Dec. 4, 1945. L. A. SPEARMAN 2,390,336

ATHLETE TRAINING APPARATUS

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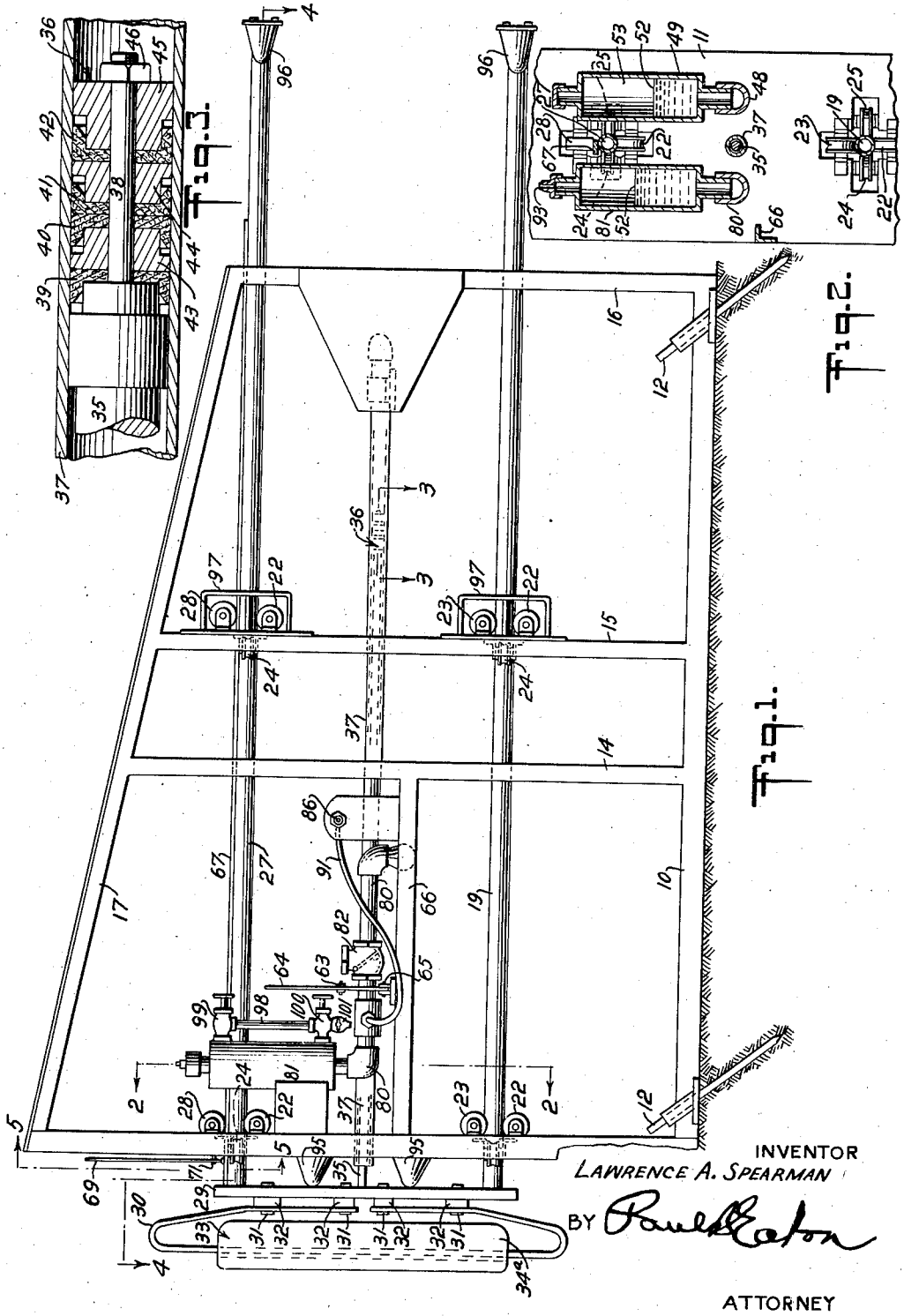


Fig. 3.

Fig. 2.

Fig. 1.

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ATHLETE TRAINING APPARATUS

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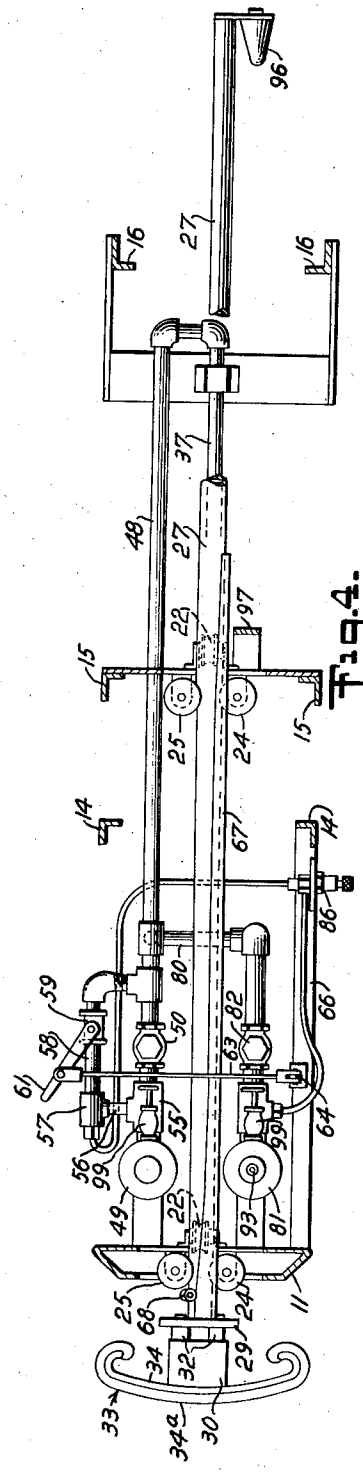


Fig. 4.

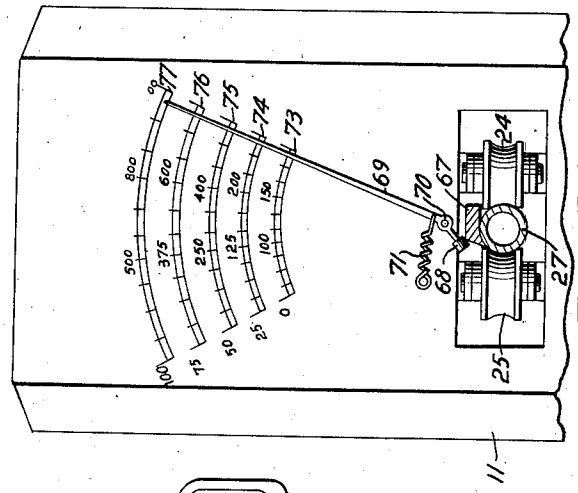


Fig. 5.

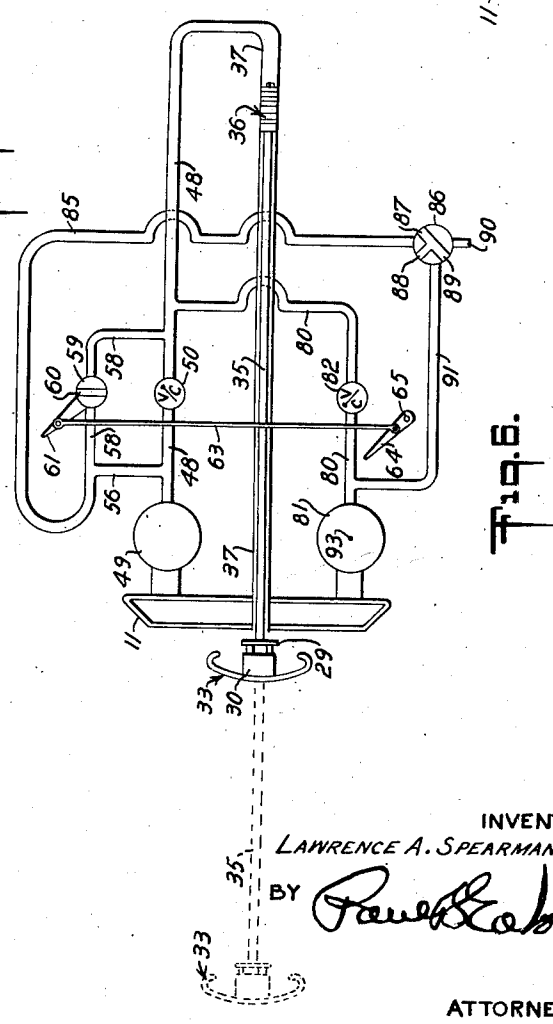


Fig. 6.

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ATHLETE TRAINING APPARATUS

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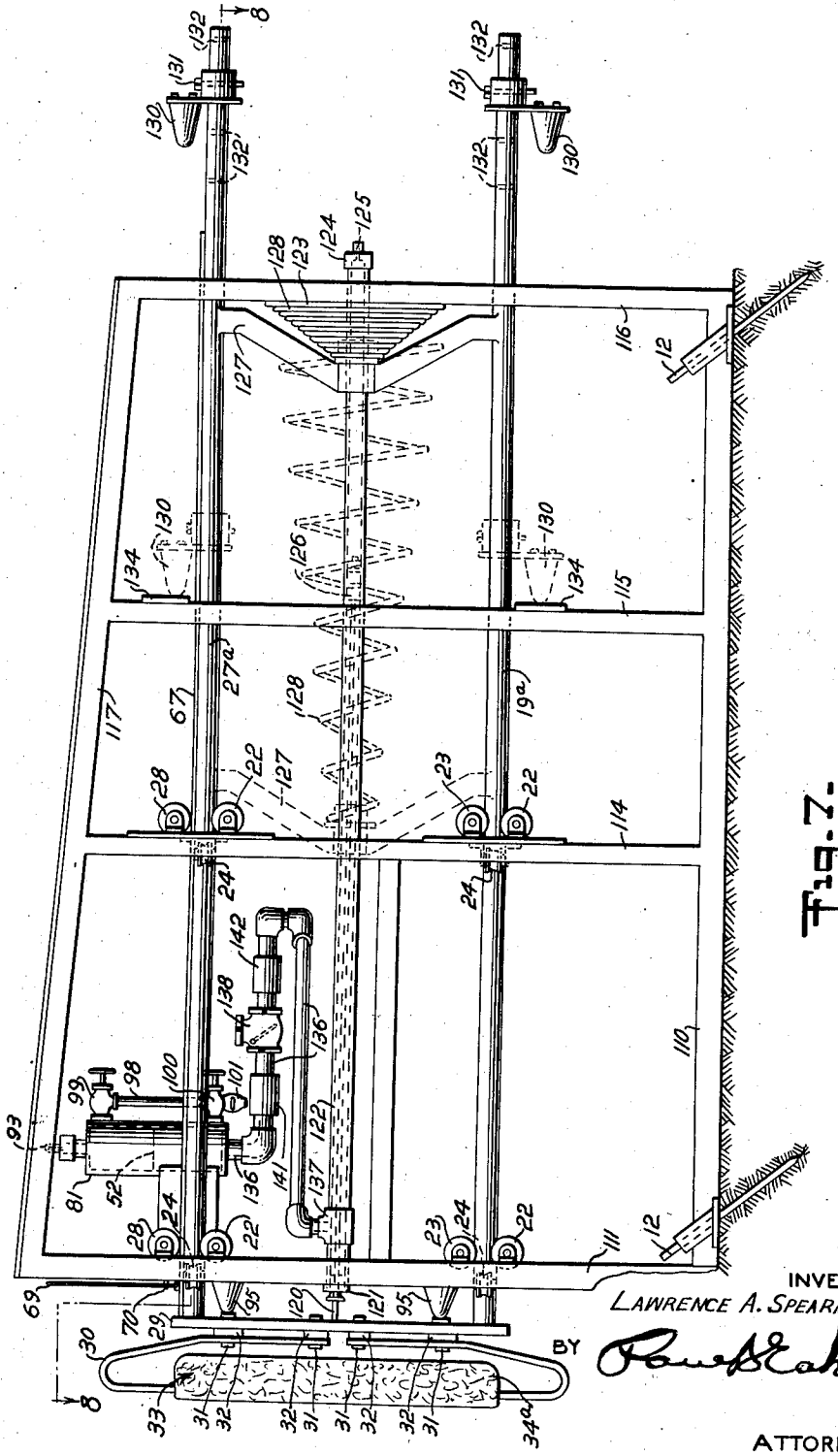


Fig. 7.

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ATHLETE TRAINING APPARATUS

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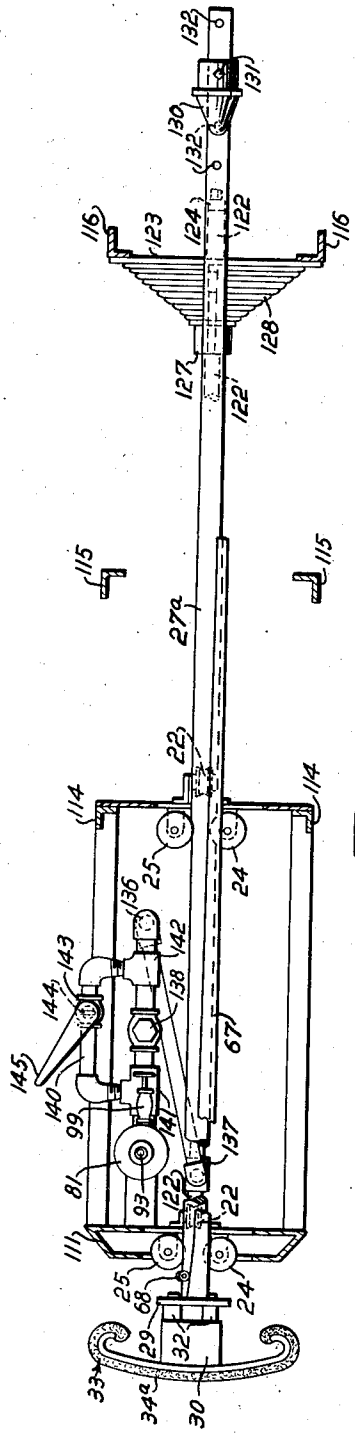


Fig. 8.

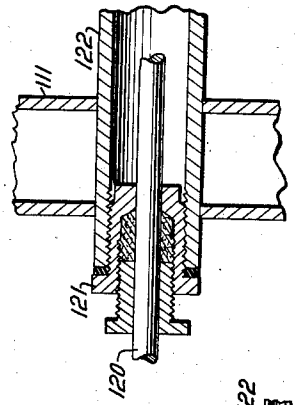


Fig. 10.

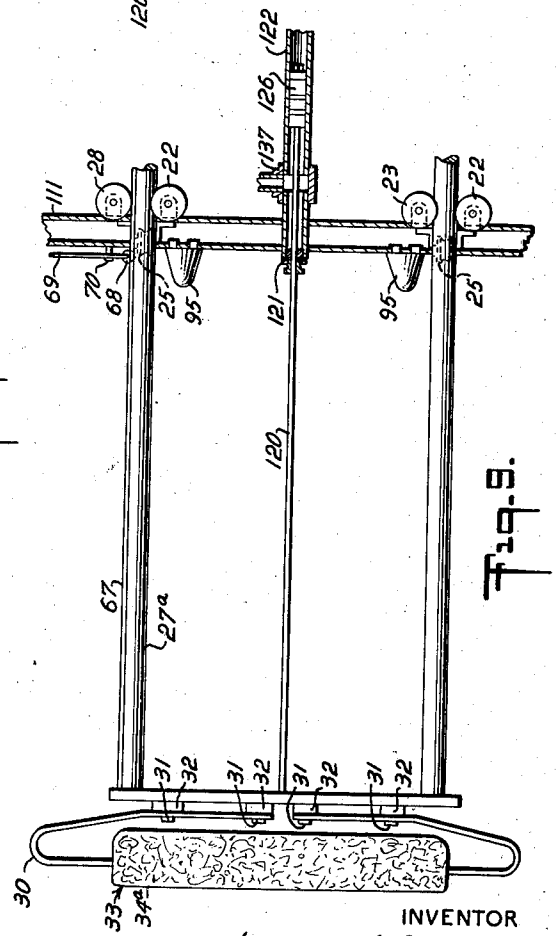


Fig. 9.

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Patented Dec. 4, 1945 2,390,336

UNITED STATES PATENT OFFICE

2,390,336

ATHLETE TRAINING APPARATUS

Lawrence A. Spearman, Newberry, S. C.

Application August 21, 1944, Serial No. 550,331

12 Claims. (Cl. 73—379)

This invention relates to a football training apparatus and more especially to a device of this class which operates on the hydraulic principle. It is a well known fact that football players require intensive training to develop the necessary skill for competing with an opposing team. It is also equally essential that the coach know the comparative strength and skill of all of his men, so that he will be able to place the proper man in the best suited position. Although there are many tests which should be applied to a player to be able to determine his fitness, some of the most important of these tests are his ability to tackle and to impart an effective impact to the opposing player.

It is an object of this invention to provide a portable training apparatus which will develop players physically in a normal way and which will indicate to the coach the essential qualifications necessary for the players to have.

It is another object of this invention to provide a training apparatus having pneumatic means associated therewith which resists the impact imparted by a player to the dummy and also having mechanism for holding the impact and registering the same. The impact holding mechanism is very important because it will prevent injury to the player as a result of a kick-back by the dummy after it has been charged, whereas, the registering device is important because it will enable the coach to ascertain the extent of the charge or impact delivered and also indicate the comparative strength and skill of the players.

It is another object of this invention to provide an apparatus of the class described with means associated therewith for varying the amount of pneumatic resistance offered to the impact imparted to the dummy by the player. In the herein disclosed apparatus, the resistance offered by the dummy increases as the dummy gives way to the player. In other words, the lowest resistance is offered when the dummy is first contacted and the highest resistance is offered when the dummy has been forced backwardly the maximum amount allowed by the machine. If it is desired to vary the low and high limits of resistance, it may be done by a mechanism incorporated in the training apparatus.

The use of a pneumatic means for the resistance to the impact imparted by the player is very advantageous in that there is a resilient cushion effect present. This cushion effect very nearly resembles the resistance offered by an opposing player, and consequently there is less likelihood of the player sustaining injuries than would be the case if he were practicing on a device that is more rigid.

It is still another object of this invention to provide a football training machine as herein described which can be used as an offensive trainer. When used in this capacity, the kick-back eliminating feature is not used; consequently, the dummy will always tend to return to extended position.

It is still another object of this invention to provide a training apparatus of the class described having a coiled compression spring for resisting the impact imparted to the dummy by the player and a hydraulic mechanism for preventing the return of the dummy after it has been pushed inwardly against the spring. The modified form of the invention discloses such a structure and practically all of the essential principles embodied in the first form are incorporated in the latter. The coiled compression spring is used for a resisting medium for the impact, where greater simplicity and a less expensive type of structure is desired.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings, in which:

Figure 1 is a side elevation of an improved training apparatus embodying the present invention;

Figure 2 is a vertical sectional view taken along the line 2—2 of Figure 1, showing the tanks for containing the liquid which is used for resisting the impact of the dummy;

Figure 3 is an enlarged sectional view taken along the line 3—3 in Figure 1, showing an improved two-way piston;

Figure 4 is a sectional plan view taken along the line 4—4 in Figure 1;

Figure 5 is a vertical sectional view taken along the line 5—5 in Figure 1, showing the indicating mechanism;

Figure 6 is a diagrammatic view showing the essential features of the invention;

Figure 7 is an elevation showing a slightly modified form of the invention in which a coiled spring is used for resisting the dummy impact and a hydraulic mechanism is used for the prevention of the return of the dummy to initial position after it has been attacked;

Figure 8 is a sectional plan view taken along the line 8—8 in Figure 7;

Figure 9 is a sectional view similar to the left-hand portion of Figure 7 showing the dummy in an extended position;

Figure 10 is an enlarged view of the right-hand central portion of Figure 9 showing the manner in which the packing nut fits into the end of the cylinder.

Referring more specifically to the drawings, the numeral 10 denotes the base of the framework to which is secured an end frame 11, and vertically disposed posts 14, 15, and 16. Base member 10 is removably anchored to the ground by means of inclined pins 12. The upper ends of

the members 11, 14, 15, and 16 are joined together by means of an inclined cover 17.

A horizontally disposed rod or pipe 19 is supported by the end frame 11 and the vertically disposed posts 15, both supporting means being identical. Each of the supporting means comprises a bottom roller 22 which is rotatably secured to its support and has its periphery concaved to fit the lower side of the rod or pipe 19. The upper side of the pipe 19 has an identical roller 23 disposed at the points of support. The sides of the pipe 19 are supported by similar rollers 24 and 25 (see Figures 1 and 2) which rollers serve to prevent lateral movement of the pipe at a point of support.

Another pipe 27 is supported by the end frame 11 and the vertically disposed posts 15 in a similar manner. The lower and the side rollers are identical, hence they will bear identical reference characters, but the upper rollers are slightly different in that the peripheries are not concave, but flat, and these rollers are designated by the reference characters 28.

The ends of the pipes 19 and 27 extend beyond the end frame 11 and have secured to the projecting ends thereof, a vertically disposed bar 29, said bar having a spring member 30 secured thereto as at 31. Suitable resilient washers 32 are spaced between the spring member 30 and the bar 29 so that additional resiliency will be supplied. The left-hand face of the spring member 30 (Figures 1 and 4) has a dummy 33 secured thereto, said dummy comprising a plate 34 with a padding 34a on its left-hand face.

The bar 29 has secured thereto one end of a piston rod 35, said piston rod having secured upon its other end a two-way piston 36, said piston being adapted to reciprocate within an elongated pipe or cylinder 37. Figure 3 shows an enlarged sectional detail view of the two-way piston 36. It is here seen that the piston rod 35 is of a slightly smaller diameter than the interior of the cylinder 37 but at the extreme right-hand end of the piston rod, a restricted portion 38 is provided around which flexible cup washers 39, 40, 41, and 42 are adapted to fit. These cup washers are separated and confined upon the restricted portion 38 by means of metallic washers 43, 44, and 45. In order to hold the members 39 to 45 inclusive upon the restricted end 39 of the piston, a nut 46 is threadably secured on the end of the restricted portion. Particular attention is called to the position occupied by the cup washers 39, 40, 41, and 42. It will be noted that the concave faces of the cup washers 39 and 40 are disposed toward the dummy whereas the concave faces of the washers 41 and 42 are disposed so as to face in the opposite direction. This arrangement of the washers is provided so that a two-way acting piston will be provided. For example, when the piston is being pushed inwardly, the washers 41 and 42 prevent the liquid from escaping backwardly past the piston and when the piston is moving from right to left in Figure 1, or in the opposite direction from the direction indicated, the washers 39 and 40 prevent air from entering the interior of the cylinder and becoming mixed with the liquid.

The right hand end of the cylinder 37 is connected to a pipe 48, which pipe leads to the bottom of a compression tank 49. The pipe 48 has a check valve 50 therein which allows the liquid from the cylinder 37 to pass thereby and to move into the pressure tank 49. However, after the liquid has once been pressed into the pressure tank 49, it cannot return by way of this check valve. By observing Figure 2, it will be seen that the tank 49 is partly filled with a liquid 52 thereby leaving an air space 53 thereabove. The upper end of the tank is adapted to be closed to prevent the air from the space 53 from escaping; consequently, when the piston 36 is moved from left to right in Figures 1 and 4, the liquid will be expelled from the cylinder 37 and forced into the tank 49, thereby compressing the air in the air space 53.

Ordinarily, when a player is using this device for practice, the dummy 33 is in the dotted line position as shown in Figure 6. When the player charges the dummy and forces it from the dotted line position towards the full line position, the liquid is forced from the cylinder 37 into the tank 49 thereby compressing the air within the air space 53. Due to the fact that the check valve 50 is present, the pressure which is stored up in the tank 49 does not have any back kick; consequently, the dummy remains substantially in the position to which it has been forced.

In order to release the dummy so that it will return to the dotted line position again, ready for the next charge by the player, it is necessary to release the liquid which has been forced into the tank 49 and allow it to return to the interior of cylinder 37. This release is effected by way of a suitable by-pass which is built around check valve 50. This by-pass comprises a T 55 in pipe 48 to which pipe 56 is secured, said pipe 56 being secured to another T 57, the other end of which has a pipe 58 secured thereto. In this pipe 58, a valve 59 is placed, which valve has a bore 60 therein. The valve 59 is adapted to be operated by a handle 61 to cause the bore 60 to connect the two portions of pipe 58, and allow the fluid to flow from the tank 49 through pipe 56, valve 59, pipe 58 and back into the cylinder 37, whereby the piston and the dummy will be moved from the full line position in Figure 6 to the dotted line position where it will be ready for the next charge of a player. The free end of the handle 61 has one end of a link 63 secured thereto, the other end of said link being pivoted to the intermediate portion of another lever 64 which is pivoted as at 65 to a strut 66, said strut having its ends secured to an intermediate portion of the end frame 11 and to vertically disposed post 14. The purpose of providing the members 63 and 64 is to make it easy to operate valve 59 from either side of the machine.

Means are also provided whereby the coach or the player can ascertain the amount of resistance that he has overcome by forcing the dummy 33 inwardly, from left to right in Figures 1, 4, and 6. This indicating means comprises a suitable cam plate 67 having one side thereof suitably curved so as to correspond to the amount of pressure necessary to push the dummy inwardly a predetermined distance. In other words, the curved surface will actuate a suitable indicating means which in turn will point to the number of pounds that the player has exterted when forcing the dummy inwardly towards the machine framework. This cam plate 67 is adapted to have its curved surface contacted by a roller 68 (Figure 5), said roller being mounted on the lower end of an indicating hand 69. The indicating hand is pivotally mounted as at 70 to the left hand face of the end frame 11. A tension spring 71 normally tends to hold the roller 68 in contact with the curved or cam surface of the plate 67 at all times. Figure 5 shows the scales to which the

indicator hand 69 points, there being five scales, namely, 73, 74, 75, 76, and 77. Each of the scales is suitably graduated to indicate the pressure exerted upon the dummy when it is forced inwardly. For example, the scale 73 indicates the pressure exerted by the player upon the dummy when the resisting air pressure in the tank 49 is such that it requires zero pounds pressure by the player to start the dummy moving; scale 74 when the starting pressure is 25 pounds; scale 75 when the starting pressure is 50 pounds; scale 76 when the starting pressure is 75 pounds; and scale 77 when the starting pressure is 100 pounds. The initial air resisting pressures in the tank 49 may be varied so that it will be necessary for the player to exert the above-named pressures upon the dummy 33 in order to start it moving when it is in an extended position. The means for varying this pressure in the tank 49 so as to cause an initial predetermined force to be exerted upon the dummy to move the same will be described later.

Leading from pipe 48 at a point between the check valve 50 and the cylinder 37 is a pipe 80 and this pipe has its other end secured to the bottom side of supply tank 81. A check valve 82 is provided in the pipe 80 which check valve allows fluid to flow from the tank 81, but will not allow it to return.

Leading from the T 57 (Figure 4) is another pipe 85, the other end of which leads to a valve 86. This valve 86 has three ports therein, namely, 87, 88, and 89 (see Figure 6). Also the valve has a stationary outlet 90. Leading from the other side of the valve is a pipe 91 which communicates with the pipe 80 at a point between the supply tank 81 and the check valve 82. The supply tank 81 differs from the pressure tank 49 in that it has a vent 93 in the upper end thereof (Figure 2) so as to allow atmospheric pressure to be present in the tank above the liquid level. This tank also has a suitable liquid 52 therein.

When it is desired to prime the device, ready for use, and to create a certain predetermined pressure in the space 53 of tank 49, a suitable liquid such as oil, is poured into supply tank 81. This liquid will flow from the tank 81 through pipe 80, check valve 82, pipe 48, check valve 50 and into the pressure tank 49. Of course, in order for the liquid level to be exactly at the same level in each tank, it will be necessary to compress the air in the space 53, therefore, the liquid level will probably be slightly higher in the tank 81 than it will be in tank 49. The apparatus, when the liquid is poured in the tanks as just described, will be properly primed to operate where it is desired that practically no initial pressure is necessary to move the dummy 33 inwardly. Of course, as the dummy is moved inwardly, the pressure wil build up because the liquid in the tank 49 will gradually rise, thereby compressing the air in the space 53. Under this condition, the scale 73 (Figure 5) indicates the amount of pressure exerted by the player. If it is desired to vary the initial pressure, that is, to increase it from zero to a point where 25 pounds initial pressure on the dummy will be necessary before the dummy will be moved, then the valves 59 and 86 must be closed and in this position the dummy 33 will be drawn from the full line position in Figure 6 to the dotted line position. This action draws the fluid from the container 81 into pipe 80, through check valve 82 and into the cylinder 37. When by reversing the travel of the dummy 33 and pushing the piston 36 inwardly to the full line position again, the liquid in the cylinder 37 is forced into the lower end of tank 49 by way of pipe 48 and check valve 50. During this inward movement, the liquid is prevented from returning to the tank 81 due to the type of check valve 82 employed. This action is repeated until the desired initial pressure in the tank 49 is present so as to require the desired initial push on the dummy to start it in action.

Let us suppose that the pressure in the tank 49 is too high and it is desired to lower it to a point where it will be required that a lower initial pressure upon the dummy will cause it to be moved. In such cases, it is only necessary to turn the valve 86 (Figure 6) in a clockwise direction until the port 88 communicates with pipe 85 and the port 89 communicates with pipe 91. Then the fluid can move from the tank 49 through pipe 56, pipe 85, valve 86, pipe 91, and into the lower end of storage tank 81. When the desired amount of liquid has been released in the tank, of course, the valve 86 is turned off to the position shown in Figure 6. The port 90 is employed when it is desired to remove or insert additional pressure and fluid from the outside into the tanks 49 and 81.

By observing Figure 1, it will be seen that the left-hand face of the end frame 11 has suitable resilient bumpers 95 which are adapted to be contacted by the bar 29 which is associated with the dummy. These bumpers serve to absorb the shock of any impact which might be exerted by virtue of pushing the dummy inwardly too far. Likewise, the ends of the pipes or rods 19 and 21 have similar resilient bumpers 96, which serve to absorb the impact produced by a sudden return of the dummy from the position shown in Figure 1 to the dotted line position shown in Figure 6. These resilient members 96 are adapted to contact plates or stops 97 which are supported by the vertical uprights 15 (Figure 1).

In order to ascertain the liquid level in the tanks 49 and 81, suitable liquid level gauges 98 are provided. These liquid level gauges are constructed from a glass tube having a valve 99 communicating between the upper end thereof and the upper portion of the tank and a valve 100 disposed between the lower end thereof and the lower portion of the tank. Associated with each of these liquid level gauges is a petcock 101 used for draining the same.

Particular attention is called to the location of pressure tank 49 and liquid tank 81. By observing the drawings, it will be noted that both of these tanks are located above the level of the operating parts and the piping system of the mechanism. This location will permit the air to move upwardly out of the pipes into space 53 without any resistance, thereby eliminating any chance of air pockets forming in the fluid circulating system.

One of the outstanding principles embodied in this structure is its adaptability as an offensive football training machine. For example, the dummy can be operated so that it will charge the player at various speeds, thus making the machine a substitute for an opposing player. When the apparatus is used in this capacity, the valve 86 (Figure 6), is in closed position, as shown, and the dummy 33 is pushed to its full line retracted position which will force the liquid from the cylinder 37 through check valve 50 and into the bottom of pressure tank 49. Of course, the valve 59 will also be closed so as to prevent the stored up pressure within the space 53 (Figure

2) from returning. With the stored up pressure, and with the dummy retracted, a player positions himself in front of the dummy 33 and at the same time the coach has control of lever 64. The coach then pulls the lever and opens the valve 59 so as to allow the fluid from the tank 49 to flow back into the cylinder 37 and allow the dummy to charge the player. The speed at which the dummy charges the player is determined by the degree that the valve 59 is opened to allow the fluid to flow back into cylinder 37. Since this valve is controlled by the coach, he can instantly stop the dummy charge if he sees the player is likely to be overcome or injured. In other words, when the valve 59 is completely opened, the dummy will move from full line position to dotted line position at full speed (Figure 6), whereas if it is only partially opened, the flow of liquid through this valve will be retarded; consequently, the speed of the charge will be reduced accordingly.

Figures 7, 8, and 9 show a slightly modified form of the invention in which a coiled compression spring is employed for resisting the impact imparted to the dummy and a hydraulic holding means is employed for prevention of its return after being attacked. Means are also provided whereby the hydraulic holding means can be released to allow the return of the dummy as in the preceding form. The numeral 110 denotes a suitable framework base which has rising therefrom an end frame 111, and posts 114, 115, and 116. The upper ends of the members 111, 114, 115, and 116 are tied together by means of a top strut 117. A dummy 33 of identical construction to that shown in the preceding form is employed in this form of the invention. The bar 29 of the dummy is secured upon the ends of the rods or pipes 19a and 27a which pipes are supported by rollers 22, 23, 24, and 28 as in the preceding form. At a point midway between the pipes 19a and 27a, and secured to the bar 29 is a small piston rod 120, said rod penetrating a packing nut 121 which is threadably secured in the left-hand end of a cylinder 122, the left-hand end of the cylinder being supported by the end frame 111; whereas, the right-hand end penetrates a plate 123 which in turn is secured between end posts 116 (see Figure 8). The end of the cylinder 122 which projects beyond the plate 123 has a cap 124 thereover, said cap having a breather hole 125 therein, which hole communicates with the interior of the cylinder. The right-hand end of the piston rod 120, however, has a piston 126 therein which is similar to the piston 36 which is shown in detail in Figure 3.

Slidably mounted around the exterior of cylinder 122 is a tie bar 127, the ends of which are adapted to be integrally secured to the proximate faces of rods or pipes 19a and 27a. Also disposed around the cylinder 122 between this tie bar and the plate 123 is a helical spring 128. The convolutions of this spring gradually increase in diameter as it progresses from left to right, thereby having a minimum diameter at the point where it contacts the bar 127 and a maximum diameter at the point where it engages the plate 123. This spring is shown in a compressed condition in full lines in Figures 7 and 8. The spring 128 and the bar 127 are also shown in dotted line extended position in Figure 7.

When the bar 127 and the spring 128 are in dotted line extended position as shown in Figure 7, the dummy 33 is in the extended position shown in Figure 9. Also the right-hand end of the pipes 19a and 27a are moved to the left in Figure 7, a distance equal to the distance between the dotted line position of bar 127 and the full line position. In order to prevent the rods or pipes 19a and 27a from moving too far to the left in Figure 7, however, suitable bumpers 130 are provided, said bumpers being adjustably secured upon the pipes by means of pins 131 which pins may be caused to penetrate any of the spaced holes 132 in the right-hand end of the pipes 19a and 27a. The purpose of providing several spaced holes 132 is to allow the user of this training device to vary the initial pressure necessary to be exerted upon the dummy 33 before it starts moving inwardly from extended to compressed position. The bumpers 130 are shown in dotted line position in Figure 7 when the dummy and its associated pipes 19a and 27a are in an extended position. Suitable plates 134 which bridge a distance between vertical posts 115 are employed as stops for the bumpers 130.

This training device has a liquid tank 81 identical to that previously described in connection with the form of the invention shown in Figures 1 to 6 inclusive. A liquid 52 is adapted to be stored in this tank which is subjected to atmospheric pressure by way of vent 93 in the top of the tank. Communicating with the bottom of the tank 81 is a pipe 136 which pipe has its other end communicating with the interior of cylinder 122 as at 137. A check valve 138 is positioned in this pipe which valve permits the fluid to flow from the tank 81 and prevents its return by way of this check valve. A by-pass pipe 140 communicates with pipe 136 as at 141, and at a point adjacent the check valve 138. The by-pass pipe returns to the pipe 136 on the other side of the check valve as at 142. Disposed in this by-pass pipe is a hand valve 143 having a bore 144 therein for permitting the fluid to pass through the by-pass when the bore is in the proper position. A handle 145 is used to position this bore so that the fluid can be prevented from flowing or so that it may flow through this pipe.

Let us assume that the dummy 33 is in extended position and ready to be tackled by the player. Usually the bore 144 is so positioned that the fluid cannot flow through the by-pass pipe, consequently, the fluid can only flow from the tank 81 through the check valve 138, pipe 136 and into the cylinder 122, where it will be disposed between the packing nut 121 and the piston 126. As the spring 128 is compressed from the dotted line position to the full line position (Figure 7), more fluid is drawn into the cylinder 122 from the tank 81. Since it cannot return except by opening the valve 143, it is evident that the impact which is delivered will not allow the dummy to kick back, because the compressed liquid will resist the movement of the piston. When it is desired to allow the dummy to return to extended position as shown in Figure 9, it is only necessary for the coach to turn the valve 143 so as to allow the confined fluid within the cylinder to return to the tank 81 by way of the by-pass pipe 140.

If it is desired to use this apparatus without the safety feature for preventing kick backs, it is only necessary to allow the valve 143 to remain open and each time the spring is compressed, it will return to extended position when the pressure is relieved from the dummy.

Also if the coach wants to use this device so as to permit the dummy to charge the player, he may do so by the manipulation of the valve. For example, if valve 143 is entirely opened, then the

flow of the liquid from the cylinder to the tank will be fast, thereby permitting a quick return of the dummy; whereas, if a slow return is desired, the valve is not opened as great an amount.

As previously stated, the initial pressure necessary to cause the dummy to move from extended position, may be varied by varying the position that the bumpers 130 occupy on the right-hand end of the pipes 19a and 27a. Of course, the farther toward the left that the bumpers 130 are positioned on the rods or pipes, the greater the amount of initial pressure that will be necessary to exert upon the dummy before it will start moving from extended position to contracted position. The indicating means on the present apparatus is identical to that of the preceding form.

In the drawings and specification, there has been set forth a preferred embodiment of the invention and although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. Training apparatus for football players comprising a fixed framework, a slidable framework disposed in the fixed framework and having a resiliently mounted impact receiving member on one end thereof and projecting beyond the fixed framework, means resisting movement of the slidable framework relative to the fixed framework upon an impact being delivered to the impact receiving member, fluid pressure means including a check valve preventing return of the slidable framework to initial position after receiving an impact, an indicator operable by movement of the slidable member upon receipt of an impact for indicating the amount of force applied to the slidable framework and means for regulating the amount of force required to be expended on the impact receiving surface before the slidable member is moved.

2. Training apparatus for football players comprising a fixed framework, a slidable framework disposed in the fixed framework and having a resiliently mounted impact receiving member on one end thereof and projecting beyond the fixed framework, resilient means resisting movement of the slidable framework relative to the fixed framework upon an impact being delivered to the impact receiving member, means preventing return of the slidable framework by the resilient means to initial position after receiving an impact, an indicator operable by movement of the slidable framework upon receipt of an impact for indicating the amount of force applied to the slidable framework, means for regulating the amount of force required to be expended on the impact receiving member before the slidable framework is moved, and means for releasing the means preventing the return of the slidable framework to allow the means resisting movement of the slidable framework to return the slidable framework to initial position.

3. Training apparatus for football players comprising a fixed framework, a slidable framework mounted in the fixed framework and having a piston associated therewith, a dummy on the slidable framework, a cylinder in which said piston is mounted, a compression spring for resisting the movement of the slidable framework when a player imparts an impact to the dummy, a container having liquid therein, a pipe connection between the container and the cylinder, a check valve in said pipe normally preventing return of the liquid to the container whereby the liquid is drawn from the container and trapped in the cylinder, when the dummy is charged, an indicator operable by movement of the slidable framework upon receipt of an impact for indicating the amount of force applied to the slidable framework, and manually operated means for allowing the liquid to flow back into the container to permit the piston, the dummy and the slidable framework to return to initial position under the force of said compression spring.

4. Training apparatus for football players comprising a fixed framework, a movable frame including a pair of rods slidably mounted in said framework and projecting beyond the confines of the fixed framework, an impact receiving member mounted on one end of the rods, an elongated cylinder mounted in the fixed framework, a piston rod having connection with said rods and extending into said cylinder, a piston on the piston rod disposed in said cylinder, a compression spring disposed between the movable frame and the fixed framework for normally projecting the impact receiving member a substantial distance beyond the confines of the fixed framework, a container for holding a liquid, a piped connection between the container and said cylinder, a check valve in said pipe connection permitting flow of the liquid into the cylinder when an impact is delivered to the impact receiving surface to move the rods and the piston rod but preventing return of the liquid into the container and also preventing return of the impact receiving member to initial position, and a bypass disposed around said check valve and having a manually controlled valve therein to allow the liquid to flow from the cylinder back into the container.

5. Training apparatus for football players comprising a fixed framework, a movable frame including a pair of rods slidably mounted in said framework and projecting beyond the confines of the fixed framework, an impact receiving member mounted on one end of the rods, an elongated cylinder mounted in the fixed framework, a piston rod having connection with said rods and extending into said cylinder, a piston on the piston rod disposed in said cylinder, a compression spring disposed between the movable frame and the fixed framework for normally projecting the impact receiving member a substantial distance beyond the confines of the fixed framework, a container for holding a liquid, a piped connection between the container and said cylinder, a check valve in said pipe connection permitting flow of the liquid into the cylinder when an impact is delivered to the impact receiving surface to move the rods and the piston rod but preventing return of the liquid into the container and also preventing return of the impact receiving member to initial position, a bypass disposed around said check valve and having a manually controlled valve therein to allow the liquid to flow from the cylinder back into the container, and means for applying pressure to the spring to predetermine the initial amount of pressure which is required to move the impact receiving member and the framework associated therewith.

6. Training apparatus for football players, comprising a fixed framework, a slidable frame disposed in the fixed framework, and having a resiliently mounted impact receiving member on one end thereof and projecting beyond the fixed framework, a compression spring resisting move-

ment of the slidable frame relative to the fixed framework upon an impact being delivered to the impact receiving member, fluid pressure means having a check valve for preventing return of the slidable frame to initial position after receiving an impact, an indicator operable by movement of the slidable frame upon receipt of an impact, for indicating the amount of force applied to the slidable frame, and adjustable means for placing the compression spring under compression, for regulating the amount of force required to initially move the slidable frame.

7. Training apparatus for football players, comprising a fixed framework, a slidable frame disposed in the fixed framework, and having a resiliently mounted impact receiving member on one end thereof and projecting beyond the fixed framework, a compression spring resisting movement of the slidable frame relative to the fixed framework upon an impact being delivered to the impact receiving member, fluid pressure means having a check valve for preventing return of the slidable frame to initial position after receiving an impact, an indicator operable by movement of the slidable frame upon receipt of an impact for indicating the amount of force applied to the slidable frame, and means for regulating the amount of force required to initiate movement of the indicator.

8. Training apparatus for football players, comprising a fixed framework, means for securing the fixed framework on a playing surface, a movable framework slidably mounted on the fixed framework and having one end extending a substantial distance beyond one end of the fixed framework, an impact receiving dummy mounted on the extending end of the movable framework, and adapted to be engaged by the body of a football player, yieldable means resisting movement of the movable framework when a player imparts an impact to the impact receiving dummy and for returning the movable framework to normal position, fluid pressure means having a check valve for preventing return of the movable framework by the yieldable means after it has been moved by an impact and means in the fluid means for releasing the fluid to allow the yieldable means to return the movable framework to normal position.

9. Training apparatus for football players comprising a framework, means for securing the framework on a playing surface, a movable member slidably mounted in the framework and having a portion thereof extending a substantial distance beyond one end of the framework, an impact receiving dummy mounted on the extending portion of said movable member and adapted to be engaged by the body of a football player charging the same, a piston and cylinder associated with the movable member, fluid pressure means associated with said piston and cylinder for resisting movement of the movable member when a player imparts an impact to the dummy, a check valve associated with said fluid pressure means for preventing the fluid pressure means from returning the movable member to normal position, and a by-pass for releasing the compressed fluid to allow the fluid pressure means to return the movable member to normal position.

10. Training apparatus for football players comprising a framework, a slidable member disposed in the framework and having an impact receiving member on one end thereof disposed a substantial distance from one end of the framework, fluid pressure means resisting movement of the slidable member relative to the framework upon an impact being delivered to the impact receiving member, a check valve in said fluid pressure means for preventing the fluid pressure means from returning the slidable member to initial position after receiving the impact, an indicator operable by movement of the slidable member upon receipt of an impact for indicating the amount of force applied to the slidable member, means for regulating the amount of force required to be expended on the impact receiving member before the slidable member is moved and manually operable means for allowing the fluid pressure means to return the impact receiving member to normal position.

11. Training apparatus for football players comprising a fixed framework, a slidable member disposed in the fixed framework and extending substantially away from one end of the framework and having an impact receiving member on the extending end, fluid pressure means resisting movement of the slidable member relative to the fixed framework upon an impact being delivered by a player to the impact receiving member, a check valve associated with the fluid pressure means for preventing reverse flow of the fluid in the fluid pressure means to return the slidable member to initial position after receiving an impact, manually operable means for allowing the fluid pressure means to return the slidable member to initial position, an indicator operable by movement of the slidable member upon receiving the impact for indicating the amount of force applied to the slidable member, and means for regulating the amount of force required to be expended on the impact receiving member before the slidable member is moved.

12. Training apparatus for football players comprising a fixed framework, a slidable member mounted in the framework and having one end projecting from one end thereof and having an impact receiving dummy on the projecting end, a piston operable by movement of the impact receiving member, a cylinder in which the piston is adapted to have movement, a source of liquid, a piped connection between the source of liquid and the cylinder, a check valve in said piped connection allowing the liquid to flow from the liquid source but preventing flow into the liquid source, a compression chamber, a piped connection between the compression chamber and the cylinder, a check valve in the last-named piped connection for allowing liquid to flow from the cylinder into said compression chamber for preventing flow of the liquid from the chamber into the cylinder, a by-pass around the last-named check valve, a manually operable valve in said by-pass whereby upon an impact being delivered to the impact receiving member, liquid from the liquid source which is present in the cylinder will be forced into the compression chamber to compress the air therein, thus resisting movement of the impact receiving member and whereby upon manipulation of the manually operable valve in the by-pass the compression will be released in the compression chamber to allow the compressed air therein to move the piston and impact receiving member to initial position.

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