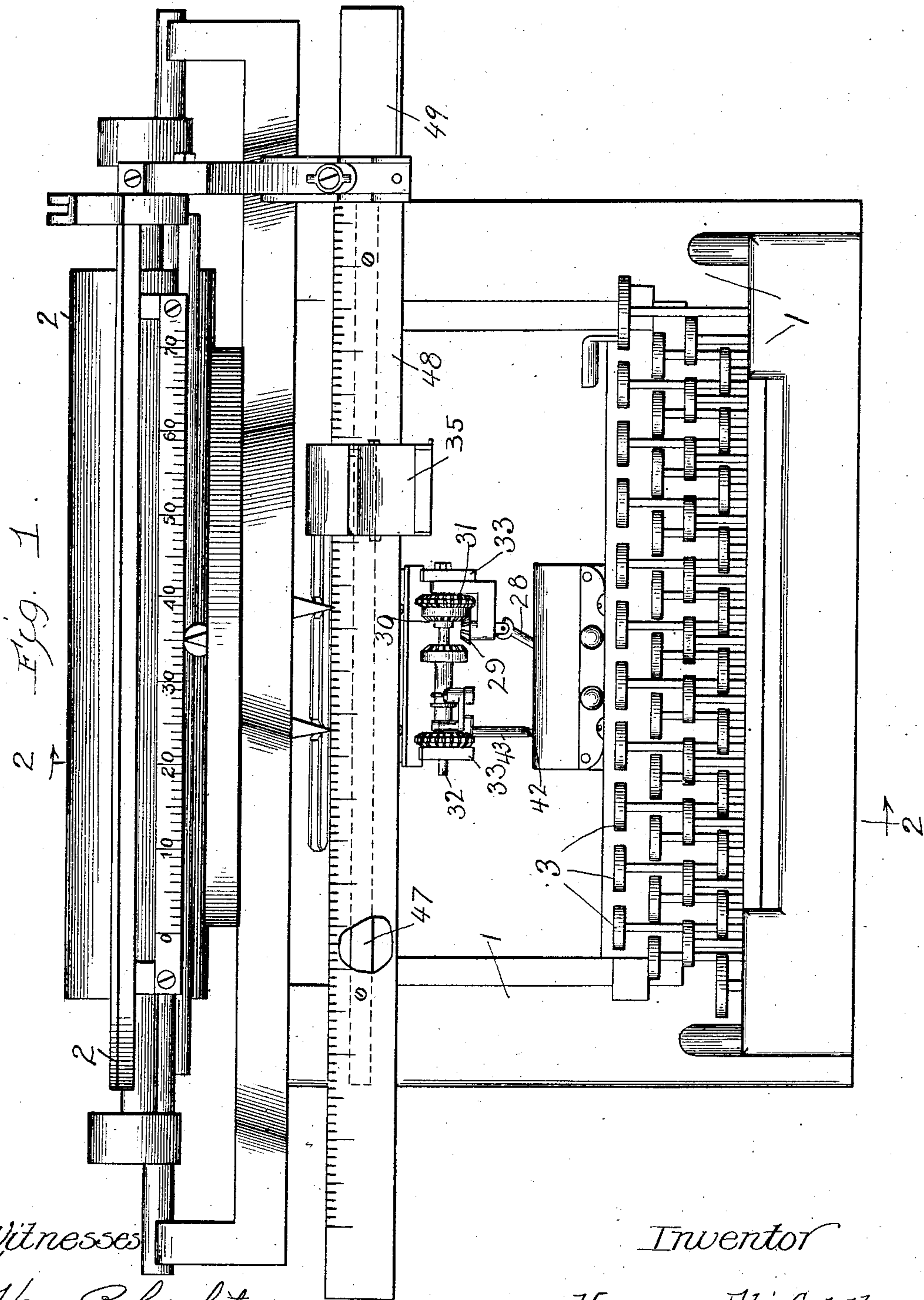


No. 876,450.

PATENTED JAN. 14, 1908.

H. E. GOLDBERG.
CALCULATING MACHINE.
APPLICATION FILED JAN. 17, 1906.

3 SHEETS—SHEET 1.



Witnesses

Harry R. L. White.
Ray White.

Inventor

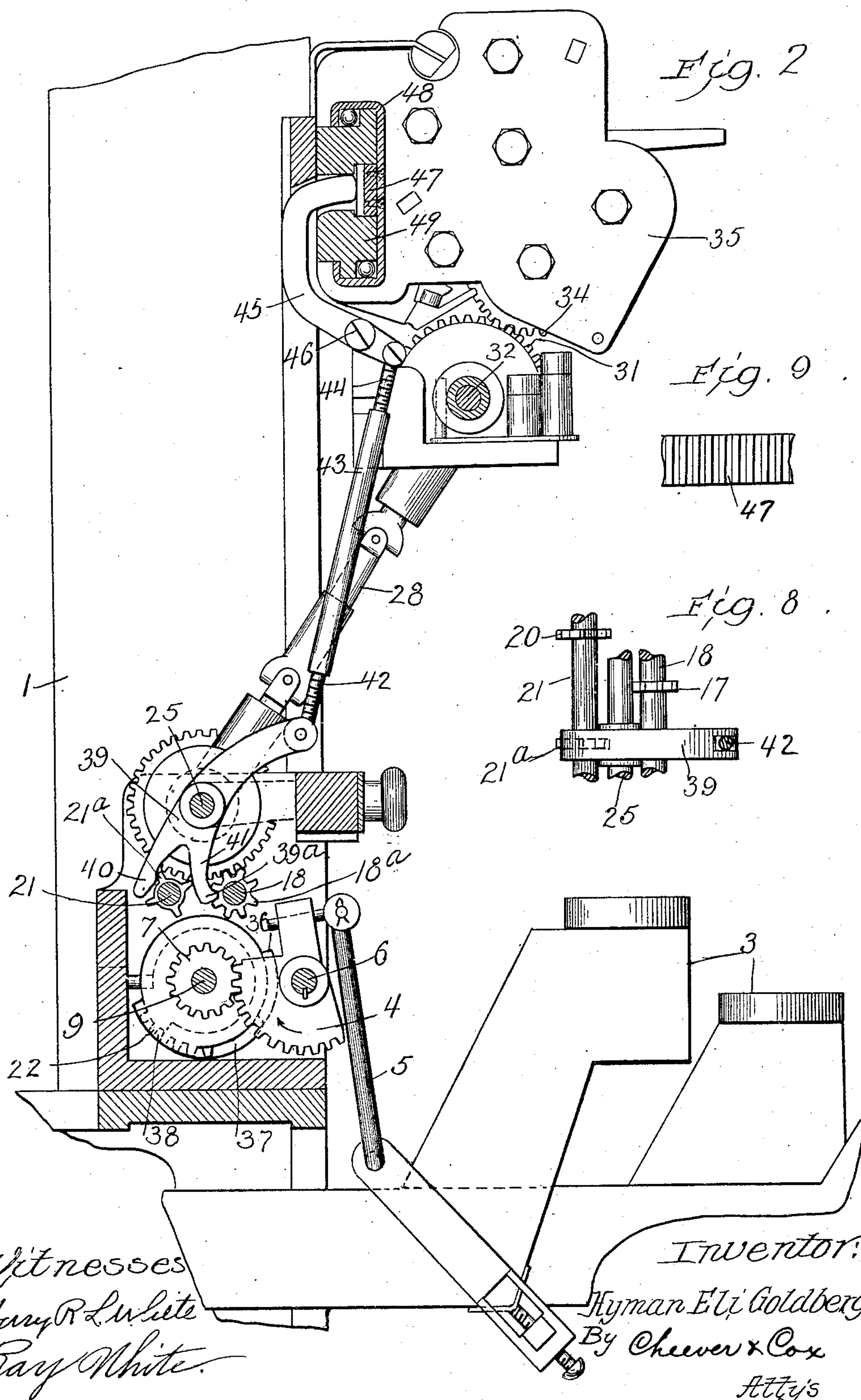
Hyman Eli Goldberg.
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3 SHEETS—SHEET 3.

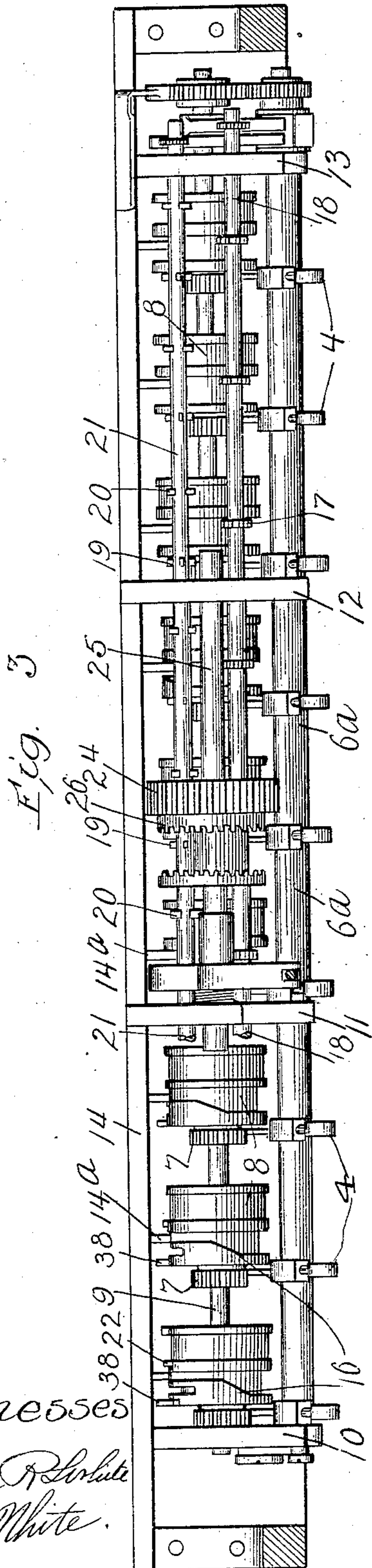
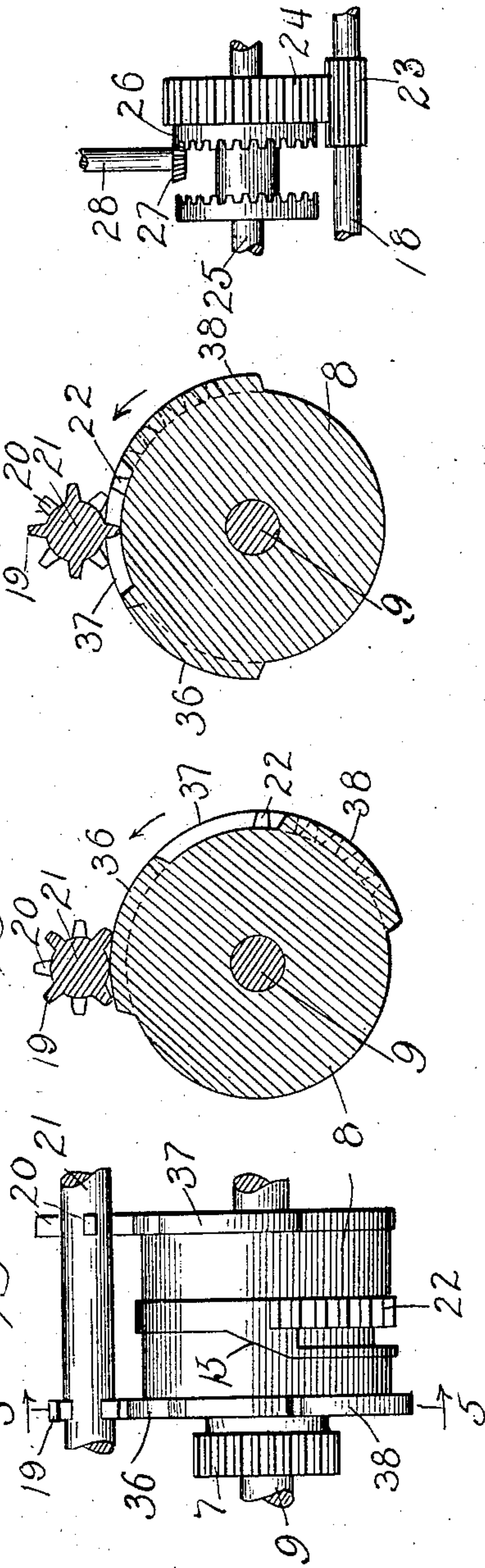


Fig. 7.

Fig. 6.

Fig. 5.

Fig. 4.



Witnesses
Harry R. White
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UNITED STATES PATENT OFFICE.

HYMAN ELI GOLDBERG, OF CHICAGO, ILLINOIS, ASSIGNOR TO GOLDBERG CALCULATING MACHINE COMPANY, A CORPORATION OF ILLINOIS.

CALCULATING-MACHINE.

No. 876,450.

Specification of Letters Patent.

Patented Jan. 14, 1908.

Application filed January 17, 1906. Serial No. 296,491.

To all whom it may concern:

Be it known that I, HYMAN ELI GOLDBERG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Calculating-Machines, of which the following is a specification.

My invention relates to calculating machines including calculating attachments to typewriters and the object of the invention is to provide reliable and simply constructed means for preventing the travel or shifting of the totalizer during the period when the totalizer wheels are being operated to register the digits.

In the typewriter-attachment form of machine which is shown, the totalizer travels past a master wheel so as to bring the totalizer wheels into mesh therewith *seriatim*, and it is the rotation of the master wheel which causes rotation of the totalizer wheels. In order to make sure that the totalizer will not shift during the rotary movement of the master wheel it is desirable that the detaining means become operative upon the totalizer somewhat prior to the commencement of rotation of the master wheel and remain operative until somewhat after the completion of rotation of the master wheel; and to obtain a mechanism operating in this manner is one of the objects of my invention. In this particular among others, the present mechanism is an improvement over the retaining mechanism shown and described in my prior patent application filed May 28, 1904 Serial No. 210,158, for in said prior application the detaining device is operated by the movement of the master or setting wheel itself and hence said detaining device is not operative either before or after the period of rotation of the setting or master wheel.

In this application I have indicated to a limited extent the construction of mechanism for inducing full key stroke and for restoring the keys and all connected parts to original position in case of an incomplete key stroke. I do not herein claim such mechanism however as the same forms the subject of a separate application for Letters Patent filed by me January eighth 1906, Serial No. 295,132.

I obtain the objects of my present invention by the mechanism illustrated in the accompanying drawing in which;

Figure 1 is a general front elevation of a typewriter attachment embodying my invention. Fig. 2 is a transverse sectional elevation thereof taken on line 2—2 Fig. 1. Fig. 3 is a plan view showing the relationship of the digit pieces, toothed driving sectors, intermittently rotating shaft and digit shaft. Fig. 4 is a face view of a digit piece showing its relation with the locking shaft and locking pinion. Fig. 5 is a sectional view taken on line 5—5 Fig. 4. Fig. 6 is a sectional view similar to Fig. 5, but showing the intermittently rotating pinion rotated one eighth of a revolution from the position shown in Fig. 5. Figs. 4, 5 and 6 serve to illustrate the coöperation of the digit pieces with the said pinions and shaft. Fig. 7 is a fragmentary detail view of the gearing for transmitting rotation from the digit shaft to the connecting or valuating shaft. Fig. 8 is a fragmentary plan view of the intermittently moving and digit shafts and of the forked piece which operates the detent or arresting member. Fig. 9 is a fragmentary view looking from the back of the totalizer showing the rack which travels in unison with the totalizer and forms part of the detaining device. Similar letters refer to similar parts throughout the several views.

In many particulars the machine here shown is the same as the one shown and described in Patent No. 782,554 issued to me February 14, 1905. The parts which are especially concerned with the present invention are illustrated in Figs. 1, 2, 8 and 9 of the accompanying drawing.

The form of totalizer here indicated is fully described in Patent No. 710,772 issued to me October 7, 1902 although it is to be understood that various other totalizers might be employed in substantially the same manner to produce the same results.

Referring to the drawings, 1 represents the typewriter framework which supports the laterally shiftable typewriter carriage 2 and the typewriter keys 3. The typewriter keys are reciprocatory and the depression and rise of a key permits the carriage to escape laterally one step, the carriage being urged by springs or otherwise to travel laterally as the result of the operation of a key. As this is the ordinary typewriter construction and as the precise construction is immaterial, the carriage escapement mechanism is not illustrated. Each of the num-

ber keys of the typewriter is connected to a driving sector 4 by means of links 5 or otherwise in such manner that the reciprocatory movement of the key will produce a reciprocatory movement of the driving sectors about shaft 6 as an axis. Said driving sectors are mounted so as to rotate independently upon said shaft and are provided with gear teeth adapted to mesh with the gear teeth 7 of the digit pieces 8. Said sectors are prevented from lateral movement on shaft 6 by means of the spacing collars 6^a or other suitable means. There is a digit piece for each of said driving sectors, and they are mounted upon shaft 9 in such manner as to be both independently rotatable and independently shiftable thereon. Shafts 6 and 9 are rotatably supported in suitable portions 10, 11, 12 and 13 of the stationary framework. The lateral shifting of the digit pieces upon their shaft is caused by pins 14^a which are rigidly fixed in a stationary frame portion 14 and are adapted to act upon the inshifting cams 15 and outshifting cams 16 on the digit pieces as best illustrated in Figs. 2, 3 and 4. The parts are so constructed that when a driving sector is rotated about shaft 6 it causes the rotation of the corresponding digit piece about shaft 9 and also causes the lateral shifting of the digit piece lengthwise of shaft 9. The faces of gears 7 are wide enough to remain in mesh with the driving sectors 4 in both shifted positions of the digit pieces. In the preferred design here shown, said digit pieces perform two functions one of which is to rotate the digit pinions 17 which are rigidly fastened to or integral with digit shaft 18, and the other function is to rotate the pinions 19 and 20 which are rigidly fastened to or integral with the intermittently rotating shaft 21. Said shaft 21 also performs two functions in the design here shown, one function being to cause the locking of the digit shaft and the other function is to cause the operation of the totalizer arrester or detaining device for preventing lateral shifting of the totalizer during the act of registration thereon. It is not essential, although it is desirable, that shaft 21 should thus perform two functions, but its ability to perform said first function is not herein claimed as novel, this having been shown in said prior patent No. 782,554. The construction whereby said shaft 21 operates the totalizer detent is claimed to be novel but first the construction of the valuating parts which are operated from the digit shaft will be described.

The digit pinions 17, and consequently shaft 18, are rotated by the toothed digit sectors 22 which are most clearly shown near the bottom of Fig. 2. Said digit sectors are incomplete toothed gear wheels, the number of teeth in each depending upon the value of the figure key to which it is connected. In

the present construction, the "1" digit sector has one tooth, the "2" digit sector two teeth, and so on. The relation of the parts is such that a digit sector will be in mesh with its digit pinion during the forward stroke of the digit sector but will be shifted out of mesh after the completion of the forward rotation so that a digit sector will rotate back to original position without rotating the digit pinion. Consequently the digit sectors rotate backward and forward but the digit pinion shaft rotates always in the same direction, and the amount of rotation depends upon the value of the key temporarily in action. On shaft 18 is rigidly fixed a pinion 23 which meshes with gear 24 rotatably mounted on bar 25. Rigidly fixed to gear 24 is a bevel gear 26 which meshes with bevel pinion 27 rigidly fixed on shaft 28. Rigidly fixed on shaft 28 is a bevel pinion 29 which meshes with a bevel gear 30 rigidly fixed to the master or setting wheel 31. Any other suitable connections, however, may be substituted for transmitting motion from shaft 18 to master wheel 31. Said master wheel is rotatably mounted on bar 32 supported in suitable stationary brackets 33. Said master wheel is adapted to mesh *seriatim* with the wheels 34 of the totalizer 35 for registering the digits on said totalizer.

Now as to the arresting or detaining device which is the special feature of the present invention. It has been above stated that the shaft 21 rotates intermittently. This is accomplished in the same manner as it is in my aforesaid patent No. 782,554 and in my companion application filed January eighth 1906 Serial No. 295,132. The said pinions 19 and 20 which are fast on said shaft 21 each have four teeth corresponding to the alternate teeth of an eight-toothed gear wheel, that is, they are like an eight toothed gear wheel from which the alternate teeth have been cut away; and they are so arranged upon said shaft that a tooth on one is opposite to the space between teeth on the other, so that when they are viewed from the side they have the appearance of forming a complete gear as illustrated in Figs. 5 and 6. Upon each digit piece 8 are three disk sectors 36, 37, and 38 best shown in Figs. 2, 4, 5 and 6. The disk sectors are so located on the digit pieces that when the digit pieces are in normal position, as shown in Figs. 2 and 4 and the parts are viewed from the side as in Figs. 5 and 6, the ends of said sectors appear to overlap each other, the overlapping areas corresponding to gear teeth suitable for engaging the teeth of the pinions 19 and 20.

The construction and arrangement is such that, for each rotation of a digit piece in the forward or positive direction, shaft 21 is twice rotated one eighth of a revolution, in

the meantime being locked by the action of disk sector 37 on pinion 20 as shown in Fig. 6. Before and after each of these partial rotary movements said shaft is also locked, first by sector 36, as shown in Fig. 5, and last by sector 38. The actions of the disk sectors on their pinions occur only during the forward or positive rotation of the digit pieces, the disk sectors being shifted out of line during their return or negative rotation by reason of the action of the pins 14^a on the outshifting cams 16. Said disk sectors are so timed with reference to the toothed digit sectors 22 on said digit pieces that said toothed digit sectors will cause the rotation of the digit shaft 18 to occur during the interval between the two partial rotary movements of the shaft 21. And it will be noted that consequently the shaft 21 is held fast, that is, locked during the rotation of the digit shaft; also that the shaft 21 commences its movement before the digit shaft does and finishes its movement after the digit shaft does. It is as a result of this fact that the special value of this invention arises, for it is evident that a totalizer detaining device operated by or from shaft 21 will commence to be operative before the registering action begins and will not cease to be operative until after the registering action is complete. Thus there is a slight period of time elapsing both before and after the movement of the master wheel, when the totalizer is positively detained. It is apparent that various devices, operative from the intermittently moving member 21 might be constructed, and a suitable and convenient one is here illustrated, being best shown in Figs. 2 and 8.

Upon bar 25 or other convenient support a reciprocating piece 39 is pivotally mounted. It has two forks or branches 40 and 41 adapted to straddle the cam 21^a in such manner as to be positively reciprocated first in one direction and then in the other every time said cam is rotated one eighth of a revolution. Said cam is rigid on shaft 21 and by preference its form is identical with that of the pinions 19 and 20. A connecting rod consisting preferably of the parts 42, 43, and 44 serves to connect said reciprocating piece 39 with the detent 45. Parts 42 and 44 are threaded rods pivotally connected to piece 39 and 45 respectively and joined by means of the sleeve 44.

The connecting rod parts have right and left threads so that by turning the sleeve 44 the operative length of said rod may be varied for purposes of adjustment. Detent 45 is pivotally mounted on stationary stud 46 and has a nose adapted to engage the rack 47, illustrated in Figs. 1, 2 and 9. The teeth of said rack are spaced to correspond with the escapement steps of the typewriter carriage and said rack is fastened to the slide 48

which is adapted to travel laterally upon stationary guide bar 49 and carry the totalizer 35. Said slide is moved in unison with the typewriter carriage by means of the arm 49 depending therefrom and engaging said slide, or in any other suitable manner.

It has been mentioned that the shaft 21 performed two functions. The first function, that of operating the totalizer detaining device has been above described and the second function will now be referred to. This second function is to prevent accidental rotation of the totalizer-operating member. To this end a nose 39^a is formed on piece 39 and adapted to enter between the teeth of a pinion 18^a on shaft 18. Said pinion is rigid on said shaft and by preference is a counter-part or is actually one of the digit pinions 18. By thus making the single piece 39 to cause both the arresting of the totalizer and locking of the digit shaft the mechanism is simplified and at the same time rendered more reliable and positive in action as the parts are more closely correlated.

Although for convenience in the description and some of the claims the totalizer is referred to as doing the traveling it will be understood that it is immaterial whether it or the actuating member does the traveling, the essential characteristic being that one travels relatively to the other.

I do not herein claim anything with reference to an auxiliary master or setting wheel or its controlling devices as this forms the subject of a separate patent application filed May 28, 1904, Serial No. 210,158.

1. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and having an intermittent movement, one movement prior to and another subsequent to the movement of said master member, and means operated by said intermittently moving member for preventing the travel of said totalizer during the period of action of said master member upon said totalizer.

2. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and having an intermittent rotary movement always in the same direction, one movement prior to and another subsequent to the movement of said master member, and means operated by said intermittently moving member for preventing the travel of said totalizer during the period of action of said master member upon said totalizer.

3. In a calculating machine, the combination of a traveling totalizer, a master member for actuating the same, figure keys, valuating connections between said keys and said mas-

ter member, a rotatable shaft having an intermittent rotary movement, one prior to and another subsequent to the movement of said master member, said shaft being connected to said keys to be operated therefrom, means for detaining said totalizer during the operation of said master member, and means operated by said shaft for operating said detaining means.

4. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and having an intermittent movement, one movement prior to and another subsequent to the movement of said master member, and a detaining device for preventing travel of the totalizer during the movement of said master member, one part of said detaining device being connected to and operated by said intermittently movable member and another part of said detaining device traveling in unison with the totalizer.

5. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and having an intermittent movement, one movement prior to and another subsequent to the movement of said master member, a rack traveling in unison with said totalizer, a detent adapted to engage said rack and connections between said detent and said intermittently moving member.

6. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and having an intermittent movement one movement prior to and another subsequent to the movement of said master member, a rack traveling in unison with said totalizer, a detent adapted to engage said rack, a cam device operated by said intermittently moving member, and connections between said cam device and said detent whereby the latter is operated therefrom.

7. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and having an intermittent movement one movement prior to and another subsequent to the movement of said master member, a rack traveling in unison with said totalizer, a detent adapted to engage said rack, a cam operated by said intermittently moving member, and a reciprocating piece operated by said cam and connected to said detent for operating the latter.

8. In a calculating machine the combination of a traveling totalizer, a master mem-

ber for registering on the same, means including keys for operating said master member, a member operated by said keys and having an intermittent movement one movement prior to and another subsequent to the movement of said master member, a rack traveling in unison with said totalizer, a detent adapted to engage said rack, a cam operated by said intermittently moving member, a reciprocating piece operated by said cam, and non yielding link connections between said reciprocating piece and said detent.

9. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and having an intermittent movement one movement prior to and another subsequent to the movement of said master member, a rack traveling in unison with said totalizer, a detent adapted to engage said rack, a cam operated by said intermittently moving member, a reciprocating piece operated by said cam connections including a rod between said reciprocating piece and said detent, and means for adjusting the length of said rod.

10. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and having two intermittent movements one of which commences prior to each movement of said master member, and means operated by said intermittently moving member for preventing the travel of said totalizer during the period of movement of said master member.

11. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and having two intermittent rotary movements always in the same direction one of which commences prior to each movement of said master member, and operated by said intermittently moving member for preventing the travel of said totalizer during the period of movement of said master member.

12. In a calculating machine the combination of a traveling totalizer, a master member for actuating the same, figure keys, valuating connections between said keys and said master member, a rotatable shaft having a plurality of intermittent rotary movements, for each movement of said master member, one of them being prior to the movement of said master member, and said shaft being connected to said keys to be operated therefrom, detaining means operative upon said totalizer and means operated by said shaft for operating said detaining means.

13. In a calculating machine the combination of a traveling totalizer, a master member for actuating the same, figure keys, valuating connections between said keys and
 5 said master member, a rotatable shaft having a plurality of intermittent rotary movements for each movement of said master member one of them being subsequent to the movement of said master member, and
 10 said shaft being connected to said keys to be operated therefrom detaining means operative upon said totalizer and means operated by said shaft for operating said detaining means.

14. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and having a
 20 plurality of intermittent movements for each movement of the master member, one of said intermittent movements being prior to the movement of said master member and a detaining device for preventing travel of the
 25 totalizer during the movement of said master member, one part of said detaining device being connected to and operated by said intermittently movable member and another part of said detaining device traveling in
 30 unison with the totalizer.

15. In a calculating machine the combination of a laterally shiftable totalizer, a master member for registering on the same, means including keys for operating said
 35 master member, a member operated by said keys and having intermittent movements one of which is prior to the movement of said master member, a rack traveling in unison with said totalizer, a detent adapted to
 40 engage said rack and connections between said detent and said intermittently moving member.

16. In a calculating machine the combination of a traveling totalizer, a master
 45 member for registering on the same, means including keys for operating said master member, a member operated by said keys and having a plurality of intermittent movements for each movement of the master
 50 member one of them being prior to each movement of said master member, a rack traveling in unison with said totalizer, a detent adapted to engage said rack, a cam device operated by said intermittently moving
 55 member, and connections between said cam device and said detent whereby the latter is operated.

17. In a calculating machine the combination of a traveling totalizer, a master
 60 member for registering on the same, means including keys for operating said master member, a member operated by said keys and having intermittent movements one prior to each forward movement of said
 65 master member; a rack traveling in unison

with said totalizer, a detent adapted to engage said rack, a cam operated by said intermittently moving member, and a reciprocating piece operated by said cam and connected to said detent for operating the
 70 latter.

18. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and
 75 having intermittent movements one prior to each forward movement of said master member; a rack traveling in unison with said totalizer, a detent adapted to engage
 80 said rack, a cam operated by said intermittently moving member; a reciprocating piece operated by said cam, and non yielding link connections between said reciprocating
 85 piece and said detent.

19. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and
 90 having intermittent movements one prior to each forward movement of said master member; a rack traveling in unison with said totalizer, a detent adapted to engage said rack, a cam operated by said intermittently
 95 moving member; a reciprocating piece operated by said pawl, connections including a rod between said reciprocating piece and said detent, and means for adjusting the length of said rod.
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20. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and
 105 having two intermittent movements one of which is subsequent to each forward movement of said master member, and means operated by said intermittently moving member for preventing the travel of said totalizer
 110 during the period of movement of said master member.

21. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and
 115 having two intermittent movements one of which is subsequent to each forward movement of said master member, means operated by said intermittently moving member
 120 for preventing the travel of said totalizer during the period of movement of said master member, and means also operated by said intermittently moving member for locking
 125 one of the parts of the mechanism which operates the master member.

22. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means in-
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cluding keys for operating said master member, a member operated by said keys and having two intermittent rotary movements always in the same direction one of which is
 5 subsequent to each movement of said master member, and means operated by said intermittently movable member for preventing the travel of said totalizer during the period of movement of said master member.

10 23. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and
 15 having intermittent movements one subsequent to each forward movement of said master member and a detaining device for preventing travel of the totalizer during the movement of said master member, one part
 20 of said detaining device being connected to and operated by said intermittently movable member and another part of said detaining device traveling in unison with the totalizer.

24. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and
 25 having intermittent movements one subsequent to the movement of said master member a rack traveling in unison with said totalizer, a detent adapted to engage said rack, and connections between said detent and
 30 said intermittently moving member.

35 25. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and
 40 having intermittent movements one subsequent to each forward movement of said master member, a rack traveling in unison with said totalizer, a detent adapted to engage said rack, a cam device operated by said
 45 intermittently moving member, and connections between said cam device and said detent whereby the latter is operated.

26. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and having intermittent
 50 movements one subsequent to each forward movement of said master member; a rack traveling in unison with said totalizer, a detent adapted to engage said rack, a cam operated by said intermittently moving member, and a reciprocating piece operated
 55 by said cam and connected to said detent for operating the latter, whereby the totalizer is held from traveling from a time prior to a time subsequent to the movement of said master member.

27. In a calculating machine the combination of a traveling totalizer, a master mem-

ber for registering on the same, means including keys for operating said master member, a member operated by said keys and having intermittent movements one subsequent
 70 to each forward movement of said master member; a rack traveling in unison with said totalizer, a detent adapted to engage said rack, a cam operated by said intermittently moving member; a reciprocating piece operated by said cam, and non yielding
 75 link connections between said reciprocating piece and said detent.

28. In a calculating machine the combination of a traveling totalizer, a master member for registering on the same, means including keys for operating said master member, a member operated by said keys and having
 80 intermittent movements one subsequent to each forward movement of said master member; a rack traveling in unison with said totalizer, a detent adapted to engage said rack, a cam operated by said intermittently moving member; a reciprocating piece operated
 85 by said pawl, connections including a rod between said reciprocating piece and said detent, and means for adjusting the length of said rod.

29. In a calculating machine the combination of a traveling totalizer, a master member for actuating the same said master member moving different amounts depending
 95 upon the value of the digit to be registered, means including keys for operating said master member, a locking member for locking said master member, said locking member being operated by said keys and adapted to
 100 operate prior to and subsequent to each movement of said master member and means operated by said locking member for temporarily preventing the travel of said totalizer.

30. In a calculating machine the combination of a traveling totalizer, a master member for actuating the same, means including reciprocating keys for operating said master
 110 member, and means separate from and uninfluenced by said master member and operated by said keys for preventing the travel of said totalizer during the movement of said master member.

31. In a calculating machine the combination of a traveling totalizer, a master member for actuating the same to register thereon, keys, valuating connections between said
 120 keys and said master member, a detaining member for preventing the travel of the totalizer during the movement of said master member, said retaining member being separate from and uninfluenced by said master member, and connections between said de-
 125 taining member and said keys, the last mentioned connections and the valuating connections having parts in common.

32. In combination, figure keys, a rotary shaft, pinions on said shaft, disk sectors con-

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connected to and operated by said keys and operative upon said pinions to impart an intermittent rotary movement to said shaft, a traveling totalizer, a master member for operating the same, valuating connections between said master member and said keys, and a detaining device operated by said shaft for preventing the travel of said totalizer during the movement of said master member.

33. In combination, figure keys, a rotary shaft, pinions on said shaft, disk sectors connected to and operated by said keys and operative upon said pinions to impart an intermittent rotary movement to said shaft, a traveling totalizer, a master member, connections between said master member and said keys, a slide for supporting said totalizer, means for supporting said slide, a rack traveling in unison with said slide, and a detent connected to and operated by said shaft and adapted to engage said rack to prevent travel of the totalizer during the movement of the master member.

34. In combination, figure keys, a rotary shaft, pinions on said shaft, locking disk sectors connected to and operated by said keys and operative upon said pinions to impart an intermittent rotary movement to said shaft, a traveling totalizer, a master member for operating the same, valuating connections between said master member and said keys, a slide for supporting said totalizer, means for supporting said slide, a rack traveling in unison with said slide, a detent adapted to engage said rack, a cam on said shaft, a reciprocating piece operated by said cam, and connections between said reciprocating piece and said detent.

35. In combination, figure keys, a rotary shaft, pinions on said shaft, locking disk sectors connected to and operated by said keys and operative upon said pinions to impart an intermittent rotary movement to said shaft, a traveling totalizer, a master member for operating the same, valuating connections between said master member and said keys, a slide for supporting said totalizer, means for supporting said slide, a rack traveling in unison with said slide, a detent adapted to engage said rack, a cam on said rack, a forked piece adapted to positively engage and be reciprocated by said cam, and connections between said forked piece and said detent, for operating the latter.

36. In combination a traveling totalizer, a master wheel for actuating the same, a rotary shaft, pinions on said shaft, digit pieces, connections between said digit pieces and said master wheel for operating the latter, other connections between said digit pieces and said pinions for imparting an intermittent rotary movement to said shaft, figure keys, connections between said keys and said digit pieces, and a detaining device operated by said shaft for preventing travel of

the totalizer during the rotary movement of said master wheel.

37. In combination, a traveling totalizer, a master member for operating the same, a detent for preventing the shifting of said totalizer when the digits are being registered thereon, keys and two sets of key connections, one operative upon said master member and the other operative upon said detent and adapted to throw it into active operation prior to the movement of said master member and out of active operation after the movement of said master member.

38. In combination, a traveling totalizer, a master member for operating the same, a detent for preventing the travel of said totalizer when the digits are being registered thereon, keys, a digit shaft, a second shaft, connections between said keys and said digit shaft for imparting a rotation thereto depending in amount upon the value of the digit to be registered, connections between said keys and said second shaft for imparting a movement thereto both prior to and subsequent to the movement of said digit shaft, connections between said digit shaft and said master member and other connections between said second shaft and said detent.

39. A typewriter having a framework, keys and a carriage one shifting relatively to the other upon the operation of the keys; in combination with a totalizer shiftable in unison with the carriage, a rack also shiftable in unison with the carriage, a master member for operating said totalizer, a detent for engaging said rack, valuating connections between said keys and said master member, an intermittently moving member, connections between the same and said detent, and connections between said keys and said intermittently moving member adapted to impart a movement thereto prior to the movement of said master member and said connections being also adapted to subsequently impart a second movement to said intermittently movable member for the same complete key action.

40. A typewriter having a framework, keys and a carriage one shiftable relatively to the other upon the operation of the keys; in combination with a totalizer shiftable in unison with the carriage, a rack also shiftable in unison with the carriage, a master member for operating said totalizer, a detent for engaging said rack, valuating connections between said keys and said master member, an intermittently moving member connections between the same and said detent, and connections between said keys and said intermittently moving member adapted to impart a movement thereto both prior to and subsequently to the movement of said master member.

41. In a calculating machine the combina-

tion of a totalizer, figure keys, means operated by said keys for actuating said totalizer, a traveling carriage for determining the decimal place of actuation, a cooperating detent and rack for preventing the travel of said carriage, and means for establishing the engagement of said detent with said rack prior to the period of actuation of the totalizer.

42. In a calculating machine the combination of a totalizer, figure keys, means operated by said keys for actuating said totalizer, a traveling carriage for determining the decimal place of actuation, a cooperating detent and rack for preventing the travel of said carriage, and means for positively holding said detent in engagement with said rack during the period of actuation of the totalizer.

43. In a calculating machine the combination of a totalizer, figure keys, means operated by said keys for actuating said totalizer, a traveling carriage for determining the decimal place of actuation, a cooperating detent and rack for preventing the travel of said carriage, and means for positively operating said detent, said detent operating means being so timed relatively to the totalizer-actuating means as to establish the engagement of said detent with the rack prior to the period of actuation, to positively hold said detent in engagement with said rack during the period of actuation and break said engagement subsequent to said period of actuation of the totalizer.

44. In a calculating machine the combination of a totalizer, figure keys, means operated by said keys for actuating said totalizer, a traveling carriage for determining the decimal place of actuation, a cooperating detent and rack for preventing the travel of said carriage, and operating means non yieldingly connected to said detent for positively pulling and pushing the same into and out of engagement with said rack.

45. In a calculating machine the combination of a totalizer, a member for actuating the same, figure keys, key operated valuating mechanism for operating said actuating

member, a traveling carriage for determining the decimal place of actuation of said totalizer, an intermittently movable member operated by a portion of said valuating mechanism and having a movement prior and another movement subsequent to each forward movement of said totalizer-actuating member, a cooperating detent and rack for preventing the travel of said carriage during the movement of the totalizer-actuating means, and means operated by said intermittently movable member and non yieldingly connected to said detent and adapted to positively push and pull the same into and out of engagement with said rack.

46. In a calculating machine the combination of a totalizer, a member for actuating the same, figure keys, key operated valuating mechanism for operating said actuating member, a traveling carriage for determining the decimal place of actuation of said totalizer, an intermittently movable member operated by a portion of said valuating mechanism and having a movement prior and another movement subsequent to each forwarded movement of said totalizer-actuating member, a cooperating detent and rack for preventing the travel of said carriage during the movement of the totalizer-actuating means, means non yieldingly connected to said detent for positively pushing and pulling the same into and out of engagement with said rack, and a cam operated by said intermittently movable member for controlling said detent-operating means, and adapted to push said detent into engagement with the rack prior to the forward movement of the totalizer-actuating means and pull it out again subsequently to said movement of said totalizer-actuating means.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

HYMAN ELI GOLDBERG.

Witnesses:

HOWARD M. COX,
CAROLYN RAFFERY.