

(No Model.)

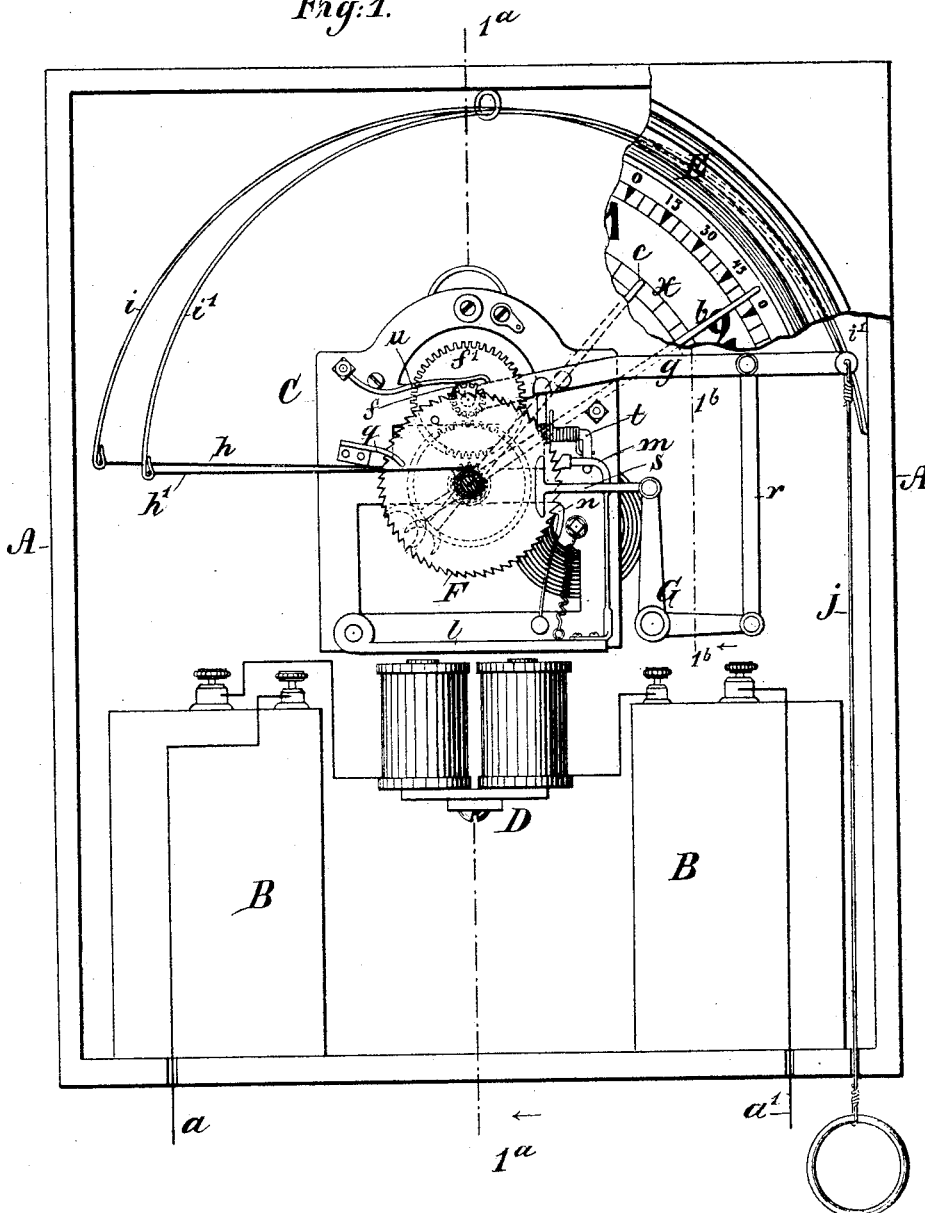
4 Sheets—Sheet 1.

E. D. WATERBURY & A. E. RANKIN.  
BILLIARD REGISTER.

No. 457,859.

Patented Aug. 18, 1891.

Fig. 1.



WITNESSES:

*E. W. Stuart*  
*Mayro Goldman*

INVENTOR:

*Emory W. Waterbury*  
*Archibald E. Rankin*

By *Henry Cornwell*  
Attorney.

(No Model.)

4 Sheets—Sheet 2.

E. D. WATERBURY & A. E. RANKIN.  
BILLIARD REGISTER.

No. 457,859.

Patented Aug. 18, 1891.

Fig. 1<sup>a</sup> A

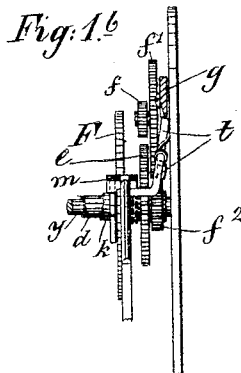
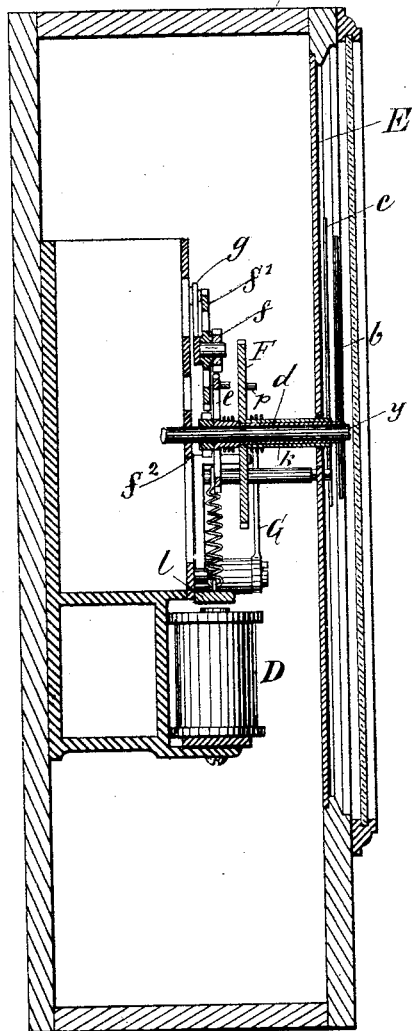
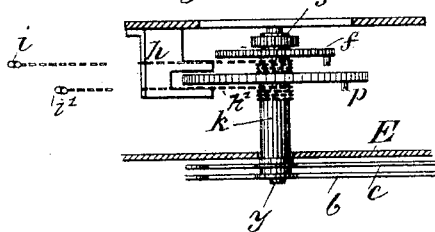


Fig. 1<sup>c</sup>



WITNESSES:

*E. W. Stuart*  
*Mayo Goldman*

INVENTOR:

*Emory D. Waterbury*  
*Archibald E. Rankin*

By *Henry Combs*  
Attorney.

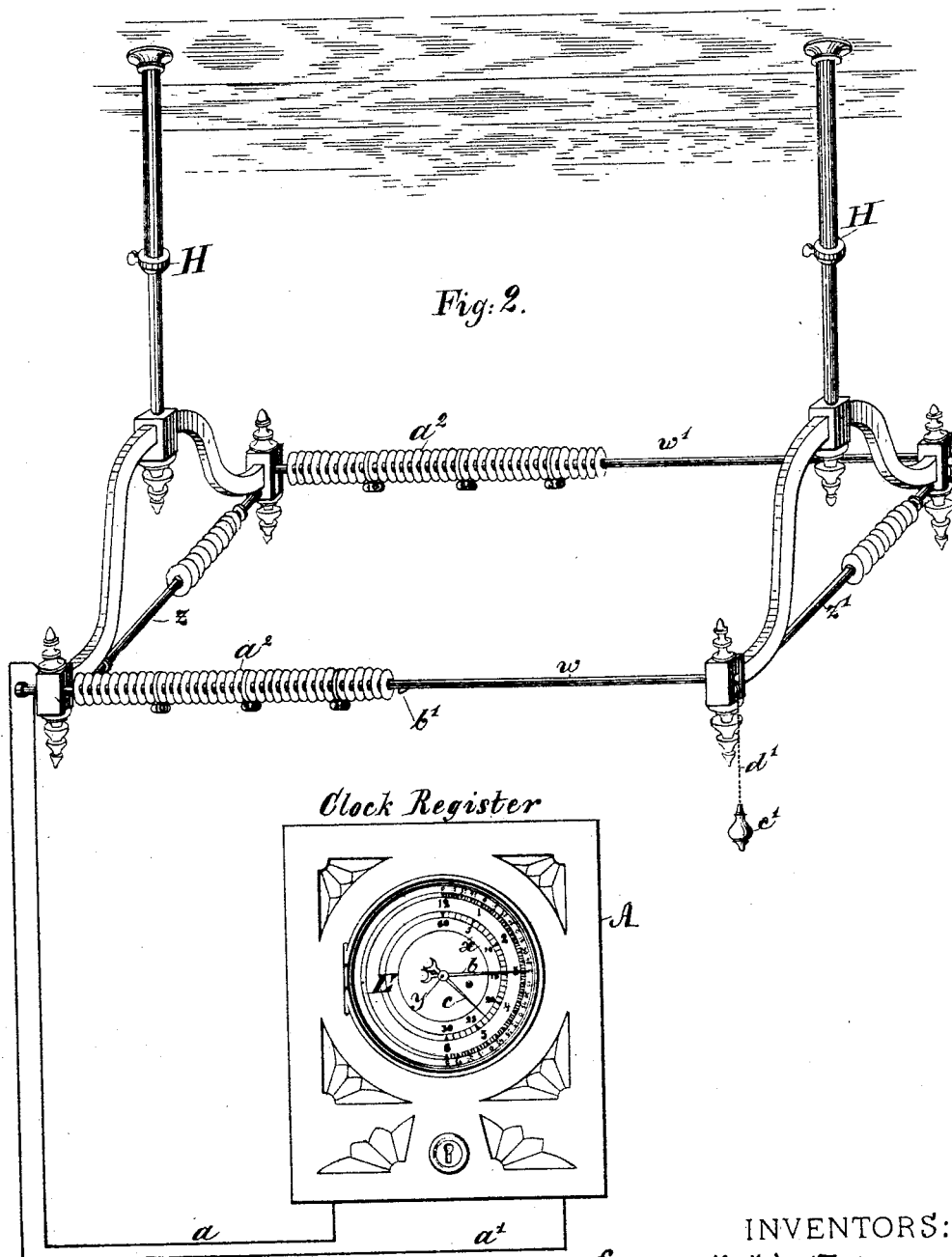
(No Model.)

4 Sheets—Sheet 3.

E. D. WATERBURY & A. E. RANKIN.  
BILLIARD REGISTER.

No. 457,859.

Patented Aug. 18, 1891.



WITNESSES:

*C. W. Stuart*  
*Mayr Goldmann*

INVENTORS:

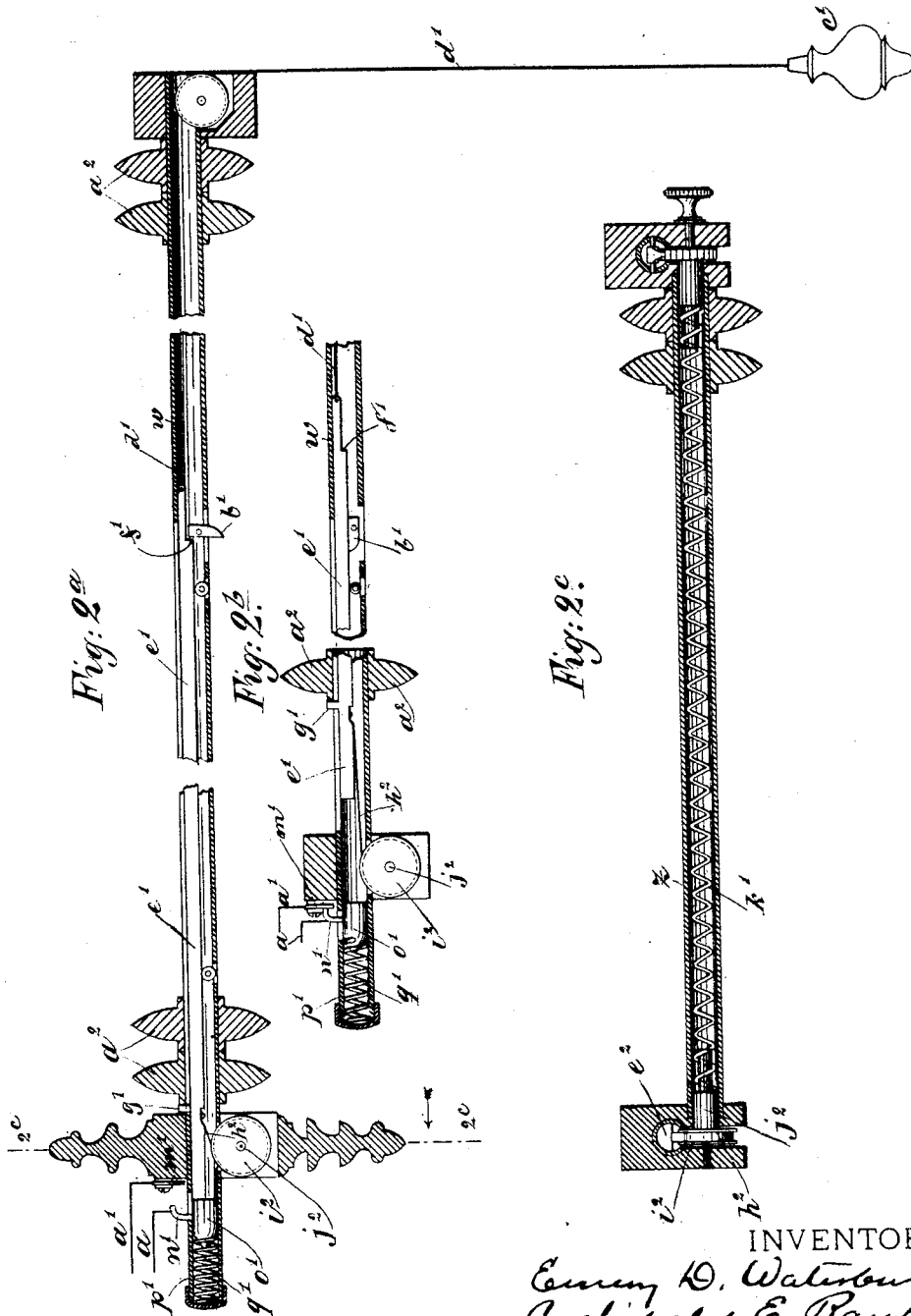
*Ernest W. Waterbury*  
*Archibald E. Rankin*

By *Henry Gossard*  
Attorney.

E. D. WATERBURY & A. E. RANKIN.  
BILLIARD REGISTER.

No. 457,859.

Patented Aug. 18, 1891.



WITNESSES:

*Eros Stuart*  
*Mayro Goldman*

INVENTORS.

*Ernest D. Waterbury*  
*Archibald E. Rankin*

*By Henry Conner*  
Attorney.

# UNITED STATES PATENT OFFICE.

EMERY D. WATERBURY AND ARCHIBALD E. RANKIN, OF SALT LAKE CITY,  
UTAH TERRITORY, ASSIGNORS OF THREE-FIFTHS TO ALLEN W. McEOWEN,  
JUDSON P. FOWLER, AND FRANK A. MARCHER, ALL OF SAME PLACE.

## BILLIARD-REGISTER.

SPECIFICATION forming part of Letters Patent No. 457,859, dated August 18, 1891.

Application filed October 18, 1890. Serial No. 368,561. (No model.)

*To all whom it may concern:*

Be it known that we, EMERY D. WATERBURY and ARCHIBALD E. RANKIN, both citizens of the United States, and residents of Salt Lake City, county of Salt Lake, in the Territory of Utah, have invented certain Improvements in Billiard-Registers and the Like, of which the following is a specification.

Our invention relates to the devices for registering games played, and particularly such games as billiards, bagatelle, &c.; and the object is, in part, to provide a means whereby each game is registered at its beginning through the medium of electricity on a clock-register or registering apparatus in the office or at the bar; in part to provide a suitable clock-register, and in part to provide means whereby the players must automatically effect the registry.

Our invention will be fully described hereinafter, and its novel features carefully defined in the claims.

In the drawings which serve to illustrate our invention, Figure 1 is a face view of the clock-register with the dial and hands removed. The hands, however, appear in dotted lines, together with a fragment of the dial. Figs. 1<sup>a</sup>, 1<sup>b</sup>, and 1<sup>c</sup> are detail views illustrating the mechanism of the clock-register, Fig. 1<sup>a</sup> being a vertical section on line 1<sup>a</sup> 1<sup>a</sup> in Fig. 1. Figs. 1<sup>b</sup> and 1<sup>c</sup> illustrate details of the device, Fig. 1<sup>b</sup> being a fragmentary section on line 1<sup>b</sup> 1<sup>b</sup> in Fig. 1, and Fig. 1<sup>c</sup> a fragmentary plan of the hands and their sleeves on the clock-arbor. This view shows, also, the devices for returning the hands to their respective starting-points. Fig. 2 is a perspective general view of a billiard-tally connected with the clock-register and constructed according to our invention. Figs. 2<sup>a</sup>, 2<sup>b</sup>, and 2<sup>c</sup> illustrate details of the device seen in Fig. 2, but on a larger scale. Fig. 2<sup>a</sup> is a longitudinal section of a side bar, showing the parts in their normal position. Fig. 2<sup>b</sup> is a fragmentary view of the same, showing the slide in the side bar shifted, and Fig. 2<sup>c</sup> is a longitudinal section of a transverse bar in the plane of the line 2<sup>c</sup> 2<sup>c</sup> in Fig. 2<sup>a</sup>.

Only one-half of the graduations of the dial are shown in Fig. 2; but it will be under-

stood that the graduations extend all the way around.

We will first describe the "clock-register," so called, which is illustrated in Figs. 1, 1<sup>a</sup>, 1<sup>b</sup>, and 1<sup>c</sup>. In Fig. 2 this register is shown in front elevation on a small scale.

A is a suitable casing containing the mechanism. B is a battery or electrical generator, which may or may not be in the register-casing.

C is an ordinary clock mechanism, which it will not be necessary to minutely describe.

D is an electro-magnet in an open circuit with the battery B. *a a'* are the circuit-conductors leading out of the casing. When this circuit is closed, the magnet D will be excited.

E is the dial of the clock-register, (see Fig. 2,) on which are the usual numbered graduations indicating the hours and minutes, as on a clock-dial, and in addition to these a series *x* of numbered graduations for the games.

On the central clock-arbor *y* are mounted the time-hand *b*, which is an "hour-hand," and the game-indicating hand *c*. The time-hand *b* is driven normally by the clock-train and the hand *c* by a pawl actuated by the magnet D. On the sleeve *d*, which carries the time-hand *b*, is a wheel *e*, which gears with a pinion *f*, and this pinion is fixed to a wheel *f'*, which gears with a pinion *f''*, fixed on the central clock-arbor *y*. Thus the time-hand is driven from said arbor *y*. The pinion *f* and wheel *f'* are carried by a rocking lever *g*, so that when said lever is rocked on its fulcrum they will be lifted out of gear, and then the time-hand will not be driven by the clock mechanism, although the latter will continue to run. On the sleeve *d* of the time-hand is wound a cord or chain *h*, attached to a spring *i* of some kind. When the time-hand is moving around the dial under the influence of the clock mechanism, the chain *h* will be wound upon the sleeve *d*, the spring *i* being put under tension, and when the lever *g* is rocked and the gearing disengaged the spring *i*, acting through chain *h*, will return the time-hand *b* to "12" on the dial, this movement being limited by a suitable stop. The lever *g* is rocked by means of a cord, chain, or the like *j*, which passes out of the

casing A. The clock, as herein shown, is only designed to operate the time-hand about twelve hours, as the stop will not permit this hand to pass but once about the dial, when it must go back to "12."

The game-indicating hand *c* has a sleeve *k*, which slips over the sleeve *d* of the time-hand, and turns thereon freely. On this sleeve is fixed a ratchet-wheel F, which has as many teeth as there are graduations *x* on the dial, each graduation (in this case sixty) indicating a game. The armature *l* of the magnet D carries a spring-pawl *m*, which acts as said armature vibrates to rotate said wheel intermittently tooth by tooth. Thus each time the circuit is closed through the magnet the pawl *m* is drawn down and the wheel F moved to the extent of one tooth.

*n* is a stop-pawl to prevent back rotation of wheel F. When the pawls *m* and *n* are disengaged from the teeth of wheel F, this wheel and the game-indicating hand *c* are rotated backward until the hand stands at "zero" or "60" by means of a chain or cord *h'*, wound on the sleeve *k*, and a spring *z'*, similar to the spring and chain described with respect to the time-hand. The movement of the hand *c* is limited by a suitable stop. In this case the stop is a pin or screw *p* in the ratchet-wheel F, engaging a fixed arm *q*. The pull on the cord *j* is made to disengage the pawls *m* and *n* simultaneously with the rocking of lever *g* by mechanism we will now describe.

G is an elbow-lever, one arm of which is coupled by a link *r* to the operating-arm of lever *g*, whereby both levers are rocked in unison. To the upright arm of the lever G is coupled a T-headed pull *s*, which engages both pawls *m* and *n* and draws them simultaneously out of engagement when the lever G is rocked.

When the cord *j* is pulled and the lever *g* raised, so as to disengage the gears, one branch of a little spring-actuated rocking-lever *t* snaps under said lever and prevents the lever-spring *u* from depressing it far enough to allow the gear-wheel to engage. The other outwardly-projecting arm of the lever *t* stands under the hook-like armature-pawl *m*.

In describing the operation let us suppose the clock mechanism to be running, the hands *b* and *c* at the starting-point—i. e., at "12" and "60," respectively, on the dial. Now if the circuit be closed in any manner between the conductors *a* and *a'* the magnet D will be excited and will attract its armature *l*, the pawl *m* will be drawn down, and ratchet-wheel F rotated one tooth, thus setting the hand *c* at "1" of the series of graduations *x*; but in being drawn down the hook-like pawl *m* will engage the arm of the spring rocking-lever *t*, thus rocking said lever and freeing lever *g*. The spring *u* now depresses this lever and puts the gearing into engagement and the clock mechanism begins to move the time-hand *b* about the dial. Every time thereafter the closing of the circuit through the

magnet moves the hand *b* over the dial and records one. Now if we employ a device whereby the players at the beginning of each game are compelled to close the circuit through the magnet it will readily be seen that the clock-registering mechanism just described will show the time occupied by the players and the number of games they have played. Before proceeding to describe the means we employ for this purpose we would say that at the close of the day or at any time the clerk or attendant has only to pull the pendant attached to the cord *j* when the hands of the register will both be set to the starting-point and the gearing will be disengaged, so that the clock may run on, but it will not actuate the time-hand.

Figs. 2, 2<sup>a</sup>, 2<sup>b</sup>, and 2<sup>c</sup> illustrate the device we employ in connection with billiard tallies or counters, whereby the players must of necessity register or indicate on the registering apparatus already described every game they play and set the time-hand in motion.

Suspended over the billiard-table or near it is a frame for the "buttons" or counters. This frame comprises two main or longitudinal bars *w* and *w'* and two transverse bars *z* and *z'*. The buttons *a*<sup>2</sup> on the bar *w* are used by one of the players for counting the points made by him in the game and those on the bar *w'* are used by the other player for the same purpose. The buttons on the transverse bars are or may be used by the respective players for counting or tallying the games won. The buttons on the bar *w'*, as well as those on bars *z* *z'*, are free to be moved along the same to and fro, like the buttons on the ordinary wire over a billiard-table, and these will be used by the player who discounts the other, if one be more skilled than the other. The reason for this choice will be explained.

At the beginning of the game the player who used the buttons on the bar *w* finds them all pushed over to one end of same to the left, as seen in Fig. 2, and before beginning the play he pushes or slides them along the bar to the right-hand end thereof; but in order to do this he must press in a beveled latch *b'*, which projects from the bar *w* at about its middle point. The pressing in of the latch and the shifting of the buttons is effected by pulling on the suspended drop *c'* within his reach, which drop is attached to a cord or chain *d'*. This chain extends into the hollow of the bar *w*, which is tubular, and is there secured to the end of a long slide *e'*, which is provided with a shoulder *f'*, adapted to engage the inner upper end of the pivoted gravity-latch *b'* when the chain *d'* is pulled and turn said latch into a horizontal position, as seen in the detached view, Fig. 2<sup>b</sup>. When in this position, the latch is wholly within the hollow of the bar *w* and out of the way of the buttons. The tubular bar *w* has a longitudinal slot in its upper side, and a stud *g'* on the slide *e'* projects out through this slot and takes behind the buttons on the bar, whereby

a continuous pull on the chain  $d'$  first presses in the latch, so as to get it out and hold it out of the way, and then, through the medium of the stud  $g'$ , slides all the buttons along the bar to the right-hand end thereof beyond the latch. When the drop  $c'$  is released, the stud  $e'$  is retracted by a spring, as will now be described.

The slide  $e'$  will be quite long—indeed, considerably longer than the space occupied by the buttons on the bar—and at its rear end (at the left in the drawings) it is secured to a chain, steel ribbon, or similar flexible connector  $h^2$ , which winds upon a drum or pulley  $i^2$  on a shaft  $j'$ , rotatively mounted in the transverse bar  $z$ , which is tubular. To this shaft is secured one end of a long coil-spring  $k'$ , similar to that of a curtain-roller, and when the drop  $c'$  is pulled the shaft is rotated and this spring wound torsionally and put under tension, and when the pull is released the spring acts, as described, to retract the slide  $e'$ . The spring  $k'$  may be put under the proper tension primarily, or it may be provided with means for regulating its tension from time to time. Whenever the drop  $c'$  is pulled, the electric current, which includes the conductors  $a$   $a'$ , the battery  $B$ , and the coils of the magnet  $D$ , is closed by means that we will now describe. One of the said conductors, as  $a'$ , is connected electrically with a contact-piece, as  $m'$ , on the frame at the corner piece where the bar  $w$  meets the transverse bar  $z$ , and the other conductor, as  $a$ , is attached to a moving contact-piece  $n'$ . This latter contact-piece is connected through a slot with a slide  $o'$  in a tube  $p'$ , which tube forms a prolongation of the tubular bar  $w$ . A light spring  $q'$  is placed in the tube  $p'$  behind the slide  $o'$ , and this spring tends to keep the moving contact-piece  $n'$  pressed up to and against the piece  $m'$ , which would close the circuit; but a rear extension of the slide  $e'$ , which extends back into tube  $p'$ , keeps the moving contact-piece pressed back normally, the spring  $k'$  being stronger than the spring  $q'$ . When the slide  $e'$  is drawn forward by a pull on the drop  $c'$ , the spring  $q'$  will insure the closure of the circuit.

The player who discounts his antagonist and who uses the buttons on the bar  $w'$  may move his buttons to and fro at will without interfering with the register, and the other player, using the buttons on rod  $w$ , may move the buttons back in counting over the pivotal latch, which will yield to allow them to pass when moved in that direction.

The frame carrying the buttons is secured to the ceiling of the room by means of telescopic suspenders  $H$   $H$ , which permit the frame to be suspended at the proper height above the table. The telescopic feature is not, however, essential. It is intended that the buttons shall be so high that they can only be reached by the cues of the players; but the drop  $c'$  may be reached conveniently with the hand.

Having thus described our invention, we claim—

1. In a game-register, the combination, with the clock mechanism and its dial, the two hands fixed to sleeves which turn freely and independently on the clock-arbor, the said sleeves, the shiftable intermediate gearing whereby the time-hand is driven from the clock-train, the electro-magnet and its armature, the pawl carried by said armature and engaging the teeth of a ratchet-wheel fixed on the sleeve of the game-indicating hand, and the said ratchet-wheel, of the spring-actuated rocking lever  $t$ , one arm of which is engaged by the hooked extremity of the armature-pawl and the other arranged to hold the intermediate gearing out of gear, whereby when the said armature-pawl is actuated the game-indicating hand is advanced and the time-hand put into gear with the clock mechanism, as set forth.

2. In a game-register, the combination, with the clock mechanism and its arbor, the time and game indicating hands, the respective sleeves  $d$  and  $k$ , mounted to turn about the clock-arbor, the ratchet-wheel  $F$  on the sleeve  $k$ , the pawls  $m$  and  $n$ , which engage said ratchet-wheel, the coupled levers  $g$  and  $G$ , the intermediate gearing  $f$  and  $f'$ , carried by the lever  $g$  and adapted to connect the clock-train with the sleeve  $d$ , the pull  $s$ , coupled to lever  $G$  and engaging the pawls  $m$  and  $n$ , means, substantially as described, for rocking the levers  $g$  and  $G$  simultaneously, and means, substantially as described, for moving the hands back to their respective starting-points when their sleeves are disengaged.

3. The combination, with a game-register adapted to be actuated by the closing of a normally-open electric circuit, the said circuit, and a generator in and forming a part of the same, of the means whereby the player closes the said circuit at the beginning of each game, said means comprising a fixed contact-piece connected electrically with one pole of the generator, a movable contact-piece, a light spring which tends to close the circuit at the contacts, the tubular bar  $w$  and the buttons  $a^2$  thereon, the spring-retracted slide in said bar, which slide holds the movable contact-piece normally away from the fixed contact, the latch  $b'$ , pivoted in a slot in the bar  $w$  and adapted to be tilted and moved in by a part of the said slide when the latter is drawn out, and the cord by which said slide is drawn out, substantially as set forth.

4. The combination, with a game-register adapted to be actuated by the closing of a normally-open electric circuit, the said circuit, and a generator in and forming part of the same, of the slotted tubular bar  $w$ , the latch  $b'$ , pivoted in said bar and adapted to be tilted and moved into same, the long slide  $e'$  in said bar provided with a stud which projects out through the slot in the bar, the operating-cord attached to the slide  $e'$ , the fixed contact-piece  $m'$ , connected electrically with

one pole of the generator, the movable contact-piece  $n'$ , connected with the other pole of the generator, its slide  $o'$ , the light spring  $q'$  behind the slide  $o'$ , the flexible connector  $h^2$ , attached to slide  $e'$ , the drum  $i^2$  on which said connector is wound, the spring  $k'$ , arranged in the tubular transverse bar  $z$  and connected with the shaft of said drum and the said bar  $z$ , the bar  $e'$  being arranged to  
10 press back the slide bearing the movable

contact-piece when retracted by the spring  $k'$ , substantially as and for the purpose set forth.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

EMERY D. WATERBURY.  
ARCH. E. RANKIN.

Witnesses:

THOMAS R. THOMPSON,  
LE ROY MANSFIELD.