Abstract Title: Track laying golf trolley

A golf trolley 2 comprises a handle 4, a frame 6 and a battery-powered drive arrangement 8. The drive arrangement 8 comprises a pair of drive members 10, each of which comprises an endless track 12, drive means 14 and support means 16 such that a portion 18 of the track 12 is flat for engaging the ground 20 without damaging the ground 20. The support means 16 typically comprises three wheels 17 for each track 12 and a longitudinally extending support member (28 fig 2) between each wheel 17.
A GOLF TROLLEY

This invention relates to a golf trolley, and more especially, this invention relates to a battery powered golf trolley.

The game of golf is extremely popular. The golf clubs required to play the game are heavy and many golfers prefer to take their golf clubs around a golf course using a golf trolley. These golfers who prefer to use a golf trolley include elderly persons, and persons who simply find the effort of carrying a golf bag around a golf course too strenuous for comfort.

A problem with golf trolleys is that they can damage golf courses in wet conditions. More specifically, the wheels of golf trolleys can quickly damage grass, especially if there has been prolonged rain. Grass areas can quickly be turned into areas of mud. In view of the damage caused by golf trolleys, they are often not allowed on golf courses in wet conditions. This means that person needing to use a golf trolley are often prevented from playing golf due to wet conditions. Since wet conditions are usually present throughout the winter, it is not unusual for such golfers to be prevented from playing golf throughout the entire winter.

It is an aim of the present invention to obviate or reduce the above mentioned problem.

Accordingly, in one non-limiting embodiment of the present invention there is provided a golf trolley comprising a handle, a frame, and a battery-
powered drive arrangement, the battery-powered drive arrangement comprising a pair of drive members which each comprises an endless track, drive means for driving the track, and support means for supporting the track such that a portion of the track is flat for engaging the ground and moving over the ground without damaging the ground.

The use of the track enables the golf trolley to be used in wet conditions without damaging golf courses, for example the fairways of golf courses. In addition, the use of the track enables the golf trolley to achieve more traction on hilly or rough terrain that would otherwise be the case if the golf trolley just had wheels. Thus the golf trolley of the present invention is firstly advantageous in that it is able to be used in inclement weather conditions and thus enables golfers requiring a golf trolley to be able to play golf all the year around. The golf trolley is secondly advantageous in that it provides more traction on hilly or rough terrain, which helps the golfers to get around golf courses.

The golf trolley may be one in which the support means comprises a plurality of support wheels. Preferably there are three of the support wheels. More or less than three of the support wheels may however be employed.

The support wheels may be not directly driven support wheels.

With support wheels which are not directly driven, each drive members may include a single drive wheel which engages the inside of the track and thereby drives the track.

Alternatively, each drive member may include a drive wheel which drives at least one planet wheel, the planet wheel contacting and driving an
adjacent one of the not directly driven support wheels. With such an arrangement, there may be one of the planet wheels. Alternatively, there may be three of the planet wheels. Any suitable and desired number of planet wheels may be employed.

The golf trolley may alternatively be one in which the support wheels are directly driven support wheels.

In all embodiments of the invention, the trolley may be one in which the support means includes at least one longitudinally extending support member for facilitating keeping the track flat.

In the embodiment of the invention where the support means comprises the plurality of support wheels, then there may be one of the longitudinally extending support members positioned between each pair of the support wheels.

The battery-powered drive arrangement may include any suitable and appropriate drive train for providing drive from one or more batteries to the drive members. Thus, for example, the battery-operated drive arrangement may include a clutch for engaging and dis-engaging the drive means.

Advantageously, the frame may include a step portion for receiving a golf bag.

The golf trolley will normally include a front wheel mounted on the frame, the front wheel being for resting on the ground when the golf trolley is standing up and at rest.

The golf trolley of the present invention may be such that it is used with normal wheels in the summer and other periods when the ground is
sufficiently dry, and with drive members including the endless track in winter and other periods when the ground is too wet for use by known golf trollies having simple wheels. In order to facilitate changing a golf trolley from a summer drive arrangement including normal wheels, to a winter drive arrangement including the track, the golf trolley of the present invention is advantageously such that each one of the drive members is secured with respect to the frame by a quick-release arrangement. Any suitable and appropriate quick-release arrangement may be employed including nuts with integral wing members for enabling the nuts easily to be removed by hand.

The golf trolley may include pivot means for enabling the drive members to pivot. When pivot means are employed, the drive members may pivot completely through 360°, or they may be constrained to pivot through less than 360°, for example 90° or 180°.

The golf trolley of the present invention may include at least one battery.

Generally, the golf trolley of the present invention may be manufactured to any suitable and desired design and size. The track may be of any desired length and width. Typically, the track will be 100 – 150mm wide and 300 – 400mm long. Generally, the length of track employed may be that designed to cause the track to have an outer general peripheral shape giving its drive member the approximate size of a known golf trolley wheel. The track may be made of any suitable and appropriate materials. A combination of a plastics material and a rubber material is presently
preferred. The support means for supporting the track are preferably made of plastics materials but other materials may be employed if desired.

Embodiments of the invention will now be described solely by way of example and with reference to the accompanying drawings in which:

Figure 1 is a side view of a golf trolley of the present invention;

Figure 2 shows a first drive member for use on the golf trolley shown in Figure 1;

Figure 3 shows a second drive member for use on the golf trolley shown in Figure 1;

Figure 4 shows a third drive member for use on the golf trolley shown in Figure 1;

Figure 5 shows a fourth drive member for use on a golf trolley of the present invention; and

Figure 6 illustrates how the golf trolley of Figure 1 can be used to mount a curb.

Referring to Figure 1, there is shown a golf trolley 2 comprising a handle 4, a frame 6 and a battery-powered drive arrangement 8.

The battery-powered drive arrangement 8 comprises a pair of drive members 10 arranged one on either side of the golf trolley 2. Each drive member 10 comprises an endless track 12, drive means 14 for driving the track 12, and support means 16 for supporting the track 12 such that a portion 18 of the track 12 is flat for engaging ground 20 and moving over the ground 20 without damaging the ground 20.
The support means 16 is in the form of three support wheels 17. The support wheels 17 are such that they are not directly driven.

Referring now to Figure 2, there is shown a drive member 22 which is one example of the drive member 10 shown in Figure 1. Similar parts as in Figure 1 have been given the same reference numerals for ease of comparison and understanding. In Figure 2, it will be seen that the track 12 has teeth 24. A single drive wheel 26 engages the inside of the track 12 as shown and thereby drives the track. The support wheels 17 simply maintain the peripheral shape of the track as a triangle and allow the track to rotate.

As also shown in Figure 2, the support means 16 includes three longitudinally extending support members 28. These support members 28 facilitate keeping the track 12 flat. There is one of the support members 28 positioned between each pair of the support wheels 17.

Figure 3 shows a drive member 30 which is similar to the drive member 22 except that the single drive wheel 26 has been replaced by a planet wheel 32. The planet wheel 32 is driven from the drive means 14. The planet wheel 32 drives one of the support wheels 17 as shown and thereby drives the support wheel 17. This support wheel 17 in turn drives the track 12.

Figure 4 shows a drive member 34 which is like the drive member 30 except that three of the planet wheels 32 are employed, with one of the planet wheels 32 being for each one of the support wheels 17.

Figure 5 shows a drive member 35 having an endless track 37 which defines a square, rather than a triangle as defined by the endless track 12.
The endless track 37 is supported by support means 39 in the form of four support wheels 41. In various embodiments, the support wheels 41 may or may not be driven support wheels, as will be understood from the description of Figures 2, 3 and 4 above.

Figure 6 illustrates how the golf trolley of the Figure 1 with its drive members 10 is simply and easily able to mount a curb 36.

Referring back to Figure 1, the battery-powered drive arrangement includes a clutch which is operated by a switch 38, the clutch engaging and dis-engaging the drive means 14. The frame 6 includes a step portion 40 for receiving a golf bag 42. A battery 44 and an electric motor 46 are mounted on the frame 6. The upper part of the golf bag 42 is attached to a bracket 48 on the frame 6.

A front wheel 50 is mounted on the frame 6 as shown. The front wheel 50 is for resting on the ground 20 when the golf trolley 2 is standing up and at rest.

It is to be appreciated that the embodiments of the invention described above with reference to the accompanying drawings have been given by way of example only and that modifications may be effected. Thus, for example, the golf trolley 2 can be of any suitable and appropriate design. Thus, for example, any suitable and appropriate designs may be employed for the handle 4 and the frame 6. The components of the trolley 4 can be made of any suitable and appropriate materials. The drive members 10 can advantageously each be secured in position by a quick-release arrangement (not shown) for enabling the drive members 10 easily to be removed in good
ground conditions and to be replaced by simple wheels if desired. The simple wheels may or may not be electrically driven.
CLAIMS

1. A golf trolley comprising a handle, a frame, and a battery-powered drive arrangement, the battery-powered drive arrangement comprising a pair of drive members which each comprises an endless track, drive means for driving the track, and support means for supporting the track such that a portion of the track is flat for engaging the ground and moving over the ground without damaging the ground.

2. A golf trolley according to claim 1 in which the support means comprises a plurality of support wheels.

3. A golf trolley according to claim 2 in which there are three of the support wheels.

4. A golf trolley according to claim 2 or claim 3 in which the support wheels are not directly driven support wheels.

5. A golf trolley according to claim 4 in which each drive member includes a single drive wheel which engages the inside of the track and thereby drives the track.

6. A golf trolley according claim 4 in which each drive member includes a drive wheel which drives at least one planet wheel, the planet wheel
contacting and driving an adjacent one of the not directly driven support wheels.

7. A golf trolley according to claim 6 in which there is one of the planet wheels.

8. A golf trolley according to claim 6 in which there are three of the planet wheels.

9. A golf trolley according to claim 2 or claim 3 in which the support wheels are directly driven support wheels.

10. A golf trolley according to any one of the preceding claims in which the support means includes at least one longitudinally extending support member for facilitating keeping the track flat.

11. A golf trolley according to any one of claims 2 – 11 in which the support means comprises the plurality of support wheels, and in which there is one of the longitudinally extending support members positioned between each pair of the support wheels.

12. A golf trolley according to any one of the preceding claims in which the battery-powered drive arrangement includes a clutch for engaging and dis-engaging the drive means.
13. A golf trolley according to any one of the preceding claims in which the frame includes a step portion for receiving a golf bag.

14. A golf trolley according to any one of the preceding claims and including a front wheel mounted on the frame, the front wheel being for resting on the ground when the golf trolley is standing up and at rest.

15. A golf trolley according to any one of the preceding claims in which each one of the drive members is secured with respect to the frame by a quick release arrangement.

16. A golf trolley according to any one of the preceding claims and including pivot means for enabling the drive members to pivot.

17. A golf trolley according to any one of the preceding claims and including at least one battery.

18. A golf trolley substantially as herein described with reference to the accompanying drawings.
### Patents Act 1977: Search Report under Section 17

#### Documents considered to be relevant:

<table>
<thead>
<tr>
<th>Category</th>
<th>Relevant to claims</th>
<th>Identity of document and passage or figure of particular relevance</th>
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<tbody>
<tr>
<td>Y</td>
<td>1-5, 10-13 &amp; 17</td>
<td>GB2221661 A (SLATER) abstract, fig 1 &amp; fig 2</td>
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<tr>
<td>Y</td>
<td>1, 2, 10-12 &amp; 17</td>
<td>US3554310 A (DIEFFENBACH) esp fig 1 &amp; col 2 ln 37-42</td>
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<tr>
<td>Y</td>
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<td>GB2104017 A (BRYLITE) abstract &amp; fig 1</td>
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#### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC:

- B7H

Worldwide search of patent documents classified in the following areas of the IPC:

- B60K; B62B; B62D

The following online and other databases have been used in the preparation of this search report:

- Online: EPODOC & WPI