No. 766,353. PATENTED AUG. 2, 1904.

P. S. HOTCHKISS.

ELECTRIC BILLIARD REGISTER.

APPLICATION FILED AUG. 6, 1903.

NO MODEL. 5 SHEETS—SHEET 1.

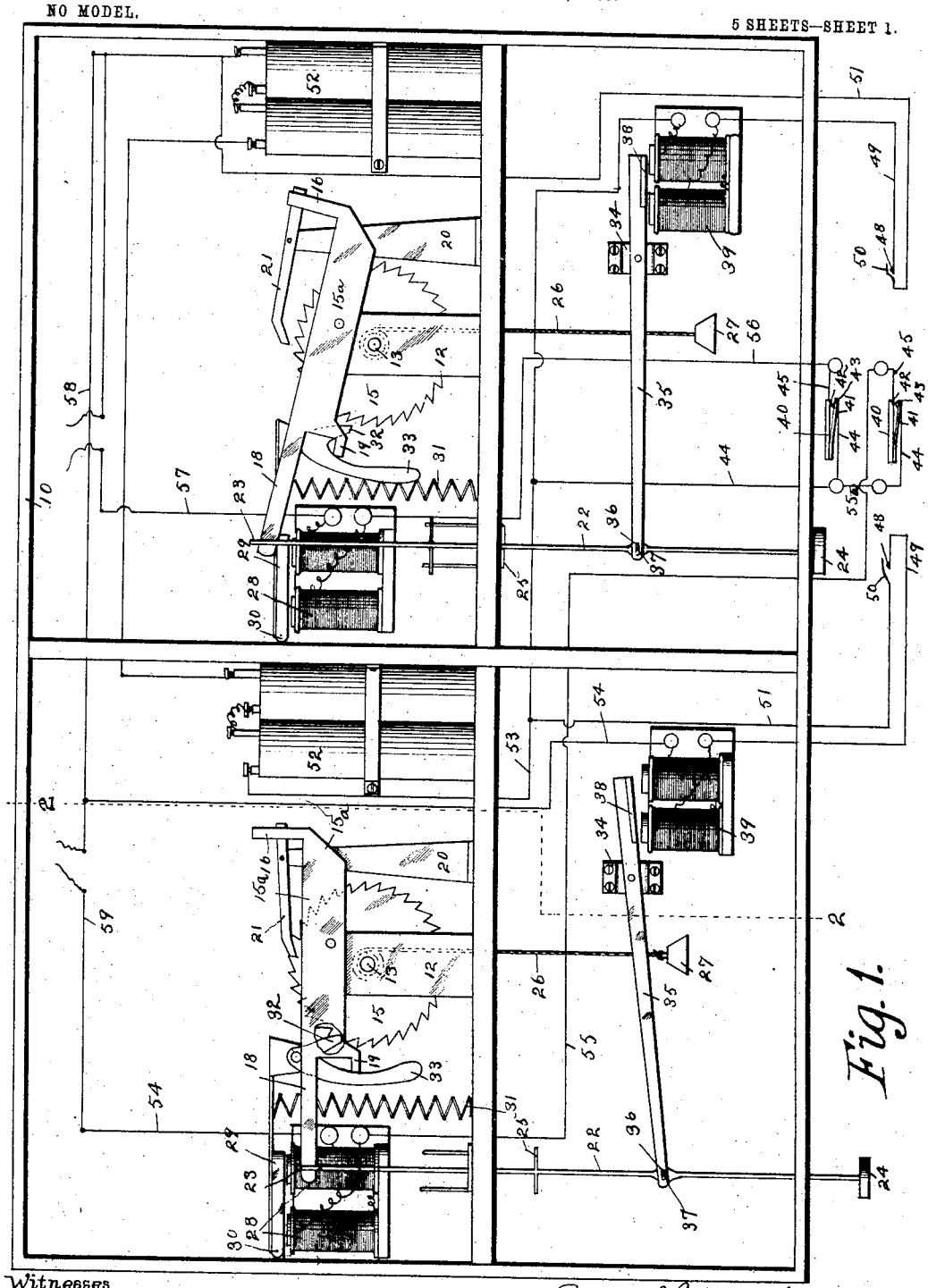


Fig. 1.

Witnesses

A. G. Hague

K. K. Leibrock

Inventor Porter S. Hotchkiss

By Orwig & Lane attys

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NO MODEL. 5 SHEETS—SHEET 2.

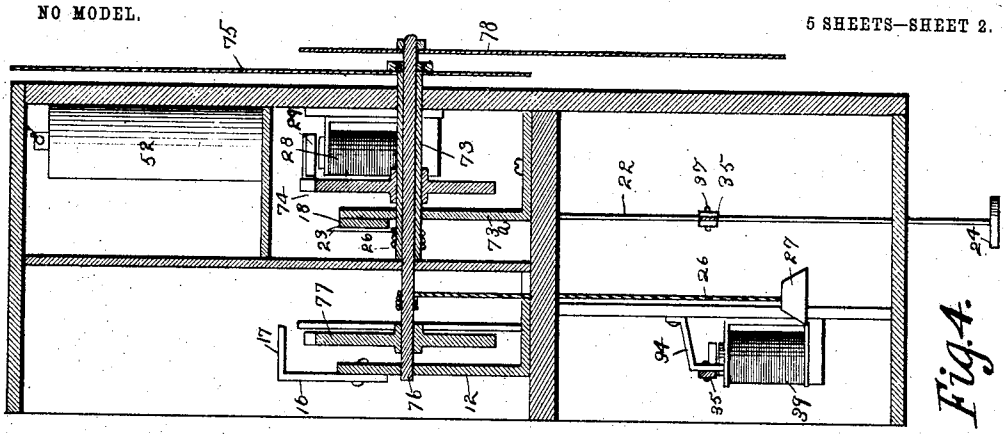


Fig. 4.

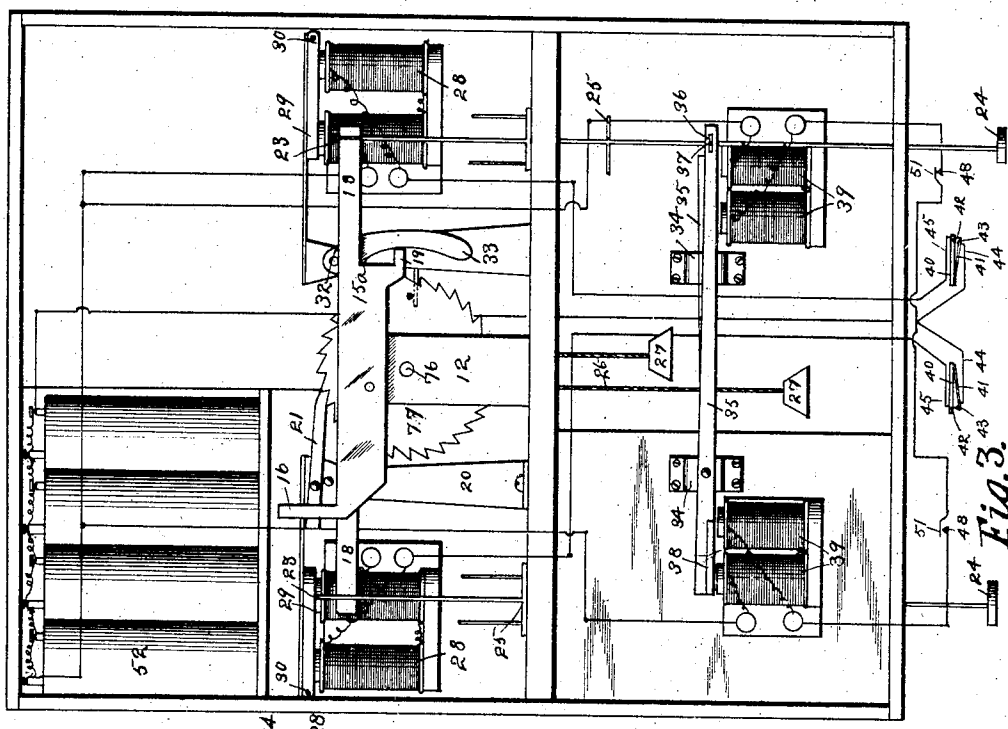


Fig. 3.

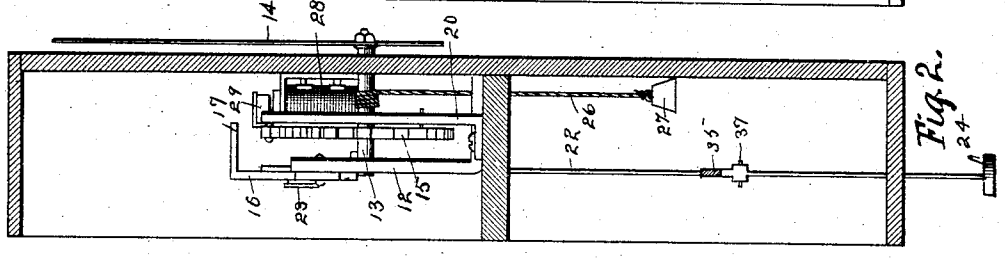


Fig. 2.

Witnesses

C. S. Hagner.

L. L. Leibrock

Inventor. Porter S. Hotchkiss.

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NO MODEL. 5 SHEETS—SHEET 3.

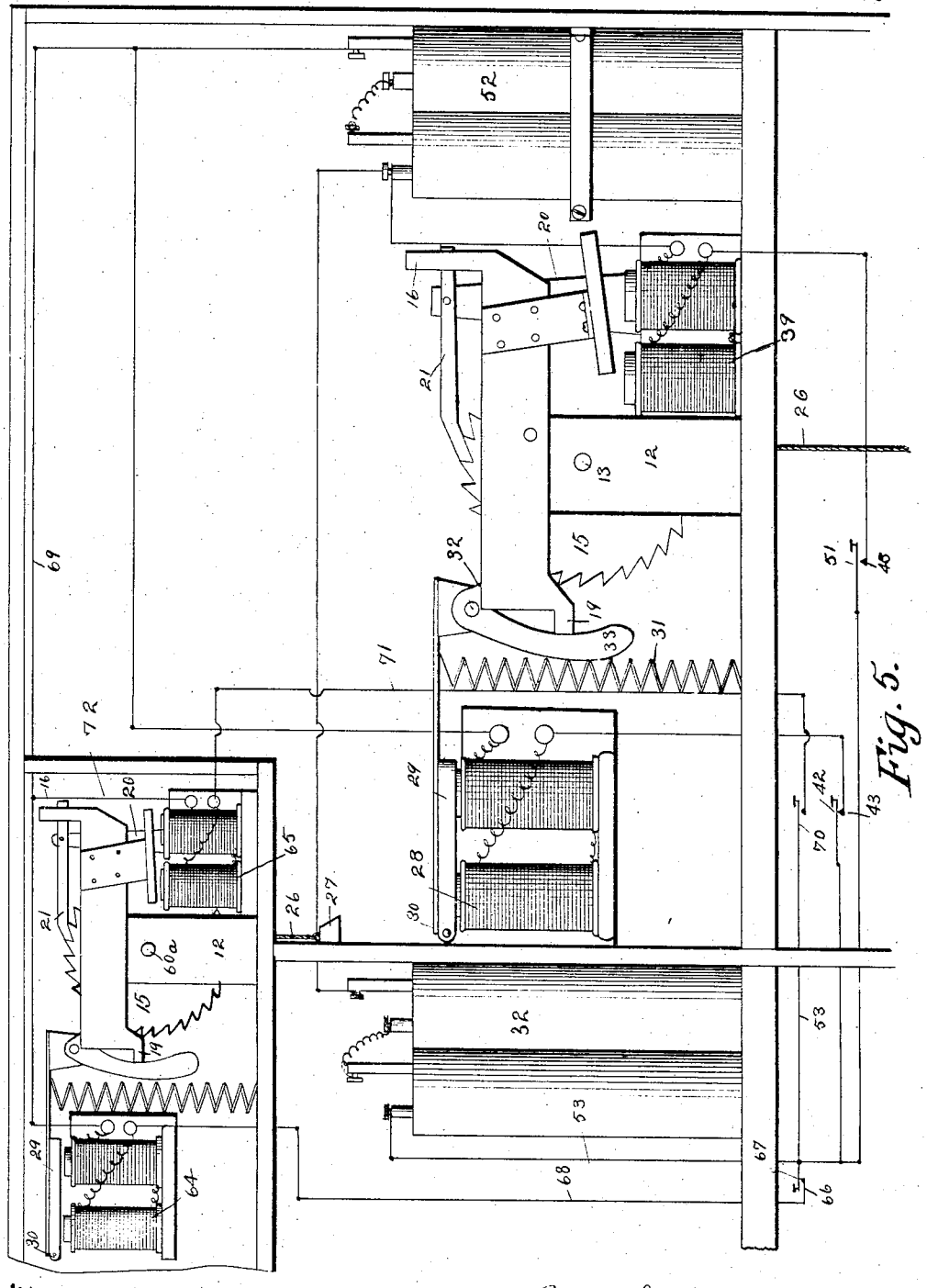


Fig. 5.

Witnesses

A. E. Hague

L. L. Leibrock

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NO MODEL. 5 SHEETS—SHEET 4.

Fig. 7.

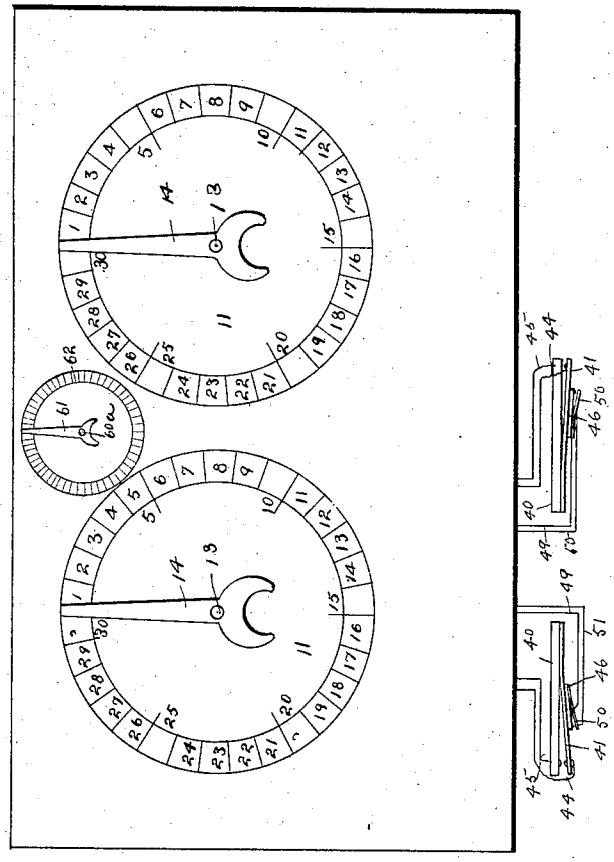


Fig. 9.

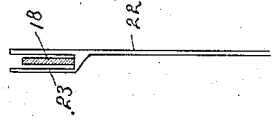


Fig. 6.

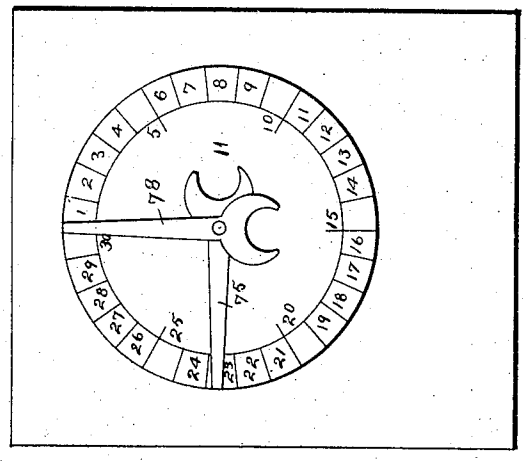
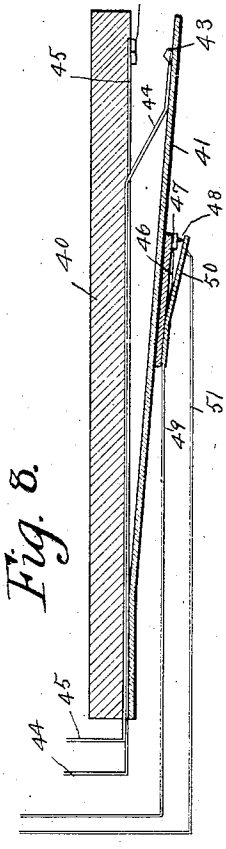


Fig. 8.



Witnesses

A. G. Hagner.

L. L. Leibrock.

Inventor Porter S. Hotchkiss

By Owing & Lane Attys

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P. S. HOTCHKISS.

ELECTRIC BILLIARD REGISTER.

APPLICATION FILED AUG. 6, 1903.

NO MODEL. 5 SHEETS—SHEET 5.

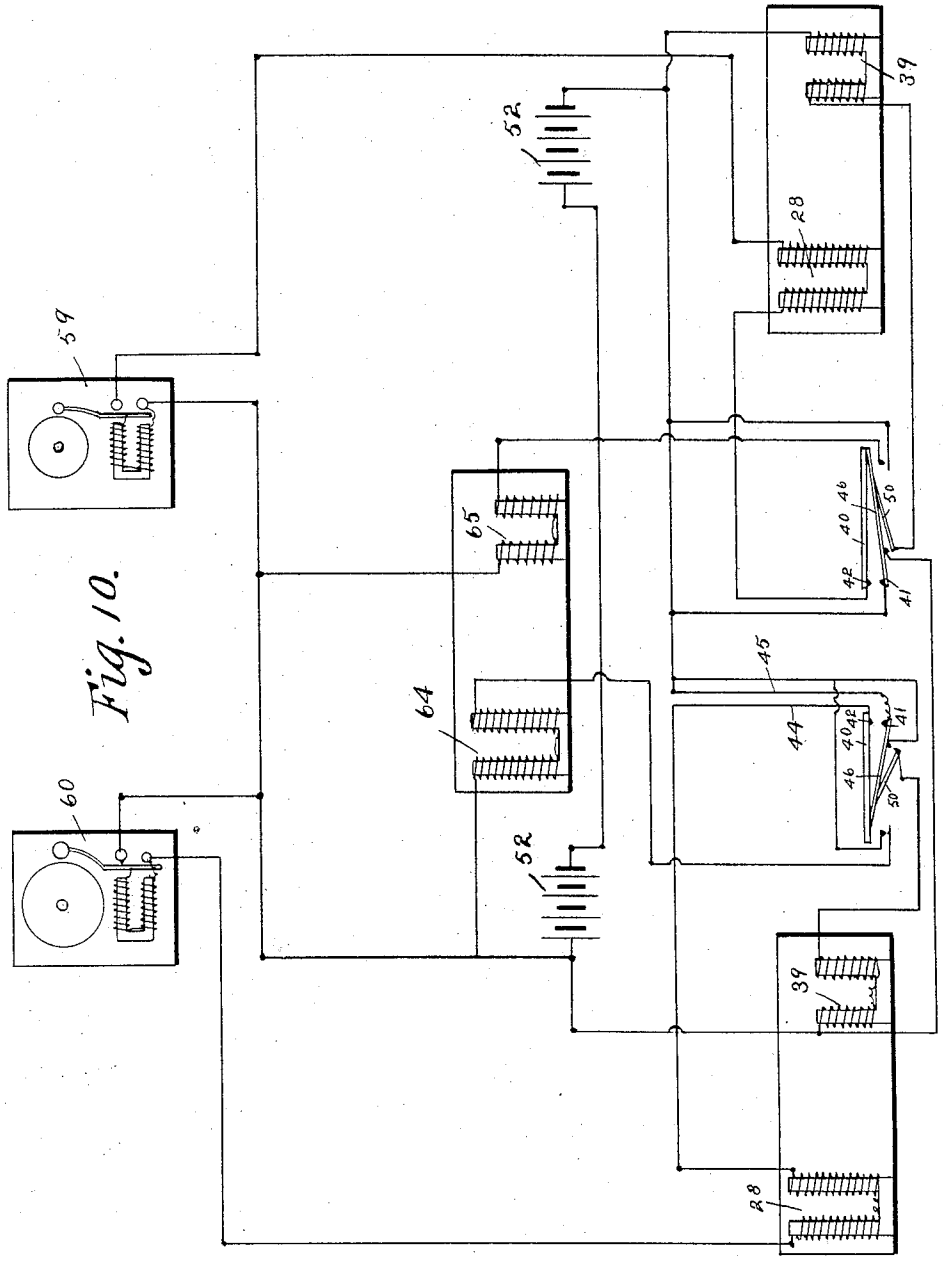


Fig. 10.

Witnesses
A. G. Hague.
L. L. Leibrock.

Inventor Porter S. Hotchkiss.
By Orwig & Lane Att'ys

No. 766,353. Patented August 2, 1904.

UNITED STATES PATENT OFFICE.

PORTER S. HOTCHKISS, OF LAKE CITY, IOWA, ASSIGNOR TO THE ELECTRIC BILLIARD REGISTER COMPANY, OF LAKE CITY, IOWA, A CORPORATION OF IOWA.

ELECTRIC BILLIARD-REGISTER.

SPECIFICATION forming part of Letters Patent No. 766,353, dated August 2, 1904.

Application filed August 6, 1903. Serial No. 168,428. (No model.)

To all whom it may concern:

Be it known that I, PORTER S. HOTCHKISS, a citizen of the United States, residing at Lake City, in the county of Calhoun and State of Iowa, have invented certain new and useful Improvements in Electric Billiard-Registers, of which the following is a specification.

The objects of my invention are to provide a machine of this class of simple, durable, and inexpensive construction especially designed for use in registering the scores in billiard games and for indicating to the players and others the exact scores as soon as made and also to indicate the average of the several players after the game has been finished.

More specifically, it is my object to provide a device of this class of ornamental and attractive appearance in which the dials or indicators are located on a support adjacent to the table upon which the game is being played and where it may be seen by the players and by onlookers and to provide a device of this class especially designed for permitting a score-keeper selected for the purpose to occupy a chair in position where he can observe the game and to operate the score-indicators by means of electric circuit-closers, which are by preference attached to the arms of the score-keeper's chair, so that the players themselves need not stop to register their scores and so that an impartial score-keeper may be selected who will register each score as made, to thereby avoid confusion and possible error in recording scores made by the players, and, further, in this connection it is my object to provide electric bells automatically sounded by the score-keeper each time the score-indicator is moved and to have bells of different sizes and tones for each score-dial, so that each player may know immediately after a point has been made whether or not the score-keeper has registered the score and whether or not the score-keeper has registered it upon the proper dial, because each player will soon become familiar with the tone of the bell corresponding to his dial, and the game may be continued rapidly and without the players looking up from the table, and yet each player may know at all times whether or not each score has been accurately registered on the proper dial.

A further object is to provide simple and inexpensive means by which the score-keeper may at the conclusion of a game cause the scoring-dials to be returned to the starting-point by pressing an electric circuit-closer located adjacent to the circuit-closers which are operated to indicate the scores.

A further object is to provide a device of this class with an independent dial to be operated by the score-keeper in the same manner as the other ones and designed to indicate a number of innings or times that each player has taken his turn throughout the progress of the game, so that upon the conclusion of the game the average number of points made by the players may be readily and quickly determined by dividing the indicated numbers on the score-dials by the indicated numbers on the dial for showing the averages.

My invention consists in certain details in the construction, arrangement, and combination of the various parts of the device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows a side elevation of the casing with one side removed, illustrating the mechanism of the preferred form of my invention. Fig. 2 shows a transverse sectional view through the indicated line 2 2 of Fig. 1. Fig. 3 shows a view similar to the one illustrated in Fig. 1 of a modified form of my intion therefor designed for use in connection with a single registering-dial and two indicators. Fig. 4 shows a vertical central transverse sectional view of same. Fig. 5 shows a view similar to Fig. 1 of another modification in which mechanism for operating the average registering-dial is illustrated. In this view the mechanism for operating one of the scoring-indicators is omitted. Fig. 6 shows a front view of the casing with the scoring-dial marked thereon, illustrating the form of my invention shown in Figs. 3 and 4,

in which both indicators are operated upon one dial. Fig. 7 shows a face view of the casing of the form in which two independent scoring-dials are shown and also the average dial and indicator. Fig. 8 shows an enlarged detail sectional view of the circuit-breakers in which the circuit-breaker for operating the scoring-indicators is combined with the circuit-breaker for releasing the scoring-indicator, so that the indicators may return to their starting-points. Fig. 9 shows an enlarged detail view of the upper end of one of the rods for manually releasing the scoring-indicators, so that they may return to the starting-point; and Fig. 10 illustrates diagrammatically the electrical circuits for operating the form of my invention in which there are two scoring-dials and one average-dial.

Referring to the accompanying drawings, I have used the reference-numeral 10 to indicate a casing or box to contain the operative mechanism. Formed on or fixed to one of the faces of the casing are two dials 11, arranged side by side and containing consecutively-arranged numbers around the edges thereof, as shown in Fig. 7. Mounted within the casing 10 are two standards 12, and the arbors 13 are supported in said standards and passed through the casing and projected beyond the central portions of the said dials, and an indicator or hand 14 is fixed to each arbor. Fixed to each of said arbors is a ratchet-wheel 15, having ratchet-teeth on its periphery corresponding in number to the numbers marked upon the face of the dial. I provide means for advancing this ratchet-wheel step by step when it is desired to score by the use of the machine as follows: Supported upon the standard 12 is a lever 15^a, having at one end an upward extension 16, provided with a laterally-projecting part 17, and on the other lever are the two arms 18 and 19. Mounted adjacent to the standard 12 is a second standard 20, and a pivoted pawl 21 is mounted at the upper end thereof. This pivoted pawl has one end which normally rests by gravity on the top of the ratchet-wheel 15, and its other end extends into the part of the extension 17, so that when the lever 15^a is tilted in one direction the extension 17 strikes upon the end of the pawl 21, and thereby elevates the pawl. The lever 15^a is tilted in the direction required for accomplishing the above-mentioned result by means of a rod 22, slidingly mounted in the machine-frame and having a forked upper end 23, into which the arm 18 is admitted. On the lower end of the rod 22 is a knob 24, by which the operator may manually elevate the said rod, and thus tilt the lever 15^a. However, the arm 18 on the lever may freely move upwardly without regard to the rod 22, and the upward movement of the rod 22 is limited by the stop 25. I have also provided means whereby the rod 22 will be electrically operated. The means will be hereinafter described. Wound upon the shaft 13 is a rope or cord 26, and a weight 27 is attached to the lower end thereof, said weight and cord tending to turn the ratchet-wheel 15 in a direction toward the pawl 21, so that when the said pawl 21 is elevated the ratchet-wheel may freely turn, but when the ratchet-wheel is moved in an opposite direction the said pawl will prevent its rearward movement.

Mounted adjacent to the opposite side of the ratchet-wheel 15 is an electromagnet 28, and an armature 29 is pivoted at 30 above the electromagnet and extends toward the ratchet-wheel 15. An extensile coil-spring 31 is provided for normally elevating the free end of the said armature, and pivoted to the armature is a pawl 32, normally held toward the ratchet-wheel and in engagement therewith by a curved weighted extension 33 on the pawl. This curved extension is in position to be engaged by the arm 19 on the lever 15^a, so that when the said arm 19 is elevated it will engage the extension 33, and thereby force the pawl 32 out of engagement with the ratchet-wheel. However, when the said arm 19 moves downwardly a slight distance it permits the pawl 32 to drop into engagement with the ratchet-wheel, and it is only when the lever 15^a is tilted to the position shown at the right of Fig. 1 that the extension 19 prevents the pawl from engaging the ratchet-wheel, and when the lever 15^a is in the position shown to the left in Fig. 1 then the arm 19 serves as a guide against which the extension 33 may slide while holding the pawl in engagement with the ratchet-wheel by the weight of the said extension 33. By this arrangement of parts it will be seen that when the armature 29 is moved downwardly toward the magnet 28 then the pawl 32 will engage the ratchet-wheel and move it one toothed space. When this is done, the pawl 21 prevents a backward movement of the ratchet-wheel, and the pawl 30 will be elevated by the spring 31 when the armature 29 is released from its magnet.

The means for electrically elevating the rod 22 comprises a bracket 34, secured to the casing and having a lever 35 pivoted thereto. In one end of the lever is a slot 36, through which a pin 37 is passed, and this pin is attached to the rod 22. On the opposite end of the lever 35 is an armature 38 adjacent to an electromagnet 39, so that when a current is passed through the magnet 29 it will attract the armature 38 and elevate the rod 22.

As will be seen from the foregoing description and from the drawings, each indicator or hand is provided with an electromagnet for moving it in one direction step by step and also with an electromagnet for releasing it, so that the weight may return it to its starting-point, and I have provided means for establishing circuits through these magnets as fol-

lows: Referring to Fig. 8 of the drawings, the reference-numeral 40 indicates a wooden bar or support, which is preferably attached to the under side of the arm of the chair, so that the score-keeper may have the circuit-breaker at a place that may be conveniently reached while watching the game. There are necessarily two of these devices, and I preferably attach one to each arm of a chair. Fixed to the part 40 is a spring 41, one end of which normally stands apart from the bar 40. Attached to the bar 40 is a contact-point 42, and attached to the spring 41 is a contact-point 43, so arranged that when the spring is forced toward the bar 40 these contact-points will engage each other. Connected with the contact-point 42 is an electrical conductor 45. Fixed to the spring 41 is a strip 46, having at one end an insulator 47, to which a contact-point 48 is attached, and a conductor 49 is connected with said contact-point 48. Fixed to the part 46 is a spring 50, designed to connect with the contact-point 48 when forced upwardly and to normally stand away from said contact-point, and attached to the spring 50 is a conductor 51. The reference-numeral 52 indicates an ordinary battery of four cells connected in series. Connected with the positive pole of one of the batteries is a conductor 53, one branch of which is connected with the conductor 51, another branch with the conductor 44, and a third branch with one of the electromagnets 39. In tracing the circuit from the first branch 51 of the conductor 53 the said conductor 51 communicates with the spring 50, where the circuit is broken and when said spring is pushed downwardly, which forms a contact with the contact-point 48, which is connected with the conductor 49. This conductor 49 leads to the electromagnet 39. A conductor 54 communicates with the magnet 39 and also with the electromagnet 28, and a conductor 55 communicates with the magnet 28 and also with the conductor 45, which conductor, as before explained, connects with the contact-point 42, at which point the circuit is broken. Connected with the contact-point 43 is the conductor 44, before described, and connected with this conductor 44 is a conductor 55^a, connected with the other one of the conductors 44. This second conductor 44 is connected with the circuit-breaker, and the circuit-breaker is connected with the conductor 45, and connected with the latter conductor 45 is a conductor 56, connected with the second electromagnet 28, and a conductor from this second electromagnet leads to the battery 52 and is indicated by the numeral 57. A branch 58 is connected with the conductor 54 and also to the conductor 57. By this arrangement of the wiring and assuming that the contact-points 42 and 43 of one of the circuit-closers is closed then a circuit is established through the electromagnet 28, with which the particular circuit-closer is directly connected, and the armature 29 is attracted to said magnet, and the hand or indicator corresponding with said magnet will be moved one space, the pawl 21 holding it against a return movement. If the contact-points 42 and 43 of the other circuit-closer are brought together, then the opposite one of the indicating-hands is moved one space, and this operation may be continued until the hands have performed a complete revolution. However, at any point throughout the movement of the hands they may be instantly returned to their starting-point when the operator forces together the contact-points 48 and 50, and when this is done the magnet 39, directly connected therewith, will attract its armature, and thereby tilt the lever 35 and operate the lever 45 in such manner as to throw both pawls out of engagement with the ratchet-wheel. Then the weight 27, connected with the hand-arbor, will automatically return the hand to its starting-point.

I have also provided means by which signal-bells may be automatically sounded each time that either one of the indicating-hands is advanced, so that the players may readily ascertain without looking up from the table whether or not the score they have made has been registered, and in this connection I have provided bells for this purpose of different sizes, and consequently of different tone, so that the player may note also whether or not the score he has made has been registered upon the proper dial. Included in the circuit which leads from the electromagnet 28 at the right side of the machine is an electric bell 59 of relatively small size, so arranged that when a circuit is completed through said magnet 28 the bell will ring, and included in the circuit from the left electromagnet 28 is an electric bell 60 of relatively large size, and consequently of different tone from the electric bell 59, and these bells are each sounded each time that a circuit is completed through the corresponding magnet 28.

In the modified form illustrated in Fig. 5 I have shown means for operating an indicating-hand for the purpose of denoting the players' averages. In this modification the devices for operating the indicating-hands on the two scoring-dials are exactly the same as in my preferred form, and in the illustration in Fig. 5 I have shown only one of such devices, it being understood that a corresponding one is to be placed on the opposite side. For the purpose of operating the scoring-indicator I provide an arbor 60^a, having an indicator 61 attached thereto and traveling around a dial 62, formed on the face of the inclosing casing. This arbor is provided with a ratchet-wheel 63, and this ratchet-wheel is automatically operated one to the space at a time by means of the electromagnet 64 and a mechanism operated by said magnet exactly like the mechanism for the same purpose that

is operated by the magnets 28. This device is also provided with an electromagnet 65, by which the lever that controls the pawls may be drawn out of engagement with the ratchet-wheel. The said magnet 64 is controlled by a circuit-breaker 66. This circuit-breaker is electrically connected by a wire 67 with the conductor 53, that leads from the battery 52, which is also connected with a conductor 68, which leads to the magnet 64. A conductor 69 is also connected with the magnet 64 and returns to the battery 52. For operating the electromagnet 65 as required to release the ratchet-wheel 63 I provide a circuit-breaker 70, electrically connected with the wire 53 and also with a wire 71, leading to the electromagnet 65, and leading from the electromagnet 65 is a conductor 72, connected with the return-wire 69. These contact-breakers 66 and 70 may be located at any suitable point adjacent to the other circuit-breakers, and when the first player has finished the score-keeper closes the circuit-breaker 66, and thus moves the indicating-dial 61 one space. Then when the first player's turn is again reached and he completes his second turn the operator again closes this circuit, so that the number of turns or innings that each player has had will be indicated upon said dial. Then when the game is finished the score-keeper may readily and accurately determine the average number of points made by each player during the progress of the game by dividing the score made by such player by the number of innings played.

In the modified form shown in Figs. 3 and 4 I have shown a structure in which the working parts are substantially the same as in the preferred form and yet two indicating-hands may be operated independently upon one dial. This permits the machine to be made of smaller size and has other desirable features which in some instances are of advantage. I shall describe in detail only that part of the structure of this modified form which differs from the structure of my preferred form. The reference-numeral 73 indicates a hollow sleeve rotatably supported in the sleeve 73 and having a ratchet-wheel 74 attached thereto and an indicating-hand 75 fixed to its outer end. For operating the ratchet-wheel 72 I have provided the magnet 28, and the mechanism controlled by said magnet is the same as in my preferred form, and this mechanism for advancing the ratchet-wheel is released and the ratchet-wheel returned to its starting-point the same as in my preferred form either by pushing upwardly upon the knob 24 or by establishing a circuit through the electromagnet 39, which controls the ratchet device governing the ratchet-wheel 34. Extended through the sleeve 72 is a shaft 76, projecting beyond both ends of the sleeve. On one end of the shaft 76 is a ratchet-wheel 77 and on the other end an indicating-hand 78. This modified form will be readily understood by assuming that the shaft 76 and the sleeve 73 are the mechanical equivalents of the shafts 13 of the form shown in Fig. 1, each being provided with the same means for advancing it step by step and also for returning it. Each is also provided with an independent indicator, the only difference being that both indicators move over one dial. Obviously both of the indicating-hands 75 and 78 are centered upon the same dial and the ratchet-wheel 77 is advanced step by step or returned to its starting-point by the same mechanism as is illustrated in my improved form. In Fig. 10 of the drawings I have illustrated diagrammatically the complete electric circuit required for operating the form of my invention which is partly illustrated in Fig. 5.

In practical use and assuming that two players are engaged in playing a game of billiards these players select a score-keeper, who seats himself upon the chair having on its arms the circuit-breakers of my device. The casing inclosing the dials and indicators are preferably secured to an elevated support, where they may be plainly seen by the players and the onlookers. When the first player makes a point in the game, the score-keeper closes the circuit-breaker which controls the magnet 28 of the dial which has been selected for that particular player, thus causing the indicator on said dial to advance one space and at the same time causing the bell corresponding with this dial to be sounded. Thus the player may know whether or not the score has been registered and also whether or not it has been registered on the proper dial. This operation is continued as long as the first player continues to score. When the second player commences, the operator closes the circuit-breaker which controls the other magnet 28, which circuit-breaker is preferably placed on the opposite arm of the bell from the first one. When this second circuit-breaker is closed, the hand on the second dial is moved and the other bell is sounded. Then when the second player has finished the operator closes the circuit-breaker which controls the magnet 64, thereby moving the indicating-hand on the dial for recording averages. This operation continues throughout the entire game. When the game is finished, the players may note by glancing at the scoring-dials just what records they have made, and then by dividing the scores thus made by the number indicated on the average-dial they may determine what average number of points they have made during each inning of the game. All of the indicating-hands may be readily and quickly returned to position by closing the circuit-breakers which control the magnets 39 and 65, or, if desired, the operator may return the hands to starting-point by pushing upwardly on the knobs 24.

Having thus described my invention, what

I claim, and desire to secure by Letters Patent of the United States therefor, is—

1. In an electric billiard-register, the combination of a dial, an indicator, electrically-operated means for moving the indicator step by step relative to the dial, automatic means for returning the indicator, and electrically-actuated means for releasing the returning means.

2. In an electric billiard-register, the combination of a dial, an indicator, electrically-operated means for moving the indicator step by step relative to the dial, automatic means for returning the indicator, and electrically-actuated means for releasing the returning means, and manually-operated means for releasing the returning mechanisms.

3. In an electric billiard-register, the combination of a dial, an indicator, means for advancing the indicator relative to the dial, automatic means for returning the indicator, electrically-operated means for releasing the return mechanism, and manually-operated means for releasing the return mechanism.

4. In an electric billiard-register, the combination of a number of dials, an arbor passed through each dial, an indicator on each arbor, a ratchet-wheel on each arbor, means for advancing each ratchet-wheel, said means comprising a lever, an electromagnet, an armature, a pawl carried by the armature and having an arm shaped to be engaged by said lever when the lever is tilted to thereby throw the pawl out of engagement with the ratchet-wheel, a second pawl pivotally supported and normally in engagement with the ratchet-wheel and shaped to be engaged by said lever when the lever is tilted and held out of engagement with the ratchet-wheel, a cord wound upon the arbor, a weight on the cord tending to return the arbor, an electromagnet, an armature for the magnet, means connected with the armature for tilting said lever, and manually-operated means for tilting said lever.

5. In an electric billiard-register, the combination of a number of dials, an indicator for each dial, a ratchet-wheel connected with each indicator, two pawls for advancing and holding each ratchet-wheel, independent, electrically-operated means for operating each of the advancing-pawls, independent, electrically-operated means for throwing both pawls of each ratchet-wheel out of engagement, and independent automatically-operated means for returning each indicator.

6. In an electric billiard-register, the combination of a number of dials, an arbor projecting through each dial, an indicator on each arbor, a ratchet-wheel on each arbor, a cord wound upon each arbor, a weight attached to each of said cords, means for independently operating each ratchet-wheel, said means comprising an electromagnet, an armature, a pawl carried by the armature normally in engagement with the ratchet-wheel and having an extension thereon, a pivoted pawl adjacent to the ratchet-wheel to prevent its return, and a lever pivotally supported and shaped to be capable of moving to position for engaging the extension of the pawl on the armature and also for engaging the other pawl to hold them away from the ratchet-wheel, and a means for releasing each ratchet-wheel, said means comprising an electromagnet, an armature moving to and from the magnet, a lever connected with said armature, and a rod connected with the lever and with the lever controlling said pawl, and a knob on said rod whereby it may be manually operated, arranged and combined substantially as and for the purposes stated.

7. In an automatic billiard-register, the combination of a number of scoring-dials, an indicator for each dial, electrically-operated means for advancing each indicator step by step, automatically-operated means for returning each indicator, electrically-operated means for releasing each indicator, an average-registering dial, an indicator therefor, electrically-operated means for advancing the average-registering indicator, automatic means for returning it, and electrically-operated means for releasing said returning mechanism.

8. In an electric billiard-register, the combination of a number of dials, an arbor passed through each dial, an indicator on each arbor, a ratchet-wheel on each arbor, means for advancing each ratchet-wheel, said means comprising a lever, an electromagnet, an armature, a pawl carried by the armature and having an arm shaped to be engaged by said lever when the lever is tilted to thereby throw the pawl out of engagement with the ratchet-wheel, a second pawl pivotally supported and normally in engagement with the ratchet-wheel and shaped to be engaged by said lever when the lever is tilted and held out of engagement with the ratchet-wheel, a cord wound upon the arbor, a weight on the cord tending to return the arbor, an electromagnet, an armature for the magnet, means connected with the armature for tilting said lever, and manually-operated means for tilting said lever, an average-recording dial, an arbor passed through it, an indicator on the arbor, a ratchet-wheel on the arbor, an electrically-operated pawl for advancing the ratchet-wheel, a gravity-actuated pawl for preventing its return, a tilting lever susceptible in position of holding both of said pawls away from the ratchet-wheel and electrically-operated means for moving said lever.

9. An electric billiard-register, comprising a number of scoring-dials, an indicator for each dial, an average-dial, an indicator therefor, a bell for each of said dials, electrically-operated means for simultaneously ringing the corresponding bell when either of the scoring-indicators are advanced, automatic

means for moving each indicator backwardly to its starting-point, and electrically-operated means for releasing said returning means.

10. An electric billiard-register, comprising in combination a number of scoring-dials and an average-recording dial, an indicator for each, independent means for advancing each indicator, bells for each of the scoring-indicators of different sizes and tones, an electric battery, an independent electromagnet for each indicator-advancing mechanism, a circuit-breaker for each indicator, and electrical conductors connecting the battery, the electromagnet, the circuit-breakers and the bells, arranged to actuate the corresponding bell when any of the magnets for advancing the scoring-indicators is included in the circuit by an operation of the corresponding circuit-breakers and electrically-released mechanism included in the same circuit for returning the indicators and circuit-breakers for each, for the purposes stated.

11. In an electric billiard-register, the combination of a dial, an indicator, electrically-operated means for advancing the indicator step by step, electrically-released means for returning the indicator to its starting-point, a battery, conductors connected with said battery and with said electric advancing and returning mechanisms, and circuit-breakers for said advancing and returning mechanisms comprising a bar 40 designed to be attached to the arm of a chair, a spring 41 fixed thereto, contact-points fixed to the bar and to the spring and having said conductors connected therewith, a bar 46 fixed to said spring 41, a contact-point 48 on the bar 46, a second spring 50 connected to the bar 46 and designed to engage the contact-point 48, and electrical conductors connected with the contact-point 48 and the spring 50, substantially as and for the purposes stated.

PORTER S. HOTCHKISS.

Witnesses:
E. W. TOWNSEND,
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