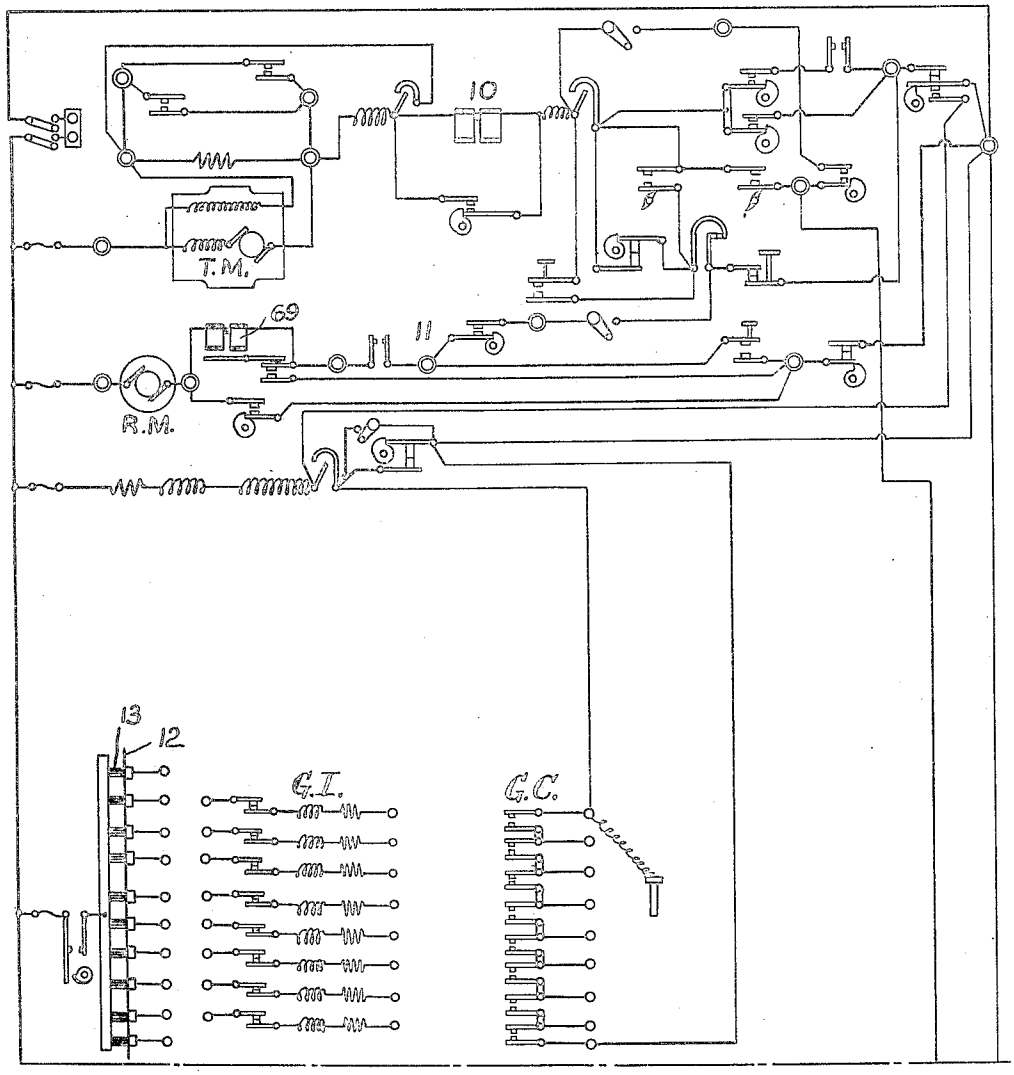
June 7, 1932. G. F. DALY 1,861,955

TOTAL TAKING MECHANISM

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Fig. 1.



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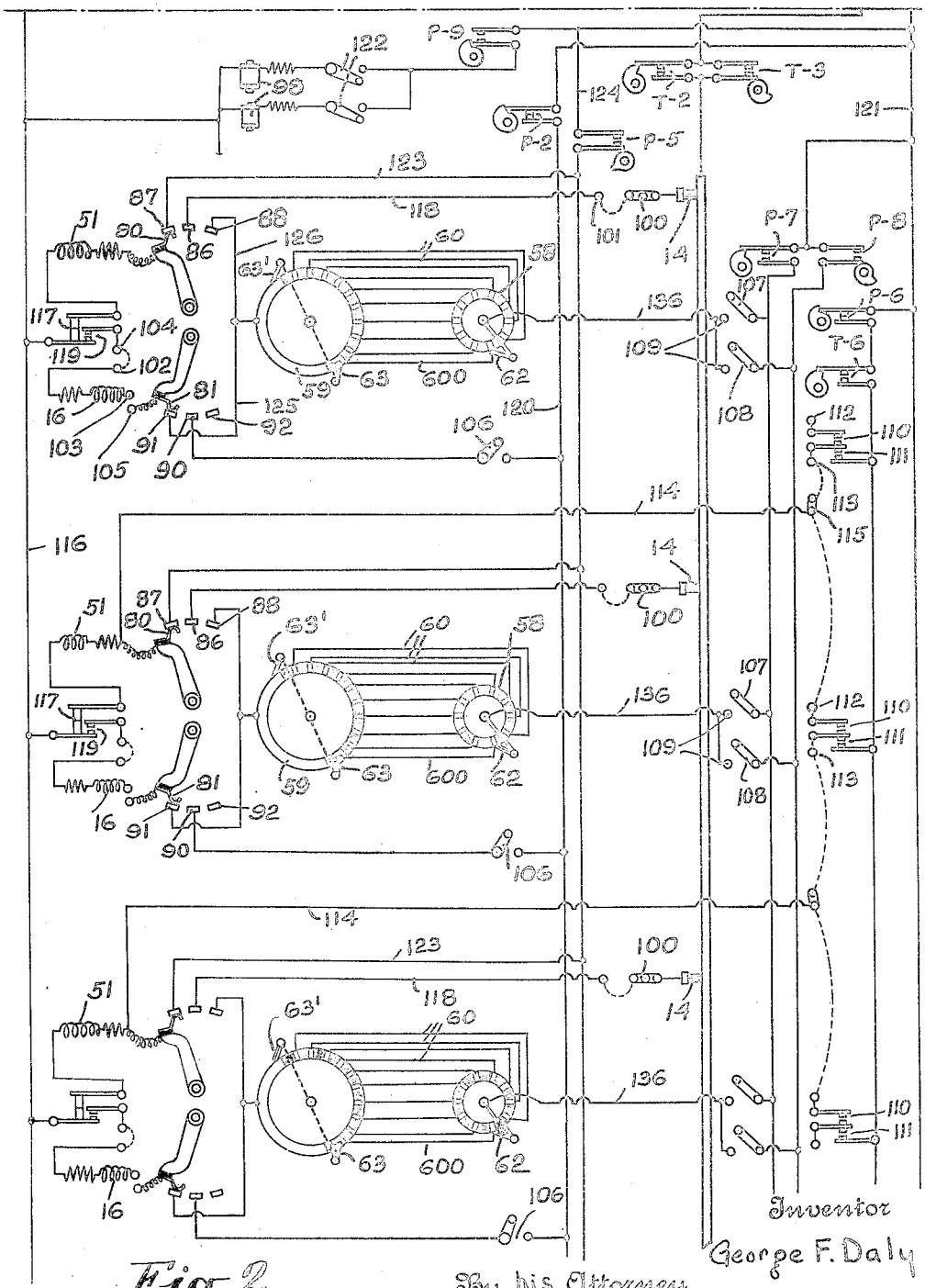


Fig. 2.

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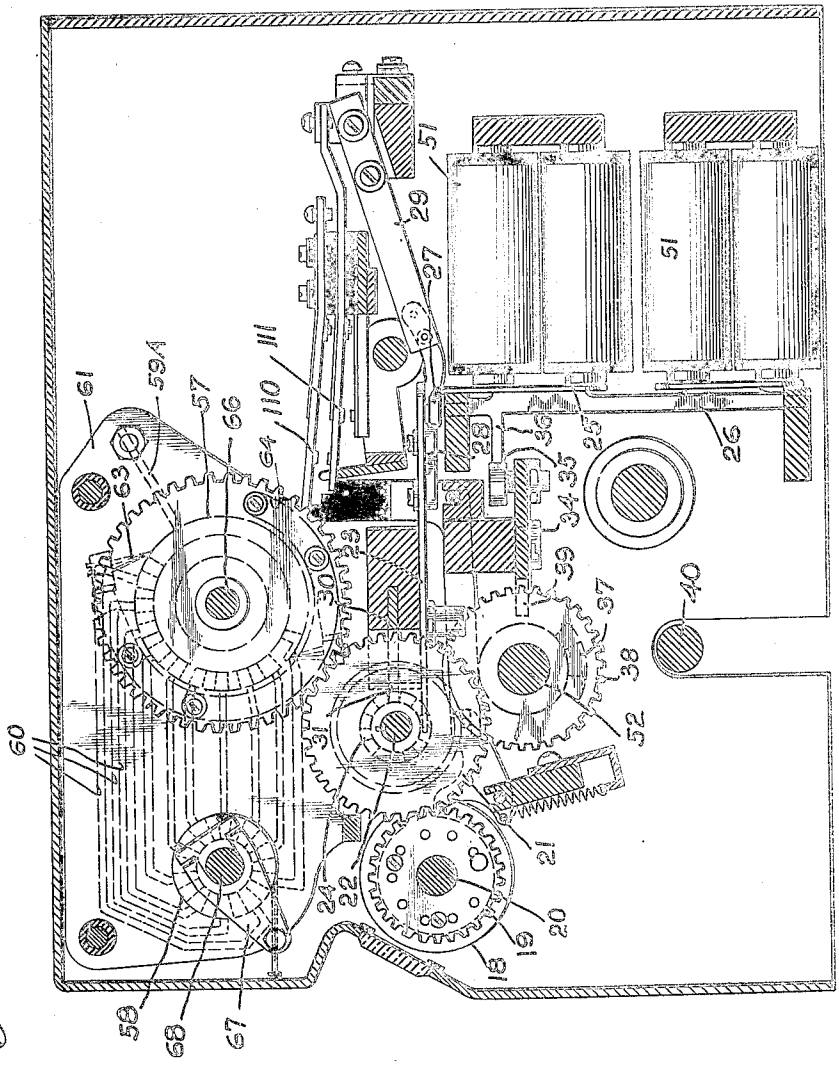


Fig. 3.

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TOTAL TAKING MECHANISM

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Fig. 4.

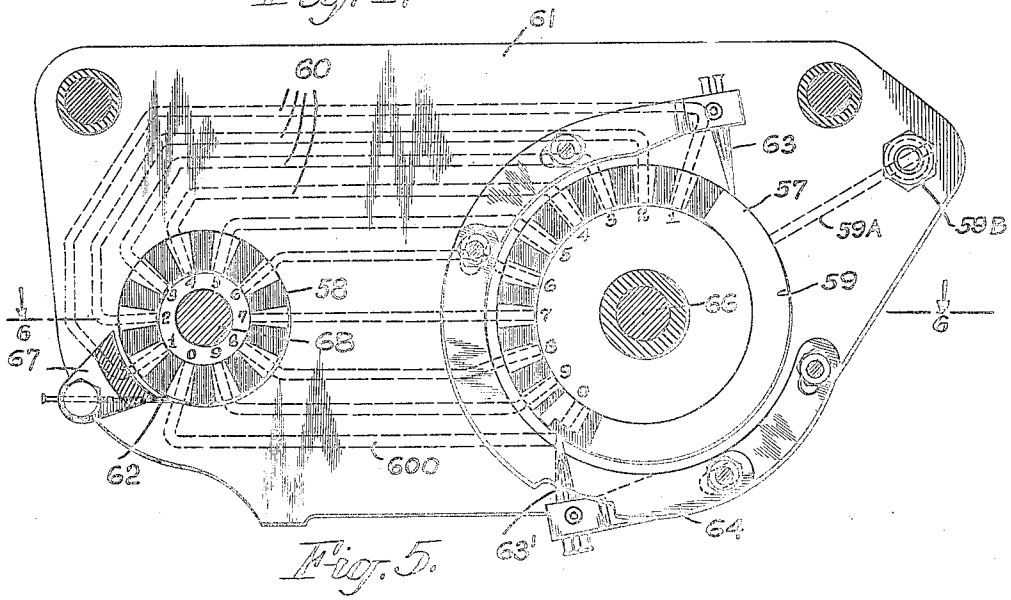


Fig. 5.

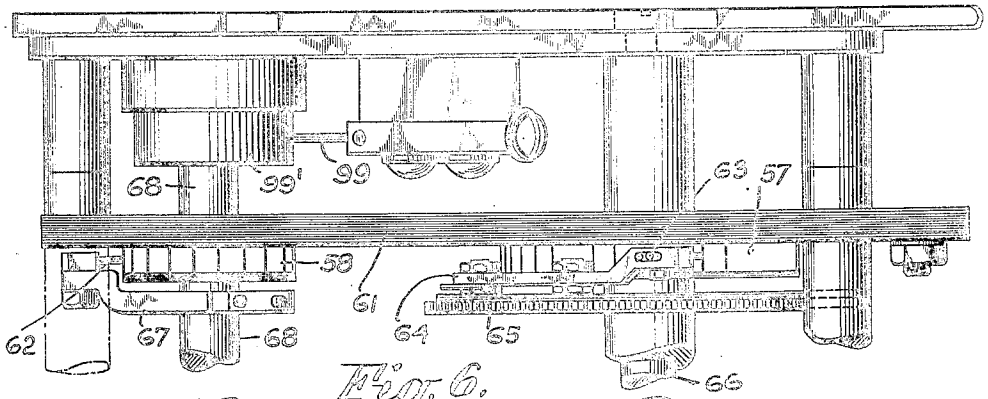
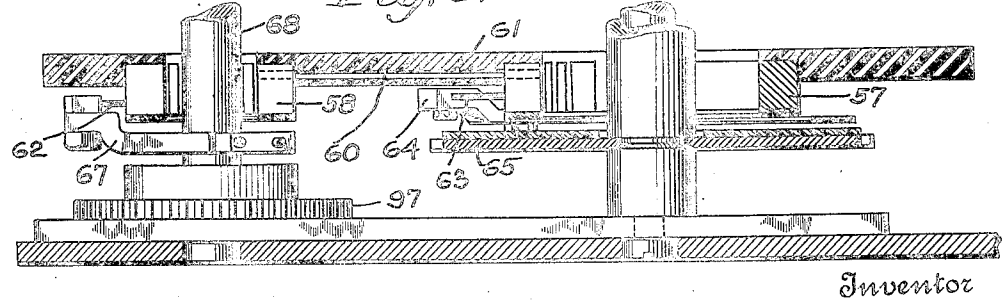


Fig. 6.



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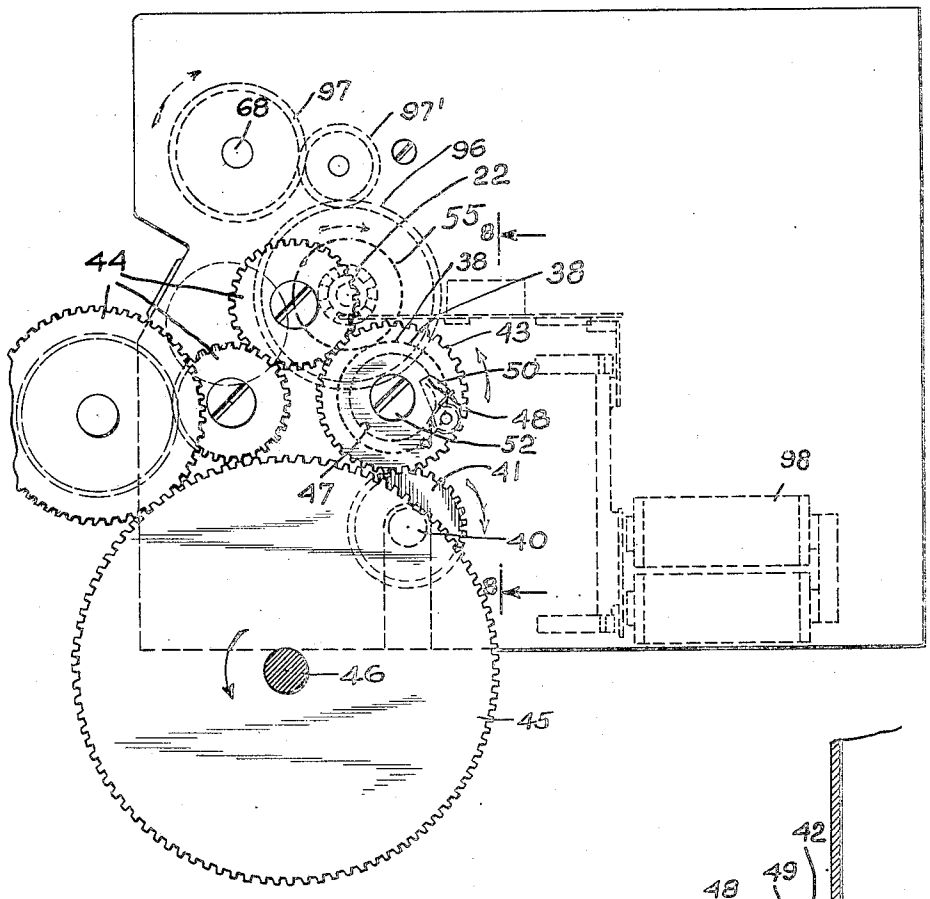
W. Wilson

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TOTAL TAKING MECHANISM

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Fig. 7.



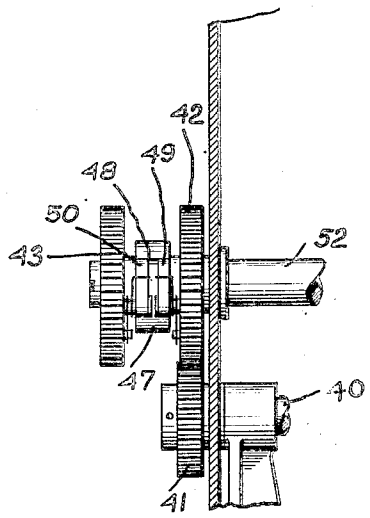


Fig. 8.

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TOTAL TAKING MECHANISM

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Fig. 9.

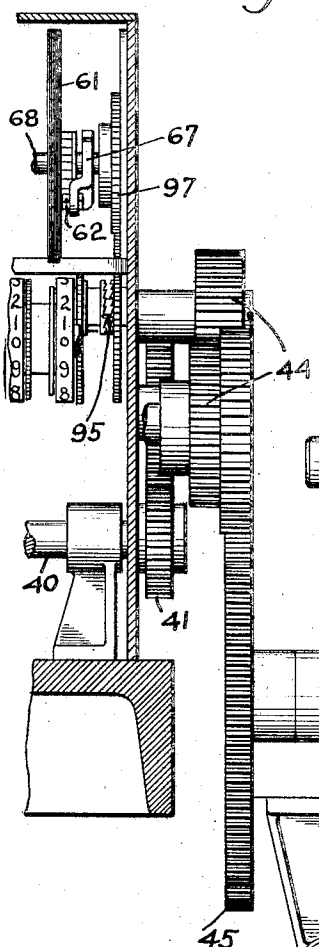
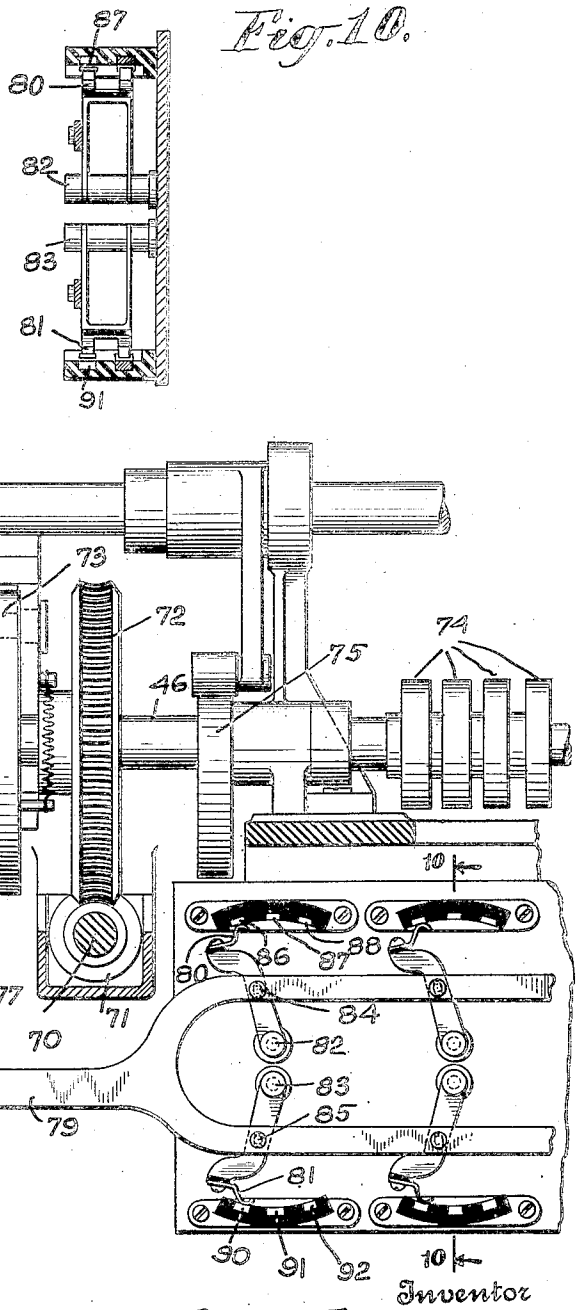


Fig. 10.



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Patented June 7, 1932 1,861,955

UNITED STATES PATENT OFFICE

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TOTAL TAKING MECHANISM

Application filed November 10, 1927. Serial No. 232,223.

The invention concerns accounting machines and more particularly mechanisms for controlling total printing and resetting of the accumulative elements on such machines.

The invention is particularly concerned with a machine including a plurality of accumulator wheels individual to denominational orders and in which total printing may be effected either with or without resetting or zeroizing and also in which resetting of any individual accumulator may be effected either with or without total printing.

In a well known commercial type of printing tabulator the accumulating elements are independently controlled from different columns of record cards for entering items. The items are entered by starting rotation of the adder elements of the accumulators at differential times corresponding to the item which is to be entered and the entering operation is terminated by disconnecting all the adder elements simultaneously from their driving mechanism so that all stop together at the end of a machine cycle. Resetting of the accumulators on these machines is also effected by starting rotation of the adding elements at differential times in accordance with the data that they register at the beginning of the reset and terminating the reset for all elements simultaneously toward the end of the reset cycle when the elements reach zero or home position. The feature of terminating all tabulating and resetting operations simultaneously is a very desirable one as it permits a common member to disconnect the elements from their driving mechanisms and this common member may be very accurately timed and its operation made certain.

The patent to J. W. Bryce, 1,834,767, Dec. 1, 1931, provides a reset mechanism which may select any individual denominational order element for reset regardless of its position in the machine and in which, nevertheless, the feature of terminating the reset operation simultaneously for all accumulator elements is retained. The invention in said copending application further contemplates driving the adder elements of the accumulators from a common drive shaft for entry of items and resetting, but which is driven from separate sources of power for the entering and resetting operation.

The object of this present invention is to provide an improvement in structure over the said copending application whereby the movable parts are more accessible for inspection, repair and replacement and adapted for greater ease in assembling.

More specifically the object of this invention resides in the improvement of the total taking and resetting mechanisms.

Another object of this invention is further to improve the commutator structure of total taking and resetting mechanisms.

Other objects and advantages of this invention will be apparent from the specification and the accompanying drawings which show one embodiment of this invention and wherein similar reference numerals indicate similar parts, and wherein in the drawings

Figs. 1 and 2 illustrate the circuit diagram for a machine according to the invention;

Fig. 3 is a sectional view through the counter with certain parts removed;

Fig. 4 is a detailed elevation of the total printing and resetting commutators;

Fig. 5 is a detailed plan view of the total printing and resetting commutators;

Fig. 6 is a section on line 6—6 of Fig. 4;

Fig. 7 is a detail illustrating the separate drives of the counter shaft during tabulating and total printing and reset operations.

Fig. 8 is a section on line 8—8 of Fig. 7;

Fig. 9 is a detail of the mechanism for driving the counters during resetting operations;

Fig. 10 is a section on line 10—10 of Fig. 9.

The circuits shown in the diagram of Fig. 1 which are used to control and operate the tabulating machine, are well known in the art and for a detailed description thereof reference may be made to the copending applications of Clair D. Lake, Serial No. 639,153, filed May 15, 1923, now Patent 1,822,594, Sept. 8, 1931, and Serial No. 47,298, filed July 31, 1925, now Patent 1,800,392, dated April 14, 1931.

Referring to Fig. 1, a tabulating motor TM is controlled by means of cooperating contacts and relays indicated generally at 10 to

drive the tabulating machine during accumulating and listing operations. Reset motor RM controlled by associated relays 11 is employed to drive the printing device and tabulating device during the process of taking the total and resetting the accumulator wheels. The machine itself is controlled in response to perforated record cards 12 and brushes 13 and 14 (Figs. 1 and 2) by means of which perforations in the record cards are sensed and control circuits are completed for operating counter magnets 51 and printing magnets 16. The two sets of brushes 13 and 14 may be connected by suitable plug connectors to group indicating bank GI and group control contacts GC. Inasmuch as the above mentioned circuits form no part of this invention a more detailed explanation will not be given herein.

Before proceeding with the explanation of the remaining part of the circuit diagram in connection with Fig. 2 the mechanical features by means of which totaling and resetting are effected will be explained in connection with Figs. 3, 4, 5, 6, 7, 8, 9, and 10.

Fig. 3 illustrates a section of the type of counter or accumulator mechanism with electric transfer shown and described in the U. S. patent to Lake No. 1,372,965. The counter wheel 18 has a series of digits marked on its periphery and has a gear 19 rigidly attached to it, both gear and wheel being free to rotate on shaft 20. The gear 19 meshes with a gear 21 which is free to rotate on counter shaft 22 of the machine. The gear 21 has an integral hub portion with clutch teeth formed on its face adapted to cooperate with corresponding clutch teeth on a sleeve having a peripheral groove into which extends pivoted shift lever 23. The sleeve and clutch faces are indicated together at 24 and are well known in the art, a more detailed description of which may be found in the last mentioned patent to Lake. The sleeve carrying a clutch member is splined to the shaft 22 and rotates with it but is free to slide axially on the shaft to permit its clutch teeth to engage or disengage the adjacent clutch teeth on the hub of gear 21. An individual counter magnet 51 controls the operation of the counter wheel. The magnet 51 is provided with an armature 25 mounted on a pivoted rod 26 so that when the armature is attracted by its magnet the rod 26 rotates. An extension 27 on the armature supporting structure engages a latch plate 28 on the lever 23 and holds the latter in unclutching position against the action of a flat spring 29. When the magnet 51 is energized its armature supporting structure is rotated releasing the extension 27 from cooperation with the latch member 28 and permitting the shift member 23 to rotate about its pivot and force the clutch members 24 into engagement. The gear 21 thereupon rotates with the tabulating shaft 22 and therefore rotates the corresponding counter wheel 18.

The magnet 51 is energized momentarily from the analyzing brush circuit in response to perforations representing different digits and its energization is timed in accordance with the location of the perforations on the controlling record. The beginning of rotation of the counter wheel 18 therefore corresponds in time to the passage of a given perforation under the analyzing brushes. Toward the end of the machine cycle any clutch which has been engaged by energization of its counter magnet during the cycle will be disengaged by a plate 30 carrying extension 31 projecting into the annular grooves on the slidable member of the clutch 24. This plate 30 being moved transversely across the counter by a cam on shaft 22 disengages the clutch 24 to stop rotation of the counter wheel 18. At the same time the plate 34 carrying stud member 35 cooperating with a projection 36 of the armature supporting structure 26 is actuated transversely with the counter mechanism by means of cam point 37 mounted on the face of gear 38 on the counter drive shaft 52. Said cam point cooperates with an extension 39 of the plate 34. The action of stud member 35 against the projection 36 rocks the armature supporting structure 26 and the armature 25 thus restoring the extension 27 to its normally latched position to hold the clutch members 24 out of engagement. A more detailed description of the operation and timing of these restoring plates 30 and 34 may be found in the last mentioned U. S. patent to Lake No. 1,372,965.

The counter shaft 22 is used in the present case for resetting as well as for tabulating and for this purpose is provided with two separate drives. Referring to Figs. 7 and 8 the tabulating shaft 40 is driven by the tabulating motor during tabulating cycles in the well known manner. The drive in this case consists of a gear 41 mounted on the tabulating shaft and meshing with a gear 42 freely mounted on the counter shaft 52. A second gear 43 is also freely mounted on the counter drive shaft 52 meshing through an intermediate gear train 44 with a large gear 45 on the reset shaft 46 of the machine which is driven by the reset motor through the usual well known type of one revolution clutch. The counter drive shaft 52 has a disc 47 splined to it provided with a notch 48. A pawl 49 pivoted on the gear 42 and a pawl 50 pivoted on the gear 43 independently cooperating with the notch 47 to operate the counter drive shaft 52. This permits said counter shaft to be driven either by the tabulating shaft 40 or the reset shaft 46, and the drive of neither interferes with the others. A complete totaling and reset operation as will appear later requires two revolutions of the counter shaft 22. A proper gear ratio is pro-

vided through the gear train 44 to cause the counter drive shaft to make two revolutions to one revolution of the reset shaft 46 and through the meshing of gears 55 and 38 rigidly mounted on the counter shaft 22 and the counter drive shaft 52 respectively and having a one to one ratio, the counter shaft 22 is caused to make two revolutions also for each revolution of reset shaft 46.

Total printing and resetting are controlled by stationary commutators 57 and 58 (Figs. 3, 4, 5 and 6) each provided with segments 1, 2, 3, 4, 5, etc., there being one corresponding to each digit on the counter wheel. A large conductive segment 59 is provided on commutator 57 which acts as a common circuit closer for all segments there being one brush constantly in contact with this segment. Copper conductors 60 are provided connecting the corresponding commutator segments on both commutators with each other. The commutator segments of commutators 57 and 58 together with their connecting conductors 60 are molded into a base of insulating material 61 with just sufficient of the periphery of the commutators exposed to provide a path over which the commutator brushes 62, 63 and 63′ may wipe. A copper conductor 59A is also embedded into the base 61 connecting the commutator segment 59 with the terminal post 59B. Thus the two commutators with the base 61 as a support form a unitary structure that may be readily removed from the machine for repairs or replacement (Fig. 4).

Two brushes 63 and 63′ wiping on commutator 57 are mounted in a common brush carrier 64 which serves as an electrical conductor between the two brushes. Said brush carrier is rigidly mounted on a gear 65 though insulated therefrom. Said gear 65 is free to rotate on shaft 66 and meshes with gear 21 on the counter shaft 22 so that as the counter element rotates the brushes 63—63′ also rotate and correspond at all times with the position of the counter wheel 18, making a contact between one of the segments 1, 2, 3, etc., and the common segment 59.

The brush 62 wiping the commutator 58 is mounted in a brush carrier 67, said carrier being fixed to the shaft 68 which is normally stationary but which is rotated during the latter part of the total and reset operation as will be hereinafter explained.

Total printing and resetting is effected, as hereinbefore explained, in the usual well known manner by the energization of the reset motor RM and its associated reset magnet 69 (Fig. 1). The motor RM drives shaft 70 (Fig. 9) and through worm 71 and worm wheel 72 drives one element of a one revolution clutch indicated generally at 73. Energization of the reset magnet 69 causes this clutch to engage and to rotate reset shaft 46 of the machine through a single revolution. The shaft 46 rotates the P cams 74 and the cam 75 for raising the type bars, (not shown) in the usual well known manner. The shaft 46 also rotates the gear 45 which, of course, rotates the counter drive shaft 52 (Fig. 7) for two revolutions during the first of which total printing is effected and during the second of which reset on any desired units is effected. The reset shaft also by means of cam 76, link 77 and bell crank 78, oscillates a yoke member 79. The yoke member controls contacts 80 and 81 which are pivoted at 82 and 83 respectively. The pivoted supporting structures are provided with slots cooperating with pins 84 and 85 on the yoke member 79. The contact 80 cooperates with three contacts 86, 87 and 88 being normally in engagement with contact 86 but moved into engagement with 87 during the first half revolution of the shaft 46, which is the total printing portion, and moved into engagement with the contact 88 during the second half of the revolution of the shaft 46, which is the reset portion. Contact 81 is similarly moved to engage contacts 90, 91, 92.

The total operation may be understood from Figs. 3 and 4. It will be recalled that the brushes 63 and 63′ rotate with the counter wheel. These brushes make one-half a revolution for every revolution of the counter wheel therefore either brush 63 or 63′ is always in engagement with a commutator segment corresponding to the position of the counter wheel, the opposite brush being in engagement with the common segment 59. Totaling is initiated by simultaneous energization of the counter magnets 51 causing the counter wheels to rotate, this energization being timed so that the counter clutches will be disengaged at the end of ten points of machine operation or after one complete revolution of the counter wheels. The counter wheels in this case are driven by the counter shaft 22 through its driving connection with the reset shaft 46 and the clutches are kicked out by the plate 30 as in tabulating. At the end of the revolution the counter wheels register exactly what they did before the operation started and the reset shaft 46 has made one-half of a revolution. The printing control circuit is established by the brush 63 or 63′, which ever may be at that time cooperating with the selective commutator segments, as this brush passes the zero position, the circuit passing through the brush 62 which during this first revolution of the counter shaft 22 is stationary. The impulse for starting the counters is given as the type bars begin to rise. In Figs. 3 and 4 assume the brush 63 is in engagement with commutator segment 8 showing that the adding wheel is registering 8. The counter wheel starts to rotate carrying the brush 63 with it and incidentally the corresponding type bar begins to rise. The brush 63 moves

from the 8 to the 9 commutator segment while the type bar moves from its normal to its 9 printing position and the brush 63 passes from the 9 to the zero commutator segment while the type bar is passing from its 9 to its 8 printing position. At this point the printing circuit is established from the brush 63 through the zero commutator segment of commutator 57 through wire 600 to the zero commutator segment of commutator 58, through brush 62 and the printing magnet is energized to select the 8 type for printing, the complete circuit of which will be described later. After this the brush 63 continues revolving and stops when it has completed a half revolution, which will be one revolution of counter shaft 22, at which time brush 63′ will have reached the 8 commutator segment and brush 63 will have assumed the position that brush 63′ had at the beginning of the total taking cycle. Other numerals are printed in the same manner.

The second half of the revolution of the reset shaft 46 effects reset of any adding wheels on which it is desired. During the second half of the revolution of the reset shaft the shaft 68 is rotated this being effected by clutch 95 (Fig. 9) similar in general design to the counter wheel clutches but which through gears 96, 97 and 97′ rotates the shaft 68. There is one of these clutches 95 provided for each counter bank and each is controlled by a magnet 98 in the same manner that the counter clutch magnets 51 actuates the counter clutches; the latter being energized at the proper time in the cycle to cause the counter shaft 22 to make one complete revolution before the clutch 95 is kicked out by one of the extensions on plate 30.

The brush 62 is energized through the shaft 68, a stationary brush 99 (Fig. 5) being provided in constant engagement with a disc 99′ electrically connected with the shaft 68. The brush 62 then may be energized whether the shaft is stationary or rotating. During this second half of the revolution of the reset shaft the brush 62 rotates covering the commutator segments in the order 1, 2, 3, etc. A circuit will be established through the brushes 63 and 63′ to the counter magnet 51 of the corresponding wheel 18 when the brush 62 reaches the commutator segment with which the brush 63 or 63′ is in engagement, except if either of said brushes are in zero position. The brush 62 starts its revolution ten machine points ahead of the kick-out plate 30. The counter magnet then will be energized at the proper time in the cycle to enter its complement into the counter and bring it back to zero, at which point its clutch is kicked out by the plate 30 and the counter wheel remains in zero position. Continuing with the first assumption that the brush 63 now engages the 8 commutator segment of the commutator 57 showing that the counter wheel registers 8. On the second half of the revolution of the reset shaft 46 the brush 62 starts to rotate, said brush wiping the 1, 2, 3, 4, 5, 6, and 7 commutator segments of the commutator 58 covering seven points of machine operation and reaches the 8 segment to complete the counter magnet circuit through the brush 63 on the eighth point of machine operation or two points previous to the kick out of the counter clutch by the plate 30. Two units are thus entered into the counter wheel which originally registered 8 thereby bringing it back to its zero position. The clutch 95 is also kicked out by the plate 30 to arrest the brush 62 in zero position and this brush remains on its zero commutator segment until another resetting operation is effected.

Although the description given has been confined to a single counter wheel with its corresponding totalizing and resetting commutator unit, it will be understood that the invention is applicable to a plurality of such counter wheels grouped together in counter banks as for example in the well known Hollerith tabulating machine, each counter wheel being provided with a totalizing and resetting unit of the kind described above.

Before explaining the general operation, attention is directed to the fact that this tabulator is designed to total print either with or without resetting of the individual denominational order counter elements and that a universal interconnecting system is provided to permit any printing magnet to be associated with any counter element and any counter element to be connected with any analyzing brush for control thereby. Referring to Fig. 2 lower analyzing brushes 14 are connected to sockets 100 and the contact 86 of each individual counter element is connected to socket 101. Any socket 100 may be connected to the socket 101 of any counter unit to permit it to be controlled by any one of the lower brushes 14. The printing magnets 16 are connected to sockets 102 and 103 so that any one of them may be connected to any accumulating element for total printing through sockets 104 and 105 respectively. A switch 106 is provided in series with contact 90 so that listing may be suppressed, if desired, in connection with any printing magnet. It will be recalled from the previous explanation that brush 62 is included in the total printing circuit as well as the resetting circuit. The circuit for total printing through this brush is controlled through cam contacts P—7 and a switch 107 is provided in series with these contacts for each brush 62 so that when a total printing operation occurs each unit may total print or not as desired. The resetting circuit is controlled by cam contacts P—8 and a switch 108 is likewise provided in series with these contacts for each brush 62 so that each denominational order element may be reset or not regardless of

whether total printing is effected from this element. Contacts P—7 close only during total printing operation and contacts P—8 close only during reset operations. The transfer contacts 110 and 111 are each connected to sockets 112 and 113, respectively while the wires 114 over which the transfer impulses are sent to the counter magnets of the counter elements terminate in sockets 115. This arrangement is substantially the same as that disclosed in the patent to J. W. Bryce, No. 1,723,499, dated August 6, 1929, and permits the transfer system be split between any two counter elements or to skip any desired counter element and also permits any counter element regardless of its position to be associated with any other counter element for transferring operations.

The general operation will now be described in connection with Fig. 2 of the drawings. This figure shows a single bank of accumulating elements consisting of a units, tens and hundreds element with transfer plugging, indicated by dotted lines, arranged for transfer from the units to the tens element and from the tens to the hundreds element. During tabulating operations the contacts 80 and 81 are in engagement with contacts 86 and 90 respectively and the counter magnets 51 are energized in response to index perforations on the controlling cards through a circuit extending from line 116, contact 117, counter magnet 51 through contact 80 thence to contact 86 and through line 118 to sockets 101 and 100 to lower brush 14. The circuit through the lower brushes is completed through cam contacts T—2 or T—3 in the usual manner. Immediately upon energization of the counter magnet 51 the contacts 117 are opened to break this counter circuit and the contacts 119 are closed to energize the listing circuit. The latter extends from line 116 through contacts 119, printing magnet 16 to contacts 81 thence to contact 90 and through switch 106, wire 120, contacts P—2 back to the other side of the line 121 in the usual manner. During tabulating, of course, the brushes 63 and 63′ rotate with the counter wheel and at all times engage a commutator contact corresponding to the reading of the counter. If totaling and reset are desired in connection with any counter, the switches 107 and 108 corresponding to the counter are closed and the switch 122 corresponding to the counter bank is closed to prepare the circuit of magnet 98 which controls clutch 95 shown in Fig. 9. These magnets and switches have been shown for two counter banks, although only one counter bank consisting of three counter elements has been shown in the diagram. It will be understood, however, that the other magnet controls a similar bank. During the totaling cycle the contacts 80 and 81 shift to contacts 87 and 91. respectively. Contacts P—5 close to establish a circuit through the counter magnet 51 extending from line 116, through contacts 117, counter magnet 51, contact 80, contact 87, wire 123 and cam contacts P—5 back to line 121 through line 124. The contacts P—5 are timed to close so that the counter element will enter ten points or in other words make a complete revolution and return to its original position. The energization of the counter magnet 51 closes contacts 119 and a printing circuit is established as brush 63 reaches the zero commutator segment. This printing circuit extends from line 116, contacts 119, printer magnet 16, contact 81, contact 91, wire 125, common commutator segment 59, brush 63′, brush 63, line 600, brush 62, wire 136, switch 107, cam contacts P—7 to the other side of the line 121. The energization of the printer magnet in this case as previously explained selects the type for printing the item originally standing upon the counter element. During the second half of the revolution of the reset shaft the contacts 80 and 81 shift to contacts 88 and 92, respectively. Contact 92 is dead, that is, no wire is connected to it and thus the printing circuit is open during the reset operation. The contacts P—9 close at the beginning of this operation to energize the clutch magnets 98 to rotate the brushes 62. Each counter element remains stationary until the brush 62 reaches the commutator which is connected with the commutator segment on which the brush 63 is resting and at this time a circuit to the counter magnet is completed to enter the complement on the counter wheel to restore it to zero. The counter magnet circuit in this case extends from line 116, contacts 117, counter magnet 51, contact 80, contact 88, line 126, common commutator segment 59, brush 63′, brush 63, through the commutator segment on which it is resting to the corresponding commutator segment connected to it on commutator 58, brush 62, line 136, switch 108, and cam contacts P—8 to the other side of the line 121. The counter clutches and the clutch 95 are kicked out simultaneously by the plate 30 (see Figs. 3 and 9) as the counter elements and the brushes 62 reach their zero position and the several elements remain in position until a subsequent tabulating operation is performed. The counter elements having been restored to zero the brushes 63 of their corresponding commutators will also be restored to their zero position.

The transfer system must be disabled during the total and reset operations as otherwise undesirable transfers will occur between the adding elements. A pair of cam contacts P—6 is provided in series with the usual transfer impulse contacts T—6 for this purpose. The contacts P—6, which are normally closed during tabulating operations, automatically open during the total and reset operations so that no transfer impulses can

reach the counter magnets during these operations.

While I have shown and described and pointed out the fundamental novel features of the invention as applied to a single modification it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. I intend to be limited therefore only as indicated by the scope of the following claims:

1. A total taking and reset device for an accounting machine which includes a rotatable counter element, said device comprising a pair of commutators each with segments corresponding to the different registering positions of the counter element, a rotatable brush driven concurrently with the counter element and a rotatable brush with means for driving the same during reset operations, each of said brushes coacting with outer surfaces of a commutator.

2. A total taking and reset device for an accounting machine which includes a rotatable counter element, said device comprising a pair of commutators each with segments corresponding to the different registering positions of the counter element and having their corresponding segments electrically interconnected, a rotatable brush driven concurrently with the counter element to contact the several segments of one of the commutators and means for rotating said brush to engage the segments successively during a total taking operation, a second rotatable brush and means for driving the same to cause it to make electrical contact with the segments of the other commutator successively during a resetting operation, both of said brushes coacting with outer surfaces of the commutators.

3. A total taking and reset device for an accounting machine which includes a counter element, the said device comprising a commutator with segments corresponding to positions of the counter element, a rotatable brush coacting with an outer surface of the commutator and driven concurrently with the counter element to engage the different segments, a second commutator with segments corresponding to those on the first commutator and electrically connected thereto and a rotatable brush coacting with an outer surface of the second commutator and means for driving said last named brush during reset operations to cause it to engage its different segments.

4. A total taking and reset device for an accounting machine which includes a counter element, the said device comprising a commutator with segments corresponding to positions of the counter element, a rotatable brush coacting with an outer surface of the commutator and driven concurrently with the counter element to engage the different segments, a second commutator with segments corresponding to and electrically connected to those of the first commutator and a rotatable brush coacting with an outer surface of the second commutator and means for driving said last named brush during reset operations to cause it to engage its different segments.

5. A total taking and reset mechanism for an accounting machine which includes a counter element, said device comprising a pair of circular commutators mounted in a common plane, each of said commutators having exposed conducting segments on its periphery corresponding to positions of a counter element, means for electrically interconnecting corresponding segments of the two commutators, a rotatable brush coacting with the periphery of each commutator, means for driving one of said brushes concurrently with the counter element and means for driving the other brush during reset operations.

6. A total taking and reset mechanism for an accounting machine which includes a counter element, said device comprising a pair of circular commutators mounted on a common base with their axes normal thereto, each of said commutators having exposed segments on its periphery corresponding to registering positions of the counter element, conductors embedded in the base connecting corresponding segments on the commutators, a rotatable brush coacting with each commutator, means for driving one of said brushes concurrently with the counter element and means for driving the other brush during reset operations.

7. A total taking and reset mechanism for an accounting machine which includes a counter element, said device comprising a molded base having a pair of annular projections thereon with commutator segments molded therein and spaced to correspond to positions of the counter element, means for electrically interconnecting corresponding segments of the two projections, a rotatable brush coacting with the outer periphery of each projection, means for driving one of said brushes concurrently with the counter element and means for driving the other brush during reset operations.

8. A total taking and reset mechanism for an accounting machine which includes a counter element, said device comprising a molded base having a pair of annular projections thereon with commutator segments molded therein spaced to correspond to positions of the counter element, conductors embedded in the base connecting corresponding commutator segments, a rotatable brush cooperating with the periphery of each annular extension, means for driving one of said brushes concurrently with the counter ele-

ment and means for driving the other of said brushes during reset operations.

9. An accounting machine comprising a counter wheel with gear means for driving the same, total taking and reset mechanism comprising a plate located substantially in the plane of said counter wheel with a pair of commutators mounted thereon and extending toward said gear means, said commutators having segments corresponding to the registering positions of said wheel and connections between corresponding segments, a rotating brush coacting with one of said commutators and driven by said gear means and a rotating brush cooperating with the other commutator and driven by reset mechanism.

10. An accounting machine comprising a counter wheel with a gear train for driving the same, total taking and reset mechanism comprising a plate located in the plane of said wheel and having a pair of commutators mounted thereon one of which extends into proximity with said gear train, each of said commutators having segments corresponding to counter wheel positions with corresponding segments on the two commutators connected by conductors imbedded in the base plate, a rotatable brush coacting with the periphery of the commutator which is proximate to the gear train and driven by the gear train to cause it to engage commutator segments corresponding to the position of the counter wheel, means for rotating said counter wheel to effect a total taking operation to cause said brush to engage the segment successively and a rotatable brush coacting with the other commutator and driven by reset mechanism to engage the segments thereon successively during reset operation.

In testimony whereof I hereto affix my signature.

GEORGE F. DALY.