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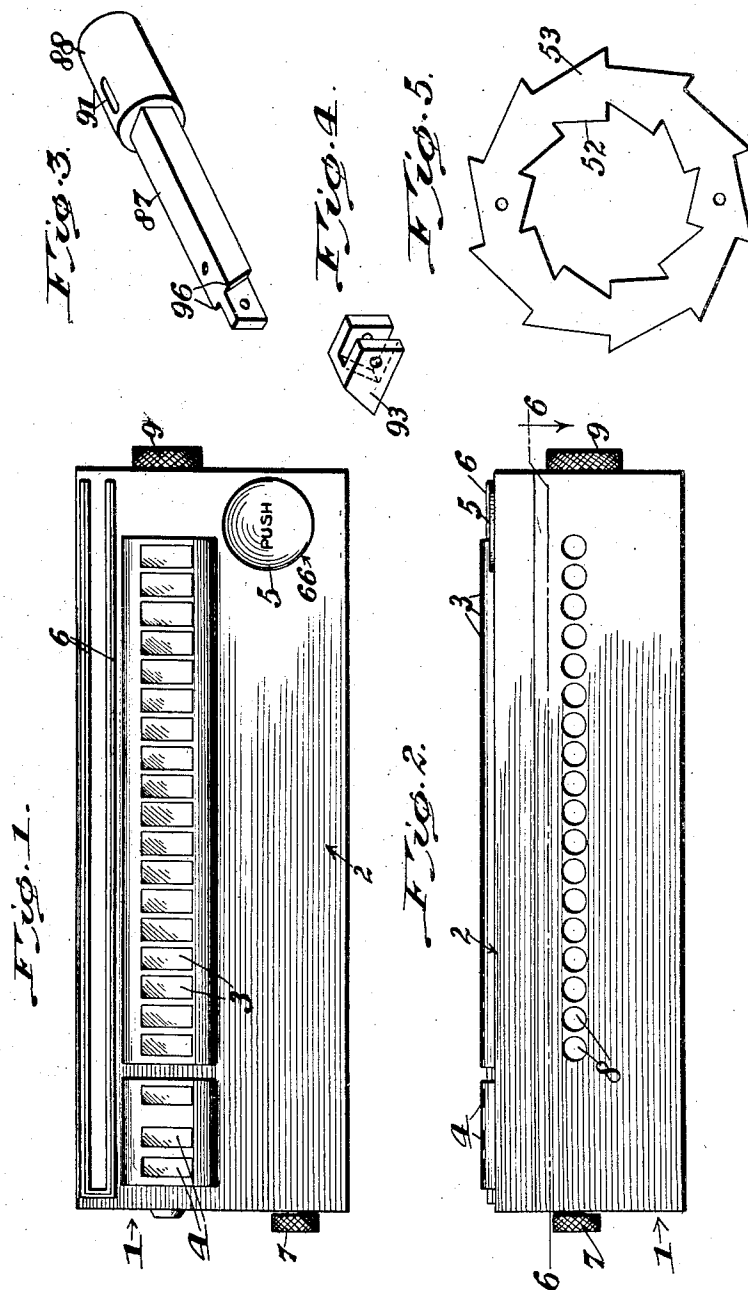
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REGISTER

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3 Sheets-Sheet 1



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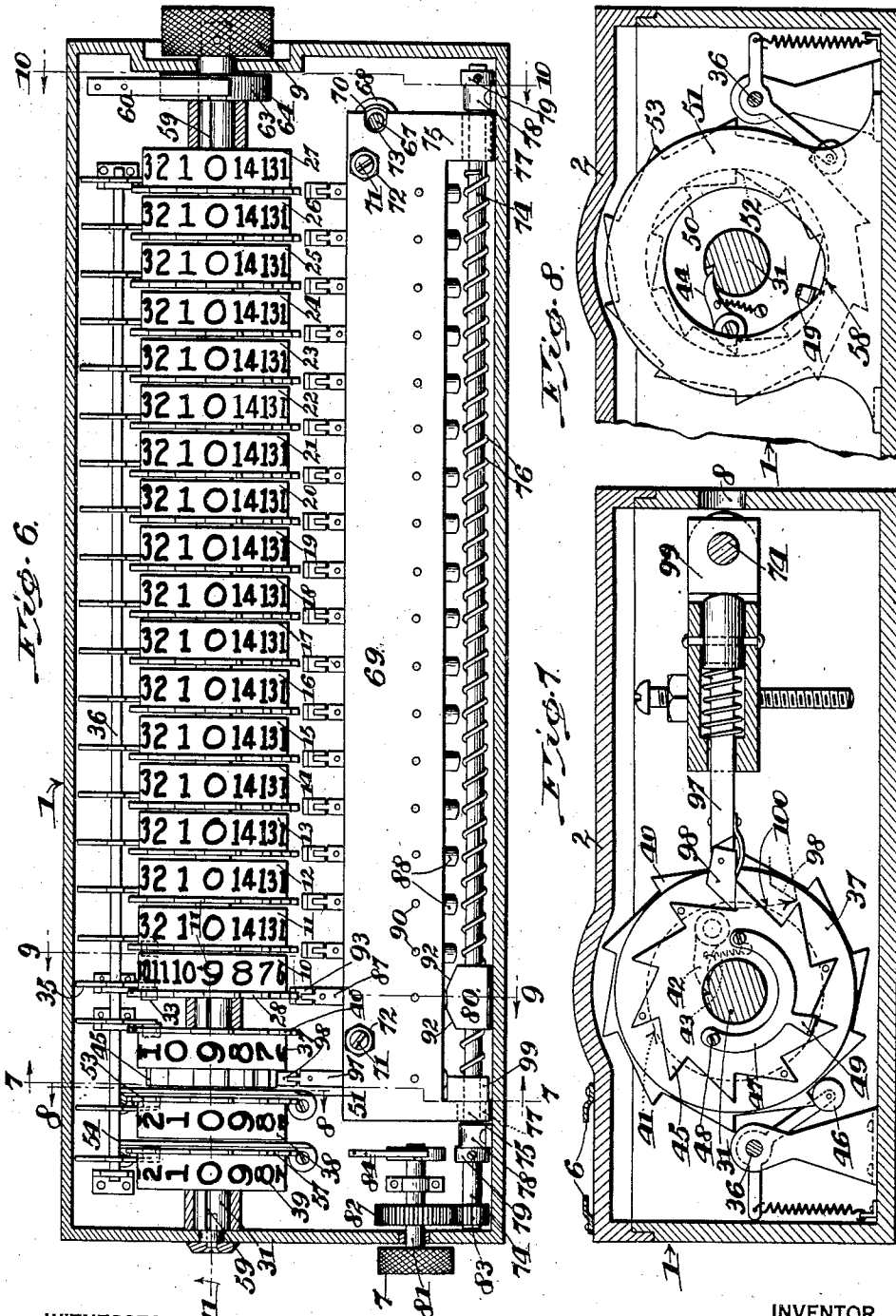
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3 Sheets-Sheet 2



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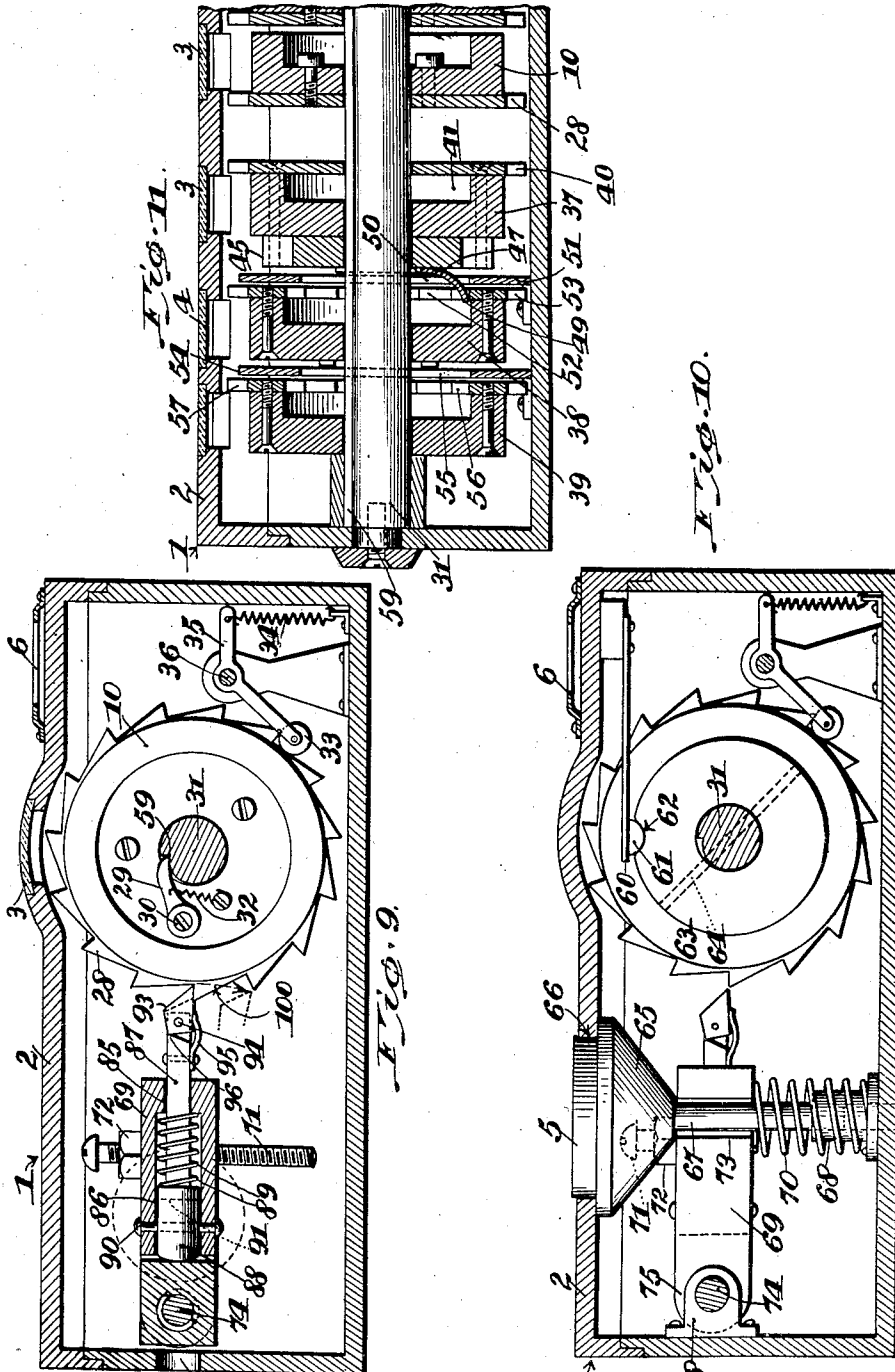
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REGISTER

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9 Claims. (Cl. 235—117)

This invention relates to improvements in registers, and its objects are as follows:—

First, to provide a mechanical counter or register intended for keeping score for the game of golf or any other purpose.

Second, to provide a duplex golf register which can be made to first register the number of strokes made at the various holes on as many individual counters and at the same time register the total number of strokes accumulated at all of the holes on a totalizing counter.

Third, to provide the combination of a plurality of counters any one of which is selectable for operation to run up a score, and a totalizing counter which will register the accumulated score points regardless of where they are run up along the line of individual counters.

Fourth, to provide a novel selector by which any one of a plurality of individual-hole counters can be singled out for operation without disturbing the continual operation of the totalizing counter.

Other objects and advantages will appear in the following specification, reference being had to the accompanying drawings in which

Figure 1 is a plan view of the register.

Figure 2 is a side elevation particularly showing the windows through which the selector can be seen and thus inform the player as to the number of the hole being played.

Figure 3 is a perspective view of one of the pawl plungers.

Figure 4 is a detail perspective view of one of the pawls.

Figure 5 is an elevation of the ratchet gear of one of the totalizing wheels.

Figure 6 is a horizontal section taken substantially on the line 6—6 of Figure 2.

Figure 7 is a cross section taken on the line 7—7 of Figure 6.

Figure 8 is a cross section taken on the line 8—8 of Figure 6.

Figure 9 is a cross section taken on the line 9—9 of Figure 6.

Figure 10 is a cross section taken on the line 10—10 of Figure 6.

Figure 11 is a detail longitudinal section taken on the line 11—11 of Figure 6.

The particular purpose for which the register is intended is to indicate and register the individual stroke at each hole in the game of golf and also the accumulated strokes at all of the holes. The register is not intended to be limited to this particular purpose because there are many others to which it is adaptable, for in-

stance registering the number of people in successive rooms and then the total number of people in the house.

The mechanism is contained by a case 1, usually of metal, the case being of a small enough size to permit its convenient carrying around. The top 2 (Fig. 1) has a long row of windows 3 through which numbers on turnable individual-hole counter wheels may be seen and a short row 4 through which numbers on totalizing counter wheels may be seen. A button 5 is intended to be depressed after each stroke thereby to register the stroke.

Guides 6 form a slot to receive a par card which is to be inserted for the particular course being played. A button 7 projecting at one end of the case is adapted to be given one complete turn in the act of selecting the particular hole being played. The number of that hole will be indicated at one of the windows 8 (Fig. 2) in the near side of the case. These windows may be numbered from 1 on up beginning at the left end of the row. A turn of the button 7 either advances the selector or backs it as desired with reference to the row of windows 8.

A button 9 on the opposite end of the case 1 (Figs. 1 and 2) is adapted to be given a complete turn in order to reset all of the counters to zero. The button 9 may be turned for resetting at any time either during the game, which is not probable, and at the end of the game. The button 7 may be similarly turned at any time. The two buttons are independent of each other.

The selective registering mechanism on the inside of the case is as follows:—A group of individual-hole counter wheel units designated from 10 to 27 (Fig. 6) is arranged beneath the long row of windows 3, each counter wheel coinciding in position with one of the windows so that the numerals running from "0" to "14", standing for the number of possible strokes per hole, can be seen in succession.

Since the construction of all of the wheels 10 to 27 is identical, the description of the wheel 10 and its immediate parts will suffice for all. The wheel 10 is in the form of a drum, (Fig. 9) on the periphery of which the numerals appear. A gear 28 is secured to one side of the wheel. A pawl 29 (Fig. 9) is pivoted at 30 to the wheel 10 on its inside. This pawl is used for clearing purposes, and it coacts with the button 9 which is hereinafter known as the clearing button. This button is secured to a shaft 31, and the pawl 29 is held against the shaft by a spring 32.

The gear 28 has fifteen teeth to correspond to the numerals "0" to "14". In order to stop the successive numerals in registration with the window 3, a locating roller 33 (Fig. 9) is pressed against the gear 28 by a spring 34. The roller is carried by a bell crank 35 which is pivotally mounted at its substantial middle on a rod 36 which is common to a number of such cranks (Fig. 6), all of the same type and for the same purpose.

The locating roller 33 keeps the counter wheel 10 from getting out of position due to shock or vibration. It also keeps the counter wheel from advancing more than one tooth upon depression of the button 5 hereinafter known as the counting button. The roller 33, and its spring 34 also insures the full advance of one tooth 28 since the spring makes the roller ride down the decline of the tooth until it rests in the tooth recess. On the shaft 31 with the individual-hole counter wheels is a totalizing counter (Fig. 6) comprising three wheels or drums 37, 38 and 39. These represent units, tens and hundreds, and the numerals on the peripheries run from "0" to "9". The units wheel 37 makes a turn with every turn of the selected individual counter wheel. On the tenth stroke the units wheel 37 picks up the tens wheel 38 and so on. The wheel 10 registers only individual strokes up to fourteen, but the wheels 37, 38 and 39 register the strokes represented by all of the wheels 10 to 27.

The numerals of the totalizing counter can be seen through the windows 4 (Fig. 1). The wheel 37 (Fig. 6) has a gear 40 secured to one side of it (Fig. 7). In a recess 41 (Fig. 7) the wheel 37 pivotally carries a pawl 42 for clearing purposes. This is held against the shaft 31 by a spring 43 precisely on the order of the pawl 29 (Fig. 9). Similar pawls for the identical purpose are mounted inside of the wheels 38, 39 as in the instance of the pawl 44 of the wheel 38 (Fig. 8).

On the side opposite the gear 40 (Fig. 7) the wheel 37 carries a ratchet gear 45. This is smaller in diameter than the gear 40 but thicker. Both gears 40, 45 have ten teeth corresponding to the numerals on the periphery of the drum 37. A locating roller 46 engages the gear 40 for the purpose already fully described with respect to the roller 33 (Fig. 9).

Attached to the side of the ratchet gear 45 (Fig. 7) is a steel spring 47. This comprises a base part, which is fastened down at 48, and a curved laterally projecting part 49 (Fig. 11) which goes through an opening 50 (Fig. 8) in a stationary carry-over plate 51 to operate on the internal teeth 52 (Figs. 5, 8, and 11) of the ratchet gear 53 (Fig. 6) of the tens wheel 38.

A carry-over plate 54 (Figs. 6 and 11), similar to 51, is stationarily mounted between the wheels 38, 39. The wheel 38 will have a spring similar to 47 with a projection through an opening 55 in the carry-over plate (Fig. 11) to operate on the internal teeth 56 of a ratchet gear 57. The tens and hundreds wheels 38 and 39 and their associated parts (the carry-over plates 51, 54, gears 53, 57, etc.) are identical.

The projecting part 49 of the spring 47 (Fig. 7) is so tensioned that it bends toward the periphery of the wheel 37. This tension makes the projection follow the contour of the opening 50 (Fig. 8) in the carry-over plate 51. This opening is circular for the most part, and its diameter is less than the internal diametral line of the teeth

52. This arrangement keeps the projecting part 49 out of engagement with the teeth 52 until an offset 58 (Fig. 8) in the opening 50 is reached. The part 49 can then move outwardly into engagement with the ratchet gear 53 and move the wheel 38 the distance of one tooth.

The offset 58 comprises cam means. Its function is to let the part 49 first move outwardly to engage a tooth 52, and then cause that part to move inwardly into disengagement. Thereafter the part 49 rides the rim of the opening 50 until the totalizing counter is to register ten strokes higher.

A slot 59 running nearly from one end to the other of the shaft 31, virtually forms a tooth to engage the clearing pawls 29 (Fig. 9), 42 (Fig. 7) and 44 (Fig. 8) for the purpose of clearing the counters. A complete turn of the clearing button 9 in the counter-clockwise direction (looking at it from the right end of the case 1) will cause the tooth (slot) 59 to catch all of the various clearing pawls wherever they may stand and move them to the top or zero position. At all other times the shaft 31 is held stationary by a locator 60 (Figs. 6 and 10). This comprises a leaf spring with a knob 61 to enter a recess 62 in the periphery of a disk 63. The disk is secured to the shaft by a pin 64.

The structure by which the counter wheels are turned is as follows:—The counting button 5 (Figs. 1 and 10) has a downwardly beveled boss 65 on the nether side. The top part of the boss is larger in diameter than the hole 66 in the top 2 through which the button works and so keeps the button from coming out. The button has a pin 67 (Fig. 10) extending below the boss 65. This pin is received and guided by a seat 68 secured to the bottom of the case on the inside.

A plunger plate 69 receives the thrust of the boss 65 on top and the thrust of a spring 70 (Fig. 10) from underneath. The spring is assembled around the pin 67 and seat 68. Pressure on the button 5 turns the plate 69 against the tension of the spring 70, and because of the boss 65 being beveled to a blunt point (Fig. 10) there is a minimum of restriction to the resulting turning of the plate. The amount of turning is limited by screw studs 71 (Figs. 6 and 9), the positions of these being adjustable and locked by nuts 72.

One end of the plate 69 has an oversized notch 73 (Figs. 6 and 10) to receive the pin 67. The plate 69 turns on a screw shaft 74 which acts as a hinge pin. The plate has knuckles 75 (Figs. 6 and 10) to receive unthreaded parts of the shaft. The screw thread 76 stands out from the shaft (Fig. 6). In order to permit assemblage the openings in the knuckles 75 are made larger than the outside diameter of the screw thread. Bushings 77 (Fig. 6) are then inserted in these openings, and the unthreaded parts of the shaft are received by these bushings. The shaft is journaled in bearings 78. Set collars 79 keep the shaft as well as the plunger plate in the proper position in the assemblage.

The pitch of the thread 76 is such that two complete revolutions of the shaft 74 will carry a selector 80 (Fig. 6) from one counter position to another. The selector can either be advanced or backed depending on the direction of rotation of the screw shaft. One turn of the button 7, hereinafter known as the selector button, will move the selector 80 as stated. For this purpose the shaft 81 of the selector button (Fig. 6) car-

ries a large spur gear 82 which meshes with a half sized spur gear 83 on the shaft 74. The ratio is 1:2 so that one turn of the selector button causes two turns of the screw shaft. The shaft 81 has locating means 84 similar to the structure 60—63 in Figure 10. This means prevents rotation of the shaft 74 except when manually rotated.

Holes 85 (Fig. 9) are drilled through the plunger plate 69 in the direction of its width. These are counterbored at 86. The structure in each of the holes is alike, and the description of one will suffice for all.

A plunger 87 works in the hole 85. Its head 88 works in the counterbore. A spring 89 in the counterbore tends to eject the head, but a pin 90 fixed crosswise of the plate and going through a slot 91 in the head limits the movements of the plunger in both directions of its sliding movement.

Sloping sides 92 (Fig. 6) of the selector 80 give its working face a wedge shape. As the selector is driven behind the head 88 (Fig. 9) the plunger 87 is projected against the tension of the spring 89. Otherwise the plunger is retracted so that the respective counter wheel remains inoperative despite a rocking of the plate 69. The selector 80 renders one counter wheel operative at a time and is necessary to make any one registering unit operative.

For that purpose the inner end of the plunger 87 carries a pawl 93 (Figs. 4 and 9). This pawl is normally hinged on a pin 94 and is held in a substantially horizontal position by a leaf spring 95. This keeps the pawl pressed against shoulders 96 (Fig. 3) on the top part of the plunger 87. The latter is made non-circular in cross section (Fig. 3) to prevent its turning. The pawl 93 is rigid on a down stroke of the plate 69 thereby to turn the counter wheel 10, but on the return stroke the spring 95 yields to let the pawl pass over the tooth on the gear 28.

A plunger 97 and pawl 98 (Figs. 6 and 7), identical in every respect except length with the plunger 87 and pawl 93, actuates the ratchet gear 45 of the totalizing counter. An additional exception is that the plunger 97 is permanently projected by a block 99 loose on the screw shaft 74 so that the ratchet gear 45 is given a turn with every depression of the plate 69.

The plunger 97 (Fig. 7) is longer than the plunger 87 (Fig. 9), the reason being that it must extend in farther to reach the ratchet gear 45 which is of smaller diameter than the gear 28. While the pawl 93 (Fig. 9) is making a relatively short stroke 100 to move the gear 28 a $\frac{1}{15}$ turn, the pawl 98 (Fig. 7) makes a relatively longer stroke 101 to move the ratchet gear 45 a $\frac{1}{10}$ turn. The differences in diameters of the gears 28, 45 make these proportions work out right.

The operation is briefly reviewed as follows.— Assume that a game is about to be played. Insert a par card between the guides 5 (Fig. 1). Turn the clearing button 9 counter-clockwise (looking at it from the right end of the case 1). The tooth formed by the slot 59 will catch all of the various clearing pawls 29, 42 and 44 (Figs. 9, 7, and 8) all being alike and for the same purpose, and bring them, consequently the individual-hole wheels 16, etc. and the totalizing counter wheels 37, 38, 39 to the zero or starting position.

Next turn the selector button 7 counter-clock-

wise (looking at it from the left end of the case 1) in order to back the selector 80 into a position behind the first window 8 at the left of the row (Fig. 2). Thus the selector indicates the first hole which is about to be played, it being borne in mind that the windows represent the holes. As long as the player is at the first hole he will not turn the selector button 7 further.

For every stroke at the first hole he pushes on the counting button 5 once. Since the selector 80 has projected the pawl 93 (Fig. 9) to the operative position, each depression of the button will give the counter wheel 10 a $\frac{1}{15}$ turn. Simultaneously with this the pawl 98 (Fig. 7) will give the units wheel 37 a $\frac{1}{10}$ turn. The tenth turn of the wheel 37 will be accomplished by a turn of the tens wheel 38. That is accomplished because the projecting part 49 of the spring 47 (Fig. 7) has reached the offset 53 which lets said part through into engagement with the internal teeth 52 of the tens wheel (Fig. 11).

The wheels 10 to 27 (Fig. 6) are referred to in the claims as a group of counter wheels. These are independent of each other so that as the selector 80 is shifted along the plunger plate 69 they will become sequentially operative due to the respective pawls being shifted into operative connection with the wheels. This statement is to be regarded as describing an engagement of the pawls with the gears 28, but it is conceivable that each counter wheel could be arranged for direct engagement by its pawl.

Inasmuch as the plunger plate 69 carries all of the pawls, said plate is both the common carrier and the common operating means. The shiftable plungers 87 all actuate the selective operable means. When one of these plungers is shifted everything carried by it goes with it, and it is through the plungers that the selection of a counter wheel 10, etc., is made.

As regards the selector 80 it is not always necessary that this be within range of the projecting heads 88. There is an appreciable space between the last head 88 and the block 99 (Fig. 6). The selector 80 may be shifted into the space out of range of the heads. The shaft 74 is the means by which the plate 69 is movably supported.

I claim:—

1. A register comprising a group of independent counter wheels, a series of pawls one for each wheel in the group, a common carrier for all of the pawls and supporting means movably supporting the carrier, and a selector operable along said supporting means and so shiftable along the common carrier thereby to render any one of the series of pawls operative.

2. A register comprising a group of independent counter wheels, a series of pawls one for each wheel in the group and normally out of operative engagement with the respective wheel, a common carrier for all of the pawls, a selector shiftable along the carrier to move the series of pawls one by one into operative engagement with the group of wheels so that only one pawl and wheel is operable at a time, and means to work the common carrier thereby to actuate the selected counter wheel.

3. In a register, a group of independent counter wheels, a series of pawls one for each wheel in the group, a common movable carrier for the series of pawls, means on the carrier tending to normally move the pawls away from the wheels, and a selector shiftable along the carrier to sequentially overcome said means and advance a

pawl into operative engagement with the respective wheel.

4. In a register, a group of independent counter wheels, a pawl for each wheel, a common movable carrier for all of the pawls, means on the carrier tending to render the pawls inoperative respecting the wheels, a shaft by which the carrier is movably supported, and a selector shiftable along the shaft to overcome said means in sequence and render the respective pawl operative respecting its wheel.

5. In a register, a counter wheel having a gear, a pawl to engage the gear, a plunger carrying the pawl and a head on the plunger said head having a slot, a plate having a hole and counterbore for the respective plunger and head, a spring in the counterbore tending to project the head from the plate and draw the pawl back from the gear, a selector to push on the head against the spring to engage the pawl with the gear, and a pin on the plate going through the slot.

6. A register comprising a group of independent counterwheels, individual means for operating each wheel including a pawl and a head, a common carrier for all of said means, a spring for each means tending to make the respective pawl inoperative and project the head from the carrier, a screw shaft on which the carrier is loosely supported, a selector on the screw shaft, and means for turning the screw shaft to successively push in the heads and make the respective pawl operative respective its wheel.

7. A register comprising a group of independent counterwheels, individual means for operating each wheel including a pawl and a head, a common carrier for all of said means, a spring for

each means tending to make the respective pawl inoperative and project the head from the carrier, a screw shaft on which the carrier is loosely supported, a selector on the screw shaft, and means for turning the screw shaft to successively push in the heads and make the respective pawl operative respective its wheel, said selector having sloping sides giving it a wedge shape.

8. A register comprising a group of independent counterwheels, individual means for operating each wheel including a pawl and a head, a common carrier for all of said means, a spring for each means tending to make the respective pawl inoperative to project the head from the carrier, a screw shaft on which the carrier is loosely supported, a selector on the screw shaft with respect to the carrier to successively push in the heads and make the respective pawl operative respecting its wheel, and means for then moving said carrier with respect to the screw shaft so as to engage the operative pawl with said wheel.

9. A device by which to register and indicate any sequence of acts, comprising a case having a row of windows, selective registering mechanism inside of the case including a succession of units matching the windows in position, a button projecting through the case having means to work the mechanism upon depression of the button so as to do the registering, and a selector means which is necessary to make any one unit operative, said means being moved along the case in back of the windows until that unit which it is desired to make register is reached, said selector means being visible through the corresponding window so to indicate the unit selected for registration.

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