No. 865,604. PATENTED SEPT. 10, 1907.

A. C. MEYER.

TARGET.

APPLICATION FILED JAN. 4, 1906.

3 SHEETS—SHEET 1.

Fig. 1.

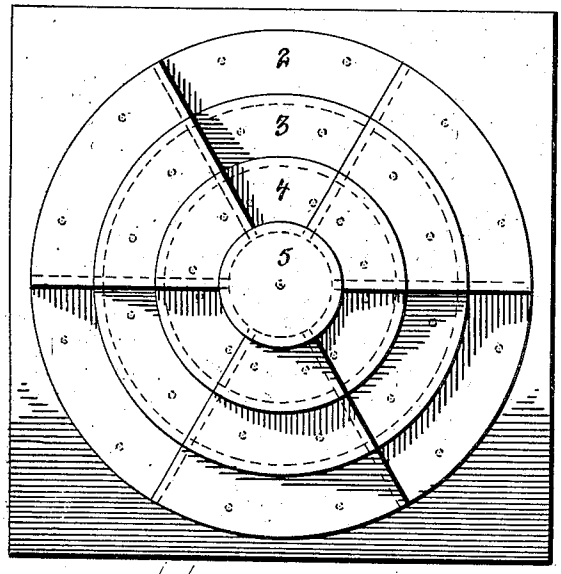


Fig. 2.

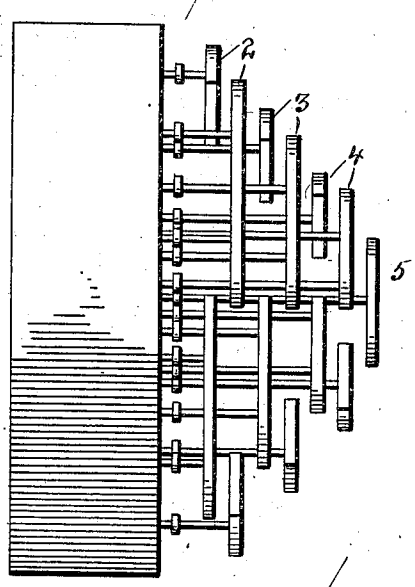


Fig. 3.

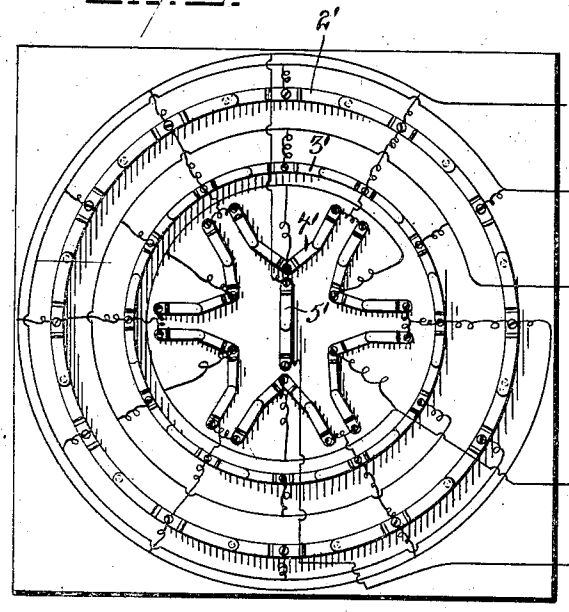
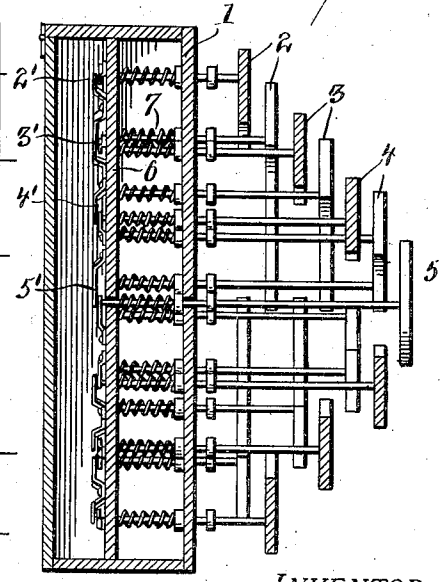


Fig. 4.



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3 SHEETS—SHEET 2.

Fig. 5.

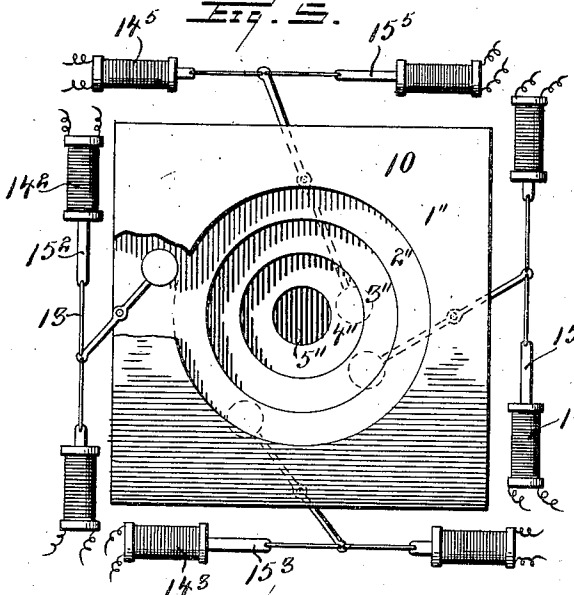


Fig. 6.

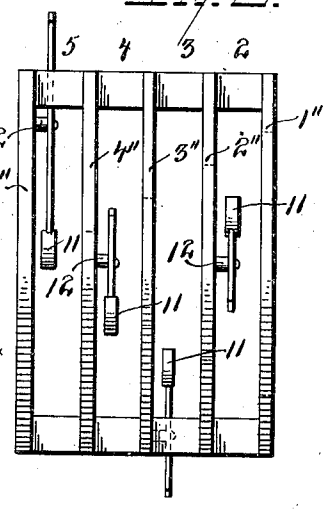


Fig. 7.

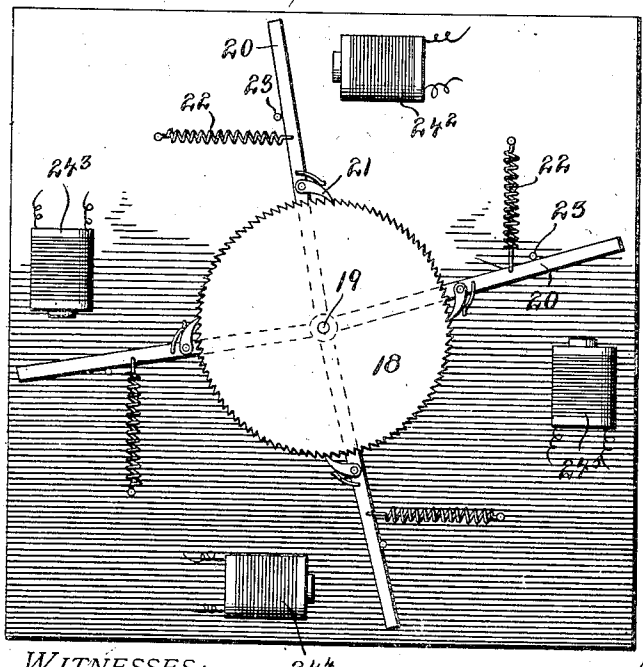
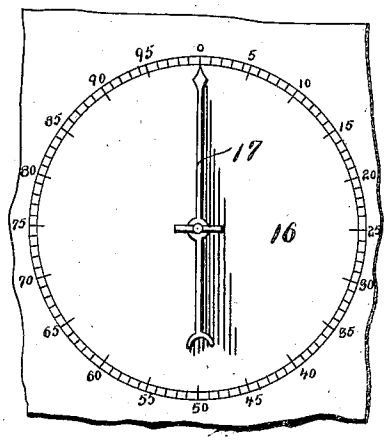


Fig. 8.



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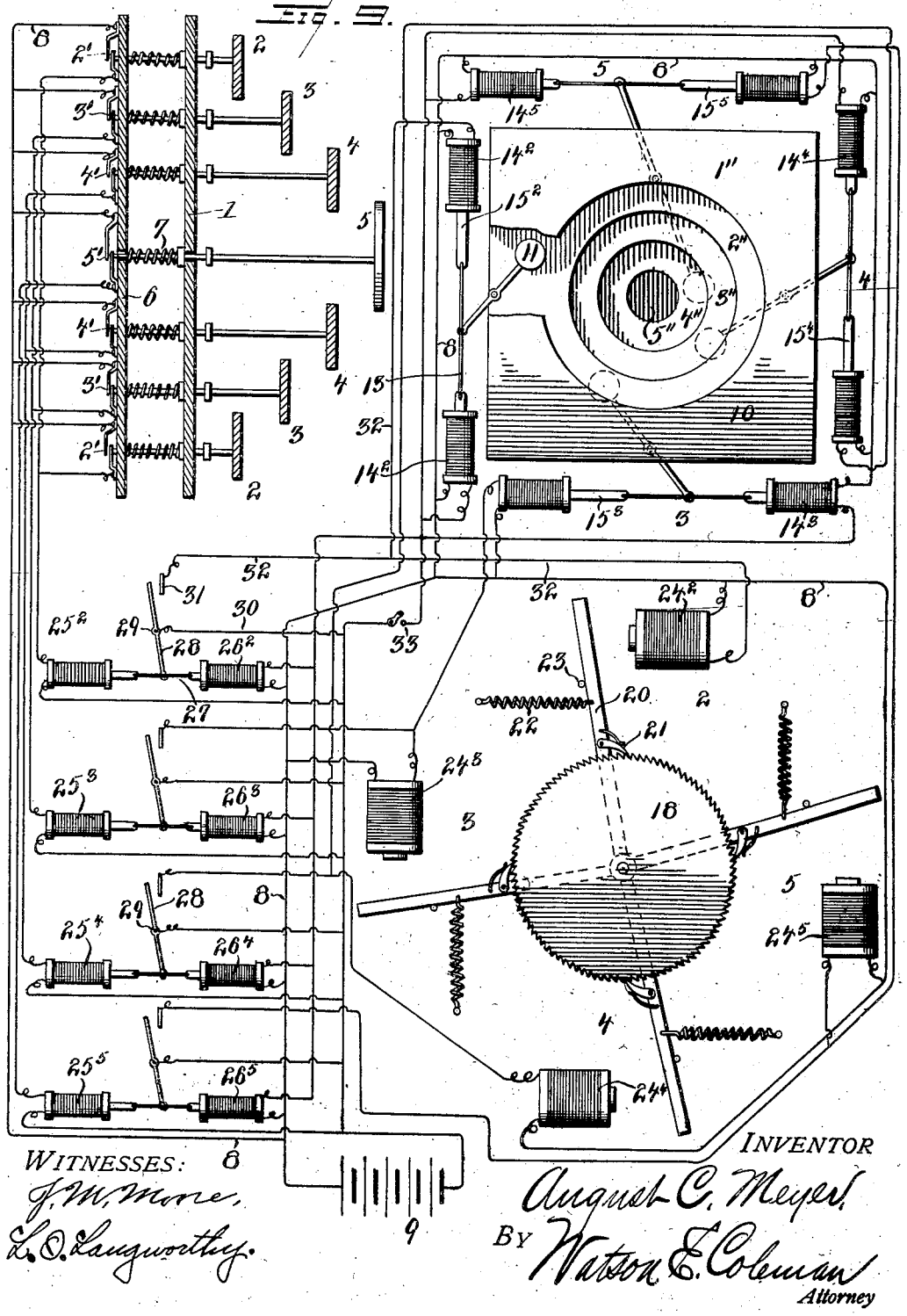
3 SHEETS—SHEET 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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TARGET.

No. 865,604. Specification of Letters Patent. Patented Sept. 10, 1907.

Application filed January 4, 1906. Serial No. 294,661.

To all whom it may concern:

Be it known that I, AUGUST C. MEYER, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Targets, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to targets and has for its object the provision of means for indicating and regulating the location and value of hits, automatically, and with absolute certainty.

With this object in view the invention resides in the construction and combination of parts hereinafter more fully described and particularly pointed out in the claims and illustrated in a preferred form in the accompanying drawings in which,

Figure 1 is a front elevation of the target; Fig. 2 is a side elevation of the same; Fig. 3 is a rear view with the cover removed; Fig. 4 is a central transverse section through the target; Fig. 5 is a front elevation, partially broken away, of the indicator and its actuating means; Fig. 6 is a partial side view of Fig. 5; Fig. 7 is a rear view of the register and its actuating mechanism; Fig. 8 is a front elevation of the register dial; and Fig. 9 is a schematic view showing the several coöperating parts with their electric connections.

The target itself is composed of a base plate 1, serving as a support for the concentric value rings 2, 3, 4 and 5. All of these rings with the exception of the "bull's eye" 5 are divided into segments of which there are six, as shown, although it is apparent there may be any desired number, each carried by one or more rods passing loosely through holes in the base plate 1 and provided on each side of the plate at a short distance therefrom with enlargements to limit their movement in either direction. The lower end of each rod passes loosely through a second plate 6 and in that portion between the two plates is encircled by coiled springs 7 which hold the rods yieldingly in their uppermost position as shown in Fig. 4.

Below the lower plate 6 are arranged two-part spring contacts 2′, 3′, 4′ and 5′, one for each of the rods carrying the segments forming each ring 2, 3, 4 and 5. These contacts are constituted in a known manner of two pieces of conducting spring metal connected at their extremities with the opposite poles of an electric battery, and having their adjacent ends overlying each other, but out of contact. The upper one rests against the lower end of its rod so that the circuit will be closed when the segment with its rod is depressed by being struck, and an impulse will be sent through the wires forming the circuit.

One member of each spring contact is connected with a trunk wire 8 leading to one pole of the battery 9, while the connection of the other member with the other pole is indirectly by means of mechanism to be hereinafter more fully described.

The indicator 10 is composed of a plurality of superposed plates 1″, 2″, 3″, 4″ and 5″, the four upper plates having each a central opening decreasing in size from the top downward. Between each plate are arranged markers 11, carried by levers pivoted to suitable supports, as shown at 12, the opposite ends of the levers being secured to the links 13 connecting the cores of solenoids 14^2, 14^3, 14^4, and 14^5 with the cores of solenoids 15^2, 15^3, 15^4, and 15^5. The markers 11 may be indicating devices of any description.

Viewed from in front, as in Fig. 5, the indicator presents an intaglio of the target, the visible portions of the plates 2″, 3″, 4″ and 5″ corresponding to the value rings 2, 3, 4 and 5 respectively of the target. The markers 11 are hidden normally by the overlying plates, but when one of the solenoids 14 is energized its marker is thrown into a position over the annular visible portion of its plate, indicating where the shot struck the target.

The register comprises a dial 16 with graduations reading, for instance, from 0 to 100, and with a pointer 17 rigidly secured to a ratchet wheel 18 carried upon an arbor 19. Upon this same arbor as a pivot are mounted levers 20 provided with pawls 21 in engagement with the teeth of the ratchet wheel 18. These levers are held by the springs 22 against stops 23, with their ends in front of magnets 24^2, 24^3, 24^4, and 24^5 of which they form the armatures and at distances therefrom varying in such degree that when the lever is moved up to magnet 24^2, it will by its pawl turn the ratchet 18 to the extent of two teeth, the lever 24^3, will move the ratchet three teeth and so on. It will thus be understood that as one of the magnets, say magnet 24^5, is energized, the pointer 17 will advance five points on the dial where it will come to rest, then if the magnet 23^3 is energized, the pointer will advance another three points stopping at eight, thus automatically registering the sum of values of shots upon the target.

From Fig. 9 it will be seen that one pole of each contact, each solenoid pair and each magnet is connected directly with the trunk wire 8 and through it with one pole of the battery. It will also be seen that the second pole of each contact is connected with the second pole of its corresponding solenoid, contact 2′ with solenoid 25^2, contact 3′ with solenoid 25^3, etc. Each of the solenoids 25^2, 25^3, 25^4, and 25^5 is coupled with a companion solenoid 26^2, 26^3, 26^4, and 26^5, by a wire or link 27 attached to their respective cores. To this link 27 is attached one end of a conductive lever 28 pivoted upon a conductive pivot 29 connected with the battery and with solenoids 15 and 25, by wire 30 having its other arm arranged to make and break contact with the pole 31 connected by wire 32 with one pole of solenoids

14^2, 14^3, 14^4, and 14^5, and with magnets 24^2, 24^3, 24^4, and 24^5. It follows, then, that if, for instance, the shot strikes the ring 2 on the target, the rods carrying that segment of the ring will be pressed inwards against the contact 2′ closing the circuit through solenoid 25^2, which will be energized and its core drawn in throwing the switch by the lever 28, thus establishing a circuit through wire 30, lever 28 and wire 32 with solenoid 14^2 and magnet 24^2 energizing each of these and through their other poles to the battery. The energizing of solenoid 14^2 will draw its core inward and throw its marker 11 into view upon the face of the indicator ring 2″, and the concurrent energizing of magnet 24^2 will attract its armature, the lever 20, moving by its pawl 21 the ratchet 18 two teeth, advancing the pointer 17 two points on the dial of the indicator. The spring 7 will instantly return the rod and segment and break the circuit at the contact 2′, but the marker 11 will remain in view to permit ample time for observation and the pointer 17 will remain stationary at the point registered. When it is desired to set the indicator for another shot, a push button located convenient for access is pressed, or the switch 33 is closed, thus closing the circuit from the battery through solenoids 15^2 and 26^2, withdrawing the marker 11 from view and the latter opening the switch at 28 disengaging the magnet 24^2 and permitting the spring to remove the lever 20 to the stop 23. The same will apply if some other portion of the target be struck, the indicator will instantly present the marker in proper position and the register will add the value of the shot to the previous score. The device thus provides an efficient and convenient means for keeping score in the gallery or on the range.

For convenience of illustration, and to avoid confusion arising from a multiplicity of wires, markers, etc., due to a duplication of parts, I have shown all the segments forming each of the value rings 2, 3 and 4, as connected to corresponding trunk wires leading respectively to single markers indicating said value ring on the indicator 10. It is to be understood, however, that, to avail of the advantages flowing from the division of the value rings into segments, there will be a marker corresponding to and connected with each segment so that not only is the value of the hit registered, but also its position above, below, to the right, or to the left of the bull's eye. The proper wiring to effect this result is a matter of no difficulty and will be obvious to anyone skilled in that art.

Having thus described my said invention, what I claim as new and desire to secure by Letters Patent of the United States, are

1. In a score keeping device, a target having movably mounted value rings, and an electric circuit arranged to be closed by the movement of the rings, in combination, with an indicator having corresponding values, markers operated by the closing of the circuit to indicate the value corresponding to the location of a hit upon the target, and a register operated by the closing of the circuit to register the total value of such hit added to the previous score.

2. In a score keeping device, a target having movably mounted value rings, and an electric circuit arranged to be closed by the movement of the rings, in combination, with an indicator having corresponding value rings, a marker for each ring, means operated by the closing of the circuit to expose a marker in a position corresponding in value to the location of the hit upon the target, and a register comprising a dial with an index, a pointer, and means operated by the closing of the circuit to advance the pointer along the index to register the total value of such hit added to the previous scale.

3. In a score keeping device, a target having movably mounted value rings, a normally open electric circuit, and a circuit closer arranged to be operated by the movement of each value ring, in combination, with an indicator having corresponding value rings, a marker for each ring, means operated by the closing of the circuit to expose a marker in a position corresponding in value to the location of the hit upon the target, and a register comprising a dial with an index, a pointer, and means operated by the closing of the circuit to advance the pointer along the index to register the total value of such hit added to the previous scale.

4. In a score keeping device, a target, a normally open electric circuit, circuit closers corresponding to the value rings of the target and arranged to be operated by a hit thereon, an indicator having values corresponding to those of the target, markers coöperating therewith, solenoids for actuating the markers, an open switch in the circuit of each of said solenoids, another solenoid for closing each switch upon the closing of the circuit by a hit, and means for opening such switch.

5. In a score keeping device, a target, a normally open electric circuits, circuit closers corresponding to the value rings of the target and arranged to be operated by a hit thereon, an indicator having values corresponding to those of the target, markers coöperating therewith, solenoids for bringing the markers into operation, an open switch in the circuit of each of said solenoids, another solenoid for closing each switch upon the closing of the circuit by a hit, another solenoid for opening such switch, and means for establishing a circuit through said last named solenoid.

6. In a score keeping device, a target having movably mounted value rings, a normally open electric circuit, circuit closers corresponding to the value rings of the target and arranged to be closed by the movement thereof under the influence of a hit, an indicator having corresponding value rings, a marker for each ring, a solenoid for bringing each marker into operation, an open switch in the circuit of each of said solenoids, another solenoid for closing such switch upon the closing of the circuit by a hit, a third solenoid for restoring the marker to its inoperative position, a fourth solenoid for opening the switch, and means for establishing a circuit to energize the two last named solenoids.

7. In a score keeping device, a target, a normally open electric circuit, circuit closers corresponding to the value rings of the target and arranged to be closed by a hit thereon, an indicator having values corresponding to those of the target, markers coöperating therewith, electrically operated means for actuating the markers, an open switch in the circuit of each marker, electrically operated means for closing each switch upon the closing of the circuit by a hit, and means for opening such switch, in combination, with a register operated by the closing of the circuit through the switch to register the total value of such hit added to the previous score.

8. In a score keeping device, a target, a normally open electric circuit, circuit closers corresponding to the value rings of the target and arranged to be closed by a hit thereon, an indicator having values corresponding to those of the target, markers coöperating therewith, electrically operated means for actuating the markers, an open switch in the circuit of each marker, electrically operated means for closing each switch upon the closing of the circuit by a hit, and means for opening such switch, in combination, with a register comprising a dial with an index, a pointer, and means operated by the closing of the circuit through the switch to advance the pointer along the index to register the total value of such hit added to the previous score.

9. In a score keeping device, a target having movably mounted value rings, a normally open electric circuit, circuit closers corresponding to the value rings of the target and arranged to be closed by the movement thereof under the influence of a hit, an indicator having corresponding value rings, a marker for each ring, a solenoid for bringing each marker into operation, an open switch in the circuit of each of said solenoids, another solenoid for clos-

ing such switch upon the closing of the circuit by a hit, a third solenoid for restoring the marker to its inoperative position, a fourth solenoid for opening the switch, and means for establishing a circuit to energize the two last named solenoids, in combination, with a register comprising a dial with an index, a pointer, and means operated by the closing of the circuit through the switch to advance the pointer along the index to register the total value of such hit added to the previous score.

10. In a score keeping device, a target having movably mounted value rings, a normally open electric circuit, circuit closers corresponding to the value rings of the target and arranged to be closed by the movement thereof under the influence of a hit, an indicator having corresponding value rings, a marker for each ring carried by a lever, a pair of solenoids having their cores connected with each other and with the marker, an open switch in the circuit of each pair of solenoids, a second pair of solenoids having their cores connected with each other and with the switch, one solenoid of the second pair energized by the closing of the circuit by a hit to close the switch and one solenoid of the first pair energized by the closing of the circuit through the switch to bring the marker into operation, and means for establishing a circuit to energize the second member of each pair to restore the marker to its inoperative position and to open the switch.

11. In a score keeping device, a target having movably mounted value rings, a normally open electric circuit, circuit closers corresponding to the value rings of the target and arranged to be closed by the movement thereof under the influence of a hit, an indicator having corresponding value rings, a marker for each ring carried by a lever, a pair of solenoids having their cores connected with each other and with the marker, an open switch in the circuit of each pair of solenoids, a second pair of solenoids having their cores connected with each other and with the switch, one solenoid of the second pair energized by the closing of the circuit by a hit to close the switch and one solenoid of the first pair energized by the closing of the circuit through the switch to bring the marker into operation, and means for establishing a circuit to energize the second member of each pair to restore the marker to its inoperative position and to open the switch, in combination, with a register comprising a dial with an index, a pointer, and means operated by the closing of the circuit through the switch to advance the pointer along the index to register the total value of such hit added to the previous score.

12. In a score keeping device, a target having movably mounted value rings, a normally open electric circuit, circuit closers corresponding to the value rings of the target and arranged to be closed by the movement thereof under the influence of a hit, an indicator having corresponding value rings, a marker for each ring carried by a lever, a pair of solenoids having their cores connected with each other and with the marker, an open switch in the circuit of each pair of solenoids, a second pair of solenoids having their cores connected with each other and with the switch, one solenoid of the second pair energized by the closing of the circuit by a hit to close the switch and one solenoid of the first pair energized by the closing of the circuit through the switch to bring the marker into operation, and means for establishing a circuit to energize the second member of each pair to restore the marker to its inoperative position and to open the switch, in combination, with a register comprising a dial with an index, a pointer, a ratchet carrying the pointer, magnets energized by the closing of the circuit through the switches and corresponding to the value rings of the target, a lever carrying a pawl in engagement with the ratchet and arranged as an armature before a magnet and at a distance therefrom sufficient to move said lever upon the energizing of the magnet and give the ratchet a throw equivalent to the value of the corresponding value ring of the target, and means for restoring the lever and pawl to its position upon the deënergizing of the magnet by the opening of the switch.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

AUGUST C. MEYER.

Witnesses:
EDWIN H. CRANDELL, Jr.,
GEO. C. DOUGLASS.