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2,413,952

ELECTRIC RECORDING OF BASKETBALL GOALS

Filed June 27, 1945

2 Sheets-Sheet 1

FIG. 1.

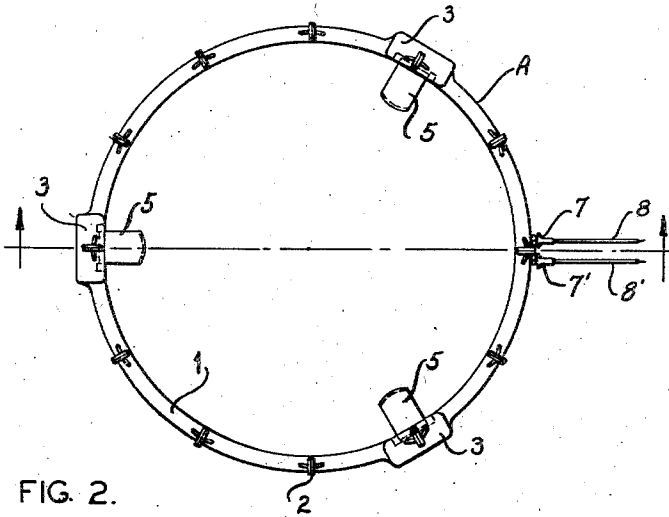


FIG. 2.

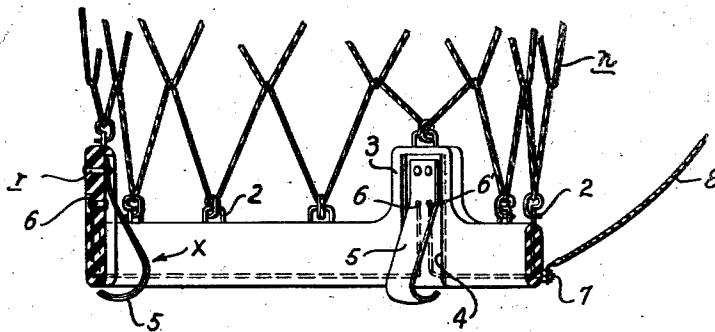


FIG. 3.

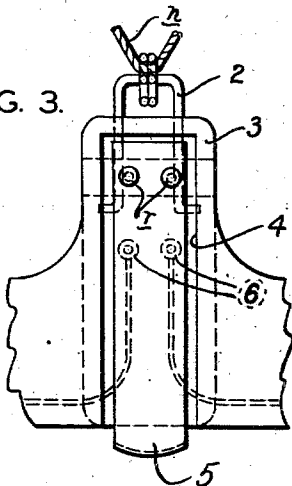


FIG. 5.

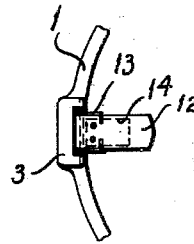
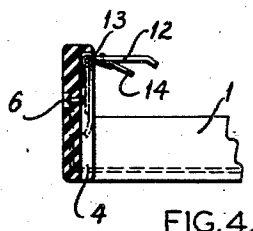


FIG. 4.

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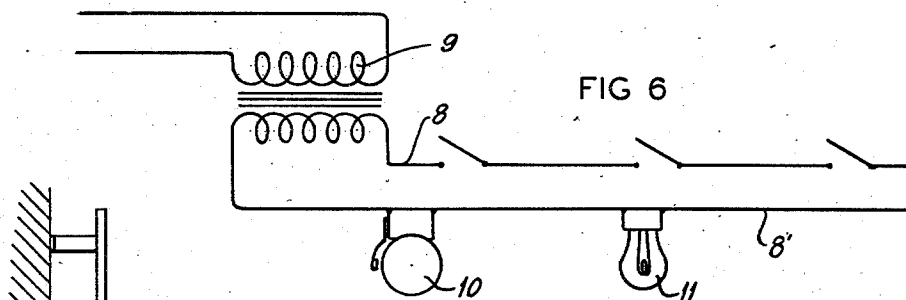
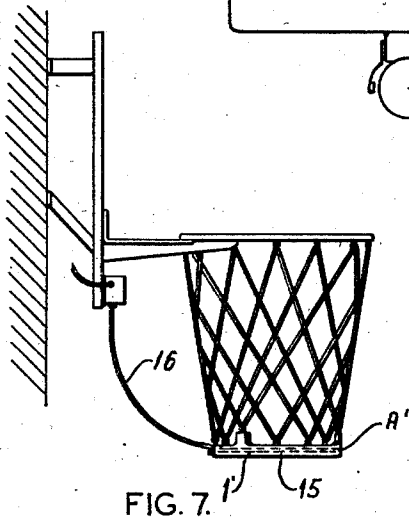
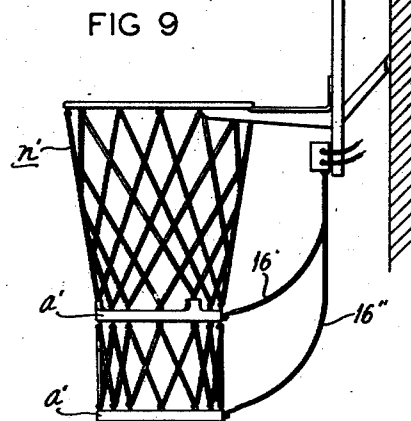
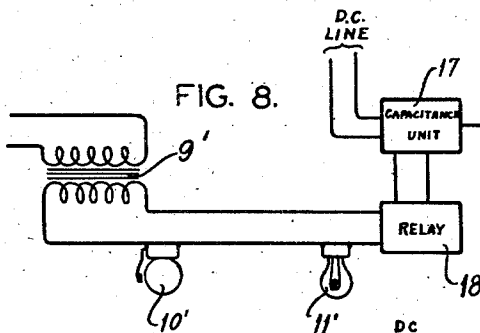
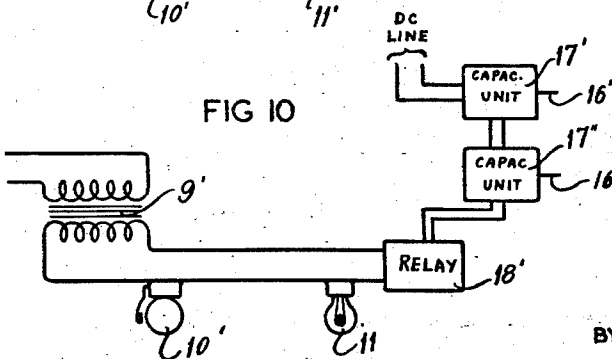
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ELECTRIC RECORDING OF BASKETBALL GOALS

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2 Sheets-Sheet 2



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ELECTRIC RECORDING OF BASKETBALL GOALS

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5 Claims. (Cl. 177—384)

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This invention relates to certain new and useful improvements in basketball goals, and more particularly, to an automatic or self-recording goal.

In games such as basketball where it is the object to throw a ball through a goal and where, as in basketball, the movements of the game are very rapid, it frequently happens that the ball may be successfully thrown through the goal by one of the players at such speed that it will escape the notice of the referee and other officials. With the increasing speed of such games, it is also becoming more difficult for the scorekeepers to keep accurate records of the goals scored during the course of a hotly contested game.

The present invention has for its primary object the provision of a basketball goal equipped with means for automatically producing a signal response as the ball passes through the goal and a score is consequently made.

It is a further object of the present invention to provide a basketball goal of the type stated which is relatively simple and economical in construction and yet is rugged and durable, and will withstand the rigorous use and treatment which it receives during the course of an actual game or contest.

It is a further object of the present invention to provide a basketball goal and signaling system of the type stated, which is relatively trouble-proof and will not normally break down during even very hard usage.

It is also an object of the present invention to provide a basketball goal of the type stated which will not emit a signal unless the basketball has actually passed through the net of the goal in such a manner that a score has in fact been made.

And with the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawings (two sheets)—

Figure 1 is a top plan view of a score indicating mechanism adapted for attachment to the net of a basketball goal and constructed in accordance with the present invention;

Figure 2 is a vertical sectional view of the scoring mechanism taken along line 2—2 of Figure 1;

Figure 3 is an enlarged fragmentary elevational view of one of the contactor elements forming a part of the present invention;

Figure 4 is a fragmentary vertical sectional view of a modified form of contactor elements forming a part of the present invention;

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Figure 5 is a top plan view of the contactor elements shown in Figure 4.

Figure 6 is a schematic wiring diagram of the signaling circuit employed in conjunction with the score indicating mechanism of Figure 1;

Figure 7 is a side elevational view of a basketball net equipped with a modified form of score indicating mechanism constructed in accordance with and embodying the present invention;

Figure 8 is a schematic wiring diagram of the signaling circuit employed in conjunction with the score indicating mechanism of Figure 7;

Figure 9 is a side elevational view of a basketball goal equipped with a second modified form of score indicating mechanism constructed in accordance with, and embodying the present invention; and

Figure 10 is a schematic wiring diagram of the signaling circuit employed in conjunction with the score indicating mechanism of Figure 9.

Referring now more in detail and by reference characters to the drawings which illustrate practical embodiments of the present invention, *a* designates a score indicating mechanism comprising a relatively flexible moulded rubber ring, 1, of substantially the same diametrical size as the approved official size for the lower or exit end of a standard basketball net *n*. Moulded in, and projecting upwardly from, the upward margin of the ring 1 is a plurality of conventional wire net hooks 2 adapted for hooked engagement with the lowermost series of loops of the net *n*. The ring 1 is further provided with three upwardly extending ears 3 spaced equidistantly from each other at distances of 120° around the ring 1 and provided upon their inner faces with inwardly opening recesses 4 which extend downwardly and continue across the inner face of the ring 1.

Secured as by means of rivets *r* in the upper end of each of the recesses 4 is a spring bronze contactor member 5 which extends downwardly for a short distance and then is curved outwardly to a point adjacent the lower margin of the ring 1, and is bent thence inwardly in an arcuate hook terminating beneath the downwardly presented face or margin of such ring 1. Moulded into the inwardly presented face of each recess 4 are two spaced contact points 6, 6' which are in turn electrically connected by means of suitable lengths of copper wire also moulded in and extending through the body of the ring 1. It will be noted that the contact point 6' of one recess is connected to a binding post 7 which projects from the rear and outer face of the ring 1. The

contact point 6 of the next adjacent recess 4 is similarly connected to a second binding post 7' which is in turn located adjacent to the binding post 7. The remaining contact points are so connected that the contact point 6 of one recess 4 is connected to the contact point 6' of the next adjacent recess 4. The pairs of contact points 6, 6' are, furthermore, so arranged within the recesses 4 that they will both be simultaneously engaged by the inner face of the contact member 5 as it is pressed downwardly into the recess 4. The outwardly curved portion of the contact member 5 is of such size and shape that the innermost point of the inwardly presented face thereof, as indicated at *x* in Figure 2, will normally be tangent to a theoretical circle which is concentric with the ring 1 and is of a diametrical size substantially smaller than the diametrical size of a standard or official basketball.

The binding posts, 7, 7', are connected by flexible lead-wires 8, 8', in series through a conventional bell transformer 9, with a bell 10, and a low voltage signal lamp 11, as shown in the wiring diagram Figure 6.

In normal use, the score indicating mechanism *a* will hang freely from the lower end of the basketball net *n*. When a goal is scored, the basketball will drop downwardly through the net and will simultaneously spread all three of the contactors 5 thereby completing the circuit across all of the pairs of contact points 6, 6' and closing the circuit through the bell 10 and lamp 11, providing both visual and audible signals indicating the fact that a goal has been properly scored. Inasmuch as the scoring mechanism 1 is relatively flexible and free swinging, it will not cause injury to any of the players if it is accidentally struck with the hand or head during the course of play. Furthermore, in the course of ordinary probability, it is virtually impossible for the score indicating circuits to be energized accidentally through impact with the hand of one of the players, since all three of the contactor elements must be simultaneously actuated in order to produce a signal impulse.

It is also possible to provide a modified form of contactor element comprising a hinged leaf 12 which is pivotally mounted in the upper end of each of the recesses 4 and is resiliently held in outwardly presented or horizontal position by means of a small coiled spring 13. Rigidly mounted upon the under face of the arm 12 is an angularly projecting, resilient contactor leaf 14 adapted for engagement with the contact points 6, 6' as shown in dotted lines in Figure 4. This latter type of contactor element is non-reversible in the sense that it cannot be actuated to produce a signal impulse if a basketball is accidentally propelled upwardly through the net from the bottom to the top, as may sometimes happen during the course of a game when the players are maneuvering the ball in the area of the floor directly beneath the net.

It is also possible to provide a modified form of score indicating mechanism A' which comprises a moulded rubber ring 1' substantially similar to the previously described ring 1, except that the contact members 5 and associated mechanism is eliminated. Instead, the ring 1' is provided internally with a single closed loop of copper wire 15 which is connected externally by means of a flexible lead 16 to a conventional electronic capacitance unit 17, which is in turn connected to a relay 18. The loop 15 is, in effect, a part of the capacitance of the antenna or grid controlling

circuit of the capacitance unit 17 and the capacitance unit 17 is so biased that when a large object such as a basketball passes through its field, the electronic balance of the capacitance unit will be disturbed and a relay actuating current will be transmitted to the relay which will in turn close the circuit to the bell 10' and signaling lamp 11' which are connected in series to the bell transformer 9', all as best seen in Figure 8.

If it is desired to provide assurance against accidental reverse throwing of the ball through the net from the bottom to the top, which may on rare occasions produce a false scoring signal, a basketball net *n'* may be provided having two vertically spaced score signalling rings *a'* each connected by flexible leads 16', 16'' to capacitance units 17', 17'' which are connected in series with each other and a relay 18'. It will be noted by reference to the wiring diagram, Figure 10, that the capacitance unit 17' is connected on its input side to a D. C. line and is in turn connected on its output side to the input side of the capacitance unit 17'', so that it becomes necessary for the capacitance unit 17' to be initially energized in order that the capacitance unit 17'' will in turn be energized for the ultimate transmission of an actuating impulse to the relay 18'. As a result, a signaling impulse will only be transmitted when the basketball passes in successive order through the upper and then the lower score signalling rings *a'*. If the ball is accidentally pushed upwardly first through the lowermost of the two score signalling rings *a'*, no signal impulse will be transmitted through the circuit.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the mechanism may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A self-recording basketball goal comprising, in combination, a basketball goal having a depending net, an annular non-extensible member suspended from the net having a plurality of series connected switches mounted therein and adapted to be actuated when a basketball passes through the net, and electrically actuated signalling means connected through said switches to a suitable source of electrical current and adapted to emit a signal when the switches are simultaneously closed.

2. A self-recording basketball goal comprising, in combination, a basketball goal having a depending net, a flexible non-stretchable rubber ring suspended from the net and provided with a plurality of switches connected in series, and electrically actuated signalling means connected through said switches to a suitable source of electrical current and adapted to emit a signal when the switches are simultaneously closed.

3. A self-recording basketball goal comprising, in combination, a basketball goal having a depending net, a flexible ring suspended from the net and having a plurality of pairs of electrical contact points, one point in each pair being electrically connected to one point in another pair, a circuit-closing element mounted on the ring adjacent each pair of contact points and being adapted to be pressed into circuit-closing engagement with such contact points when a basketball passes through the net, and electrically actuated signalling means connected through said pairs of

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contact points to a suitable source of electrical current and adapted to emit a signal when the circuit-closing elements are simultaneously pressed into contact with the pairs of contact points.

4. A self-recording basketball goal comprising, in combination, a basketball goal having a depending net, a flexible ring suspended from the net and having a plurality of pairs of electrical contact points, one point in each pair being electrically connected to one point in another pair, a circuit-closing element mounted on the ring adjacent each pair of contact points, said element having a downwardly and outwardly curving portion which extends out into the path of the basketball as the latter passes through the ring whereby said element will be pressed into circuit-closing engagement with such contact points when a basketball passes through the net, and

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electrically actuated signalling means connected through said pairs of contact points to a suitable source of electrical current and adapted to emit a signal when the circuit-closing elements are simultaneously pressed into contact with the pairs of contact points.

5. A self-recording basketball goal comprising, in combination, a basketball goal having a depending a net, a ring suspended from the net and provided with a plurality of switches connected in series, said switches each having an outwardly projecting arm adapted for effective switch operation only when swung downwardly, and electrically actuated signalling means connected through said switches to a suitable source of electrical current and adapted to emit a signal when the switches are simultaneously closed.

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