Dec. 1, 1970 J. F. SPIELMAN 3,544,126

COLLAPSIBLE HAND-PULLED GOLF CART

Filed April 7, 1969 3 Sheets-Sheet 1

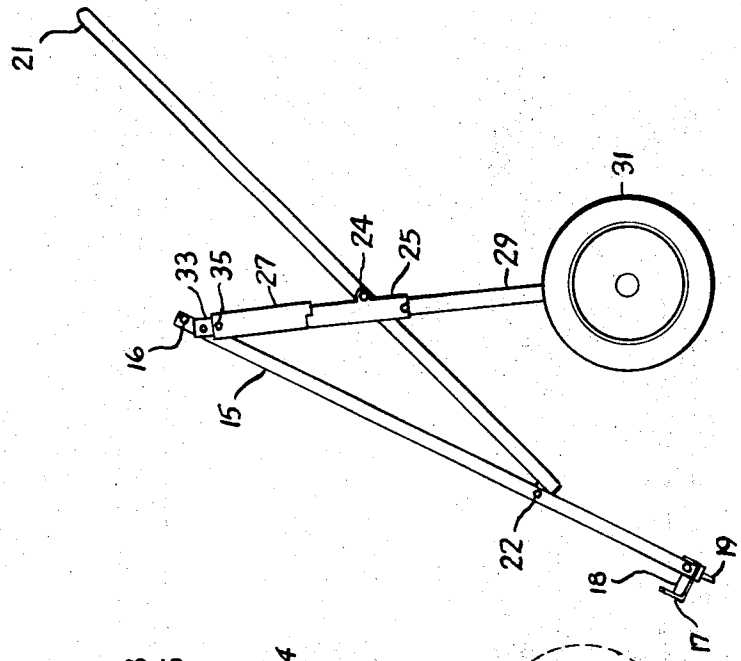


FIG. 3

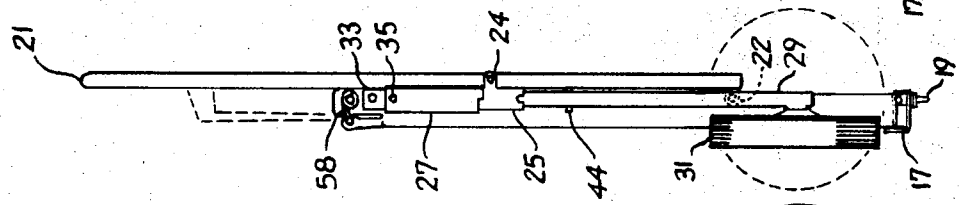


FIG. 2

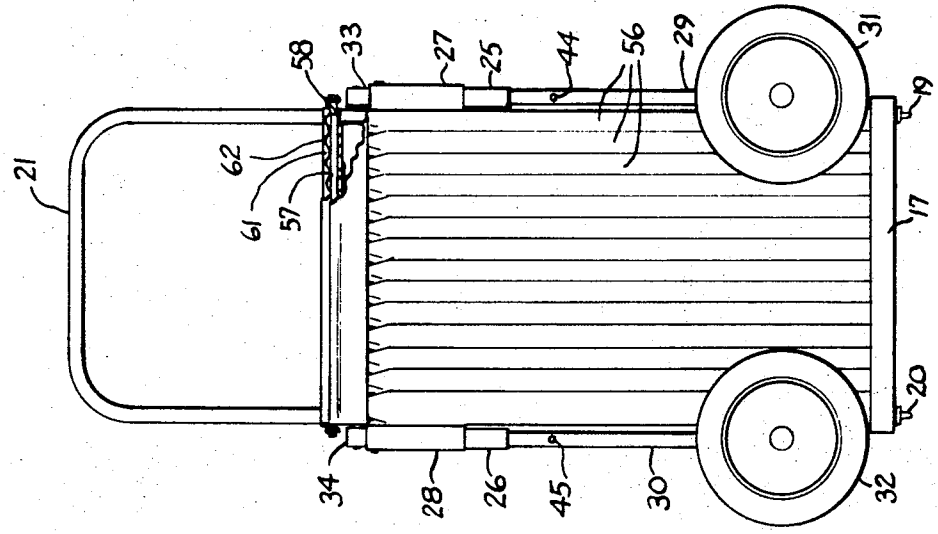


FIG. 1

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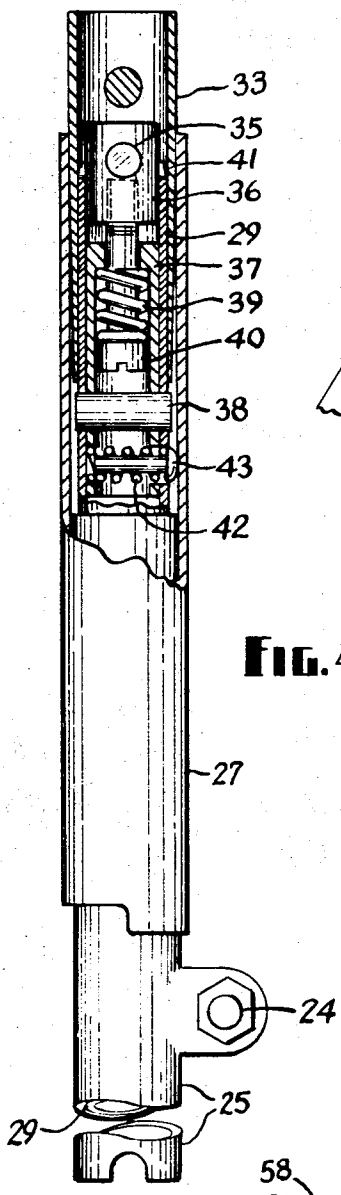


FIG. 4

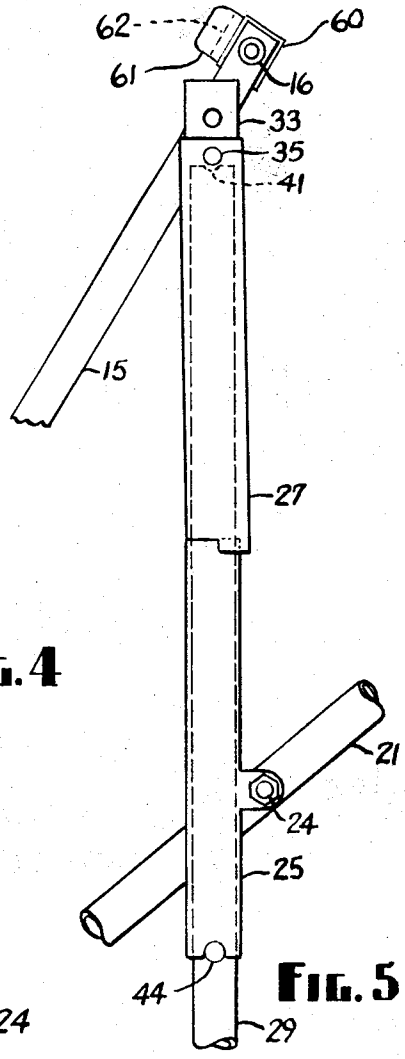


FIG. 5

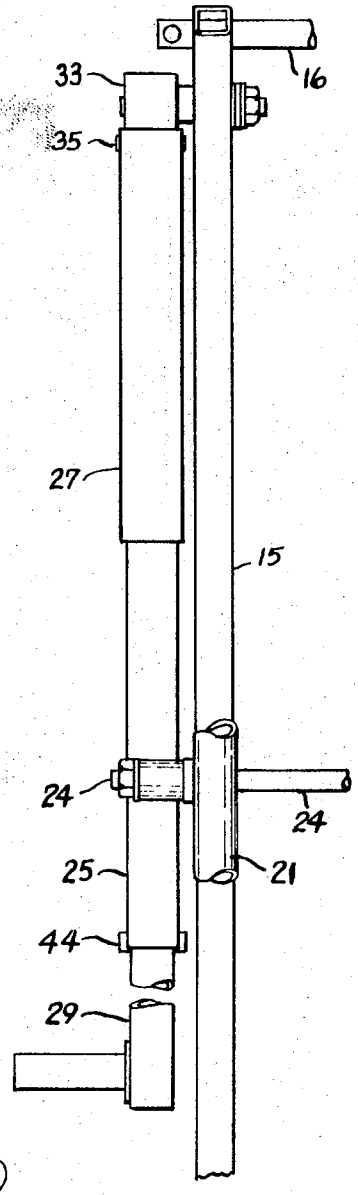


FIG. 6

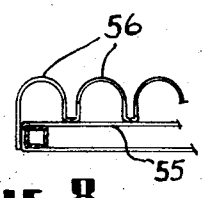


FIG. 8

FIG. 7

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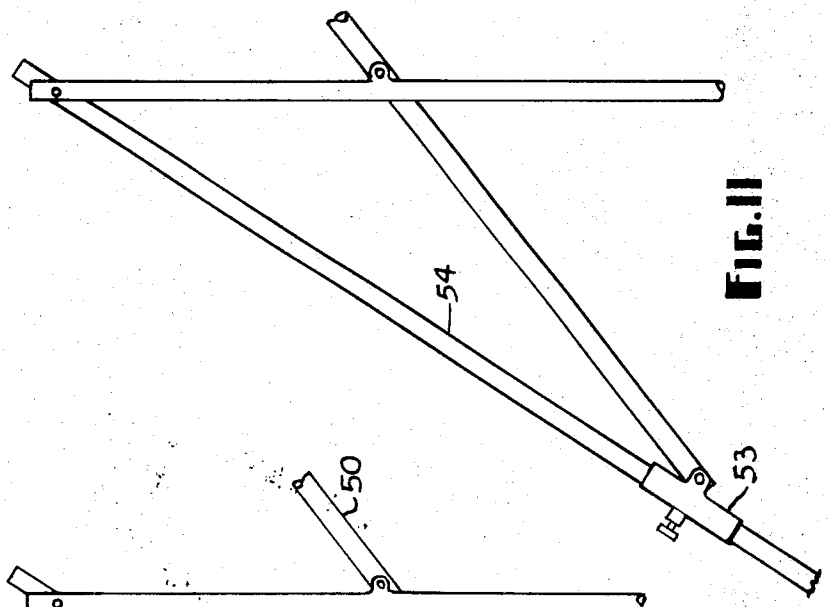


FIG. 11

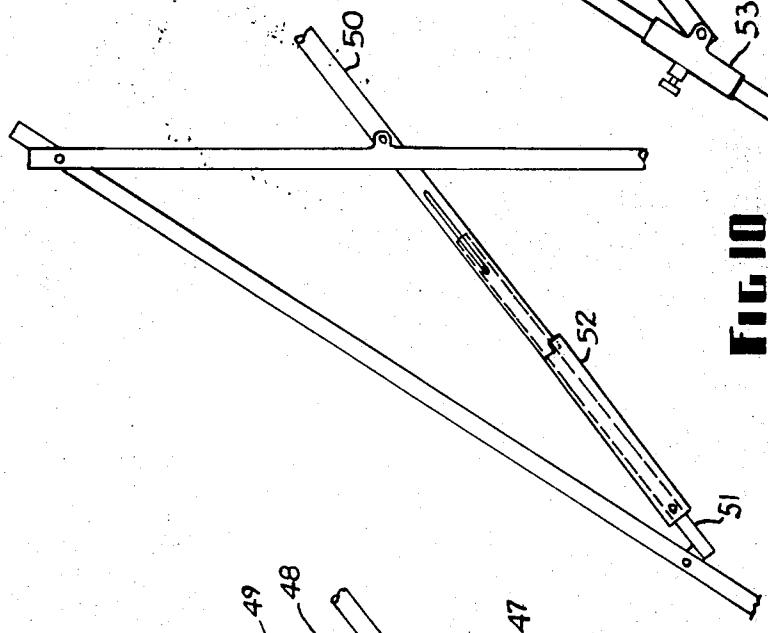


FIG. 10

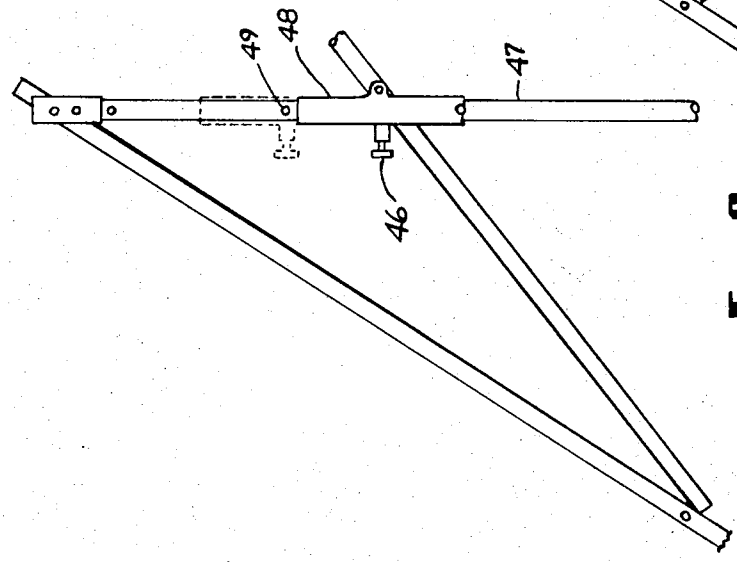


FIG. 9

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3,544,126

COLLAPSIBLE HAND-PULLED GOLF CART

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Int. Cl. B62b 11/00
U.S. Cl. 280—41 6 Claims

ABSTRACT OF THE DISCLOSURE

A collapsible golf cart having a golf club receiving rack with column like undercarriage structure laterally pivoted thereto adjacent the upper end thereof extending downwardly therefrom and with a handle member laterally pivoted at its lower end to a point intermediate the upper and lower end of the rack, extending upwardly therefrom crossing the undercarriage structure, and a mechanism manually operable to collapse the undercarriage structure and the handle member against the rack.

The invention relates to hande-pulled golf carts which golfers use to transport golf clubs on the golf course. A new approach to golf cart collapsing for handling is fundamental, operating on a scheme of geometric triangle variation in conjunction with vertical undercarriage support structure to the end of creating a flat folded package.

Once conceived, the scheme of geometric folding can be realized in different mechanical ways. The underlying plan is to provide a golf club receiving rack with vertical or column-like undercarriage structure laterally pivoted thereto toward the upper end and with a handle member laterally pivoted thereto at an intermediate point, and with the handle member crossing the undercarriage structure at an upward angle and mechanically connecting with the same. This plan enables the handle to fold to the rack from a low pivot and the undercarriage to fold to the rack from a high pivot once a release mechanism to upset the proximity of the rack to the handle and to the undercarriage is provided. More than one way to accomplish the foregoing plan is illustrated and described. The preferred embodiment of the invention (FIGS. 1 through 8) is elected after objective review of the merits of alternatives offered by the strut and triangle concept of structure.

Important secondary invention is disclosed in the primary illustrations. A misaligning sleeve latch is revealed for convenient and effective folding mechanism, however used. Special wheel indexing methods and golf club handling provisions also augment the generating concept. In all, a profound solution to known golf cart inadequacies will become evident.

The primary object of the invention is to provide a collapsing hand-pulled golf cart which will fold to a flat form and unfold with little expenditure of physical effort by a golfer.

A second object of the invention is to provide desirable advanced latching, indexing and operating methods to facilitate folding and unfolding.

A further object is to provide a golf club holding rack which is especially convenient to use and which prevents golf clubs from rattling one against the other.

More advantages will become apparent in the description of the accompanying drawings which follows. In the drawings:

FIG. 1 is a plan view of the new golf cart in folded form, with illustrative cutaway portions.

FIG. 2 is a side view orthographically projected from FIG. 1.

FIG. 3 is a side view of the unfolded cart with the golf club sheath removed.

FIG. 4 is a cutaway drawing displaying the operation of a misaligning latching sleeve, enlarged from a portion

of FIG. 2, and conceived as an ultimate folding convenience latch.

FIG. 5 is a fragment of the side of the cart enlarged from FIG. 3, illustrating some of the mechanical operation.

FIG. 6 is a front view fragment projected from FIG. 5, to further clarify the invention.

FIG. 7 is a perspective drawing to further convey the form and shape of the invention.

FIG. 8 is a schematic cross section for explaining golf club sheath construction.

FIGS. 9, 10 and 11 schematically illustrate departures from the preferred embodiment of the invention, showing that any side of the fundamental cart-support triangle of pivots can have the length varied mechanically to fold the pivoted elements of the cart to parallelism.

When the cart is standing as in use, a golf club rack frame normally leaning from the vertical (FIG. 3) is comprised of a pair of aligned side frames, **15** being the example, separated laterally by an integral upper cross bar **16**. The lower end of the rack frame carries a cross channel **17** and turf spikes **19** and **20**. A cushion **18**, on which golf club handle ends can rest, covers the bottom of the cross channel **17**.

A handle frame **21** is "U" shaped and has the open end thereof connected on aligned transverse pivots **22** and **23** with the side frames, **15** being the example, while extending upward at an acute angle relative to the plane of the golf club rack frame. The handle frame **21** contains a cross bar **24** whose outward ends extend to serve as pivots connecting the handle frame **21** with a pair of folding sleeves **25** and **26**, holding the same fixed from axial rotation.

The folding sleeves **25** and **26** are elements carried on a pair of strut assemblies which also comprise misaligning latching sleeves **27** and **28**, struts **29** and **30** and pivot sleeves **33** and **34**. The struts **29** and **30** carry axially aligned wheels **31** and **32** respectively at their lower ends.

Both strut assemblies have the same working mechanism within their upper end, which FIGS. 4, 5 and 6 demonstrate. For example, on one side of the cart the pivot sleeve **33** contains a diametrically installed index pin **35** which also passes through the latching sleeve **27** and through an index plug **36**, whereby the index pin **35** prevents any related turning of the three. Similarly, a spring sleeve **37** is held within the strut **29** near the upper end by a joining pin **38**; and the strut **29** is rotatably fit within the pivot sleeve **33** and the folding sleeve **25**.

An index spring **39** is compressed lineally within a bore in the spring sleeve **37** by a screw **40** which is screwed securely into the lower end of the index plug **36**.

The struts, **29** being the example, have index notches, **41** being the example, ninety degrees apart at the upper ends thereof. The index spring **39** is now understood to urge a diametrically opposite pair of index notches **41** into engagement with the index pin **35**. The struts **29** and **30** can be manually urged to rotate and index ninety degrees apart, since rotative force or lineal extension will compress the index springs **39** and upset the index pins **35** from the index notches **41**.

The pivot sleeves **33** and **34** are shown pivoted to the rack side frames, **15** being the example, on a common axis. Within each strut a latch spring **42** (FIG. 4) urges a cross plunger pin **43** against the forward interior sides of the latching sleeves **27** and **28** when the wheels **31** and **32** are in normal axial alignment as in FIG. 3.

With mechanism and structure thus far explained, and referring now especially to FIGS. 1, 2, 3 and 4, a golfer may first have the new golf cart folded flat as in FIGS. 1 and 2 for ease of handling. From the preceding description he may turn the wheels **31** and **32** ninety degrees (dotted lines FIG. 2) and may apply hand pressure to

separate the golf club rack frame from the handle frame at their upper ends (FIG. 3). The folding sleeves **25** and **26** will thereby be caused to slide downward along the struts **29** and **30**, respectively, until lateral notches in the lower ends of the folding sleeves **25** and **26** engage lateral aligning pins **44** and **45** installed through the sturts **29** and **30**, respectively. Further hand pressure will then cause the index springs **39** to compress and the index notches **41** to disengage from the index pins **35** (FIG. 5). Further movement then will cause the upper ends of the folding sleeves **25** and **26** to pass below the short lower ends of the latching sleeves **27** and **28**, whereupon the latching springs **42** will urge the latching sleeves **27** and **28** forward and out of lineal alignment with the folding sleeves **25** and **26**. After release of hand pressure by the golfer, the index springs **39** will urge endwise abutment of the latching sleeves **27** and **28** with the folding sleeves **25** and **26** respectively; and the wheels **31** and **32** will remain positioned, since the index springs **39** also force engagement of the aligning pins **44** and **45** with the folding sleeves **25** and **26**, respectively. The golf cart thus becomes unfolded without free play, looseness or rattle. Golf clubs are shown dotted in FIGS. 2 and 7. The cart as shown in FIGS. 3 and 7 can be grasped at the top of the handle frame, rotated clockwise about the wheel axles and pulled along a terrain.

To fold the cart again, a golfer needs only to compress the long ends of the latching sleeves **27** and **28** against the folding sleeves **25** and **26** respectively to accomplish related realignment (FIG. 4), whereupon the index springs **39** will cause immediate reengagement of a set of opposite index notches **41** with the index pins **35**. The golf cart may then be folded to a flat condition as FIGS. 1 and 2 illustrate and as has been explained in the foregoing description.

It is now understood that to unfold the golf cart as described is to effect a rigid structural triangle between interconnecting pivot points to support the cart and golf clubs substantially balanced over the wheels, as FIG. 3 clearly illustrates.

Schematically, FIGS. 9, 10 and 11 illustrate how other mechanisms in other locations can also be used to operate the folding and unfolding of the golf cart, all employing the fundamental plan of creating and upsetting a supporting triangular relationship of the planes of the three inter-pivoted component structures.

FIG. 9 illustrates how a spring-loaded pull-pin arrangement **46** can be uesd to withdraw a pin from a strut **47** to permit a folding sleeve element **48** to slide upward (dotted lines) as has been described previously. Here the strut **47** can turn at the top end and permit the pull-pin arrangement **46** to engage a hole **49** to completely fold the cart without index notches, springs or latching sleeves.

FIG. 10 illustrates how a handle element **50** can have an internal sliding member **51**. This arrangement permits telescopic extension of the handle to create the basic triangle which can be supported by a latching sleeve element **52** which can operate in a manner similar to that of the latching sleeves **27** and **28** already described. It is obvious that a pull-pin arrangement such as **46** in FIG. 9 can be used to lock this mechanism. An indexing provision here would be located near the wheels.

FIG. 11, again, departs from all of the other methods for collapsing the supporting triangle. A spring-loaded pull-pin slide **53**, when operated, will move downward on a rack element **54** to lengthen that side of the triangle because it is the longest of the three and the base element against which the others fold for achieving parallelism in the basic folding plan.

Beyond the operating and structural scheme, the golf cart may have a golf club receiving provision especially illustrated in FIGS. 1, 2, 5, 7 and 8, where a flexible sheath is carried over the carrying rack frame. The sheath has a base portion **55** and an enclosing portion sewn or otherwise arranged into tubes **56** for receiving

golf club handles downward individually. The tubes **56** are gathered toward their upper ends (FIG. 1) where a transverse closure tube **57** is carried within the sheath and related to the enclosing portion thereof. An elastic cord **58** passes through the closure tube **57** and ties to the ends of the rack cross bar **16** whereby to urge the closure tube **57** against the rack. The base portion of the flexible sheath may contain pockets **59** (FIG. 7) for carrying miscellaneous golfing accessories.

Underneath the flexible sheath at the upper end of the rack frame an expedient lateral channel **60** carries a bonded-on rubberlike separating pad **61**. The separating pad **61** is provided with golf club shaft separating notches **62** (FIGS. 1, 5 and 7), in which golf clubs are carried with clubheads up in aligned array. The cushion **18** at the bottom of the rack cushions the handle ends of golf clubs. The separating pad **61** cushions the shafts of golf clubs. The closure tube **57**, by the tension of the elastic cord **58**, is understood to urge all golf clubs into the separating notches **62** simultaneously or collectively. Each club is then separately contained and held securely. A golfer needs only to pull the closure tube **57** away from the rack by hand to permit removal or insertion of any one of his golf clubs.

Alterations or adjustments of structural or pivot proximity are possible. However, the particular illustrated relationship is developed for the practical aspects. For example, the struts are substantially vertical columns for supporting golf club loads during normal use. Then, the handle crossing the struts creates a desirable large attaching base for the rack to assure a firm unfolded cart. Again, the preferred location of the latching sleeves is prudently selected for availability to the hands; and the indexing provision permits kicking the wheels with the foot to stow or to unfold. In all, the primary illustrations strive toward the ultimate in practical engineering and convenience, and portray an essence as well as a character. Appropriately, the invention is encompassed by the following claims.

I claim:

1. A collapsible hand-pulled golf cart comprising: a golf club receiving rack member lying in a transverse plane and inclining in a forward direction from the vertical when normally standing alone, undercarriage structure transversely pivoted with the said rack member toward the upper end thereof and on the forward side thereof, said undercarriage structure extending downward to a distance substantially equal to the level of the lower end of the said rack member, a handle member having one end transversely pivoted with the said rack member at an intermediate point thereon and on the forward side thereof, said handle member extending upward from the horizontal and at an acuate angle relative to the said rack member, said handle member crossing through and beyond the said undercarriage structure, and mechanism normally fixing the said rack member in relation to the said undercarriage structure and to the said handle member, said mechanism being manually operable to collapse the said undercarriage structure and the said handle member against the said rack member.

2. The invnetion as set forth in claim **1**, wherein the said mechanism comprises an outer sleeve and an inner sleeve having a telescopic intersliding relation, wherein the outer sleeve is normally extended past an end of the inner sleeve and disposed in endwise abutment therewith while being spring-urged out of lineal alignment abutment therewith while being spring-urged out of lineal alignment therewith, and wherein lineal alignment by hand of the outer sleeve with the inner sleeve permits the sleeves to interslide and thus the golf cart to collapse.

3. The invention as set forth in claim **1**, wherein the said golf club receiving rack member embodies a flexible sheath, said sheath being adapted to receive golf clubs with handles downward in individual receptacles and in aligned lateral array, wherein the said rack member con-

tains a plurality of separating notches arranged lateraly across the upper end thereof for receiving the sides of golf club shifts to align the same in lateral array, said flexible sheath embodying a transverse collective closure bar across the upper end thereof in near proximity to the said separating notches, and wherein the said rack member embodies a resilient element for urging the said closure bar against golf club shafts to retain the same in the said separating notches.

4. The invention as set forth in claim 1, wherein the said undercarriage structure comprises: a pair of column-like struts spaced apart laterally, a wheel on each of the said struts at the lower ends thereof, said wheels being aligned on a common transverse axis, said struts embodying the said manually operable mechanism at a location between the upper ends of the said struts and the point of crossing therewith of the said handle member, said manually operable mechanism involving the lineal intersliding of sleeve elements.

5. A collapsible hand-pulled golf cart comprising: a golf club receiving rack element lying in a transverse plane, a handle element lying in a transverse plane, a pair of wheel strut elements lying in a common transverse plane, a pair of wheels arranged apart on a common transverse axis as a base support and on which the cart may be rolled, said pair of wheel strut elements being related each to a respective wheel of the said wheel and extending upward therefrom, said wheel strut elements being transversely pivoted at the upper ends thereof to the said rack element on a common axis, said rack element extending downward at an acute angle relative to the said wheel strut elements to a level substantially equal to the lower reaches of the said wheels, said handle element having one end thereof transversely pivoted to the said rack element at an intermediate point thereon, said handle element in side plan extending at an angle upward from the horizontal and crossing the plane of the said wheel strut elements, said wheel strut elements and said handle element being transversely pivoted together at intermediate points on each of the same at the said crossing, and manually operable mechanism for collapsing the said handle element and the said pair of wheel strut elements into parallelism with the said rack element.

6. The invention as set forth in claim 5, wherein the said wheel strut elements each embody indexing mechanism for turning the planes of the said wheels into parallelism with the plane of the said rack element.

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