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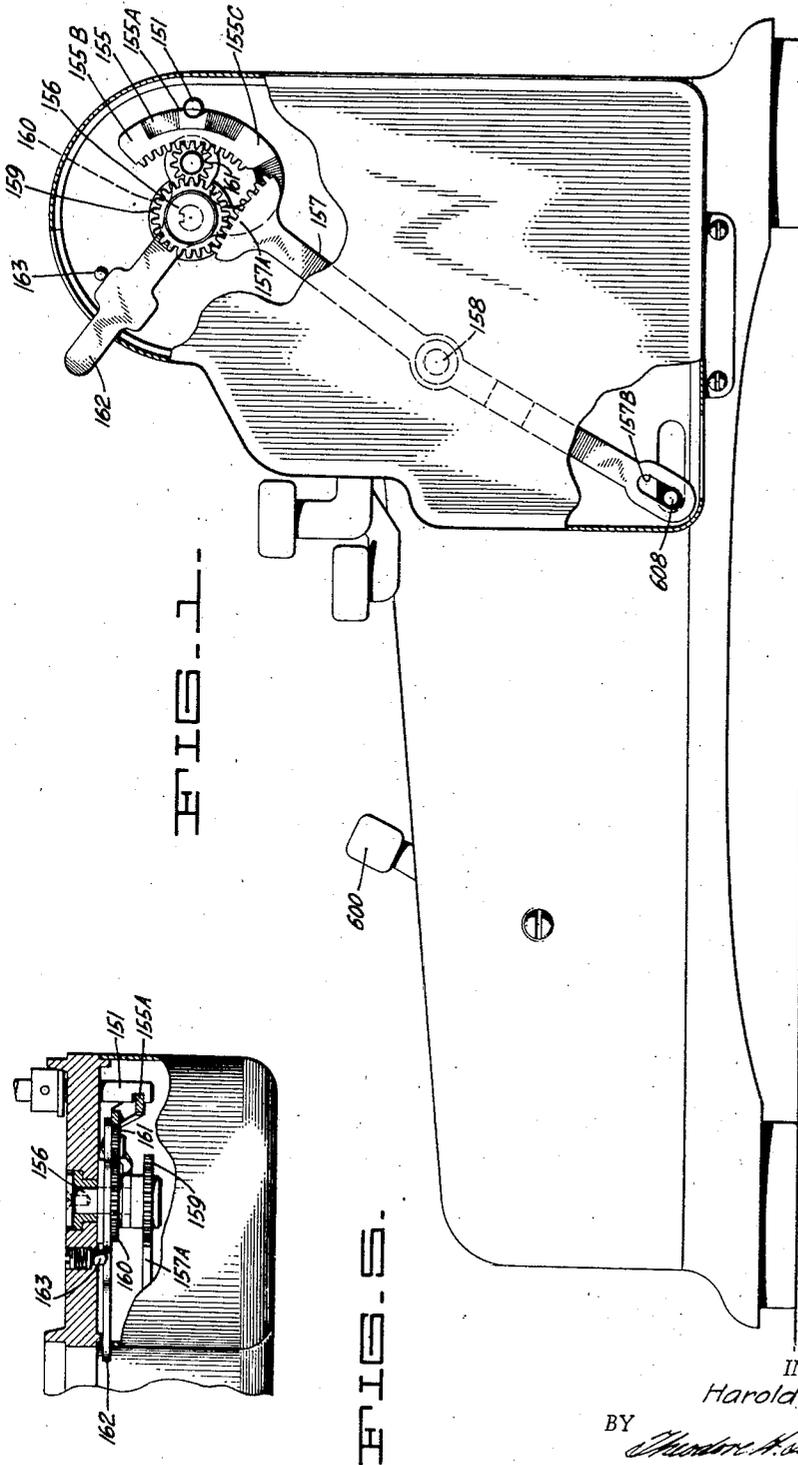
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2,335,226

CALCULATING MACHINE

Original Filed Sept. 26, 1930

4 Sheets-Sheet 1



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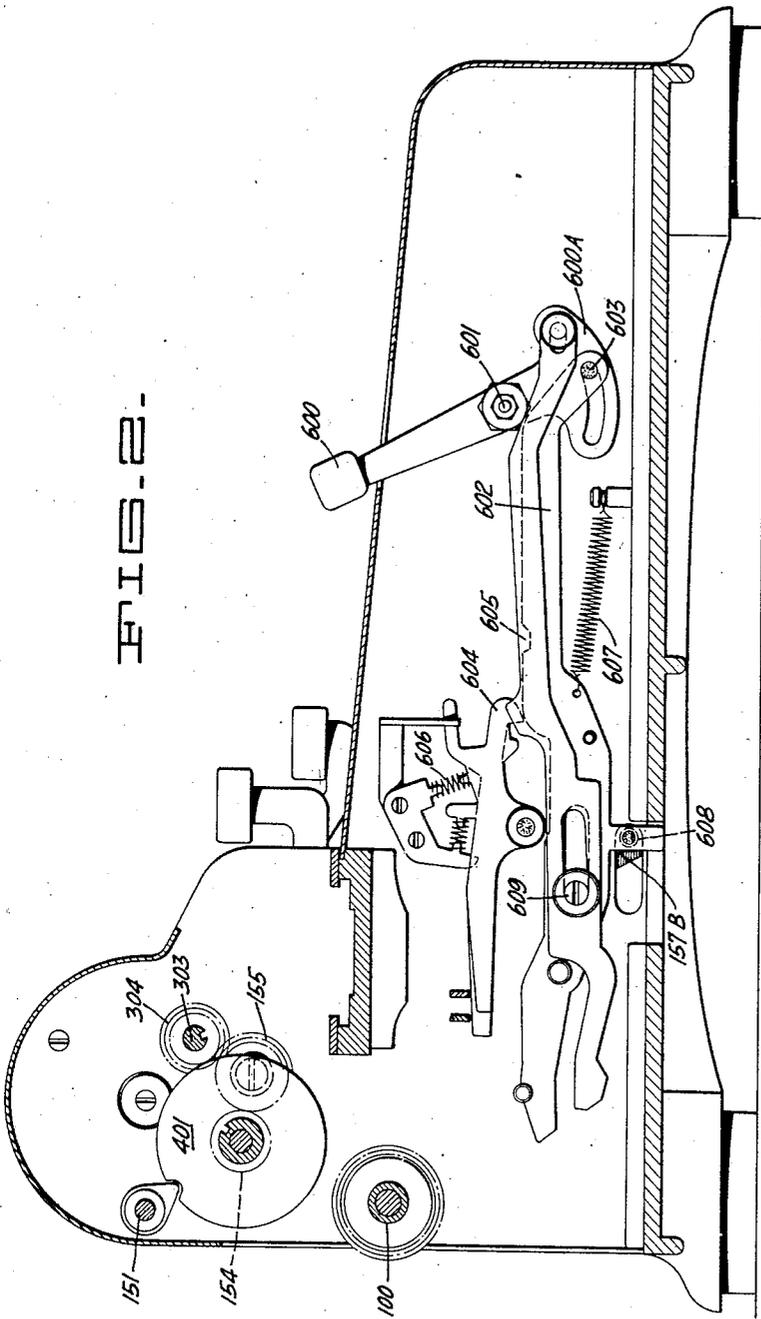
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CALCULATING MACHINE

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FIG. 2.



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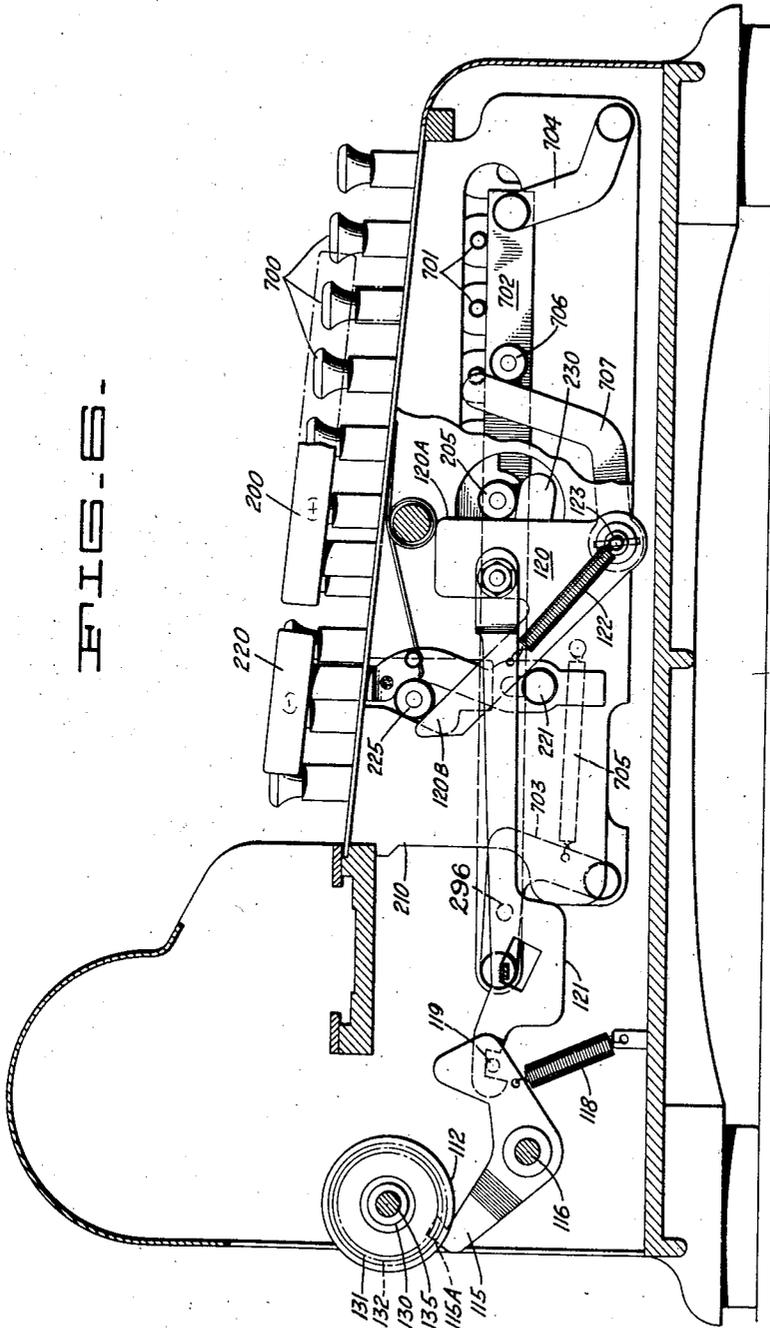
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CALCULATING MACHINE

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FIG. 6.



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2,335,226

CALCULATING MACHINE

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Continuation of application Serial No. 484,562, September 26, 1930. This application February 12, 1940, Serial No. 318,490

20 Claims. (Cl. 235—79)

This application is a continuation of application Serial No. 484,562, filed September 26, 1930, by Harold T. Avery, and entitled "Calculating machine."

The present invention relates to controlling levers for calculating machines of the reversible rotary type adapted to perform the four primary calculations, but particularly to the type embodying means whereby multiplication and division operations are performed automatically.

It is an object of the invention to provide a controlling mechanism jointly settable by several operating means.

Another object of the invention is to provide in a calculating machine a control lever for a reversing mechanism which is positively operable by movement of the automatic division lever thereby assuring the correct rotative direction of the counter actuator to produce a true quotient without the necessity of an additional setting by the operator when it is desired to perform a division operation after a multiplication operation has been performed.

A further object of the invention is to provide means, in a calculating machine, whereby a complementary quotient or multiplier may be obtained if desired.

Other objects will appear as this specification progresses.

The invention possesses a plurality of advantageous features, some of which will be set forth at length in the following description, where that form of the invention which has been selected for illustration in the drawings accompanying and forming a part of the present specification, will be described in full. In said drawings, one form and one adaptation of the apparatus has been shown, but, it is to be understood that the invention has not been limited to such, since the invention, as set forth in the claims, may be embodied in a plurality of other forms and adaptations.

It is manifest that the invention may be embodied in any machine. However, in the accompanying drawings, it is shown embodied in a calculating machine of the general type disclosed in the patent to Friden, Number 1,643,710, dated September 27, 1927, to which reference is hereby made for a disclosure of mechanisms of a calculating machine as are not specifically described herein.

In the accompanying drawings forming a part of the specification:

Figure 1 is a right side view of the calculating machine with parts of the casing broken

away to more fully disclose the present invention.

Figure 2 is a longitudinal section through the calculating machine looking from the left and showing the automatic division lever and its associated mechanism.

Figure 3 is a rear view of the calculating machine with portions of the casing broken away to disclose the present adaptation of the invention.

Figure 4 is a longitudinal section of a rear portion of the calculating machine taken on line 4—4 of Figure 3.

Figure 5 is a plan view of the present invention with some parts shown in section to more fully disclose the operation thereof.

Figure 6 is a longitudinal section through the calculating machine with parts cut away to show the several control means therefor.

Automatic calculating machines heretofore have been provided with additional setting means, manipulated by the operator to one position during the performance of problems in multiplication to obtain a true multiplier, and to another position during problems in division to obtain a true quotient. With this additional setting necessary between successive problems in multiplication and division, it is obvious that the registration of true results relies wholly on the human element.

The present invention relieves the operator of this added responsibility and automatically sets registration of either true quotient or true multiplier; however, the invention comprises means whereby complementary quotients or multipliers may be obtained if desired.

The calculating machine embodying the present invention is of the keyboard type, and comprises a reversible rotary actuator, into which values are introduced by the depression of keys. The rotation of this actuator serves to transfer these values to the numeral wheels of the accumulator register to effect a calculating operation. For the purpose of making direct action of selected values on the numeral wheels of the highest order possible, the accumulator register is disposed in parallel displaceable relation to the axis of the actuator.

Drive control

The driving mechanism of the machine is substantially similar to that disclosed in the patent to Friden, Number 1,643,710 and comprises an electric motor which is connected to the drive shaft 100 (Figures 3 and 4) by appropriate speed

reducing gearing, and is adapted to be intermittently connected to the calculating mechanism to drive the same.

The means whereby the drive is connected to the calculating mechanism includes a clutch 112 (Figures 4 and 6) having an internal ratchet arrangement which is adapted to be maintained in its non-engaging position by means of a clutch control mechanism. This clutch control mechanism comprises a bell crank 115, journaled on a stub shaft 116 on the machine frame, a foot 115A of which is adapted to project through an appropriately positioned aperture in the clutch housing 112 when the actuator is at full cycle position and thereby disengage the clutch mechanism.

A spring 118, tensioned between a stud on the machine base and the forward arm of the bell crank 115, tends to urge the foot 115A into clutch disengaging position, so that in the absence of intervention by other instrumentalities, the actuator will be brought to rest with the clutch in disengaged position when it reaches full cycle position after a rotation. Means are provided for operating the bell crank 115 to engage the clutch for the number of rotations requisite to perform a desired calculation or enter a factor into the machine, and pin 119 is provided on the forward end of the bell crank for this purpose. Pin 119 is engaged by the notched rear end of a control link 121 which is pivoted at its forward end to control plate 120 and normally held in position overlying the pin 119 by a spring 122 tensioned between the shaft 123 and an intermediate point on the control link. Control plate 120 is fixed on shaft 123 journaled in the machine, and comprises a forward-vertical portion 120A adapted to cooperate with the plus bar, and a rear angular portion 120B adapted to cooperate with the minus bar. Operation of either of these bars or the multiplier keys is adapted to impart a counter-clockwise oscillation to control plate 120, as will be hereinafter described. This imparts corresponding counter-clockwise oscillation to the clutch operating bell crank 115, permitting engagement of the clutch ratchet mechanism for the period that such adjustment is maintained. The internal ratchet mechanism of the clutch 112 is fully described in the patent to Friden, Number 1,643,710, to which reference is made for necessary details.

Reversing gearing

Fixed to the clutch housing 112 (Figure 3), for rotation therewith, is a sleeve 130 journaled in an intermediate wall of the machine, and journaled upon this sleeve adjacent the clutch housing are two gears 131 and 132. These gears, adapted to be optionally keyed to the clutch housing sleeve 130, are instrumental in driving the machine, and since one of these gears includes an intermediate idler 131A in its driving train to the actuator, it is obvious that said actuator may be driven in either direction. This portion of the mechanism is fully disclosed in the patent to Friden, Number 1,682,901, of September 4, 1928.

Plus and minus bars

The machine comprising the present invention includes manual means for controlling rotation of the actuator for a plurality of operations selectively in either a positive or negative direction. The means for manually controlling rotation in the positive direction comprises a plus bar 200 (Figure 6) conveniently supported on a frame

and a pair of parallel links, (not shown), which are pivoted intermediate their ends to the opposite side of plate 210 and held by an appropriately positioned spring so that the plus bar will normally be maintained in its elevated position. The plus bar supporting frame carries a roller 205 which extends through an aperture in the plate 210, and which, upon depression of the plus bar 200, moves downwardly and to the rear as a result of the manner in which it is supported upon the parallel links, and, since this roller abuts the forward side of the arm 120A of control plate 120, it is obvious that depression of the plus bar will result in a counter-clockwise oscillation of the control plate 120 and consequent engagement of the actuator clutch 112.

The means for controlling negative rotation of the actuator comprises a minus bar 220, the stem of which is slidably supported on the plate 210 by means of a pin and slot connection 221. This minus bar stem is adapted, upon depression thereof, to depress a roller 225 which is journaled on the forward horizontal end of a bell crank (not shown), the vertical end of which is linked with the reversing mechanism comprising gears 131 and 132 (Figure 3) in such a manner that its oscillation reverses the direction of rotation of the actuators. The roller 225 also abuts the rearward angular arm 120B of the control plate 120 so that depression of the minus bar 220, in addition to effecting reversal of the actuators, rocks the control plate 120 in a counter-clockwise direction to effect engagement of the actuator clutch. The manner in which the minus bar is connected to operate the reversing mechanism is more fully disclosed in the patent to Friden, Number 1,643,710.

To prevent simultaneous operation of the plus and minus bars, the two ends of a rocking bar 230 underlie the rollers 205 and 225, and, since this bar 230 is pivoted intermediate its ends to the plate 210, it is seen that depression of one bar rocks the opposite end upward to block simultaneous depression of the other bar.

Automatic multiplication control mechanism

For the purpose of performing automatic multiplication, the calculating machine, as shown in the patent to Friden, Number 1,643,710, is provided with a trip slide which actuates devices engaging a pin 296 thus tripping or raising the rear end of the latch lever 121 (Figure 6) to release the clutch control lever 115 at the end of a selected predetermined number of rotations of the actuator. This trip slide is positioned in variable angular positions, the magnitude of which is determined by the denomination of the multiplier key depressed, however, since the trip slide and associated mechanism is fully described in the above mentioned patent, only the control keys therefor and their connection for effecting engagement of the main clutch will be described herein.

In addition to positioning the trip slide, the depression of any multiplier key 700 (Figure 6) through its laterally projecting pin 701, imparts a downward and rearward movement to a bar 702 due to the mode in which it is supported on the parallel links 703 and 704. These links have one end journaled in the machine and the other journaled on the bar 702, and the entire assembly is normally held in its elevated position by a spring 705 tensioned from an intermediate point on the link 703 to a suitable stud in the machine. Journaled on a stud in the bar 702

is a roller 706 adapted to contact the front side of a lever 707 which is fixed to the end of the shaft 123 opposite the control plate 120. Since the control plate 120 is also fixed to the shaft 123, it is obvious that the rearward movement of the bar 702 caused by the depression of a multiplier key will, through the lever 707, rotate the control plate 120 counter-clockwise and effect engagement of the clutch 112 which, at the end of a predetermined number of rotations, will be disengaged by the link 121 being lifted clear of the bell crank pin 119 by action of the automatic multiplication trip slide.

Counter register

The machine is also provided with a stationary counter register 300 (Figure 4) comprising a plurality of numeral wheels 300 which are arranged to be driven by a single toothed actuator 301 through their intermediate gears 302. The single tooth counter actuator 301 is keyed to and driven by its shaft 303, but is longitudinally displaceable thereon by movement of the accumulator carriage 400. It is driven by rotation of the counter register tens carrying drum 401 through the gears 154, 155, and 304 (see also Figure 2), and since these gears are of a one to one ratio with the accumulator actuator gearing, it is obvious that the actuator 301 will correctly count the number of revolutions of the accumulator actuator in any denominational order.

It is well known in the calculating machine art that during multiplication operations the accumulator actuator must rotate in an additive direction and during division operations must rotate in a subtractive direction, while to obtain true multipliers and quotients the counter actuator must rotate in an additive direction during both operations. Thus, it is evident that a second reversing mechanism is necessary to effect synchronous rotation of these actuators in the same directions, or in opposite directions from each other. This second reversing mechanism comprises a shiftable gear 153 (Figure 3) having on its hub an annular groove into which the bifurcated end of a forked member 152 is disposed. The forked member 152 is secured to shaft 151 shiftablely mounted in the frames of the machine, and adapted to be transversely shifted into either of two positions by means to be hereinafter described. It is evident that a shifting of the shaft 151 will effect a like shifting of the gear 153 which is adapted to include the gear 131A in its driving train to the counter actuator while it is in one position, and to omit this gear while in the other position. This mechanism is fully disclosed in the patent to Friden, Number 1,643,710, where additional description may be found, if necessary.

Reversing lever

The present invention comprises means whereby the shaft 151 (Figures 1, 3, and 5) is automatically shifted to obtain true multipliers and quotients during the performance of problems in multiplication and division, and with settable means whereby complementary multipliers and quotients may be automatically obtained for these problems, if desired. The shiftable reversing gear shaft 151 extends through the right side frame of the machine, and is provided in its outer extremity with a slot in which is disposed a camming edge of a segment 155 journaled on a stud 156, and arranged to be rotated about said pivot point to effect a shifting movement of the

shaft 151 by movement of a lever 157, which is journaled on a stud 158, securely mounted in a side frame of the machine. The lever 157 is provided on its upper extremity with an arcuate rack 157A meshing with a gear 159 keyed to the stud 156 and arranged to rotate the same in its bearing in the side frame of the machine. Rotation of this stud serves to effect a like rotation of a second gear 160, also keyed to the stud, and continuously in mesh with a planetary gear 161 which is journaled on the rear extremity of the lever 162, and adapted to effect movement of the cam segment 155 by meshing with an internal arcuate rack provided thereon. The lever 162 (Figure 1) is shown in its forward or true figure position which, through the planetary gear 161, normally holds the camming segment 155 so that the slot in the shaft 151 is riding the cam's high portion 155A (Figure 3) which holds the shaft 151 and the gear 153 in their multiplying position for a true figure product position. This means that the accumulator and counter actuators will both rotate in the same direction.

To perform automatic division on the present machine, it is necessary to enter the factors in the usual manner, and pull the division control lever 600 (Figure 2) to its forward position, which, through its intermediate pivot point 601, imparts a rearward motion to its lower extremity 600A. Thus, a like rearward movement is imparted to the slide 602 journaled on this lever at 603 and slidably supported on its rear end by stud 609. This slide is normally held in its forward position by a spring 607, and latched in its rearward position for the duration of the division operation by a latch 604 which is forced into the depression 605 by a spring 606. The rocking of the automatic division control lever 600 to its forward or operative position, is adapted to effect a reversing operation through a stud 608 secured on a projection of the slide 602 and extended through an appropriately positioned aperture in the side frame of the machine to be disposed in a slot 157B provided in the lower extremity of the reversing lever 157. A rearward movement of the slide 602 to perform a division operation, will impart a counter-clockwise rotation to the lever 157 which, through the gears 159, 160, and 161, will transfer said counter-clockwise movement to the segment 155. Since the cam edge of the segment 155 is disposed in a slot in the shaft 151, it is evident that this counter-clockwise rotation of the segment 155 (Figure 3) will force the slot from its seat on the high point of the cam 155A to the low point 155C, consequently shifting the shaft 151 and the gear 153 to their reverse or division position. Although the accumulator actuator will now run in a subtractive direction to perform a problem in division, the counter actuator will still run in an additive direction and correctly count the subtractive rotations of the accumulator actuator in each denominational order to display a true figure quotient.

Complementary setting mechanism

During the performance of certain calculations it is often found necessary to obtain complementary quotients or multipliers and, as hereinbefore mentioned, means are comprised in the present invention whereby this may be optionally accomplished. The operation of the mechanism comprising the present invention has been described with the lever 162 (Figure-1) in its forward or true figure position, where it will remain

during the majority of calculating operations, or until a complementary quotient or multiplier is necessary, when it is shifted to its rearward or complementary position. This lever 162 is loosely journaled on the shaft 156 and is releasably held in either of the above mentioned positions by a spring pressed member 163 (see also Figure 5). It is obvious, then, that a rocking of this lever to its rearward position will result in a reversing operation due to movement of the segment 155 effected by rotation of the planetary gear 161 around the normally stationary sun gear 160. This movement of the segment 155 will rotate it sufficiently to cause the shifting of the shaft 151 to its reverse position and the slot in said shaft will be disposed on a low portion of said cam 155B (Figure 3). With the shaft 151 in this reverse position the performance of a multiplication problem will result in the registration of the complement of the multiplier in the counter register. However, if the automatic division control lever 600 be now pulled to its operative position, the lever 157 (Figure 1) will be rocked sufficiently to cause a counter-clockwise movement of the segment 155 through a limited arc to place the shaft 151 in the position shown in Figures 1, 3, and 5, which at the completion of a division operation will result in a complementary quotient. The manner whereby this is accomplished has been described hereinbefore.

It is also clear that the provision of the above described automatic control does not interfere with the manual setting of the counter reversing gear by means of the lever 162 when it is desired to perform various computations by means of the plus and minus bars.

I claim:

1. A register controlling mechanism comprising a control element selectively settable to a plurality of positions, means for shifting said element comprising a ring gear having a plurality of cam faces, sun and planetary gears operable to set said ring gear to shift said element, means for operating said sun gear, and means for selectively setting said planetary gear to a plurality of positions to cause different cam faces of said ring gear to contact said element upon a given operation of said sun gear.

2. In a calculating machine, a quotient register, reversibly settable drive means therefor, means for reversing the setting of said drive means, an automatic division operation initiating member and means operable in time with said operation initiating member upon movement thereof to operation initiating position for actuating said reversing means to effect a reversal of said drive means from either setting thereof.

3. In a calculating machine having an automatic division initiating member, and accumulator and counter register actuators; reversible driving transmissions for said actuators, a control member selectively settable to a plurality of positions, and means for controlling the transmission for one of said actuators; said means being controlled by said control member when in one of its positions for effecting dissimilar rotation of said one of said actuators with respect to the other and said means being also controllable by said automatic division initiating member, while said control member remains in said set position, for effecting similar rotation of said one of said actuators with respect to the other.

4. In a calculating machine having an automatic division initiating member, and accumulator and counter register actuators; reversible

driving transmissions for said actuators, a control member selectively settable to a plurality of positions, and means for controlling the transmission for one of said actuators; said means being controlled by said control member when in one of its positions for effecting similar rotation of said one of said actuators with respect to the other and said means being also controllable by said automatic division initiating member while said control member remains in said set position for effecting dissimilar rotation of said one of said actuators with respect to the other; said means being controlled by said control member when in another of its positions for effecting dissimilar rotation of said one of said actuators with respect to the other and said means being also controllable by said automatic division initiating member, while said control member remains in said other set position, for effecting similar rotation of said one of said actuators with respect to the other.

5. In a calculating machine having an automatic division initiating member, and reversible accumulator and counter registers; a control member selectively settable to a plurality of positions, and means controlled by said control member when in one of its positions for effecting subtractive operation of one during additive operation of the other of said registers, and controllable by said automatic division initiating member for effecting subtractive operation of said one during subtractive operation of the other of said registers.

6. In a calculating machine having an automatic division initiating member, and reversible accumulator and counter registers; a control member selectively settable to a plurality of positions, and means controlled by said control member when in one of its positions for effecting additive operation of one during additive operation of the other of said registers, and controllable by said automatic division initiating member for effecting subtractive operation of said one during additive operation of the other of said registers; said means being controlled by said control member when in another of its positions for effecting subtractive operation of one during additive operation of the other of said registers, and controllable by said automatic division initiating member for effecting subtractive operation of said one during subtractive operation of the other of said registers.

7. In a motor driven calculating machine having an accumulator and a counter register, actuators therefor, and reversing mechanisms for said actuators; a plurality of control members for normally causing additive rotation of said actuators, an automatic division control member, means controlled by said automatic division control member upon movement thereof to operative position to reverse the direction of rotation of said accumulator actuator, means controlled by said automatic division control member upon movement thereof to operative position to maintain the initial direction of rotation of said counter actuator, and means for selectively adjusting a portion of said last named means so that said counter actuator will initially rotate in a negative direction.

8. In a calculating machine having an accumulator, a counter, separate actuators for said accumulator and counter, a reversible driving transmission common to said actuators, and means for operating said transmission to reverse the direction of operation of one of said actua-

tors with respect to the other; the combination of means including a first lever manually settable to any of a plurality of positions and operable upon movement thereof to any one of said positions to actuate said reversing means, and means including a second manually settable lever effective while said first lever is in any of its set positions, to operate said reversing means.

9. In a calculating machine having an accumulator, a counter, and means for reversing the direction of operation of said counter with respect to the direction of operation of said accumulator; the combination of means including a first lever manually settable to any of a plurality of positions and operable upon movement thereof to any one of said positions to actuate said reversing means, and means including a second manually settable lever effective while said first lever is in any of its set positions, to operate said reversing means.

10. In a calculating machine having an accumulator, a counter, and means for reversing the direction of operation of said counter with respect to the direction of operation of said accumulator; the combination of means including a first lever manually settable to any of a plurality of positions and effective upon movement thereof to any one of said positions to actuate said reversing means, means including a second settable lever for adjusting said reversing means, a manually operable automatic division initiating member, and a releasable retaining device responsive to operation of said initiating member to hold elements of said last named means in the adjustment effected by said second lever; and means responsive to the release of said retaining device for again adjusting said reversing means.

11. In a calculating machine having an accumulator, a counter, separate actuators for said accumulator and counter, and means for reversing the direction of operation of one of said actuators with respect to the other; the combination of a system comprising a first member settable into any of a plurality of positions and a connecting mechanism controlled by said member and operable upon movement thereof to any one of said positions to operate said reversing means; and a second settable member, and connections between said second settable member and said connecting mechanism for operating the latter and thereby operating said reversing mechanism independently of said first settable member.

12. In a calculating machine having an accumulator, a counter, and means for reversing the direction of operation of said counter with respect to the direction of operation of said accumulator; the combination of a system comprising a first member settable into any of a plurality of positions and a connecting mechanism controlled by said member and operable upon movement thereof to any one of said positions to operate said reversing means; and a second settable member and connections between said second settable member and said connecting mechanism for operating the latter and thereby operating said reversing mechanism independently of said first settable member.

13. In a calculating machine having an accumulator, a counter, separate actuating mechanisms for said accumulator and said counter, respectively, and a cyclic driving transmission common to said actuating mechanisms; the combination with settable means for reversing the direction of operation of said counter with respect to the direction of operation of said accumulator,

of setting mechanism for said means including a setting device movable to a series of positions, means controlled by said setting device upon movement thereof from any of its effective positions to an adjacent effective position for setting said settable means to effect a reversal of the direction of operation of said counter with respect to the direction of operation of said accumulator, a plurality of independently operable actuating devices for said setting device, and means for transmitting individual and concurrent movements of said actuating devices individually and cumulatively to said setting device.

14. In a calculating machine having an accumulator, a counter, separate actuating mechanisms for said accumulator and said counter, respectively, and a cyclic driving transmission common to said actuating mechanisms; the combination with settable means for reversing the direction of operation of said counter with respect to the direction of operation of said accumulator, comprising a shiftable reversing member, of a cam movable to a series of effective positions and having an operating connection with said shiftable reversing member, a plurality of independently operable actuating devices for said cam, and means for transmitting individual and concurrent movements of said actuating devices individually and cumulatively to said cam.

15. In a calculating machine having an accumulator, a counter, separate actuating mechanisms for said accumulator and said counter, respectively, a cyclic driving transmission common to said actuating mechanisms, and automatic division mechanism including a settable control member; the combination with settable means for reversing the direction of operation of said counter with respect to the direction of operation of said accumulator, of setting mechanism for said means including a setting device movable to a series of positions, means controlled by said setting device upon movement thereof from any of its effective positions to an adjacent effective position for setting said settable means to effect a reversal of the direction of operation of said counter with respect to the direction of operation of said accumulator, an actuating device for said setting device operable independently of said automatic division control member, and means for transmitting individual and concurrent movements of said actuating device and said automatic division control member individually and cumulatively to said setting device.

16. In a calculating machine having an accumulator, a counter, separate actuating mechanisms for said accumulator and said counter, respectively, a cyclic driving transmission common to said actuating mechanisms, and automatic division mechanism including a settable control member; the combination with settable means for reversing the direction of operation of said counter with respect to the direction of operation of said accumulator, comprising a shiftable reversing member, of a cam movable to a series of effective positions and having an operating connection with said shiftable reversing member, an actuating device for said cam operable independently of said automatic division control member, and means for transmitting individual and concurrent movements of said actuating device and said automatic division control member individually and cumulatively to said cam.

17. In a motor driven calculating machine, a reversing mechanism, operating means therefor comprising a planetary gear system including a

ring gear, a sun gear and a planetary gear, a plurality of cam faces on said ring gear, a manually operable automatic division initiating member, a manually settable member, means operable in time with one of said members for oscillating said sun gear to cause displacement of said ring gear by rotation of said planet gear about its own axis, and means operable in time with the other of said members to cause displacement of said ring gear by orbital movement of said planet gear.

18. In a motor driven calculating machine having a reversing mechanism disposed between the motor and a motor driven portion of the machine; a planetary gear system having ring, planet and sun gear elements, means comprising a series of at least three cam faces shiftable by one of said elements for adjusting said reversing mechanism to effect successive reversals of the motor driven portion of the machine thereby, and separate and independently operable means for oscillating each of the other elements of said planetary gear system, concurrently oscillating said one of said elements and said cam faces to effect one or more successive reversals of the motor driven portion of the machine by said reversing mechanism.

19. In a motor driven calculating machine having a reversing mechanism disposed between the motor and a motor driven portion of the machine; a differential movement transmitting system having at least three connected elements, means comprising a series of at least three cam faces shiftable by one of said elements for adjusting

5 said reversing mechanism to effect successive reversals of the motor driven portion of the machine thereby, and separate and independently operable means for adjusting each of the other elements of said differential movement transmitting system concurrently shifting said one of said elements and said series of cam faces to effect one or more successive reversals of the motor driven portion of the machine by said reversing mechanism.

10 20. In a calculating machine having quotient and dividend registers; the combination with means for operating said registers in unison to effect alternative positive or negative registration, means for reversing the sign character of the registration upon said quotient register relative to the sign character of the registration upon the other register, and control devices for setting the machine for selected kinds of calculations including a manually settable automatic division initiating member; of manually operable mechanism for setting said reversing means, a releasable latch responsive to said automatic division initiating member upon setting thereof to hold said reversing means in set position, and a spring tensioned by said manually operable mechanism upon setting thereof and retained in such tensioned condition by said latch; said spring being effective upon release of said latch to cause resetting of said reversing means.

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