United States Patent [19]

Hilsinger

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[54] **STORAGE CONTAINER**

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[52] **U.S. Cl.** **312/285,** 206/387, 312/11, 312/125, 312/319

[51] **Int. Cl.** **A47f 1/04**

[58] **Field of Search** ..... 224/42.41, 42.43, 42.42, 224/42.44, 42.45, 42.46 R; 312/10, 11, 125, 283, 135, 285, 319, 245, 248, 252; 206/DIG. 36, 387, 1

[56] **References Cited**

UNITED STATES PATENTS

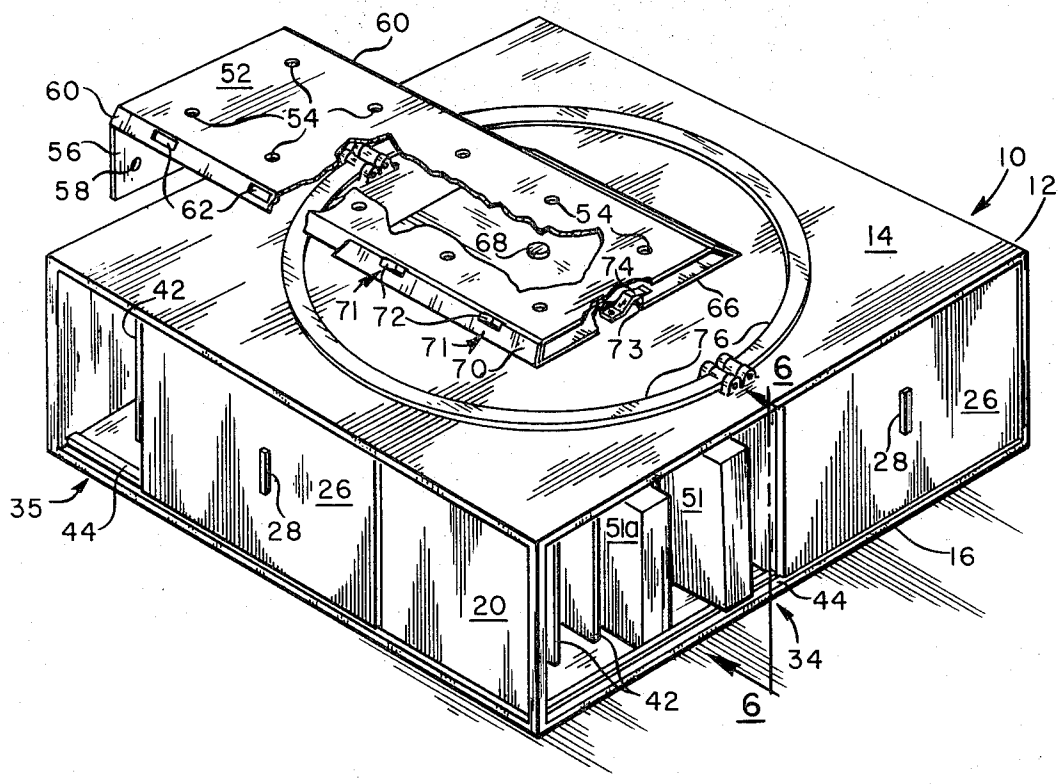
735,614	8/1903	Stevens	312/285 X
2,354,835	8/1944	Rosenberg	312/252
2,433,788	12/1947	Schade	16/126
2,522,202	9/1950	Theis	108/142 X
2,557,218	6/1951	Ewell	312/244 X
3,107,816	10/1963	Teague, Jr. et al.	312/18 X
3,170,741	2/1965	Richards, Jr.	312/285 X
3,180,697	4/1965	Mulch	206/1
3,334,950	8/1967	Brownlee	312/10
3,371,976	3/1968	Ritz, Jr.	206/DIG. 36
3,443,851	5/1969	Earl	206/DIG. 36
3,692,376	9/1972	McKinsey	312/11
3,736,036	5/1973	Mathus	312/11
3,933,225	4/1960	Fry et al.	224/42

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[57] **ABSTRACT**

A container for stereo tape cartridges and the like which includes a multi-sided housing having a plurality of receptacles in the respective sides thereof. Each receptacle includes a rearwardly positioned spring normally urging outward any cartridge stored therein, and a retainer to engage the forward end of the cartridge, restraining its outward movement. Slide means and means to accommodate rotation of the container are provided to facilitate storage of the holder and accessibility of all receptacles and cartridges contained therein, particularly as related to their use in automobiles.

6 Claims, 6 Drawing Figures



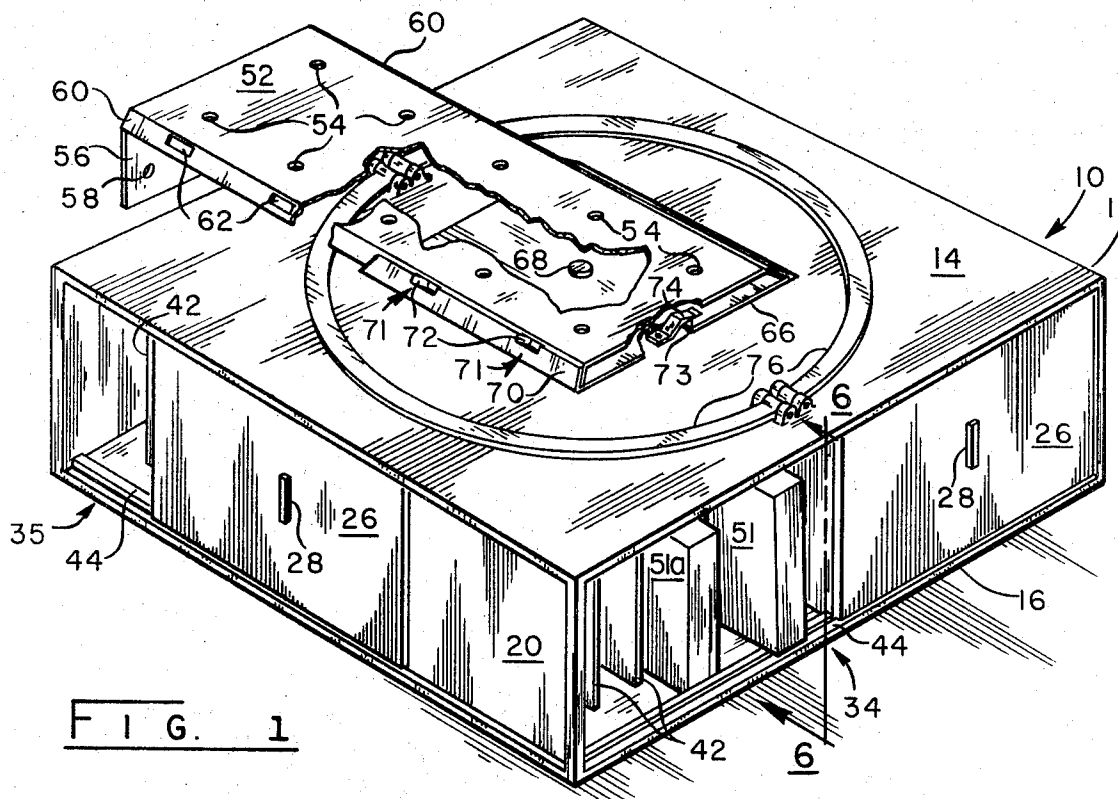

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FIG. 1

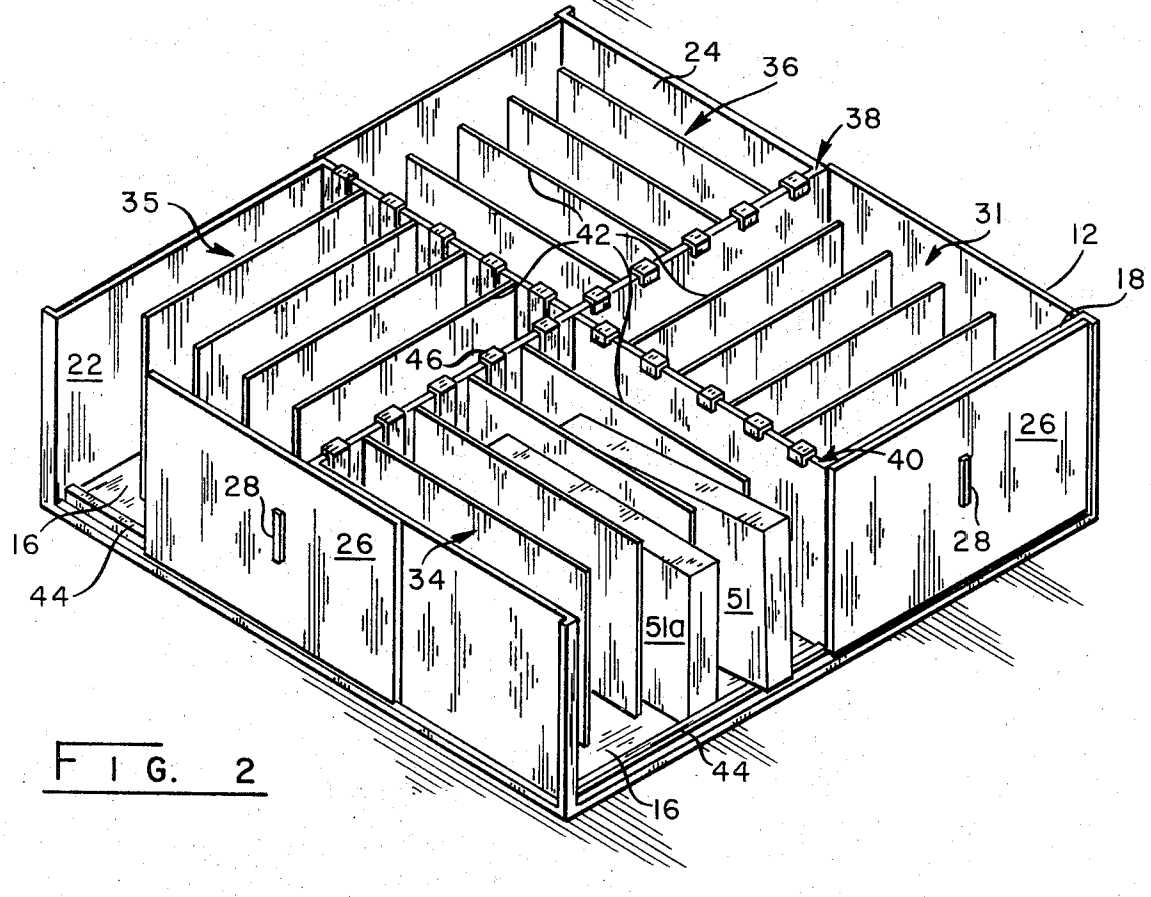

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FIG. 2

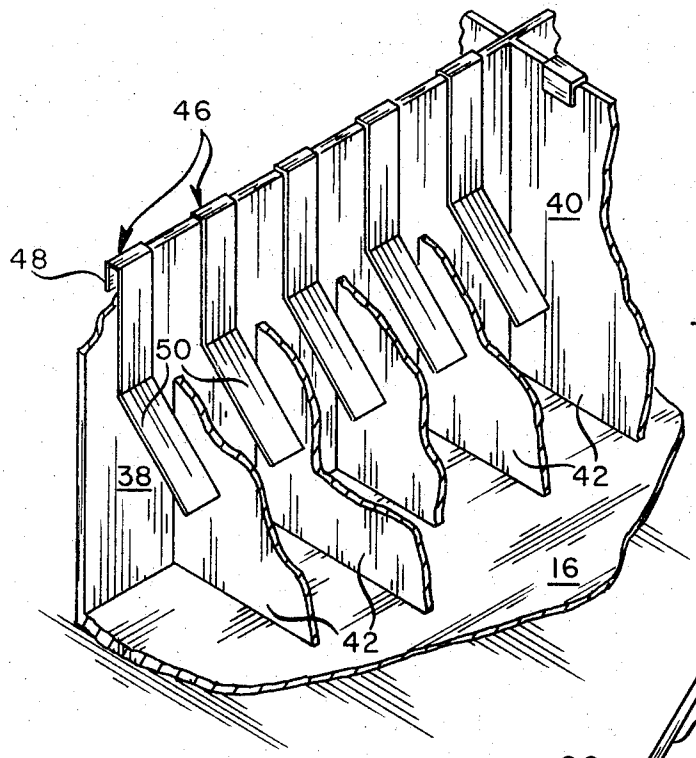


FIG. 3

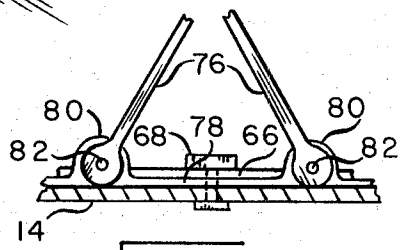


FIG. 4

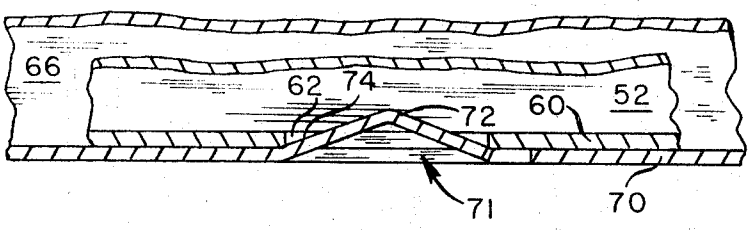


FIG. 5

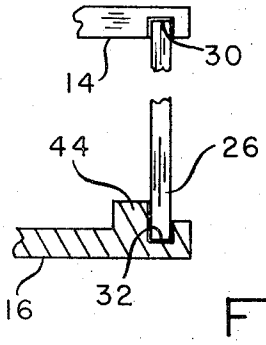


FIG. 6

STORAGE CONTAINER

BACKGROUND OF THE INVENTION

Recent years have seen a phenomenal growth in the use of stereo sound systems both in automotive vehicles and homes. Full utility of such systems requires the use of relatively large numbers of tape cartridges. The storage of such cartridges is a problem, particularly when space is restricted, as it is in automobiles. Cartridges often tend to become scattered about in a disorganized, untidy manner and are subject to destruction. Several stereo cartridge storage containers have existed in the prior art; for example, such as those shown in U.S. Patent Nos. 3,445,851 and 3,371,976. None, however, has succeeded in providing the storage capacity, the convenience, and the ease of utility required for the most effective use of stereo systems in confined spaces, again, particularly as related to their use in automobiles.

It is unfortunately true that stereo tape systems and their cartridges have become highly vulnerable targets for thieves, losses of cartridges from automobiles being especially prevalent. Since it is important that such vulnerability be minimized, the ease of removing and transporting cartridges is a significant consideration. This, together with a maximization of the benefits mentioned above have been primary considerations in the development of this invention.

Transportability of the nature described also solves an additional difficulty encountered by many users of stereo systems. When stereo systems are installed in more than one automotive vehicle, or in an auto and a home, considerations of full utility demand that transportability of cartridges from one system location to another be simple and convenient.

Cassette type tape recorders and playback units have also now come into vogue. Storability of cartridges for such cassette systems has further increased the scope of the problem. Variations in sizes and shapes of cartridges have contributed to the difficulty of proposed solutions, as has also the desire of users to organize cartridges according to the subject matter of the recordings.

SUMMARY OF THE INVENTION

This invention provides a simply constructed and convenient container for magnetic recording tape cartridges, solutions to the aforementioned problems and difficulties being provided.

The basic container comprises a housing, usually essentially square and short in configuration. Although it is to be understood that this cartridge container can be utilized effectively when only a single side or two sides thereof includes cartridge receptacles, it is usually configured to include four sides, the container or housing being divided into four quadrants, such that one quadrant is accessable from each side of the container.

Within each of the quadrants is a plurality of dividers, separating the interior into receptacles substantially matching the shape of the tape cartridge to be received therein.

Spring means is provided at the rearward extremity of each of the receptacles to normally bias a stored cartridge outward against a stop member, thereby effectively securing the cartridge in its position, without rattling. The cartridge may be easily released by simply pressing its front edge thereby releasing it from the stop means and permitting it to be readily grasped and withdrawn from the receptacle.

A door is provided for covering the series of receptacles in each of the respective quadrants.

Retainer and slide means mounted to the under side of an automobile dashboard, for example, with a mating portion being affixed to the upper surface of the cartridge container, are provided to facilitate its firm retention and its easy installation in and removal from its installed position under a dashboard.

Handles are provided on the upper surface of the container such that, when it is removed, it may be carried readily from place to place.

Through utilization of these features the present invention avoids the problems and deficiencies of the prior art in meeting the objects of invention. Other important objectives will also become apparent when the drawings of this invention are considered in light of the specification.

It will also be apparent that, while the invention is described in terms of storing stereo tape cartridges, it can also be used equally as effectively in storing other items by the simple expedient of modifying the receptacle configuration to match that of the item to be stored. Thus, while the description is specific in its terms, the specification and claims are not considered to be limited thereby to its use with stereo cartridges.

BRIEF DESCRIPTION OF THE DRAWINGS

This invention may be clearly understood by reference to the detailed description and to the drawings, in which:

FIG. **1** is a perspective view of the cartridge container of this invention generally illustrated in its most usual configuration, including its installation mechanism;

FIG. **2** is a perspective view of the container partially cut away to better illustrate its internal construction;

FIG. **3** is an enlarged cutaway of the central section of the container to better illustrate the spring means configuration;

FIG. **4** is a side view of the handles and their retention mechanism, as raised to their carrying positions;

FIG. **5** is a cutaway of a typical retention spring and receptacle for installing the container, and

FIG. **6** is a sectional cutaway view, taken along line **6—6** of FIG. **1.**

DETAILED DESCRIPTION OF THE INVENTION

In detail, the container of this invention is identified by the numeral **10** throughout the drawings. It comprises a substantially hollow housing **12** which, usually, is of essentially square configuration. Its height, or thickness, is only sufficient to accommodate the receipt of the specific items to be stored therein.

As illustrated, the housing **12** includes a top **14,** a bottom **16,** and four sides **18,20,22** and **24.** Each of these sides, at least in the preferred embodiment, includes a slidable door **26** having a handle **28** to facilitate its sliding. Obviously, grooves or other convenient features may be utilized in place of the handles **28.** The doors **26** are adapted to slide within upper and lower grooves **30** and **32,** appropriately provided in the top and bottom of the housing, substantially as illustrated in FIG. **6.**

It will be noted that the housing **12** is divided into four quadrants, variously identified as **34, 35** and **36,**

and 37. Thus, each of sides 18,20,22 and 24 includes a closed portion, e.g., as illustrated at 20 and an open portion or quadrant, e.g., as at 34, such open portions or quadrants defining entrances for receptacles utilized for the storage of stereo tape cartridges. Assisting to define the respective quadrants of the housing, are a pair of divider walls 38 and 40. These walls, more specifically, provide side and rear walls for the respective quadrants.

Within each of the quadrant sections is at least one and usually a plurality of partitions or dividers 42. Each of such dividers extends from the divider wall at the rear of its quadrant to a position a predetermined distance inside of the quadrant opening. Fixed to or integral with the top side of bottom 16 is a holding block or stop means 44. This stop means is provided as an abutment for the cartridges stored in the container. A receptacle 45 is defined between the respective dividers 42, its boundaries being defined by a divider 42 on each side thereof, the top 14, the bottom 16, and by the divider wall 38 or 40 at the rear of the receptacle. It will be apparent that the divider walls 38 and 40 and the container sides 18, 20, 22 and 24 also sometimes define receptacle sides.

The width, height and depth of each receptacle is slightly larger than the corresponding dimensions of the cartridge, or other items to be stored therein, so as to receive the same in a non-interfering relationship and to permit their insertion and extraction with ease.

Similarly, the dimension between the top of the stop means 44 and the top 14 must be larger than the height of the item to be stored to assure proper receipt of that item.

At the rear of each receptacle 45 is a spring means, usually in the form of a leaf spring 46. In its preferred configuration, each leaf spring is bent in a generally U-shaped configuration at its upper extremity, such as illustrated at numeral 48 in FIG. 3. It is then bent outward at the region indicated as 50 so as to extend forwardly from the divider wall to which it is attached and into its respective receptacle 44. The housing top 14 acts as a retainer to maintain the springs 46 in their installed positions over the divider walls.

When a tape cartridge, such as illustrated at 51 and 51*a*, is to be stored within one of the receptacles 45, it is inserted thereinto until it engages the spring 46 (see FIG. 2). It is then forced inward against the biasing action of the spring, deforming the spring until such time as the forward edge of the cartridge is beyond (inward of) the stop means 44. The cartridge is then forced downward until its forward edge is engaged behind the stop means 44 (see 51*a*). The biasing action of the spring 46 then applies a continuous force against the cartridge, urging it outward and causing its forward edge to engage the stop means. The cartridge is thereby firmly retained by the stop means and the leaf spring 46.

In its most usual application the container 12 is installed under the dashboard of an automobile. To assure its proper storage in that respect, and to accommodate its rotation for easy access to each of the quadrant receptacle groups, means is provided to facilitate its retraction to a position under the dashboard and its extension from that position.

A bracket 52 is installed under the dashboard to accommodate such storage. This bracket 52 is provided with a plurality of holes 54, or other suitable means, for attachment purposes. It additionally includes a tab member 56 extending downward at its rearward extremity, holes 58 being provided therein for attachment to the firewall of the automobile. Upon either side of the bracket 52, a flange 60 is bent downward at an angle of less than 90° to provide the male segment of a slide for a mating mounting bracket. The flanges 60 contain a plurality of cutouts 62 for a purpose to be described.

Attached to the top 14 of the housing 12 is a female bracket portion 66 having a rotating pin mount 68 of conventional construction located centrally thereof. This pin is also located centrally of the top 14 so as to provide a balanced rotational movement of the housing 12 relative to the bracket 66. The bracket 66 includes a pair of flanges 70, bent inward in excess of 90° and oriented to substantially match the flanges 60 upon the bracket 52, the flanges 70, in the usual case being external of and nesting the flanges 60 so as to be slidable over and with respect to them, while acting to firmly retain those flanges 60 and support housing 12.

Located upon the flanges 70, either separate from or integral therewith, are a pair of spring detents 71 having inwardly deformed portions 72 (FIG. 5). The spring detents 71 (shown in FIG. 5 as being integral with the flange 70) are located in forward-to-rearward alignment with the cutouts 62 and 64 in the flanges 60, such that when the female bracket 66, with its flanges 70, is moved over the male bracket 52 the spring detents 71 are caused to snap into and engage selected ones of the cutouts 62, providing a predetermined holding force to retain the relative positions of the two bracket portions 52 and 66, and the structure supported thereby, until an additional force is applied, causing the spring detents 71 to be deflected outward from the cutouts in a camming action and to be disengaged therefrom. Continued movement will cause the detents 71 to engage the next pair of cutouts 62, or result in removal of the bracket 66 and housing 12 from the bracket 52.

Included in the bottom of the bracket 66 is a cutout 73 adapted for engagement by any one (one only shown) of as plurality of spring detents 74 appropriately secured to the top 14 of the housing 12. Four such spring detents are provided, spaced at 90° from one another such that rotation of the housing 12 will result in one of such detents snapping into the cutout 73 in a manner similar to that explained with respect to detent 71 and cutouts 62. The four detents are spaced to releasably and selectively retain the housing in any one of four positions, with the respective open sides facing the operator.

While the slide and detent mechanism heretofore described is effective in carrying out the objects of this invention, alternative retention and slide means may be provided, so long as those objects are effectively met.

Attached to the top 14 of the housing 12 are a pair of handles 76 adapted to normally lie upon the top 14, essentially as illustrated in FIG. 1. They must lie in a plane sufficiently flat to obviate any structural interference when the retainer and slide assembly are in a sliding mode. While it is not mandatory that two handles be provided, such a configuration is preferred, to provide greater stability for carrying purposes. The handles 76 may be attached to the top 14 in any conventional manner.

It is sometimes desirable that a plate 78, either separate or integral with the bracket 66, be provided and

that bosses **80** be formed upon the opposite marginal region thereof to receive swivel pins **82** upon the handles **76,** to thereby facilitate their swiveling relationship.

Thus, the container **10,** with the cartridges contained therein may be easily removed and carried from an automobile to a house or from vehicle-to-vehicle very readily.

While there is no criticality attached to the material from which the various components of this invention are made, it will be apparent that the housing **12** may be made from fiberboard or plastic, appropriately bonded, or of grooved construction. If plastic, it may be integrally molded. In the latter event, suitable provision must be made for installation of the springs, as, for example, making the top **14** separate and bonding it into place after installation of the springs **46** and the doors **26.**

The brackets and handles may be made of plastic or metal as found most desirable to suit the needs of particular applications. Spring steel is normally used for the leaf springs.

Use of the storage container of this invention is facilitated by first engaging the bracket **66** upon the container with the bracket **52,** which is mounted in an automobile or the like, and sliding the bracket **66** thereover until the spring detents **71** engage in the first pair of cutouts **62,** thereby retaining the complete container assembly **10** in a relatively stable relationship, but disposed outward from the dashboard in a non-interfering structural relationship. While in this position the container **10** may be swiveled relative to the bracket **66** about the rotatable mount **68** so as to bring any desired one of its various quadrants into a forward position for accessability of the stored cartridges, the spring detents **74** snapping into the cutout **73** as each of the respective quadrants is reached. When the quadrant within which the cartridge to be utilized is properly oriented, a force is applied to the container **10** so as to cause the spring detent **71** to spring outward and be disengaged from the cutout **62,** slid along the flanges **70,** and to eventually engage the next pair of cutouts **62,** again holding the container in a fixed, stable mode. This action is continued until the container reaches its rearward-most position under the dashboard of the automobile and out of the way of passengers.

The operator then selects that cartridge stored in one of the receptacles **44,** presses upon the front of that cartridge so as to slightly depress the spring **46** behind it, and moves that cartridge out of engagement with the retainer means **43** by applying a slightly upward force. This permits the biasing action of the spring **46** to move the cartridge outwardly a short distance beyond the other stored cartridges, in an amount sufficient to permit it to be grasped by the operator and readily removed from its receptacle **44.**

The cartridge may be returned to its stored position by simply re-inserting it into its receptacle, pushing it rearward against the force of the spring **46,** and downward until it is firmly engaged behind the leaf spring **46.** At any time the stored cartridges are in this retained position behind the holding block **43,** the door **26** may be slid into its closed position, covering the quadrant and any cartridge stored therein.

Removal of the container **10** from its installed position is accomplished by simply grasping and pulling it outward against the force of the spring detents **71,** causing them to be disengaged from their respective cutouts, and pulling the container outward until the flanges of the respective brackets **66** and **52** are disengaged from one another. The container **10** may be then readily handled and carried from place-to-place by merely swinging the handles **76** upward.

Although the invention has been described and illustrated in detail, it is to be clearly understood that the same is by way of illustration and example only and is not to be taken by way of limitation, the spirit and scope of this invention being limited only by the terms of the appended claims.

I claim:

1. A storage container comprising:

a substantially hollow housing having means defining a top, bottom, and rear and side walls;

partition means in said housing fixed thereto and dividing the same into a plurality of major receptacles, each major receptacle being divided into a plurality of minor receptacles for receiving an item to be stored therein said minor receptacles encompassing substantially the total volume of said storage container;

stop means affixed to said bottom wall outwardly adjacent said partition means for engagement by and retention of items to be stored in the receptacles; and

spring means extending forward from said rear wall in each minor receptacle for engaging and biasing forwardly from said rear wall such stored items.

2. The storage container of claim **1** wherein said housing is four-sided and divided into four quadrants, each said quadrant encompassing one of said major receptacles and including a plurality of said minor receptacles.

3. A storage container for tape cartridges and the like comprising:

a housing divided into four substantially hollow quadrants encompassing the total volume of said housing;

at least one vertical partition in each said quadrant dividing the same into a plurality of receptacles having open fronts,

stop means adjacent each said open front for engagement by the items to be stored, and

biasing means opposite each said open front to normally urge items stored in the receptacles toward said open fronts in biased relation against said stop means.

4. The storage container of claim **3** wherein

a rotatable, slidable bracket is attached to said storage container; and spring detent means upon said bracket adapted to facilitate removable installation of said storage container and its rotation relative to separate structure.

5. The storage container of claim **4** wherein said bracket includes means for selective positioning and container relative to the separate structure and releasable retention means is provided to retain said housing in any one of four positions upon revolving said housing.

6. The storage container of claim **5** wherein

a pair of handles are attached to a top surface of said container in spaced relation on either side of said bracket for carrying said container.

* * * * *