June 29, 1948. L. C. GARDNER 2,444,224

REGISTER DEVICE

Filed Aug. 16, 1946 2 Sheets-Sheet 1

Fig. 1

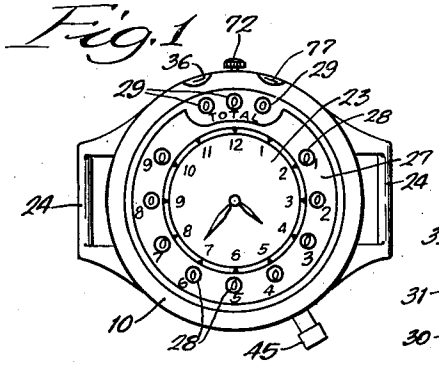


Fig. 2

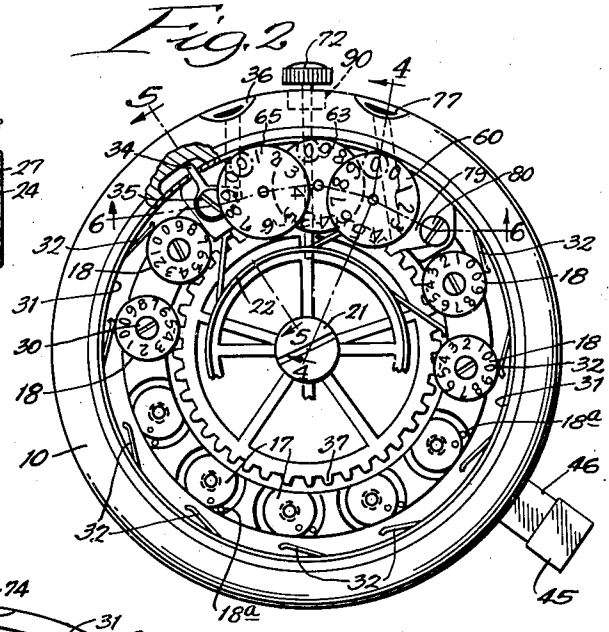


Fig. 3

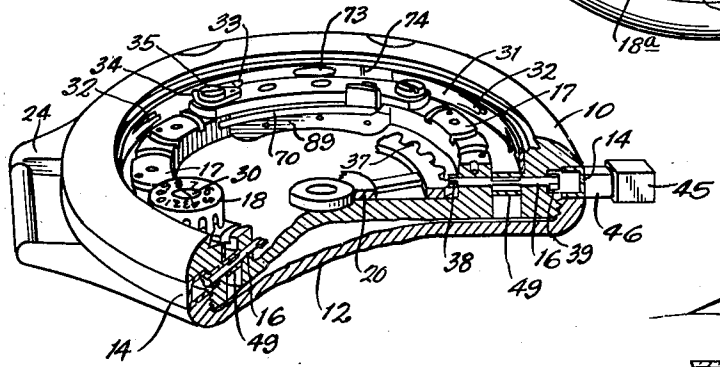


Fig. 4

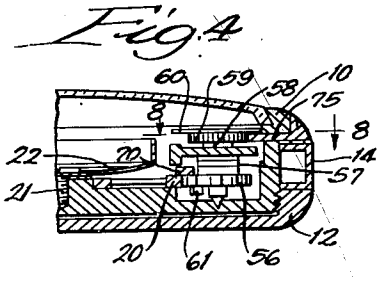
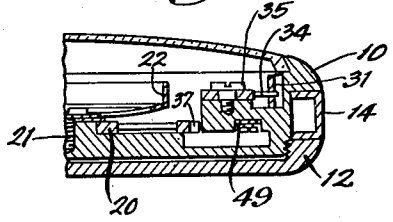


Fig. 5



Inventor:
Lowell C. Gardner.
By Dawson, Booth and Spangenberg,
Attorneys.

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Fig. 6

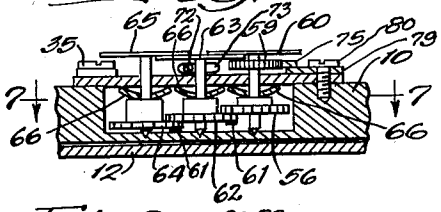


Fig. 7

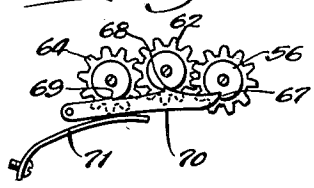


Fig. 8

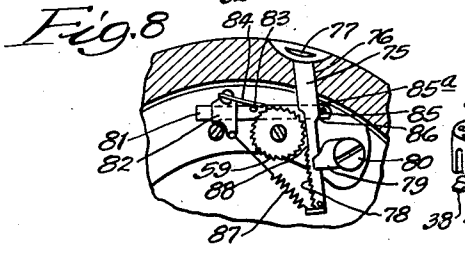


Fig. 9

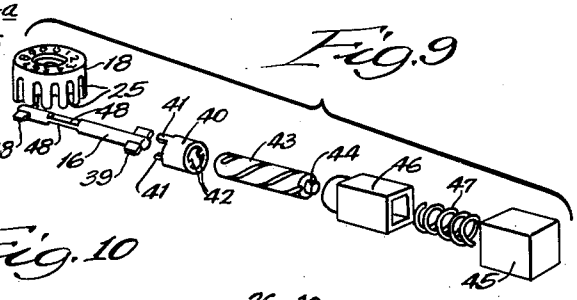


Fig. 10

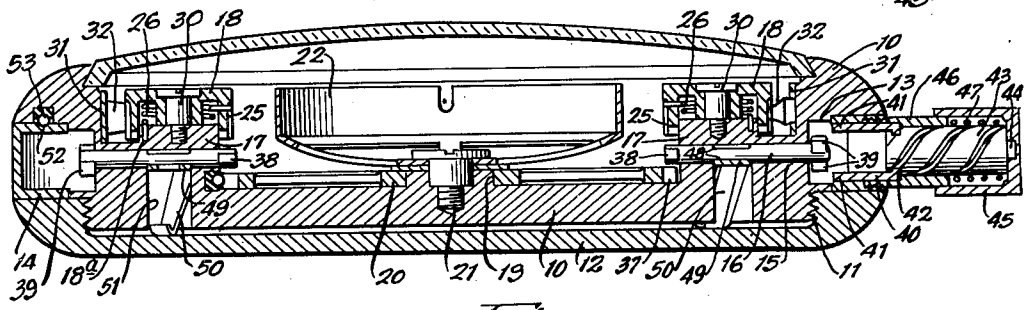


Fig. 11

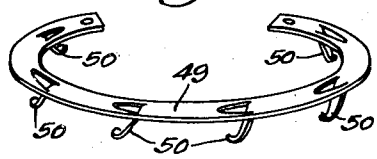


Fig. 12

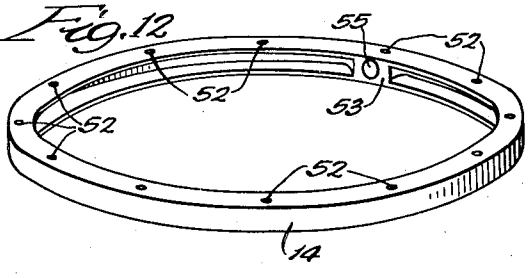
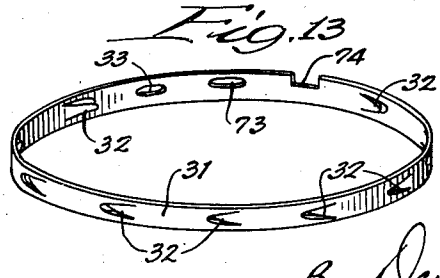


Fig. 13



Inventor:
Lowell C. Gardner,
By Dawson, Booth and Spangenberg,
Attorneys.

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UNITED STATES PATENT OFFICE

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REGISTER DEVICE

Lowell C. Gardner, North Miami, Fla.

Application August 16, 1946, Serial No. 691,088

6 Claims. (Cl. 235—114)

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This invention relates to a register device. It is particularly useful in the registering of golf scores and other data, and is preferably employed in combination with a timepiece.

An object of the invention is to provide a register which will register or set out upon separate indicia-bearing disks the results of a count or score, while at the same time providing means for totaling the results upon the separate disks or counters. A further object is to provide a register structure of simplified construction providing a plurality of separate counters with which a manual member may be brought into clutching engagement so as to provide a record upon each of the counters while at the same time providing a totalizing counter or counters setting forth the aggregate of the individual counters. A further object is to provide such counter mechanism with means for automatically resetting the same upon operating a reset member. Yet another object is to provide means in a counter structure embodying individual counters and totalizing counters, separate control means for releasing the individual counters to restore them to zero, and means for returning the totalizing counters to zero. Yet another object is to provide a unique structure in which individual counters are arranged in an annular row around a circular case, together with means for aligning a manual control member with the separate counters for actuation thereof, and means for recording the movements of the manual actuator upon a totalizing counter. Yet another object is to provide in a casing structure an annular row of separate counters, together with means for manually actuating or setting the counters in combination with a timepiece centrally housed within said annular row of counters, the numerals of the timepiece being aligned with the number registrations of the separate counters. Other specific objects and advantages will appear as the specification proceeds.

The invention is illustrated, in a preferred embodiment, by the accompanying drawings, in which—

Figure 1 is a plan view of a register structure embodying my invention; Fig. 2, a plan view of the circular portion of the structure shown in Fig. 1, the dial and glass cover being removed; Fig. 3, a perspective and part sectional view of the structure shown in Fig. 1; Fig. 4, a detail sectional view, the section being taken as indicated at line 4—4 of Fig. 3; Fig. 5, a detail sectional view, the section being taken as indicated at line 5—5 of Fig. 2; Fig. 6, a broken detail sectional view, the section being taken as indicated at line 6—6 of Fig. 2; Fig. 7, a plan view of the totalizing counter gears and the mechanism for stopping each at zero during resetting; Fig. 8, a sectional detail view, the section being taken as indicated at line 8—8 of Fig. 4; Fig. 9, an exploded perspective view of the manual mechanism for actuating the counters; Fig. 10, a transverse sectional view on an enlarged scale; Fig. 11, a perspective view of the spring band employed; Fig. 12, a perspective view of the rotatable selector ring employed; and Fig. 13, a perspective view of the pawl or latch device used with the separate counters.

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In the illustration given, 10 designates a main casing body providing a central recess or chamber and having a lower threaded portion 11. Threadedly engaging the portion 11 is an outer case cover or bottom 12.

The casing body 10 is provided peripherally with an annular recess 13 in which is rotatably mounted a rotatable ring 14. Also, the body 10 is provided at spaced intervals with longitudinal recesses 15 adapted to receive the rotatable shafts 16. The body 10 also provides, as shown more clearly in Figs. 3 and 10, a plurality of raised bosses 17 adapted to rotatably receive the individual counters 18. The body 10 is also provided with a central boss 19 upon which is rotatably mounted a ring gear 20.

A screw member 21 threadedly engages the central portion of the body 10 and secures thereto a watch-supporting frame 22. The member 22 is preferably formed of spring metal so as to firmly secure and protect the central timepiece 23 against injury.

If desired, the lower cover 12 may be integrally provided with laterally-extending arms 24 having slots therein adapted to receive a wrist strap band.

The individual counters 18 may be of any desired form or structure. In the illustration given, I provide a member bearing numerals on its upper surface and having its side walls provided with spaced grooves or slots 25. The member 18 is recessed interiorly to house a spring 26 fixed to the casing boss 17 at one end and to the member 18 at the other, the tension of the spring being such as to maintain the disk 18 with the numeral zero showing through the aperture in the dial 27 thereabove. If desired, the counter 18 may be provided with a single tooth for engaging a stop pin 18a in the adjacent groove. As shown more clearly in Fig. 1, the opening 28 in

the dial 27 is preferably aligned with an hour number shown on the timepiece 23. In addition to the openings 28 for the separate counters, there are openings 29 in the dial for the totalizing counters.

Each of the counters 18 is rotatably mounted upon a pin 30 fixed to the boss 17.

A pawl band 31 is received within the chamber of the casing 10 and around the separate counters 18. The band 31 is provided with a plurality of outwardly-extending pawls 32 adapted to engage the vertical grooves 25 in each counter so as to maintain it in fixed position. The band 31 is provided with a recess 33 adapted to receive an arm 34 carried by a pivotally-mounted bell crank 35. The crank 35 is provided with a lever terminating in a handle 36 by which movement of the arm 34 and the corresponding movement of the ring 31 may be effected to release the pawls 32 from engagement with the individual counters 18.

It will be observed that the ring gear 20 has teeth 37 vertically aligned with the teeth of grooves 25 of the individual counters 18 so that a single device may be employed for actuating both at the same time.

The shaft 16 is adapted to be rotated and is equipped at its end with a cross member 38 so as to engage the teeth 37 of ring gear 20 and the teeth 25 of individual counter 18 to actuate both simultaneously. The shaft 16 is provided at its upper end with a crosspiece 39 adapted to be engaged by a rotatable sleeve 40 having inwardly-extending arms 41, as shown more clearly in Fig. 9. The sleeve 40 has inwardly-extending teeth 42 engaging a grooved actuating member 43. The actuating member 43 has a reduced upper end 44 permanently fixed to an outer button 45. Member 43 is guided within a casing sleeve 46 and a spring 47 therein normally urges the button 45 to its outer position, as shown more clearly in Figs. 9 and 10.

In order to stabilize the shaft 16 and to prevent any undesired rotation thereof, I prefer to flatten an inner portion of the shaft 16 at 48. The friction ring 49, as shown best in Fig. 11, bears against the flattened portion 48 of shaft 16 and is provided with depending spring legs 50 extending through a slot 51 in the casing body 10 and bearing against the inner face of the bottom cover 12.

In order to prevent excessive rotation of the rotatable ring 14 within the channel 13 of casing 10 and in order to align the ring 14 so that the rotatable sleeve will readily engage the shaft 16 at selected intervals, I provide the top wall of the ring 14 with indentations 52, as shown best in Figs. 10 and 12. Balls 53 carried by the body 10 and urged by a rubber seat engage the indentations 52 in the upper spring face of the member 14 so as to releasably lock the ring 14 in the desired spaced alignments. Ring 14 is provided at one section with a solid portion 54 through which extends an opening 55. The opening 55 rotatably receives the sleeve 40.

From the structure already described, it will be understood that the separate counters 18 are normally held in fixed position by the spring pawls 32 of the ring 31 and that each of the counters 18 may be actuated separately by the manual button 45 to bring the desired score or other numeral in the opening 28 of the dial so as to thus register a score or other numeral for a given golf hole or any other event.

By utilizing the ring gear 20 and a totalizing

counter, I provide at all times a total count of the score as the individual counters are successively operated. When the shaft 16 is rotated to move the counter 18 one space, the crosspiece 38 simultaneously engages the tooth 37 of the ring gear 20 therebelow and moves it one space.

A totalizing unit gear 56, as shown best in Fig. 4, is in constant mesh with the teeth of the ring gear 20. The gear 56 is mounted upon a shaft 57, and upon a reduced end portion 58 of the shaft is mounted a reset gear 59. Above gear 59 is an indicator disk 60 bearing numerals up to ten. The gear 56 has a depending tooth 61 adapted to engage once during each revolution an adjacent totalizing gear 62. This gear has a disk 63 thereabove registering numerals in tens. A third gear 64 carries at its outer end a disk 65 for registering hundreds. Each of the gears 56, 62 and 64 is provided with a friction washer 66 to prevent accidental misplacement of the gears and to maintain a desired friction upon each. Gear 56 is provided with a cam recess 67, gear 62 is provided with a cam recess 68, and gear 64 is provided with a cam recess 69. It will be noted that the recesses 69 and 67 are inclined in a different direction from the recess of gear 62. Gears 56 and 64 rotate in a different direction from the intermediate gear 62. A cam member 70 is supported by a flat spring 71 in the position best shown in Fig. 7 and serves the purpose of stopping each of the gears with the numeral zero in registry with the opening 29 in the dial during the resetting operation.

The winding stem 72 of the watch 23 extends through the opening 73 in the pawl band 31 and through a passage in the casing body 10. The spring band 31 is cut away at 74 to permit the action of a reset shaft which will now be described.

As shown more clearly in Fig. 8, the gear or ratchet 59 fixed upon the shaft 58 of the gear 56 is adapted to be moved for resetting the gears 56 and thereby gears 62 and 64 to their initial positions. As shown more clearly in Fig. 8, a shaft 75 is slidably mounted in a slot 76 in the casing body 10 and is provided with a handle portion 77.

At its inner side, the shaft 75 is provided with teeth 78 adapted to be brought into engagement with the ratchet 59 when the shaft 75 is drawn outwardly. The shaft 75 is normally guided for reciprocal movement by the overhanging member 79 secured by the screw 80 to the casing body. A latch bar 81 is guided within a bracket 82 for horizontal movement and the bar carries a pin 83 which, in the position shown in Fig. 8, maintains a spring pawl 84 out of contact with the teeth of ratchet 59. The inner end of the latch bar 81 is provided with a pin 85 adapted to engage an inclined surface 86 of the actuating shaft 75. A spring 87 connects the lower end of actuating shaft 75 and the bracket 82. It will be noted that there is an intermediate reduced portion 88 of the shaft 75 where the shaft is not provided with teeth and where the shaft, when in the inner position shown in Fig. 8, does not engage the ratchet teeth 59.

The slot 73 provides a limit for rotation opening 31.

The shaft 75 is provided with a notch or recess 85a to receive pin 85.

As shown more clearly in Fig. 3, the casing body 10 may be provided with an undercut 89 between the end portions of spring 49 for the totalizing gears 56, 62, and 64. If desired, the stem 72 of the timepiece may be enclosed within a rubber

or resilient collar 90, as indicated more clearly in Fig. 2.

The ball 20a slides in between the teeth of the ring gear 20 to maintain the teeth always in line.

Operation

The operation of the device will be described, for the purpose of simplicity, in connection with the registering of scores on a golf course, but it will be understood that the structure may be employed for other registering uses.

After a hole has been played and the operator desires to register the score for that particular hole, he swings the button 45 so as to bring it into alignment with the hole in question. For example, if the hole is number 1, he will swing the button 45 until it is aligned with the numeral 1 shown on the outer edge of the dial 27. When he reaches the point of alignment, the balls 53 of casing 10 will slip into the corresponding recesses and thus will facilitate the alignment of the manually-operated means with the shaft 16. The operator will then press the button 45 inwardly to indicate the number of strokes taken on that hole. For example, if the score is 4, the operator will press the button 45 inwardly four times. As the member 45 moves inwardly, it carries the groove shaft 43 bodily with it and rotates the sleeve 40. Sleeve 40 causes its arms 41 to engage the crosspiece 39 of shaft 16 and rotates the shaft ½ revolution. Similarly, the crosspiece or teeth 38 at the opposite end of the shaft 16 simultaneously moves the teeth 25 of counter 18 and the teeth 37 of ring gear 20. The four separate inward movements of the button 45 result in the rotation of the counter 18 and the numeral-bearing disk thereon so as to bring the numeral 4 into alignment with the opening 28 of the dial. At the same time, the ring gear 20 is rotated to the extent of four teeth, and this causes the totalizer gear 56 to register four units on its disk 60.

When hole 2 has been played and the score is, say, 5, the player will swing the button 45 until it is aligned with hole 2 as indicated on the dial, and the button 45 is pressed inwardly five times successively so that the individual counter 18 aligned therewith will show the number 5 through the opening 28 aligned with hole 2. The ring gear 20 is advanced by five teeth and this is registered by the totalizing unit gear 56 to show the number 9. As the total score increases, the gears 62 and 64 will be brought into play, the depending tooth 61 of each gear engaging the next adjacent gear once during each revolution thereof so that the intermediate gear 62 will register in tens and the outermost gear 64 will register in hundreds.

After nine holes have been played and the player is ready to start on the tenth hole, he will raise the handle 36 and this movement will swing the latch ring 31 to the left and thus will release each of the individual counters 18. Upon such release, the spring 26 of each will immediately restore the counter to its zero position. The handle 36 may then be pushed in to its normal position, as illustrated in Fig. 2. This movement moves the latch ring 31 back to its initial position in which the pawls 32 are effective for maintaining each of the separate counters 18 against movement.

It will be noted that the above release operation in which the individual counters are restored to their zero position, does not affect the totalizing gears and, as the player proceeds through the second nine holes, the aggregate of the scores indicated on the separate counters is added to the total score already indicated for the first nine holes.

At the conclusion of the game and when it is desired to reset the entire register for the next day's game, the handle 36 is first drawn outwardly to release the latch or pawl ring 31 so that the individual counters 18 are restored to their zero position. The handle 36 is then pressed downwardly to restore the pawls 32 to operative position. The handle 77, as shown best in Fig. 8, is then drawn outwardly so as to bring the teeth 78 thereof into engagement with the ratchet 59. This movement causes the lever 81 to swing inwardly under the downward pressure of spring 84 and at the same time the spring pawl 84 engages the ratchet teeth 59. Upward and downward movement of the shaft 75 rotates teeth 59 so as to reset the totalizing gears 58, 62 and 64. In the resetting operation, the spring-urged cam member 70, having cams engaging the notches 67, 68 and 69 in the gears, serves to halt first gear 64 after it has reached the zero position, and next gear 62 after it has reached zero position, and finally the unit gear 56 when it has reached zero position. It will be noted that such cams and notches do not interfere with the movement of the gears in the opposite direction during the recording operation.

The register device is particularly useful on a golf course in that it enables the player to mark each stroke at the time he makes the stroke. Thus, after each play, the player will press a button 45 inwardly causing a ½ revolution of the shaft 16, thus rotating the counter 18 one step. In the pressing of button 45, the sleeve 40 first, by reason of friction, moves inwardly to its inner position and at that point starts its rotary movement.

On resetting the totalizing counter to zero, the members 70 will bring the pawl first into engagement with recess 69, leaving the gears 62 and 56 free to operate. After gear 62 is rotated to zero, the member 70 brings its second pawl into engagement with recess 68, stopping the gear 62, but leaving unit counter gear 56 free to operate. When unit gear 56 reaches zero position, the third pawl of member 70 will engage recess 67 to stop counter gear 56.

In the combination structure shown, the timepiece 23 has the hour numbers thereon preferably aligned with the registry openings for the separate holes. With this structure, the operator can align the minute hand with any selected hole and determine the intervening period of time required to play it and any selected number of succeeding holes. The watch is resiliently held within the enclosure provided by the annular row of counters.

While in the foregoing specification, I have set forth certain details as illustrative of an embodiment of the invention, it will be understood that such details may be varied widely by those skilled in the art without departing from the spirit of my invention.

I claim:

1. In a register device, a casing providing a chamber and an annular groove in the periphery thereof, a plurality of actuator shafts extending through passages in said casing between said annular groove and the interior of said chamber, means carried by the inner end of each of said shafts for actuating counter mechanism there-

in, said counter mechanism comprising individual counters and a totalizing counter, and a manual member for actuating said shaft to effect the rotation thereof.

2. In a register device, a casing providing a chamber and an annular groove in the periphery thereof, a plurality of actuator shafts extending through passages in said casing between said annular groove and the interior of said chamber, means carried by the inner end of each of said shafts for actuating counter mechanism therein, said counter mechanism comprising individual counters and a totalizing counter, and a manual member for actuating said shaft to effect the rotation thereof, said manual means being rotatably mounted within said peripheral groove and adapted to be brought into releasable engagement with each of said shafts.

3. In a register device, a casing providing a chamber and an annular groove in the periphery thereof, a plurality of actuator shafts extending through passages in said casing between said annular groove and the interior of said chamber, means carried by the inner end of each of said shafts for actuating counter mechanism therein, said counter mechanism comprising individual counters and a totalizing counter, and a manual member for actuating said shaft to effect the rotation thereof, said manual means comprising a reciprocable member and a rotatable sleeve connected thereto by a pin and spiral groove means, and clutch means connecting said sleeve to one of said shafts.

4. In a register device, a casing providing a chamber, said casing having an annular groove extending thereabout, a ring rotatably mounted within said groove, a plurality of spaced shafts extending through said casing and having ends extending into said groove, counter members arranged within said chamber in releasable engagement with said shafts, and manually-operable means carried by said ring and adapted to be brought into engagement with a selected shaft

for rotating the same to effect movement of said counter mechanism.

5. In a register device, a casing providing a chamber, said casing having an annular groove extending thereabout, a ring rotatably mounted within said groove, a plurality of spaced shafts extending through said casing and having ends extending into said groove, counter members arranged within said chamber in releasable engagement with said shafts, manually-operable means carried by said ring and adapted to be brought into engagement with a selected shaft for rotating the same to effect movement of said counter mechanism, and spring-locking means for aligning said manual means with said shafts.

6. In a register device, a casing providing a chamber, said casing having an annular groove extending thereabout, a ring rotatably mounted within said groove, a plurality of spaced shafts extending through said casing and having ends extending into said groove, counter members arranged within said chamber in releasable engagement with said shafts, manually-operable means carried by said ring and adapted to be brought into engagement with a selected shaft for rotating the same to effect movement of said counter mechanism, and spring means engaging each of said shafts to prevent free rotation thereof.

LOWELL C. GARDNER.

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