Sept. 3, 1963 R. W. BONNEY 3,102,647

GOLF BALL PICKER

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FIG. 1

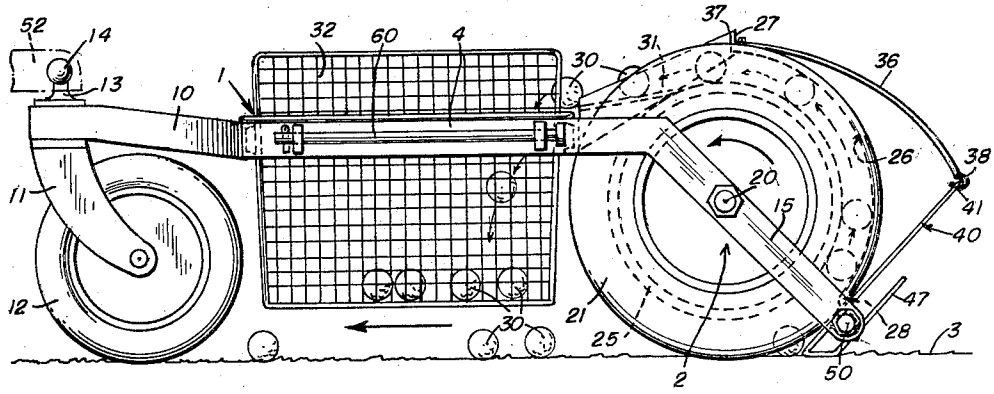
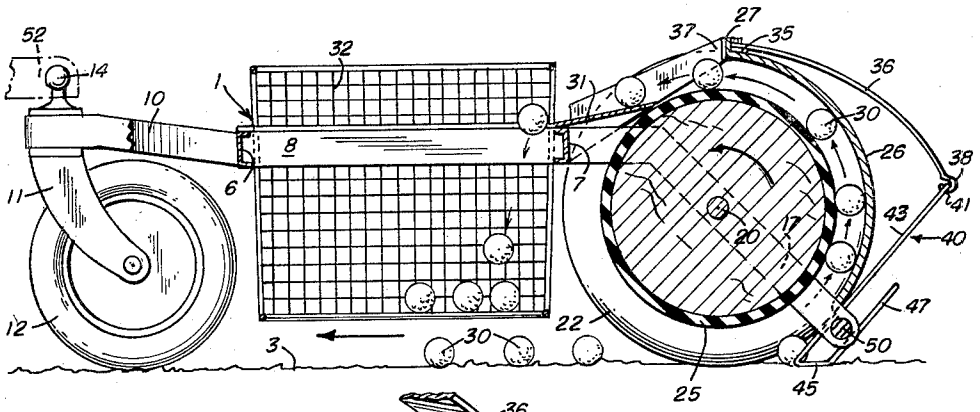


FIG. 2



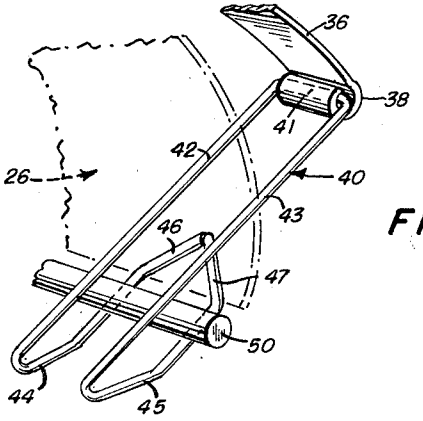


FIG. 4

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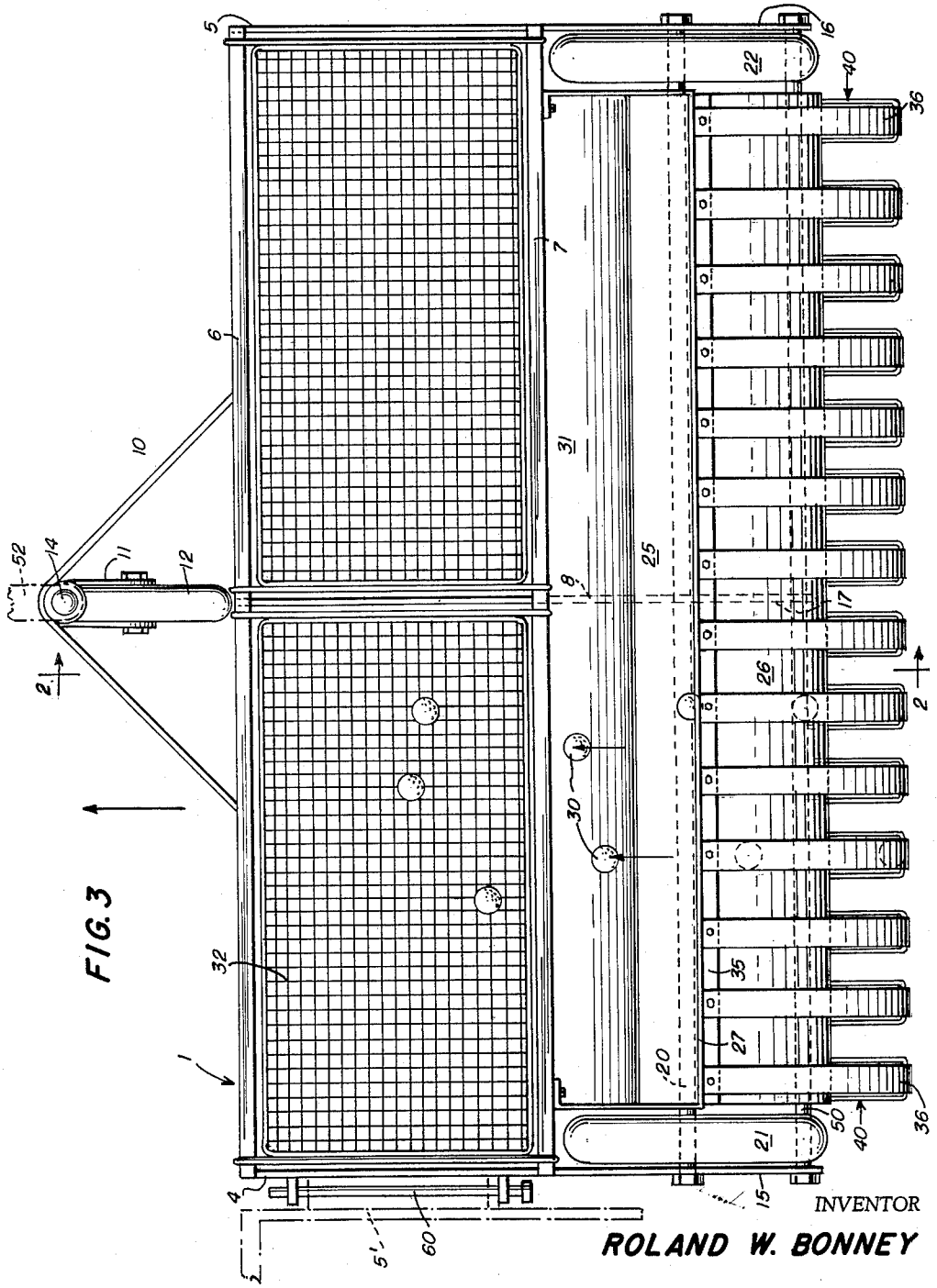


FIG. 3

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GOLF BALL PICKER

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3 Claims. (Cl. 214—356)

The present invention relates generally to devices for collecting large numbers of small objects lying at random positions on uneven terrain, and more particularly to such devices which are useful in collecting golf balls on a golf course or driving range.

Prior art systems for collecting golf balls, or the like, lying at random positions on uneven terrain, have generally utilized a plurality of wheels spaced apart so that the balls become wedged between adjacent wheels, and are carried thereby toward a basket where they are ejected. Such systems have the serious disadvantage that they cannot pick up balls lodged in slight depressions in terrain.

It is a primary object of the present invention to provide a ball collector which is capable of collecting balls at high speed from uneven terrain, and from depressions in the terrain.

It is a more specific object of the invention to provide a system for picking up balls from uneven terrain, or from terrain including depressions, which utilizes a large number of individually spring pressed pick-up elements, capable in ensemble of following uneven terrain and individually capable of entering a slight depression to dislodge a ball therefrom.

The above and still further objects, features and advantages of the present invention will become apparent upon consideration of the following detailed description of one specific embodiment thereof, especially when taken in conjunction with the accompanying drawings, wherein:

FIGURE 1 is a view in side elevation of a machine according to the invention.

FIGURE 2 is a view partially in section, corresponding with FIGURE 1 generally, and taken on the line 2—2 of FIGURE 3.

FIGURE 3 is a view in plan of a system according to FIGURES 1 and 2.

FIGURE 4 is a view in perspective of an individual spring pressed pick-up element, of the type utilized in the system of FIGURES 1–3.

Referring now more particularly to the accompanying drawings, the numeral 1 denotes a generally horizontal frame having a rearwardly and downwardly extending portion 2 which terminates adjacent to but above the level of ground 3. The frame 1 includes at least two parallel longitudinally extending beams, 4 and 5, located at the extreme sides of the machine, these being joined at their forward extremities by a forward transverse beam 6 and at a rearward position by a rearward transverse beam 7. If desired, a further longitudinal beam 8 may join the transverse beams 6 and 7, midway intermediate the beams 4 and 5, depending on the overall width of the machine.

Extending forwardly of the forward transverse beam 6 is a V-shaped bracket 10, at the apex of which is mounted a downwardly extending caster bracket 11 carrying a wheel 12. The latter is free to swivel in all directions, lending maneuverability to the machine. Extending upwardly of the apex of V-shaped bracket 10 is a fitting 13 terminating in a smooth spherical knob 14, which may be employed to mate with a recess in a pull rod P. The latter may be pulled by a jeep, tractor, or the like, (not shown) thereby providing motive power for the machine.

The rearward portions 15, 16, 17 of parallel beams 4, 5, 8, respectively, extend rearwardly and downwardly

at an angle of about 45°, terminating just above ground level. A transverse round rod 20 extends between the extensions 15, 16, 17, and constitutes a shaft providing bearing for a pair of wheels 21, 22, located just inwardly of the beams 4, 5, respectively. The wheels 21, 22 run on the ground and serve as primary supports for the machine in conjunction with wheel 12.

Extending intermediate the wheels 21, 22 is a frame or cylinder 25 made of rubber or the like resilient material. A conforming guard 26 is spaced from cylinder 25 over that part of its area extending from the highest point of cylinder 25, as at 27, rearwardly and downwardly to a position 28 adjacent ground 3, but is spaced throughout from cylinder 25 by a distance slightly less than the diameter of a standard golf ball. Since the cylinder 25 rotates counterclockwise (as seen in FIG. 1), when the machine is moving forwardly in normal operation, while the conforming guard 26 is stationary, any golf balls, as 30, caught between the cylinder 25 and the guard 26, are driven counterclockwise until they reach the high point of cylinder 25 and emerge from under the guard 26. At this point the balls are delivered to a sloping ramp 31 which delivers them by gravity to a basket or baskets 32.

It will be appreciated that the wheel 12, or the wheels 21, 22, or both, may be replaced by skids, or that the wheels 21, 22 may be wholly eliminated and not replaced by any equivalent, relying on other elements of the machine for support with respect to ground.

At point 27 of the guard 26, or adjacent thereto, is a channel 35, to which are secured a plurality of leaf springs 36. The channel 35 and the upper end 27 of guard 26 are supported rigidly by braces 37 which are suitably supported by and secured to the main frame of the machine.

The leaf springs 36 are arranged as cantilevers, exerting groundward pressure at their remote ends, at which are provided eyes 38 for swingingly supporting forks 40. The latter are rigid and are fabricated of metal rod, bent into shape. The forks 40 each include a transverse element 41 mating with eye 38, from which extend forwardly and downwardly at an angle of about 45° two parallel elements 42, 43. These extend to ground 3, where they extend rearwardly along the ground, as at 44, 45 and thence upwardly, as at 46, 47 parallel to the elements 42, 43 but toward each other. The generally V-shaped parts of the fork 40, formed by base 44 and arms 42, 46, and by base 45 and arms 43, 47, are guided on a transverse rod 50, mounted rigidly between extensions 15, 16, 17 adjacent to ground 3. The forks 40 are thus constrained to ride on rod 50, but are pushed toward ground by leaf springs 36, so that they maintain not only their angles fixed with respect to ground, but also contact with ground at all times. Since the several forks 40 are individually mounted and spring pressed, each can enter any depression in the terrain without inhibition from any other fork 40.

The forks 40, considered as an ensemble, are thereby not only capable of but are constrained to follow the contours of uneven ground. The angle which the forks 40 make with ground, about 45°, although not limited to such value, is selected empirically to trap and scoop up golf balls, and to lift them to a point where they are caught between the resilient cylinder 25 and the guard 26, and are thereby carried upwardly to the ramp 31, from which they are delivered to the baskets 32. The spacings between adjacent elements 42, 43, along the entire array of these, and whether these derive from the same or different forks 40, are selected to be smaller than the diameter of a golf ball, so that no golf balls can escape.

It may be desirable to make provision for driving a

plurality of units in tandem. For this purpose a bracket 50 may be secured to the frame member 4, and may be secured to a further frame member 51 of a further collector unit (not shown).

While I have described and illustrated one specific embodiment of my invention, it will be clear that variations of the details of construction which are specifically illustrated and described may be resorted to without departing from the true spirit and scope of the invention as defined in the appended claims.

What I claim is:

1. A golf ball collector for collecting golf balls from an uneven terrain comprising a vehicle adapted to be pulled in a first direction, an array of forks having ends resting on said terrain, said array of forks extending transversely of said first direction, a separate spring for pressing each of said fork ends individually against said terrain, said forks being mounted for individual motion with respect to all others of said forks, a receptacle mounted on said vehicle and extending thereacross, rotary conveyor means carrying said balls from said forks to said receptacle, wherein each of said forks includes at least one U-shaped element having its base resting on said terrain, and a transverse guide rod extending transversely between the arms of said U-shaped element and serving as a guide therefor.

2. The combination according to claim 1 wherein is

provided a separate cantilever spring for pressing each of said U-shaped elements toward said terrain.

3. The combination according to claim 1 wherein said rotary means includes a rotary drum having a resilient surface, said drum extending parallel to said array of forks, and a stationary guard located in equally spaced relation to said drum over approximately half its surface, said guard extending circumferentially from a point adjacent said terrain to a point adjacent the highest element of said drum, the fixed spacing between said drum and said guard being slightly less than the diameter of any of said golf balls, and the sense of rotation of said drum being such as to raise said golf balls to said highest element.

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