Oct. 2, 1923. **1,469,488**

C. A. SIEWECK

CALCULATING MACHINE

Filed Sept. 1, 1922 3 Sheets-Sheet 1

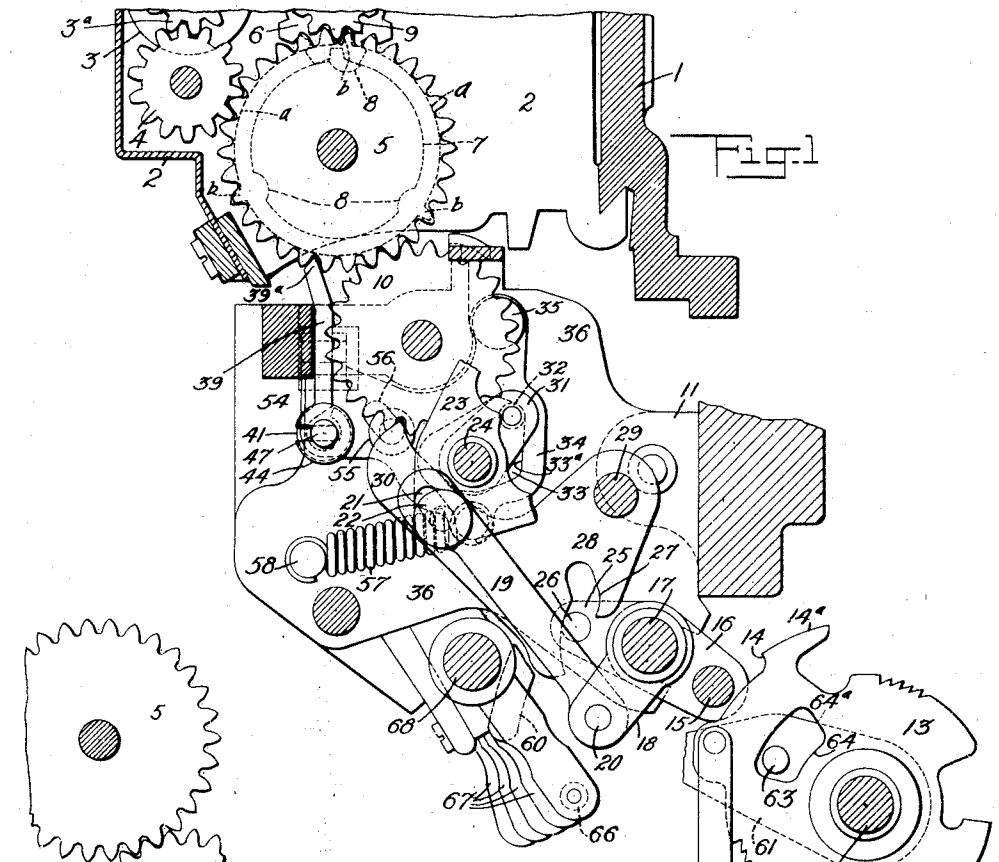


Fig. 1

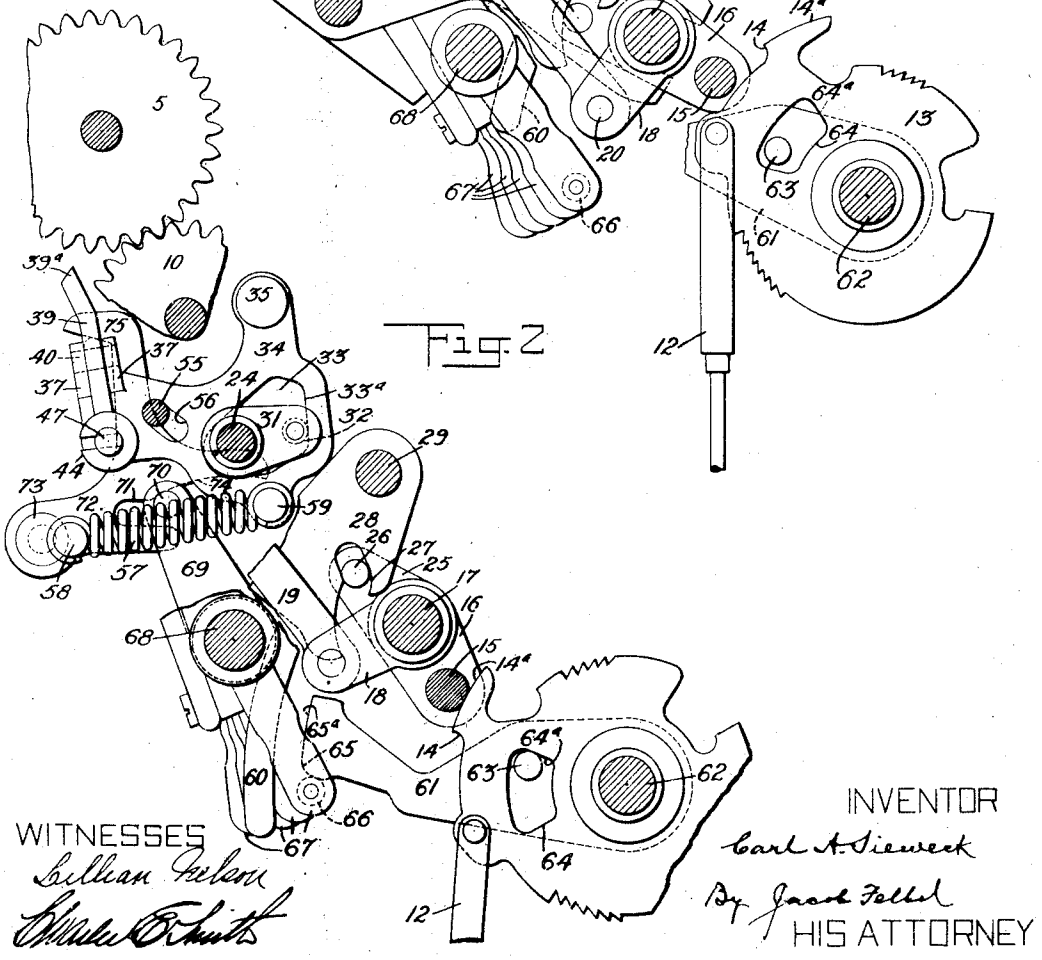


Fig. 2

WITNESSES

Lillian Nelson

INVENTOR

Carl A. Sieweck

By Jacob Fellheimer

HIS ATTORNEY

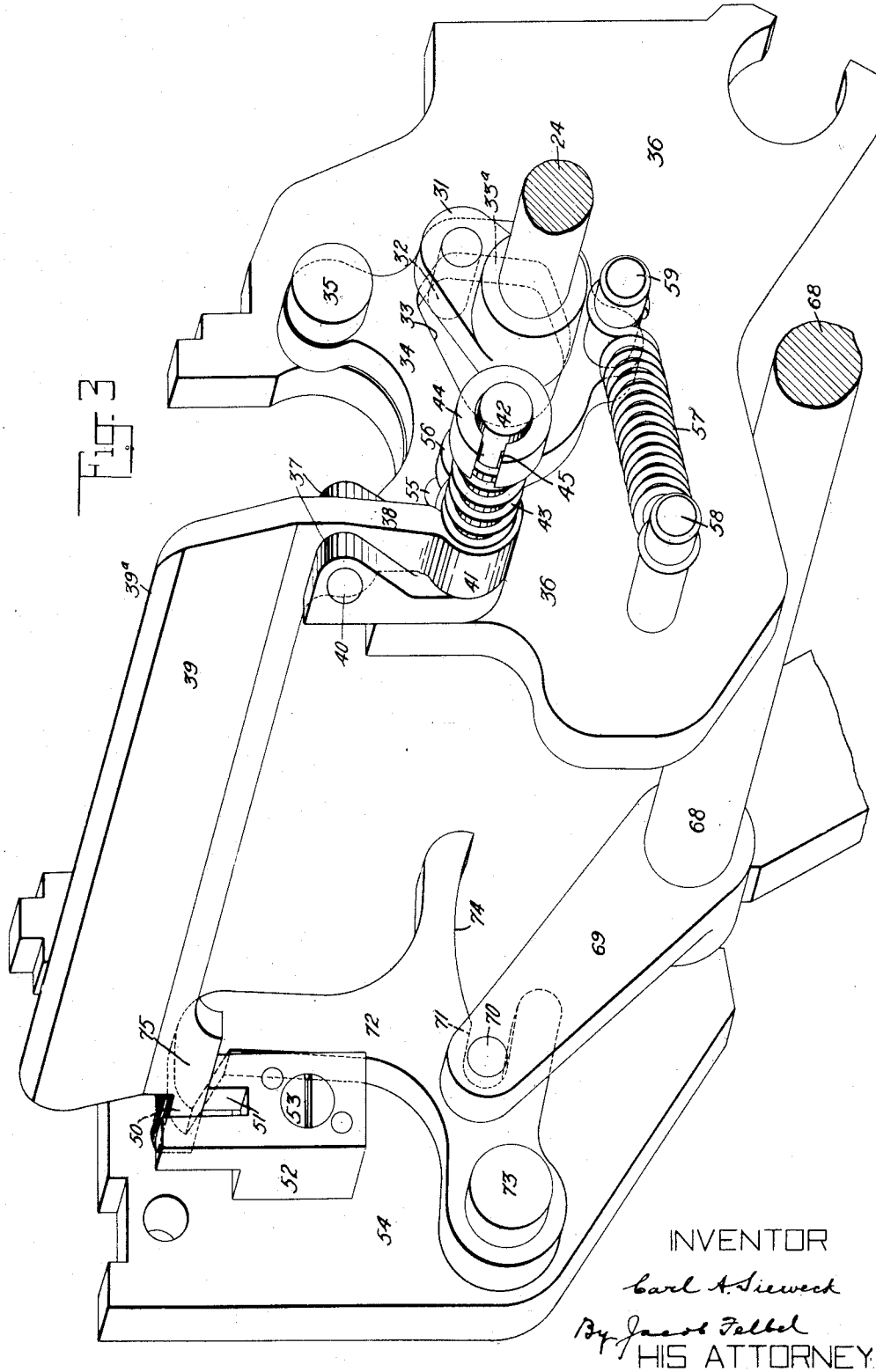
Oct. 2, 1923. 1,469,488

C. A. SIEWECK

CALCULATING MACHINE

Filed Sept. 1, 1922 3 Sheets-Sheet 2

Fig. 3



INVENTOR

Carl A. Sieweck

By Jacob Felbel

HIS ATTORNEY

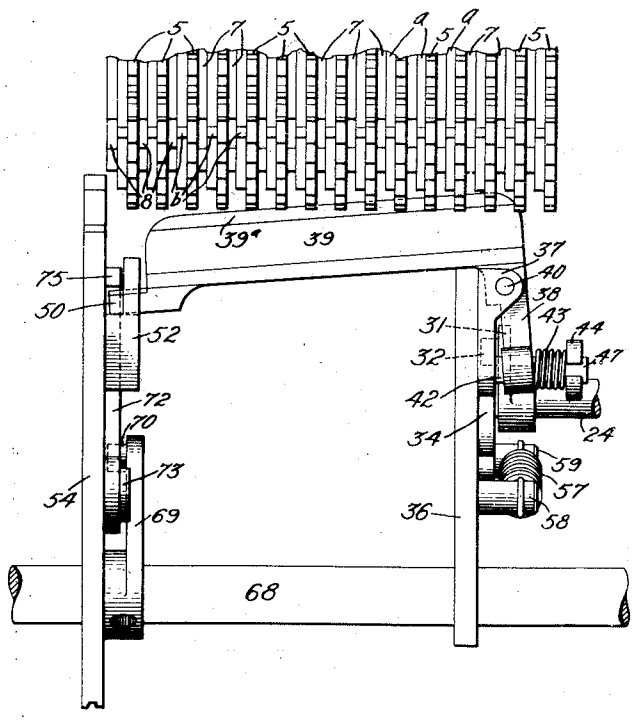
Oct. 2, 1923. 1,469,488

C. A. SIEWECK

CALCULATING MACHINE

Filed Sept. 1, 1922 3 Sheets-Sheet 3

Fig. 4



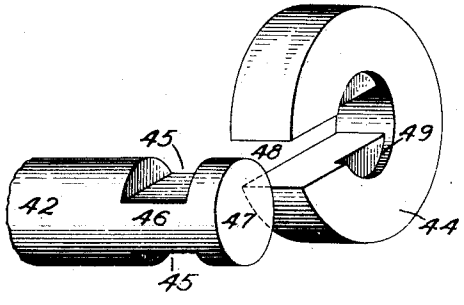


Fig. 5

WITNESSES

Lillian Nelson

INVENTOR

Carl A. Sieweck

By Jacob Fellheimer

HIS ATTORNEY

Patented Oct. 2, 1923. 1,469,488

UNITED STATES PATENT OFFICE.

CARL A. SIEWECK, OF NEW YORK, N. Y., ASSIGNOR TO REMINGTON ACCOUNTING MACHINE CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

CALCULATING MACHINE.

Application filed September 1, 1922. Serial No. 585,736.

To all whom it may concern:

Be it known that I, CARL A. SIEWECK, citizen of the United States, and resident of the borough of Manhattan, city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Calculating Machines, of which the following is a specification.

My invention relates to calculating machines and more particularly to spiral removing mechanism for such machines.

In calculating machines, in which carrying mechanism of certain kinds is employed to carry from a wheel of lower order to the next wheel of a higher order throughout the series, there is a likelihood of developing what is known as "spirals" during the carrying and clearing operations. That is to say the numerals on the register wheels, exposed at the sight-openings in the totalizer frame, instead of appearing in a straight horizontal line will appear in a spirally disposed arrangement which sometimes results in the improper actuation of the register and gives a false reading on the register wheels, as is well understood in the art.

The main object of my invention is to provide simple and highly efficient rectifying mechanism for overcoming this difficulty and for automatically aligning the wheels after each operation thereof to remove any spiral that may develop.

A further object of my invention is to provide simple and efficient mechanism of the character specified which may be readily incorporated in existing computing machines without modifying, or materially modifying, the structural features of such machines as they now exist.

To the above and other ends which will hereinafter appear, my invention consists in the features of construction, arrangements of parts, and combinations of devices set forth in the following specification and particularly pointed out in the appended claims.

In the accompanying drawings, wherein like reference characters indicate corresponding parts in the different views,

Figure 1 is an enlarged detail fragmentary fore-and-aft vertical sectional view showing a portion of the actuator and a portion of a totalizer of a Remington accounting machine.

Figure 2 is a like view of the same showing the parts in different positions from those represented in Fig. 1.

Figure 3 is an enlarged detail perspective view of the aligning bar and means associated therewith for controlling the movement thereof.

Figure 4 is an enlarged detail fragmentary front view of the parts represented in Fig. 3 together with certain of the wheels of the totalizer with which the aligning bar coacts.

Figure 5 is an enlarged detail perspective view of the means by which the spring for the aligning bar is retained in place.

I have shown my invention in the present instance embodied in a Remington accounting machine of the character disclosed, for example, in the patent to John C. Wahl, No. 1,270,471, dated June 25, 1918, in which the devices of the present invention may be readily embodied without modifying, or materially modifying, structural features of said machine as they now exist. It should be understood, however, that the invention is not restricted to embodiment in such machines but may be employed wherever found available in various styles of computing machines.

The Remington accounting machine is a combined typewriting and computing machine in which one or more vertical totalizers are carried by a truck connected to the carriage of the typewriting machine to travel therewith. Each vertical totalizer carries registering mechanism controlled by actuating mechanism carried by the frame of the machine and operated by the numeral keys of the typewriting machine. When a totalizer has been brought to the computing zone an actuation of a numeral key will register in said totalizer a number according to the value of the key which has been actuated, either for addition or subtraction, in accordance with the setting of the machine. The truck advancing one step at each operation of a numeral key brings wheels of the totalizer successively into engagement with the master wheel or device of the actuating mechanism for actuation thereby. When used for addition, for example, each register wheel in making a complete revolution and in moving from the "9" position to the "0" position will result in the carrying mechanism turning the register wheel of the next higher order one space adding one

thereto, this movement at times being transmitted throughout the series from a wheel of the lowest order to a wheel of the highest order.

In the accompanying drawings I have shown only so much of the Remington accounting machine as is necessary to arrive at an understanding of my invention in its inclusion therein, the mechanism of this machine being well understood in the art and fully disclosed in the said Wahl patent.

A portion of the truck, by which one or more vertical totalizers are carried, is indicated by the reference numeral 1 in Fig. 1. Each totalizer comprises a frame 2 detachably connected to and adjustable to different positions along the truck 1. Each totalizer frame 2, as ordinarily constructed, carries a series of dial wheels 3, each provided with a gear wheel 3^a; a series of meshing idle wheels 4; a series of gears 5 each having thirty teeth which mesh with the gears 4; and a series of locking wheels 6. Each gear 5 has fixed on the left-hand side thereof a wheel *a* formed with three carrying teeth *b* spaced apart at intervals of ten teeth of the companion gear 5. Each gear 5 also has fixed thereto a wheel 7 arranged to the left of the wheel *a* and having its periphery formed with three notches 8 arranged at intervals corresponding to the positions of the carrying teeth *b*. Each wheel 7 constitutes a member of a Geneva gear which coacts with the companion gear, star or locking wheel 6. Each wheel 6 carries a gear 9 on the right-hand side thereof with which the carrying teeth *b* coact, and also has on the left-hand side thereof a gear (not shown) which meshes with the wheel 5 of the next higher order. When the teeth of a wheel 6 engage the periphery of the companion wheel 7 said wheel 6 is prevented from turning. When, however, a recess 8 is brought opposite a tooth of the companion wheel 6 as shown in Fig. 1, a carrying tooth *b* engages the associated gear 9 and turns said wheel 6 one unit; a tooth of the wheel 6 passing through the registering recess 8 at this time. This turning movement of the wheel 6 is transmitted through the gear on the left-hand side thereof to the engaged gear 5 of the next higher order and such motion in turn is transmitted to its dial wheel. In this manner motion may be transmitted throughout the series from the lowest to the highest order wheels to carry successively through all of the register wheels.

The truck 1 moving with the typewriter carriage brings the totalizer to the computing zone and the wheels 5 are brought successively by a step by step movement into mesh with a master wheel or device 10 to be operated successively thereby at successive operations of the numeral keys. The master wheel 10 is carried by an actuator frame secured to the frame of the typewriting machine. Various parts of the actuating mechanism by which the master wheel is controlled are carried by this frame, certain only of such parts being illustrated. This actuating mechanism comprises a series of links 12 each connected at its lower end to the respective key lever of the numeral key for said link. The upper end of each link is pivoted to the associate so-called fan 13 that includes part of the full stroke mechanism and means by which motion is transmitted to various parts of the actuating mechanism. A cam 14 on each fan 13 coacts with a universal bar 15 carried by and adapted to turn in bearings in parallel arms 16 fixed to a rock shaft 17. Also fixed to the shaft 17 is a crank arm 18 to which a link 19 is pivoted at 20. The upper end of the link 19 is slotted at 21 to receive a headed pin 22 carried by a master cam 23. This cam is fixed on a shaft 24 and is operative on a certain master dog (not shown) and on other devices, which for the purpose of my present invention need not be considered further than to point out that the parts in question operate in the usual manner, except that a certain aligning dog usually employed in the Remington machine and co-operative with the wheels 5, is omitted. An additional crank arm 25 fixed on the rock shaft 17 carries a laterally projecting pin or roller 26 co-operative with a cam 27. This cam is formed in a member 28 pivoted at 29 and carrying a so-called locking dog 30 which normally engages the master wheel 10 and serves to definitely align the master wheel and hold it in position during the time said wheel is not being rotated by the depression of a key.

My improved aligning mechanism includes a crank arm 31 fixed on rock shaft 24 and carrying a laterally projecting pin 32 that projects into an opening 33 in a carrier 34 pivoted on a headed pin 35 secured to a frame plate 36 of the actuator. As the shaft 24 receives a clockwise movement from its normal position as the parts are viewed in Fig. 1, the pin 32 will be forced against the wall 33^a of the opening in the carrier 34, turning the latter from the Fig. 1 to the Fig. 2 position. The forward end of the carrier 34 carries laterally projecting lugs 37 between which is received a depending arm 38 at the right-hand end of an aligning bar or plate 39. A pivot pin 40 extends through the lugs 37 and the arm 38 transversely of the bar 39 to pivotally connect the aligning bar at one end to its carrier 34. The lower end of the arm 38 is formed with an enlargement 41 provided with an opening through which a pin 42 extends. This pin is secured at its inner end to and projects laterally from the

carrier 34. The diameter of the pin is smaller than that of the opening in the arm 38 through which the pin extends so as not to interfere with the pivotal movements of the aligning bar on its carrier 34. A coiled expansion spring 43 surrounds the pin 42 and bears at its inner end against the enlargement 41, and at its outer end against a stop or head 44 carried by the pin at the outer end thereof. I prefer to detachably connect this head to the pin as best shown in Fig. 5. From this view it will be seen that the pin 42 is provided with two recesses, slots or cutouts 45 on opposite sides thereof and near its outer end. This leaves an intermediate web 46 between the slots, and leaves a head 47 at the end. The detachable head 44 is in the nature of a washer of a thickness corresponding substantially to the width of the slots 45 and formed with a laterally extending slot 48 corresponding substantially to the thickness of the web 46 and with a central depression 49 corresponding substantially to the shape and dimensions of the head 47. It will be understood that when the spring 43 is maintained contracted on the pin 42, the head 44 may be slipped laterally on the pin through the openings 45 therein until the head is centered on the pin. If the spring is then released it will force the head 44 to the right and seat the head 47 in the recess 49, thus locking the head 44 against accidental detachment, and holding it in this position so long as the force of the spring 43 is exerted thereon, but enabling the head to be readily detached when desired.

It will be understood from what has been said the force of the spring 43 is exerted to hold the arm 38 against the carrier 34, or to return it to such position if moved therefrom. The spring therefore tends to hold the aligning bar 39 in the normal position, shown in Fig. 3, relatively to the carrier 34, so that the two may swing together as one part around the axis of the pivot 35, which is parallel with the aligning bar and with the axis of the wheel 5. The left-hand end of the aligning bar 39 is provided with a locking finger or lug 50 co-operative with the locking or holding device that is automatically thrown into and out of engagement therewith, as will hereinafter appear. I prefer to guide this finger 50, in its movement with the plate 39 and the carrier 34, in a guide slot 51 of a bifurcated guide member 52 secured at 53 to the plate 54 of the actuator frame. In order to further aid in guiding the carrier 34, and to provide means for limiting its pivotal movements from and back to normal position, I prefer to employ a headed pin 55 the stem of which extends through a slot 56 in the carrier, as shown in Fig. 2. This pin is secured to the frame plate 36 and the head of the pin overlapping the right-hand or outer face of the carrier guides the latter at its foward end between said head and the frame plate 36.

From an inspection of Fig. 1 it will be seen that the upper engaging edge 39a of the aligning bar is of angular shape in cross section to fit snugly between the teeth of the wheels 5. When therefore the bar is forced into place between said teeth the wheels engaged by the bar will be properly aligned. It is not necessary to have the aligning bar coact with the right-hand or lowest order wheel inasmuch as said wheel is properly aligned by engagement with the master wheel, which is itself aligned and held in proper position by the locking dog 30.

The carrier 34 is turned on its pivot 35 from the Fig. 2 to the Fig. 1 or effective position, by a contractile spring 57 stronger than the spring 43 and connected at one end to a pin 58 which projects from the frame plate 36, and connected at its other end to a pin 59 which projects laterally from the carrier. The movement of the aligning bar 39 with its carrier to the releasing position is effected by the camming action of the pin 32 against the carrier and against the force of the spring 57.

As thus far described the construction is such that the first part of the depression of a key is effective to swing the universal bar 15 before any motion is transmitted to the master wheel in a manner to be presently described. This movement of the universal bar results in moving the parts controlled thereby from the Fig. 1 to the Fig. 2 position, thereby withdrawing the locking dog 30 from the master wheel 10 and withdrawing the locking bar 39 from engagement with the wheels 5 that coact therewith. In this movement, the bar 39 swings bodily with its carrier 34 around the pivot 35 and simultaneously disengages all the wheels 5 with which it coacts. The parts are held in this position by the universal bar bearing on a dwell 14a of the cam 14 of the actuated fan 13 during part of the remainder of the down stroke of the key, and until the universal bar clears the dwell 14a and is freed from control of the depressed key for independent return movement.

It is not until after the above described preliminary operations of releasing the master wheel and the wheels 5, etc., have taken place that the master wheel is turned the requisite distance during, say, the last half of a depression of a key to set up a number in the register. The operation of the master wheel is effected by a series of goosenecks 60 each formed as a part of a carrier 61 mounted to turn on the supporting rod 62 on which the fans 13 also are mounted to turn. Each carrier 61 is associated with

and operated by a fan 13 through an intermediate lost motion connection comprising a pin 63 projecting laterally from the carrier into a slot 64 in the companion fan 13. This lost motion connection enables the above described preliminary operation to be effected before the upper wall 64ª of the slot in the operated fan reaches the pin 63 and takes up the carrier of the goose-neck to cause an operation of the master wheel. It will be understood that cams 65 on the different goose-necks are so shaped that each gives a different extent of throw depending on the value of the key to which the goose-neck is operatively connected. Each cam terminates in a slot 65ª which acts as a dwell at the high point of the cam. These goose-necks operate on pins or rollers 66 carried by arms 67, only five of which are shown in the present instance. These arms project from the differential shaft 68 of the machine and radiate from said shaft to bring the pins 66 thereon into co-operative relation with the cam 65. The usual means (not shown) are provided for transmitting to the master wheel the different extents of movement given to the differential shaft 68.

Thus far I have described in detail only the disengaging movement of the aligning plate or bar 39 from the wheels 5, it being understood that the engagement of the plate with said wheels and the aligning thereof does not take place until after the master wheel has been actuated. In engaging the wheels 5 and aligning them, and thereby aligning the dial wheels it is highly desirable to cause the aligning bar 39 to engage the wheels 5 successively beginning at the right. In order to effect this result I provide the following means co-operative with those hereinbefore described.

Referring especially to Fig. 3, it will be seen that the differential shaft 68 carries a crank arm 60 provided with a laterally projecting pin 70. This pin is received in a cam slot 71 of a locking member 72 mounted on a headed pivot pin 73 secured to the frame plate 54. The upper wall of the cam slot continues as a surface 74 which when the member 72 is in the actuated position is concentric to the center of the shaft 68. This surface 74 acts as a dwell to hold the locking member in its actuated or locked position until the pin 70 re-enters the cam slot 71 and withdraws the locking member to releasing position, shown in Fig. 3. The preliminary operations hereinbefore described at the first part of a key depression moves the aligning bar down to simultaneously disengage the wheels 5, and leaves the locking finger 50 in the lower end of the slot 51. During a further depression of the key the differential shaft 68 will be rocked by the actuated goose-neck a distance depending on the value of the particular key depressed. The first part of this movement of the differential shaft is effective to turn the locking member 72 in an anti-clockwise direction, as the parts are viewed in Fig. 3. This brings the upper hook-like engaging portion 75 over the finger 50 and prevents an upward or return movement of that end of the aligning bar. The construction and arrangement of the parts of the Remington accounting machine are such that near the termination of the down stroke of a key the universal bar 15 drops off the dwell 14ª of the actuated fan 13, allowing the universal bar and the parts controlled thereby to return to their normal positions. On the other hand, the actuated goose-neck, the differential shaft 68 and the parts controlled thereby do not return to normal position until about the termination of the up-stroke of the key. By controlling the carrier 34 of the aligning bar 39 from the universal bar, and controlling the locking member 72 from the differential shaft 68, I am enabled to move the aligning bar down and simultaneously disengage all the wheels 5 at the first part of the down-stroke of the key. When this movement is completed the member 72 is moved to locking position to hold the free end of the aligning bar against return movement. Before the down stroke of the key is completed the universal bar returns to normal position allowing the carrier 34, under the force of its spring 57, to move up to the position shown in Fig. 4. The effect of this is to carry the right-hand end of the aligning bar up with the carrier while the left-hand end thereof is held by the locking member 72; the locking bar at this time overcoming the force of the spring 43 and turning on the pivot 40. The locking bar is thus moved relatively to its carrier 34 and is disposed in an oblique position, its engaging edge assuming an angular position relative to the axis of the wheels 5, as shown in Fig. 4. It is with the parts thus disposed that the right-hand end portion of the aligning bar successively engages wheels 5 of the lower orders near the right-hand end of the series. The parts remain in this position until near the end of the return movement of the depressed key, when the associate goose-neck 60 releases the differential shaft 68. As the latter returns to normal position the locking member 72 will return to releasing position, thus freeing the aligning bar. When thus freed the spring 43 is effective to turn the aligning bar on its pivot 40 while the carrier 34 remains at rest. The effect of this pivotal movement of the aligning bar is to elevate or advance the left-hand end thereof, thus bringing about a successive engagement thereof with the remaining wheels 5 to the left; or as many of them as it may be necessary for all practical purposes to engage. It has been pointed out that the

master dog 30 coacts with the master wheel so that in practice it is unnecessary to align the right-hand or lower order wheel 5 by the aligning bar 39. It is also unnecessary in practice for the bar 39 to coact with one, or even several of the wheels 5 to the left of the alining bar. Therefore when I refer herein and in the accompanying claims to the aligning bar engaging a series of wheels, it will be understood that the entire series of wheels 5 are not necessarily included by such terms.

The teetering movement of the aligning bar so as to advance first one end thereof and then the other into engagement with the wheels and thus successively engage them, I regard as an important feature of my invention, as is the control of the aligning bar by the universal bar and differential shaft for bringing about the successive and properly timed operation of the aligning bar.

The operation of a totalizer might be one in which carrying is done to all carrying wheels above the lowest, or one in which the totalizer is cleared by adding to a registered number the complement of that number. Probably trouble caused by the spiral in clearing operations is more annoying than that caused by it in carrying operations, since clearing operations are frequently performed, whereas carrying operations in which carrying is done to several wheels at a time are performed only occasionally or rarely; the spiral not occurring so as to be troublesome except when a number registered at the sight-openings contains a long succession of either nines or naughts.

It will be understood that the greater the number of register wheels, the greater the liability of spiraling, since the longer the series of wheels the greater is the amount of lost motion in the carrying gear train. In a totalizer carrying a sufficiently long series of wheels, the spiral would absorb all of the motion derived from a carrying wheel of the lowest order, so that not any of it would be imparted to the highest carrying wheel. In the present instance I have shown fifteen totalizer wheels, a rather long series; and in practice the justifying mechanism of my invention has proved efficient in use with such a totalizer.

It will be observed that the construction is such that the spring 43 is rendered alternately effective and ineffective to produce a pivotal movement of the aligning bar 39 around its pivot 40; that the spring 43 constitutes a connecting means by which the aligning bar is connected to its carrier 44 or moving means, and that the axis of the pivot 40 is contained in a plane at right-angles to the axis of the wheels 5 and the carrier 34 swings in such a plane so that the aligning bar swings on its pivot 40 in a plane at right-angles to the plane of movement of the carrier 34 to effect the described movements of the aligning bar.

Various changes may be made without departing from my invention.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a calculating machine, the combination of totalizer mechanism including a series of gear wheels, and an automatically operating aligning bar coacting therewith and moving into engagement with said wheels by a movement of the bar first at one end and then at the other in order to engage said wheels successively.

2. In a calculating machine, the combination of totalizer mechanism including a series of gear wheels, key controlled actuating mechanism for said totalizer, an aligning bar co-operative with said gear wheels and movable into engagement therewith by a movement of the bar first at one end and then at the other in order to engage the wheels successively, and automatically operating means controlled by said actuating mechanism for thus moving the aligning bar at each operation of a key.

3. In a calculating machine, the combination of totalizer mechanism including a series of gear wheels, an automatically operating aligning bar coacting therewith, and automatically operating means for holding one end of the bar against movement towards the wheels while the other end is advanced and for releasing and advancing the previously held end of the bar after the other end engages its wheels, whereby the bar engages the wheels successively.

4. In a calculating machine, the combination of totalizer mechanism including a series of gear wheels, and an automatically operating aligning bar coacting therewith and moving into engagement with said wheels by a movement of the bar first at one end and then at the other in order to engage said wheels successively, said automatically operating means including a spring, and means for alternately rendering the spring ineffective and effective to move the bar.

5. In a calculating machine, the combination of totalizer mechanism including a series of gear wheels, key controlled actuating mechanism for said totalizer, an aligning bar co-operative with said gear wheels, and automatically operating means controlled by said actuating mechanism for moving the aligning bar at each operation of a key, said automatically operating means including a spring through which said bar is connected to its moving means, and means for holding one end of the bar against the action of said spring while the other end is moved into engagement with certain of said wheels and then releasing the held end of the bar and

allowing the spring to move it and thus cause the bar to engage the wheels successively.

6. In a calculating machine, the combination of totalizer mechanism including a series of gear wheels, and an automatically operating aligning bar coacting therewith, said bar being mounted to swing around an axis contained in a plane at right-angles to the axis of the wheels, whereby said bar may successively engage said wheels.

7. In a calculating machine, the combination of totalizer mechanism including a series of gear wheels, and an automatically operating aligning bar coacting therewith, said bar being connected to its moving means for bodily movement therewith and also for pivotal movement relatively thereto, whereby the bar may simultaneously disengage the wheels and successively engage them.

8. In a calculating machine, the combination of totalizer mechanism including a series of gear wheels, key controlled actuating mechanism for said totalizer, an aligning bar co-operative with said gear wheels and mounted to swing around an axis extending transversely of the length of said bar to engage the wheels successively, and means controlled by said actuating mechanism for automatically controlling the operation of said aligning bar.

9. In a calculating machine, the combination of totalizer mechanism including a series of gear wheels, a member pivoted to swing in a plane at right-angles to the axis of said wheels, an aligning bar coacting with said wheels and pivoted to said member to swing thereon in a plane at right-angles to the plane of movement of the member, and automatically operating means for controlling the pivotal movement of said member and the pivotal movement of the aligning bar thereon.

10. In a calculating machine, the combination of totalizer mechanism including a series of gear wheels, key controlled actuating mechanism for said totalizer, a member pivoted to swing in a plane at right angles to the axis of said wheels, an aligning bar coacting with said wheels and pivoted to said member to swing thereon in a plane at right-angles to the plane of movement of the member, and means controlled by said actuating mechanism for controlling the pivotal movement of said member and the pivotal movement of the aligning bar thereon.

11. In a calculating machine, the combination of totalizer mechanism including a series of gear wheels, a member pivoted to swing in a plane at right-angles to the axis of said wheels, an aligning bar coacting with said wheels and pivoted to said member to swing thereon in a plane at right-angles to the plane of movement of the member, a spring which tends to maintain the normal relation between the aligning bar and said member so that the two may swing together, automatically operating means for swinging said member, and automatically operating means for holding one end of the aligning bar against the force of its spring while the opposite end of the bar is moved with said member and for thereafter releasing the bar and allowing it to be restored by its spring to normal position relatively to said member.

12. In a calculating machine, the combination of totalizer mechanism including a series of gear wheels, key controlled actuating means for said totalizer, a member pivoted to swing in a plane at right-angles to the axis of said wheels, an aligning bar coacting with said wheels and pivoted to said member to swing thereon in a plane at right-angles to the plane of movement of the member, a spring which tends to maintain the normal relation between the aligning bar and said member, and means controlled by each actuation of a key for moving said member and aligning bar together and for then holding one end of the aligning bar while the other end thereof moves with the member and then releasing the previously held end of the bar and allowing the force of the spring to swing the aligning bar and engage it with said wheels successively.

13. In a calculating machine, the combination of a traveling totalizer including a series of gear wheels, a master device carried by the frame of the machine and with which said wheels coact successively as the totalizer travels, key controlled actuated mechanism for said master device, an aligning bar carried by the frame of the machine and movable into engagement with said wheels by a movement of the bar first at one end and then at the other in order to engage said wheels successively, and means operative at each actuation of a key for thus moving the aligning bar.

14. In a calculating machine, the combination of a traveling totalizer including a series of gear wheels, a master device carried by the frame of the machine and with which said wheels coact successively as the totalizer travels, key controlled actuating mechanism for said master device, an aligning bar carried by the frame of the machine and normally engaging said wheels when the totalizer is in the computing zone, said aligning bar first disengaging the wheels simultaneously by a like movement at both ends of the bar and thereafter advancing first one end and then the other and engaging the wheels successively, and means for automatically effecting such movements of the aligning bar at each actuation of a key.

15. In a calculating machine, the combination of a traveling totalizer including

a series of gear wheels, a master device carried by the frame of the machine and with which said wheels coact successively as the totalizer travels, key controlled actuating mechanism for said master device, an aligning bar carried by the frame of the machine and normally engaging said wheels when the totalizer is in the computing zone, means for simultaneously disengaging the aligning bar from the engaged wheels, means for locking the aligning bar at one end against a wheel engaging movement, means for at this time advancing the other end of the bar into re-engagement with wheels of lower order, and means for releasing such locking means after such re-engagement has been effected so as to cause the wheels to be successively engaged by the bar, all of said means for controlling the operation of the aligning bar being automatically actuated at each depression of a key.

16. In a calculating machine, the combination of a traveling totalizer including a series of gear wheels, a master device carried by the frame of the machine and with which said wheels coact successively as the totalizer travels, key controlled actuating mechanism for said master device, an aligning bar carried by the frame of the machine, and mounted to receive a teetering motion into engagement with said wheels in order to engage them successively, and means for thus moving the aligning bar at each depression of a key.

17. In a calculating machine, the combination of a traveling totalizer including a series of gear wheels, a master device carried by the frame of the machine and with which said wheels coact successively as the totalizer travels, key controlled actuating mechanism for said master device, an aligning bar carried by the frame of the machine, a carrier for said bar and to which the bar is pivoted for relative movement thereon, and means for automatically moving said carrier and for bringing about a relative movement of the bar thereon at each depression of a key.

18. In a calculating machine, the combination of a totalizer including a series of gear wheels, an aligning bar coacting therewith and movable from an oblique to a parallel position relative to the axis of said wheels to successively engage the wheels and align them, key controlled means for actuating said totalizer, and means controlled thereby for controlling the said movement of the aligning bar.

19. In a calculating machine, the combination of a totalizer including a series of gear wheels, an aligning bar coacting therewith and movable from an oblique to a parallel position relative to the axis of said wheels to successively engage the wheels and align them and maintained parallel while disengaging the wheels to effect a simultaneous disengagement therefrom, key controlled means for actuating said totalizer, and means controlled thereby for controlling such movements to first disengage the wheels simultaneously and then re-engage them successively at each complete operation of a key of said totalizer actuating means.

20. In a calculating machine, the combination of a totalizer including a series of gear wheels; an aligning bar coacting therewith; a pivoted carrier to which said bar is pivoted to swing relatively to said carrier; key controlled actuating means for said totalizer including a universal bar and a differential shaft; means actuated by the universal bar for controlling said carrier; and means actuated by said differential shaft for controlling said relative swinging movement of the aligning bar on its carrier.

21. In a calculating machine, the combination of a totalizer including a series of gear wheels; an aligning bar engaging said wheels successively; a movable carrier to which one end of the bar is pivoted so that it may move with and swing relatively to said carrier; a spring which tends to hold the bar in normal relation to its carrier; and automatically operating means actuated at each operation of the totalizer for holding said bar against movement at its free end while its pivoted end is advanced with the carrier and for then releasing the free end of the bar and allowing the spring to swing it on the carrier.

22. In a calculating machine, the combination of a totalizer including a series of gear wheels; an aligning bar engaging said wheels successively; a movable carrier to which one end of the bar is pivoted so that it may move with and swing relatively to said carrier; a spring which tends to hold the bar in normal relation to its carrier; key controlled actuating mechanism for said totalizer including a universal bar and differential shaft actuated at each depression of a key; means controlled by said universal bar for actuating said carrier; and means controlled by said differential shaft for holding said bar against movement at its free end while its pivoted end is advanced with the carrier and for then releasing the free end of the bar and allowing the spring to swing it on the carrier.

23. In a calculating machine, the combination of a totalizer including a series of gear wheels; an aligning bar engaging said gear wheels successively to align them; a pivoted carrier the pivotal axis of which is parallel with said bar; a pivotal connection between said bar at one end of the latter and said carrier and the axis of which extends transversely of said bar; a spring which tends to maintain the normal relation between said bar and carrier; key controlled

means for actuating said totalizer and which includes a universal bar and a differential shaft operated at each depression of a key; means controlled by said universal bar for moving said carrier to move the bar carried thereby towards said wheels; and an engaging member controlled by said differential shaft for holding the free end of said bar while its pivoted end is advanced by the carrier towards the wheels and for subsequently releasing the free end of the carrier and allowing said spring to move the bar successively into engagement with said whee's.

24. In a calculating machine, the combination of a traveling totalizer including a series of gear wheels; a master device carried by the frame of the machine and with which said wheels coact successively as the totalizer travels; key controlled actuating mechanism for said master device including a universal bar and differential shaft; an aligning bar carried by the frame of the machine and coacting successively with said wheels to align them after the tota'izer is actuated; a movable carrier to which one end of said bar is pivoted for movement relatively thereto and by which the bar is carried; means controlled by said universal bar for moving said carrier, an engaging member thrown into and out of engagement with the end of the bar opposite that which is pivoted to the carrier; and means actuated by said differential shaft for controlling said engaging member.

25. In a calculating machine, the combination of a traveling totalizer including a series of gear wheels; a master device carried by the frame of the machine and with which said wheels coact successively as the totalizer travels; key control'ed actuating mechanism for said master device including a universal bar and differential shaft; an aligning bar carried by the frame of the machine and coacting successively with said wheels to align them after the totalizer is actuated, said aligning bar normally engaging the wheels when the totalizer is in a computing zone; a movable carrier to which one end of said aligning bar is pivoted for movement relative'y thereto and by which the bar is carried; a spring which returns the aligning bar to and tends to maintain it in normal relation to said carrier; means controlled by said universal bar for moving said carrier; an engaging member thrown into and out of engagement with the free end of said aligning bar; and means actuated by said differential shaft for controlling said engaging member in order to hold the free end of the aligning bar against movement as its pivoted end advances with the carrier to engage certain of said wheels and to then release the bar and allow its spring to swing the bar around its pivotal connection with the carrier.

26. In a calcu'ating machine, the combination of register wheels and carrying mechanism therefor including gear wheels, an aligning bar coacting with said gear wheels, a master device, a universal bar for bringing about preliminary operations of parts before said master device is actuated, a differential shaft by which said master device is actuated, means controlled by said universal bar for moving said aligning bar out of cooperation with said gear wheels, and means controlled by said differential shaft for enabling said aligning bar to engage said gear whee s after the master device has been actuated.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 31st day of August, A. D. 1922.

CARL A. SIEWECK.

Witnesses:

LILLIAN NELSON,

CHARLES E. SMITH.