June 14, 1960 T. D. BRITT 2,940,757

FOOTBALL TRAINING MACHINE

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Fig. 1

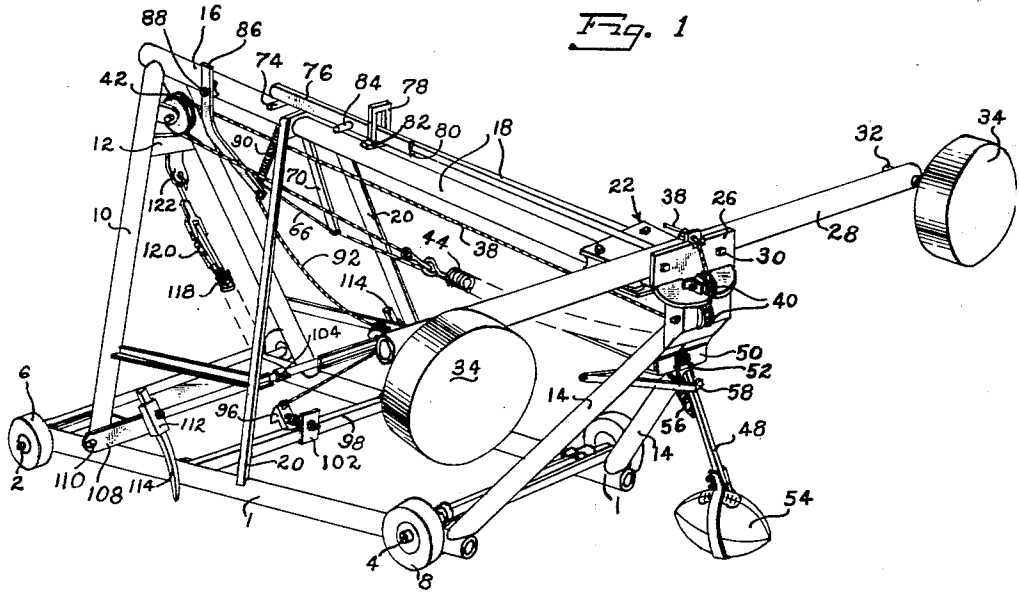


Fig. 2

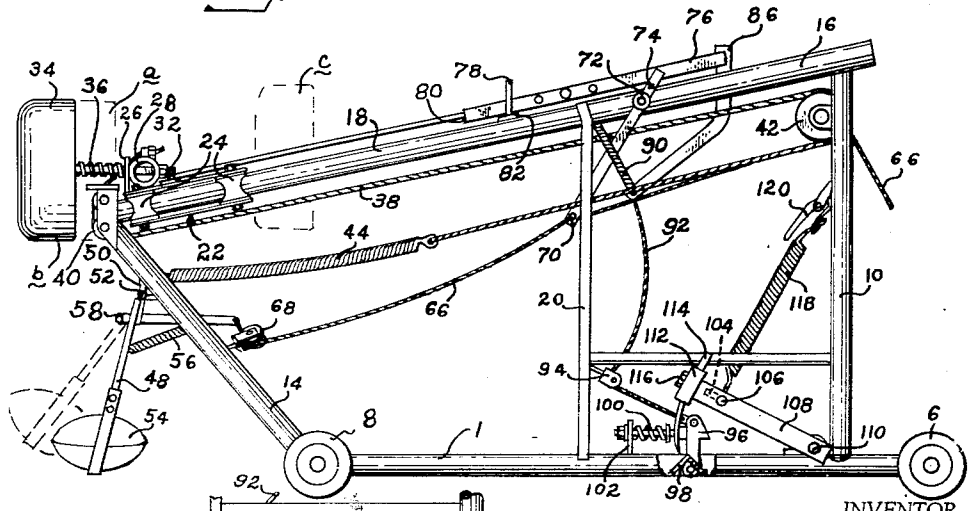
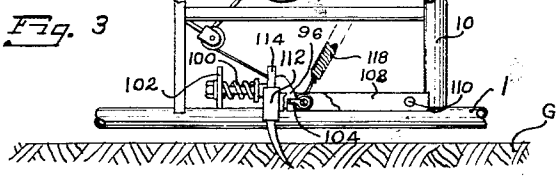


Fig. 3



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Fig. 4

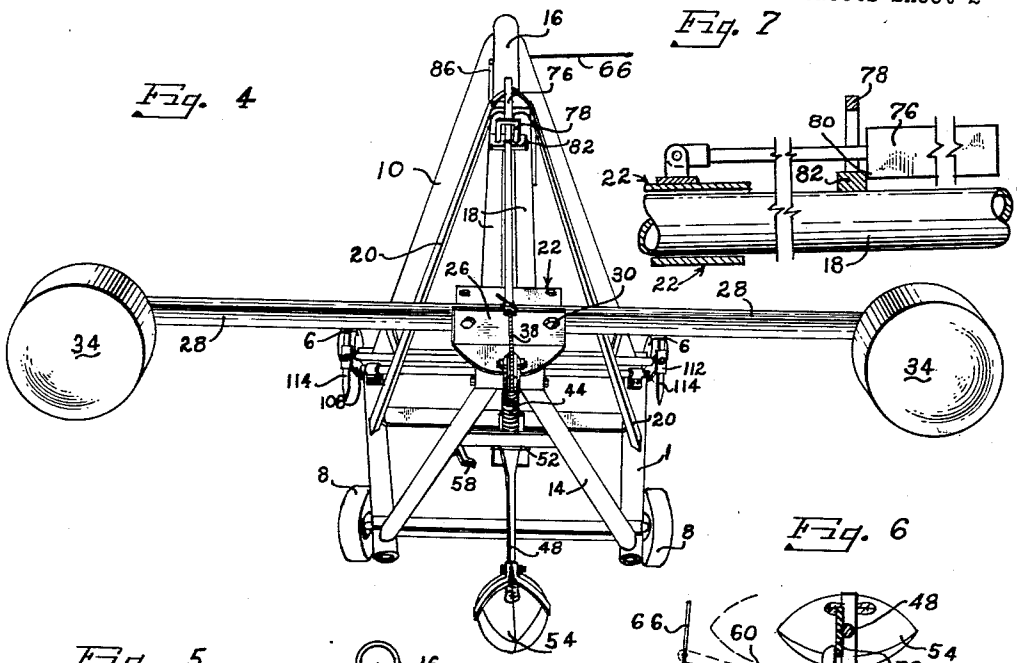


Fig. 7

Fig. 6

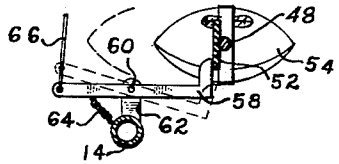
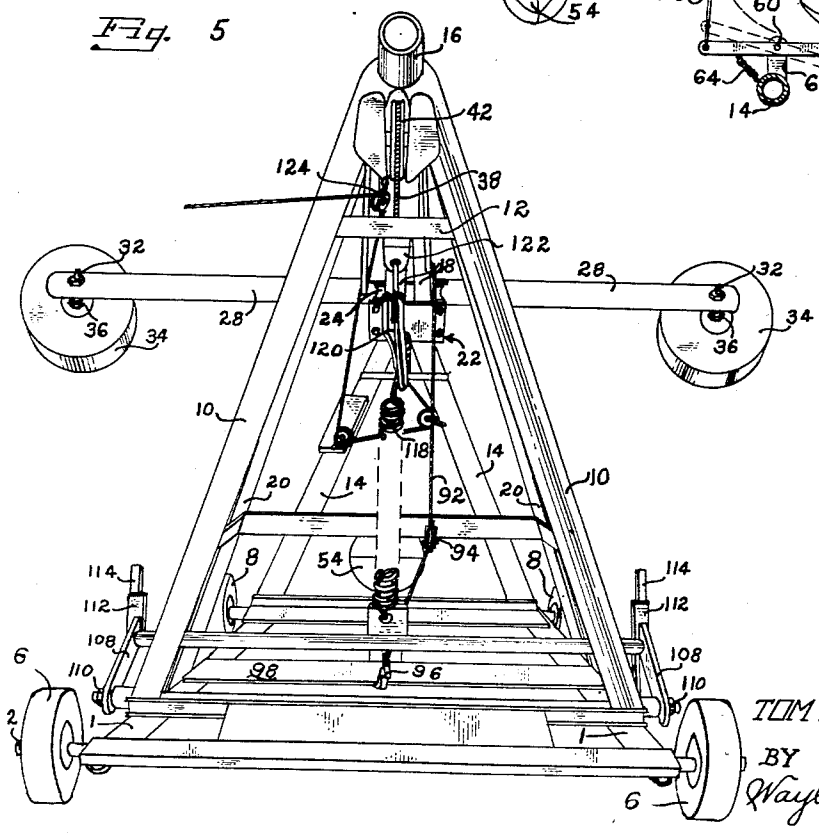


Fig. 5



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FOOTBALL TRAINING MACHINE

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10 Claims. (Cl. 273—55)

This invention relates to equipment for teaching defensive or offensive tactics to football players and for the development of co-ordinated play and cooperation of the team, and to teach the players to charge and to follow through when the ball "snaps," and whereby both the coach and the players are able to determine the driving power of the players being trained.

Various devices have been proposed heretofore to teach the art of charging and offensive blocking, but such devices have, for the most part, performed only a single function, rather than multiple functions, and have given neither the players nor the coach the true simulated defensive charging and offensive blocking movements, in such manner as to teach the players coordination, which coordinated action is registered in such manner as to provide visible results of the performance of the players.

An object of this invention is to provide a football training machine, which coordinates the movement of the football with the movement of the machine, to simulate the advance of the offensive team and also of the defensive team, simultaneously with the movement of the football by the "center" so as to enable the players to exert a driving action against the device whereby the coordination and driving power of the players can be determined.

Another object of the invention is to provide a device whereby the players may obtain needed exercise and learn the correct technique of defensive charging.

Still another object of the invention is to provide a machine which may be remotely controlled, to give an element of surprise to the players.

Yet another object of the invention is to provide a football practice machine which may be driven forward for a "loss" when the players exert sufficient driving power at the right time.

Another object of the invention is to provide a device which will develop in the players, balance, agility, power, form and position, with a minimum possibility of bodily injury.

A further object of the invention is to provide a machine which is light in weight, simple in construction, which may be readily moved from place to place, and which gives an effective simulation of the action of an opposing team.

With these objects in mind and others which will become manifest as the description proceeds, reference is to be had to the accompanying drawings, in which like reference characters designate like parts in the several views thereof, in which:

Fig. 1 is a perspective view of the device showing a side, front and the top of the machine in one position;

Fig. 2 is a side elevational view of the machine showing the side opposite that shown in Fig. 1, and showing alternate positions of the machine in dashed outline, and showing the anchor plows in raised position;

Fig. 3 is a fragmentary elevational view, similar to that shown in Fig. 2, except the anchor plows are shown as engaged in the ground;

Fig. 4 is a front elevational view of the device;

Fig. 5 is a rear elevational view thereof;

Fig. 6 is a fragmentary detailed view showing the latch mechanism in full outline, which holds the football in one position, showing the tripped position of the latch mechanism in dashed outline, and showing the football in another position in dashed outline; and

Fig. 7 is an enlarged fragmentary detailed view showing a portion of the carriage, a portion of the tubular track, and showing the latch detent mechanism in position to hold the carriage in "set" position.

With more detailed reference to the drawing, the numeral 1 generally a frame having transverse axles 2 and 4 thereacross, on which axles wheels 6 and 8, respectively, are journaled, in such manner that the wheels will be exterior of the frame 1. A pair of upright standards 10 are mounted on the front end of the frame 1, which standards 10 converge inwardly substantially to form an A-member, with a brace 12 extending between the upper portions of the standards. The uprights 10, when viewed from the side as shown in Fig. 2, present substantially vertical members.

A pair of upright tubular members 14 extend rearwardly of the frame at an acute angle with respect to the horizontal, which tubular members 14 converge medially inward, as will best be seen in Figs. 1, 2, and 4. The lower ends of the frame members 14 are secured to the respective frame members.

Tubular members 16 and 18 are joined in end-to-end relation, the forward end of member 16 being secured to upright member 10, and the rear ends of members 18 are secured to the upper end of members 14, so as to present a light weight, rigid frame, which frame is made of thin section tubular members, such as steel, aluminum or the like. The members 18 are preferably positioned in side by side relation, with the rear ends thereof being lower than the front ends thereof, which members 18 form a track. The members 16 and 18 are further braced to frame 1 by means of braces 20, which braces 20 are connected at their upper ends to the members 18, at the juncture thereof with the member 16.

A wheeled carriage, designated generally by the numeral 22, has pairs of rollers 24 thereon, on each side of tubular members 18, so that the carriage 22 will be guided along tubular members 18, as will be more fully brought out hereinafter. The wheeled carriage 22 has an upstanding bracket 26 secured to the rear end thereof, to which bracket is attached a transverse member 28 by means of bolts 30. The transverse member 28 extends outward a substantial distance on each side of the frame 1. Each end of the transverse member 28 has an aperture formed transversely therethrough, which apertures are in substantially parallel relation with tubular track members 18. Each of the apertures in the member 28 has a bolt 32 slidably positioned therein, which respective bolts extend rearward of the transverse member 28 a substantial distance, and each bolt 32 has a pad or cushion 32 secured on the rear end thereof. A compression spring 36 is telescoped over each of the bolts 32 intermediate the respective pads 34 and the transverse member 27, so, upon movement of the pad or cushion 34 forwardly, the spring will compress to permit the yielding action of the pad, under the impact of a player, which will cushion the movement of the player, and reduce the likelihood of shock or injury to the player.

A cable 38 is secured to the upstanding bracket 26, approximately medially thereof, which cable 38 passes rearward and is guided around pulleys 40, so the cable 38 extends forward to a further pulley 42, which pulley 42 is journaled on a shaft which extends between uprights 10 at the forward end of the device, with a further

reach of the cable extending rearward from pulley 42, which cable is anchored to the forward end of spring 44. The opposite end of the spring 44 is anchored to a cross-bar 46 on the upward and rearward end of rearwardly extending braces 14. The spring 44 is a tension spring and is connected to cable 38 in such mannner that, as the wheeled carriage 22 is moved forward, tension is applied to the spring.

An arm 48 is hingeably connected to cross-bar 50 by means of a hinge 52, which cross-bar 50 is attached to the members 14. The arm 48 carrying a football 54, will be free to move forward under the tension of spring 56, upon the tripping of a latch member 58, which engages hinge member 52, when in the position as shown in full outline in Fig. 6. The latch member 58 is beveled, to permit the automatic setting of the football when it is swung rearward, as from the position as shown in dashed outline in Fig. 6, to that shown in full outline therein.

The latch 58 is pivotally connnected at 60 to an outstanding bracket 62 on one of the rearwardly and upwardly extending members 14. A tension spring 64 is positioned between the latch 58 and rearwardly extending upright member 14 so as to move the latch member from the position as shown in dashed outline in Fig. 6 to that shown in full outline therein, upon the release of tension from cord 66.

The cord 66 extends from an end of latch lever 58 through a pulley 68 and is attached to the lower end of pivoted lever 70, which lever is pivoted to member 16 by means of a pin 72, in such manner that the opposite end of the lever from the cord 66, has a pin 74 projecting outwardly therefrom beneath a control rod 76. The control rod 76 is hingeably connected to wheeled carriage 22, and the control rod 76 extends through upstanding loop 78 on the upper side of tubular members 18, so that a shoulder 80, on the rod 76, will engage transverse bar 82, secured to the upper side of tubular members 18, to hold the wheeled carriage 22 so that the pad or cushion members 34 will be in the positions as indicated at *a*, which is the initial "set" position.

The bar 76 extends forwardly and has an outstanding projection 84 on one side thereof, to engage an upstanding lever 86, which lever is pivotally mounted on the side of tubular member 16 by means of a pivot pin 88, which lever extends downward and has a spring 90 connected near the end thereof, which spring urges the lower end of the lever upward. A cable 92 extends from the lower end of the lever 86 through a pulley 94 and is attached to a latch mechanism 96, which latch mechanism is pivoted to a transverse bar 98. A compression spring 100 is positioned between abutment 102, mounted on cross-brace 98 which extends between the members of frame 1 and the latch 96 to urge the latch into engagement with an outstanding lug 104 on transverse rod 106, when the rod is in position as indicated in Fig. 3. The rod 106 extends between a pair of arms 108, which arms are mounted on a shaft 110, which extends between the side members of frame 1, and which arms are exterior of the frame 1.

Each outer end of each arm carries a socket 112, in each of which sockets a downwardly extending plow or ground engaging pointed tooth 114, is adjustably secured by means of a set screw 116.

A spring 118 is connected to the transverse bar 106 and to a toggle action mechanism, such as a load tightener or "boomer" 120. The other end of the load tightener 120 is connected to a lug 122 on cross-bar 12. When in one position, this load tightener will exert considerable tension on spring 118, but when in another position, the spring 118 will be loosened, to enable the plows 114 to be buried into the ground, as indicated in Fig. 3, so that the latch 96 will engage the projection 104.

The cord 66 extends from arm 70 through a pulley 124, at the forward end of the device, which cord may be directed either outward to the right or to the left for actuation by a coach or operator.

Operation

It is preferable to use the football practice device on an open sod or earthen plot of ground. To initially put the device in position for operation, a toggle action load fastening device or "boomer" 120 is loosened to a position which will permit the spring 118 to be sufficiently loose so that, by stepping on pivoted arms 108 and cross-bar 106, the plows 114 may be moved from the position, as shown in Fig. 2, to that shown in Fig. 3, so as to engage into the ground G. A lug 104 will then engage beneath latch mechanism 96, with the spring 100 maintaining the latch 96 in engaged relation with lug 104 on transverse rod 106. With the plows 114 thus locked in engaged position in the ground, the load tightening device 120 is moved to a position to tighten spring 118. With the device positioned in this manner, the pads 34 are moved forward manually, from the position as shown in full outline at *b*, in Fig. 2, to that shown at *a* in dashed outline therein, whereupon, the wheeled carriage 22 and rod 76 will move forward until shoulder 80 on rod 76 engages an abutment 82 secured to the top of tubular members 18. In so doing, a cable 38, which is attached to wheeled carriage 22 and to a spring 44 anchored at the opposite end of the cable, which spring is anchored to cross-bar 50 on the forward end of members 14, and the spring 44 is so positioned that tension is applied thereto, to hold the shoulder 80 in engaged relation with abutment 82.

A football 54 is mounted on the lower end of rod 48, which rod is hinged to a hinge member 52, which arrangement allows forward and rearward swinging action of ball 54. A latch 58 is pivotally mounted on standard 14 so as to engage the rear side of hinge 52, so as to hold the ball 54 in a position as shown in dashed outline in Fig. 2. With the end of the latch lever, opposite the hinge engaging portion, secured to a cord 66, which cord passes through pulley 68 and is attached to trip lever 70, which enables an operator or coach to control the tripping of levers 48 and 70, by means of cord 66, at a point remote from the device.

The lever 70 is pivoted at 72 in such manner that an outstanding projection 74, on rod 70, passes beneath rod 76. The angularity of the lever 70 is such that, upon movement of cord 66, the projection 74 will raise the rod upward so that the shoulder 80 will be raised above abutment 82, which will permit the rod to slide forward in guided relation within upstanding guide members 78, as will best be seen in Fig. 2.

Upon pulling the cord 66, the lever 70 and the latch 58 will be simultaneously moved, and the movement of lever 70 is so co-ordinated with the movement of the latch 58, that the projection 74 will lift shoulder 80 out of engagement with abutment 82 simultaneously with the disengagement of the nose portion of the latch member 58 from the hinge member 52. This will permit the ball 54 to move from the position as shown in dashed outline in Fig. 2 to that shown in full outline therein, which simulates the "snapping" of the ball, when the ball is put into play.

With the rod 76 released to permit the wheeled carriage 22, which carries the pads 34, to move rearward, the defensive players, one opposite each pad 34, will then start a forward movement or drive against the pads, therefore, if the defensive players work in coordinated relation, and both pads are hit simultaneously, before they reach the position as shown in full outline, as indicated at *b*, a projection 84 will cause the lever to pivot about pivot 88 so that the lower end thereof will move upward, as the upper end thereof moves forward. If the pads 34 are hit by the players, before position *b* is

reached, and are driven forward, the position is indicated at *c*.

In so doing the cord **92**, which is attached to the lower end of lever **86**, will move upward, which will cause latch member **96**, which is attached to cord **92**, to compress spring **100**, whereupon, the latch **96** becomes disengaged from lug **104** and the spring **118** will move arms **108** and plows **114** from position as indicated in Fig. 3 to that as indicated in Fig. 2. If the defensive charge is properly co-ordinated, the entire wheeled, mobile blocking device will be moved forward on the wheels **6** and **8**, a distance comparable to that of driving back offensive players.

It is to be pointed out that one player charging one pad **34** is ineffective, and the tangible results would be negligible, but with the co-ordinated forward movement of two players starting as the ball begins to move, a defensive charge can be made by the players driving forward and upward, their movements in aligned relation of members **18**, the movement of the pads **34** and of the entire machine, will indicate the striking power of the defensive players, in very much the same manner as if actual players were used in the offensive play, but with the possibility of injury to the players being minimized. By having the controls of the machine arranged in a manner as set out above, an operator, such as a coach or an instructor, can manipulate the controls, and two defensive players, operating as a team, can co-ordinate the beginning of their movement with the actual beginning of the movement of the football **54**. In this manner actual game practice is closely simulated.

In practice with the machine, the two defensive players opposite the respective pads, are in position with their forearms and shoulders in close guarding relation to the pad, however, if the response of the defensive players to the movement of the ball **54** is not practically instantaneous, the pads will plunge against the players, thereby signifying that the players are not providing good defensive action. The springs are so positioned between the respective pads **34** and the transverse member **28**, that the spring will compress upon impact by the defensive players, with the pads **34**, thereby providing, for the players, the maximum of safety.

While the invention has been described in some particularity for teaching or training the players defensive tactics, the machine can be used equally as well in training offensive tactics, by working out certain drills in connection with the movement of the ball and the movement of the charging element, as will be more fully brought out hereinafter.

The charging element is so spring loaded that it will move toward the opposing players, upon the snapping of the ball, in the manner opposing players would move. The snapping of the ball **54**, that is, moving the ball from one position to another upon the tripping of latch **58** will develop visual alertness and corresponding reaction, which will enable the players to work out the best charging tactics at the most opportune time and in the best position to overcome the resistance offered by the machine, in such manner as to drive the charging element forward until the plows **114** are released and the machine is driven forward. The various actions of which teaches the initial charge and a continued drive in such manner that the players have to develop balance and to move the machine with increasing speed. In short, the device teaches correct form, power, position and pursuit, thereby greatly aiding the instructor or coach with a minimum of explanation.

In using the machine to teach offensive action, the movement of the players is co-ordinated with the movement of the ball so there is no lag by the offensive players upon the snapping of the ball.

While the invention has been illustrated and described in some detail for one embodiment thereof, it is to be understood that changes may be made in the minor

details of construction without departing from the scope of the invention or the scope of the appended claims.

Having thus clearly shown and described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a football training machine, a frame, wheels mounted on said frame for rolling movement thereof over the terrain, a football swingably mounted on said frame near an end thereof for swinging in a medial, vertical plane in the normal line of movement of the machine, a charging element movably mounted on said frame for charging movement in one direction, means tending to move said charging element along said frame, detent means for selectively retaining said charging element in a set position, resilient means urging movement of said football from one position to another in a direction opposite the movement of said charging element, detent means holding said football in a normally set position, and means to release said charging element and said football substantially simultaneously for movement in opposite directions.

2. A football training machine as defined in claim 1, wherein ground engaging means retains said frame against normal rolling movement, and wherein release means are actuated by said charging means to release said ground engaging means.

3. A football training machine as defined in claim 1, wherein said means tending to move said charging element along said frame is a resilient means.

4. A football training machine as defined in claim 1, wherein said means to release said charging element and said football substantially simultaneously is a cord-like means which is attached to the respective detent means.

5. A football practice apparatus comprising a pair of spaced apart frame members, a wheel mounted near each end of each of said frame members for rolling along the terrain, upright members secured to said frame members, a longitudinal member secured at the upper ends of said upright members, a carriage movably mounted on said longitudinal member, a transverse member secured to said carriage and having a resilient abutment near each outer end thereof, latch means to lock said carriage carrying said transverse member a spaced distance from an end of said longitudinal member, resilient means urging said carriage along said longitudinal member in one direction, an arm pivotally mounted on said frame near an end thereof and adjacent said transverse member, a football element mounted on said arm, resilient means normally urging said football in an opposite direction from the normal, resilient direction of movement of said carriage, latch means engageable with said arm to maintain said football in a set position against the tension of said resilient means, and means to release said pivoted arm on which said football element is mounted and for releasing said first-mentioned latch means so said football element and said carriage will move in opposite directions.

6. A football practice apparatus as defined in claim 5, wherein a pair of arms is pivotally mounted on said frame members to swing with respect thereto, ground engaging elements provided on said arms, latch means for holding said ground engaging elements in ground engaging position, release means connected with said latch means to be actuated upon movement of said carriage beyond a predetermined point, thereby releasing said ground engaging means, and resilient means for moving said ground engaging means from its ground engaging position to a disengaged position.

7. A football practice apparatus as defined in claim 6, wherein release means is provided for releasing tension on said resilient means which moves said ground engaging means from ground engaging position to disengaged position.

8. In a football practice apparatus, a wheeled frame, means to normally hold said wheeled frame against roll-

ing movement, upwardly converging members on each end of said frame, a medial member positioned between the upper ends of said upright members and forming an upwardly inclined, longitudinal trackway, a transverse member mounted on said longitudinal trackway for movement therealong, a padded element on each end of said transverse member, resilient means connected between said frame and said transverse member to urge said transverse member longitudinally along said trackway, latch and detent means connecting said transverse member and said longitudinal trackway so as to normally retain said transverse member against the tension of said resilient member, means connected to said latch means to release said transverse member for movement thereof along said longitudinal trackway under the influence of said resilient member, and means to release said wheeled frame holding means upon movement of said transverse member along said trackway a predetermined distance against the tension of said resilient means.

9. A practice device for training athletes; comprising a base, wheels mounting said base for rolling movement thereof over the terrain, two pairs of upwardly and inwardly converging members secured to said base at their lower ends, a medial longitudinal member secured to the upper ends of said upwardly and inwardly converging members and forming an inclined, longitudinal trackway, a carriage, rollers mounted on said carriage, which rollers are in rolling engagement with said longitudinal trackway, a transverse member mounted on and secured to said carriage above said longitudinal trackway, a pad element mounted on each end of said transverse member, resilient means connected between said base and said carriage for urging said carriage and said transverse member downward along said inclined, longitudinal trackway, latch means intermediate said carriage and said trackway to normally retain said carriage against movement thereof downwardly along said longitudinal trackway, a pivoted arm element mounted on said base, for indicating the initiation of a play, which pivoted arm element is positioned substantially in a medial plane passing longitudinally through said longitudinal trackway, which pivoted arm element extends outward from said base, resilient means connected to said pivoted arm element, which resilient means urges said pivoted arm element in a direction opposite the direction which said first named resilient means urges said carriage to move, latch means on said base for normally holding said pivoted arm against movement due to resilient pressure, a ground engaging element pivotally mounted on said base, a third resilient means normally urging said ground engaging element out of engagement with said ground, latch means for normally restraining disengagement of said ground engaging element from the ground, remote control means connected to said first mentioned and said second mentioned latch means for simultaneously tripping the latch means which holds said carriage and the latch means which holds said pivoted arm element against movement by their respective resilient means, and a further tripping means for releasing said latch holding said ground engaging element in engaged position with the ground when said carriage has moved upward to a predetermined position on said upwardly inclined trackway.

10. In a football practice apparatus, a wheeled frame, upwardly converging members mounted on each end of said frame, a medial member positioned between the upper ends of said upwardly converging members and forming an upwardly inclined, longitudinal trackway, a transverse member mounted on said longitudinal trackway for movement therealong, a padded element mounted on each end of said transverse member, resilient means connected between said frame and said transverse member to urge said transverse member longitudinally along said trackway, latch and detent means connecting said transverse member and said longitudinal trackway so as to normally retain said transverse member against tension of said resilient member, means connected to said latch means to release said transverse member for movement thereof along said longitudinal trackway under the influence of said resilient member, ground engaging means on said frame, and means provided on said frame to release said ground engaging means upon movement of said padded elements a predetermined distance along said longitudinal trackway against the tension of said resilient means.

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