No. 800,810. PATENTED OCT. 3, 1905.

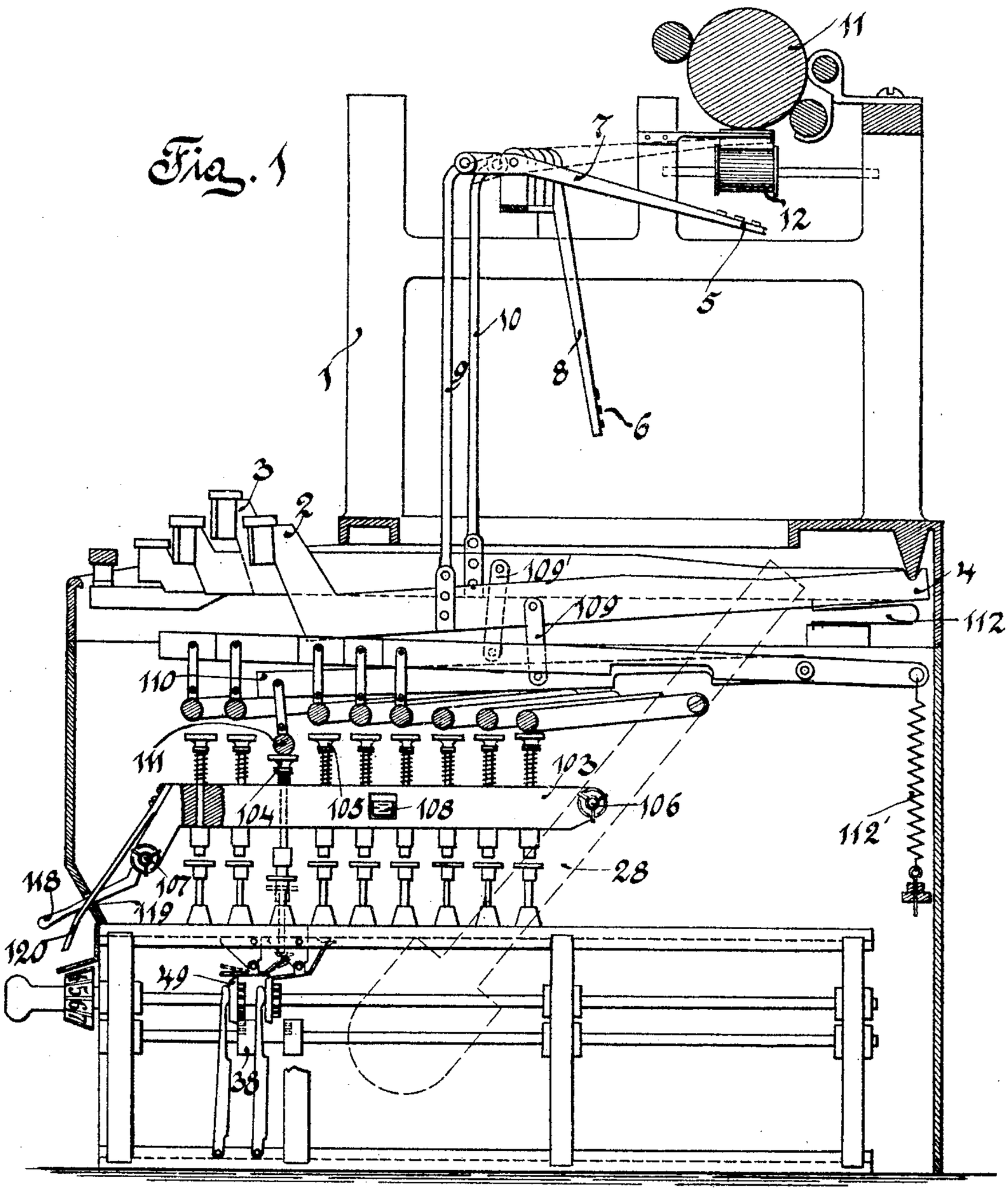
H. MARSHALL & J. T. UEBBING.

COMPUTING MACHINE.

APPLICATION FILED JAN. 4, 1905.

6 SHEETS—SHEET 1.

Fig. 1



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6 SHEETS—SHEET 2.

	6	3	8.	7	5	
	4	2	1.	9	8	

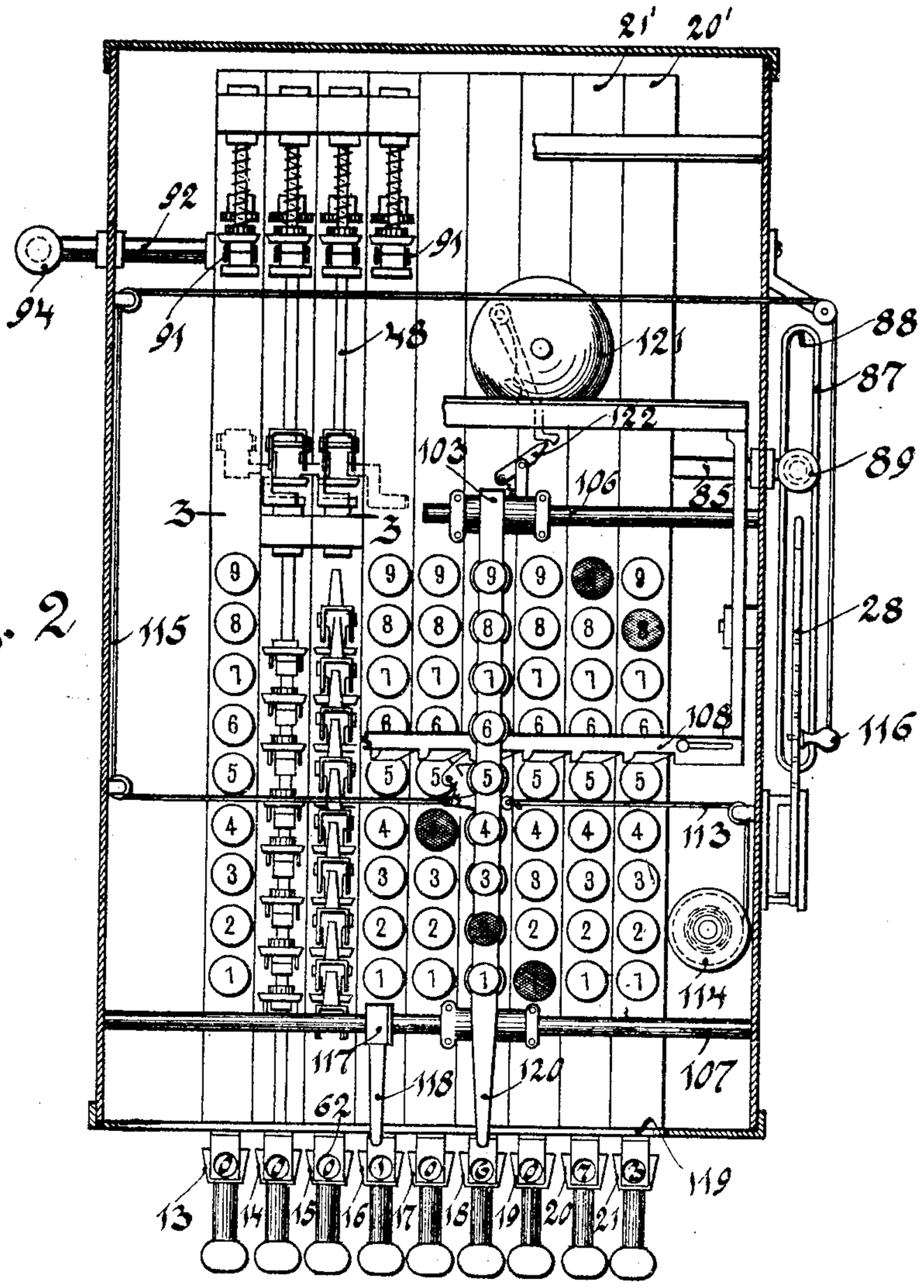

Fig. 2

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6 SHEETS—SHEET 3.

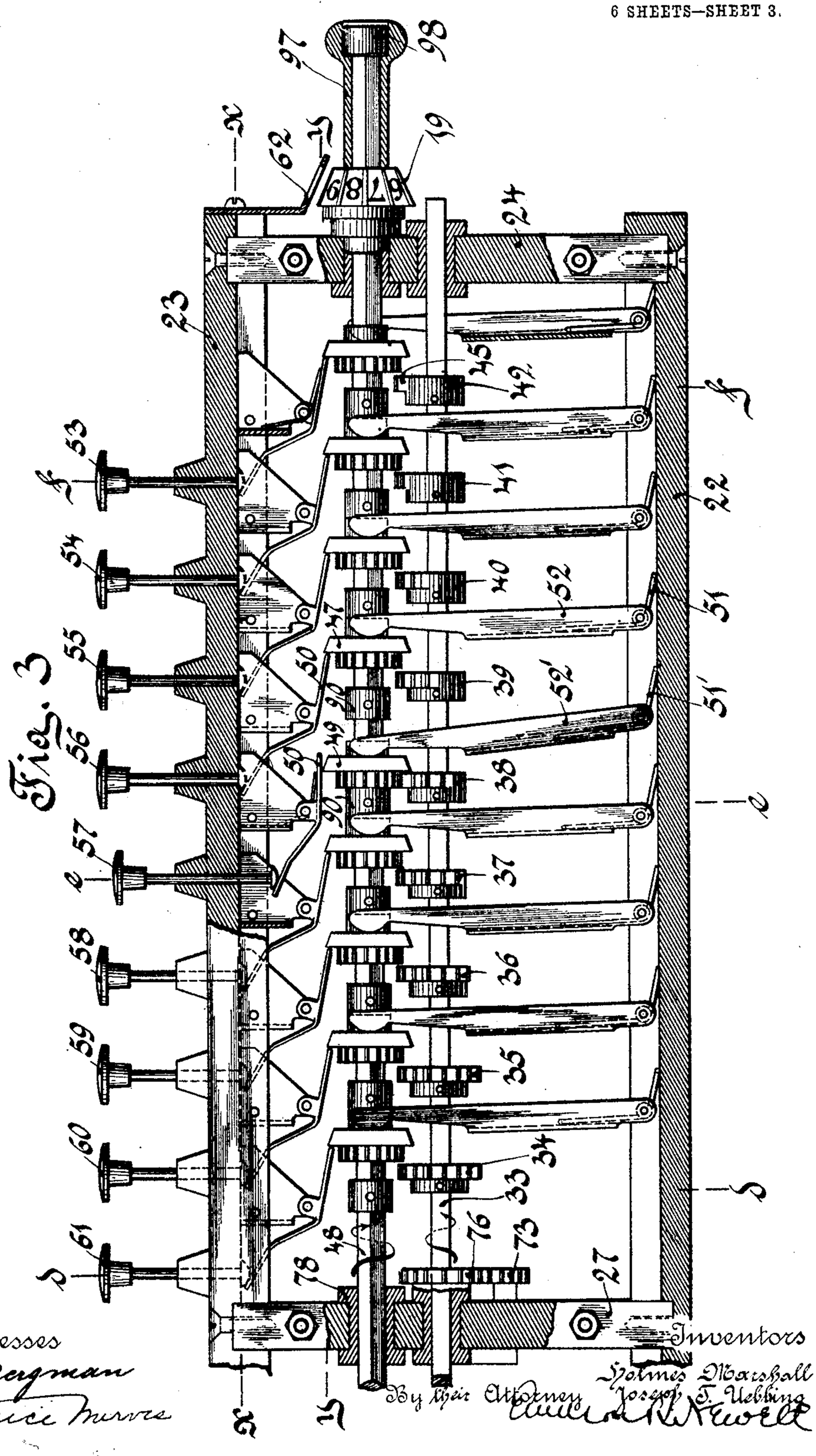

Fig. 3.

No. 800,810. PATENTED OCT. 3, 1905.

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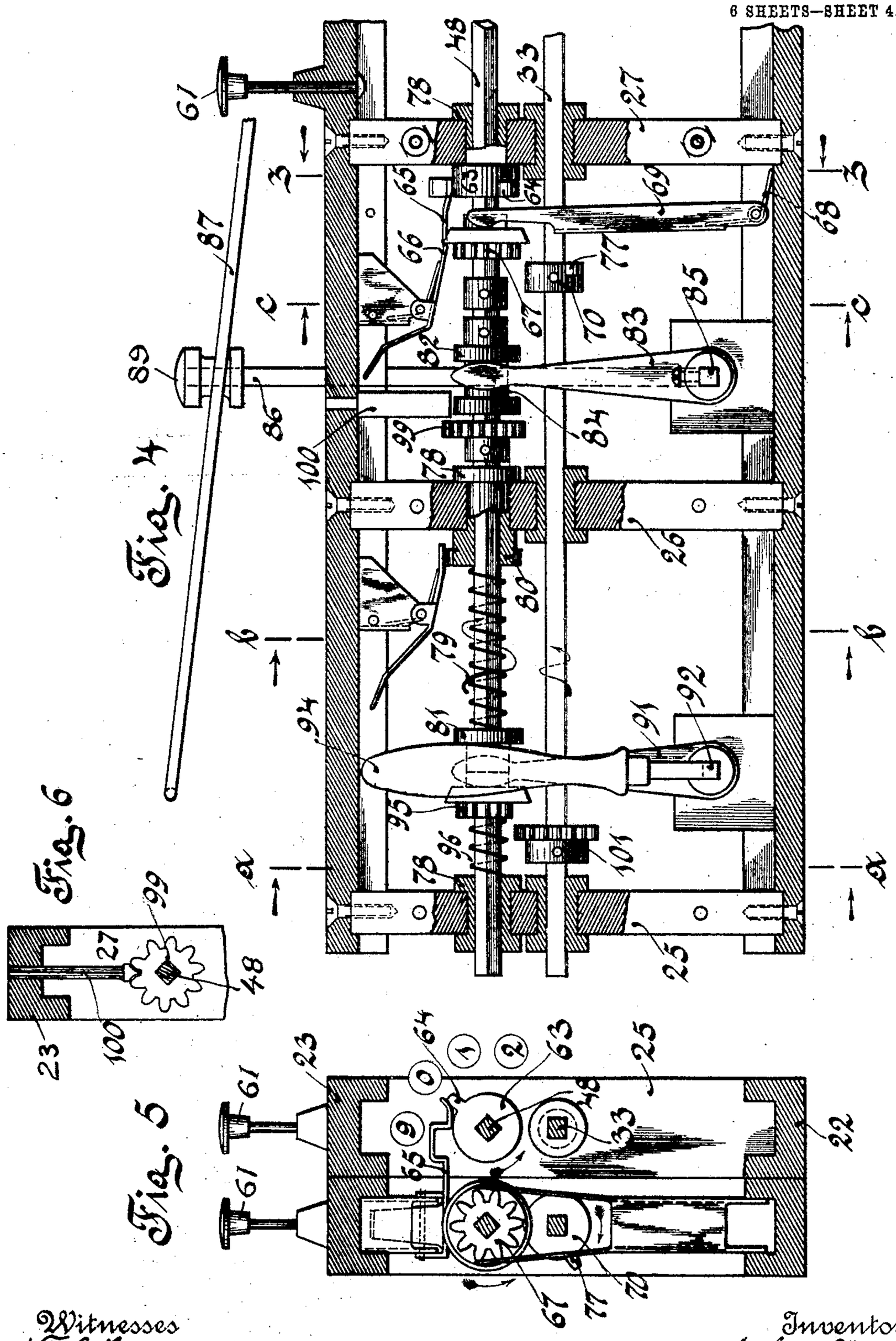
COMPUTING MACHINE.

APPLICATION FILED JAN. 4, 1905.

6 SHEETS—SHEET 4.



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APPLICATION FILED JAN. 4, 1905.

6 SHEETS—SHEET 5.

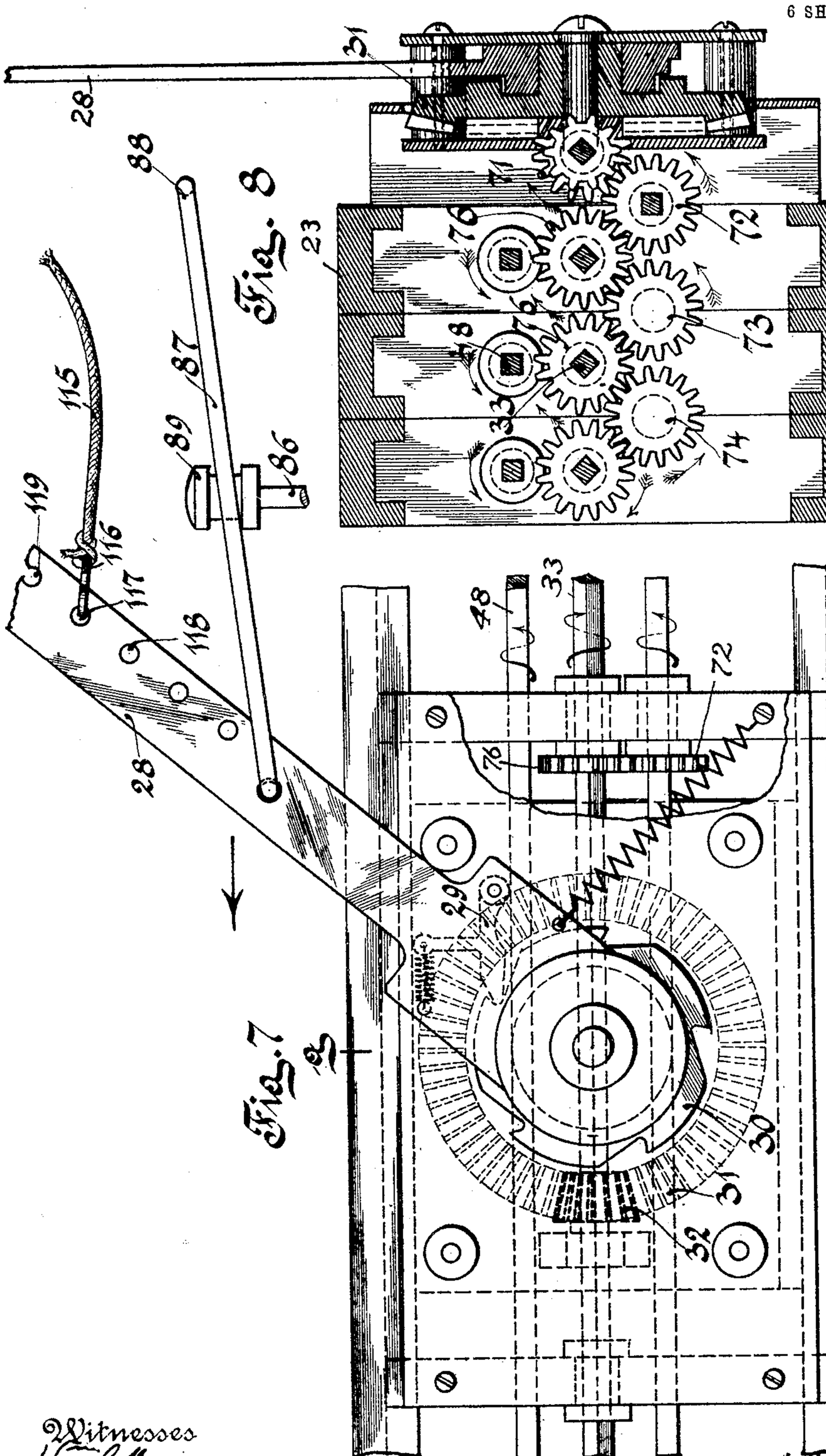

Fig. 8

Fig. 7

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No. 800,810. PATENTED OCT. 3, 1905.

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COMPUTING MACHINE.

APPLICATION FILED JAN. 4, 1905.

6 SHEETS—SHEET 6.

Fig. 15

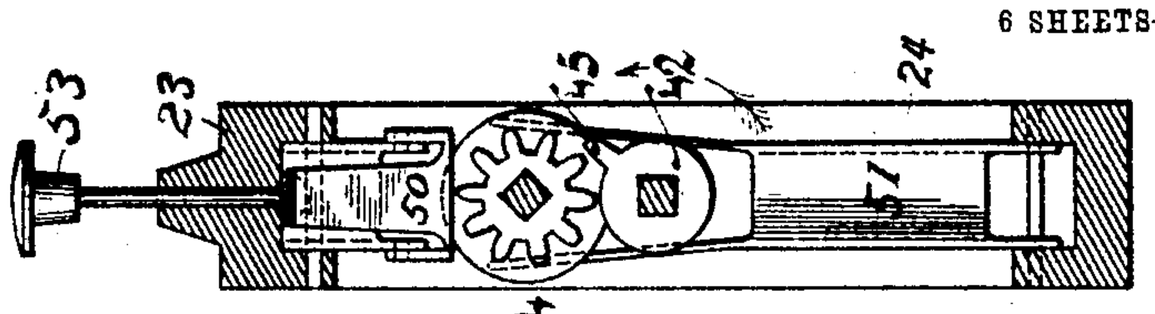


Fig. 14

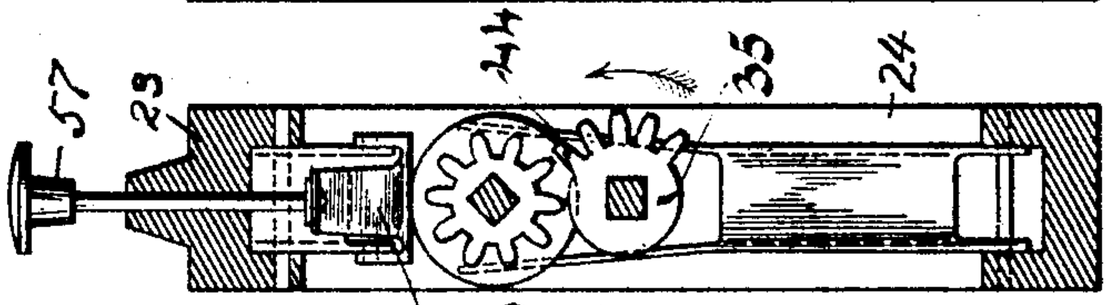


Fig. 13

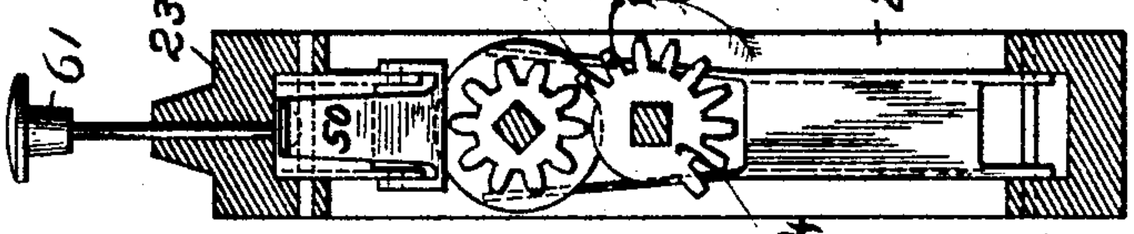


Fig. 12

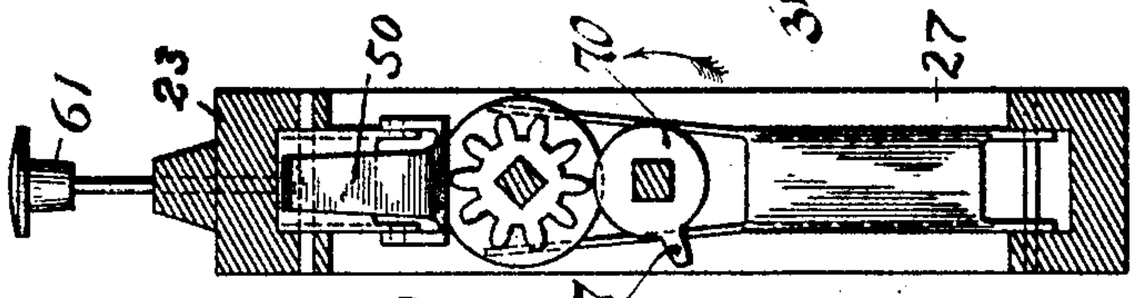


Fig. 11

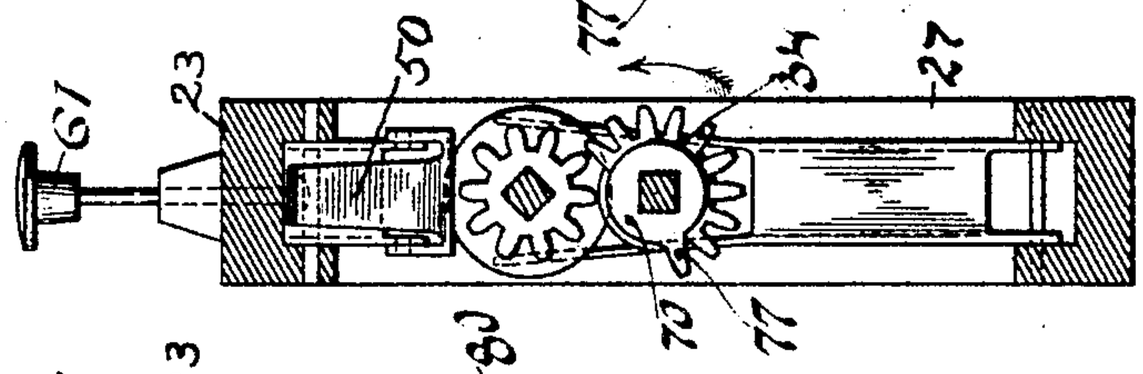


Fig. 10

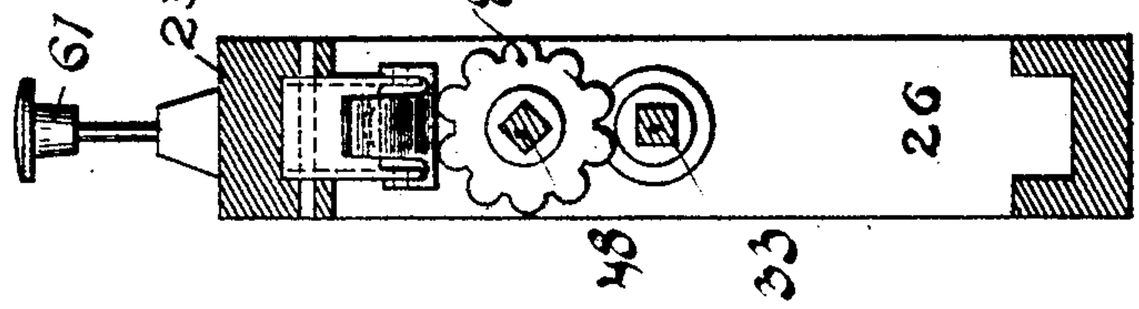
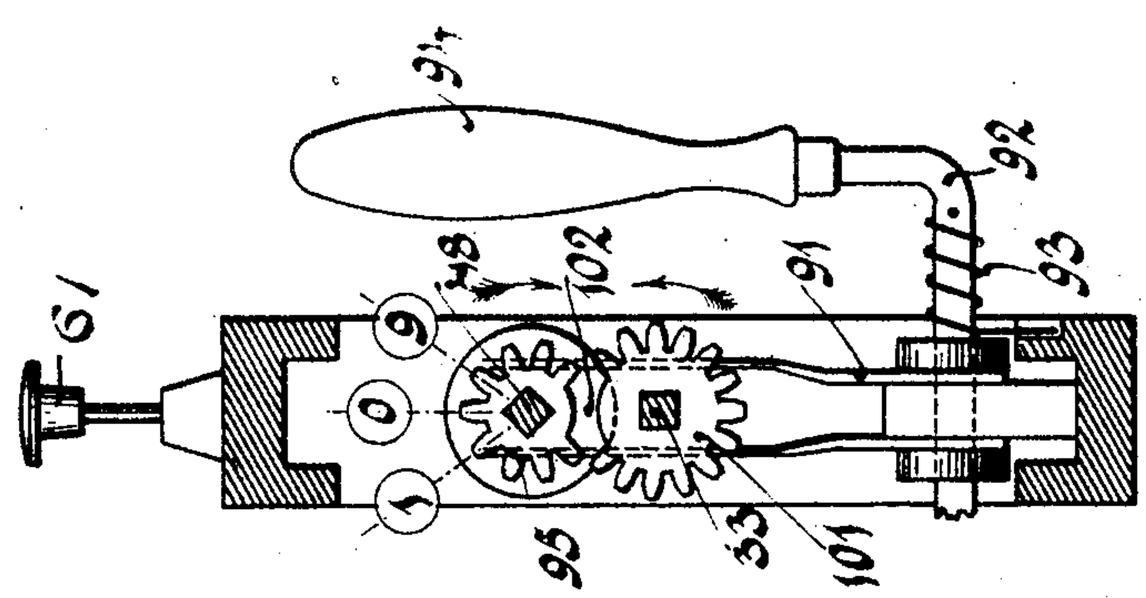


Fig. 9



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UNITED STATES PATENT OFFICE.

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COMPUTING-MACHINE.

No. 800,810. Specification of Letters Patent. Patented Oct. 3, 1905.

Application filed January 4, 1905. Serial No. 239,591.

To all whom it may concern:

Be it known that we, HOLMES MARSHALL, residing at New York city, State of New York, and JOSEPH T. UEBBING, residing at Cleveland, Ohio, citizens of the United States, have invented certain new and useful Improvements in Computing-Machines, of which the following is a clear, full, and exact description.

Our invention relates to improvements in computing-machines, particularly adding-machines; and our object is to improve and simplify the construction of the same.

Our invention will be set forth in the claims.

In the preferred embodiment of our invention shown in the drawings we have illustrated a computing-machine combined with a type-writing machine, and in the drawings—

Figure 1 is a side elevation, partly in section, showing a type-writer, a portion of the computing-machine, and a portion of the mechanism connecting the keys of the type-writer with the computing-machine keys. Fig. 2 is a plan view of the computing-machine and movable plunger-carriage, one row of the machine being shown in section substantially on the line *x x* of Fig. 3 and another row in section substantially on the line *y y* of Fig. 3. Fig. 3 is a side elevation, partly in section, of the right half of any one indicator mechanism. Fig. 4 is a side elevation of the left half of the same construction. Fig. 5 is a sectional view through two of the indicator mechanisms at the line *z z* of Fig. 4. Fig. 6 is a detail of the locking device. Fig. 7 is a side elevation of the motor-handle and the ratchet-and-pawl mechanism for operating the machine. Fig. 8 is a sectional view of Fig. 7, substantially on the line *g g*, looking in the direction of the arrow in Fig. 7 and showing part of the train of gears which rotates the shafts of the different indicators. Fig. 9 is a section on the line *a a* of Fig. 4, showing the mechanism for one indicator for setting it back to zero. Fig. 10 is a section on the line *b b* of Fig. 4, showing a brake mechanism. Fig. 11 is a section through one indicator mechanism on the line *c c* of Fig. 4, showing the relative position of the driving-teeth of that indicator. Fig. 12 is a section on the same line, showing the position of the "carrying-tooth." Fig. 13 is a section on the line *d d* of Fig. 3, showing the nine-toothed or ninth driving-wheel of one indicator. Fig. 14 is a section on the line *e e* of Fig. 3 to show the position of the teeth on the five-toothed or fifth driving-wheel with relation to those on the ninth, and Fig. 15 is a section on the line *f f* of Fig. 3 to show the relative position of the first or single-toothed driving-wheel.

In the preferred embodiment of our invention shown in the drawings we have illustrated one form of a computing-machine embodying our invention and in Fig. 1 have shown an ordinary Remington type-writer combined therewith; but it will be obvious that while some of the features of our invention relate to a combined type-writing and computing machine most of the features of invention hereinafter claimed relate more particularly to a computing-machine, and it will be obvious that the computing-machine may be used either in combination with a type-writer or by itself alone.

In the embodiment of our invention shown in the drawings the computing-machine is an adding-machine.

Referring to Fig. 1 of the drawings, we have shown at the upper portion thereof a type-writer, which may be of any approved form; but for illustration we have represented it as provided with a frame 1, which carries suitable keys 2 3, &c., which are provided with numbers—as, for example, on the upper row of an ordinary Remington type-writer. These keys are pivoted at 4, and each of them is provided with type 5 6, moved thereby by any suitable connection—such, for instance, as the ordinary type-bars 7 8 and connecting-rods 9 and 10. 11 is a suitable bed for the paper to be written upon by the type-writer, which receives the force of the blow of the type, and in the present instance it is an ordinary rotatable platen. 12 is a roller for carrying the inking-ribbon. Suitable connections from each of these type-writer keys to the computing-machine are provided and will be hereinafter described.

Referring to the adding-machine more particularly shown in the remaining figures, 13 to 21 are nine movable indicators, and in the present embodiment of our invention they are rotatable and carry numbers thereon from "0" to "9," as partially indicated at 19 in Fig. 3. We prefer to provide a separate frame for each indicator, as shown, for example, at 20′ 21′, &c., in Fig. 2. These frames preferably run lengthwise of the ma-

chine. We prefer to provide a motor for operating the machine and which may, if desired, be in the form of a reciprocating handle 28 (see Fig. 7) and a suitable ratchet-and-pawl connection for rotating the train of operating-gears, although we do not wish to be limited to this construction. In the present instance the spring-pressed pawl 29 is carried by the handle and at each reciprocation moves the ratchet-wheel 30 one tooth forward in the direction of the arrow in Fig. 7. This wheel 30 carries a circular beveled rack 31, meshing with the beveled gear-wheel 32, which drives the train of gears shown in Fig. 8. The teeth on said wheel 30 are spaced apart and provided with a smooth surface between each two adjacent teeth, and the handle is adapted by a full movement in the forward direction to give a relative movement between the pawl and ratchet-wheel. In this case the pawl is carried by the handle a distance at least equal to the distance between two adjacent teeth, but less than that between alternate teeth. The handle will therefore rotate wheel 30 only one tooth at each reciprocation, and even if the handle is not drawn completely forward it cannot catch on the succeeding tooth until the full intended movement of wheel 30 has been given, for the pawl will slip on the smooth portion of the wheel.

Referring now to Fig. 3, we have provided a connecting mechanism between the indicator 19 and the motor 28, which is adapted to cause the motor to move the indicator different amounts, and this connecting mechanism comprises a movable, preferably a rotatable, device having thereon (at each of several points along the same transversely of its direction of rotation) a number of teeth different from the number of teeth at any other of said points. In the present embodiment this device is made up of a shaft 33, preferably carrying thereon a plurality of wheels 34 to 42. Wheel 42 has a single tooth thereon, as indicated in Fig. 15, and each of the other wheels has in this embodiment an increasing number of teeth up to wheel 34, which has nine teeth. Each of the wheels therefore has a number of teeth upon it different from the number of teeth upon any other wheel. These wheels are in the present embodiment separated somewhat and fixed to shaft 33, and the teeth are arranged so that they stand in rows, the first teeth on all the wheels standing in a line along the shaft in the same position as the single tooth upon wheel 42. Fig. 13 shows the relative position of the teeth, tooth 45 (see Fig. 15) hiding the first tooth on each of the succeeding wheels—such, for example, as the tooth 44 upon wheel 35. Similarly tooth 46 of Fig. 13 is in the same row and hides each of the teeth of the succeeding wheels except of wheel 42, which has no second tooth. It will therefore be seen that the teeth on these wheels form a plurality of parallel rows, and, as seen in Fig. 3, when proceeding from right to left there are an increasing number of teeth, said wheels and shaft 33 therefore comprising a rotatable device which at each of the several points at which the wheels are located is provided with a number of teeth different from the number of teeth at any other of said points. In the present embodiment this device is rotatable and is driven by the motor, and as the uppermost row of teeth is the longest, the second row shorter, the third row shorter than that, &c., it will be observed that these teeth are arranged in parallel rows, with the ends in echelon; but this echelon arrangement may not be necessary in all cases. Shaft 33 of each indicator mechanism is in the present embodiment of our invention given one complete revolution at each forward pull on handle 28.

Referring to Fig. 3, we have provided a toothed device which is adapted to engage this other toothed device at any of the said points where in the present embodiment the different wheels are located, and in the present instance this second toothed device is normally unconnected with the motor, but normally connected with the indicator, and this is the construction we prefer. This second toothed device is adapted to engage the driving device at any one of the said points and may, if desired, comprise a flanged and toothed wheel 47, which is slidable longitudinally on the square shaft 48, but incapable of rotation around it. It is normally held in the position shown, but may move transversely of itself into engagement with one of the driving-wheels, as shown at 49. We prefer to provide a plurality of wheels similar to wheels 47 49, one for each of the driving-wheels 35 to 42. Each of the driven wheels may be normally held out of operative relation to its corresponding driving-wheel, as indicated by the position of the wheels 39 and 47, which in the present embodiment normally stand in different planes, whereby they are out of operative relation to each other and are held there by a spring-pressed detent 50. A spring 51 by means of the forked lever 52 tends to move this wheel to the left into position to be engaged by the wheel 39.

In order to cause a wheel on shaft 48 to be connected with any one of the wheels on shaft 43, which may be desired, we provide a selective mechanism, which preferably comprises a plurality of keys 53 to 61 and means operated thereby and adapted to automatically cause shaft 48, and therefore the indicator, to be connected with shaft 33 at any point where the former would be driven by the number of teeth desired. In the present instance we provide each key with a pivoted spring-pressed detent 50, which when the key is depressed will release a wheel—49, for example—and allow it to move into position to be engaged by the driving device at the point where one of the

driving-wheels—for example, 38—is located, which will therefore upon the operation of the motor cause the wheel 49 and the indicator to be rotated five spaces, as wheel 38 has five teeth—that is, the driving device has five teeth at that particular point. It will therefore be observed that in the present embodiment there are several driven wheels 47 49, &c., and the selective mechanism is adapted to automatically cause any one of those driven wheels to operatively connect the driving device and the indicator.

The mechanism for connecting the motor with the indicator may also be considered to consist of two sets of movable toothed members, preferably rotatable wheels, each of the members of one set being capable of moving the indicator and each of the members of the other set being movable by said motor and normally unconnected with but adapted to engage and move one of the members of the first set, each of the members of one, preferably the driving set, being adapted to move the indicator a different amount from the amount said indicator is moved by any other member of said set. In the present embodiment of our invention the wheels 47 49, &c., constitute one set, and the wheels 34 to 42 constitute the other set, and, as we have stated above, we prefer to have the set of differently-toothed wheels 34 to 42 driven by the motor and to have them drive any one of the wheels of the other set; but this may not be necessary in all cases. It will be obvious that each of the wheels 34 to 42 is in the present embodiment adapted to move the indicator 19 an amount different from the amount said indicator is moved by any other wheel of that set.

The connecting mechanism between the motor and indicator (illustrated in Fig. 3) may be further considered to comprise a plurality of connecting mechanisms which are normally incapable of operating the indicator, each of said connecting mechanisms being adapted to cause said indicator to be operated a different amount when the selective mechanism is operated. Each of these connecting mechanisms in the present instance comprises two members, preferably two toothed wheels. For example, wheels 38 and 49 constitute one connecting mechanism and wheels 39 and 47 constitute another connecting mechanism, the first being adapted to operate the indicator five spaces and the second four spaces, and it will be obvious that the selective mechanism is adapted to cause any one of these connecting mechanisms to operatively connect the motor and the indicator.

The different wheels 34 to 42 may also be considered to constitute a series of members each of which is adapted to operate the indicator a different amount and adapted to be separately—that is, each independently of the others—connected with the indicator, and if the selective mechanism is considered to also include the set of wheels 47 49, &c., it will be obvious that the selective mechanism is adapted to operatively connect any one of the wheels 34 to 42 with the indicator, so that it may be operated any amount desired.

It will be obvious that in an adding-machine where several indicators are provided each one of which has numbers on it only from "0" to "9" an amount above nine cannot be correctly indicated without adding a figure to the next higher indicator. In order to carry this additional figure to the next indicator, we have provided carrying means controlled by one indicator mechanism and operating to move the next higher indicator one figure after the lower indicator has been moved or rotated a certain amount, in the present instance after it has moved beyond the point where the figure "9" is visible through the sight-hole 62. (See Figs. 2 and 3.) In the present embodiment, as shown in Fig. 5, we have provided on shaft 48 a wheel 63, which has a single tooth 64, which when the indicator shows the figure "9" stands in the position shown in Fig. 5; but when the indicator is moved to "0" this tooth raises an arm 65, which is connected to and raises a spring-pressed detent 66 of the next higher indicator mechanism and allows a toothed wheel 67 to move to the left under the influence of spring 68, pressing on the pivoted fork 69, and come into position to be engaged by a wheel 70, provided with a single tooth, which when the latter is rotated will rotate wheel 67, and consequently the shaft of the next higher indicator, a single space, thus adding or "carrying" "1" to the next higher indicator. The wheels 67 and 70 of that next higher column, therefore, comprise one form of carrying means which is controlled by the next lower indicator mechanism, and they operate to move that higher indicator one space after the lower indicator has moved a certain amount. In the present embodiment of our invention the carrying-tooth 77 of the wheel 70 is so positioned that it will move the higher indicator at a time different from the time that indicator is moved by its own connecting mechanism. We prefer this arrangement, because where all the indicators are moved simultaneously it may be desirable to add an amount to a higher column at substantially the same time that an amount is added to the lower column, which will cause the indicator of the lower column to be moved beyond the ninth space. We prefer that the amount to be carried to the higher column shall be carried after the higher indicator has been moved by its own connecting mechanism, and therefore we have positioned this carrying-tooth 77 behind the ninth tooth on the wheel 34, as indicated in Figs. 11 and 12. In Fig. 12 the relative position of wheel 70 with relation to wheel 34 is shown by comparison with Fig. 13, and in Fig. 11

two wheels have been indicated together to make this postponed position of tooth 77 additionally clear. Each of the indicator mechanisms, except of the first or lowest column, is provided with such a carrying-tooth.

In the present embodiment each of the indicators is provided with a construction like that shown in Figs. 3 and 4 and also with a carrying mechanism like wheels 67 and 70, and the shaft 33 of each indicator mechanism is rotated at every reciprocation of the motor-handle. This is accomplished by means of the train of gears shown in Fig. 8, the wheels 72, 73, 74 being idlers and each shaft 33 having on it a wheel 76. We prefer this construction in which all of the wheels 34 to 42 are simultaneously rotated at each operation of the motor; but it will be obvious that we do not intend to limit ourselves to this construction.

It will be obvious that after the motor has been operated and the indicator rotated the connecting mechanism—for example, wheels 49 and 38—should be restored to their normal position—that is, in the present instance, so that they are out of contact with each other. In the present embodiment we have made the shaft 48 of each indicator mechanism slidable longitudinally in rotatable bearings 78. This shaft is normally kept in the position shown in Figs. 3 and 4 by a coiled spring 79, located between the brake-wheel 80 and a collar 81, fixed to the shaft. Shaft 48 is also provided with a collar 82, fixed to it, and a fork 83, the fingers of which fork are located in the annular recess 84 of the collar. The forks 83 of the different indicator mechanisms are mounted on and fixed to a rocking shaft 85, which passes transversely through the machine and is provided with an upward extension 86, around which is passed a link 87, made of a loop, which is at one end fastened to the handle 28. When the handle is thrown forward, the indicators will be rotated, and after they have been rotated the end 88 of the loop will strike against the head 89 (see Figs. 4 and 7) and throw the forks 83 to the right in Fig. 4, and consequently push the shafts 48 to the right. These shafts carry stops 90, (see Fig. 3,) which the wheels 47 49 strike against, and if any of these wheels are in their "set" position (shown by the wheel 49) they will be carried to the right until their detents 50 again engage the same, when they will be held in their normal position. This restoring of the connecting mechanisms to their normal position is thus automatically accomplished by a reciprocation of the handle.

In order that the operator may restore the connecting mechanisms of all the indicators to their normal position without adding any amount, we have provided an additional restoring mechanism, consisting in the present embodiment of an additional fork 91 (see Figs. 2 and 4) and an additional collar 81 for each shaft 48. These forks 91 are fixed to a transverse shaft 92, which (see Fig. 9) is provided with a coiled spring 93, tending to hold the same in the position shown in Fig. 4. A handle 94 may also be provided by which the operator may at any time throw the handle to the right in Fig. 4 or toward the bottom of the sheet in Fig. 2 and throw all the shafts 48 to the right in Fig. 4 and simultaneously restore all the connecting mechanisms to their normal position. It will be obvious that this restoring of the connecting mechanisms can be accomplished after the selective mechanism has been operated and before the motor has been operated, and it will be obvious that this mechanism is independent of the motor—that is, the handle 28 does not need to be operated when the handle 94 is operated. The operator can therefore, if he has made a mistake in depressing a key of the machine, restore all the connecting mechanisms of each indicator to their normal position and again strike the keys for the proper amount.

It often happens in operating a computing-machine that the operator will strike proper keys except, perhaps, in one row, and it is therefore desirable to be able to restore the connecting mechanism of that indicator only to its normal position—that is, without restoring the connecting mechanism of any other indicator. The projecting or right end of shaft 48 may be provided (see Fig. 3) with a finger-piece 97. The operator may therefore take hold of this finger-piece 97 and pull the shaft 48 to the right and restore its driven wheels to their normal position without interfering with or restoring the driven wheels of any other indicator, and the operator may therefore in this way correct his mistake in the selecting mechanism of that indicator only, if he so desires.

It will be observed that in the present embodiment each indicator is independently rotatable after its selective mechanism has been operated and before the motor is operated, and it is desirable, in order to prevent mistakes, that when the operator restores the connecting mechanism of any one indicator only means should be provided for preventing the accidental rotation of that indicator and consequent indication of an incorrect amount. This we have accomplished in the present embodiment in two ways, one of which is the finger-piece 97, which is freely rotatable on shaft 48 and which, if the operator inadvertently rotates his hand when operating the restoring mechanism, will itself rotate without turning the indicator. Another device which accomplishes this result and at the same time provides an automatic lock which positively locks the indicator against movement when the restoring mechanism is operated is in the present embodiment a toothed wheel 99, fixed to shaft 48, and a pin 100, which has, Figs. 4 and 6, a wedge-shaped

end which normally stands in front of the opening between two adjacent teeth on the wheel when the indicator is at rest, but which enters between the teeth whenever the shaft and wheel 99 are moved to the right. This automatically locks the indicator against rotation.

After several amounts have been added on the computing-machine and it is desired to start a new account the indicators should all be set back to zero—that is, so that zero shall appear through each of the sight-holes. In order to accomplish this result, we have in the present embodiment provided each shaft 48 with a toothed wheel 95, which is longitudinally slidable on, but incapable of rotation around, the shaft and is normally held in the position shown in Fig. 4 by a light coiled spring 96, which is much weaker than the spring 93.

Referring to Fig. 4, we have provided a connecting mechanism between the indicator 19 and the motor 28, which comprises a toothed driving member, in the present embodiment a toothed wheel 101, fixed to shaft 33, which is driven by the motor. This driving member, as seen in Fig. 9, has a cut-away portion 102, where teeth have been omitted. A toothed driven member connected with the indicator, in the present embodiment a wheel 95 located on, but incapable of rotation around, shaft 48, is provided, and which also has a cut-away portion. In the present embodiment, as shaft 33 is given one complete rotation at each forward movement of the handle 28, the wheel 101 normally stands in the position shown in Fig. 9, and the cut-away portion on that wheel consequently normally stands in a position where it may receive the teeth upon the other wheel 95, as this wheel 95 may be in any position, depending upon the amount of rotation which has been given to the indicator connected with it. This cut-away portion of the wheel 101 therefore allows the two wheels to be moved into operative position with relation to each other without danger of the teeth on one wheel engaging the teeth on the other and preventing such movement. These two wheels are normally out of engagement, and this is preferably accomplished by making the wheel 95 slidable transversely of itself on the squared shaft 48. A spring 96 normally tends to hold the wheel in the position shown in Fig. 4; but when the handle 94 is thrown to the left in Fig. 4 this wheel is moved to the left to such a position that the teeth on it may enter the cut-away portion on wheel 101, ready to engage the teeth on the driving-wheel 101 when the latter is rotated. It will be obvious that no matter what position of rotation the wheel 95 is in when such engagement occurs the rotation of the driving-wheel 101 will rotate it until it reaches the position shown in Fig. 9, when no further rotation will occur, and consequently the indicator will be set back to zero, the cut-away portion on wheel 95 then allowing the teeth on driving-wheel 101 to clear the teeth on wheel 95. The cut-away portion on wheel 95 therefore corresponds to "0" on the indicator—that is, the cut-away portion on it stops its rotation when the indicator has moved to the position where "0" is indicated. We prefer to cause the driven wheel 95 to be moved into position to engage the other wheel; but this may not be necessary in all cases. In the present embodiment, as shown in Fig. 2, each indicator is provided with such a set-back mechanism, which are simultaneously operated by the forks 91 on rock-shaft 92 when the handle 94 is thrown to the left in Fig. 4, thus setting all the indicators back to zero.

In the present embodiment we have provided a very simple frame construction which is of advantage in assembling the machines and which also may allow all indicator mechanisms to be made the same, so that they and the frames may be interchangeable in the machine, and if one mechanism becomes damaged it may, with its frame, be removed and another frame and its mechanism inserted in the machine. In the present embodiment we have provided frames, as indicated at 20, 21, &c., on Fig. 2, which are separable from each other and located side by side. Each of these frames, as indicated in Figs. 3 and 4, preferably consists of a base 22, having a top 23, end pieces 24 and 25, and, if desired, suitable stanchions 26 27. It will be observed that each frame carries an operating mechanism for one indicator and also a selective mechanism for that indicator, and any frame may be removed from the machine and replaced by another one without necessitating the dismemberment of the entire mechanism of the computing-machine. Such mechanism carried by each frame is duplicated in each other frame.

In cases where a type-writer is combined with a computing-machine it is desirable that the type should strike the paper on the type-writer and write the figure to be added by the indicator mechanism after the mechanism which causes that figure to be selected is operated. The operator of a machine will by such a construction be certain that if the type-writer prints upon the paper the figure to be added he will have operated the proper setting device. In this way he will be certain not to skip or insufficiently operate the setting device desired. In the present embodiment of our invention (shown in Fig. 3) the computing-machine has several mechanisms, each of which is adapted to cause the indicator to be operated a different amount—that is, an amount different from the amount any other mechanism causes the indicator to be operated. In this case one of these mechanisms is, for instance, the wheel 38 and the wheel 49. These

two wheels and detent 50 also constitute a setting device. We have also provided a plurality of devices each of which is adapted to connect one of the type-writer numeral-keys with a setting device and adapted to operate the same before the type strikes the paper which may be on the platen or bed 11. In the present embodiment one of these connecting devices is the plunger 57 and a connection from the type-writer key, which will operate it. It will be observed that in Fig. 3 the key 57 has been depressed an amount just sufficient to release the wheel 49; but it may be depressed farther, as indicated in dotted lines in Fig. 1, and the connection between the type-writer key 2 and this detent is such that the type 5 will not strike the paper on platen 11 until the detent moves to the dotted position. (Shown in Fig. 1.) Consequently if the operator sees a figure printed on the paper he will know that he has released the wheel, which will cause the indicator to be operated that amount.

In the present embodiment we have provided connecting mechanisms between the type-writer key and the keys of the computing-machine, comprising a carriage 103, carrying spring-pressed plungers 104 105, &c., which carriage is slidable from left to right over the different rows of keys of the computing-machine—for example, on transverse rods 106 and 107—and provided with a suitable escapement mechanism, (indicated generically by 108,) which is operated by the depression of the type-writer key. Each type-writer key is connected by a link 109 to a lever 110, which operates a bail 111, extending across the machine and adapted to operate one of the plungers, whatever may be the position of the carriage. The general construction described in this paragraph is not claimed by itself alone, and it is therefore not thought necessary to illustrate it any more than has been done. The type-writer keys and their respective bails and levers are held in the raised position by springs 112 or 112′.

Referring to Fig. 1, it will be seen that the type-writer key 2 has depressed its lever 110 and bail 111 and also the plunger 104 just enough to release the wheel 49; but its type-bar 7 is then in such a position that the type 5 carried by it has not yet struck against the platen, and the key 2 must be depressed slightly farther until the detent is moved to the dotted position, when the type-bar 7 will have been moved farther to its dotted position and the type will strike against any paper which may be on the platen. Therefore the type will not strike against the paper until after the detent has been released.

The plunger-carriage 103 in the present embodiment normally stands at the left of the machine, and a suitable device—such, for example, as the strap 113 and spring-drum 114—may be provided, which, with the escapement 108, will move the carriage step by step to the right as the numeral-keys of the type-writer are depressed. In order to return the carriage to its normal position, in this embodiment at the left of the machine suitable means may be provided for doing so whenever the motor-handle is thrown forward. In the present embodiment we have shown a cord 115 passing around pulleys and attached by means of a hook or pin 116, which is adapted to be engaged in any one of a number of holes 117 118 119, (see Fig. 7,) which constitutes one form of an adjustable connection with the motor, by which the carriage may be drawn different amounts to the left, so that it will normally stand over any row of the computing-machine which may be desired. Such a mechanism as generally described in this paragraph is, however, old. It often happens, however, that an unskilled operator will throw the handle forward too violently, which will give a quick jerk on the cord 115 and throw the carriage to the left farther than is intended. For example, the operator may desire to have the carriage normally stand over the hundreds-column, which in Fig. 2 is the fifth column from the right, as the majority of checks or amounts which he is adding may be under one thousand dollars. If, however, he gives a too violent pull on the handle 28, the carriage may, even though the pin 116 is in the proper hole to cause the carriage to stop over the column desired, because of the impetus given to it travel up to the thousands-column or even beyond, and unless the operator notices this he may write his amounts on the type-writer in the proper place on the paper; but every figure which he adds on the machine will be added in a column higher than it should be. We have therefore provided a shiftable stop device which is adapted to prevent overtravel of the carriage in its movement in the direction of its normal position, which in the present embodiment is at the left of the machine. In the embodiment of our invention illustrated 117 is such a stop device consisting of a collar slidable on the rod 107 and having a projection or handle 118 extending outside of the machine through a slot 119 in the front of the case. This collar 117 has a tight fit upon rod 107, but may be moved by handle 118 to the right or left, as desired. In Fig. 2 it is shown in a position such that when the carriage strikes against it it will stop over the fifth column from the right—that is, the hundreds-column—and will be prevented, even in consequence of a too violent pull on the handle, from traveling beyond the point where it is desired to stop it.

120 is a pointer attached to carriage 103 and also projecting through slot 119 over the indicators which will show the position of the carriage.

If desired, a bell, such as 121, may be provided with a clapper which is actuated by the spring-tooth 122, so as to ring the bell when

the carriage moves from the fourth column to the third column.

While we have in the drawings illustrated that embodiment of our invention which we now prefer, we are fully aware that many variations from the construction shown herein may be made without departing from the spirit of our invention as claimed, and we therefore do not desire to be limited to the particular construction heretofore described, and illustrated in the drawings.

What we claim is—

1. In a computing-machine in combination, an indicator, an operating-motor for the same, a plurality of connecting mechanisms between said motor and indicator normally incapable of operating said indicator, each of said connecting mechanisms being adapted to cause said indicator to be operated a different amount, and selective mechanism whereby any one of said connecting mechanisms may be caused to operatively connect said motor and indicator, means for operating the selective mechanism and an independent means for operating the motor, whereby the selective mechanism may be operated to connect any one of the connecting mechanisms with the motor and indicator, and the motor afterward operated at the will of the operator, to operate said indicator.

2. In a computing-machine in combination, an indicator, an operating-motor for the same, a plurality of connecting mechanisms between said motor and indicator normally incapable of operating said indicator, each of said connecting mechanisms being adapted to cause said indicator to be operated a different amount, selective mechanism whereby any one of said connecting mechanisms may be caused to operatively connect said motor and indicator, the selective mechanism being adapted to be operated prior to and independently of the motor, and means adapted to restore, when desired, said selective mechanism to its normal position without operating said motor.

3. In a computing-machine in combination, an indicator, an intermittently-operated motor handle and shaft for said indicator, a plurality of connecting mechanisms between said motor-shaft and indicator normally incapable of operating said indicator, each of said connecting mechanisms being adapted to cause said indicator to be operated a different amount, and independently-operated selective mechanism whereby any one of said connecting mechanisms may be caused to operatively connect said motor and indicator prior to the operation of said motor-shaft.

4. In a computing-machine in combination, an indicator, an operating-motor for the same, a plurality of connecting mechanisms between said motor and indicator normally incapable of operating said indicator, each of said mechanisms including two members, one normally connected with said indicator and the other normally disconnected therewith, each of said connecting mechanisms being adapted to cause said indicator to be operated a different amount, and selective mechanism whereby said two members of any one of said connecting mechanisms may be caused to engage and thereby operatively connect said motor and indicator.

5. In a computing-machine in combination, a pair of indicators, an operating-motor for the same, a plurality of connecting mechanisms for each indicator between said motor and indicator and normally incapable of operating said indicator, each of said connecting mechanisms of each indicator being adapted to cause its indicator to be operated a different amount, selective mechanism for each indicator whereby any one of said connecting mechanisms of that indicator may be caused to operatively connect said motor and that indicator, and carrying means controlled by the mechanism of one indicator and operating to move said other indicator after said first indicator has moved a certain amount.

6. In a computing-machine in combination, a pair of rotatable indicators, an operating-motor for the same, nine independent connecting mechanisms for each indicator between said motor and indicator and normally incapable of operating said indicator, each of said connecting mechanisms of each indicator being adapted to cause its indicator to be operated a different amount, nine keys for each indicator, each key being connected with a connecting mechanism of said indicator whereby any one of said connecting mechanisms of that indicator may be caused to operatively connect said motor and that indicator, and carrying means controlled by the mechanism of one indicator and operating to move said other indicator after said first indicator has moved a certain amount.

7. In a computing-machine in combination, an indicator, a series of members each adapted to operate said indicator a different amount and adapted to be separately connected with the same, and selecting mechanism adapted to operatively connect any one of said members with said indicator.

8. In a computing-machine in combination, an indicator, a series of independent mechanisms each adapted to operate said indicator a different amount and adapted to be separately connected with the same, each of said mechanisms including two members one of which is normally connected with said indicator and disconnected with said other member, and selecting mechanism adapted to operatively connect said two members of any one of said mechanisms.

9. In a computing-machine in combination, an indicator, a series of independent mechanisms each adapted to operate said indicator a different amount and adapted to be separately

connected with the same, each of said mechanisms including two members one of which is normally connected with said indicator and disconnected with said other member, one of said members being a rotatable wheel and the other a movable toothed member, and selecting mechanism adapted to operatively connect any one of said mechanisms with said indicator.

10. In a computing-machine in combination, an indicator, a series of independent mechanisms each adapted to operate said indicator a different amount and adapted to be separately connected with the same, each of said mechanisms including two members one of which is normally connected with said indicator and disconnected with said other member, and selecting mechanism adapted to operatively connect said two members of any one of said mechanisms, and a motor adapted to operate said latter member.

11. In a computing-machine in combination, an indicator, a series or independent mechanisms each adapted to operate said indicator a different amount and adapted to be separately connected with the same, each of said mechanisms including two members one of which is normally connected with said indicator and disconnected with said other member, and selecting mechanism adapted to operatively connect said two members of any one of said mechanisms, and means to disconnect said two members.

12. In a computing-machine in combination, an indicator, a series of independent mechanisms each adapted to operate said indicator a different amount and adapted to be separately connected with the same, each of said mechanisms including a wheel and a movable toothed member, said wheel being normally connected with said indicator and disconnected with said toothed member, selecting mechanism adapted to operatively connect said wheel and toothed member of any one of said connecting mechanisms, and a motor adapted to operate said toothed member.

13. In a computing-machine in combination, an indicator, an operating-motor for the same, a plurality of toothed driven wheels connected with said indicator, a plurality of driving-wheels each of them having a number of teeth thereon different from the number of teeth upon any other of said driving-wheels, each of said driving-wheels being adapted to engage with and rotate one of said driven wheels, and means normally holding said driving and driven wheels out of engagement, and selecting mechanism adapted to cause a relative movement between any driving-wheel and its driven wheel whereby said wheels may engage, and mechanism connecting said driving-wheels with said motor.

14. In a computing-machine in combination, a movable indicator, mechanism adapted to move said indicator different amounts, said mechanism including a movable device having teeth thereon arranged in parallel rows with the ends in echelon, a plurality of movable toothed devices normally unconnected with said first device but independently movable into position to engage the same, each of said movable toothed devices adapted to be engaged by a different number of teeth on said first device, and selective mechanism adapted to move any one of said movable toothed devices into position to be engaged by said first device.

15. In a computing-machine in combination, a movable indicator, a motor therefor, mechanism adapted to connect said motor and indicator and adapted to move the latter different amounts, said mechanism including a driving device having teeth thereon arranged in parallel rows with the ends in echelon, a plurality of movable toothed driven devices capable of moving said indicator and normally unconnected with said driving device but independently movable into position to be engaged by the same, each of said driven devices being then driven by a different number of teeth on said driving device, and selective mechanism adapted to move any one of said driven devices into position to be engaged by said driving device.

16. In a computing-machine in combination, a movable indicator, a motor therefor, mechanism adapted to connect said motor and indicator and adapted to move the latter different amounts, said mechanism including a rotatable driving device having teeth thereon arranged in parallel rows with the ends in echelon, a plurality of movable toothed driven wheels capable of moving said indicator and normally unconnected with said driving device but independently movable into position to be engaged by the same, each of said driven wheels being then driven by a different number of teeth on said driving device, and selective mechanism adapted to move any one of said driven wheels into position to be engaged by said driving device.

17. In a computing-machine in combination, a pair of movable indicators, mechanism for each indicator adapted to move said indicator different amounts, each mechanism including a movable device having teeth thereon arranged in parallel rows with the ends in echelon, and a plurality of movable toothed driven devices normally unconnected with said first device but independently movable into position to engage the same, each of said movable toothed devices adapted to be engaged by a different number of teeth on said first device, selective mechanism for each indicator adapted to move any one of said movable toothed devices belonging to its indicator into position to be engaged by said first device of that indicator, and means controlled by one indicator mechanism and adapted to move said other indicator after said first indicator has moved a certain amount.

18. In a computing-machine in combination, a pair of movable indicators, a motor therefor, a pair of mechanisms one for each indicator and each adapted to connect said motor and its indicator and adapted to move the same different amounts, each of said connecting mechanisms including a driving device having teeth thereon arranged in parallel rows with their ends in echelon and a plurality of movable toothed driven devices each capable of moving its indicator and normally unconnected with said driving device but independently movable into position to be engaged by the same, each of said driven devices being then driven by a different number of teeth on said driving device, a selective mechanism for each indicator adapted to move any one of said driven devices connected with its indicator into position to be engaged by its driving device, and carrying means controlled by one indicator mechanism and operating to move said other indicator after said first indicator has been moved a certain amount.

19. In a computing-machine in combination, a pair of rotatable indicators, a motor therefor, a pair of mechanisms one for each indicator and each adapted to connect said motor and its indicator and adapted to move the same different amounts, each of said connecting mechanisms including a rotatable driving device having teeth thereon arranged in parallel rows with their ends in echelon and a plurality of movable toothed driven wheels, each capable of moving its indicator and normally unconnected with said driving device but independently movable into position to be engaged by the same, each of said driven wheels being then driven by a different number of teeth on said driving device, a selective mechanism for each indicator adapted to move any one of said driven wheels connected with its indicator into position to be engaged by its driving device, and carrying means controlled by one indicator mechanism and operating to move said other indicator after said first indicator has been moved a certain amount.

20. In a computing-machine in combination, a pair of movable indicators, a motor therefor, a pair of mechanisms one for each indicator and each adapted to connect said motor and its indicator and adapted to move the same different amounts, each of said connecting mechanisms including a driving device having teeth thereon arranged in parallel rows with their ends in echelon and a plurality of movable toothed driven devices each capable of moving its indicator and normally unconnected with said driving device but independently movable into position to be engaged by the same, each of said driven devices being then driven by a different number of teeth on said driving device, a selective mechanism for each indicator adapted to move any one of said driven devices connected with its indicator into position to be engaged by its driving device, and carrying means controlled by one indicator mechanism and operating to move said other indicator after said first indicator has been moved a certain amount, said carrying means being adapted to move said "other indicator" at a time different from the time that indicator is moved by its own connecting mechanism.

21. In a computing-machine in combination, a pair of movable indicators, a motor therefor, a pair of mechanisms one for each indicator and each adapted to connect said motor and its indicator and adapted to move the same different amounts, each of said connecting mechanisms including a driving device having teeth thereon arranged in parallel rows with their ends in echelon and a plurality of movable toothed driven devices each capable of moving its indicator and normally unconnected with said driving device but independently movable into position to be engaged by the same, each of said driven devices being then driven by a different number of teeth on said driving device, a selective mechanism for each indicator adapted to move any one of said driven devices connected with its indicator into position to be engaged by its driving device, and carrying means controlled by one indicator mechanism and operating to move said other indicator after said first indicator has been moved a certain amount, said carrying means being adapted to move said "other indicator" after that indicator is moved by its own connecting mechanism.

22. In a computing-machine in combination, a movable indicator, a motor for the same, connecting mechanism between the same comprising two sets of movable toothed members, each of the members of one set being capable of moving said indicator, each of the members of said other set being movable by said motor and normally unconnected with but adapted to engage and move one of the members of said first set, each of the members of one set being adapted to move said indicator a different amount from the amount said indicator is moved by any other member of said set, and selective mechanism whereby any one of said members of one set may be caused to move into position to engage the corresponding member of the other set.

23. In a computing-machine in combination, a rotatable indicator, a motor for the same, connecting mechanism between the same comprising two sets of movable toothed members, each of the members of one set being capable of rotating said indicator, each of the members of said other set being movable by said motor and normally unconnected with but adapted to engage and move one of the members of said first set, each of the members of one set being adapted to rotate said indicator an amount different from the amount said indicator is moved by any other member

of said set, and selective mechanism whereby any one of said members of one set may be caused to move into position to engage the corresponding member of the other set.

24. In a computing-machine in combination, a movable indicator, a motor for the same, connecting mechanism between the same comprising two sets of rotatable toothed wheels, each of the wheels of one set being capable of moving said indicator, each of the wheels of said other set being rotatable by said motor and normally unconnected with but adapted to engage and rotate one of the wheels of said first set, each of the wheels of one set being adapted to move said indicator an amount different from the amount said indicator is moved by any other wheel of said set, and selective mechanism whereby any one of said wheels of one set may be caused to engage the corresponding wheel of the other set.

25. In a computing-machine in combination, a movable indicator, a motor for the same, connecting mechanism between the same comprising two sets of rotatable toothed wheels, each of the wheels of one set being capable of moving said indicator, each of the wheels of said other set being rotatable by said motor and normally unconnected with but adapted to engage and rotate one of the wheels of said first set, each of the wheels of one set being adapted to move said indicator an amount different from the amount said indicator is moved by any other wheel of said set, and selective mechanism whereby any one of said wheels of said first set may be caused to move into position to engage the corresponding wheel of said other set.

26. In a computing-machine in combination, a movable indicator, a motor for the same, connecting mechanism between the same comprising two sets of rotatable toothed wheels, each of the wheels of one set being capable of moving said indicator, all of the wheels of said other set being simultaneously rotatable by said motor and each being normally unconnected with but adapted to engage and rotate one of the wheels of said first set, each of the wheels of one set being adapted to move said indicator an amount different from the amount said indicator is moved by any other wheel of said set, and selective mechanism whereby any one of said wheels of said first set may be caused to move into position to engage the corresponding wheel of said other set.

27. In a computing-machine in combination, a rotatable indicator, a motor for the same adapted to be intermittently operated, connecting mechanism between the same comprising two sets of rotatable toothed wheels constituting a driving and a driven set, each of the wheels of the driven set being longitudinally slidable upon, but incapable of rotation around, a shaft connected with the said indicator and capable of rotating said indicator, all of the wheels of said driving set being simultaneously rotatable by said motor and each being normally unconnected with but adapted to engage and rotate one of the wheels of said driven set, each of the wheels of said driving set being adapted to rotate said indicator an amount different from the amount said indicator is moved by any other wheel of said set, and selective mechanism whereby any one of said wheels of said driven set may be caused to move into position to engage the corresponding wheel of the driving set.

28. In a computing-machine in combination, a pair of movable indicators, a motor for the same, a pair of connecting mechanisms one for each indicator and each adapted to connect said motor and its indicator and each comprising two sets of movable toothed members, each of the members of one set being capable of moving its indicator, each of the members of said other set being movable by said motor and normally unconnected with but adapted to engage and move one of the members of said first set, each of the members of one set being adapted to move said indicator an amount different from the amount said indicator is moved by any other member of said set, a selective mechanism for each indicator whereby any one of the members of one set belonging to either indicator may be caused to engage the corresponding member of the other set belonging to that indicator, and carrying means controlled by one indicator mechanism and operating to move said other indicator after said first indicator has been moved a certain amount.

29. In a computing-machine in combination, a pair of movable indicators, a motor for the same, a pair of connecting mechanisms one for each indicator and each adapted to connect said motor and its indicator and each comprising two sets of movable toothed wheels, each of the wheels of one set being capable of moving its indicator, each of the wheels of said other set being rotatable by said motor and normally unconnected with but adapted to engage and rotate one of the wheels of said first set, each of the wheels of one set being adapted to move said indicator an amount different from the amount said indicator is moved by any other wheel of said set, a selective mechanism for each indicator whereby any one of the wheels of one set belonging to either indicator may be caused to engage the corresponding wheel of the other set belonging to that indicator, and carrying means controlled by one indicator mechanism and operating to move said other indicator after said first indicator has been moved a certain amount.

30. In a computing-machine in combination, a pair of movable indicators, a motor for the same, a pair of connecting mechanisms one for each indicator and each adapted to connect said motor and its indicator and each

comprising two sets of movable toothed members, each of the members of one set being capable of moving its indicator, each of the members of said other set being movable by said motor and normally unconnected with but adapted to engage and move one of the members of said first set, each of the members of one set being adapted to move said indicator an amount different from the amount said indicator is moved by any other member of said set, a selective mechanism for each indicator whereby any one of the members of one set belonging to either indicator may be caused to engage the corresponding member of the other set belonging to that indicator, and carrying means controlled by one indicator mechanism and operating to move said other indicator after said first indicator has been moved a certain amount, said carrying means adapted to move said "other indicator" at a time different from the time that indicator is moved by its own connecting mechanism.

31. In a computing-machine in combination, a pair of movable indicators, a motor for the same, a pair of connecting mechanisms one for each indicator and each adapted to connect said motor and its indicator and each comprising two sets of movable toothed members, each of the members of one set being capable of moving its indicator, each of the members of said other set being movable by said motor and normally unconnected with but adapted to engage and move one of the members of said first set, each of the members of one set being adapted to move said indicator an amount different from the amount said indicator is moved by any other member of said set, a selective mechanism for each indicator whereby any one of the members of one set belonging to either indicator may be caused to engage the corresponding member of the other set belonging to that indicator, and carrying means controlled by one indicator mechanism and operating to move said other indicator after said first indicator has been moved a certain amount, said carrying means being adapted to move said "other indicator" after that indicator is moved by its own connecting mechanism.

32. In a combined type-writing and computing machine in combination, a type-writer having a paper-bed, finger-keys, and type movable thereby and adapted to strike against paper on said bed, a computing-machine having mechanisms each adapted to cause said machine to be operated a different amount, a plurality of devices each adapted to connect a type-writer key with one of said mechanisms and adapted to operate the same, each of said connecting devices being adapted to operate its mechanism before said type strikes said paper.

33. In a combined type-writing and computing machine in combination, a type-writer having a paper-bed, finger-keys, and type movable thereby and adapted to strike against paper on said bed, a computing-machine having a plurality of setting devices each adapted to cause said machine to be operated a different amount, a plurality of devices each adapted to connect a type-writer key with a setting device and adapted to operate the same, each of said connecting devices being adapted to operate its setting device before said type strikes said paper.

34. In a combined type-writing and computing machine in combination, a type-writer having a paper-bed, finger-keys, and type movable thereby and adapted to strike against paper on said bed, a computing-machine having a plurality of setting devices, each adapted to cause said machine to be operated a different amount and each including a spring-pressed movable toothed member and a detent to retain said member in position against the action of said spring, a plurality of devices each adapted to connect a type-writer key with a setting-detent and adapted to operate the same, each of said detents being adapted to allow its connecting device to move beyond the position necessary to release its toothed member and before said type strikes said paper.

35. In a combined type-writing and computing machine in combination, a type-writer having a paper-bed, finger-keys, and type movable thereby and adapted to strike against paper on said bed, a computing-machine having a plurality of setting devices, each adapted to cause said machine to be operated a different amount, and each including a spring-pressed movable toothed wheel and a detent acting to retain said wheel in position against the action of said spring, a plurality of devices each adapted to connect a type-writer key with a setting-detent and adapted to operate the same, each of said detents being adapted to allow its connecting device to move beyond the position necessary to release its toothed wheel and before said type strikes said paper.

36. In a computing-machine in combination, a movable indicator, operating means adapted to move said indicator different amounts, selective mechanism adapted to control said means and cause said indicator to be moved any of said amounts desired, said indicator being movable after said selective mechanism has been operated, restoring mechanism adapted to restore said operating means to its normal position, and means to prevent the movement of said indicator when said restoring mechanism is operated.

37. In a computing-machine in combination, a rotatable indicator, a motor for the same, connecting mechanism between the same adapted to rotate said indicator different amounts, selective mechanism adapted to control said connecting mechanism and cause said motor to rotate said indicator any of said amounts desired, said indicator being rotata-

ble after said selective mechanism has been operated, restoring mechanism adapted to restore said connecting mechanism to its normal position, and means to automatically lock said indicator against rotation when said restoring mechanism is operated.

38. In a computing-machine in combination, a pair of indicators, a motor for the same, a separate connecting mechanism between each indicator and said motor and each adapted to move its indicator different amounts, selective mechanism for each indicator each adapted to control said connecting mechanism of its indicator and cause said motor to move said indicator any of said amounts desired, said indicators being independently movable after said selective mechanisms have been operated, restoring mechanism for each indicator and each adapted to restore its connecting mechanism to its normal position, and means to automatically lock that indicator whose restoring mechanism has been operated against movement when its restoring mechanism is operated, and carrying means controlled by one indicator mechanism and operating to move said other indicator after said first indicator has been moved a certain amount.

39. In a computing-machine in combination, a movable indicator, a motor for the same, connecting mechanism between the same adapted to move said indicator different amounts, said connecting mechanism including a rotatable shaft on which are mounted a plurality of toothed wheels and which is connected with said indicator, selective mechanism adapted to control said connecting mechanism and cause said motor to move said indicator any of said amounts desired, said indicator being movable after said selective mechanism has been operated, restoring mechanism adapted to restore said connecting mechanism to its normal position, and means to automatically lock said indicator against movement when said restoring mechanism is operated.

40. In a computing-machine in combination, a movable indicator carrying thereon numbers from "0" to "9," means to move said indicator different amounts, means adapted to control the same whereby said indicator may be caused to move any of said amounts desired, a motor, means for setting said indicator back to "0" after it has been moved and including a connecting mechanism between said indicator and motor and comprising a toothed driving member, and a toothed driven member connected with said indicator, each of said members having a cut-away portion, the cut-away portion of said driven member corresponding to "0" on said indicator, the teeth on said members being normally out of engagement, said cut-away portion on said driving member normally standing in a position to receive the teeth of said other member.

41. In a computing-machine in combination, a movable indicator carrying thereon numbers from "0" to "9," means to move said indicator different amounts, means adapted to control the same whereby said indicator may be caused to move any of said amounts desired, a motor, means for setting said indicator back to "0" after it has been moved and including a connecting mechanism between said indicator and motor and comprising a toothed driving member, and a toothed driven wheel connected with said indicator, each of said members having a cut-away portion, the cut-away portion of said driven wheel corresponding to "0" on said indicator, said members being normally out of engagement, one of said members being adapted to move into position to engage the other member, means to move the same, said cut-away portion on said driving member normally standing in a position to receive the teeth of said other member.

42. In a computing-machine in combination, a movable indicator carrying thereon numbers from "0" to "9," means to move said indicator different amounts, means adapted to control the same whereby said indicator may be caused to move any of said amounts desired, a motor, means for setting said indicator back to "0" after it has been moved and including a connecting mechanism between said indicator and motor and comprising a toothed driving-wheel, and a bodily-movable toothed driven wheel connected with said indicator, each of said wheels having a cut-away portion, the cut-away portion of said driven wheel corresponding to "0" on said indicator, said wheels being normally out of engagement, said driven wheel being adapted to move into position to engage said driving-wheel, means to move the same, said cut-away portion on said driving-wheel normally standing in a position to receive the teeth of said driven wheel.

43. In a computing-machine in combination, a plurality of rows of keys, a plunger-carriage movable over said keys and adapted to operate the same, a motor for said computing-machine and a connection therewith adapted to move said carriage to its normal position, and a shiftable stop device adapted to prevent overtravel of said carriage in its movement in the direction of its normal position.

44. In a computing-machine in combination, a plurality of rows of keys, a plunger-carriage movable toward the right over said keys and adapted to operate the same, a motor for said computing-machine and a connection therewith adapted to move said carriage toward the left to its normal position, and a shiftable stop device extending outside of said machine and adapted to prevent overtravel of said carriage in its movement in said leftward direction.

45. In a computing-machine in combination, a plurality of rows of keys, a plunger-carriage movable toward the right over said keys and adapted to operate the same, a motor for said computing-machine and an adjustable connection therewith adapted to move said carriage

different amounts toward the left to its normal position, and a shiftable stop device extending outside of said machine and adapted to prevent overtravel of said carriage in its movement in said leftward direction.

46. In a computing-machine in combination, a pair of indicators, a pair of frames one for each indicator, each of said frames carrying operating means adapted to move its indicator different amounts and selective mechanism adapted to cause its indicator to be moved any of said amounts desired, means controlled by one indicator mechanism and adapted to move said other indicator after said first indicator has been moved a certain amount, each frame with its operating means and selective mechanism being interchangeable in said machine.

47. In a computing-machine in combination, a plurality of indicators, a plurality of separable frames located side by side, each frame carrying means adapted to move one indicator different amounts.

48. In a computing-machine in combination, an indicator, an operating-motor for the same, a plurality of connecting mechanisms between said motor and indicator normally incapable of operating said indicator, each of said connecting mechanisms being adapted to cause said indicator to be operated a different amount, and selective mechanism whereby any one of said connecting mechanisms may be caused to operatively connect said motor and indicator, and means for restoring said connecting mechanism to its normal position and operatable after said selective mechanism has been operated and before said motor has been operated.

49. In a computing-machine in combination, a pair of rotatable indicators, an operating-motor for the same, nine independent connecting mechanisms for each indicator between said motor and indicator and normally incapable of operating said indicator, each of said connecting mechanisms of each indicator being adapted to cause its indicator to be operated a different amount, nine keys for each indicator, each key being connected with a connecting mechanism of said indicator whereby any one of said connecting mechanisms of that indicator may be caused to operatively connect said motor and that indicator, and carrying means controlled by the mechanism of one indicator and operating to move said other indicator after said first indicator has moved a certain amount, and means for each indicator operatable after the selective mechanism of that indicator has been operated and before said motor has been operated and adapted to restore said connecting mechanism, of that indicator only, to its normal position.

50. In a computing-machine in combination, an indicator, an operating-motor for the same, a plurality of toothed driven wheels connected with said indicator, a plurality of driving-wheels each of them having a number of teeth thereon different from the number of teeth upon any other of said driving-wheels, each of said driving-wheels being adapted to engage with and rotate one of said driven wheels, and means normally holding said driving and driven wheels out of engagement, and selecting mechanism adapted to cause a relative movement between any driving-wheel and its driven wheel whereby said wheels may engage, and mechanism connecting said driving-wheels with said motor, and means independent of said motor and operatable by the operator of said machine and adapted to disconnect said driving and driven wheels.

51. In a computing-machine in combination, a movable indicator, mechanism adapted to move said indicator different amounts, said mechanism including a movable device having teeth thereon arranged in parallel rows with the ends in echelon, a plurality of movable toothed devices normally unconnected with said first device but independently movable into position to engage the same, each of said movable toothed devices adapted to be engaged by a different number of teeth on said first device, and selective mechanism adapted to move any one of said movable toothed devices into position to be engaged by said first device, and means for restoring said connecting mechanism to its normal position and operatable after said selective mechanism has been operated and before said motor has been operated.

52. In a computing-machine in combination, a pair of movable indicators, mechanism for each indicator adapted to move said indicator different amounts, each mechanism including a movable device having teeth thereon arranged in parallel rows with the ends in echelon, and a plurality of movable toothed driven devices normally unconnected with said first device but independently movable into position to engage the same, each of said movable toothed devices adapted to be engaged by a different number of teeth on said first device, selective mechanism for each indicator adapted to move any one of said movable toothed devices belonging to its indicator into position to be engaged by said first device of that indicator, and means controlled by one indicator mechanism and adapted to move said other indicator after said first indicator has moved a certain amount, an independent restoring mechanism for each indicator operatable after the said selective mechanism of that indicator has been operated and before said motor has been operated and adapted to restore the connecting mechanism, of its indicator only, to its normal position.

53. In a computing-machine in combination, a pair of movable indicators, a motor therefor, a pair of mechanisms one for each indicator and each adapted to connect said motor and its indicator and adapted to move the same different amounts, each of said connecting mech-

anisms including a driving device having teeth thereon arranged in parallel rows with their ends in echelon and a plurality of movable toothed driven devices each capable of moving its indicator and normally unconnected with said driving device but independently movable into position to be engaged by the same, each of said driven devices being then driven by a different number of teeth on said driving device, a selective mechanism for each indicator adapted to move any one of said driven devices connected with its indicator into position to be engaged by its driving device, and carrying means controlled by one indicator mechanism and operating to move said other indicator after said first indicator has been moved a certain amount, and means operatable by the operator of said machine and adapted to restore said driven devices of one indicator to their normal position without restoring the driven devices of the other indicators.

54. In a computing-machine in combination, a movable indicator, a motor for the same, connecting mechanism between the same comprising two sets of movable toothed members, each of the members of one set being capable of moving said indicator, each of the members of said other set being movable by said motor and normally unconnected with but adapted to engage and move one of the members of said first set, each of the members of one set being adapted to move said indicator a different amount from the amount said indicator is moved by any other member of said set, and selective mechanism whereby any one of said members of one set may be caused to move into position to engage the corresponding member of the other set, and means operatable by the operator of said machine before said motor is operated and adapted to restore said members to their normal relative position.

55. In a computing-machine in combination, a pair of movable indicators, a motor for the same, a pair of connecting mechanisms one for each indicator and each adapted to connect said motor and its indicator and each comprising two sets of movable toothed members, each of the members of one set being capable of moving its indicator, each of the members of said other set being movable by said motor and normally unconnected with but adapted to engage and move one of the members of said first set, each of the members of one set being adapted to move said indicator an amount different from the amount said indicator is moved by any other member of said set, a selective mechanism for each indicator whereby any one of the members of one set belonging to either indicator may be caused to engage the corresponding member of the other set belonging to that indicator, and carrying means controlled by one indicator mechanism and operating to move said other indicator after said first indicator has been moved a certain amount, an independent restoring mechanism for each indicator mechanism and adapted to restore the connecting mechanism of either indicator to its normal position without restoring the connecting mechanism of the other indicator.

56. In a computing-machine in combination, an indicator, a motor, connecting mechanism between the same adapted to cause said motor to move said indicator different amounts and comprising a movable device having thereon (at each of several points along the same transversely of its direction of movement) a number of teeth different from the number of teeth at any other of said points, a toothed device adapted to engage the same at any of said points, one of said devices being driven by the other device and adapted to move said indicator, and selective mechanism comprising a plurality of keys and means operated thereby and adapted to automatically cause one of said devices to engage the other device at any of said points desired.

57. In a computing-machine in combination, an indicator, a motor, connecting mechanism between the same adapted to cause said motor to move said indicator different amounts and comprising a rotatable device having thereon (at each of several points along the same transversely of its direction of rotation) a number of teeth different from the number of teeth at any other of said points, a rotatable toothed device adapted to engage the same at any of said points, said second device being driven by the first device and adapted to move said indicator, and selective mechanism comprising a plurality of keys and means operated thereby and adapted to cause said driven device to engage said driving device at any of said points desired.

58. In a computing-machine in combination, an indicator, a motor, connecting mechanism between the same adapted to cause said motor to move said indicator different amounts and comprising a movable device having thereon (at each of several points along the same transversely of its direction of movement) a number of teeth different from the number of teeth at any other of said points, a toothed device adapted to engage the same at any of said points, one of said devices being driven by the other device and adapted to move said indicator, and selective mechanism comprising a plurality of keys and means operated thereby and adapted to automatically cause one of said devices to engage the other device at any of said points desired, one of said devices comprising a toothed wheel movable transversely of said first device.

59. In a computing-machine in combination, an indicator, a motor for the same, a plurality of connecting mechanisms between said indicator and motor each adapted to operate said indicator a different amount, each of said connecting mechanisms comprising a toothed

driving member and a toothed driven member, said members of each mechanism normally standing in different planes whereby said two members are out of operative relation to each other, and selective mechanism whereby one member of any of said mechanisms may be caused to move laterally into position to engage the other member of that connecting mechanism.

60. In a computing-machine in combination, an indicator, a motor for the same, a plurality of connecting mechanisms between said indicator and motor each adapted to operate said indicator a different amount, each of said connecting mechanisms comprising a toothed driving member and a toothed driven member, said members of each mechanism normally standing in different planes whereby said two members are out of operative relation to each other, and selective mechanism whereby one member of any of said mechanisms may be caused to move laterally into position to engage the other member of that connecting mechanism, said laterally-movable members being slidably mounted on, but incapable of rotation around, a shaft connected with said indicator and adapted to operate the same.

61. In a computing-machine in combination, a motor for the same, a plurality of connecting mechanisms between said indicator and motor each adapted to operate said indicator a different amount, each of said connecting mechanisms comprising a driving-wheel and a toothed driven wheel, said wheels of each mechanism normally standing in different planes whereby said two wheels are out of operative relation to each other, and selective mechanism whereby said driven wheel of any of said mechanisms may be caused to move laterally into position to engage the driving-wheel of that connecting mechanism.

62. In a computing-machine in combination, an indicator, a motor for the same, connecting mechanism adapted to move said indicator different amounts and including a driving device moved by said motor and having teeth thereon arranged in parallel rows with their ends in echelon, a plurality of movable toothed driven devices each adapted to be engaged by a different number of teeth on said driving device, and selective mechanism adapted to automatically cause any one of said driven devices to operatively connect said driving device and indicator.

63. In a computing-machine in combination, an indicator, a motor for the same, connecting mechanism adapted to move said indicator different amounts and including a rotatable driving device rotated by said motor and having teeth thereon arranged in parallel rows with their ends in echelon, a plurality of rotatable toothed driven wheels each adapted to be engaged by a different number of teeth on said driving device, and selective mechanism adapted to automatically cause any one of said driven wheels to operatively connect said driving device and indicator.

Dated this 29th day of July, 1904.

HOLMES MARSHALL.
JOSEPH T. UEBBING.

Witnesses to Marshall:
EMERSON R. NEWELL,
BEATRICE MIRVIS.

Witnesses to Uebbing:
ALBERT STEARN,
EDWARD A. HEWITT.