United States Patent [19]

Wegley et al.

[11] **3,874,512**

[45] **Apr. 1, 1975**

[54] MULTI-SIDED STORAGE RACK FOR SKIS OR SIMILAR ARTICLES

[76] Inventors: **Jack H. Wegley,** 1805 Forest, Boulder, Colo. 80302; **John C. Foraker,** 485 Oneida, Boulder, Colo. 80303

[22] Filed: **Aug. 23, 1973**

[21] Appl. No.: **391,037**

[52] **U.S. Cl.** ..... **211/163,** 211/60 SK

[51] **Int. Cl.** **A47f 5/02**

[58] **Field of Search**..... 211/163, 60 SK, 60 G, 78, 211/58, 115, 131

[56] **References Cited**

UNITED STATES PATENTS

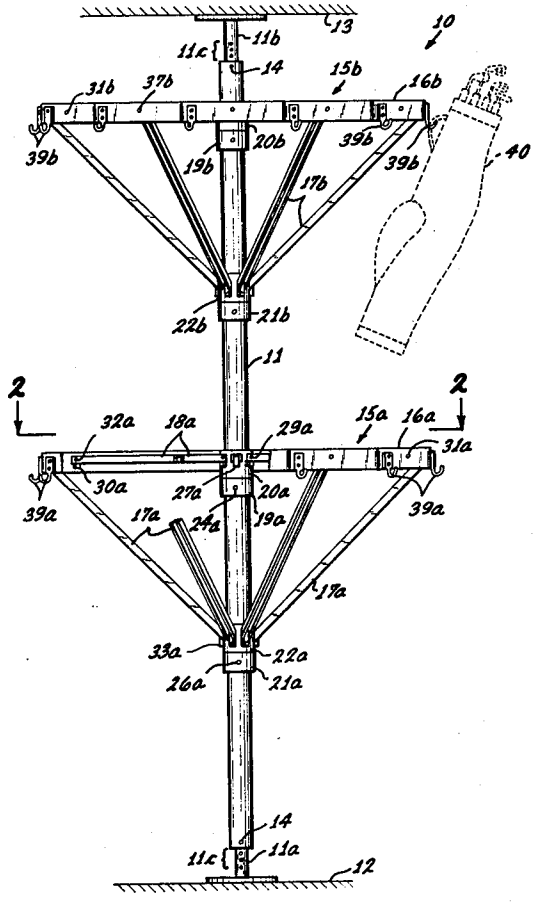
74,633	2/1968	Tice	211/163
663,838	12/1900	White	211/163
1,718,881	6/1929	Schander	211/163
2,334,518	11/1943	Turnbull	211/163
3,701,436	10/1972	Adams	211/60 SK
3,722,652	3/1973	Busch	211/60 SK

Primary Examiner—Paul R. Gilliam
Assistant Examiner—Andrew M. Calvert
Attorney, Agent, or Firm—Burton, Crandell & Polumbus

[57] **ABSTRACT**

A multi-sided or polygonal rack for storing or displaying skis or similar articles. A pair of unitary molded frame members are formed with a polygonal web integrally joined to a central top by a plurality of spokes extending radially from the hub to the midpoint of each side of the polygonal member. In one embodiment of the invention a carousel type arrangement is achieved by mounting two frame members in vertically spaced relationship upon a central post, the frame members being freely rotatable on the post. Another version finds the upper and lower frame members provided with wall mounting brackets, while still a third version finds the two frame members mounted upon a central post and provided with mounting brackets for mounting the rack upon a car. Both frame members of the car rack version and the upper frame members of the carousel and wall mounted versions are provided with resilient straps each having one end anchored to a projecting pin fixedly mounted adjacent one end of each side of the polygonal web, the straps having a washer like member fixed to their opposite ends which can be slipped over the pin at the next adjacent side to clamp the skis against the outer side of the polygonal member. The lower frame members of the carousel and wall mounted versions are formed with integral pockets at each exposed side of the polygonal outer web, the pockets serving to receive the tails of a pair of skis.

4 Claims, 19 Drawing Figures



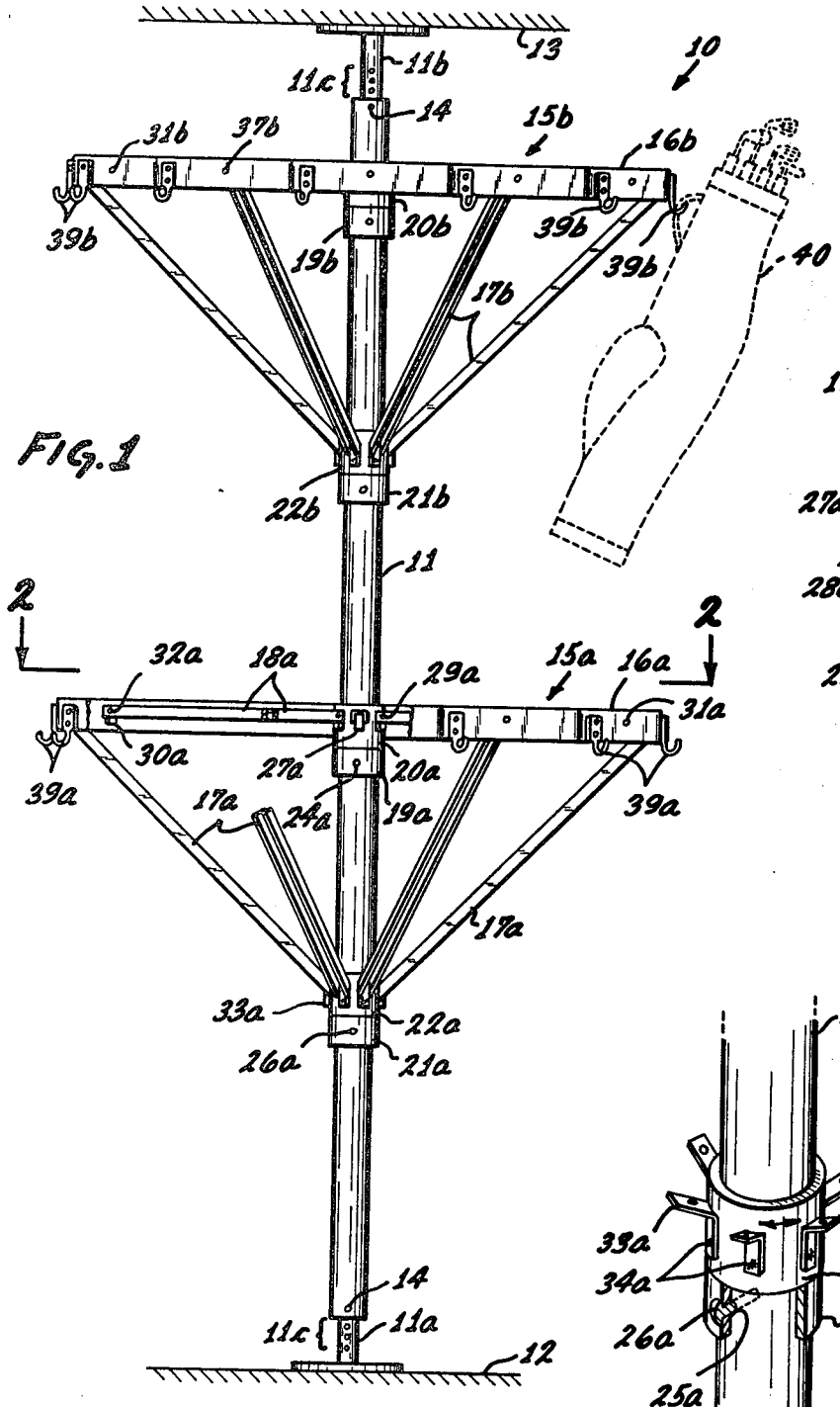


FIG. 1

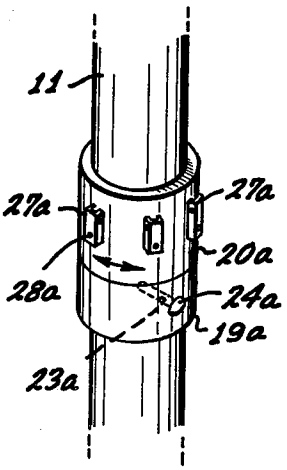


FIG. 3

FIG. 4

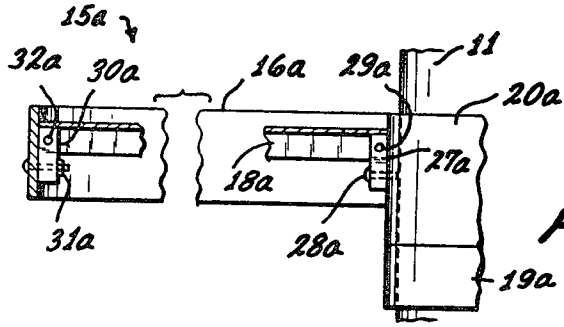


FIG. 5

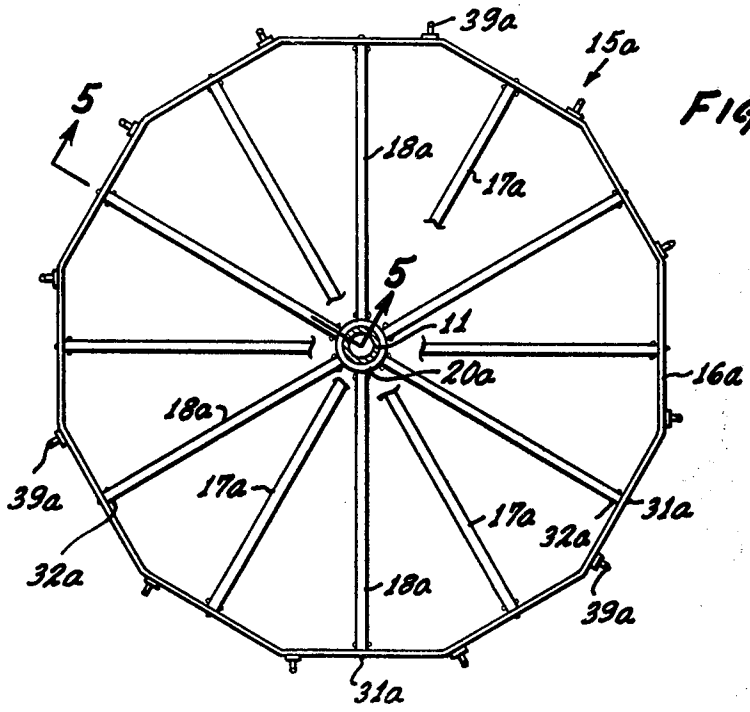


FIG. 2

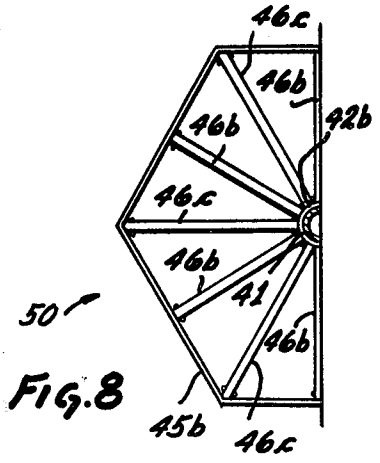


FIG. 8

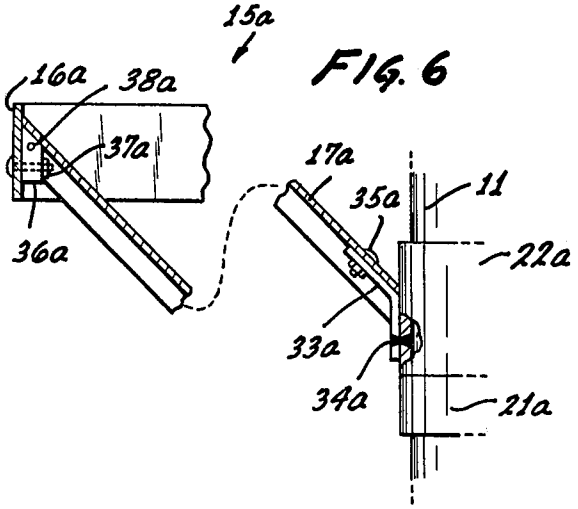


FIG. 6

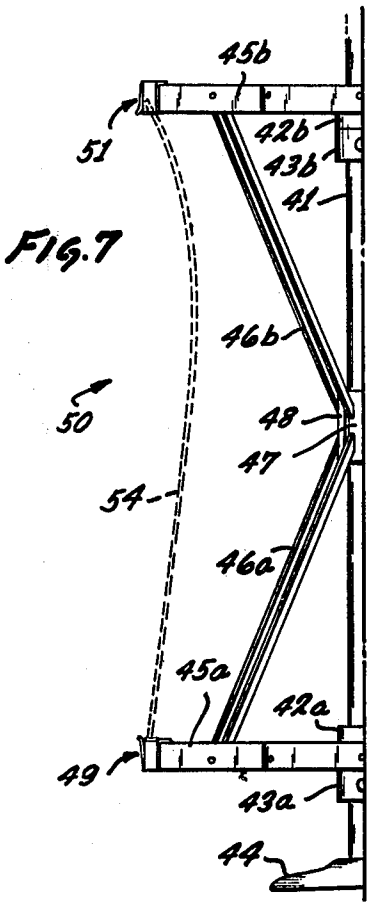


FIG. 7

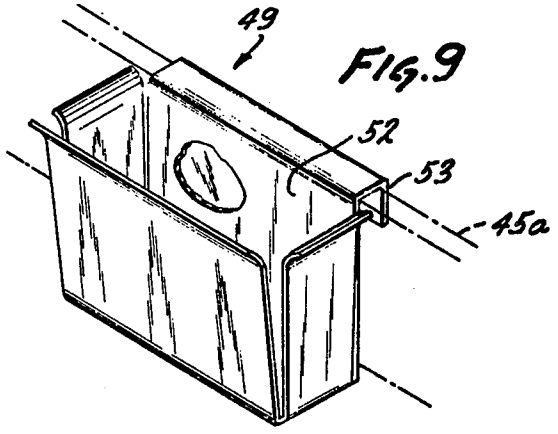


FIG. 9

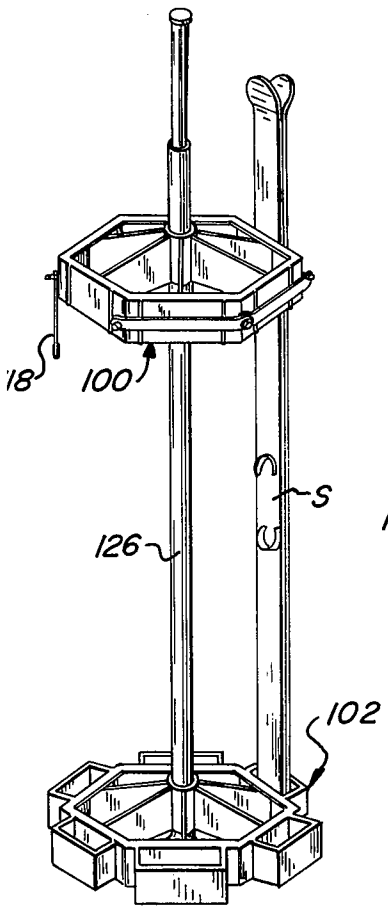


Fig_10

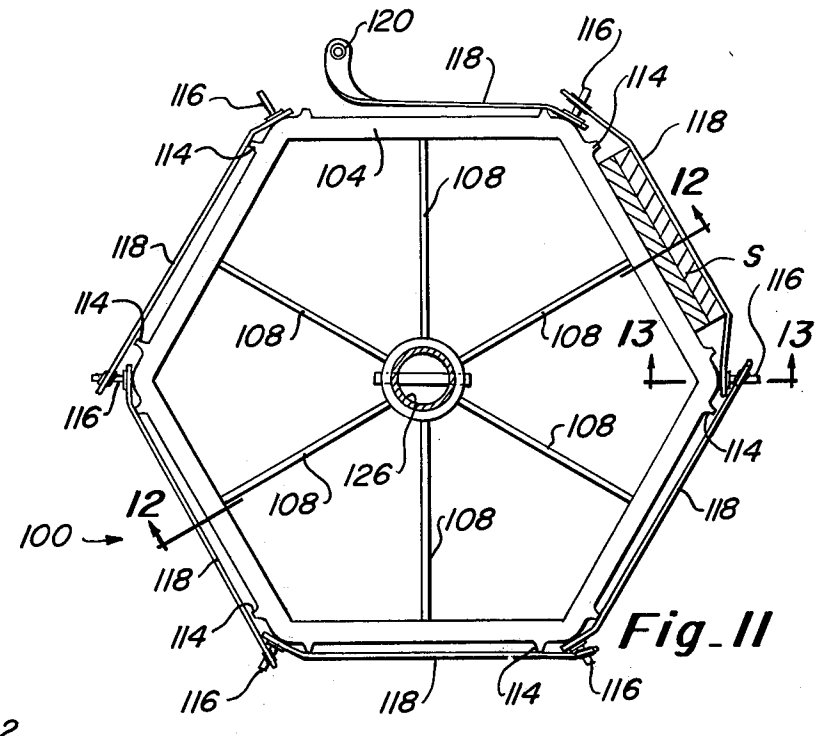


Fig_11

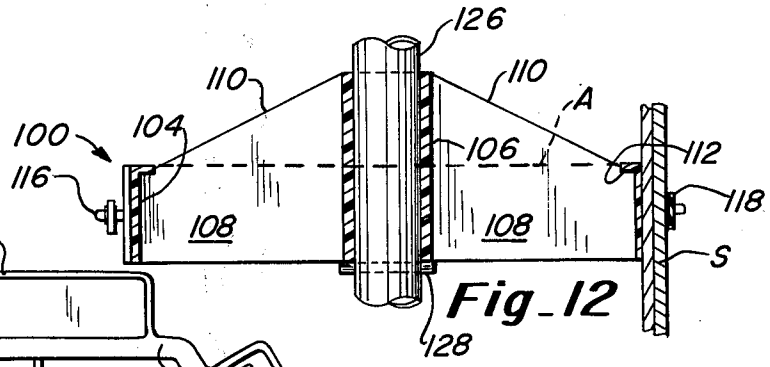


Fig_12

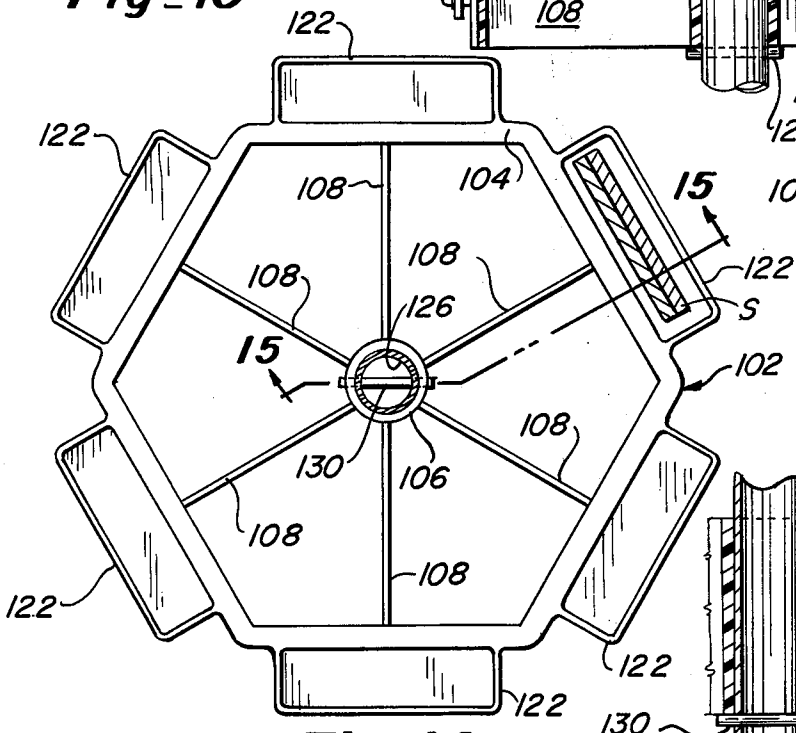


Fig_14

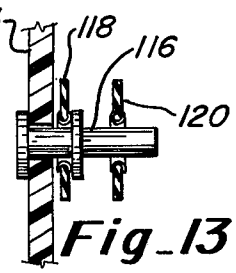


Fig_13

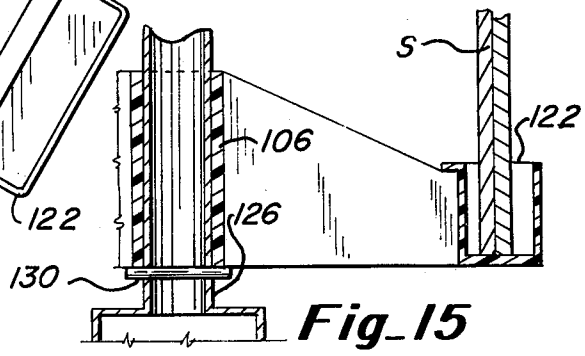


Fig_15

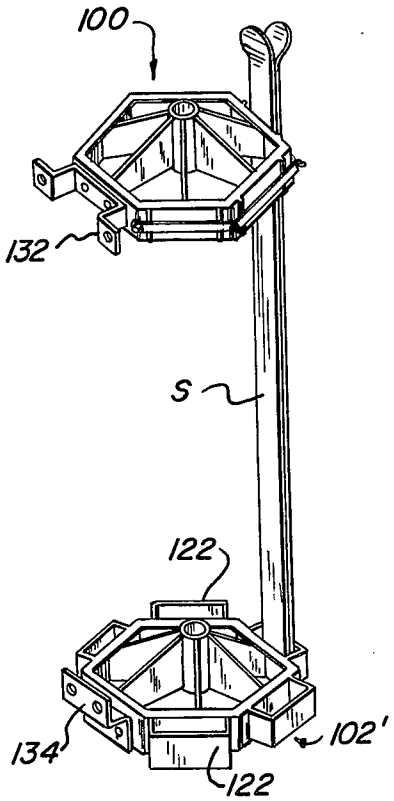


Fig_16

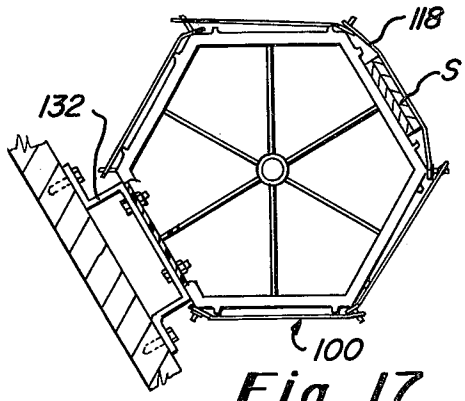


Fig_17

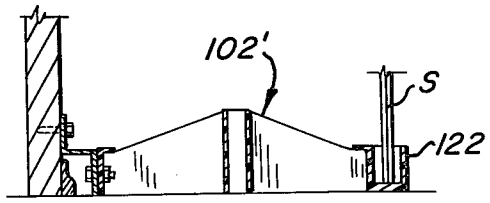


Fig_18

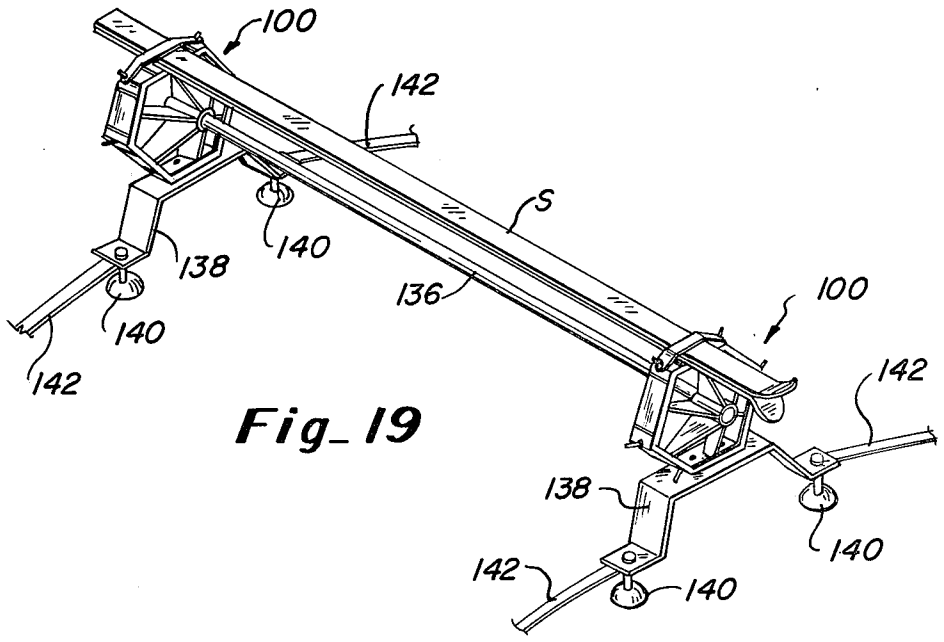


Fig_19

MULTI-SIDED STORAGE RACK FOR SKIS OR SIMILAR ARTICLES

CROSS-REFERENCE TO RELATED APPLICATION

This application relates to the co-pending application of Jack H. Wegley, Ser. No. 269,039, filed July 5, 1972, which application discloses a basic concept to which further improvements have been added in the present application.

SUMMARY OF THE INVENTION

The art of the present invention is found in a polygonal frame member which is of one-piece molded construction. Two basic forms of frame members are employed, each of which includes a polygonal outer web integrally joined to a coaxial central hub by radially extending spokes extending from the hub to the midpoint of each side of the polygonal outer member. In one form of frame member, pockets are formed along each outer side of the frame member, while in the other form of frame member the pockets are eliminated and replaced with a pair of locating ribs. The two forms of frame members may be produced from a single mold, inserts being placed in the pocket forming portions of the mold when it is desired to mold frame members without the pockets. For strengthening purposes, the central hub has an axial length greater than the axial width of the polygonal outer web and the radially extending struts are tapered, extending the full length of the hub and the full width of the rib.

Three forms of the invention are disclosed, a carousel type form in which frame members are rotatably supported at vertically spaced positions on a central post, the post preferably being of the extensible length type employed for pole lamps. A second form of the invention finds upper and lower frame members being provided with wall mounting brackets at one side of their polygonal configuration, the brackets being fixedly secured to a wall surface as by bolts. In both the carousel and wall mounted version, the pocket type frame members are employed as the lower of the two frame members, while the upper frame members do not have pockets, but are provided with resilient straps for clamping a ski rack to each of the exposed polygonal sides.

A third form of the invention, a car rack embodiment, is disclosed which finds two of the non-pocket type frame members fixedly mounted at spaced positions on a central shaft with car mounting brackets and straps secured to the lower side of the respective polygonal frame members.

Other objects and features of the invention will become apparent to the following specification and to the drawings.

FIG. **1** is a front elevational view of a carousel-type supporting apparatus in accordance with the present invention;

FIG. **2** is a top plan view of the carousel-type supporting apparatus taken along line **2—2** of FIG. **1** in accordance with the present invention;

FIG. **3** is a perspective view of the inner mounting means for the plurality of spokes of the carousel type supporting apparatus in accordance with the present invention;

FIG. **4** is a perspective view of the inner mounting means for the plurality of struts of the carousel-type supporting apparatus in accordance with the present invention;

FIG. **5** is an enlarged side elevational view, partially separated, of the mounted spokes of the carousel-type supporting apparatus taken along line **5—5** of FIG. **2** in accordance with the present invention;

FIG. **6** is an enlarged side elevational view, partially separated, of the mounted struts of the carousel-type supporting apparatus in accordance with the present invention;

FIG. **7**, is a partial front elevational view of another carousel-type supporting apparatus in accordance with the present invention;

FIG. **8** is a top plan view of the carousel-type supporting apparatus of FIG. **7** in accordance with the present invention;

FIG. **9** is a perspective view of a lower poket-type retaining member of the carousel-type supporting apparatus of FIG. **7** in accordance with the present invention;

FIG. **10** is a perspective view of a pole mounted ski rack;

FIG. **11** is a detail top plan view, partially in cross section of the upper frame member of the rack of FIG. **10**;

FIG. **12** is a cross sectional view taken on line **12—12** of FIG. **11**;

FIG. **13** is a detail cross sectional view taken on line **13—13** of FIG. **11**;

FIG. **14** is a top plan view, partially in section, of he lower frame member of the rack of FIG. **10**;

FIG. **15** is a detail cross sectional view taken on line **15—15** of FIG. **14**;

FIG. **16** is a detail perspective view of a wall mounted embodiment of the rack of FIG. **10**;

FIG. **17** is a top plan view of the rack of FIG. **16**;

FIG. **18** is a cross sectional view, taken on a central vertical plane of the lower frame member of the rack of FIG. **16**; and

FIG. **19** is a perspective view of a rack embodying certain features of the rack of FIG. **10** adapted to be mounted upon an automobile.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIG. **1**, there is shown a carousel-type supporting apparatus **10** in accordance with the principles of the present invention. The supporting apparatus **10** is generally comprised of a pair of individually rotatable retaining means **15***a* and **15***b* for retaining heavy objects, such as, the illustrated set of golf clubs and golf bag **40.** The retaining means **15***a* and **15***b* are rotatably mounted to a center post **11** which vertically mounted between the ground **12** and the ceiling **13.** The carousel-type supporting apparatus **10** may be adjusted by means of a pair of telescopic member **11***a* and **11***b* which include respective apertures **11**c that cooperate the respective pins **14** to allow the supporting apparatus to be securely mounted in a conventional showroom. The rotatable retaining means **15***a* and **15***b* are identical; therefore, for the sake of clarity and brevity, only the lower rotatable retaining means **15***a* will be described throughout the rest of this specification.

Referring now also to FIG. **2**, there is shown a top plan view of the carousel-type supporting apparatus **10** which illustrates the lower rotatable retaining means **15***a* set forth in the lower half of FIG. **1.** The lower ro-

tatable retaining means **15***a* is generally comprised of an annular member **16***a*, a plurality of diagonally disposed struts **17***a*, a plurality of horizontally disposed spokes **18***a*, an upper collar **20***a*, a lower collar **22***a*, and a plurality of retaining hooks **39***a*. The annular member **16***a* has twleve sections, each section having either one end of the six struts **17***a* or one end of the six spokes **18***a* mounted thereto. The other ends of the struts **17***a* and the spokes **18***a* are respectively mounted to the lower collar **22***a*, and a plurality of retaining hooks **39***a*. The annular member **16***a* has twelve sections, each section having either one end of the six struts **17***a* or one end of the six spokes **18***a* mounted thereto. The other ends of the struts **17***a* and the spokes **18***a* are respectively mounted to the lower collar **22***a* and the upper collar **20***a*. The mounting of such struts **17***a* and spokes **18***a* will be described in detail in the later discussions of FIGS. **3, 4 5** and **6.** The upper collar **20***a* and the lower collar **22***a* are rotatably supported on the center post **11** by respective rings **19***a* and **21***a* which are securely mounted to the center post **11** as clearly illustrated in FIGS. **3** and **4.**

Referring now to FIGS. **3, 4, 5,** and **6,** the means for constructing and rotatably mounting the retaining means **15***a* are shown in detail. In FIGS. **3** and **5,** the ring **19***a* is secured to the center post **11** by means of the aperture **23***a* and the pin **24***a*. A plurality of inner spoke brackets **27***a* may be mounted on the upper collar **20***a* by conventional means, for example, suitable screw and lock washer means **28***a*. The inner end of the spoke **18***a* may be secured to the inner spoke bracket **27***a* by means of an aperture and pin combination **29***a*. The outer end of the spoke **18***a* may be secured to the annular member **16***a* by means of an outer spoke bracket **30***a*. The outer spoke bracket **30***a* secures the spoke **18***a* by means of an aperture and pin combination **32***a*, and the outer spoke bracket **30***a* is secured to the annular member **16***a* by means of the screw and lock nut arrangement **31***a*.

Referring now to FIGS. **4** and **6,** there is shown the means in detail for securing the plurality of struts **17***a* between the annular member **16***a* and lower collar **22***a*. The ring **21***a* is secured to the center post **11** by means of the aperture **25***a* and the pin **26***a*. A plurality of inner strut brackets **33***a* may be respectively welded to the lower collar **22***a* at the illustrated area designated **34***a*. The inner end of the strut **17***a* may then be secured to the inner strut bracket **33***a* by means of a screw and lock nut arrangement **35***a*. The outer strut bracket **36***a* may be secured to the annular member **16***a* by a screw and lock nut arrangement **37***a*. In turn, the outer end of the strut **17***a* may be secured to the outer strut bracket **36***a* by means of an aperture and pin combination **38***a*.

For the most part, all of the elements of the carousel type supporting apparatus **10** are fabricated of aluminum, and the same applies for the later taught supporting apparatus **50,** except for the base stand **44.** The plurality of struts **17***a* and spokes **18***a* are inverted U-shaped aluminum channels which are relatively lightweight and may be arranged to ensure compact packaging of the carousel-type supporting apparatus **10.** The center post **11** may consist of two sections which allows the approximate maximum length of the package to be no longer than a respective diameter of the annular members **16***a* and **16***b*.

Referring now to FIGS. **7, 8** and **9,** there is shown another carousel-type supporting apparatus **50** for retaining shown skis **54** in accordance with the principles of the present invention. The supporting apparatus **50** is generally comprised of a pair of generally annular rotatable retaining means **45***a* and **45***b* which are adapted to rotate around a center post **41** which is supported by a base stand **44.** While the plurality of spokes **46***c* and the plurality of struts **46***a* and **46***b* are mounted in a similar fashion as the aforementioned spokes and struts of the supporting apparatus **10,** the plurality of struts **46***a* are attached to a common collar **47** by means of strut bracket **48** so that the retaining means **45***a* and **45***b* are locked in rotation movement in order to retain the shown skis **54.** As is obvious in light of the earlier discussion of supporting apparatus **10,** the pair of rotatable retaining means **45***a* and **45***b* are also rotatably mounted to the center post **41** by means of the respective lower collar and ring **42***a* and **43***a* and upper collar and ring **42***b* and **43***b*. The shown skis **54** are retained on the supporting apparatus **50** by means of cooperating lower pocket retaining member **49** and upper pocket retaining member **51.**

Referring now to FIG. **9,** there is shown a perspective view of the lower pocket retaining member **49** which is mounted to the lower retaining member **45***a* by means of the U-shaped inner support **53.** The pocket retaining members **49** and **51** may be constructed of suitable rigid material, such as, metal, and such material may be rubber or felt control on its inner surface **52.**

In FIGS. **10** through **19,** three exemplary forms of ski racks are disclosed which employ main frame members **100** (FIG. **11**) and two instances a main frame member **102** of a molded thermoplastic material.

Referring first to FIGS. **11** through **13,** main frame member **100** is preferably constructed as a one-piece member having a continuous polygonal outer web **104,** a centrally located hub **106** coaxial with the polygonal configuration of outer web **104,** and a plurality of stiffening webs **108** which extend radially from hub **106** to the respective midpoints of the individual sides of polygonal web **104.** As best seen in FIG. **12,** the axial extent of hub **106** is approximately twice that of the axial extent of outer web **100** and stiffening webs **108** are tapered as at **110** to provide an increased degree of rigidity to the assembly. Preferably, frame members **100** are cast as a single unit, however, in some situations, it may be desirable to form the members from two as at the dividing line A of FIG. **12** which are subsequently assembled by thermal bonding.

For additional strength, an inwardly projecting flange **112** (FIG. **12**) is formed around the inner periphery of outer web **104.** Near the end of each individual side of outer web **104,** a pair of outwardly projecting locating ribs **104** are integrally formed to extend axially along each side of web **104.**

At or adjacent each corner of polygonal web **104,** an outwardly projecting pin **116** is fixedly secured as by a riveting technique (FIG. **13**) to the web, a resilient strap **118** having one end fixedly secured to web **104** during the rivetin process. A coupling washer **120** is fixedly secured to the free end of each strap **118.** The length of resilient strap **118** is somewhat less than the distance between adjacent pins **116** so that when the coupling wahser **120** at the free end of the strap is slipped over the pin **116** at the adjacent side of web **104,** strap **118** is resiliently tensioned and may thus

serve as a clamping or holding memker for detachably holding a pair of skis S against one side of polygonal web **104**, the locating ribs **114** holding the skis in a substantially centered position at the side of web **104**.

Frame member **102** differs from frame member **100** in that a ski tail receiving cup **122** is integrally molded at the outer side of each side of polygonal web **104**. Apart from the presence of cups **122**, the configuration and dimensions of web **102** are identical to the corresponding configuration and dimensions of web **100** and by employing a mold with removable inserts, a single mold may be alternatively used ro produce webs **100** or **102**. It will be noted that the spacing between locating ribs **114** and the opposite end sides of cups **122** is identical.

Referring now to FIG. **10**, a pole mounted version of a ski rack embodying the invention is disclosed in which a frame member **100** and a frame member **102** are received on an extensible pole **126** which passes through the central hubs **106** of the respective frame members. Pole **126** is of the longitudinally extensible type which is adjustably extended to rigidly clamp the pole in a fixed position between a floor and ceiling, poles of this type being widely employed for supporting lamps. Frame members **100** and **102** are supported upon pole **106** for free rotation relative to the pole as by roll pins **128, 130** which pass through pole **126** in underlying relationship of the central hubs of the respective frame members. In the arrangement of FIG. **10**, the uppermost frame member **100** and the lowermost frame member **102** are rotatively coupled to eeach other whenever a pair of skis is mounted in the unit as shown in FIG. **10**, the tail ends of the skis being received in one of the cups **122** while the upper ends of the skis are clamped to one side of frame member **100** by the resilient straps **118**. Thus, when fully loaded, the rack can be freely rotated to bring a desired pair of skis to a selected position, thus enabling locating of the rack closely adjacent a wall or in a corner of the room.

In FIGS. **16** through **18**, a stationary wall-mounted version of the rack is disclosed in which the upper frame member **100** is provided with a generally U-shaped wall mounting bracket **132** fixedly secured to one side of the outer web of frame member **100**. A slightly modified form of frame member **102**, designated **102'** in FIGS. **16** and **18** is employed in which the cup **122** is omitted from one of the sides of polygonal member **104** and an offset wall mounting bracket **134** is fixedly secured to member **102'** in place of the omitted cup. The brackets **132** and **134** are fixedly secured, as by screws, to a wall surface as illustrated in FIGS. **17** and **18**.

In FIG. **19**, a car rack version of the invention is disclosed which employs two frame members **100** fixedly interconnected to each other by a central rod **136** which is fixedly secured at its opposite ends, as by riveting, to the central hubs of the respective frame members **100**. A mounting bracket **138** of a configuration suitable to support the two frame members **100** at a sufficient clearance from a car roof or rear deck is employed and is fixedly secured to one side of the frame members as illustrated in FIG. **19**. Conventional suction cups and straps **140** and **142** are employed to support and secure the rack of FIG. **19** to the roof or trunk lid of a car.

Thus, although the present invention has been shown and described with reference to particular embodiments, such as, a carousel-type supporting apparatus having hexagonally shaped retaining member, nevertheless, various changes and modifications obvious to a person skilled in the art to which the invention pertains, for example, generally annular shaped retaining members having some other member of sides, are deemed to lie within the spirit, scope and contemplation of the invention as set forth in the appended claims.

What is claimed is:

1. A carousel type rack comprising:

a vertically disposed post; and

upper and lower frame members projecting radially outwardly from said post, said pair of frame members being rotably mounted on said post and each of said frame members comprising:

a hub rotatably received upon said post;

a polygonal outer web coaxial with said post;

a plurality of radially extending spokes integral with said hub and extending from said hub to the midpoints of the sides of said polygonal member and integrally jointed thereto to define a rigid one piece frame member, the axial width of said polygonal web being less than the axial length of said hub with said spokes being tapered from a maximum axial width equal to that of the hub at their juncture therewith to a minimum axial width equal to that of said web at the juncture of said spokes within said web; and

retaining means for retaining articles contiguous to the sides of said polygonal member, said retaining means on the lower frame member comprising upwardly opening pockets integrally formed on the outer sides of the polygonal web, and said retaining means on the upper frame member comprising resilient straps secured at one end to one end of each side of said polygonal web and means for releasably attaching the other end of said strap at the other end of said one side of said polygonal web.

2. A ski rack comprising a pair of frame members, each frame member including a one piece polygonal outer web symmetrical about a central axis, a cylindrical central hub coaxial of said axis and a plurality of stiffening webs each intricately joined at one end of said hub and projecting radially from said hub, the opposite ends of said stiffening webs being respectively integrally joined to the midpoints of the sides of said polygonal outer web to constitute said hub, stiffening webs and polygonal web has a unitary one piece frame member, a rod like central member received within the hubs of said frame members, locating means engaged between said central member and said hubs to maintain a selected axial spacing between said frame members, and releasable securing means on said frame members for releasably securing skis to the sides of said polygonal webs, said securing means including a bolt fixedly mounted at one end of a side of said polygonal outer web of one of said frame members projecting outwardly from said outer web, a resilient strap having a length less than the length of a side of said polygonal web, means mounting one end of each said strap upon said bolt against the outer side of said outer web, and means at the other end of said strap for detachably securing said strap to a similar second bolt located at a corresponding position on an adjacent side of said

outer web, and wherein said securing means also includes a ski tail receiving cup integrally formed on a respective side at the outer web of the other of said frame members.

3. A ski rack as defined in claim **2** further comprising means for supporting said central member in a vertical position with said one of said frame members located adjacent the lower end of said central member.

4. A ski rack as defined in claim **3** wherein said locating means comprises bracket means for fixedly mounting said frame members upon a wall surface spaced in vertical alignment with each other.

* * * * *