June 20, 1961 J. K. NORTHROP 2,989,319

LIGHTWEIGHT GOLF-CLUB CARRIER

Filed Oct. 27, 1959 2 Sheets-Sheet 1

FIG-1

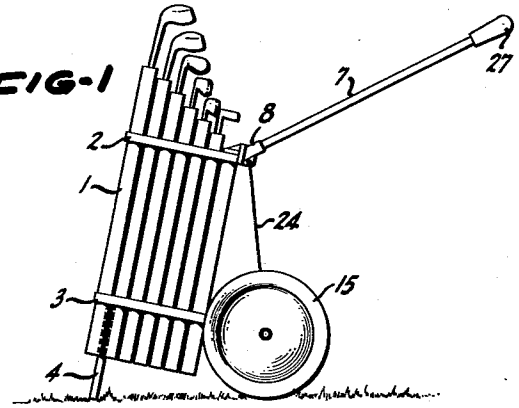
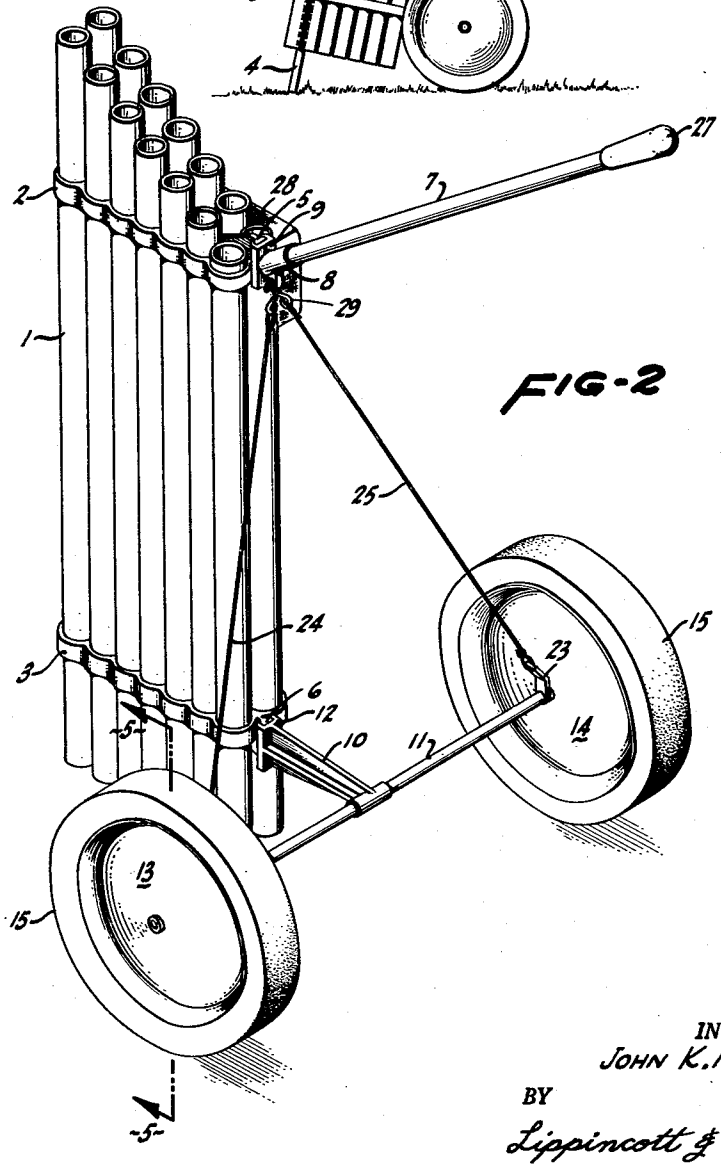


FIG-2



INVENTOR.
JOHN K. NORTHROP

BY
Lippincott & Ralle
ATTORNEYS

June 20, 1961 J. K. NORTHROP 2,989,319

LIGHTWEIGHT GOLF-CLUB CARRIER

Filed Oct. 27, 1959 2 Sheets-Sheet 2

FIG-3

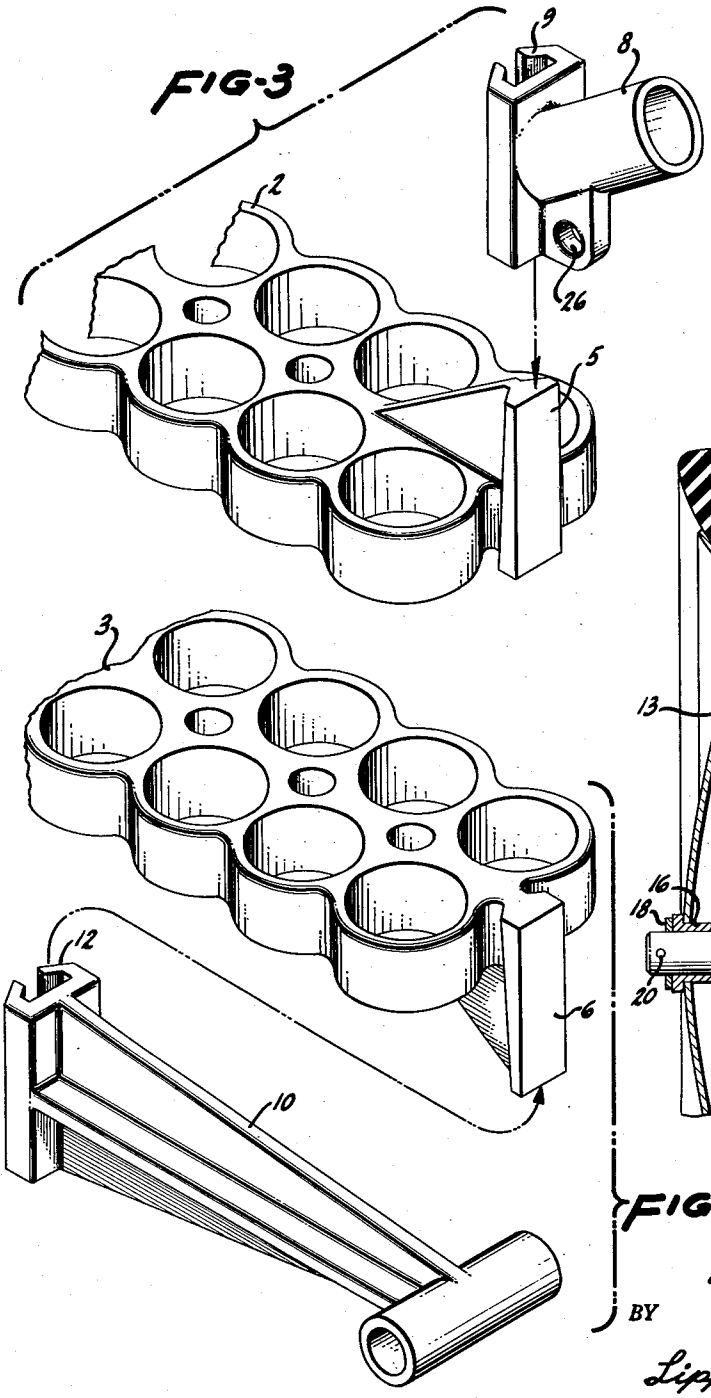


FIG-5

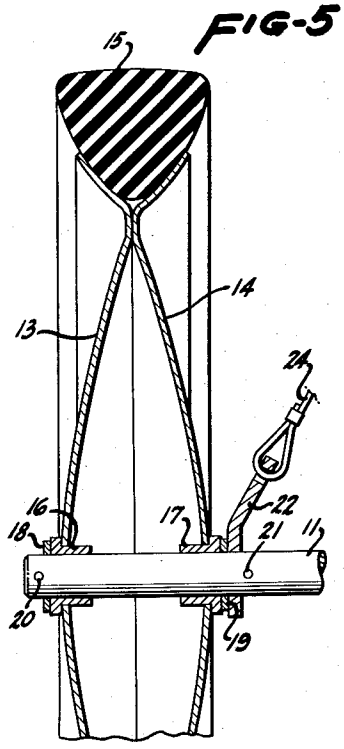


FIG-4

INVENTOR.
JOHN K. NORTHROP

BY

Lippincott & Ralls
ATTORNEYS

United States Patent Office 2,989,319
Patented June 20, 1961

2,989,319

LIGHTWEIGHT GOLF-CLUB CARRIER

John K. Northrop, 4410 Via Esperanza, Santa Barbara, Calif.

Filed Oct. 27, 1959, Ser. No. 849,049
1 Claim. (Cl. 280—47.26)

This invention relates to golf-club carriers or golf carts, i.e., manually propelled, wheeled vehicles for the transportation of golf clubs and accessories on a golf course. The primary object of the invention is to provide a golf-club carrier of improved, lightweight construction, whereby the manual effort required to transport the clubs is reduced to one-half, or less, of that usually required with prior golf carts. Other objects are to provide unusually easy club access and selection; superior protection for club shafts and handles; a simple remainder if clubs are inadvertently left on the course after use; and maximum protection to fairways from cart damage.

Most golf carts presently in use provide for the transportation of a golf bag in which clubs are carried rather loosely—with perhaps two or three subdivisions within the bag to separate woods, long irons, and short irons. Because the club handles become intermixed and crossed within the bag, chafing of the club handles and damage to club shafts may occur. Some players have added a number of thin-walled plastic or light-metal tubes within the bag for better protection of the handles and shafts from damage; however, there is no specific place in, or support by, the bag for each tube and club. Present golf carts for transporting golf bags, clubs, and protective tubes take numerous forms, generally comprising two wheels braced to a backbone, tubular structure having upper and lower clamps, supports, or guides to position the golf bag on the cart. The average cart, even if made of aluminum or magnesium alloys, weighs 12 to 18 lbs. The bag it supports weighs 6 to 12 lbs., and the protective tubes, if used, weight about 2 lbs., giving a total weight of 20 to 30 lbs. for a combination intended to transport approximately 12 lbs. of useful load, a full set of fourteen clubs.

In recent years a number of combination golf carts and bags have come on the market. Some of these have separate pockets for each club, and some have reduced weight to a degree by using comparatively flimsy frame structures, or by the use of small-diameter wheels instead of the normal 10- or 12-inch diameter size. Generally, the overall weight-saving has not been substantial, and the undersized wheels—where used—have the added disadvantage of increasing the effort required to propel the cart, are more sensitive to surface irregularities of the ground, and penetrate the grass to a greater degree by concentrating the cart weight into a smaller supporting area, thereby increasing the pressure on the turf.

The present invention provides a golf-club carrier weighing approximately 8 lbs., utilizing 12-inch diameter wheels with treads more than twice as wide as standard tires of the same diameter, which can be propelled up hill or on level turf with appreciably less than half the effort required with conventional golf carts. The resulting reduction in fatigue is of great significance to the large majority of golfers who do not employ caddies. The turf pressure and penetration are about one-fourth that of prior-art carts, and turf damage is lessened accordingly. The clubs are held in individual, smooth-walled tubes which form the principal component of the carrier body and provide maximum ease of club insertion and removal, with maximum protection to the club handles and shafts. Their logical and orderly arrangement expedites club selection and affords instant reminder of a missing club.

The invention may be best understood from the following illustrative description and the accompanying drawings.

FIG. 1 of the drawings is a side elevation of the improved golf-club carrier, clubs being shown in some of the club-holding tubes to illustrate the manner of use;

FIG. 2 is a projection view of the same carrier, drawn to a larger scale for better illustrating details of construction;

FIG. 3 is an exploded, fragmentary detail, drawn to a still larger scale, showing the manner in which the handle socket is removably attached to the upper bracket of the body assembly;

FIG. 4 is an exploded, fragmentary detail illustrating the manner in which the axle T is removably attached to the lower bracket of the body assembly;

FIG. 5 is a fragmentary, vertical section through one of the wheels, taken along the line 5—5 of FIG. 2.

Referring to the drawings, the improved, lightweight golf cart consists essentially of three, easily separated sub-assemblies; a body assembly, a handle, and a wheel-and-axle assembly. The body assembly consists of fourteen club-holding tube **1**, an upper bracket **2**, and an identical (but inverted) lower bracket **3**. Each of the fourteen tubes **1** is of sufficient diameter to accept the handle and shank of the golf club. They are graduated in length substantially in the same proportions as a conventional set of golf clubs, each tube being approximately three-fourths the length of the club that it is intended to hold. These tubes, having wall thicknesses of 15 to 25 mils, may be constructed of a tough, rigid plastic, such as polyvinyl chloride, or of magnesium or aluminum alloy. In a preferred embodiment, the fourteen tubes **1** are of polyvinyl chloride, are approximately $1\frac{5}{16}$-inch in diameter, and have a wall thickness of approximately 25 mils. The total weight of the fourteen tubes is only 2 lbs.

The brackets **2** and **3** are preferably of die-cast aluminum or magnesium alloy and weigh only 0.8 lb. Each bracket is provided with fourteen holes for receiving the fourteen tubes **1**; these holes are arranged in two parallel fore-and-aft rows of seven holes each. Each of the tubes **1** extends through a hole of bracket **2** and a corresponding hole of bracket **3**. The two brackets are located near the upper and lower ends of the tube assembly, respectively, and are cemented to the tubes, forming a rigid bundle of substantially upright, parallel tubes **1**. This assembled bundle of tubes **1** has ample structural strength to form the club-holding container and the backbone structure of the cart in one unit, which it will be noted is exceptionally compact and lightweight. A leg for the cart is formed by a polyvinyl chloride tube **4** of ¾-inch diameter, weighing only 0.1 lb., frictionally held between the lower ends of the four rearmost tubes **1** and extending downward from the rear portion of lower bracket **3**. The front end of each bracket terminates in the internal portion or tenon **5**, **6** of a tapered dove tail joint, by means of which the handle and the wheel-and-axle assembly are removably attached to the body assembly, as hereafter described.

The rod-like handle extends forward from the upper bracket **2**. Preferably, this handle consists of: a metal tube **7**, e.g., aluminum alloy, of ¾-inch diameter and 25 mils wall thickness, approximately 27 inches long and weighing 0.2 lb.; a die-cast aluminum socket **8**, weighing .15 lb.; and a cork grip **27** weighing $\frac{1}{50}$ lb. The socket **8**, which forms the base portion of the handle, comprises the external part **9** of the tapered dove tail joint by means of which the handle is removably fastened to the upper bracket **2** of the body assembly. As is best shown in FIG. 3, tenon **5** and its mating part **9** are tapered from top to bottom in such a way that the handle and the body assembly are securely locked together when part **9** is pressed downward onto tenon **5**. On the other hand, the handle is easily removed, when desired, simply by sliding part **9** upward away from tenon **5**.

The wheel-and-axle assembly comprises a die-cast, aluminum axle T **10**, weighing 0.3 lb., which is fastened to the center of a horizontal axle **11**, preferably a one-half inch diameter, aluminum alloy rod, about **2** feet long, weiging less than ½ lb. T **10** extends forward from lower bracket **3** of the body assembly, as shown. The base portion of the T is formed as the external part **12** which mates with tenon **6** to form the tapered dove tail joint, by means of which the wheel-and-axle assembly is removably connected to the body assembly. As is best seen in FIG. 4, tenon **6** and mating part **12** are tapered from bottom to top so that the wheel-and-axle assembly is securely locked to the body assembly when part **12** is slid upward over tenon **6**. On the other hand, the wheel-and-axle assembly can be readily removed from the body assembly by sliding the part **12** downward away from tenon **6**.

Two wheels are rotatively mounted at opposite ends of axle **11**. Each wheel comprises two lightweight, metal stampings **13** and **14**, as is best seen in FIG. 5, which may be riveted, welded, cemented, or clipped together. The thickness of stampings **13** and **14** is exaggerated in the drawings—in practice, they may be about 20 mils thick. These support a tire **15** of sponge-neoprene or similar material of 12-inch outside diameter and having a relatively wide, smooth tread for maximum turf support and minimum turf damage. The wheels are rotatively mounted on the axle **11** by means of two nylon bushings **16** and **17**, two washers **18** and **19**, and cotter pins or other fasteners inserted through holes **20** and **21** of the axle **11**. The two wheels, complete, weigh just over 3.5 lbs., of which 2.5 lbs. is in the extra-large tires that promote easy rolling and minimum turf damage.

Two small clips **22**, **23** are mounted upon axle **11** just inside of and adjacent to the two wheels. Two flexible brace wires **24**, **25** are preferably 1/16-inch diameter stranded-steel wires. The lower ends of wires **24** and **25** are fastened to clips **22** and **23**, as shown in FIG. 2. The upper ends of the two brace wires are provided with hooks **29** (see FIG. 2) which are received by a hole **26** (see FIG. 3) provided in the handle socket, as shown. Thus, the two brace wires **24** and **25** are removably fastened to the handle, and extend from the base of the handle to the axle **11** in an inverted-V configuration. These two flexible steel wires provide transverse bracing for the assembled cart. Not only are they lighter in weight than braces heretofore used, but also they permit flexure of the axle to absorb shocks. They are easily unfastened from the handle for disassembly of the cart, and occupy negligible space when the cart is disassembled for shipment or storage. When the cart is assembled, the wires **24**, **25** serve the additional purpose of pulling the handle and the wheel-and-axle assembly toward each other, thus preventing accidental removal of either from the body assembly.

If desired, a small fabric bag **28**, suitable for carrying golf balls, tees, gloves, and the like, may be attached to either side of upper bracket **2**. Preferably this bag is too small to carry shoes, sweaters, and other items of clothing that are sometimes unnecessarily transported around the golf course to the further fatigue of the player. In the preferred embodiment of the invention, the fabric bag provided weighs only 0.1 lb.

For disassembly and stowage, the brace wires **24**, **25** are unhooked from hole **26**, and the tapered, dove tail joints are separated to remove the handle and the wheel-and-axle assembly from the body assembly. Leg **4**, being held only by frictional engagement with the four rearmost tubes **1**, is easily removed. Wheels can be readily removed from the axle, if desired, for still further compaction or long-distance shipment. The total weight of the complete cart, according to a preferred embodiment, is only 7.79 lbs. It may be seen that this is about one-third the weight of conventional, prior equipment intended for the same purpose, and that the combined weight of cart and clubs is about one-half as great as heretofore. With the wide-tread, 12-inch diameter tires described, turf pressure and penetration are about one-fourth what is normal with prior golf carts in common use. The propulsion effort is less than half that normally required heretofore. The individual smooth-walled tubes **1** provide maximum ease of club insertion and removal, and are far superior in this respect to the individual fabric pockets sometimes used in golf bags. The relatively light turf pressure precludes any possible damage to tees or fairways.

It will be understood that the particular weights given for the several parts are only illustrative of the exceptional weight reduction achieved by use of the present invention, and that some variation in the weights of individual parts is to be expected from variations in design, materials used, and the like. Also, the number of tubes **1** may be reduced for players who carry less than a full set of clubs; for example, many players carry no more than ten clubs, and for them a cart having only ten of the tubes **1** (five tubes per row) may be satisfactory, or even preferable.

What is claimed is:

A lightweight golf-club carrier comprising a plurality of club-holding tubes each adapted to receive the handle and shank of a golf club, said tubes being graduated in length in substantially the same proportions as a conventional set of golf clubs, each tube being approximately three-fourths the length of the club that is intended to hold, upper and lower brackets each provided with holes for receiving said tubes, said holes of each bracket being arranged in two similar, parallel, fore-and-aft rows of holes, each tube extending through a hole of each bracket and being cemented thereto forming a rigid bundle of substantially upright tubes, a tubular leg frictionally engaging a plurality of said tubes and extending downward from a rear portion of said lower bracket, a removable, rod-like handle extending forward from said upper bracket, a base portion of said handle and a front end portion of said upper bracket being formed as separable, mating parts of a tapered dove tail joint, a removable axle T extending forward from said lower bracket, a base portion of said T and a front end portion of said lower bracket being formed as separable mating parts of a tapered dove tail joint, a horizontal axle attached to said T, two wheels rotatively mounted at opposite ends of said axle, two clips fastened to said axle inside of and adjacent to said wheels, and a pair of flexible brace wires extending from said clips to the base of said handle in an inverted-V configuration.

References Cited in the file of this patent

UNITED STATES PATENTS

2,236,053	Caron	Mar. 25, 1941
2,681,232	Womack	June 15, 1954
2,758,848	Christensen	Aug. 14, 1956

FOREIGN PATENTS

236,390	Great Britain	July 9, 1925

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,989,319 June 20, 1961

John K. Knorthrop

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, line 17, for "remainder" read -- reminder --; column 1, line 38, for "weight", first occurrence, read -- weigh --; column 2, line 20, for "tube" read -- tubes --; column 3, line 5, for "weiging" read -- weighing --; column 4, line 36, for "that is intended" read -- that it is intended --.

Signed and sealed this 9th day of January 1962.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents