

952,137.

E. M. PLUMMER.
 ADDING MACHINE.
 APPLICATION FILED JULY 19, 1909.

Patented Mar. 15, 1910.

5 SHEETS—SHEET 1.

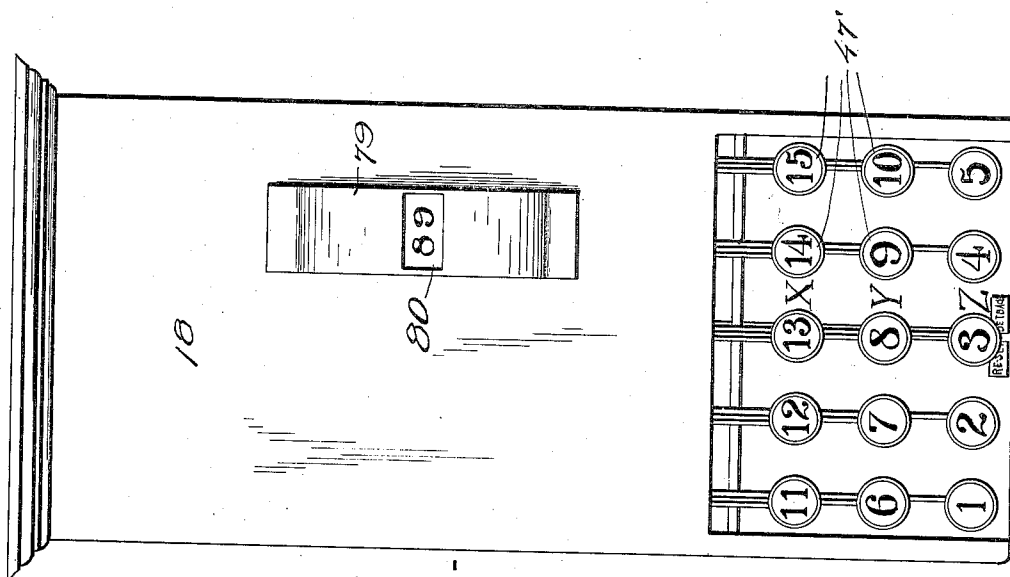
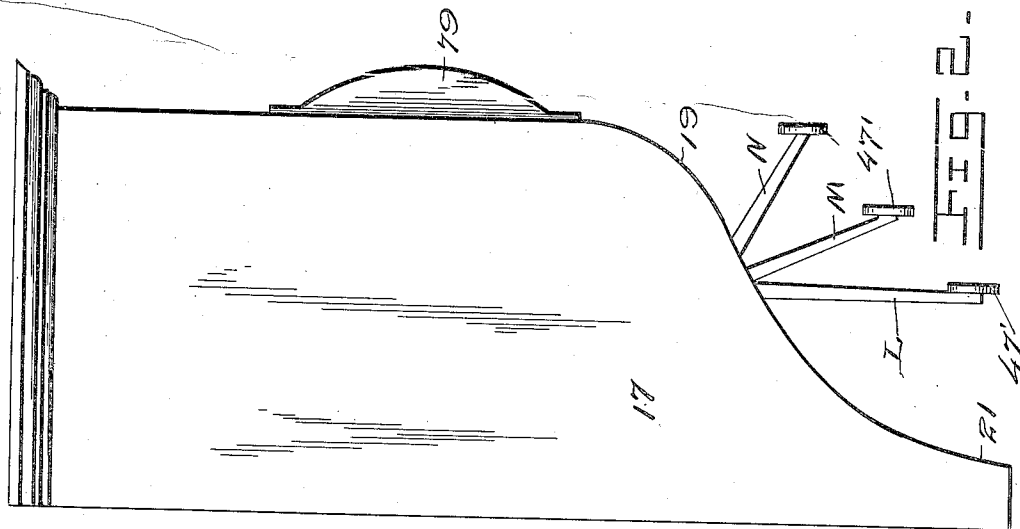


FIG. 1.

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By *Woodward & Chandler*

Attorneys

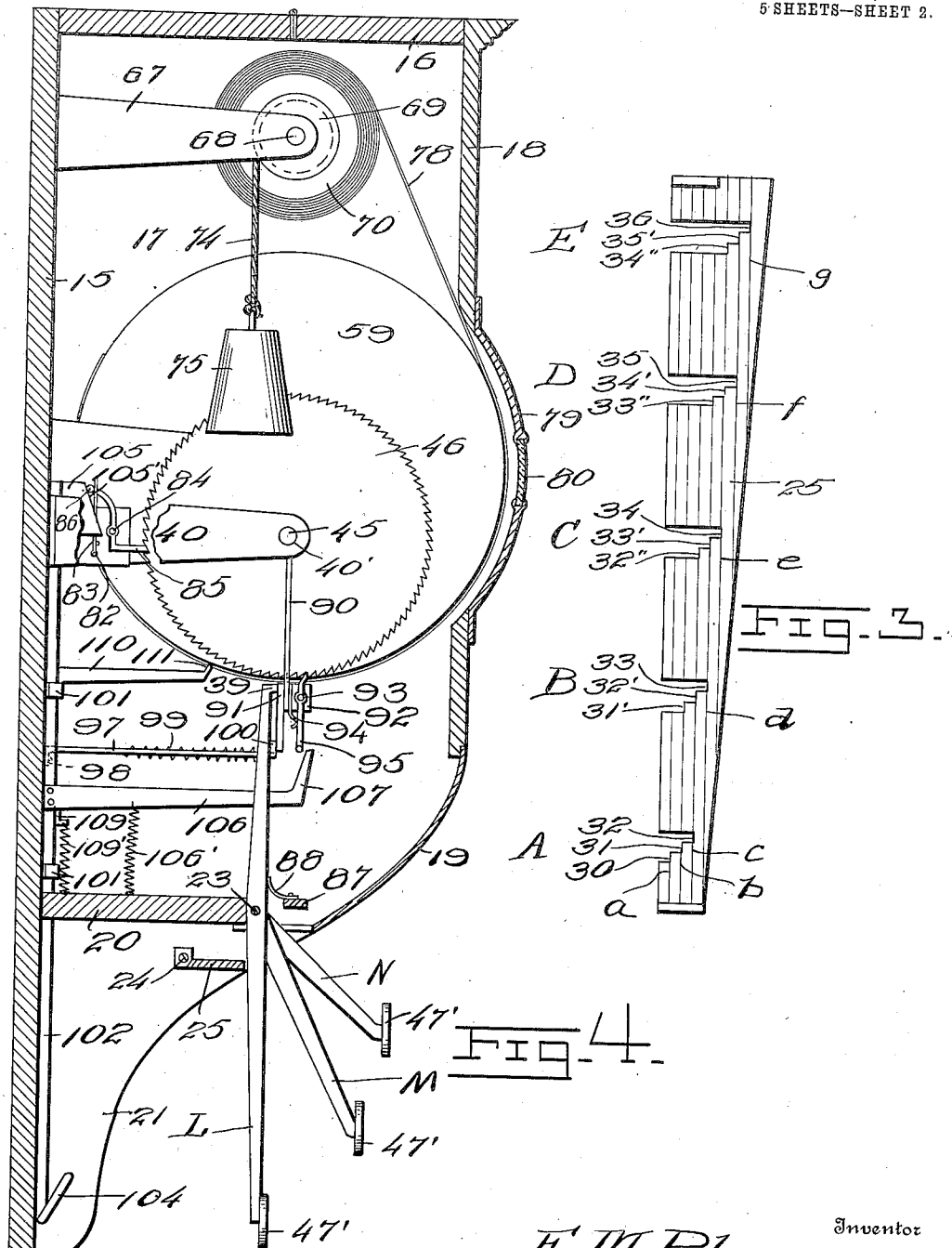
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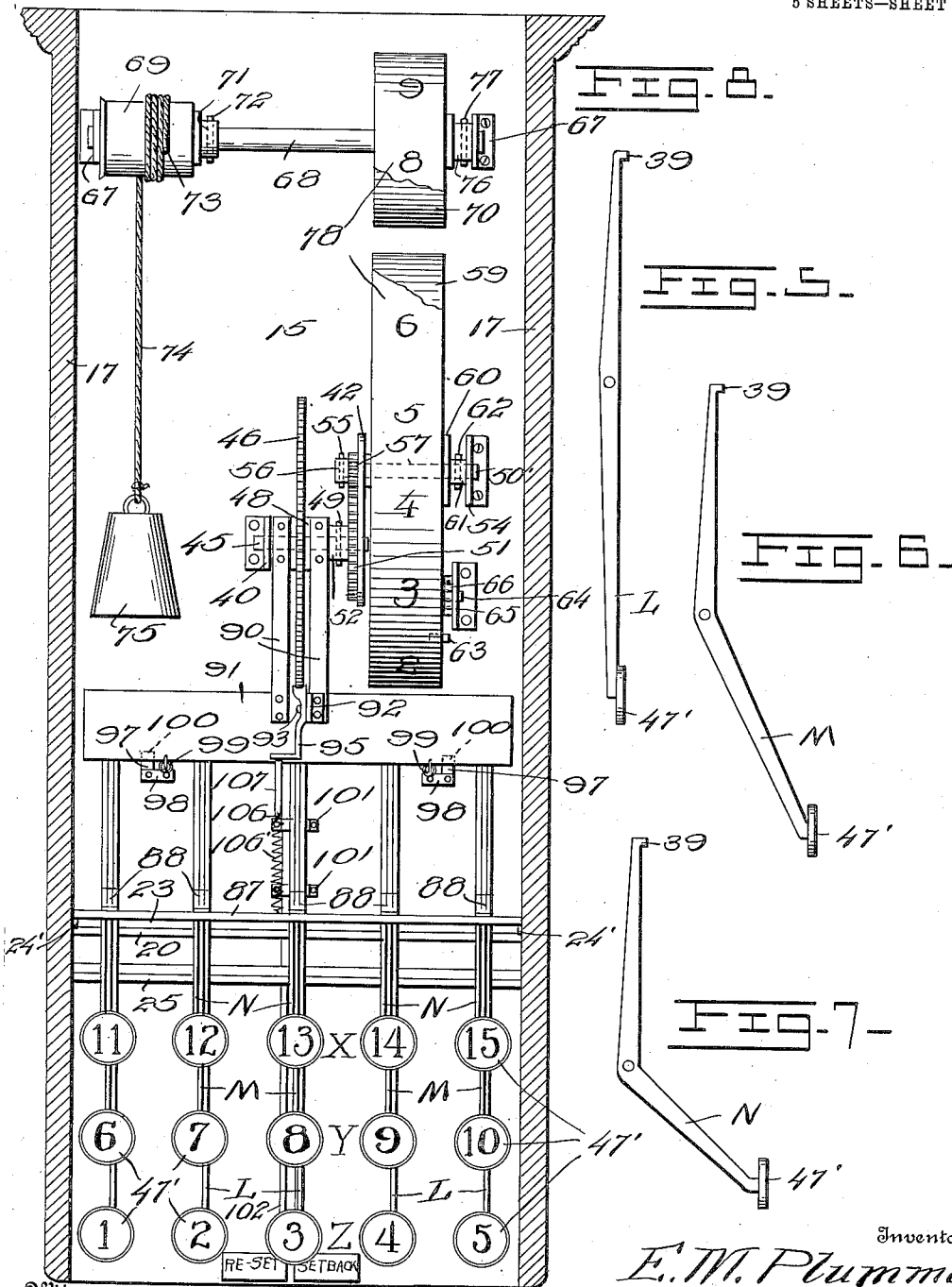
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5 SHEETS—SHEET 3.



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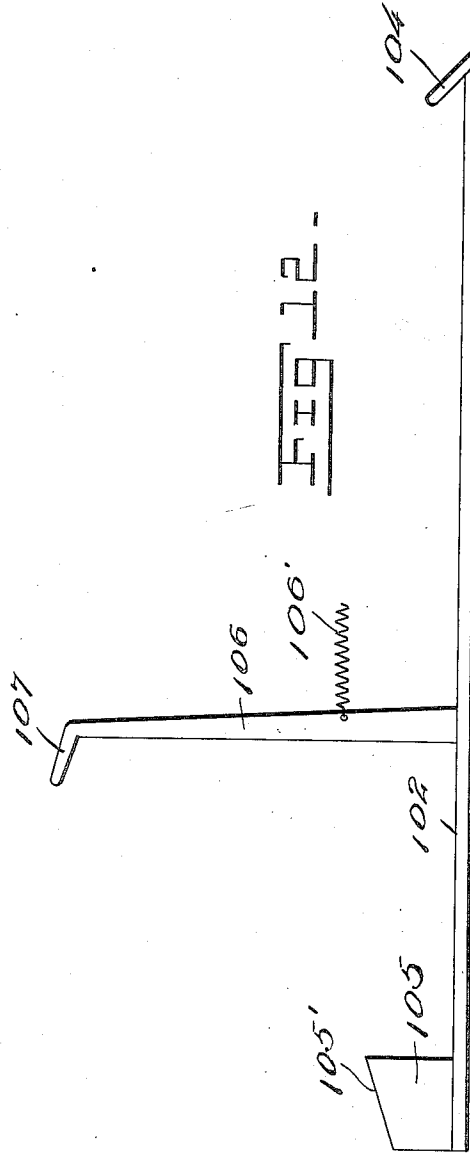
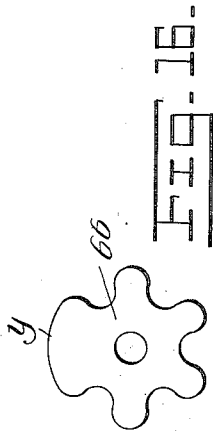
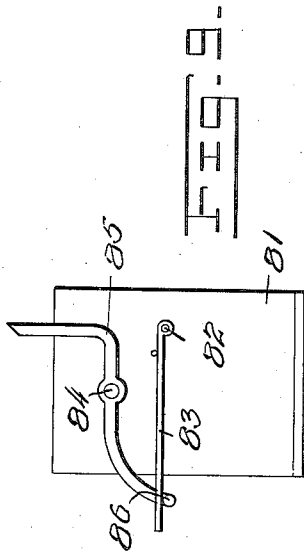
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5 SHEETS—SHEET 4.

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5 SHEETS—SHEET 5.

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FIG. 14-

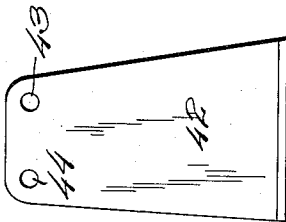
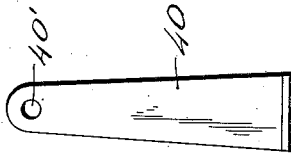
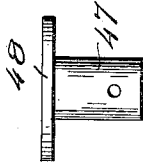


FIG. 11-

FIG. 10-

FIG. 15-

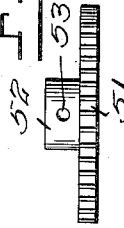
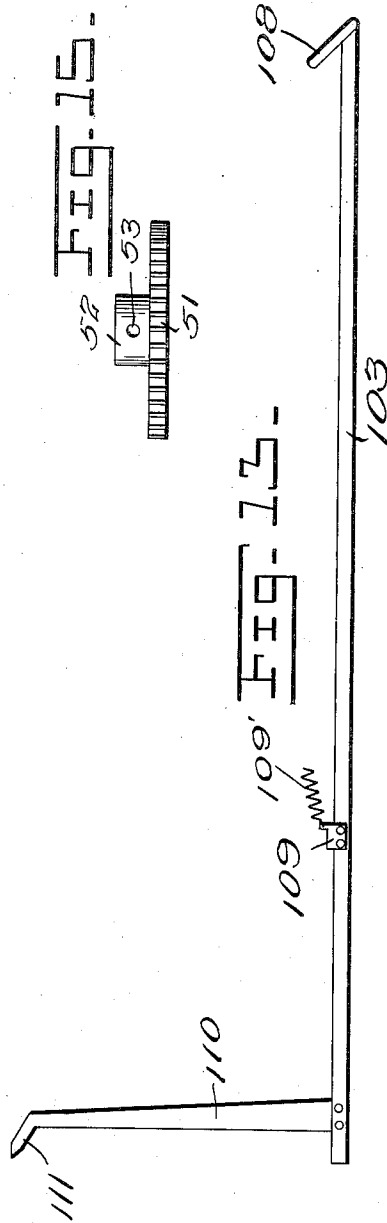


FIG. 12-



Witnesses

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UNITED STATES PATENT OFFICE.

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ADDING-MACHINE.

952,137.

Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed July 19, 1909. Serial No. 508,257.

To all whom it may concern:

Be it known that I, EARL M. PLUMMER, a citizen of the United States, residing at Marshalltown, in the county of Marshall and State of Iowa, have invented certain new and useful Improvements in Adding-Machines, of which the following is a specification.

This invention relates to certain new and useful improvements in adding machines.

The object of this invention is to provide a game counter especially adapted to be used in keeping a correct score of all points made in playing pool and billiard games.

Another object is to provide a counter so constructed that the same may be used as a subtractor.

With these and other objects in view the present invention consists in the combination and arrangement of parts as will be hereinafter more fully described and particularly pointed out in the appended claims, it being understood that changes in the specific structure shown and described may be made within the scope of the claims without departing from the spirit of the invention.

In the drawings forming a part of this specification, and in which like characters of reference indicate similar parts in the several views, Figure 1 shows a front view of a game counter embodying my invention, Fig. 2 is a side view thereof, Fig. 3 is an enlarged detached front view of the check rack, Fig. 4 is an enlarged side elevational view with parts removed, Fig. 5 is a side view of a first tier operating lever, Fig. 6 is a side view of one of the second tier operating levers, Fig. 7 is a side view of one of the third tier operating levers, Fig. 8 is an enlarged front view with parts removed, Fig. 9 is an enlarged detached detail of the detent, Fig. 10 is an enlarged detached detail of the main bearing plate, Fig. 11 is a side view of one of the bearing posts, Fig. 12 shows an enlarged detached side elevational view of the setback lever used in my invention, Fig. 13 shows a detached enlarged side elevational view of the reset lever used in my invention, Fig. 14 is a detail of the shaft sleeve, Fig. 15 is a detail of the drive gear, Fig. 16 shows an enlarged detached detail of the stop pinion.

The aim of my invention, is to provide a recording mechanism adapted to be used by one or more players, in recording and scoring the points made in the games played upon a pool or billiard table.

My game counter is intended to be hung upon the wall, or the same may be used upon a horizontal support.

In the accompanying drawings, 15 represents a base preferably of wood, provided with the top 16, the two similar sides 17, the face plate 18, ending in the beveled edged bottom section 19, below which is held the panel 20, as shown. The sides 17 are reduced at the forward end and terminate in the reduced portions 21 as disclosed more clearly in Fig. 2. Held to the bottom member 20, which is the form of a batten preferably made of wood, is the shaft 23 secured by means of the end bearings 24' fixed to the batten 20 as shown.

Held between the reduced forward ends 21 of the sides 17, and secured by means of the screws 24 is the check rack 25 a detail of which is shown in Fig. 3. This check rack is provided with five lever slots marked A, B, C, D, and E as shown. These lever slots are all of an equal width, but each has a step formed bottom. The three steps forming the bottom within the first lever slot are marked 30, 31 and 32. The bottoms within the second slot B are marked 31', 32' and 33; the bottoms within the lever slot C being marked 32'', 33' and 34. The stop bottoms within the lever slot D are marked 33'', 34' and 35, while the stop bottoms within the terminal slot E are marked 34'', 35' and 36. In order to more clearly bring out the operation of the levers in connection with this check rack, I have divided this rack into a plurality of lengthwise disposed divisions marked by the lines *a*, *b*, *c*, *d*, *e*, *f*, and *g*. The functions of these stop bottoms will be more fully described hereinafter.

Held within each lever slot are three levers, these levers being collectively marked, L, M, and N, three such levers being used in connection with each lever slot. The first set of levers L are in the form of straight bars and form the lower tier, being held in a horizontal position. The second set of levers M a detail of one of which is shown

in Fig. 6 has approximately one-half of its length bent upward, at a slight angle, while the final set of operating levers N forming the upper tier has its operating end extending approximately at an angle of 45 degrees. The operating end of each lever is provided with a finger plate 47' in the form of a disk, each disk having a suitable number as is shown in the front view. In this view the uppermost tier of the finger plate is marked X, the intermediate tier Y, while the lower tier is marked Z. As shown in the side view, each like set of levers is slightly longer than the preceding set while the outer ends of the different sets of levers vary in length, the inner ends of all of the levers terminate in alinement, each lever being provided with an upwardly directed nosing 39.

Held to the base 15 at a suitable point is the bearing post 40 a detail of which is shown in Fig. 11, and this post 40 is provided near its upper end with the bearing 40'. Held adjacent to this bearing post 40 is the main bearing plate 42, provided with the bearing 43 held in alinement with the bearing 40', this main bearing plate being provided with the additional bearing 44 as disclosed in Fig. 10, where a detail of this bearing plate is shown.

Held within the bearing 40' and the bearing 43, is the drive shaft 45. Secured to this drive shaft 45, is a ratchet wheel 46, provided in this instance with two hundred notches. Held upon this drive shaft 45 adjacent to the ratchet wheel 46, is the shaft sleeve 47 having the collar 48, which collar is secured to the ratchet wheel 46, while passing through an opening in the shaft sleeve 47 is the pin 49 which also passes through a suitable opening within the drive shaft, so that this shaft sleeve is securely fixed to this drive shaft in the manner shown.

Held upon the shaft sleeve 47, is the hub 52 of the drive gear 51, which hub is provided with the opening 53 through which the pin 49 passes, so that this pin secures the hub 52 as well as the collar 47 to the drive shaft 45.

Held within the bearing 44 of the main bearing plate 42, and a bearing within the upper end of the post 54, is the driven shaft 50', which at its outer end carries the driven pinion 57 having the hub 56 through which a pin 55 passes securing the hub to the shaft 50'. This shaft 50' passes through the winding wheel 59, this wheel being secured to the shaft by means of the disk 60 provided with the hub 61 through which the pin 62 passes through an opening within the driven shaft 50', so that this winding wheel is securely fixed to this shaft 50'. The driving gear 51 meshes with the driven pinion 57. The winding wheel 59 is preferably made of wood and is provided at a suitable point

with the pin 63 which projects outwardly therefrom as disclosed in the front view.

Held upon the pin 64 carried within the bearing plate 65 is the stop pinion 66, this stop pinion being positioned within the path of the pin 63. As shown in Fig. 16, this stop pinion is provided with four teeth and a cam forming portion 7, the instrumentalities being so arranged that as the winding wheel rotates, it will rotate the stop pinion 66 until the stop shoulder 7 is encountered when the movement of the winding wheel is stopped and checked. The wheel must then be reversed so that the stop teeth are carried in an opposite direction until the pin again encounters the stop forming portion 7. From these it will be seen that this pinion 66 acts as a stop to limit the movement of the winding wheel 59, which is permitted a predetermined number of revolutions. Held near the upper portion of the housing, are the two similar bearings posts 67 which carry the drum shaft 68 to which is secured at one end the drum 69, while at the other end is secured the tape spool 70. The drum 69 is secured to the shaft by means of the collar 71 having an opening as has also the drum shaft arranged to receive the securing pin 72. Secured to this drum 69 by means of the pin 73, is the strand 74 carrying at its free end the counterpoise 75 as clearly disclosed in Fig. 8. The spool 70 is secured to this drum shaft by means of the collar 76 which also has a pin opening as has the drum shaft arranged to receive the pin 77 by means of which this collar and spool are connected to the drum shaft. Secured at one end to the spool 70 and at the other to the winding wheel 59, is the tape 78 of suitable non-stretchable material which is provided with numbers running from 0 to 200 consecutively. The panel 18 at a suitable point is slotted to permit the protrusion of a portion of the winding wheel 59, the panel at this slotted point being provided with the hood 79, having the glass covered opening through which the tape numbers may be seen. Secured to the base 15 at a suitable point adjacent to the ratchet wheel 46, is the bearing plate 81 carrying the pin 82 to which is secured the spring 83, as shown in Fig. 9. Held above the pin 82 is the pin 84 which pivotally carries the pawl 85 having the downwardly extending end 86 engaged by the spring 83 so that this pawl 85 is in normal engagement with the ratchet wheel 46 as clearly indicated in the side view.

Extending from one of the sides 17 to the other is the bar 87, which carries a plurality of springs 88, there being one spring for each lever as shown. Pivottally held upon the drive shaft 45 are the two rock arms 90. These rock arms at their ends are secured to the pawl plate 91 which is of a length so

said plate extends above all of the upwardly directed lugs or nosings 39 carried at the inner ends of the operating levers. Secured to this pawl plate 91, is the ear 92 carrying the pin 93 which in turn pivotally supports the pawl 95 engaging the ratchet wheel 46, a spring 94 being secured to this pawl plate and operating against the outer end of this pawl 95 to insure normal contact between the pawl 95 and the ratchet wheel 46. Positioned behind the pawl plate 91 near each end, is a stop plate 97 having the outer upwardly directed stop ear 100, these plates being secured to the base 15 by means of the flanges 98, and extending from each of these stop plates 97 is a spring 99 secured at its upper end to the pawl plate 91, insuring this pawl plate at all times being in spring pressed engagement with the stop ears 100. Slidably held to the base 15, by means of the guide yokes 101, are the members 102 and 103, the first forming what I call a reset rod and the second being the setback rod. The reset rod is disclosed in detached detail in Fig. 12 and is provided in front with the push plates 104 disclosing the legend "Setback." At its inner end this lever 102 carries the cam plate 105 having an obliquely held upper contact edge 105' arranged to contact with the projecting end 86 of the pawl 85. Intermediate of its ends this reset rod is provided with the trip arm 106 having the nosing 107 arranged to contact with the pawl 95 to release the same from engagement with the ratchet wheel 46. The setback rod 103 is provided at its forward end with the push plate 108 disclosing the legend "Setback" and intermediate of its ends is provided with the stop collar 109 while projecting upwardly from this lever is the stop pawl 110 the upper end 111 being arranged to come into engagement with the teeth of the ratchet wheel 46 in one position of this lever. Extending from this stop collar 109 is the spring 109' secured to the forward batten 20, so that this setback rod is normally drawn outward, in which position the stop pawl 110 will be held immediately in front of the ratchet wheel 46. The outward movement of this lever 103 is checked in that the stop pawl 110 comes in contact with the rear yoke 101. Extending from the trip arm 106 to the batten 20 is the coil spring 106' insuring this lever 102 normally being held in an outward position. As shown in Fig. 4, the stop collar 109 is held adjacent to the trip arm 106, so that when the set back rod 103 is actuated, this collar 109 will contact with the trip arm 106. Thus the reset lever is freely movable independently, but upon operation of the setback lever the reset member is also moved.

When the instrumentalities have been

properly arranged the operation of my device is as follows: To record one point, the operator would depress the first lever provided with the finger plate having the numeral 1, this lever would then be depressed one division of space upon the check rack to engage the bottom 30 which would advance the ratchet wheel one tooth and the winding wheel 59 a suitable distance so as to bring the numeral 1 upon the tape below the glass 80'. Should the next point scored be 4, the lever having that number would be depressed so that the lower edge thereof would engage the stop bottom 33". The first tier of levers registering the numerals from 1 to 5, are stopped by the first bottom within each lever slot. The outwardly projecting end of the lever series M, however, is so arranged, that the ratchet wheel 46 will be advanced four teeth before the upper edge of the check rack is encountered. If the number to be recorded amounted to 8, the connected lever would advance the ratchet wheel 46 four teeth before the upper edge of the check rack were encountered, and advance the ratchet wheel four teeth in entering the slot. The upper tier of levers have their ends so bent that the ratchet wheel is advanced eight teeth before the bottom of the lever enters the lever slot after which the lever is permitted to pass downward engaging the stop bottom within the check rack. If the score made amounted to thirteen, for instance, the lever 13 would travel the distance of eight teeth above the check rack and then the five divisions within the lever slot below and be stopped by the bottom 34.

In certain pool games, when what is called a scratch is made the player loses one point. In order to set back the score one point the operator would actuate the setback lever which would result in the upper end or nosing 107 of the trip arm 106 engaging the projecting end of the pawl 95 and the cam plate 105 engaging the pawl 85 to disengage these pawls from the ratchet wheel. At the instant that these pawls became disengaged from the ratchet wheel 46 the stop pawl 110 would be carried below the teeth of the ratchet wheel 46 to check the movement of the ratchet wheel after the space of one ratchet tooth has been passed resulting in the counterpoise 75 rewinding the tape one number. At the conclusion of the game, it is necessary to reset the machine, which is accomplished in pushing back the reset lever 103 which results in the nosing 107 engaging the pawl 95 while the cam plate 105 engages the detent 85 to carry the same out of engagement with the ratchet wheel 46. As soon as this ratchet wheel is released, the counterpoise 75 operates the drum shaft 68

to rewind the tape 78 upon the spool 70. The machine is then ready to be used in scoring a new game.

The machine is simple in construction, there are no parts likely to become inoperative, and the device is positive in its action, both in recording the scores as well as in the resetting of the instrumentalities.

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

1. The combination with a suitably supported shaft, of a ratchet wheel carried by said shaft, a pawl pivotally carried by said shaft and contacting with said ratchet wheel, a stop to check the movement of said pawl in one direction, a detent engaging said ratchet wheel, a trip arm arranged to contact with said pawl, and a cam plate secured to said trip arm arranged to contact with said detent and a stop pawl carried by said trip arm.

2. The combination with a suitably supported operating lever, of a rack limiting the movement of said lever in one direction, a stop limiting the movement of said lever in an opposite direction, a spring to normally force said lever in contact with said stop, a suitably supported shaft, a ratchet wheel carried by said shaft, a pawl arm carried by said shaft, a stop limiting the movement of said pawl arm in one direction, a pawl carried by said pawl arm, a detent engaging said ratchet wheel, a slidably held lever, a stop pawl carried by said lever arranged to contact with said ratchet wheel, a stop collar carried by said lever, a slidably held push lever, a trip arm carried by said push lever arranged to contact with said pawl, and a cam plate carried by said push lever arranged to contact with said detent, said stop collar contacting with said push lever.

3. The combination with a base, of a plurality of operating levers pivotally carried by said base, a check rack having a plurality of stop bottoms of various depths, a stop limiting the movement of said levers in one direction, springs to normally force said operating levers into contact with said stop, a suitably supported shaft, a ratchet wheel carried by said shaft, a pawl arm pivotally secured to said shaft, a pawl plate secured to said pawl arm, all of said operating levers contacting with said pawl plate, a pawl secured to said pawl plate contacting with said ratchet wheel, means to normally force said ratchet wheel in one direction, a detent engaging said ratchet wheel, a slidably held lever provided with the stop pawl arranged to contact with said ratchet wheel, a spring to hold said sliding lever into retracted position, a stop collar carried by said sliding lever, a push

bar, a cam plate carried by said push bar arranged to contact with said detent, said stop collar contacting with said push bar, a trip arm arranged to contact with said pawl, and a spring to force said push bar into retracted position.

4. The combination with a supporting base, of a plurality of operating levers, a check rack having stop bottoms positioned at various distances to limit the movement of said operating levers in one direction, a stop plate, to all of said operating levers limiting the movement of said levers in an opposite direction, springs to force said operating levers into engagement with said stop plates, a suitably supported drive shaft, a ratchet wheel carried by said drive shaft, a pawl arm carried by said drive shaft, a pawl plate carried by said pawl arm, a pawl secured to said pawl plate, all of said operating levers contacting with said pawl plate, a drive gear secured to said drive shaft, said pawl contacting with said ratchet wheel, a suitably supported driven shaft, a pinion secured to said driven shaft and meshing with said drive gear, a winding wheel carried by said driven shaft, a suitably supported drum shaft, a spool carried by said drum shaft, a drum secured to said drum shaft, a strand winding upon said drum shaft, a counterpoise carried by said strand, a sliding lever, a stop pawl carried by said sliding lever, a stop collar secured to said sliding lever, said stop pawl being held adjacent to said sliding lever, a spring to normally force said guiding lever into retracted position, a push bar, a cam plate carried by said push bar, a trip arm carried by said push bar, said trip arm being arranged to contact with said pawl, said cam plate arranged to contact with said detent, and a spring to force said push bar into retracted position, said stop collar contacting with said push bar.

5. In a device of the class described the combination with a plurality of lever members pivoted upon a common axis, a driven member adapted to be engaged by said levers, said levers having operating portions extending therefrom, certain of the operating portions being extended at various angles from the respective levers, and a check member having stop portions arranged in step formation for engagement with the operating portions, the angles of the operating portions with respect to the levers being adapted to produce different degrees of movement of the movable member upon engagement of variously disposed operating members with stop portions of a common height.

6. In a device of the class described the combination with a revoluble member having inclined ratchet teeth extending in a

common direction therearound, means for
yieldably resisting rotation of the wheel, a
radially movable member disposed adja-
cent thereto, a propelling dog carried by the
5 movable member and engaged with the
ratchet teeth, a check dog engaged with the
ratchet teeth, a movable member adapted
to engage and release each of said dogs, a
movable check member arranged to engage
10 the last named movable member for release

of the dogs and engagement with the ratchet
teeth to allow escape of one tooth past said
dogs.

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

EARL M. PLUMMER.

Witnesses:

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GEO. W. BEASLEY.