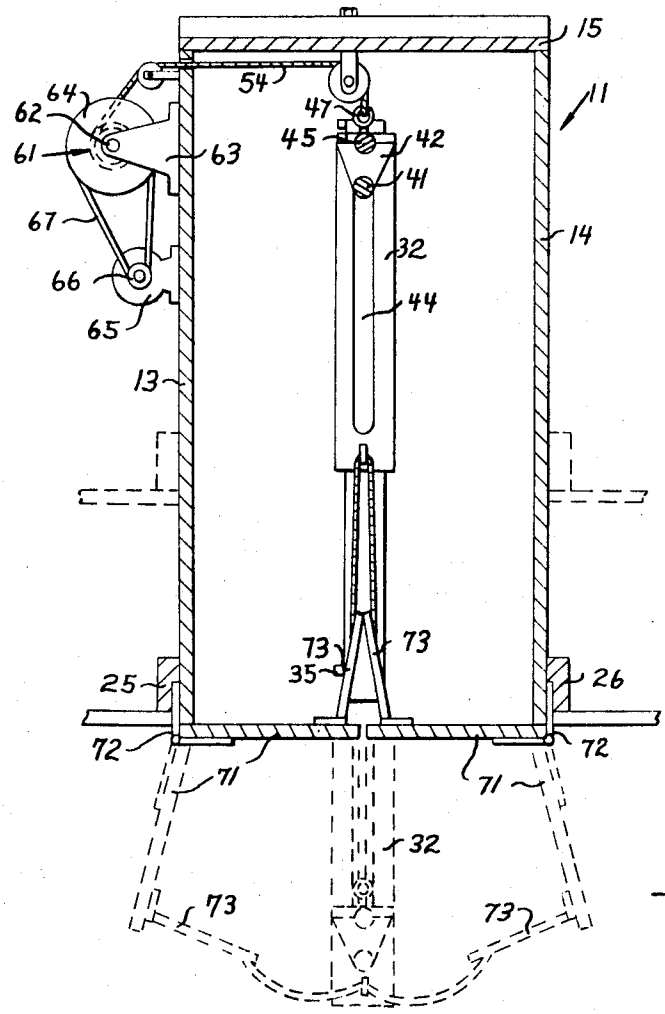


Fig. 2

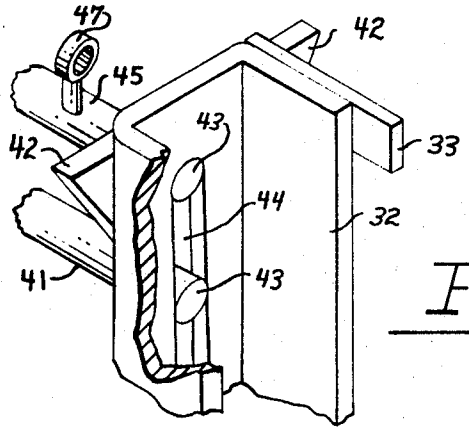


Fig. 4

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RETRACTABLE CLOTHES STORAGE APPARATUS

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U.S. Cl. 312—242 7 Claims

ABSTRACT OF THE DISCLOSURE

A retractable clothes storage apparatus having an enclosure for mounting in an attic, hinged doors for mounting in a ceiling to open the enclosure to a room of a house, a clothes bar mounted on telescoping guides and adapted to be raised into the enclosure and lowered into the room, a motor drive for raising and lowering the clothes bar and for opening and closing the doors.

BACKGROUND OF THE INVENTION

Field of the invention.—The field of the invention is generally clothes closets, and more particularly, clothes bars and hangers.

Description of the prior art.—Clothes bars, pegs, hangers and the like are well known. Many adaptations have been made in them in order to conserve living space in residences. Shift robes, highboys, and the like have often incorporated a sliding or otherwise horizontally retractable clothes bar. However, to the best of the inventor's knowledge, no apparatus similar to that of the present invention has previously been known in the art.

Each of the prior art structures mentioned above occupies floor space which, if not used for storage space, could be used for general living space. With the high cost of residential construction, floor space is at a premium. Therefore, in order to reduce the amount of floor space required in a residence, it is desirable to provide storage space either in an attic or a basement.

In order to make efficient use of the available closet space in residences, it is generally necessary to use the attic or basement storage for winter clothes during the summer and summer clothes during the winter. This shifting of clothes up and down steps or stairs is tiring work even though it is required only about twice a year.

What is needed is storage space that is accessable on the main floor of the residence and does not occupy additional floor space. The apparatus of the present invention provides such a storage space without occupying floor space. Also, it is adaptable to be installed in either new or existing residences.

SUMMARY OF THE INVENTION

The retractable clothes storage apparatus of the present invention has an enclosure for mounting in the attic of a house. Within the enclosure, which may be lined with cedar for moth protection, are a pair of opposed vertical first guide members, one at each end of the enclosure. A second guide member is slidably connected to each of the first guide members and adapted to extend its lower end below the lower end of the first guide member.

A horizontal clothes bar is slidably connected to the second guide members by end plates which are slidable over substantially the full length of the second guide members. A stabilizing bar parallel to and above the clothes bar has each of its ends affixed to one of the end plates.

The clothes bar, the end plates and the stabilizing bar form a sliding support structure which is supported by a pair of cables passing over pulleys affixed to the top of

the enclosure. The cables pass through one side of the enclosure, over second pulleys, and are affixed to drums mounted on an axle. Also mounted on the axle is a large belt pulley. An electric motor drives the drums by means of a small belt pulley on the motor shaft being belted to the large belt pulley on the axle.

A pair of hinged doors are provided at the bottom of the enclosure. Each door has a pair of closing arms mounted thereon on the side opposite its hinges. The closing arms are connected by lines to the second guide members.

When the motor is driven in one direction, it unwinds the cables off of the drums, permitting the sliding support structure to descend under the force of gravity. The second guide members also descend, thereby releasing tension on the door lines and allowing the doors to swing open. At a certain point, the second guide members engage a stop and are held from moving any lower. The support structure, however, continues to move downwardly until it reaches a second stop on the second guide members. In this position the clothes bar is easily accessable to persons standing on the floor.

To reverse the operation, rotation of the motor is reversed. This winds up the cables on the drums, thereby raising the support structure and any clothing hung on the clothes bar. In upward travel, the second guide members remain stationary until the support structure reaches a point near their upper ends and engage another pair of stops. At this point, the second guide members are lifted upwardly by the support structure and slide upon the first guide members. As the second guide members move upwardly, they pull on the door lines to close the doors. At the upward end of travel the doors are completely closed and the motor is turned off.

It is therefore an object of the present invention to provide a retractable clothes storage apparatus.

It is a further object of the present invention to provide a clothes bar which is retractable into the ceiling and attic of a room.

It is another object of the present invention to provide an apparatus which provides storage space which is accessable to persons standing on the floor of a room but which does not occupy floor space in the room.

It is still another object of the present invention to provide a clothes storage device that is convenient to use.

These and other objects and advantages will become apparent as the description proceeds, reference being made to the attached drawings and appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of the apparatus of the present invention in cross section taken generally along the line 1—1 of FIG. 2.

FIG. 2 is an end elevational view of the apparatus of the present invention in cross section taken generally along the line 2—2 of FIG. 1.

FIG. 3 is a perspective view of typical ceiling joists showing how the joists may be modified to install the apparatus of the present invention.

FIG. 4 is an enlarged perspective view showing one embodiment of the support structure and a guide member.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIGS. 1 and 2 is shown an enclosure **11** for mounting in an attic. The enclosure **11** has ends **12**, sides **13** and **14** and a top **15**. It may be desirable to modify the ceiling joists as shown in FIG. 3 and to provide a box frame **21** to support the enclosure and to compensate for any lost strength due to cutting a portion out of a joist **22**. The box frame may be formed of cross members **23**

and 24 and by portions of ceiling joists 25 and 26. The enclosure 11 may be formed of plywood, and may be cedar lined.

To each end 12 is mounted a first guide member 31. The guide members are substantially vertical and may be secured to the ends by any suitable means. Each guide member 31 extends from a point near the top of the enclosure 11 to a point near the bottom of the enclosure. Upon each of the guide members 31 is slidably mounted a second guide member 32 as shown in FIGS. 1 and 2. The second guide members 32 are slidable upon the first guide members from the position shown in FIG. 1 to the position shown in broken lines in FIG. 2. The limits of travel of the second guide members 32 are provided by a stop 33 at the upper ends of the second guide members 32 and by companion stop members 34 and 35 affixed to the first guide members 31. In the position shown in FIG. 1, the stops 33 define the upward limit of travel of the second guide members 32 by encountering the stop members 34. In the position shown in broken lines in FIG. 2, the downward most position of the second guide members 32 is determined by the stops 33 encountering the stop members 35.

A clothes bar 41 is affixed to end plates 42 as shown in FIG. 1. The end plates 42 are slidably connected to the second guide members by means of a pair of pins 43 on each end plate engaged in a slot 44 in each second guide member 32 as best shown in FIG. 4. A stabilizing bar 45 affixed at its ends to the end plates 42 forms with the end plates 42 and the clothes bar 41 a support structure 46. It will be seen that the limits of travel of the support structure 46 within the second guide members 32 is defined by the length of the slots 44.

Affixed to the stabilizing bar 41 near each of its ends is an eyebolt 47, to be described in more detail subsequently.

A pair of pulleys 51 are mounted to the top 15 of the enclosure 11 as shown in FIGS. 1 and 2. A reinforcing member 52, such as a 2 x 4 piece of lumber, may be used to stay the top 15 directly above each of the pulleys 51. The pulleys 51 may be affixed to the top 15 by means of bolts 53 as best shown in FIG. 1. The pulleys 51 are positioned so that cables 54 affixed to the eyebolts 47 and passing over the pulleys 51 will be vertical. The cables 54, after passing over the pulleys 51 run horizontally through holes 55 in the side 13, over second pulleys 57 affixed to the outside of the side 13 and are affixed to drums 61.

The drums 61 are mounted on an axle 62 which is rotatably mounted in axle supports 63. A large belt pulley 64 is also mounted on the axle 62. An electric motor 65 having a small belt pulley 66 mounted on its shaft drives the axle 62 through a belt 67 which engages the belt pulley 66 and the belt pulley 64.

A pair of doors 71 are mounted to the lower margin of the enclosure 11, as best shown in FIGS. 1 and 2, by a pair of hinges 72. Each door 71 has a pair of closing arms 73 mounted opposite the hinges 72. The closing arms 73 project from the inner sides of the doors 71 at a slight angle so that their distal ends are positioned substantially vertically above the margins of the doors 71 when the doors 71 are closed, as best shown in FIG. 2. A door closing line 74 has one end affixed to the distal end of each door closing arm 73 and the other end affixed to a point near the lower end of one of the second guide members 32. The lengths of the door closing lines 74 are selected so that the doors will be held in the fully closed position when the second guide members 32 are at the upper ends of their travel. In order to provide for manfacturing tolerances, the door closing lines may be made resilient so that they are under resilient tension when they are holding the doors 71 closed.

The apparatus of the present invention may also incorporate a conventional motor contrl circuit. The motor 65 may be drivable in one direction only, however it is preferred that the motor be reversible. "Up" and "down" control btutons may be conveniently positioned for access by persons in the room below the enclosure. Limit switches positioned on the guide members may be used to de-energize the motor 65 when the support structure has reached either of its limits of travel.

It may also be desirable to provide the motor 65 with an electric brake which will hold the motor shaft from rotating except when the motor is energized.

A close inspection of FIGS. 1 and 2 will reveal that with the support structure 46 at the upper limit of its travel, the second guide members 32 are also at the upper limit of their travel. As the cables 54 unwind from the drums 61 to lower the support structure, the second guide members 32 slide downwardly with the support structure, thereby releasing the tension on the door closing lines 74 and allowing the doors 71 to swing open under the force of gravity. The second guide members 32 continue to slide downwardly with the support structure until the stops 33 engage the stop member 35. At this point, the second guide members stop, however, the support structure continues downward movement, sliding within the second guide members 32, until it reaches the limits of its travel. In this position, the clothes bar is easily accessible for a person standing on the floor of the room to remove or add clothes from or to the clothes bar 41.

When the support structure is being raised, the support structure slides within the second guide members 32, which initially remain stationary. As the support structure continues upwardly, it encounters the tops of the slots 44 and from that point, carries the second guide members 32 upwardly with it. As the second guide members move upwardly, they pull on the door closing lines 74 and close the doors. At the upward limit of travel of the support structure and the second guide members, the doors are completely closed.

It will be seen that the present invention provides a retractable clothes storage apparatus which meets the hereinabove set forth objects. It is retractable into the attic; it is accessable to persons standing on the floor of the room below it; it provides storage space but does not occupy floor space in the room; and it is convenient to use.

While the invention has been illustrated and described in detail in the drawings and foregoing description, the same is to be considered as illustrative and not restrictive in character, it being understood that only the preferred embodiment has been shown and described and that all changes and modifications that come within the spirit of the invention and the scope of the claims are deired to be protected. For example, available attic space may not permit the doors 71 to be mounted flush with the ceiling, in which case the enclosure 11 may be installed with its lower end extending below the ceiling to form a bulkhead. This is illustrated by the broken line representation of the ceiling joist in FIG. 2. Furthermore, the apparatus may be made manually operated rather than motor operated and modifications made in dimensions without departing from the spirit of the invention.

The invention claimed is:

1. A retractable clothes storage apparatus comprising:
an enclosure for mounting in the attic of a house with an opening covered by a door through a ceiling of said house to said enclosure;
a clothes bar retractably mounted within said enclosure; and
means for lowering and retracting said clothes bar wherein said means includes a pair of first guide members affixed to said enclosure and a pair of second guide members slidable upon said first guide members.

2. The invention according to claim 1 wherein said means for lowering and retracting said clothes bar includes a pair of end plates, said end plates being slidable upon said second guide members and affixed to either end of said clothes bar.

3. The invention according to claim 2 wherein said means for lowering and retracting said clothes bar includes a drum rotatably mounted on an axle, means for rotating said axle and drum, and a cable having one end affixed to said clothes bar and the other end affixed to said drum.

4. The invention according to claim 3 wherein a said means for rotating said axle and drum includes an electric motor.

5. The invention according to claim 1 further comprising a door for closing said opening when said clothes bar is retracted and door operating means for opening said door when said clothes bar is lowered and for closing said door when said clothes bar is retracted.

6. The invention according to claim 5 wherein said means for lowering and retracting said clothes bar includes a pair of first guide members affixed to said enclosure and, a pair of second guide members slidable upon said first guide members, and said door opening means includes a line affixed to said door and to one of said second guide members.

7. The invention according to claim 6 wherein said line is resilient.

References Cited

UNITED STATES PATENTS

2,614,020	10/1952	Collins	312—312
2,730,213	1/1956	Mason et al.	5—10 X
2,968,048	1/1961	Roberge	5—10
3,165,368	1/1965	Hughes	312—242

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5—10; 312—272