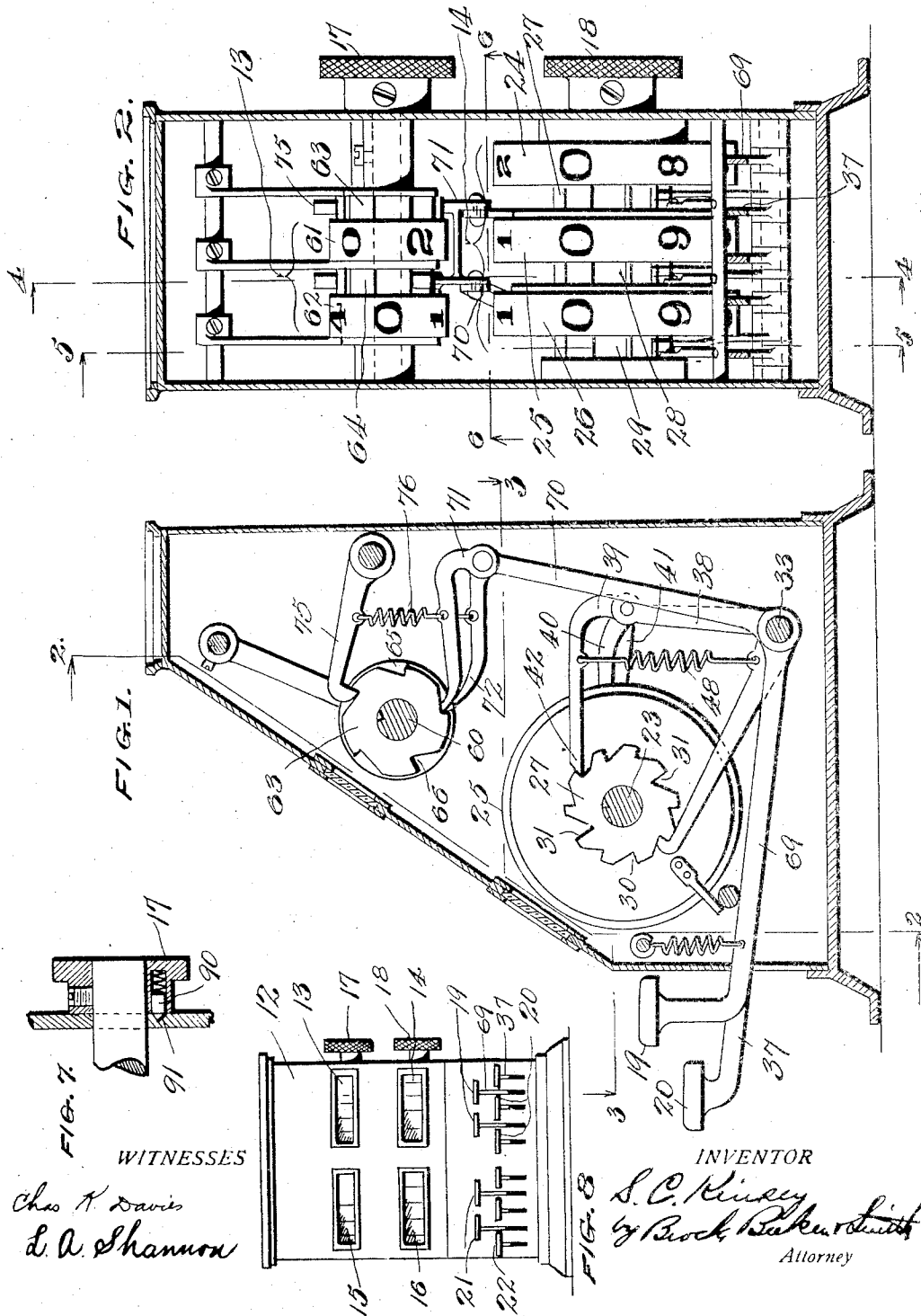


S. C. KINSEY.
REGISTERING MECHANISM.
APPLICATION FILED JULY 6, 1909.

972,198.

Patented Oct. 11, 1910.

3 SHEETS—SHEET 1.

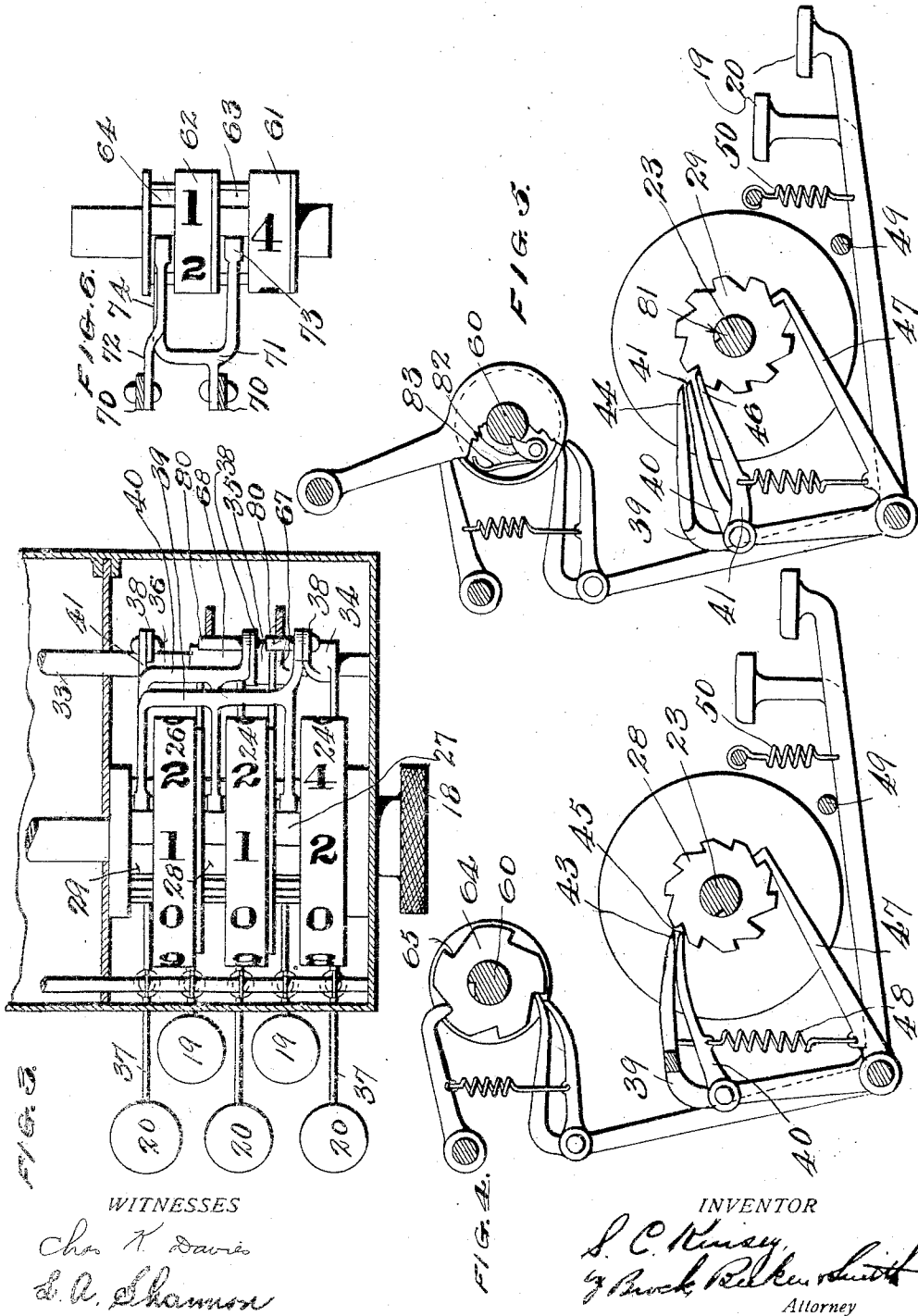


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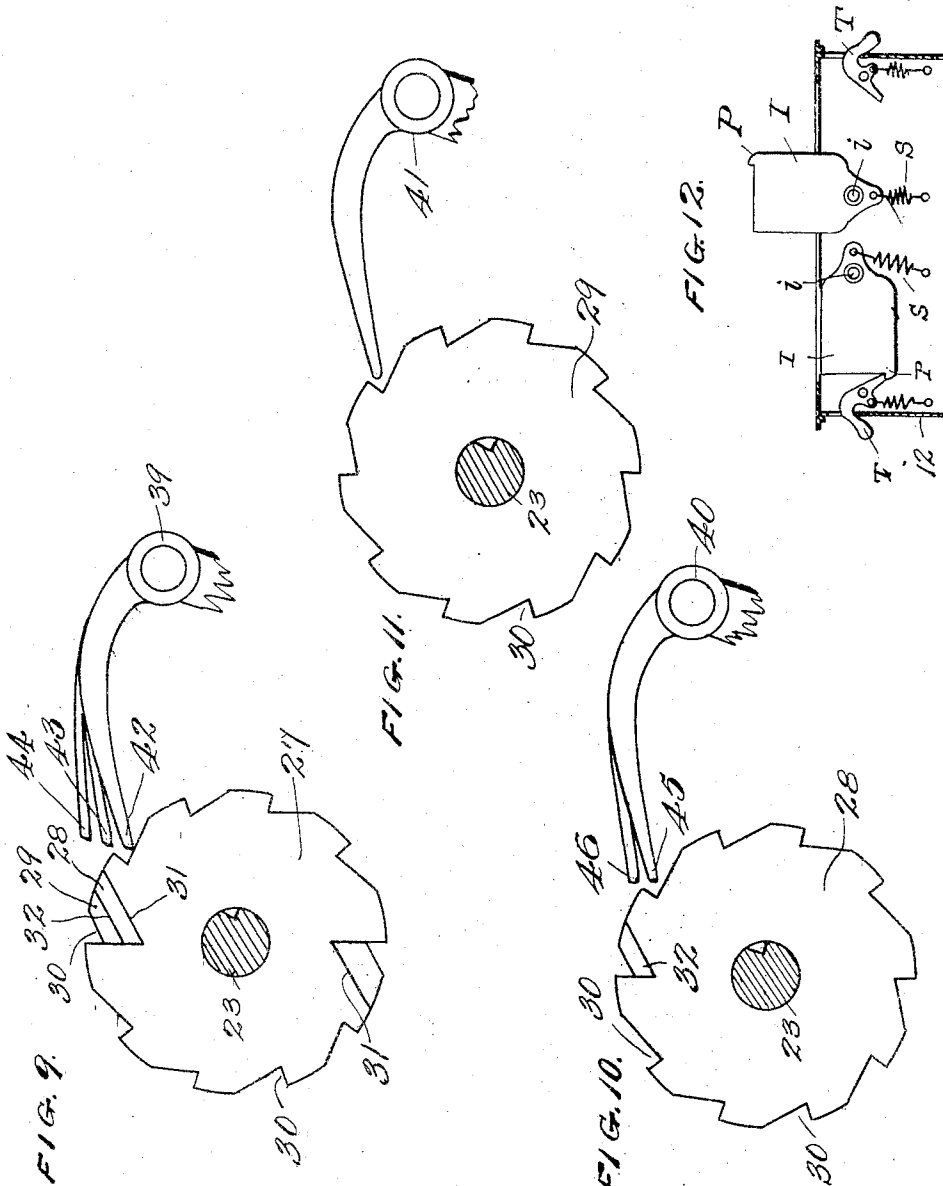


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3 SHEETS—SHEET 3.



WITNESSES

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STEPHEN C. KINSEY, OF OGDEN, UTAH.

REGISTERING MECHANISM.

972,198.

Specification of Letters Patent.

Patented Oct. 11, 1910.

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To all whom it may concern:

Be it known that I, STEPHEN C. KINSEY, a citizen of the United States, and resident of Ogden, in the county of Weber and State of Utah, have invented a certain new and useful Registering Mechanism, of which the following is a specification.

My invention relates to registering mechanism designed especially for use in recording the scores of bridge whist. The invention may be readily adapted to other uses, but it will be described as designed for the purpose indicated.

Among the principal features of the invention are the following: For each contestant (two partners) I provide registering mechanism consisting of two registering devices, one to record the game score and the other to record the total. Keys and actuating mechanism are provided for each of the registering devices and the mechanism is arranged so that when the game points are scored on the game register these points are added to the total automatically. The honors may be added to the total without affecting the game registering device. The unit disks of the registering devices are numbered by twos, thus—2, 4, 6, 8, 0, and two sets of units may be placed on one disk. This is easily done in the total registering device. The automatic "carrying" mechanism for adding to the tens and hundreds indication when the unit disk is moved is adapted to this method of numbering the unit disk. I usually provide two complete registers, each consisting of two registering devices as above described, the whole being arranged as an operative unit. There are four sets of keys for recording the game scores and totals for each of the contestants. Reset mechanism is provided which may be arranged so that the total indicating devices for both parties may be reset simultaneously and so that the game indicating devices for both parties may be reset simultaneously.

The objects and advantages of the invention will be described so far as is necessary hereinafter in connection with a detailed description of an exemplifying structure, in which the invention is embodied.

In the drawing, Figure 1 is a vertical section from front to back of the machine taken just within the right hand plate and looking toward the left. Fig. 2 is a section

looking from the front of the machine on the line 2—2 of Fig. 1. Fig. 3 is a section looking down on the line 3—3; Fig. 1. Fig. 4 is a detail view of the registering and operating mechanism looking from the left side of the machine, on the section line 4—4, Fig. 2. Fig. 5 is a similar view on the section line 5—5 of Fig. 2. Fig. 6 is a section looking upward on the line 6—6 of Fig. 2. Fig. 7 is a sectional detail of a portion of the reset mechanism. Fig. 8 is a front view of the whole machine consisting of two double registering devices. Fig. 9 is a diagrammatic view showing the triple pawl in its relation to the ratchets of the total registering mechanism. Fig. 10 is a similar view of the double pawl showing its relation to ratchets of either of the registering devices, and Fig. 11 is a similar view of the single pawl showing its relation to the unit ratchet of either the game or total registering device. Fig. 12 is a view of the "horse" or game indicating mechanism.

Fig. 8 is a front view of a complete machine, comprising a casing 12, a game registering device 13 and a total registering device 14 for one contestant, a second game registering device 15 and a total register device 16 for the other contestant, a reset knob 17 for the two game registers, a reset knob 18 for the two total registers, keys 19 for game register 13, keys 20 for total register 14, keys 21 for game register 15 and keys 22 for total register 16.

Figs. 1 and 2 show a registering device which consists essentially of one-half of the complete machine shown in Fig. 8, comprising the game register 13, the total register 14, reset knobs 17 and 18 and keys 19 and 20, and actuating mechanism which will now be described. The other half of the machine may be a substantial duplicate of the mechanism which will be described in detail except that the resetting devices are preferably common to both parts of the machine.

A shaft 23 carries the unit disk 24, tens disk 25, and hundreds disk 26, all the disks being revolubly mounted on the shaft. Reset knob 18 is rigidly fixed on the shaft. The unit disk carries a circular ratchet 27, tens disk a similar ratchet 28, and the hundreds disk a ratchet 29. In bridge whist

it is desired to score two units at a time and the unit disk is therefore marked with the alternate unit numbers. It is found convenient in order that the unit disk and its operating mechanism may be uniform with the other disks to put two sets of units on the unit disk so that in a preferred form of the invention the disk is numbered as follows: 0, 2, 4, 6, 8, 0, 2, 4, 6, 8. The ratchets 27, 28 and 29 are provided with the uniform shallow notches 30. The unit ratchet 27 has two deep notches 31 corresponding to the two sets of units on its disk. The ratchets and their pawls and the action of the carrying mechanism may be most readily understood by reference to Figs. 9, 10 and 11, which show these parts diagrammatically with other parts of the machine removed. In these views the deep notches in the disks are shown in an exaggerated way to make the operation of the machine more clear. The tens disk 28 has one deep notch 32, the depth of this notch being intermediate between the depth of the uniform notches 30 and the deep notches 31 of the unit disk. All the other notches on the tens and unit disks are the uniform notches 30. The hundreds disk has no deep notch, all the notches 30 being of uniform depth. The tens disk is numbered in the ordinary way from 1 to 0 and the hundreds disk is similarly numbered. Each of the ratchets, it will be observed, has altogether 10 notches, corresponding to the ten indicating positions of the corresponding disk.

A key shaft 33 mounted adjacent to the disk shaft 23 carries bell-cranks 34, 35, 36, corresponding, respectively, to disks 24, 25 and 26. Each of these bell-cranks has a horizontal arm 37 carrying one of the keys 20 and a vertical arm 38 at the upper end of which is pivoted a pawl. Bell-crank 34 carries a triple pawl 39; bell-crank 35 carries a double pawl 40, and bell-crank 36 carries a single pawl 41. The pawl 39 has a tooth 42 engaging the unit ratchet 27, a tooth 43 engaging the tens ratchet and a tooth 44 engaging the hundreds ratchet. Tooth 43 is elevated above tooth 42 so that when tooth 42 is at the bottom of one of the uniform notches 30 of the unit ratchet, tooth 43 will clear the notches of the tens ratchet, and tooth 44 is elevated above tooth 43 so that when tooth 43 rests at the bottom of one of the uniform notches 30 of the tens disk tooth 44 will just clear the notches of the hundreds disk. The double pawl has a tooth 45 engaging the tens ratchet 28 and a tooth 46 engaging the hundreds disk 29. Tooth 46 is elevated above tooth 45 sufficiently so that when tooth 45 rests at the bottom of one of the uniform notches 30 of latch 28, tooth 46 will just clear the notches of the hundreds ratchet 29. Tooth 42 of pawl 39 alone engages the unit ratchet 27,

as is best understood from Fig. 1. As shown in Fig. 4, the tens ratchet 28 is engaged by tooth 45 of the double pawl 40 and by tooth 43 of the triple pawl 39, the tooth 43 lying above tooth 45, and, as shown in Fig. 5, the hundreds ratchet 29 is engaged by the single pawl 41, by tooth 46 of the double-pawl which lies over pawl 41 and by tooth 44 of the triple pawl which lies over tooth 46. Each of the ratchets 27, 28, and 29 is provided with a holding pawl engaging the underside of the ratchet and pivoted on the key rod 33. The holding pawls and the actuating pawls are urged into contact with the ratchets by springs 48 stretched between the holding and actuating pawls. A stop bar 49 running across the tops of key-bars 37-limits the upward movement of the keys which are held against the stop bar by springs 50.

To register two points on the total registering device, key 20 corresponding to the unit disk 24 is depressed. This moves the triple pawl 39 toward the front of the machine as viewed in Fig. 8. Tooth 42 of the triple pawl is always in contact with ratchet 27 corresponding to the unit disk, and the ratchet and disk are thus rotated one indicating space. On release of the key it returns to normal position and the pawl moves back until tooth 42 is in engagement with the notch of ratchet 23 to the rear of the one previously acted upon. The unit key may be thus actuated until the unit disk indicates eight points without affecting the balance of the register. When the unit disk indicates eight points, however, the return movement of the key and pawl brings tooth 42 opposite one of the deep notches 31, of the ratchet. The tooth immediately drops into its notch on influence of its spring 48 until tooth 43 of the same pawl is in engagement with the bottom of one of the uniform notches of the tens disk. This engagement of tooth 43 with its notch maintains tooth 42 midway in deep notch 31 and also maintains tooth 44 clear of the hundreds ratchet. When the unit key is next depressed, therefore, the unit ratchet 27 and the tens ratchet 28 are rotated one indicating space by teeth 42 and 43 and the hundreds disk is not affected because tooth 44 is clear from ratchet 27. This registering action of the unit key may be continued until the unit disk shows 8 points and the tens disk shows a 9. Under these circumstances disks 27 and 28 are in such a position, as shown in Fig. 9, that one of the deep notches 31 of disk 27 is in line with deep notch 32 of disk 28. Tooth 43 of the triple pawl then drops to the bottom of the deep notch 32 permitting tooth 44 to engage the corresponding notch 30 of the hundreds disk. Tooth 42 of pawl 39 at the same time drops to the bottom of deep

notch 31 of the units ratchet 27. At the next depression of the key all three disks are moved by the pawl one indicating space.

To register points in multiples of 10, the key 20 corresponding to the tens disk may be at any time depressed. A depression of the tens key causes tooth 45 of pawl 40 to rotate the tens ratchet 28 one indicating space. When the tens disk shows the number 9 tooth 45 of the double pawl 40 rests in deep notch 32 of ratchet 28 and thus tooth 46 of the pawl is permitted to engage the hundreds ratchet 29. The next actuation of the tens key therefore will rotate both the tens and hundreds ratchets one indicating space. The depression of the hundreds key at any time will rotate the hundreds ratchet 29 by means of the hundreds pawl 41. The teeth of the pawls which overlie each other and engage a single ratchet are beveled off so that they lie close together and rest somewhat back of the radial faces of the notches so that when any pawl is actuated its tooth slides over or under the tooth of the other pawls and engages the notch without any interference.

It is evident from the foregoing that registration of points up to 998 at one time may be expeditiously effected by the use of only three keys. For instance, suppose a score of 238 is to be recorded. The hundreds key is depressed twice, the tens key three times and the units key four times. No matter what the position of the disks at the time the registration is made the carrying of the units to tens and tens to hundreds is automatically made by the mechanism described.

Above shaft 23 is mounted another shaft 60 which carries the units disk 61, and tens disk 62 of the game register. The units disk is numbered 2, 4, 6, 8, 0, so that the unit scores may be indicated two points at a time and the tens disk 62 is numbered 1, 2, 3, 4, 0. The units disk is provided with ratchet 63 and the tens disk with the ratchet 64. The tens ratchet 64 is provided with five uniform notches 65 and the units ratchet 63 is provided with four similar notches 65 and one deep notch 66. Bell-cranks 67 and 68 for the units and tens disks of the game register, respectively, are also mounted on key shaft 33 and are provided with horizontal arms 69 carrying keys 19 and vertical arms 70. Bell-crank 67 corresponding to the units disk carries a double pawl 71 and bell-crank 68 carries a single pawl 72. The double pawl 71 has a tooth 73 engaging ratchet 63 and a tooth 74 engaging ratchet 64, while the single pawl 72 also engages ratchet 64. Ratchets 63 and 64 are provided with holding pawls 75 and the holding and actuating pawls are rotated into engagement with the ratchets by springs 76 stretched between them. The disks, ratchets and actuating

mechanism of the game register are constructed and operated in the same manner as the units and tens disk and other similar parts of the total register which has been fully described.

For scoring bridge whist it is desirable that registrations on the total register may be made without affecting the game register, also that the registrations on the game-register may be automatically added to the total. Means for accomplishing this will now be described.

The arms 70 of the game register bell-cranks lie somewhat to the rear of the arms 38 of the total register bell-cranks. Each of the bell-cranks 34, 35 of the total register is provided with a pin 80. These pins are engaged by arms 70 of the game register bell-cranks so that when either key 19 is depressed, the arm 70 of the corresponding bell-crank will by engagement with the corresponding pin 80 cause the corresponding bell-crank of the total register to move and effect a registration on the total register in the same manner as if the corresponding key 20 had been depressed.

For the purpose of resetting the register to zero, when desired, each of the shafts 23, 60, is provided with a longitudinal groove 81. As seen in Fig. 5 each of the disks carries interiorly a pawl 82 pressed by a spring 83 into engagement with the corresponding shaft 23 or 60. The pawls are all so positioned in their disks that when they fall into the groove in the corresponding shaft, the zeros of the disks on that shaft are all in line. Resetting is effected by rotating knobs 17 and 18 in the direction of rotation of the disks until all of the pawls 82 engage the groove in the corresponding shaft and then continuing the rotation of the knob until the zeros show back of the slot provided in the casing for inspection of the register. To assist in properly resetting the registers each of the knobs, as shown in Fig. 7, may be provided with a spring-pressed plunger 90 adapted to engage a socket 91 formed in the adjacent wall of the casing. The socket is so placed that when the knob is in the correct zero position the plunger falls into the socket and checks the movement of the knob and shaft.

The foregoing describes only one specific form in which I have found it convenient to embody the invention. Various changes in this structure may be made without departing from the invention as will be evident to persons skilled in the art.

Fig. 12 is a view of the back plate of the machine looking toward the rear. The plate carries two indicators or targets I pivoted to the plate at i and urged to assume a vertical position by springs s. Each of the targets has a shoulder or projection p. There are two of the targets one for each contestant.

Each target has a shoulder or target *p* adapted to be indicated by a trigger *T*. Ordinarily the targets are in a horizontal position engaging the triggers. When one of the contestants scores 30 points making a game, the proper trigger *T* is pressed, permitting the target *I* to assume a vertical position. If the same party wins the next game one hundred points are added to the total score of that contestant and the game score of both parties is turned to zero. If, however, the other party wins the second game, the other trigger is released and then the party winning the third game has the addition made to its total score.

I claim:

1. In registering mechanism, the combination of two registering devices, a set of keys for each of the devices, actuating means intermediate each set of keys and its registering device and means by which the actuation of one of the devices causes the actuation of the other device.

2. In registering mechanism, the combination of two registering devices, a set of keys for each of the devices, actuating mechanism intermediate each set of keys and its device, and means by which the movement of the keys of one set causes registration on the corresponding registering device only and actuation of the keys of the other set causes registration on both of the registering devices.

3. In registering mechanism, the combination of a shaft, a plurality of character disks thereon, a circular ratchet carried by each disk, a single pawl for one of the ratchets, a double pawl common to two of the ratchets and a triple pawl common to three of the ratchets, keys and actuating mechanism between the keys and pawls.

4. In registering mechanism, the combination of a shaft, a plurality of character disks thereon, a circular ratchet carried by each disk, a single pawl for one of the ratchets, a double pawl common to two of the ratchets and a triple pawl common to three of the ratchets, keys and actuating mechanism between the keys and pawls, and a holding pawl engaging each of the ratchets to prevent return movement thereof.

5. In registering mechanism, the combination of a shaft, a units disk, a tens disk and a hundreds disk thereon, a circular ratchet for each disk, the hundreds ratchet being provided with notches of uniform depth, the tens ratchet being provided with a plurality of similar notches and one deep notch and the units disk being provided with notches of uniform depth and one notch deeper than the deep notch of the tens disk, a single pawl engaging the hundreds ratchet, a double pawl engaging the hundreds and tens ratchets and a triple pawl engaging the three ratchets, keys, and actuating mechanism between the keys and pawls.

6. In registering mechanism, the combination of a shaft, a plurality of disks thereon, a circular ratchet for each disk, each ratchet being provided with a plurality of uniform notches and one of the ratchets being provided with a deeper notch, a single pawl acting on one of the ratchets and a multiple pawl acting on a plurality of the ratchets.

7. In registering mechanism, a plurality of character disks of different orders, keys one for each disk, actuating means for each key, the actuating means for each key corresponding to a disk of the lower orders being constructed and arranged to act upon the corresponding disk and each disk of a higher order.

8. In registering mechanism, the combination of two character disks, a ratchet for each disk, two keys, an actuator intermediate one of the keys and one of the ratchets and another actuator intermediate the other key and both of the ratchets.

9. In registering mechanism, the combination of a shaft, two character disks thereon, a first ratchet secured to one of the disks and provided with a plurality of uniform notches and a deeper notch, a second ratchet secured to the other disk and provided with uniform notches, a key for each disk, a pawl for one of the keys engaging the second ratchet, and a pawl for the other key having arms engaging both the ratchets.

STEPHEN C. KINSEY.

Witnesses:

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