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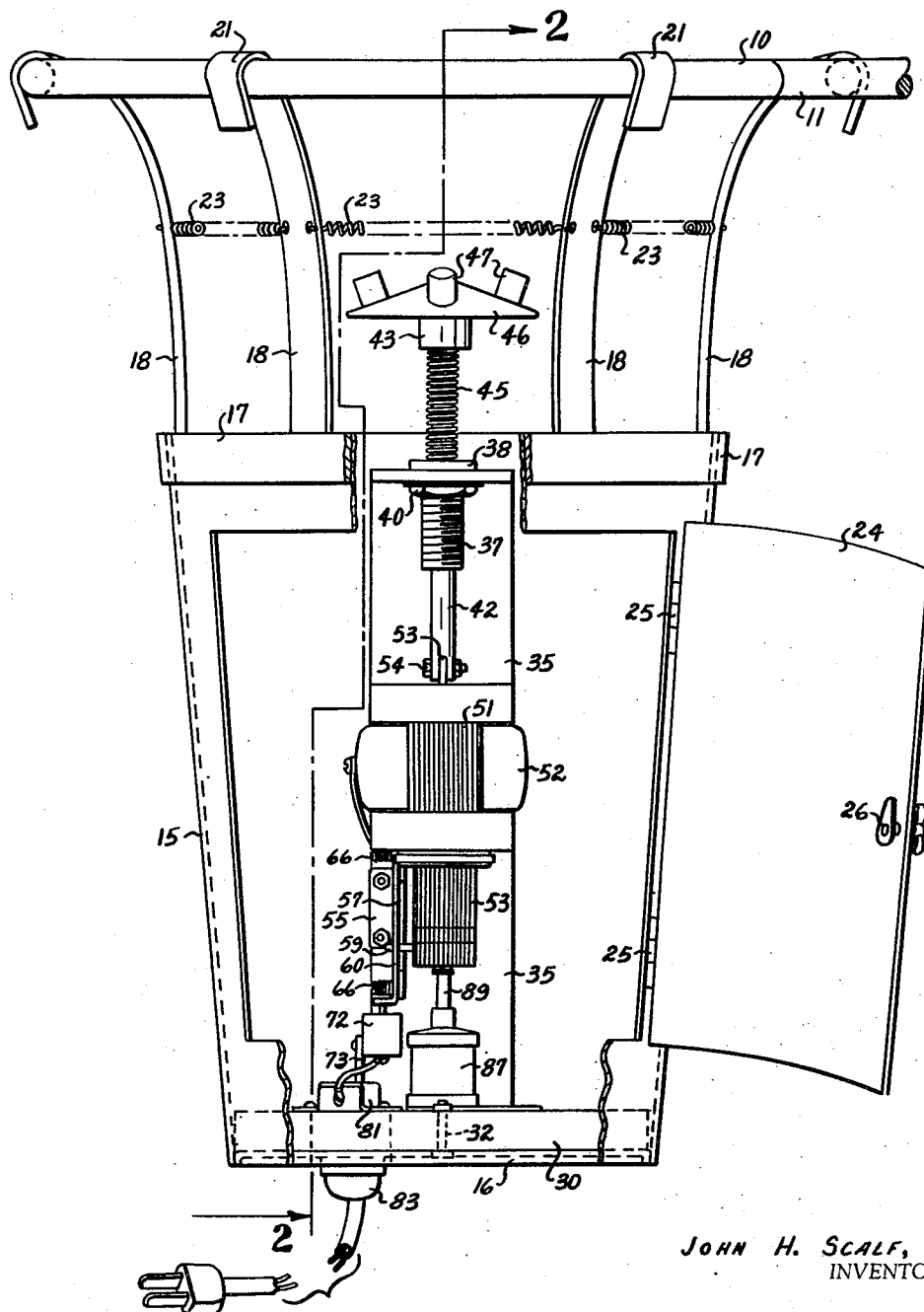
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2,808,264

BASKETBALL PRACTICE APPARATUS

Filed July 31, 1953

3 Sheets-Sheet 1



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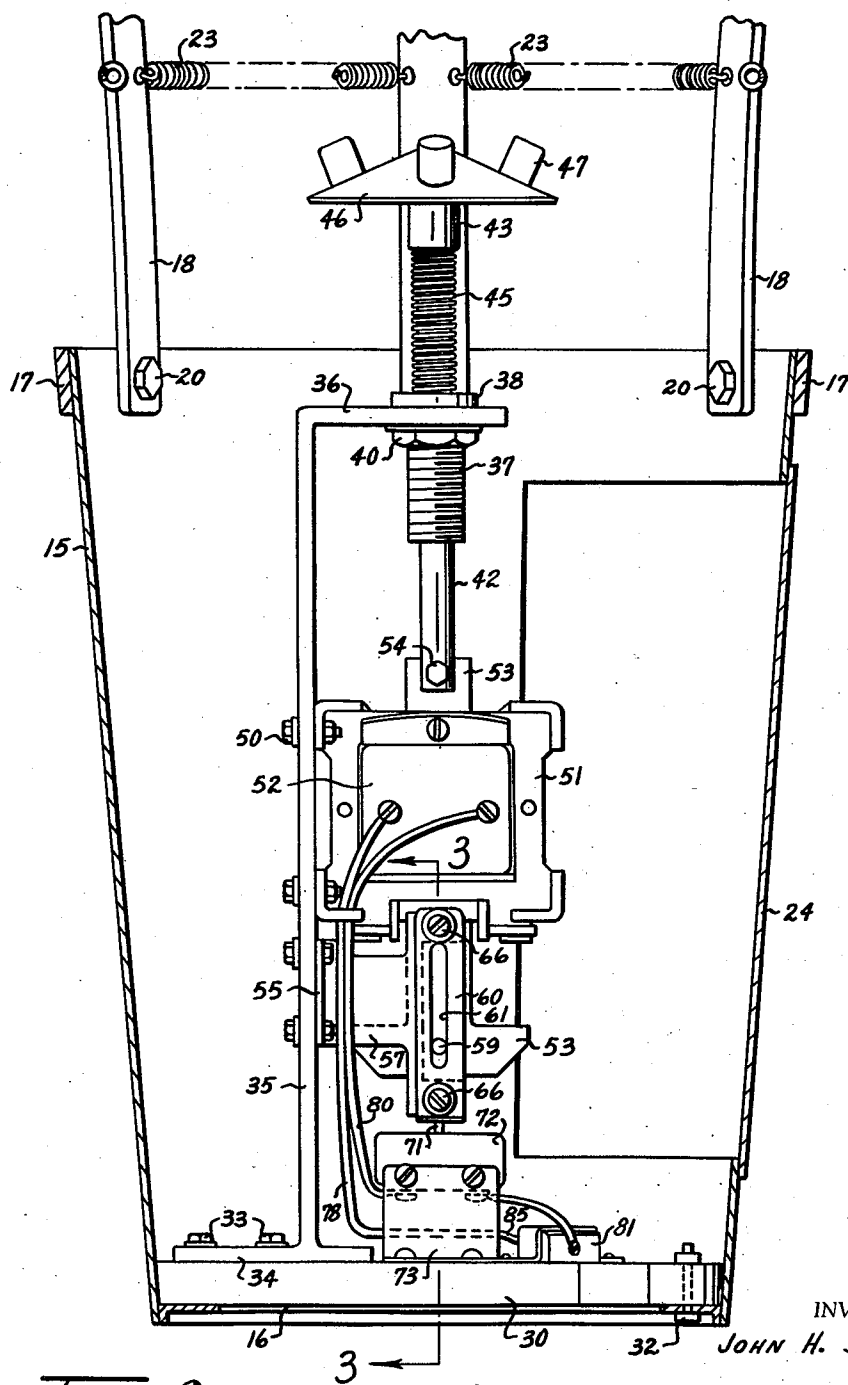


Fig-2

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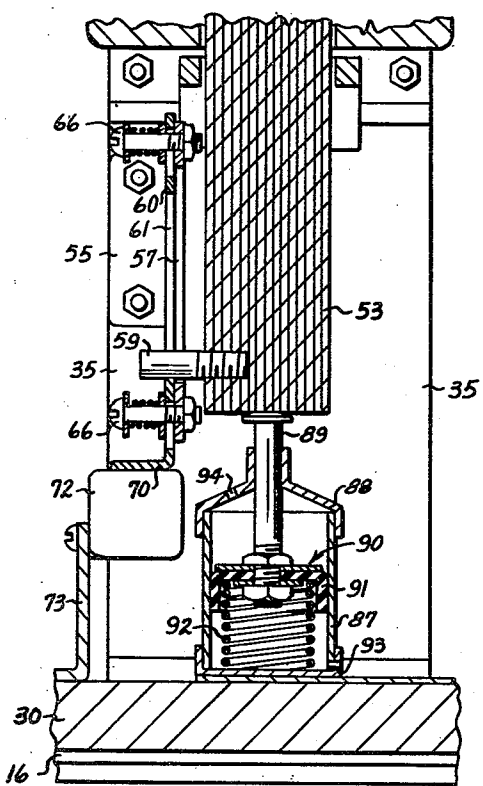


Fig- 4

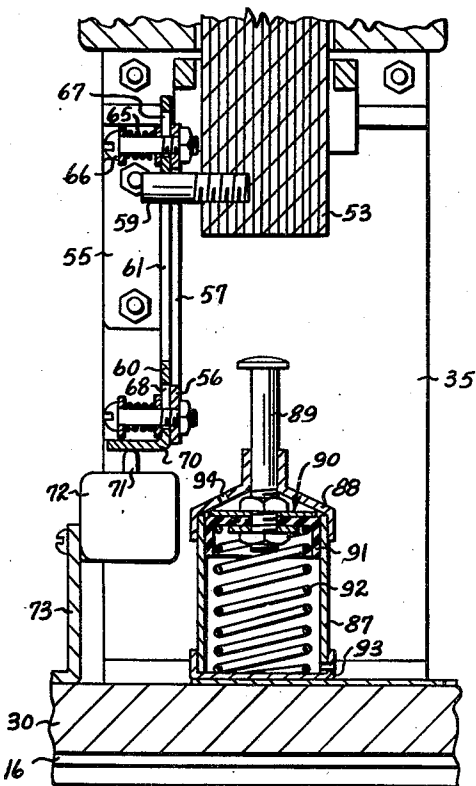


Fig- 3

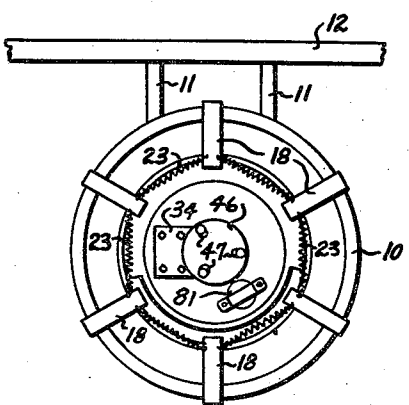


Fig- 5

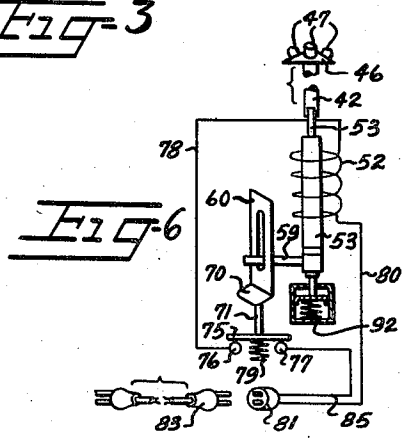


Fig- 6

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BASKETBALL PRACTICE APPARATUS

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7 Claims. (Cl. 273—1.5)

This invention relates to a game apparatus and more especially to an apparatus adapted to be used by basketball players during practice.

It is well known that in basketball there is an annular member secured to a board at each end of the court and depending from this annular member is usually a basket in the form of a net which is open at the bottom and players during practice endeavor to toss the ball through the annular member or ring and through the net and at least one player has to stand underneath the net and retrieve the ball and toss it to the players disposed at the foul line or in the vicinity thereof for repeat practice shots. The apparatus is also especially adaptable for tip-off shots or shots thrown from one side of the apparatus against the board and then bouncing into the ring.

It is an object of this invention to provide an apparatus adapted to be associated with a conventional basketball ring with or without the basket depending therefrom and wherein when a ball is thrown into and through the ring, it will engage an apparatus which will automatically eject the ball back through the ring and out to the players so that a plurality of players can engage in much swifter practice than has heretofore been the case because the player for returning the ball to the other players is eliminated and also it is much more rapid and a greater number of practice shots can be consummated within a given time than with the old method heretofore employed.

It is therefore an object of this invention to provide an apparatus to be suspended from a basketball ring so that when a ball is thrown through the ring, the ball is automatically ejected back upwardly through the ring and out towards the floor to be caught by a player and returned for another practice shot.

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 an elevation of the apparatus with parts broken away and with the access door shown in opened position;

Figure 2 is a vertical sectional view with parts in elevation taken substantially along the line 2—2 in Figure 1;

Figure 3 is a vertical sectional view taken substantially along the line 3—3 in Figure 2 and showing the parts in elevated position;

Figure 4 is a view taken along the same line as Figure 3, but showing the parts in depressed position after receiving the impact of a basketball;

Figure 5 is a reduced top plan view of the apparatus showing it associated with a complete basketball ring and attached to a suitable backboard;

Figure 6 is a schematic wiring diagram of the electrical portion of the apparatus.

Referring more specifically to the drawings, the numeral 10 indicates a basketball ring to which a net has heretofore ordinarily been attached and this ring has integral therewith any suitable supporting means such as bars or pipes 11 which are suitably secured to a back-

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board 12. An open topped housing 15 is provided having an annular member 16 secured therein and being surrounded at its top by a circular band 17 and a plurality of brackets 18 are secured to the interior surface of the open topped housing by any suitable means such as bolts 20 which penetrate the housing and the ring 17. These brackets 18 are curved outwardly and downwardly as at 21 to provide hooked portions to hook over the basket ring 10 and forming a ball receiving pocket. Intermediate the ends of the brackets 18 there is disposed a plurality of tension springs 23 for assisting in guiding the ball downwardly between the brackets 18.

The open topped housing 15 has a suitable access door 24 hingedly connected as at 25 to one of the walls of an opening in the housing and has latch means 26 for latching the same in closed position, which position it will occupy during use.

A circular bottom member 30 is loosely fitted into the housing 15 from the top and is supported by the annular member 16 and is held in position by any suitable means such as a plurality of bolts 32 passing through the annular member 16 and through the bottom 30. Mounted on this bottom 30 by any suitable means such as bolts 33 is a horizontal leg portion 34 of a bracket having an upright portion 35 and an inturned horizontal portion 36. The portion 36 is penetrated by a sleeve 37 which has an enlarged portion 38 on its upper end and its exterior is threaded for reception of a nut 40 for securing the sleeve 37 in position in the portion 36. The sleeve 37 is penetrated by a shaft 42 which has a sleeve 43 secured on its upper end and between the lower end of the sleeve 43 and the upper end of sleeve 37 is disposed a compression spring 45 which surrounds the plunger 42 and normally tends to move the plunger upwardly. The sleeve 43 has integral therewith a conical member 46 having a plurality of resilient bumpers 47 made of any suitable material such as natural or synthetic rubber. Secured on the upright portion 35, by any suitable means such as bolts 50, is an electrical solenoid 51 having a solenoid coil 52 and a solenoid core 53. The solenoid core 53 has its upper end connected to the shaft or plunger 42 by any suitable means, such as a pivot pin or bolt 54. Secured on the upright portion 35 is a bracket 55 which is substantially L-shaped and has an inwardly projecting portion 56 which is slotted as at 57, which slot is penetrated by a pin 59 secured in the solenoid core 53. Slidably mounted on the portion 56 of bracket 55 is a switch actuating plate 60 which has a vertically disposed slot 61 therein which is also penetrated by the pin 59 extending from the solenoid core 53. The member 60 is slidably pressed against the portion 56 by means of compression springs 65 surrounding bolts 66 which are threadably mounted in the portion 56 of bracket 55 and the upper and lower ends of the member 60 have elongated slots 67 and 68 which are also penetrated by the bolts 66. The lower end of the member 60 has a horizontal portion 70 which is adapted to engage, at times, a pin 71 of a switch mechanism housed in switch housing 72 secured to a suitable bracket 73 mounted on the floor 30 of the apparatus. This switch pin 71 has integral therewith a knife member 75 which is adapted to engage the contacts 76 and 77 of the electrical circuit. The knife 75 is normally held out of contact with contacts 76 and 77 by means of a compression spring 79. The contact 76 has a wire 78 leading therefrom to one side of the solenoid coil 52 and from the other side of the solenoid coil 52 a wire 80 leads to a plug 81 adapted to be connected to any suitable source of electrical energy such as a drop cord arrangement 83. The other side of the plug 81 has a wire 85 connected thereto which is connected to the contact 77.

Mounted on the floor 30 is a suitable cylindrical dash pot having a housing 87 sealed by a cap 88 and having

a plunger 89 slidably mounted in the cap 88 and extending downwardly into the cylinder 87 and having a piston arrangement indicated broadly at 90 and having a cup washer 91 therein and between the cup washer 91 and the bottom of the cylinder 87 is a compression spring 92 to normally force the piston 90 upwardly. Suitable leak holes 93 and 94 are provided in the cylinder and cap respectively for admitting and exhausting air to the dash pot and slowing down its operation.

Method of operation

As it is well known a basketball rarely makes a vertical descent through the ring holding the basket, but usually goes in at an angle as a bounce-off from the back-board and thus will hit the conical member 46 in a slanting direction and were it not for the projections 47 the ball might roll around without actuating the apparatus. However, when the ball hits one of the members 47 and it, of course, has a downward force and it forces the plunger 42 downwardly as well as the solenoid core 53 which, of course, moves the pin 59 from the position shown in Figure 3 to the position shown in Figure 4 which depresses the plunger 89 in the dash pot cylinder 87 at the same time the horizontal leg 70 depresses the switch pin 71 to the position shown in Figure 4 and thus the switch bar 75 is caused to contact the switch points 76 and 77 and this energizes the solenoid coil 52 and quickly forces the solenoid core 53 upwardly carrying the parts to the position shown in Figure 3 which opens the switch in housing 72 and thus ejects the basketball from the basket and the ball will then fall downwardly and be caught by a player and returned to the basket. In view of the compression spring 45 pushing the conical member 46 upwardly there is a tendency for the shaft 42 and the solenoid core 53 to reciprocate upwardly and downwardly which might cause closing of the switch in switch housing 72 repeatedly but in view of the fact that the lower end of the solenoid core 53 engages the dash pot plunger, upon a repeat operation from the same closure of the switch, this has a tendency to slow down and snub reciprocation of the solenoid core 53 and thus this repeated actuation of the mechanism is prevented.

It is evident that when the solenoid core moves downwardly under the impact of a basketball that the member 60 will be slid downwardly to engage the switch pin 71 or to the position shown in Figure 4 whereas when the solenoid coil is energized to move the solenoid core 53 upwardly the pin 59 will reset the member 60 and raise it to the position shown in Figure 3 where it will not be depressing the switch pin 71.

It is also seen that were it not for the dash pot mechanism, when the solenoid core were energized to eject the basketball, the weight of the core itself would cause it to fall downwardly and again depress the switch pin 72 and therefore the mechanism would repeat itself indefinitely were it not for the dash pot mechanism which prevents this.

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. Basketball practice apparatus adapted to be supported by a conventional basketball cage supporting ring comprising an open topped housing, a plurality of hooked brackets secured to the upper end of the open topped housing and adapted to be hooked around the conventional ring of a basketball cage, a vertically reciprocable member mounted in the housing and having an impact receiving member on the upper end thereof adapted to be engaged by a basketball falling through the ring, and whereby the weight of the basketball will depress the member, an electrical solenoid having a core connected

to said member, an electrical circuit for the solenoid, means carried by said member for energizing the electric circuit to the electrical solenoid core upon downward movement of the member engaged by the basketball to thereby swiftly raise the member supporting the basketball and eject it upwardly through the ring, dash pot means disposed below the solenoid core and engageable by the solenoid core upon de-energization of the solenoid for preventing the second closing of the circuit to the solenoid.

2. Basketball practice apparatus adapted to be supported by a conventional basketball cage supporting ring comprising an open topped housing, a plurality of hooked brackets secured to the upper end of the open topped housing and adapted to be hooked around the conventional ring of a basketball cage, a vertically reciprocable member mounted in the housing and having an impact receiving member on the upper end thereof adapted to be engaged by a basketball falling through the ring, and whereby the weight of the basketball will depress the member, an electrical solenoid having a core connected to said member, an electrical circuit for the solenoid having a switch therein, means carried by said member for closing the switch and energizing the electric circuit to the electrical solenoid core upon downward movement of the member engaged by the basketball to thereby swiftly raise the member supporting the basketball and eject it upwardly through the ring, dash pot means disposed below the solenoid core and engageable by the solenoid core upon de-energization of the solenoid for preventing the second closing of the switch in the circuit to the solenoid.

3. Basketball practice apparatus having supporting means for engaging the conventional ring of a basketball cage, a vertically reciprocable member and having an impact receiving member on the upper end thereof adapted to be engaged by a basketball falling through the ring, and whereby the weight of the basketball will depress the member, an electrical solenoid having a core connected to said member, an electrical circuit for the solenoid having a normally open switch therein, means carried by said member for closing the switch and energizing the electrical circuit to the electrical solenoid core upon downward movement of the member engaged by the basketball to thereby swiftly raise the member supporting the basketball and eject it upwardly through the ring, dash pot means disposed below the solenoid core and engageable by the solenoid core upon de-energization of the solenoid for preventing the second closing of the circuit to the solenoid.

4. Basketball practice apparatus having supporting means for engaging the conventional ring of a basketball cage, a vertically reciprocable member and having an impact receiving member on the upper end thereof adapted to be engaged by a basketball falling through the ring, and whereby the weight of the basketball will depress the member, an electrical solenoid having a core connected to said member, an electrical circuit for the solenoid, means carried by said member for energizing the electrical circuit to the electrical solenoid core upon downward movement of the member engaged by the basketball to thereby swiftly raise the member supporting the basketball and eject it upwardly through the ring, the upward movement of the member serving to open the electrical circuit, dash pot means disposed below the solenoid core and engageable by the solenoid core upon de-energization of the solenoid for preventing the second closing of the circuit to the solenoid.

5. Basketball practice apparatus having supporting means for engaging the conventional ring of a basketball cage to support the apparatus in alignment with and below the ring, a vertically reciprocable member and having an impact receiving member on the upper end thereof adapted to be engaged by a basketball falling through the ring, and whereby the weight of the basket-

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ball will depress the member, an electrical solenoid having a core connected to said member, an electrical circuit for the solenoid, means carried by said member for energizing the electrical circuit to the electrical solenoid core upon downward movement of the member engaged by the basketball to thereby swiftly raise the member supporting the basketball and eject it upwardly through the ring, and dampening means disposed below the solenoid core and engageable by the solenoid core upon de-energization of the solenoid for preventing the second closing of the circuit to the solenoid.

6. Basketball practice apparatus adapted to be supported by the ring of a basketball cage, said apparatus comprising a vertically reciprocable solenoid core disposed below the ring and in the path of a basketball falling through the ring, a solenoid coil surrounding at least a portion of said solenoid core and connected in an electrical circuit, switch means interposed in said circuit and closable by downward movement of the core to energize the solenoid coil to move the core upwardly to eject the basketball upwardly past the ring, said switch means comprising a radial projection extending from said core, a pair of contacts disposed in said electrical circuit adjacent said projection, bridging means engageable with said contacts for closing said electrical circuit, yieldable means normally urging said bridging means out of engagement with said contacts, said radially extending projection on said vertically reciprocable core being engageable with said bridging means upon said vertically reciprocable core being depressed by the weight of a basketball to overcome said yieldable means and cause said bridging means to

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engage the contacts and complete the circuit whereby said vertically movable member will be swiftly moved upwardly to eject the basketball above the ring and to move said radial extending projection out of contact with said bridging means whereby the circuit will be broken and said vertically reciprocable core will return to its original position, and means for dampening the downward movement of the vertically reciprocable core to prevent said projection from contacting said bridging means to thereby insure de-energization of the electrical circuit.

7. A basketball goal apparatus, comprising: pocket means for containing a basketball, said pocket having a mouth substantially commensurate with a basketball goal basket; means for engaging said pocket to a basketball goal basket, in open mouth disposition thereunder; a solenoid disposed below said pocket, said solenoid having a movable plunger operative to project a basketball, in the pocket, upwardly through said mouth; and an electric circuit for said solenoid including switch means closable by a basketball in said pocket.

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