Sept. 9, 1941. R. A. NOOR 2,255,711

PNEUMATIC FOOTBALL TRAINING MACHINE

Filed Dec. 28, 1939 3 Sheets-Sheet 1

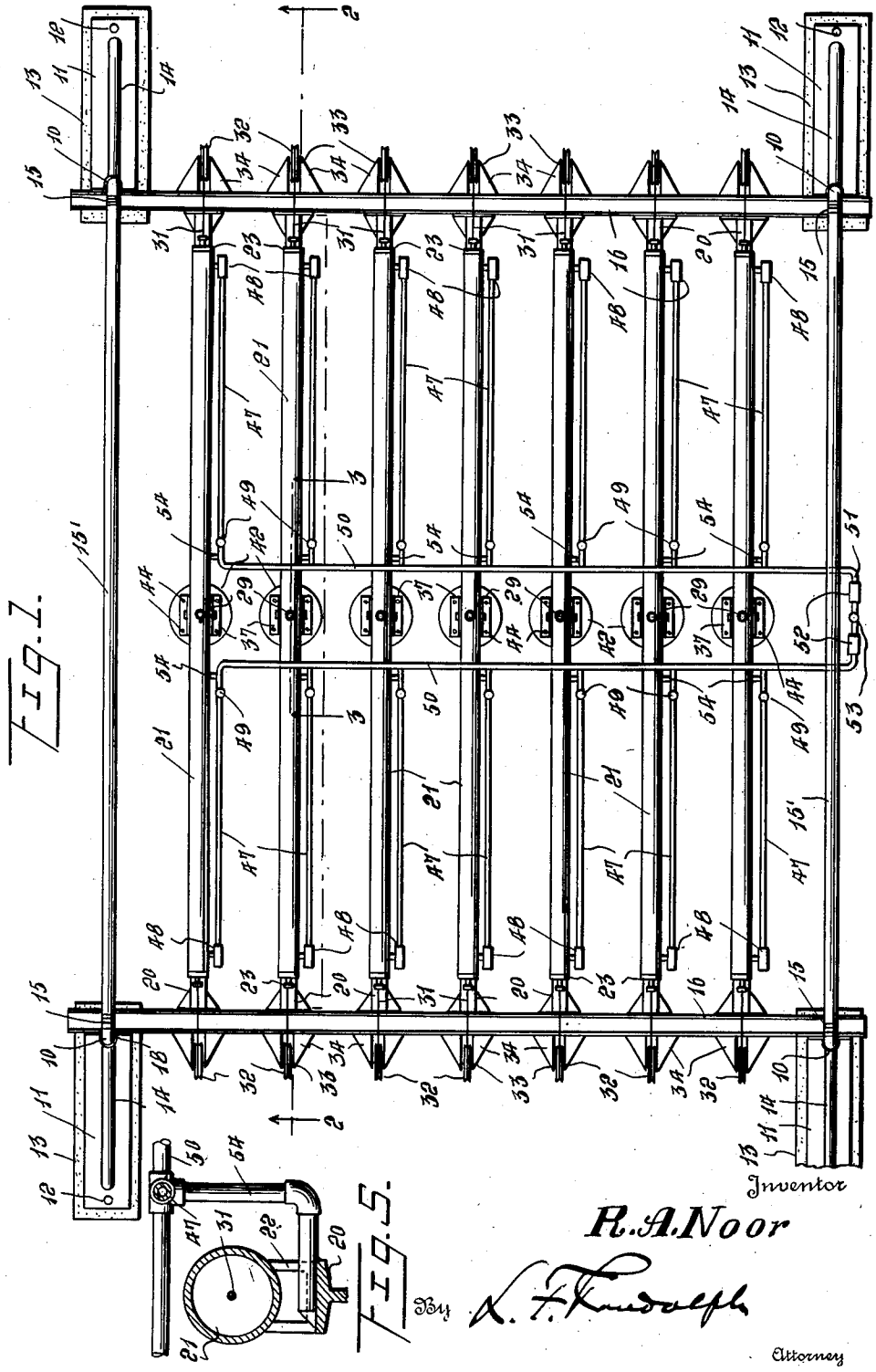


FIG. 1.



FIG. 5.

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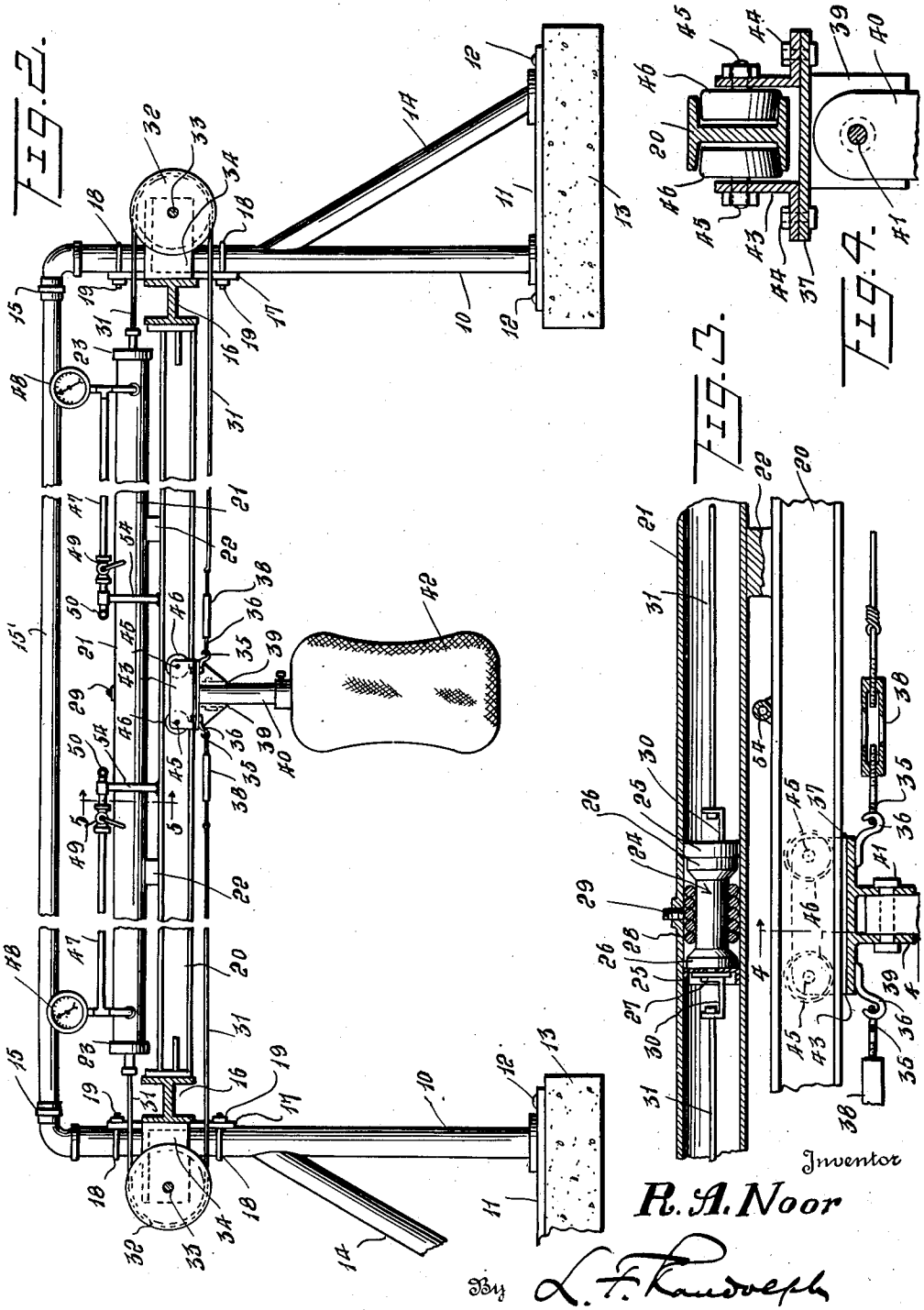
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PNEUMATIC FOOTBALL TRAINING MACHINE

Filed Dec. 28, 1939 3 Sheets-Sheet 2



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PNEUMATIC FOOTBALL TRAINING MACHINE

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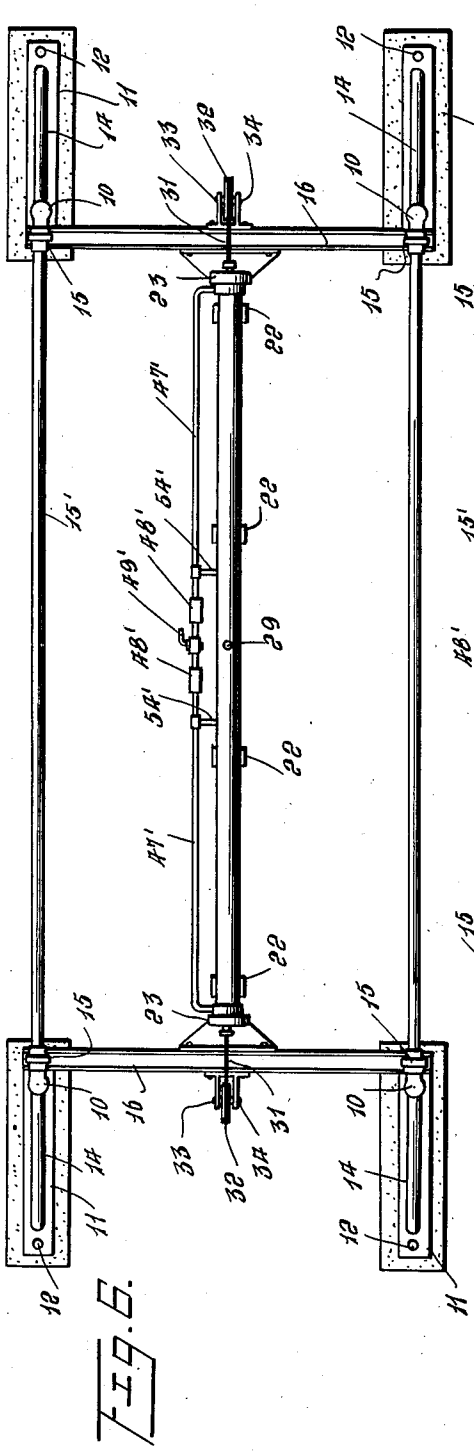


FIG. 6.

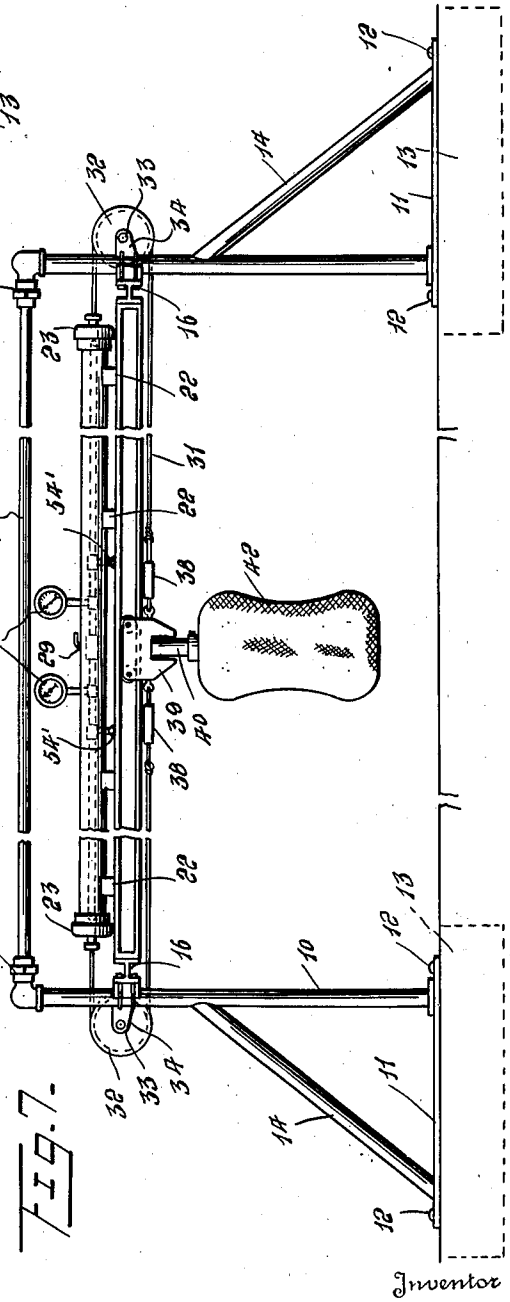


FIG. 7.

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# UNITED STATES PATENT OFFICE

2,255,711

## PNEUMATIC FOOTBALL TRAINING MACHINE

Robert A. Noor, Tuscumbia, Ala.

Application December 28, 1939, Serial No. 311,422

9 Claims. (Cl. 265—20)

This invention relates to a pneumatic football training machine and it aims generally to improve, simplify and render more practical and efficient the machine disclosed in application Serial No. 164,250, filed by me on September 16, 1937, now Patent 2,183,465.

It is particularly aimed to provide a structure which is stronger and has vertically adjustable means supporting the dummy and the pneumatic means in a novel manner, and generally has parts enabling ready assembly or disassembly.

At the same time, the machine possesses all of the advantages of that disclosed in my patent aforesaid, particularly offering a means of selecting players according to their individual ability, a machine which builds up the muscles of the back, legs, arms, wrists and shoulders, develops the art of charging, blocking and tackling, eliminates "live bait," develops a sense of accuracy and timing, offers conditions comparable to actual play, keeps a player off his knees, makes practice enjoyable like a game, etc.

Operative embodiments are shown by way of example in the accompanying drawings, wherein:

Figure 1 is a plan view of one form of the machine;

Figure 2 is a vertical sectional view taken on the plane of line 2—2 of Figure 1;

Figure 3 is a vertical sectional view taken on the plane of line 3—3 of Figure 1;

Figure 4 is a cross section taken on the line 4—4 of Figure 3;

Figure 5 is a cross section taken on the line 5—5 of Figure 2;

Figure 6 is a plan view of a modified form of the invention, and

Figure 7 is a side elevation of the modified form of Figure 6.

Referring specifically to the drawings wherein like reference characters designate like or similar parts, and first to the form of Figures 1 to 5, four upright corner posts are employed at 10 mounted for instance on metallic bars 11 which are fastened as at 12 to any suitable support or supports, for instance concrete foundation sections or blocks 13. Braces 14 preferably extend from the posts 10 to the bars 11. Longitudinal braces 15' join the posts 10 at the top, being detachably connected thereto as by means of coupling devices at 15. The posts 10 and braces 15' are usually metal piping and the couplings 15 are screw threaded thereto.

Metallic crossbeams 16 are employed having blocks or plates 17 of metal welded or otherwise rigidly connected thereto and which plates 17 removably mount U-bolts 18 which surround the posts 10 and through manipulation of the nuts 19 thereon, enable the crossbeams 16 to be placed at different heights and clamped therein to the posts 10.

One or more longitudinal metallic beams 20 may be welded or in any other manner rigidly secured at opposite ends to the crossbeams 16, at suitable distances apart, and preferably in parallelism. Seven of such beams 20 are shown in Figures 1 to 5, by way of example.

Elongated cylinders 21 are mounted one on each of the longitudinal beams 20, preferably being above the same and attached by means of blocks or the like 22 welded to the beams and to the cylinders. Removable caps 23 may be screw threaded to the opposite ends of the cylinders 21. Operable within the cylinders 21 are plungers or piston devices generally designated 24. Such devices have leather or other flexible cup-shaped gaskets 25 held in place thereon between metallic cups 26 and removable plates 27. Centrally the pistons 24 are reduced and surrounded by packing 28, for instance of asbestos, which is lubricated and adapted to be maintained lubricated in connection with the bore wall of the cylinders, by means of lubricant supplied through a plug 29 carried by each cylinder. Brackets or attaching devices 30 are carried by the plates 27 and draw cable sections 31 are permanently or removably fastened thereto as preferred, the same passing out through the caps or closures 23.

Said cable sections 31 are trained over pulleys 32, pivoted as at 33 to brackets 34 which are welded or otherwise fastened to the outer sides of the crossbeams 16. The other ends of the cables 31 have eyelets 35 which detachably engage hooks 36 on longitudinally slidable carriages 37. Such cable sections 31 include turnbuckle devices 38 whereby the cable sections may be lengthened or shortened as desired.

Said carriages 37 have integral depending lugs 39 between which a stem or post 40 of any suitable form of dummy 42 is disposed, being pivoted to such ears 39 by pins as at 41. This connection insures travel of the dummy longitudinally against pivotal movement with respect to the carriage but permits lateral pivotal movement of the dummy with respect to the carriage.

The carriages 37 have L-shaped brackets 43 bolted thereto as at 44 and suitable bolts or pins 45 journal rollers 46 to the brackets 43 and which rollers are disposed between the upper and lower flanges of the longitudinal beams 20 and are adapted to travel on the latter.

Air pipes are employed, two for each cylinder 21, the same being connected to the cylinders at opposite ends of the latter and in such air pipes or pipe lines, a pressure indicator 48 is operatively connected. Regulable valves 49 are provided one in each pipe 47 and the inner ends of the pipes 47 are connected to cross pipes or manifolds 50 which are connected in conducting relation by a short pipe at 51 and which includes pressure indicators or gages 52 between which a regulable cut-off valve 53 is disposed.

As a result of the construction described the pneumatic system is closed and the players will tackle or engage the dummies being used at the same time or only one or any desired number, as preferred. According to the direction of charge by the player or players, all valves 49 must be closed in order to register the full pressure on the corresponding gages 48 since the movement of the dummies 42, through the cables 31, will move the pistons or plungers 24.

For practice the coach may vary the resistance on each cylinder by regulating the individual valves 49, or for all players on the main regulating valve 53. The coach may also apply a different resistance on each cylinder for each individual player in which event the previously mentioned gauges 48 will indicate the pressures exerted on each cylinder by each individual player. The coach is able to judge the blocking or charging power of each player at the same time. It will be realized that the pressure throughout the system is equal and that gauges 52 are responsive to the same pressure as gauges 48, if valves 49 are open and valve 53 is closed. The gauges 52 enable the coach to watch the total effort exerted by all players at close range, when valves 49 are open.

Pipe elements 54 constitute brackets and support the pipes from the beams 20 and may even be welded thereto.

Various changes may be resorted to within the spirit and scope of the invention as defined by the claims. For instance, I may use the form disclosed in Figures 6 and 7. Such form illustrates the use of but a single longitudinal beam 20, cylinder 21 and associated parts in a closed pneumatic system. Otherwise, the only difference in this form over the preceding form is in a single line of air piping at 47' communicating at opposite ends, with the interior of the cylinder. This piping 47' has supports 54' and between the same pressure gages 48' are connected and between the pressure gages 48' a valve 49' is connected, to be entirely cut-off if desired or to be partly closed, according to the resistance offered to the dummy. Since all other parts agree with those of the preceding form, the same reference numerals have been applied thereto.

It is clear that although the cables 31 slide through the caps or closures 23, the engagement is air-tight.

I claim as my invention:

1. A football practice apparatus comprising crossbeams, supporting means therefor, a longitudinal beam supported by the crossbeams, a cylinder mounted by the longitudinal beam, a piston operable in the cylinder, a dummy, a carriage for the dummy, said carriage and dummy being bodily movably mounted on the longitudinal beam, flexible connections passing into the cylinder and directly connected to the piston, said flexible connections extending from the piston to the carriage, guide means for said flexible connections mounted on the crossbeams, and means to indicate air pressure produced in the cylinder caused by impact of a player with said dummy.

2. A football practice apparatus comprising crossbeams, supporting means therefor, a longitudinal beam supported by the crossbeams, a cylinder mounted by the longitudinal beam, a piston operable in the cylinder, a dummy, a carriage for the dummy, said carriage and dummy being bodily movably mounted on the longitudinal beam, flexible connections passing into the cylinder and directly connected to the piston, said flexible connections extending from the piston to the carriage, guide means for said flexible connections mounted on the crossbeams, means to indicate air pressure produced in the cylinder caused by impact of a player with said dummy, said guide means being pulleys, turnbuckles in the flexible connections, and closures at the ends of the cylinder through which the flexible connections pass in air-tight relation.

3. A football practice apparatus comprising crossbeams, supporting means therefor, a longitudinal beam supported by the crossbeams, a cylinder mounted by the longitudinal beam, a piston operable in the cylinder, a dummy, a carriage for the dummy, said carriage and dummy being bodily movably mounted on the longitudinal beam, flexible connections passing into the cylinder and directly connected to the piston, said flexible connections extending from the piston to the carriage, guide means for said flexible connections mounted on the crossbeams, means to indicate air pressure produced in the cylinder caused by impact of a player with said dummy, said longitudinal beam having horizontal flanges extending from opposite sides thereof, said carriage including brackets on opposite sides thereof, and rollers mounted by said brackets and disposed to travel on said flanges.

4. A football practice apparatus comprising crossbeams, supporting means therefor, a longitudinal beam supported by the crossbeams, a cylinder mounted by the longitudinal beam, a piston operable in the cylinder, a dummy, a carriage for the dummy, said carriage and dummy being bodily movably mounted on the longitudinal beam, flexible connections passing into the cylinder and directly connected to the piston, said flexible connections extending from the piston to the carriage, guide means for said flexible connections mounted on the crossbeams, means to indicate air pressure produced in the cylinder caused by impact of a player with said dummy, said longitudinal beam having horizontal flanges extending from opposite sides thereof, said carriage including brackets on opposite sides thereof, rollers mounted by said brackets and disposed to travel on said flanges, said dummy being pivoted to the carriage for swinging movement laterally of its main path of travel.

5. A football practice apparatus comprising crossbeams, supporting means therefor, a longitudinal beam supported by the crossbeams, a cylinder mounted by the longitudinal beam, a piston operable in the cylinder, a dummy, a carriage for the dummy, said carriage and dummy being bodily movably mounted on the longitudinal beam, flexible connections passing into the cylinder and directly connected to the piston, said flexible connections extending from the piston to the carriage, guide means for said flexible connections mounted on the crossbeams, means to indicate air pressure produced in the cylinder caused by impact of a player with said dummy,

plates carried by said crossbeams, and means co-acting with the plates and supporting means to clamp the crossbeams at different elevations.

6. A football practice apparatus comprising crossbeams, supporting means therefor, a longitudinal beam supported by the crossbeams, a cylinder mounted by the longitudinal beam, a piston operable in the cylinder, a dummy, a carriage for the dummy, said carriage and dummy being bodily movably mounted on the longitudinal beam, flexible connections passing into the cylinder and directly connected to the piston, said flexible connections extending from the piston to the carriage, guide means for said flexible connections mounted on the crossbeams, means to indicate air pressure produced in the cylinder caused by impact of a player with said dummy, said piston having a reduced portion, packing about said reduced portion, and means on the cylinder whereby lubricant may be supplied to the interior thereof.

7. A football practice apparatus comprising crossbeams, supporting means therefor, a longitudinal beam supported by the crossbeams, a cylinder mounted by the longitudinal beam, a piston operable in the cylinder, a dummy, a carriage for the dummy, said carriage and dummy being bodily movably mounted on the longitudinal beam, flexible connections from the piston to the carriage, guide means for said flexible connections mounted on the crossbeams, means to indicate air pressure produced in the cylinder caused by impact of a player with said dummy, brackets at opposite ends of the piston to which the flexible cable is connected, gaskets carried by opposite ends of the piston, and means to secure the gaskets in place and said brackets to the piston.

8. A football practice apparatus comprising supporting means, crossbeams secured thereto, a plurality of longitudinal beams mounted by the crossbeams in spaced relation, cylinders mounted by the longitudinal beams, pistons operable in the cylinders, carriages movable along the longitudinal beams, dummies carried by the carriages, flexible connections from the pistons movable air-tight through the ends of the cylinders, and connected to the carriages, guide means for the flexible connections mounted by the crossbeams, means to indicate pressure within the respective cylinders caused by impact of a player with the associated dummy and conduit means in communication with all of the cylinders having a pressure indicator means therein.

9. A football practice apparatus comprising supporting means, crossbeams secured thereto, a plurality of longitudinal beams mounted by the crossbeams in spaced relation, cylinders mounted by the longitudinal beams, pistons operable in the cylinders, carriages movable along the longitudinal beams, dummies carried by the carriages, flexible connections from the pistons movable air-tight through the ends of the cylinders, and connected to the carriages, guide means for the flexible connections mounted by the crossbeams, means to indicate pressure within the cylinders caused by impact of a player with the associated dummy, consisting of air lines connected at one end to the cylinders, gages in said air lines, cut-off valves in said air lines between the gages, piping to which the air lines are connected, a pair of pressure gages in the piping, and a valve in the piping between the pressure gages thereof.

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