



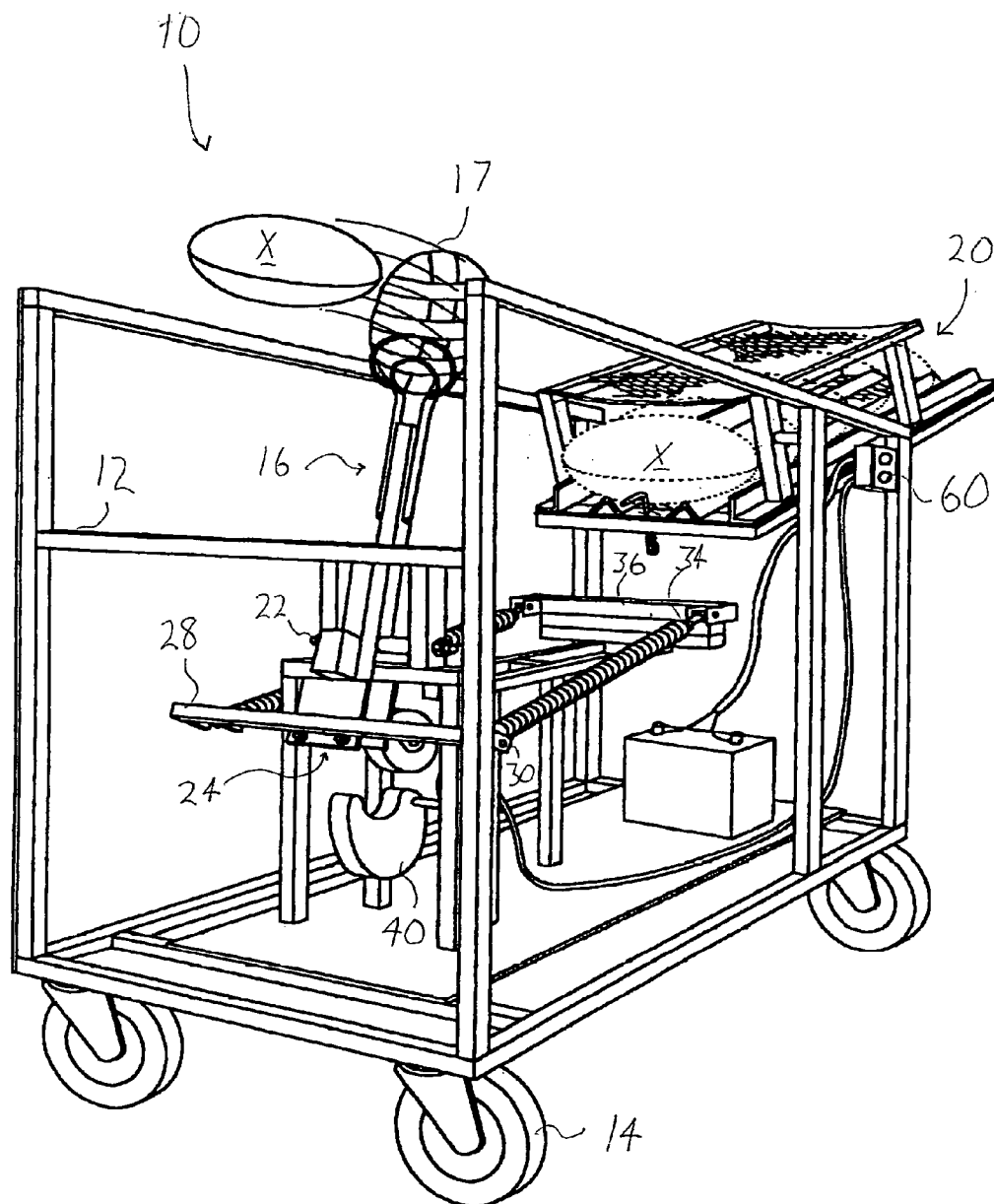
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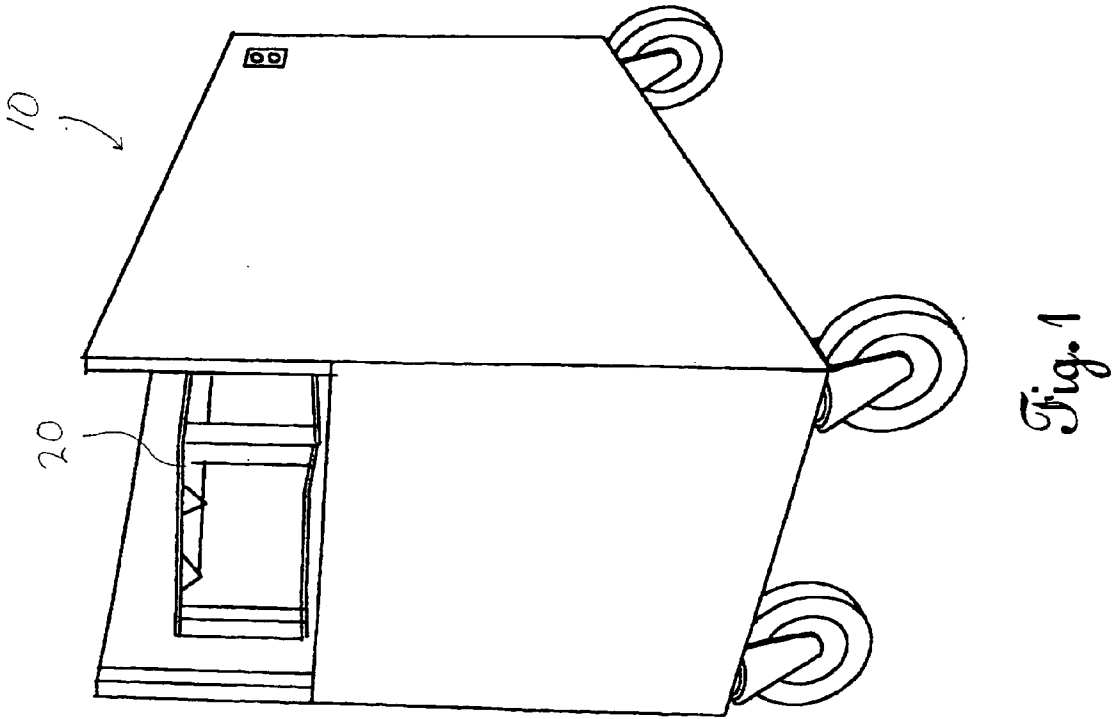
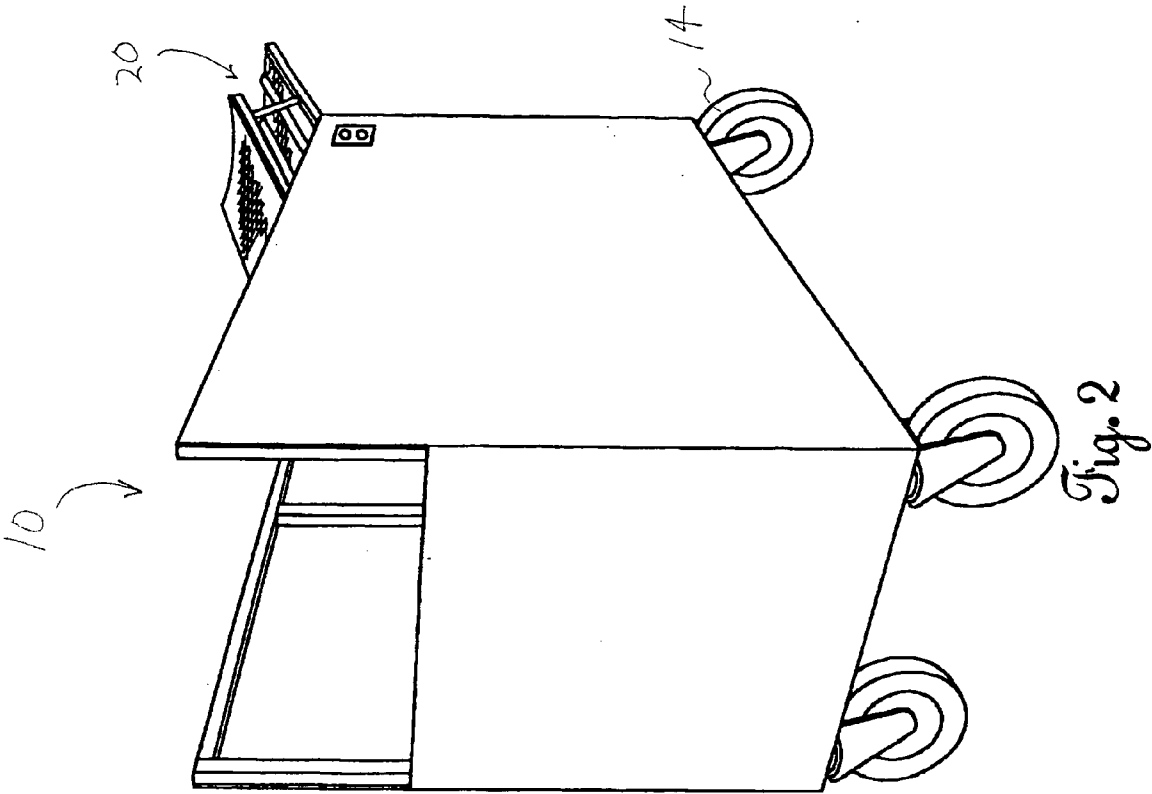
(19) **United States**(12) **Patent Application Publication****Silver et al.**(10) **Pub. No.: US 2006/0035733 A1**(43) **Pub. Date: Feb. 16, 2006**(54) **FOOTBALL HIKING SYSTEM****Publication Classification**(76) Inventors: **Duane Silver**, Waco, TX (US); **Connie Silver**, Waco, TX (US)(51) **Int. Cl.**
A63B 69/00 (2006.01)(52) **U.S. Cl.** **473/438**

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David G. Henry**900 Washington Ave.****P.O. Box 1470****Waco, TX 76703-1470 (US)**(21) Appl. No.: **10/918,538**(22) Filed: **Aug. 13, 2004**(57) **ABSTRACT**

The invention is of a Shotgun hiker, a mechanical football hiker that propels the football five yards in a consistent direction and manner in order to allow football teams to practice the shotgun offense without the use of a trained team member to hike the football.





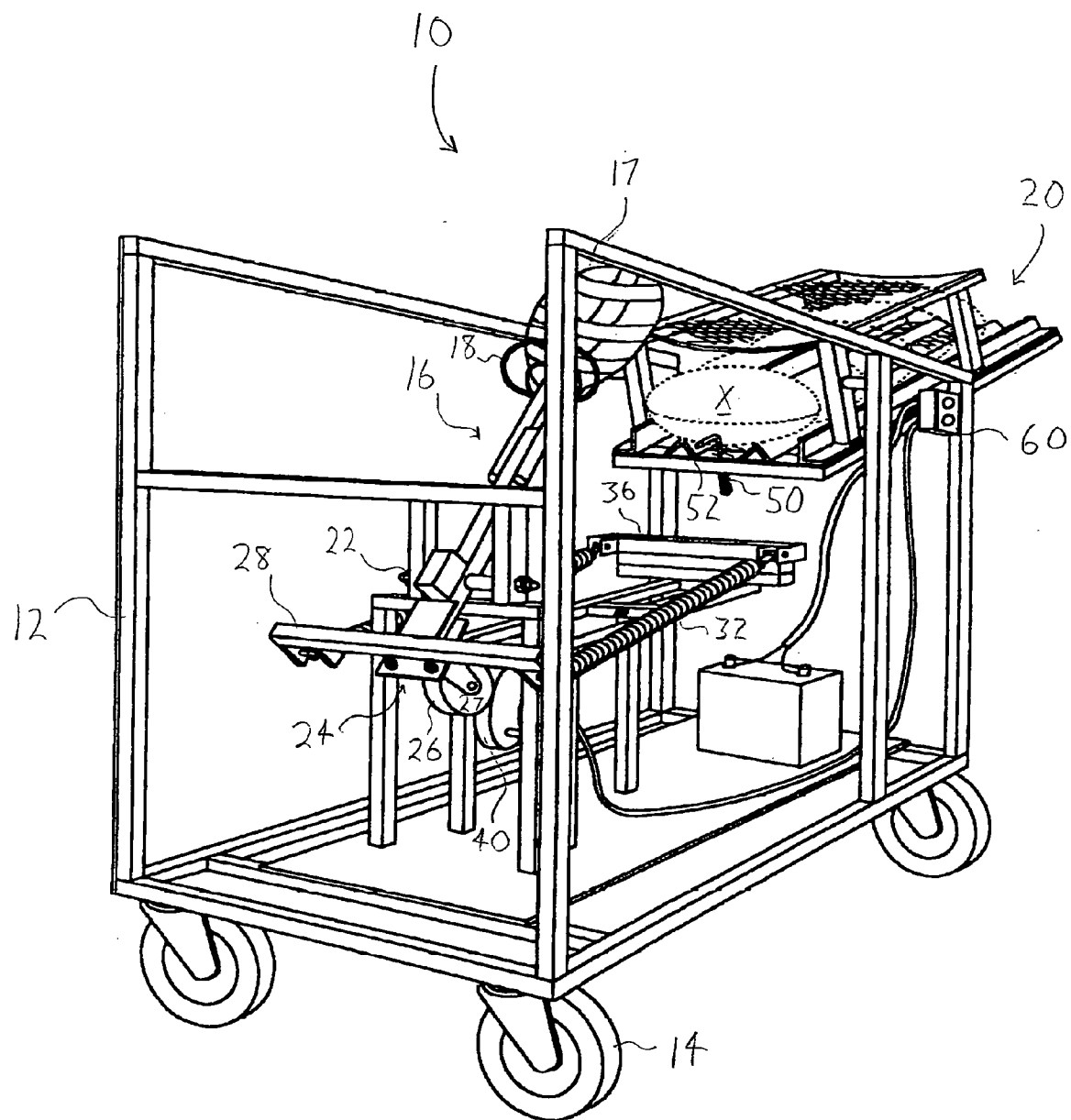


Fig. 3A

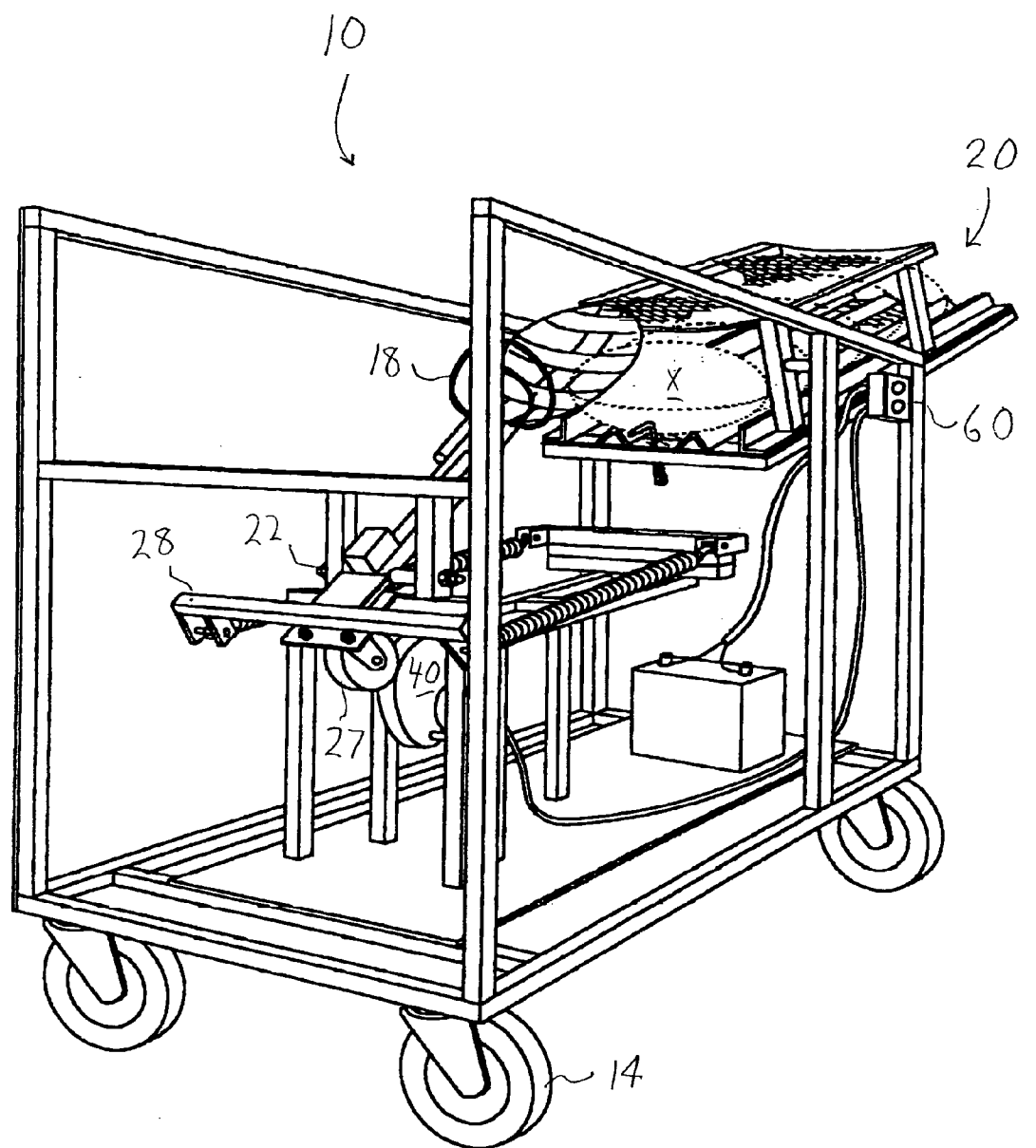


Fig. 3B

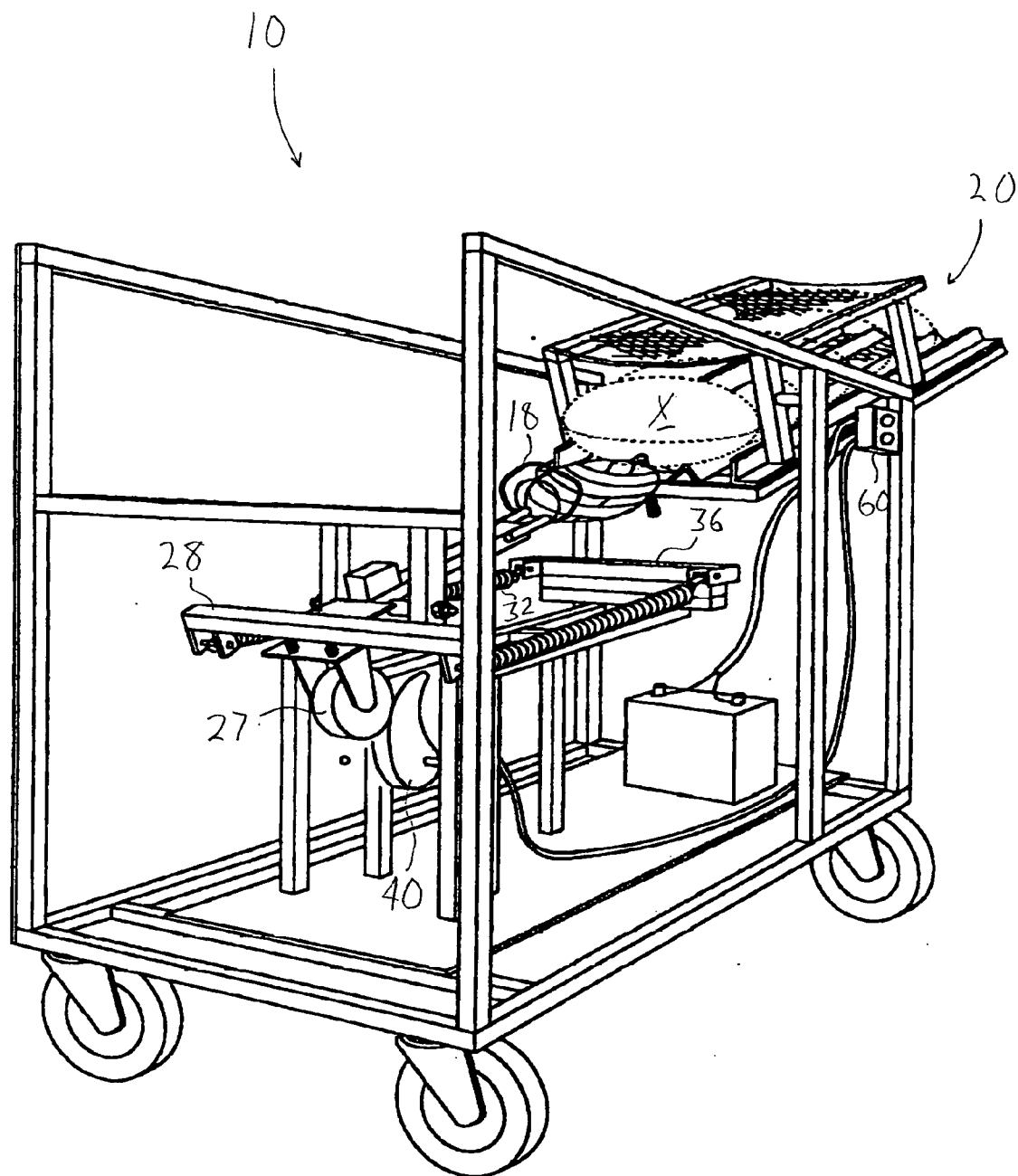


Fig. 3C

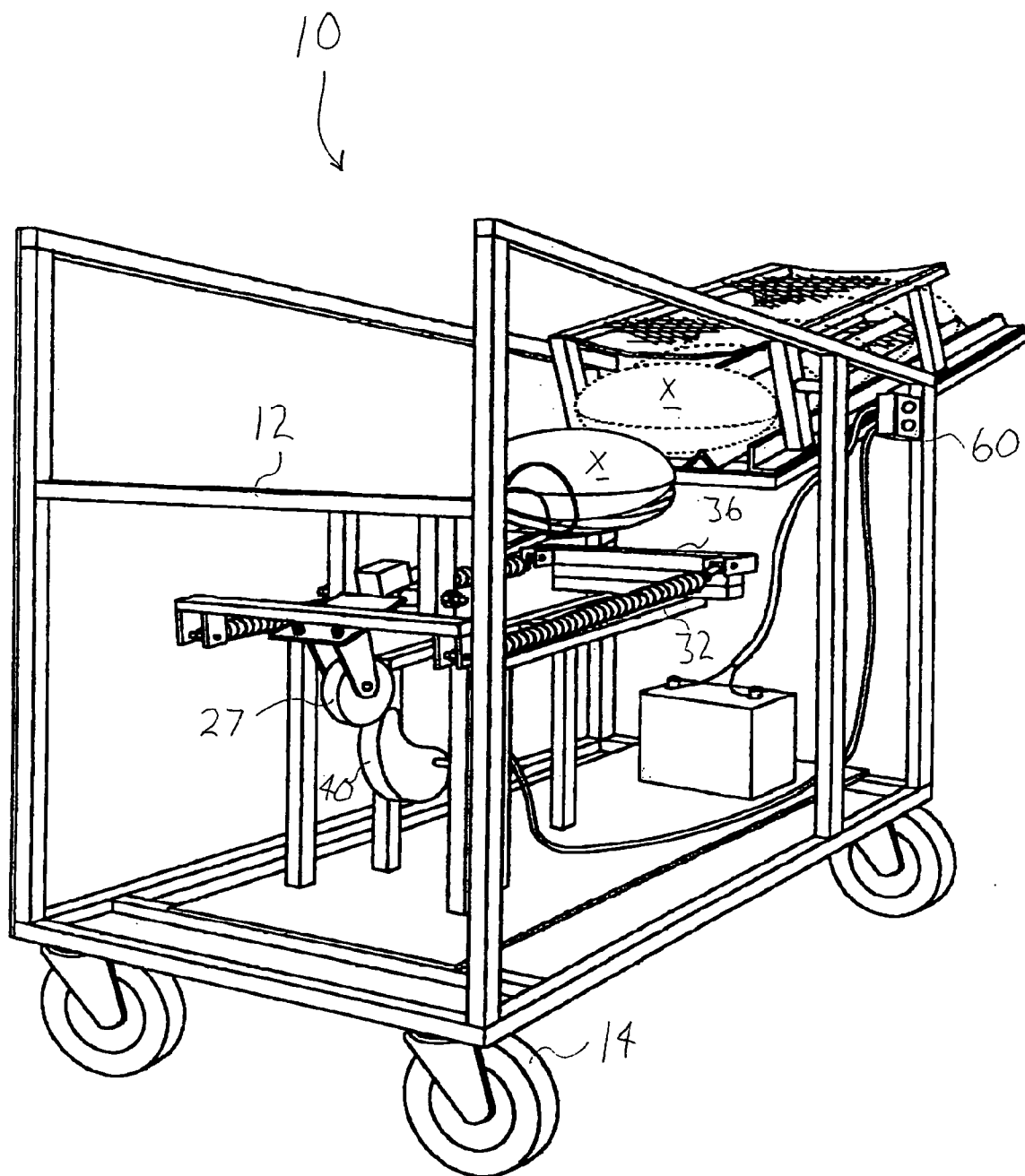


Fig. 3D

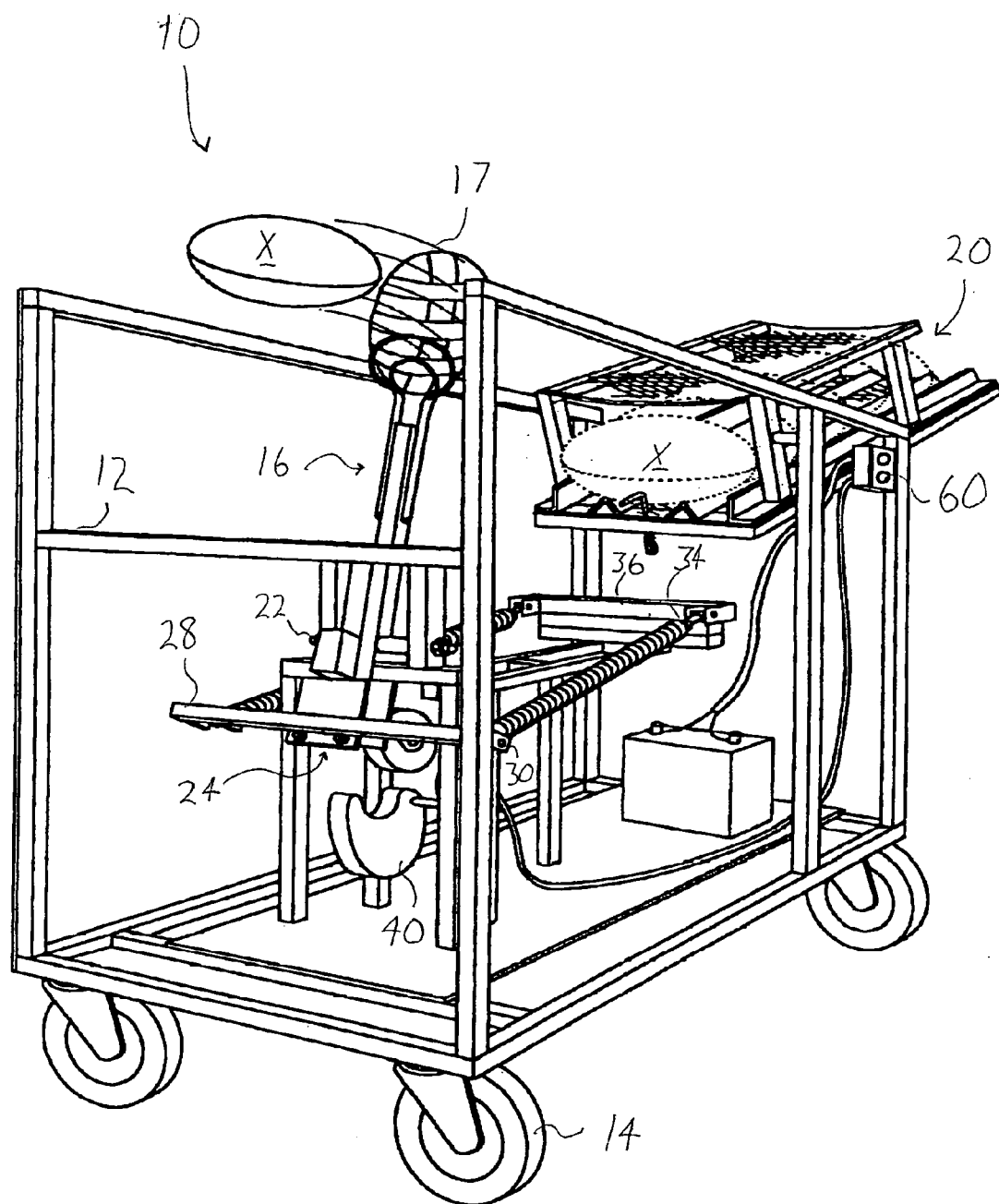


Fig. 3E

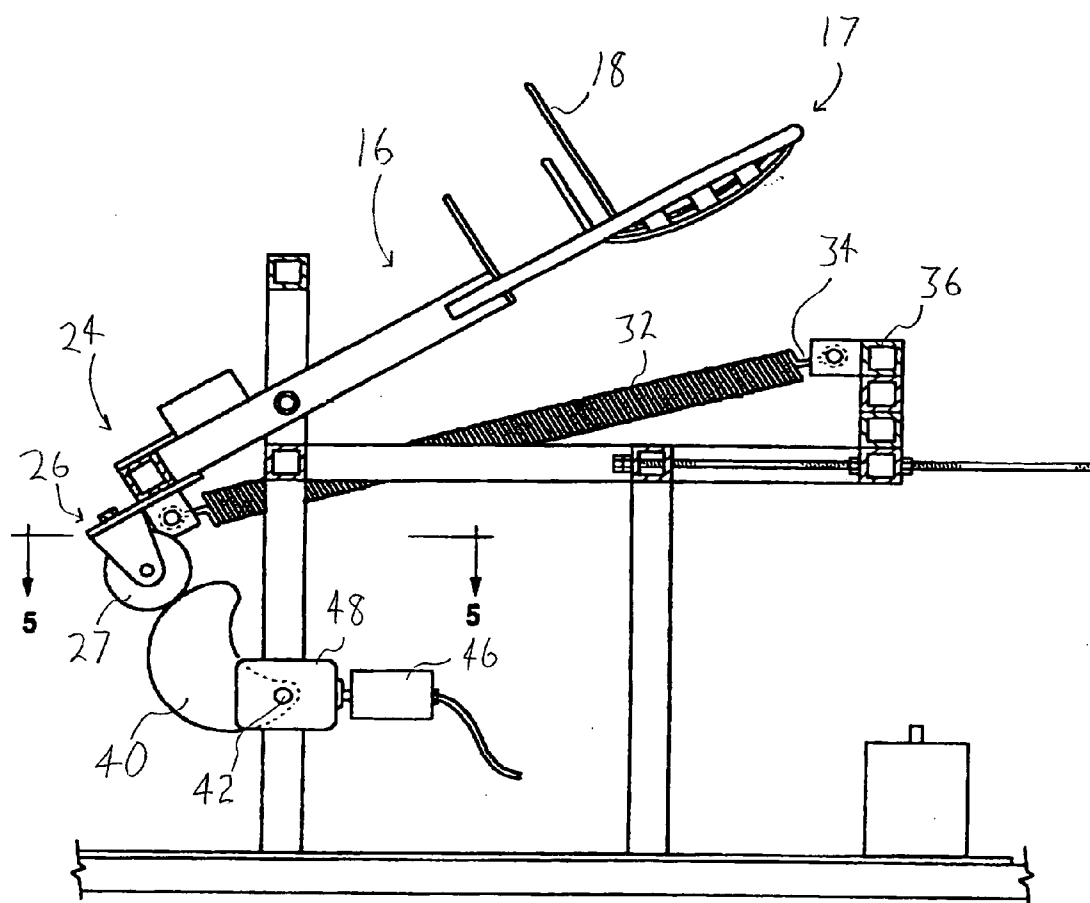


Fig. 4

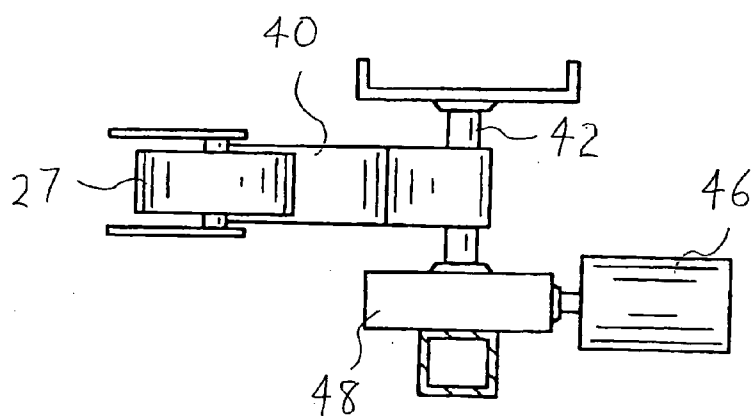


Fig. 5

FOOTBALL HIKING SYSTEM

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to apparatuses for simulating sporting ball handling.

[0003] 2. Background Information

[0004] Football is a national passion, and where there are football games, there are football practices. Football practice seasons and football practice sessions are typically regulated by league rules in order to ensure consistency and fairness. These rules, for instance, may limit the amount of time a team can practice or limit the length of the practice season a team can require players to be present for practice.

[0005] Working within these constraints, consistency is difficult to maintain when propelling or hiking a football to the quarterback during practice sessions. This is true because the job of hiking the ball during practice typically falls to an “expendable” member of the team or training staff because the official ball hiker is most likely performing his own training. It would be inefficient to utilize a valuable member of the team to perform such a monotonous, repetitive function as hiking the ball to the practicing quarterback, when that team member could be furthering his own skills, especially when practice time is limited. Another variation of this problem is encountered during off season practice sessions when attendance is not required and therefore the presence of a hiker is optional. This has led to the development of mechanical ball hikers.

[0006] Currently, the mechanical ball hikers that are available merely “hand” the ball to the quarterback, and do not propel it in the manner required to simulate that required for the “shotgun” formation. Therefore, existing ball hikers may be adequate for teams using standard line-ups and plays, but are useless for those employing the “shotgun” offense, in which the quarterback typically stands back from the offensive line about five yards. This line-up is advantageous in certain situations because it gives the quarterback more time to throw the ball and is very hard to defend against. It is an advantageous offense to use with a light, quick front line and a quarterback who knows how to run as well as throw the ball. More and more high school and college teams are taking advantage of the unique plays that such a line-up favors.

[0007] The shotgun hiker of the present invention solves the problem of how to train a quarterback in the shotgun offense by creating the force needed to mechanically propel a football over a distance, consistently and in a predictable direction. This allows football team members to maximize their practice time and football coaches to most efficiently and effectively train quarterbacks and other team members in the shotgun offense.

SUMMARY OF THE INVENTION

[0008] In view of the foregoing, it is an object of the present invention to provide a mechanical means to propel or hike a football during football practice.

[0009] It is another object of the present invention to provide a more convenient method of practicing the shotgun offense by providing a mechanical means to propel or hike

a football over a distance, rather than merely “hand the ball” to the quarterback during football practice.

[0010] It is a further object of the present invention to provide a consistent means of propelling or hiking the football over a distance into the hands of a quarterback during football practice without the use of an experienced team member.

[0011] It is another object of the present invention to provide a method for training quarterbacks in the initial reception of the football as in the shotgun offense, which method involves a novel football hiking simulator device which provides uniform practice parameters and obviates the need for a human center.

[0012] In satisfaction of these and other related objectives, Applicant’s present invention provides a convenient, consistent, mechanical means to propel a football over a distance into the hands of a practicing quarterback in order that the team may practice the shotgun offense without the use of an experienced team member to merely, repetitively hike the ball.

[0013] Applicant’s approach to the problem described above makes possible, for the first time, a mechanical means of propelling or hiking a football in the manner required for the shotgun offense, and which allows a football team to practice the shotgun offense without the use of an experienced team member to hike the football.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] **FIG. 1** is a perspective rear view of the football hiker of the present invention.

[0015] **FIG. 2** is a perspective front view of the football hiker of the present invention.

[0016] **FIG. 3A** is a perspective front view of the football hiker of the present invention with the outer, substantially aesthetic casing removed for viewing of internal components. In this view, the launching arm is in an intermediate position.

[0017] **FIG. 3B** is the same depiction as that of **FIG. 3A**, except that the launching arm is moved through action of the machine’s cam member to a position closer to the launch release point (to be described later).

[0018] **FIG. 3C** is the same depiction as that of **FIGS. 3A and 3B**, except that the launching arm is moved through action of the machine’s cam member to a position closer still to the launch release point (to be described later).

[0019] **FIG. 3D** is the same depiction as that of **FIGS. 3A, 3B and 3C**, except that the launching arm is moved through action of the machine’s cam member to a position immediately before reaching the launch release point (to be described later).

[0020] **FIG. 3E** is the same depiction as that of **FIGS. 3A, 3B, 3C and 3D**, except that the launching arm has now moved through action of the machine’s cam member beyond the launch release point, and the ball is being launched.

[0021] **FIG. 4** is a side-elevational view of the primary components of a football hiker according to the present invention.

[0022] FIG. 5 is a top plan view of the referenced cam member of the machine with associated rollers and mechanisms to be described later herein.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0023] With reference to FIG. 1-3E, the shotgun hiker of the present invention is identified generally by the reference number 10 (sometimes hereafter "machine 10").

[0024] Machine 10 includes a support frame 12, which, in the preferred embodiment, doubles as a cart with wheels 14. The operative heart of machine 10 includes a catapult-like structure which includes a launching arm assembly 16. The distal, free end 17 of launching arm assembly 16 is configured as a football cradle structure for supporting a standard football X immediately prior to and during a ball launching or hiking operation. A stop 18 positioned medial of the launching arm assembly "catches" footballs X as they are delivered via a chute assembly 20 (to be described in more detail hereafter).

[0025] Launching arm assembly 16 pivots about an axle 22. Near the proximal end 24 of launching arm assembly 16 is attached, in the preferred embodiment, a cam roller assembly 26. A tension bracket 28 is attached to proximal end 24 of launching arm assembly 16, to either end of which are respectively attached the distal ends 30 of springs 32.

[0026] Proximal ends 34 of springs 32 are, in turn, attached to an anchor block assembly 36 which, in the preferred embodiment, provides for adjustment of the tension provided by springs 32. This adjustment may be by various conventional means, including positional adjustment of the anchor block assembly 36 itself (see FIG. 4), or though adjustment of the attaching points for springs 32 (such as by twisting eye bolts to which springs 32 may be attached and which would be threaded into anchor block assembly 36).

[0027] As is clear from a review of the figures, springs 32 urge launch arm assembly 16 from its most retracted position (the "launch point") such as is nearly shown in FIG. 3D, toward its most extended, post-launch position, such as is shown in FIG. 3E.

[0028] A roller 27 of cam roller assembly 26 interacts with cam 40 whereby, as cam 40 rotates about its shaft 42 (see FIG. 5) launch arm assembly 16 moves cyclically to and between the launch and post-launch positions. The configuration of cam 40 is such that, immediately after launch arm assembly 16 reaches its launch point orientation, the contact surface of cam 40 abruptly drops away, out of contact with roller 27, such that launch arm assembly 16 is free to pivot under force of springs 32 to thereby launch a football X. Continued rotation of cam 40 repeats the cycle, with launch arm assembly 16 being eventually returned to the launch point orientation.

[0029] Referring principally to FIGS. 4 and 5, Cam 40, via its shaft 42, rotates under power of an electric motor 46, delivered via a transmission 48. Transmission 48 provides gear reduction for both reducing power requirements for electric motor 46, while maintaining sufficient torque to reliably actuate the launch arm assembly 16 as against the forces of springs 32.

[0030] Referring principally to FIGS. 3A-3E, the preferred embodiment of the present invention includes the use of a conventional car battery for power purposes. Such is included in the interest of portability. However, alternative power sources are certainly viable options, including the use of household 110V current, with accompanying use of extension cord(s) and appropriate changes to electric motor 46.

[0031] As mentioned earlier, football(s) X are delivered to distal end 17 of launching arm assembly 16 via a chute assembly 20. Chute assembly 20 is configured for delivering footballs X, one at a time, to distal end 17 of launching arm assembly 16. A gate assembly 50 is positioned adjacent interior end 42 of chute assembly 20. Gate assembly includes, in the preferred embodiment, a solenoid-based actuation device which, upon charging, causes gate 52 to retract and allow one football X to roll into position on distal end 17 of launching arm assembly 16.

[0032] An alternative, and perhaps preferred, gate mechanism (not shown in the drawings) is one which utilizes a rocking barrier/cradle mechanism to control the "flow" of footballs X through machine 10. Such is one in which a rocking tray-like member, with an upward-facing annular recess, is positioned as part of the floor surface 21 of chute assembly 20 over which footballs X roll to be delivered to the launching arm assembly 16. This tray-like member is positioned near the delivery end of the chute assembly 20. An actuator assembly cyclically rocks the tray-like member such that, in one limit of motion, a barrier is presented to on-coming footballs X (while allowing any football X resident in the annular recess to roll onto the distal end 17 of the launching arm assembly 16), while when at the other limit of motion, a football X rolls into the annular recess. So long as footballs X remain in chute assembly 20, and the gate mechanism continues working on coordination with the cyclical motion of launching arm assembly 16, footballs X will be hiked (or "snapped") for practice. A still further variation of this type of gate apparatus is one in which the rocking member is on the upper, ceiling surface of the chute assembly 20, and projections on either end of the rocking member control ingress and egress of footballs X relative to the intervening recess, somewhat analogous to the pallet fork of a mechanical clock.

[0033] Coordination of any such type of gate mechanism with motion of launching arm 16 can be achieved through a variety of means, including electronic, or even mechanical means. The design of such is well within the skills of persons ordinarily skilled in the related arts.

[0034] The coordination between operation of gate assembly 50 and the position of launching arm assembly 16 may be handled in a variety of ways. Most simply, perhaps, is by providing contact switches (not shown in the drawings) which are closed immediately before launch arm assembly 16 reaches the launch point and which, upon actuation, activate suitable timed circuits for retracting gate 52 for a prescribed duration for delivering a football X, but restraining the next successive football X in chute assembly 20.

[0035] Control of electrical motor 46, and by it control of machine 10, is by via a control box 60. Control box 60 may be fixed to machine 10, or may be removable for operation at a distance from machine 10. While a hard wire-based control box 60 is shown in the drawings, a wireless remote

control version is envisioned, and may be based on such technology as garage door opener controllers and suitable receivers for use therewith.

[0036] An optional feature of a machine **10** according to the present invention is one which includes some means by which to reorient the support frame **12** (or the actual mechanical components of machine **10**) such that footballs **X** are hiked (“snapped”) at a lower trajectory. This would be desirable for training for extra point place holders who receive a football while positioned on one knee. The simplest, though not only approach to this is by providing a “jack” structure which simply raises the rearward portion of support frame (or “cart”) **12**.

[0037] Although the invention has been described with reference to specific embodiments, this description is not meant to be construed in a limited sense. Various modifications of the disclosed embodiments, as well as alternative embodiments of the inventions will become apparent to persons skilled in the art upon reference to the description of the invention. It is, therefore, contemplated that the appended claims will cover such modifications that fall within the scope of the invention.

We claim:

1. A football hiking apparatus comprising:

a support frame;

a launching arm assembly pivotally engaged with said support frame for pivotally moving to and between a launch point orientation and a post-launch orientation;

biasing means engaged with said ball launching platform for biasing said ball launching platform toward said post-launch orientation;

cam interface means positioned near a proximal end of said launching arm assembly;

a cam member rotatably carried on an axle member, in turn, supported by said support frame, said cam member being positioned for interaction with said cam interface means of said launching arm assembly, said cam member and said cam interface member being configured whereby rotation of said cam member about an axle member causes motion of said launching arm assembly to and between said launch point orientation and said post-launch orientation;

cam drive means for effecting rotation of said cam member; and

control means for controlling said cam drive means.

2. The invention of claim 1 further comprising:

a football chute assembly for accommodating a plurality of footballs; and

gate means attached to said chute assembly, said gate means, upon actuation, releasing one of said footballs for egress from said football chute assembly;

gate actuation means for actuating said gate means for releasing one of said footballs from said football chute assembly only when said football cradle structure of said launching arm assembly is positioned for receiving a said football;

said football chute assembly being positioned relative to said launching arm assembly whereby, upon actuation of said gate means, a football released from said football chute assembly rolls to a position atop football cradle means at a distal, free end of said launching arm assembly.

3. A method for simulating football hiking comprising the steps of:

selecting a football hiking apparatus comprising:

a support frame;

a launching arm assembly pivotally engaged with said support frame for pivotally moving to and between a launch point orientation and a post-launch orientation, said launching arm assembly having a football cradle structure positioned near a distal, free end thereof;

biasing means engaged with said ball launching platform for biasing said ball launching platform toward said post-launch orientation;

cam interface means positioned near a proximal end of said launching arm assembly;

a cam member rotatably carried on an axle member, in turn, supported by said support frame, said cam member being positioned for interaction with said cam interface means of said launching arm assembly, said cam member and said cam interface member being configured whereby rotation of said cam member about an axle member causes motion of said launching arm assembly to and between said launch point orientation and said post-launch orientation;

cam drive means for effecting rotation of said cam member;

control means for controlling said cam drive means;

a football chute assembly for accommodating a plurality of footballs; and

gate means attached to said chute assembly, said gate means, upon actuation, releasing one of said footballs for egress from said football chute assembly;

gate actuation means for actuating said gate means for releasing one of said footballs from said football chute assembly only when said football cradle structure of said launching arm assembly is positioned for receiving a said football;

said football chute assembly being positioned relative to said launching arm assembly whereby, upon actuation of said gate means, a football released from said football chute assembly rolls to a position atop football cradle means at a distal, free end of said launching arm assembly;

positioning one or more footballs in said football chute assembly; and

actuating said control means for hiking said one or more footballs; one at a time.

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