E. POYET.
AUTOMATIC CENTRALIZING TOTALIZER APPARATUS.
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1,008,862.

WITNESSES

INVENTOR
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ATTORNEYS

Fig. 2
To all whom it may concern:

Be it known that I, ETIENNE POYET, a citizen of the United States, and a resident of Ybor City, in the county of Hillsborough and State of Florida, have invented a new and improved Automatic Centralizing Totalizer Apparatus, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide a mechanism adapted to be operated electrically from removed stations to total the results of a plurality of cash registers; to provide a mechanism continuously operated and having a plurality of selective devices arranged in groups corresponding to the series of the various monetary denominations to operate in said series; and to provide a mechanism, the construction and arrangement of the parts of which are durable, accurate and efficient.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a front elevation of the apparatus, the casing having been removed; Fig. 2 is a vertical "cross section of the same; Fig. 3 is a detailed view in vertical section, showing the construction and arrangement of the totalizing mechanism in conjunction with the selective mechanism; Fig. 4 is a detailed view in vertical section showing the comptometer wheel of the second series in conjunction with the lifting arm of the totalizing mechanism at the beginning of its operation; Fig. 5 is the same view as Fig. 4, showing the operating mechanism for the comptometer wheel of the second series in conjunction with the lifting arm of the totalizing mechanism at the beginning of its operation; Fig. 6 is a side elevation of the various trays and chutes comprising parts of the totalizing mechanism; Fig. 7 is a top view of the trays utilized in the totalizing mechanism, showing the delivery chute connected with the selective mechanism disposed about the said trays; and Fig. 8 is a diagrammatic view, showing one of the electro selective magnets and an electro circuit in conjunction therewith.

The present invention may be used in various lines of commercial pursuits. It may be used, also, with slight variations not necessitating inventive genius, as a totalizing machine. The use which I prefer to devote it to, and in its application to which it is shown in the accompanying drawings, is that of a totalizer for a series of cash registers. In this preferred form of use it will be understood that in an establishment, either contained under one roof or several roofs, the various cash registers are provided with electric adjustment to the key board whereby each key is arranged and disposed to depress the necessary contacts to complete the individual electric circuit.

Referring to Fig. 8 of the drawings, this is illustrated in diagrammatic manner, wherein the keys A and B are shown as having depending stems C and D, mounted in keys to impinge upon and depress the certain contacts E and F to cause the same to form metallic contact with the studs G and H, thereby completing respectively the circuit over the wires I, I or K, K. The circuit of which the wires K, K are components is not shown as completed in the figure of drawings, but like the circuit of which the wires I, I form components, it leads to a distinct and separate electromagnet formed by spools 9, 9 in one of the groups of said magnets shown. Whatever the number in money represented by the key A on the various cash registers, the amount is indicated by the delivery of a series of balls 10, 10 from certain receptacles and delivered to be registered by a feeding mechanism hereinafter described.

The totalizer is provided with a series of magazines each designed and arranged to hold separable counting devices to be delivered to a mechanical registering mechanism, and in such disposition therein as to cause the said register to move in conformity with the denomination of the magazine from which the counting device was delivered. Each of the magazines is provided with a series of groups of operative devices arranged in interdependent relation, as hereinafter set forth, for arithmetically increasing the total result of the operating of each key of the cash register to which each group is independently assigned.

In the drawings there is shown a totalizer constructed and arranged in accordance with the present invention, employing five distinct magazines, each to hold counters to be delivered to a single station in common, irrespective of the cash register or other devices thereof.

AUTOMATIC CENTRALIZING TOTALIZER APPARATUS.
vice upon which the register has been manually effected. Each magazine may be elongated to provide as many of the groups of operating devices as there are manually operated registering machines.

It will be understood that the keys of each manually operated registering machine are separably and electrically connected with one member of a single group, be that group on the magazine indicating units from one to five, or upon the next succeeding magazine indicating denominations of tens arranged in operative groups of one to five, or the third magazine wherein the counters indicate denominations of one hundred, also arranged in operative groups of one to five, and so on for the next succeeding magazines. It will be understood from the foregoing that as each individual manually operated register is connected with distinct operating devices on the five magazines, the registers may be operated simultaneously without interference in their effect upon the totalizer.

It will be observed that with the depression of the key A to close the contact key upon the stud G, the electric circuit energizing the spools 9, 9 is completed. When the said electric circuit is completed, the armature 12 is drawn to the spools against the expansion of a coiled spring 13. The armature 12 is mounted upon a stem 14, upon which the said spring is coiled. At the end of the stem 14 is provided a plunger 15, adapted to normally rest upon the inside of the bottom of the channel 11. The opposite side of the channel 11 is formed by a gate 16 hingedly mounted at 17 upon the frame of the channel 11. The gate 16 is held normally closed by a leaf spring 18. When now by the depression of the key A the contact E is depressed on the stud G, and the spools 9, 9 are energized, the armature 12 is drawn toward the said spools, extending the plunger 15 across the channel 11 and beyond the opening closed by the gate 16. If a ball 10 be interposed between the said gate and plunger, this will be delivered from the channel 11, indicating thereby the operation of the key A representing a certain monetary denomination in each of the series of cash registers connected with this totalizer.

The channels 11 are mounted in series and disposed transversely in the apparatus, as shown particularly at Fig. 1 of the drawings. In the present apparatus there are shown five such series disposed in parallel arrangement, three series being shown in Fig. 1 of the drawings, while the five are shown in Fig. 2 of the drawings. Each series is fixedly secured to, and held in open communication with hoppers 19, 19. These are supported upon transverse structural bars 20, 20. The said channels are mounted upon chutes 21, 21, which extend downward to deliver the balls as received into a lower hopper 22. Operating across the hoppers 19, 19 are small shafts 23, 23, having extended thereon projections 24, 24, whereby the balls 10 are continuously agitated and fed into the channels 11. At the lower ends of the chutes 21, 21 they are directed within the hopper 22 and between the various partitions 25, 25 therein provided. Extended transversely across this hopper 22 is the shaft 23 having projections 24, as above mentioned with reference to the hoppers 19. The various shafts 23 are rotated by a chain of gears 26, 26. These gears are rotated from a driving gear 27, which is mounted upon a shaft 28, which constitutes the operating shaft of the apparatus and is connected to the main or driving shaft X at the top of the machine. The mechanism for driving the shaft 28 is not herein shown or described. Upon this shaft 28 is mounted a series of eccentric cams 29, 29.

The partitions 25, 25 divide the hopper 22 into as many compartments as there are series of channels 11 superimposed above the said hopper 22. From each of the compartments there is extended a channel 30, corresponding in all respects to the channels 11. The channels 30 are closed by the gate 16 being held in closed position by the leaf spring 18, similar in construction and arrangement to the gate and spring closing the channels 11. The channels 30 are mounted upon a bed plate 31, having on the end removed from the channels 30, an upturned flange 32, through which is extended as many short pistons 33 as there are channels 30. Each of the pistons 33 is provided with a plunger 34 and a shoe 35.

The operation of the pistons 33 is in all respects similar to the operation of the stem 14 and plunger 15. They are impelled by the eccentrics 29, 29 against the periphery of which the shoes 33, 33 bear. The shoes 35 are held in pressure contact with the eccentrics by springs 36, 36. When the gate 16 is opened by the balls 10 being thrust against the same by the plunger 34, the said balls, when released, are dropped into a hopper 37, from which they are delivered by a pipe 38 into a common receptacle, to be therefrom transferred and distributed into the various hoppers 19, 19 in the apparatus.

The channels 11, 11 are preferably arranged in groups of five. Where, however, the cash registers with which this apparatus is cooperating are arranged in a larger series, this arrangement is followed in the grouping of the channels 11 in the present apparatus. Whatever this grouping the arrangement of the armature 12 is that shown in Fig. 1 of the drawings, where each of the armatures succeeding the first of the series is provided with a lateral extension 39, 39, which extend from and rest upon the armature.
tare connected with the stem 14 operating in the channel precedingly disposed in the series arrangement of the group.

The spools 8, 9 are constructed in a manner that so interact with them sufficiently powerful that each pair may operate the armatures and stems connected therewith in the channels seriesly preceding the spools energized; that is to say, when the magnet operating the stem and plunger of the channel numbers four of the series is energized, it will operate to advance the plunger 34 in the fourth channel of the series, and also by the superimposition of the extensions 39, 39, it will operate to advance the stems and plungers through the channels 11, being numbers one, two and three of the series. It is by means of this arrangement that when the cash register with which this totalizer is electrically connected is operated to indicate a purchase of four cents, then the fourth magnet in the series operating the tubes corresponding to the "cents" column is energized. With the advance of the stem and plunger to extract the ball 10 from the fourth channel 11, the stems and plungers in each of the three preceding channels are advanced, thereby delivering to the hopper four of the balls, which represent the number of cents indicated on the cash register. If the cash register be arranged for indicating by separate instrumentality the nine numerals preceding ten, then the arrangement herein illustrated as grouping in fives is extended to groups in tens, and the strength of the magnets constituted by the spools 8, 9 is augmented to permit the operation of the nine instrumentality for delivering the balls 10, instead of that which is herein shown as five.

In the present apparatus, the upper bank of the channels 11, 11 is devoted to the combinations of the unit denomination of the cents of the monetary system of the various cash registers. The second bank is arranged for combinations of the denomination of tens of the cents of the monetary system of the various cash registers. The third bank is arranged for combinations of the units of the dollars of the monetary system of the various cash registers. The fourth bank is arranged for combinations of the tens of dollars of the monetary system of the various cash registers. The fifth bank is arranged for combinations of hundreds of dollars of the monetary system of the various cash registers.

For the purpose of simplification I have shown in Fig. 6 of the drawings, by dotted lines, the various chutes 21 as comprising a wide-spread receiving end to carry the total product from the entire banks. As thus received, the balls 10, 10 are delivered in the channels 30 in the path of the reciprocating plunger 34 to be thrust thereby against the gate 16, and thence delivered into the hopper 37.

Attached to each gate 16 connected with the channels 30, is a lifting arm 40, 40. These arms are provided with a series of up-turned extensions 41, 41 arranged to impinge upon arms 42, 42 extended from collars 43, 44, upon the outer end of which is pivoted, on shafts 44, 44, paws 45, 45. The paws 45, 45 are arranged to engage rigid wheels 46, 46, these being fixedly attached to disks 47, 47. The disks 47, 47 are properly engraved upon their periphery with numerals ranging from one to nine. The disks 47 are of the usual comptometer construction and arrangement. In the present instance the apparatus is arranged to operate eight of these disks, showing a possibility of monetary designation of any sum up to, but not including, one million dollars. The disks are rotated by the paws 45, which are mounted upon a shaft 48. The lifting arms 40 and the gate 16 mounted upon the channels 30, operate the said paws.

The paws 45, 45 are arranged in pairs. One of each pair is in engagement to constantly operate the wheel 46 belonging to that particular pawl 45. The opposite pawl 45, connected with the first mentioned pawl, is held out of engagement but just above the wheel 46 connected to the disk 47 marking the numbers for the next upper denomination. The shaft 44, upon which the second pawl 45 is mounted, is arranged to hold the second pawl out of engagement until the first mentioned pawl strikes in the deepened ratchet tooth 49. The tooth 49 is deepened to permit the shaft 44 to rock sufficiently to permit the second pawl 45 to engage the wheel 46 belonging to the disk 47 of the next superior denomination. When the first mentioned pawl thus engages the deepened tooth 49, the second mentioned pawl engages one of the teeth in the wheel 46 of the next denomination. When now the arm 42 is raised to shift the paws 45, both of the wheels 46 are rotated the space of one ratchet tooth. The ratchet tooth next succeeding 49 is not deepened, and the strokes of the first mentioned pawl 45 succeeding 115 that which operated on the tooth 49 does not permit the engagement of the second mentioned pawl 45 with the wheel 46 of the next superior denomination.

It will be understood that the eccentric wheels 29, 29 by which the arms 40 are operated are mounted alternately out of time with each other, or in other words, the arms 40 'operating the paws 45 of adjacent denominations alternately thus avoid any conflict of the pawl mechanism of a lower denomination with that of a superior denomination endeavoring to operate the disk simultaneously. The paws of the two denominations are operated successively. Each
wheel, however, has its independent pawl mechanism, having its accompanying pawl adapted to engage the wheel of the next higher denomination at one point in the operation of the wheel to which it is attached, as above set forth. What has been stated is true of the first five wheels cooperating with this present apparatus. From the first five wheels the transmission from wheel to wheel is by the usual pawl engagement and escapement.

The comptometer wheels 47 are arranged in front of a transparent slide or door 50, which is suitably mounted in the frame X of the apparatus, whereby the proprietor, or other person authorized, may view the arrangement of the wheels 47 and read off from the same the total additions of the register on this apparatus.

As above mentioned, the hoppers 19, 19 are re-filled from time to time with the balls 10, 10 delivered from the common hopper 37. For this purpose are provided doors Y, Y.

Having an apparatus of the construction such as above described and shown, the operation is as follows: As stated, the various ejecting mechanisms embodying the plungers 15 and the magnets 9, 9 are electrically connected to the various cash receiving registers located at various stations, and adapted to close the electric circuit operating the particular magnet corresponding in monetary denomination to the particular key on the various registers. With each operation of the particular key the one of the balls 10 is ejected from the channel 11. Thus, for every different station five operations occur in rapid succession, indicating the same cash purchase from each by a rapid succession of ejectments from the same channel of the balls 10. For illustration, should five purchases of five cents each be registered on five differently positioned cash receiving registers, the operation of the five cent key in each register would operate the magnet connected with the armature 12, stem 14 and plunger 15, operating to eject balls from the fifth of the upper bank of the channels 11, and there would be twenty five of such balls ejected and conveyed through the chute 21 connected with the upper bank of channels and delivered to the hopper 22 into the first compartment thereof. The balls would be conveyed thence to the channel 30 and presented successively in front of the plunger 34 to be ejected thereby and delivered to the hopper 37. In being thus ejected from the channel 30, however, it will be seen that the gate 16 connected with the said channel, has, through the lifting arm 40 connected therewith, operated the arms 42 to cause the pawl 45 to rotate the rigid wheel 46 and engraved disk 47 connected therewith. It will also be observed that the disk 47 has been advanced twenty five times, which represents two and one half complete revolutions, which, if the wheel started at zero, would leave the wheel standing at a position showing the figure 5. Having been rotated two complete revolutions it will have advanced the wheel of a higher denomination, which is the denomination of tens, two of its serial movements, presenting thereby on that wheel the figure 2. The two wheels indicate, for the transaction received from the five cash receiving registers, wherein each recorded a purchase of five cents, in this totalizer there has been recorded a total purchase of twenty five cents.

What has been said here of the small amounts it will be understood can be amplified to purchases of any amount. The present apparatus is designed so that purchases ranging from one cent to multiples of one hundred dollars may be recorded.

It will be understood that the operations on the various cash receiving registers cause accurate duplication on the ball ejecting mechanism used in this apparatus. Thus, instead of the purchases recorded on the cash receiving register being duplicated as above described, they may be, for various and different reasons, recorded on the totalizer, simultaneously or successively, as the case may be.

The pawls 51, 51 are provided to prevent the retraction of the wheels 47, 47 after having been set forward by the pawls 45, 45.

While I have herein described and shown the apparatus as adapted for use in connection with cash registers, I wish to be understood as intending to use the present invention in conjunction with any sort of counting machine, such as computers, counters, and voting machines, and such use I broadly claim for this invention.

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

A centralizing totalizer apparatus, comprising a mechanical register embodying interconnected progressively operated display wheels; a hopper disposed in juxtaposed relation to said register divided into separate compartments serially arranged, said compartments each having a delivery opening and adapted to dispose counting devices received therein in successive order in line with said delivery openings; a plurality of closure devices for said delivery openings, said devices being operatively connected with the members of said register; an operating mechanism for removing said closure devices from said openings at regular intervals and when said compartments contain counting devices; a group of five magazines adapted to contain separable movable counting devices; a plurality of guide chutes connecting each of said magazines with one only
of the said compartments in said hopper; a plurality of reciprocating devices arranged in groups of five for extracting the counting devices successively from said magazines for delivery to said hopper; electro-actuated means for moving each of said reciprocating devices; and a plurality of connecting members fixedly mounted on each reciprocating device, said members being adapted to impinge upon and advance all of said reciprocating devices disposed in each of said groups and in order preceding the device actuated.

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

ETIENNE POYET.

Witnesses:
C. JUMEAU,
JOHN P. WALL,

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."