

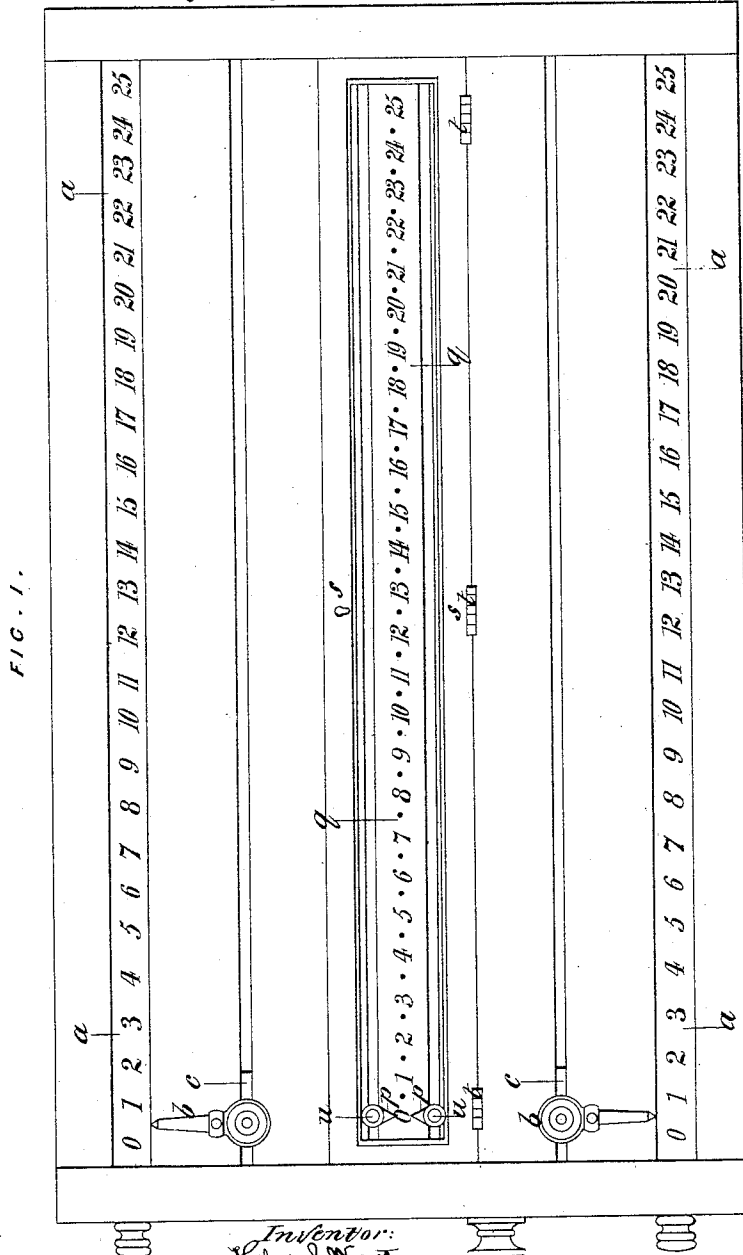
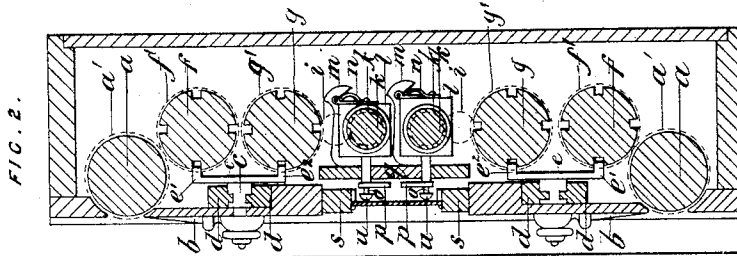
(No Model.)

3 Sheets—Sheet 1.

H. S. WOOSTER.
BILLIARD SCORE KEEPER AND GAME COUNTER.

No. 470,275.

Patented Mar. 8, 1892.



Witnesses:

M. F. Boyle

Charles R. Searle.

Inventor:

H. S. Wooster

By his attorney John D. Searle

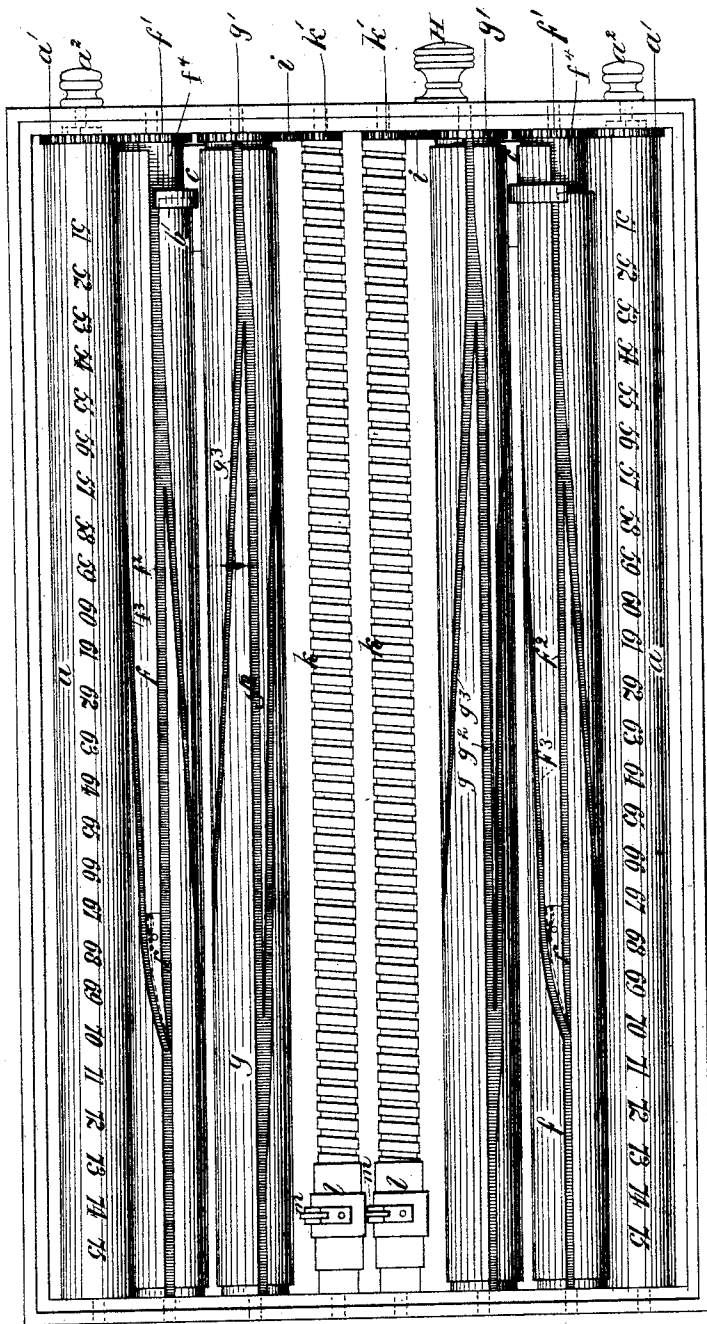
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Fig. 3. Rear View.



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(No Model.)

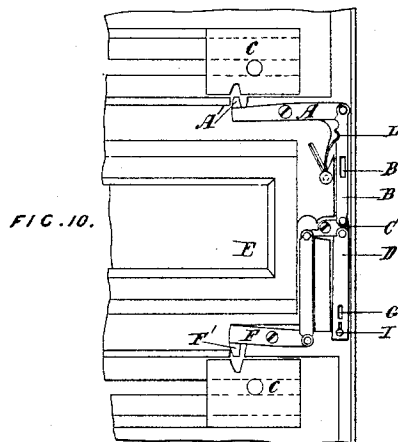
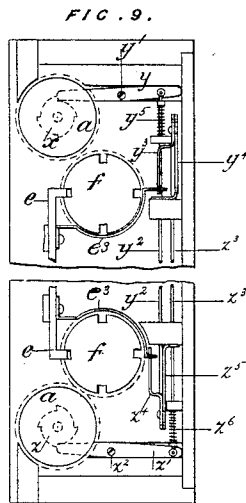
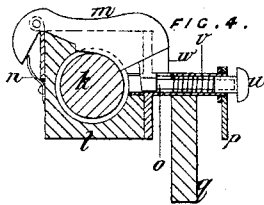
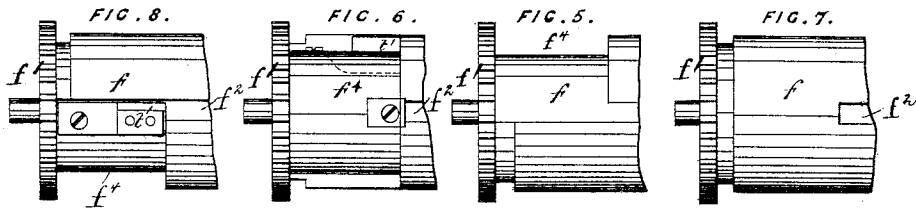
3 Sheets—Sheet 3.

H. S. WOOSTER.

BILLIARD SCORE KEEPER AND GAME COUNTER.

No. 470,275.

Patented Mar. 8, 1892.



Witnesses:

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UNITED STATES PATENT OFFICE.

HERBERT SIDNEY WOOSTER, OF BATH, ENGLAND.

BILLIARD-SCORE KEEPER AND GAME-COUNTER.

SPECIFICATION forming part of Letters Patent No. 470,275, dated March 8, 1892.

Application filed June 2, 1891. Serial No. 394,826. (No model.)

To all whom it may concern:

Be it known that I, HERBERT SIDNEY WOOSTER, a subject of the Queen of Great Britain and Ireland, residing at Bath, in the Kingdom of Great Britain and Ireland, have invented a certain Apparatus for Scoring the Game of Billiards and Indicating the Number of Games Played, of which the following is a specification.

The invention consists in an improved appliance for scoring the game of billiards and affording a return of the number of games played. The appliance is, therefore, a provision against false returns by attendants as to money due by them to proprietors of billiard-tables.

Referring to the accompanying drawings, Figure 1 represents a front elevation, and Fig. 2 a partial vertical transverse section, of my improved appliance for scoring at the game of billiards and giving a return of the number of games played. Fig. 3 represents a rear elevation, the cover of the back being removed and the pointers at the mid-height, which I term the "games-register," being traversed to their full extent to register twenty-five games. Figs. 4 to 8 are on a larger scale. Fig. 4 is a cross-section of the uppermost of the two endless screws, which extend horizontally across the machine at the mid-height to register the number of the games. Figs. 5, 6, 7, and 8 are front views of one end of one of the rollers, turned in four different positions. Figs. 9 and 10 are outline drawings of the same scale as Figs. 1, 2, and 3. Fig. 9 is a vertical section of the parts near the top and bottom of the machine, the middle parts being broken away. Fig. 10 is a front elevation showing the mechanism which connects the upper and lower parts of the machine and makes their action dependent on each other. This is useful under certain conditions.

Similar letters of reference indicate like parts in all the figures where they appear.

Toward the top and bottom, respectively, of the machine are the usual marking-rollers *a*, bearing numerals from "1" to "100," arranged in series. I have made them four series of twenty-five each.

In front of the rollers *a* are the pointers *b*, which may for convenience in description be termed the "units-indicators," by which the

"points" are marked by simply moving the pointers along from left to right.

As the action is similar in both sets of indicating mechanism at the top and bottom, respectively, it will simplify description at first to set forth the operation with respect to one set only—the upper set.

The pointer *b* is secured to a carriage or plate *c*, which is free to slide on rails *d*, Fig. 2, fixed behind the face of the appliance, and carries a yoke *e*, having a short arm *e'* at top and *e''* at bottom projecting backward into grooves provided in rollers *f* and *g*, arranged parallel with the rollers *a*, and which perform important functions. The roller *a* is fitted with a toothed wheel *a'*, gearing with a toothed wheel *f'*, fixed on the roller *f*. Each roller *g* has a toothed wheel *g'* gearing with a pinion *i*, which latter gears with toothed wheel *k'*, fixed on the corresponding endless screw *k*, which works through an easy-fitting sleeve *l*, a separate view of which sleeve, on an enlarged scale, is shown by Fig. 4. Each sleeve *l* carries a pivoted lever *m*, which is urged downward by the springs *n*, so as, when permitted, to engage in the helical groove of the screw *k*.

Upon the spindle *o*, extending outward to the front from the sleeve *l*, is carried a pointer *p*, for indicating the number of games and half-games played and scored by the units-indicators *b*. The pointers *p* may, for convenience in description, be termed the "games-indicators." Behind them is a flat plate or board *q*, bearing numerals "1" to "25," arranged at equal distances apart in regular sequence, each major graduation—that is to say, from one numeral to another—being of the value of one game of one hundred points as spaced upon the roller *a*. Each roller *f* and *g* has four longitudinal grooves connected by four diagonal grooves. The yoke *e*, which has short arms *e'* *e''* engaging in the grooves, couples the rollers *f* and *g* together, as seen at Fig. 2.

In scoring from one to twenty-five by a units-indicator *b* the upper arm *e'* of the yoke *e* slides in the straight longitudinal groove *f''* of the roller *f* and produces no effect on the rollers. In its return passage from right to left the yoke leaves the straight groove and traverses the inclined or diagonal groove *f'''* and turns the

roller f a quarter of a revolution. This is effected as follows: In traversing to the right the yoke raises a spring-switch r , which switch is closed by its spring after the yoke has passed. This movement is to the left in Fig. 3, because Fig. 3 is a rear view. This switch directs the upper arm of the yoke into the groove f^3 on the return motion. The lower arm e^2 of the upper yoke e in traveling to the right moves in the diagonal groove g^3 of the roller g , causing that roller to revolve until it has turned a quarter-revolution. At the end of its traverse the said lower arm e^2 of the yoke reaches the next longitudinal groove g^2 , and on the return of the yoke e from right to left the inner and lower arm remains and slides in the groove g^2 . As the yoke approaches the left end of the appliance, its lower arm e^2 , following the conformation of the groove in which it is traveling, turns the roller g slightly, so that on its next move to right the arm e^2 passes into the groove g^3 , and by traversing this causes the roller to revolve enough to complete a quarter-revolution.

Each diagonal groove f^3 in the roller f and g^3 in the roller g is of such pitch that while the proper arm of the yoke e is traveling in it the roller f or g , as the case may be, is rotated, through one-fourth of a revolution. During the motion to the left the roller a is by the intervening gearing f' and a' turned a quarter-revolution, and hence the second set of numerals, commencing with "26," appears at front instead of the first series, and so on. So, also, each movement to the right turns the roller g a quarter-revolution, and by means of the toothed wheels g' , i , and k' , the screw k is caused to rotate to such an extent as to move the sleeve l longitudinally through one-fourth of the distance between two consecutive numerals on the plate or board q behind the games-indicator. It will now be seen that a complete revolution of the roller a at the top or bottom, which is made in scoring one hundred points by one player, moves the corresponding games-indicator p through one complete graduation. Then the game is finished, and the units-indicator for the other player being now idly made, to complete the movements to register one hundred and back again to zero like the other, the apparatus is ready to register a new game, until the whole length of the screws k have been traversed by the game-indicators.

The position of the game-indicators is a true index of the total number of the games played, and thus a check is provided upon the return given by attendants to proprietors of billiard-tables as to payments which are due to them, the computation being based on the usual system of a fixed charge for each game of fifty or one hundred points, respectively.

When it is required, as after each payment made by the attendant, to return the games-indicators to the starting-point, the window

is unlocked by a key (not kept by the attendant) inserted in the key-hole (seen at Fig. 1,) and after the window has been opened on its hinges t an inward pressure is applied to the stud u , (see Fig. 4,) and the spring v behind it is thus compressed and the wedge w is forced back, raising the lever m out of engagement with the screw. The sleeve is then free to be drawn backward along the screw without rotation of the latter. On withdrawal of the pressure from the stud u the spring n restores the lever m to engagement with the screw, and the spring v returns the stud u to its normal position. Now all is ready to again register any required number of games up to the limit. As shown, this is twenty-five full games.

To adapt the machine for registering half-games or games in which only fifty points are scored, it is of advantage to be able to set the indexes back to zero without moving them idly through the several motions required to register the next fifty. I have equipped the machine for attaining this end, allowing each units-indicator to be set back to zero when only fifty points are made. Furthermore, I provide mechanism which connects the upper and lower part of the machine, so that although the upper units-indicator can be set back when fifty points are made it can only be done provided the lower one is brought up to the same number, "50", and the lower can be moved back to zero from "50," provided the upper one is carried forward to "50." The diagonal groove f^3 in each roller f , in which at the termination of each game the yoke e is returned from right to left, opens at the left end in Fig. 1, which is the right end in Fig. 3, into a part f^4 , which is of smaller diameter than the general body of the roller, as seen more particularly in the separate view, Fig. 6, and extends half around the roller. The grooves f^2 f^3 in each roller f , along the first of which the yoke e has been traversed to the right and along the second of which it is to be returned when twenty-five points have been scored, is blocked at the left end, the right in Fig. 3, (shown by f in Fig. 6;) also the grooves by which, when the seventy-five points are scored and the yoke returned, are not (see Fig. 4) run out to the roller-neck; but the grooves in each roller along which the yoke is returned, when fifty points have been scored, opens into a cavity or sunk space. When the upper arm e' of the yoke e in the upper part of the apparatus or the corresponding arm, the lower arm (similarly lettered e') in the lower part of the apparatus, is moved to the left end of its traverse after registering fifty points and is in the position to register fifty-one points and commence therefrom to go on to complete the hundred, there is liberty, if the players so elect, by reason of the yoke e being in the sunk space f , which extends half around the roller, for the player by operating on the knob a^2 at the end of the apparatus to turn the roller back to "1," and

thus to commence again at "1" to register a new game. This is important to allow half-games to be registered. I avoid all possibility of thus turning back one, the upper or the lower, roller *a*, without the other having been brought up to "50," by the following means: At the gearing end of each roller *a* is a ratchet-wheel. (See Fig. 9.) The ratchet-wheel *x* of the upper units-indicator roller engages with a pawl *y*, (see Fig. 9,) pivoted at *y'* to the frame of apparatus, and connected at the outer end to a rod *y²*, which extends downward and is connected at the lower extremity to one end of the horizontal arm of a bell-crank lever *z⁴*, pivoted to a fixed bracket *z⁵*. The pawl *y* is normally kept engaged with the ratchet-wheel *z* by a spiral spring *y⁵* bearing at the upper end against a collar on the rod *y²* and at the lower end upon a stop fixed to the frame. The lower yoke *e* carries a curved arm *e³*, which extends backward, so as to come into contact with the upper limb of the bell-crank lever *z⁴*, when the lower units-indicator is moved sufficiently far to the left. The ratchet-wheel *z* of the lower units-indicator roller engages with a pawl *z'*, pivoted at *z²* to the frame of the apparatus, and connected at the outer end to a rod *z³*, which extends upward and is connected at the upper extremity to one end of the horizontal arm of a bell-crank lever *y³*, pivoted to a fixed bracket *y⁴*. The pawl *z'* is normally kept in engagement with the ratchet *z* by a spiral spring *z⁶*, bearing at the lower end against a shoulder on the rod *z³*, and at the upper end against a stop fixed to the frame. The upper yoke *e* carries a curved arm similarly lettered *e³*, which extends backward, so as to come into contact with the lower limb of the bell-crank lever *y³* when the said units-indicator is moved sufficiently far to the left. By this arrangement of ratchet-wheels, pawls, levers, and springs, and rods extending up and down, the upper pawl *y* is freed from engagement with the ratchet-wheel *x* only when the lower bell-crank lever *z⁴* is tilted by contact therewith of the arm *e³* of the lower units-indicator, and, similarly, the lower pawl *z'* is freed from engagement with its ratchet-wheel *z* only when the upper bell-crank lever *y³* is tilted by contact therewith of the arm *e³* of the upper units-indicator. Accordingly, the pawls can be freed from engagement with the ratchet-wheels of the rollers *a* only when both units-indicators stand near "51," to which position both must consequently be brought before either roller *a* can be reversed to zero through the medium of its handle *a²*. When the rollers *a* have been so reversed, the yokes *e* enter the grooves in the roller *f* at the zero-point, passing over and depressing a spring-tongue *t'*, Figs. 6 and 8, which thereafter rebounds, blocking the groove, and preventing withdrawal thereof of the yokes.

To prevent the machine being tampered with in the absence of the attendant, the yokes *e* are capable of being rendered inoperative by locking. A convenient form of locking-

gear for this purpose is shown at Fig. 10. It consists of a system of articulated levers A, C, and F, pivoted to the frame and connected links B, D, and E. The link D is guided on the stud I, and receives in a slot G an arm (not shown) fixed to the spindle of the handle H. By partially turning the handle II and thus moving the link D downward the levers A and F are turned upon their pivots, so as to cause the teeth A' and F' to take into notches provided in the slide *c* of each units-indicator. In this position the mechanism is locked by the bolt of an ordinary lock (not shown) being shot into the slot B' of the link B by turning the key of the said ordinary lock. The spring L serves to maintain the levers either in the position shown at Fig. 10, or in the position occupied by them when the teeth of the levers A and F are engaged in the notches of the slides *c* until such positions are changed by turning the handle II.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention.

Instead of employing switches, such as *r*, Fig. 3, for diverting the upper arm *e'* of the yoke *e* from a longitudinal to a diagonal groove, the transfer may be effected in the same way as above described with reference to the inner or lower arm.

I claim as my invention—

1. In a games-register, the combination of a units-indicator *b*, arranged to traverse backward and forward in registering the number of points, and gearing operated by such traverse communicating motion to a screw-shaft *k*, carrying a sleeve *l*, and games-indicator *p*, adapted to register the number of games and half-games, as herein specified.

2. In a games-register, the roller *a*, carrying several series of figures to be presented in succession by partially revolving the roller, gearing *a'f'*, and roller *f*, the latter having inclined grooves *f³*, in combination with a units-indicator *b* and adapted to be reciprocated, as shown, and with means, as the arm *e'*, for engaging in the groove *f³* and partially revolving the latter by the reciprocations of the former, and with mechanism connecting it to a screw *k*, arranged to be revolved and to communicate a slow registering motion to the games-indicator *p*, as herein specified.

3. In a games-register, in combination with the units-indicator *a* and pointer *b*, arranged to be traversed relatively thereto, the roller *f*, geared to the roller *a* and having two sets of grooves *f²* *f³*, and a switch *r*, combined and arranged for joint operation as herein specified.

4. In a games-register, the games-indicator *p*, carried on a sleeve *l*, mounted on the screw *k*, in combination with each other and with the engaging means *m*, and provisions, as the push-pin *v* and wedge *w*, for disengaging, when required, and with the window *s*, with locking means, all arranged for joint operation substantially as herein specified.

5. In a games-register, the rollers f and g , having inclined grooves f^3 and g^3 , and the yoke e , having arms e' and e'' connected to the units-indicator b , in combination with each other and with an endless screw k and games-indicator p , traversed thereby, and gearing connecting these parts, all arranged for joint operation as herein specified.

6. In a games-register, the pointer b , mounted on a carriage adapted to be reciprocated between guideways, as shown, in combination with the roller f , having two sets of grooves f^2 and f^3 , communicating, as shown, the provisions for registering half-games consisting in providing said roller f with cavity f^4 , arranged to receive the arm e' and allow the roller f and its connections to be revolved backward, as herein specified.

7. In a games-register, the pointer b , mounted on a carriage adapted to be reciprocated between guideways, as shown, in combination with the roller f , having two sets of grooves f^2 and f^3 , communicating, as shown, the provisions for registering half-games consisting in providing the said roller f with a cavity f^4 , arranged to receive the arm e' and allow the roller f and its connections to be revolved backward, and with the spring-tongues t' , and arranged to allow the arm e' to be so moved and to forbid a return movement, as herein specified.

8. In a games-register having two rollers a , carrying numerals and adapted for registering units, and mechanism for registering the number of games, with provision for turning backward the units-registering rolls to register fractions of games, so connecting the two rollers a that neither can be turned to commence anew until the other has been

turned to complete the corresponding portion of a game, substantially as herein specified.

9. In an appliance for marking or scoring games, an arrangement of rollers, such as a , f , and g , grooved and coupled by yokes, such as e , screw-thread rollers, such as k , carrying sleeves, such as l , or their equivalent, said arrangement being such that as each series of units displayed from end to end on the units-indicator rollers is indicated by the units-indicators in the progress of the game the games-indicators actuated through the said screws and sleeves indicate through the medium of a graduated board, such as q , the total number of games and half-games played, substantially as hereinbefore described.

10. In apparatus for marking or scoring games, the mechanism for interlocking the units-indicator rollers, whereby on the conclusion of a game of fifty points both units-indicators must be returned to the starting end of the apparatus before either of the units-indicator rollers can be reversed to zero, as herein set forth.

11. The spring sleeve or clip carrying the games-indicators, consisting of the lever m , spring n , spindle o , with wedge-piece w , spiral spring v , and stud u , arranged and operating substantially as herein described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERBERT SIDNEY WOOSTER.

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