G. B. PUTNAM.

ADDING MACHINE.

APPLICATION FILED FEB. 18, 1905.

985,284.

Patented Feb. 28, 1911.

4 SHEETS—SHEET 1.

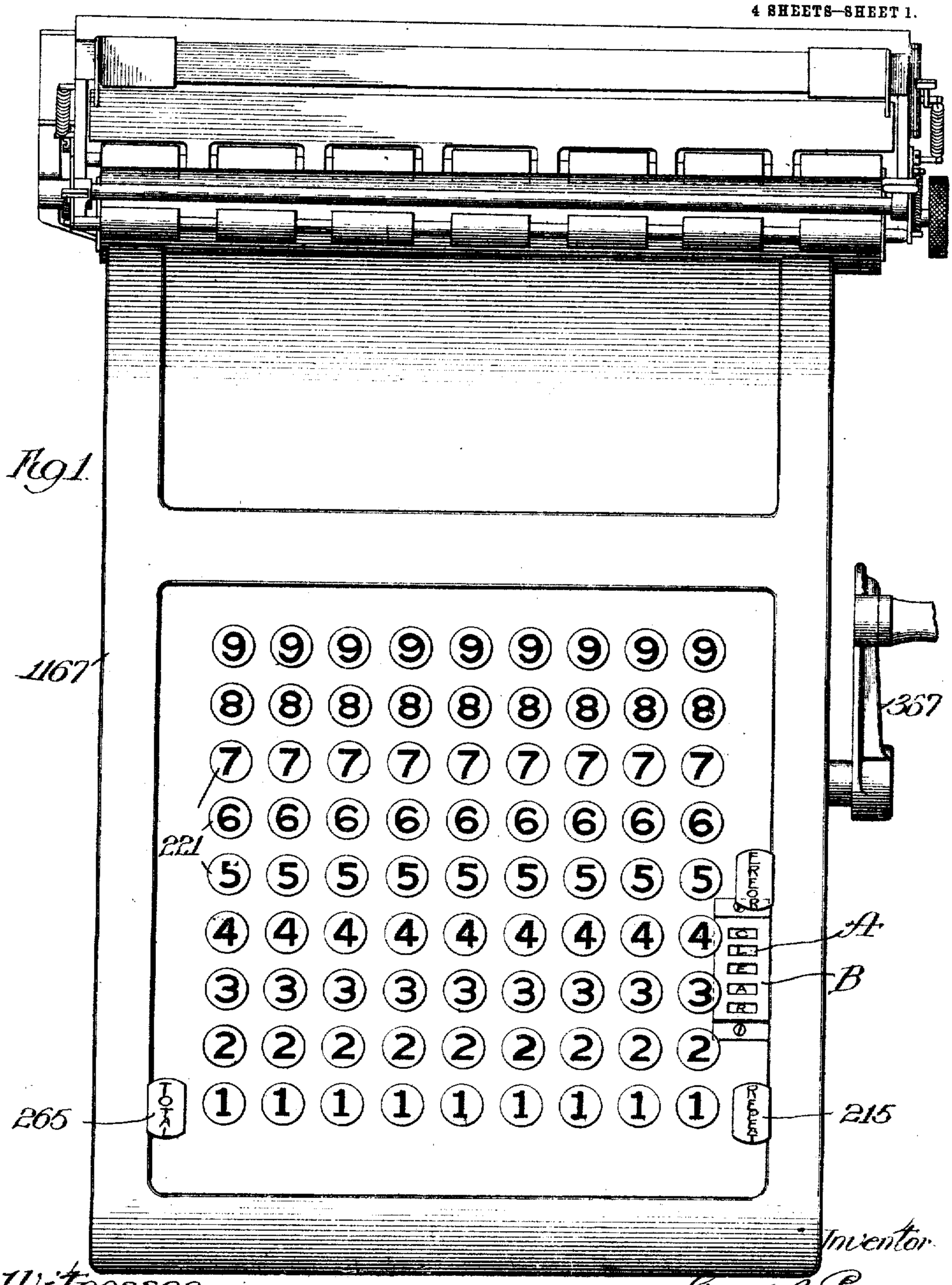


Fig 1.

Witnesses;
Edw. R. Bruett
Louis B. Erwin

Inventor.
George B. Putnam
By Lector & Ribbon
His Attys

G. B. PUTNAM.

ADDING MACHINE.

APPLICATION FILED FEB. 18, 1905.

985,284.

Patented Feb. 28, 1911.

4 SHEETS—SHEET 2.

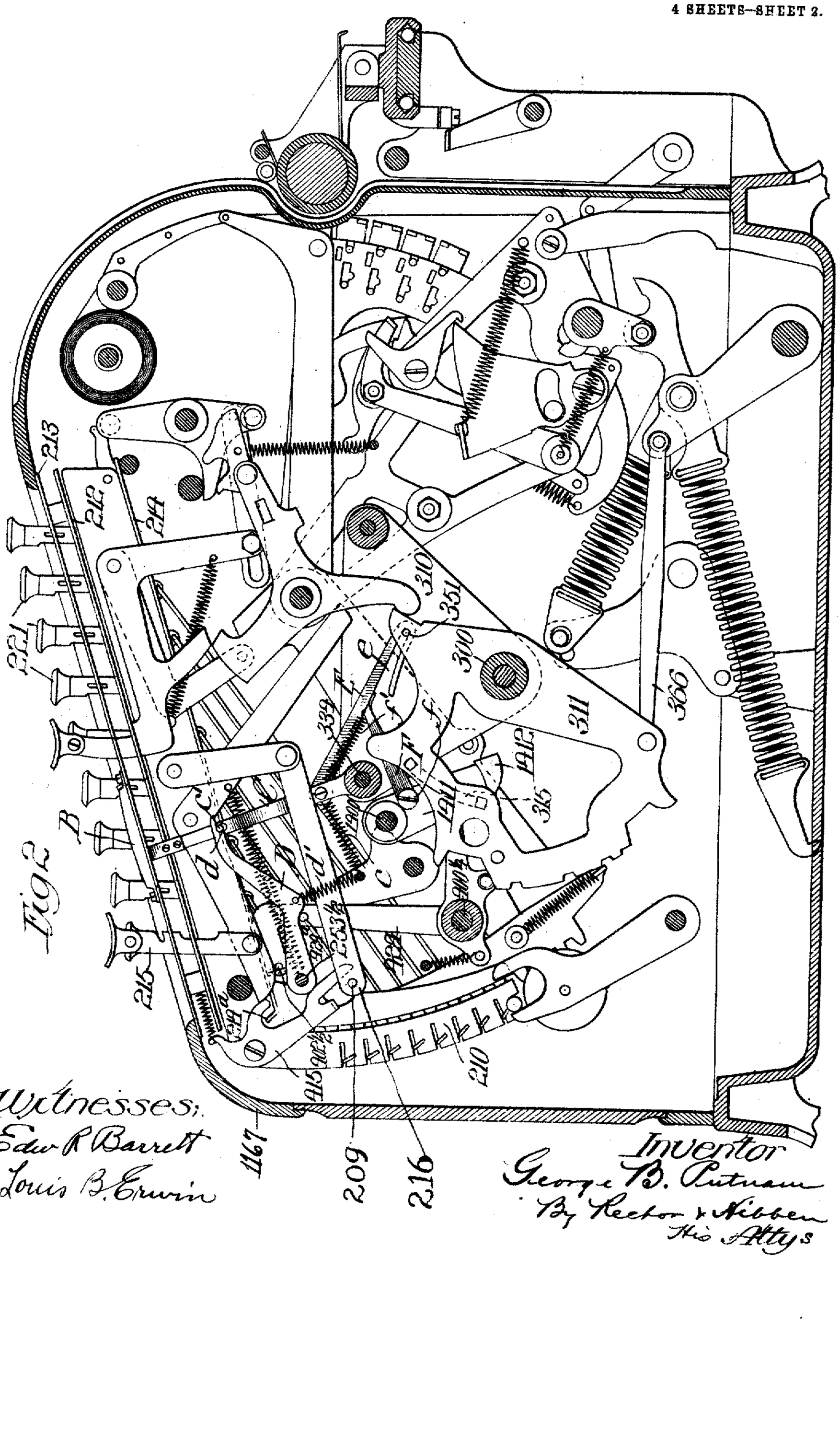


Fig 2

Witnesses:
Edw R Barrett
Louis B. Erwin

Inventor
George B. Putnam
By Rector & Hibben
His Attys

G. B. PUTNAM.

ADDING MACHINE.

APPLICATION FILED FEB. 18, 1905.

985,284. **Patented Feb. 28, 1911.**

4 SHEETS—SHEET 3.

Fig 3

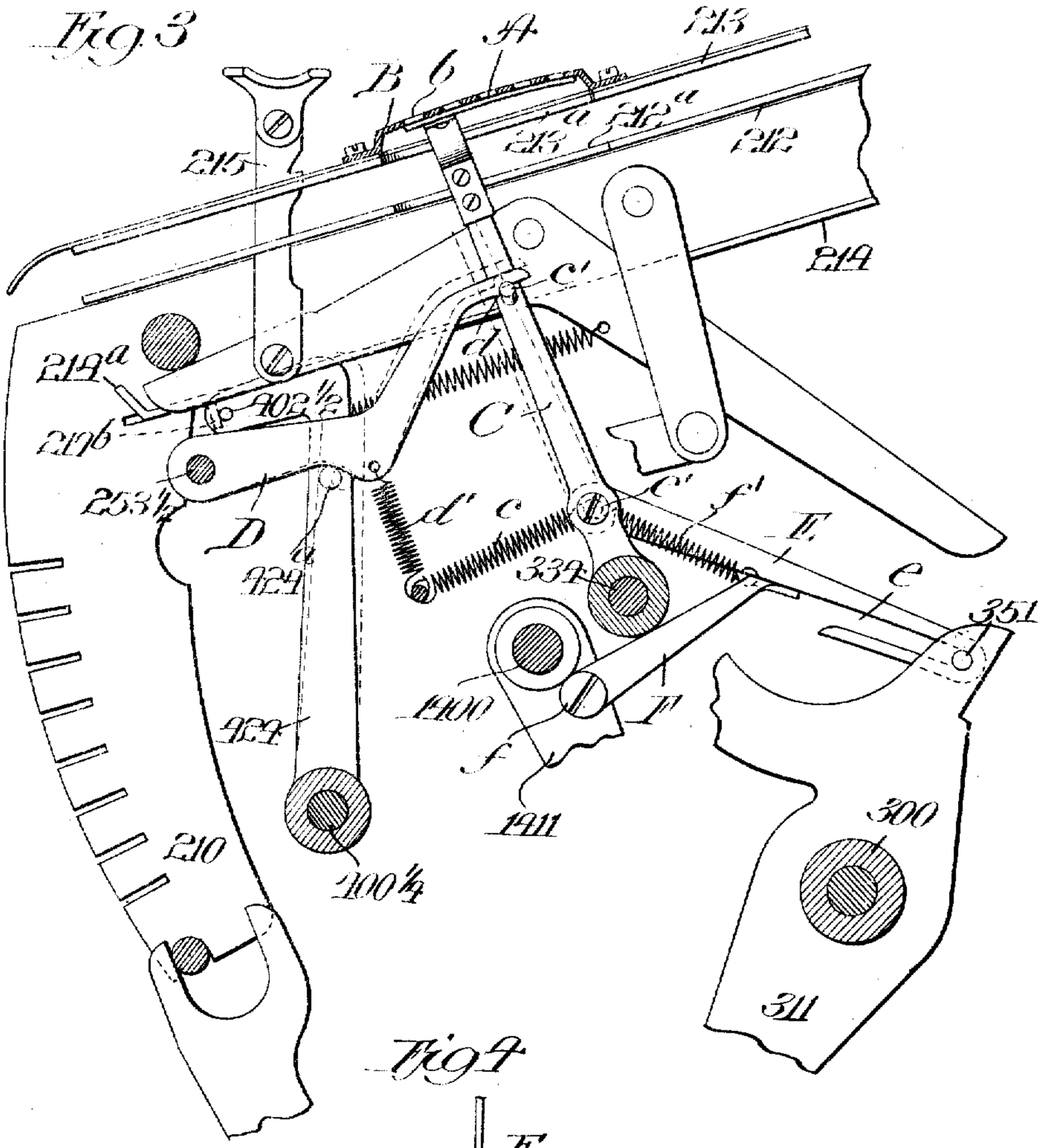
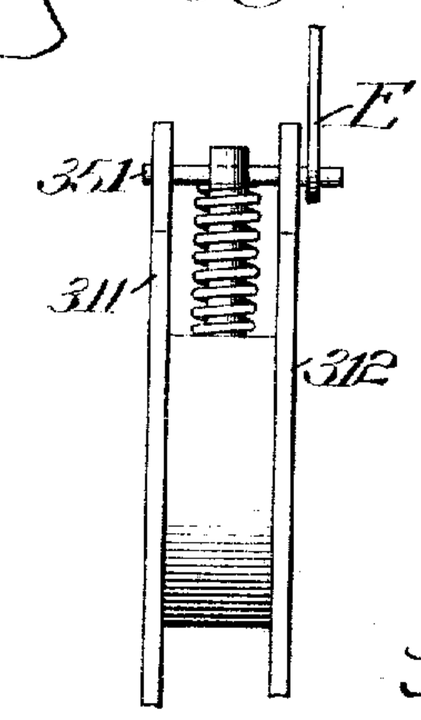


Fig 4



Witnesses
Edw. R. Barrett
Louis B. Erwin

Inventor
George B. Putnam
By Rector & Nebon
His Attys.

G. B. PUTNAM.

ADDING MACHINE.

APPLICATION FILED FEB. 18, 1905.

985,284.

Patented Feb. 28, 1911.

4 SHEETS—SHEET 4.

Fig. 5.

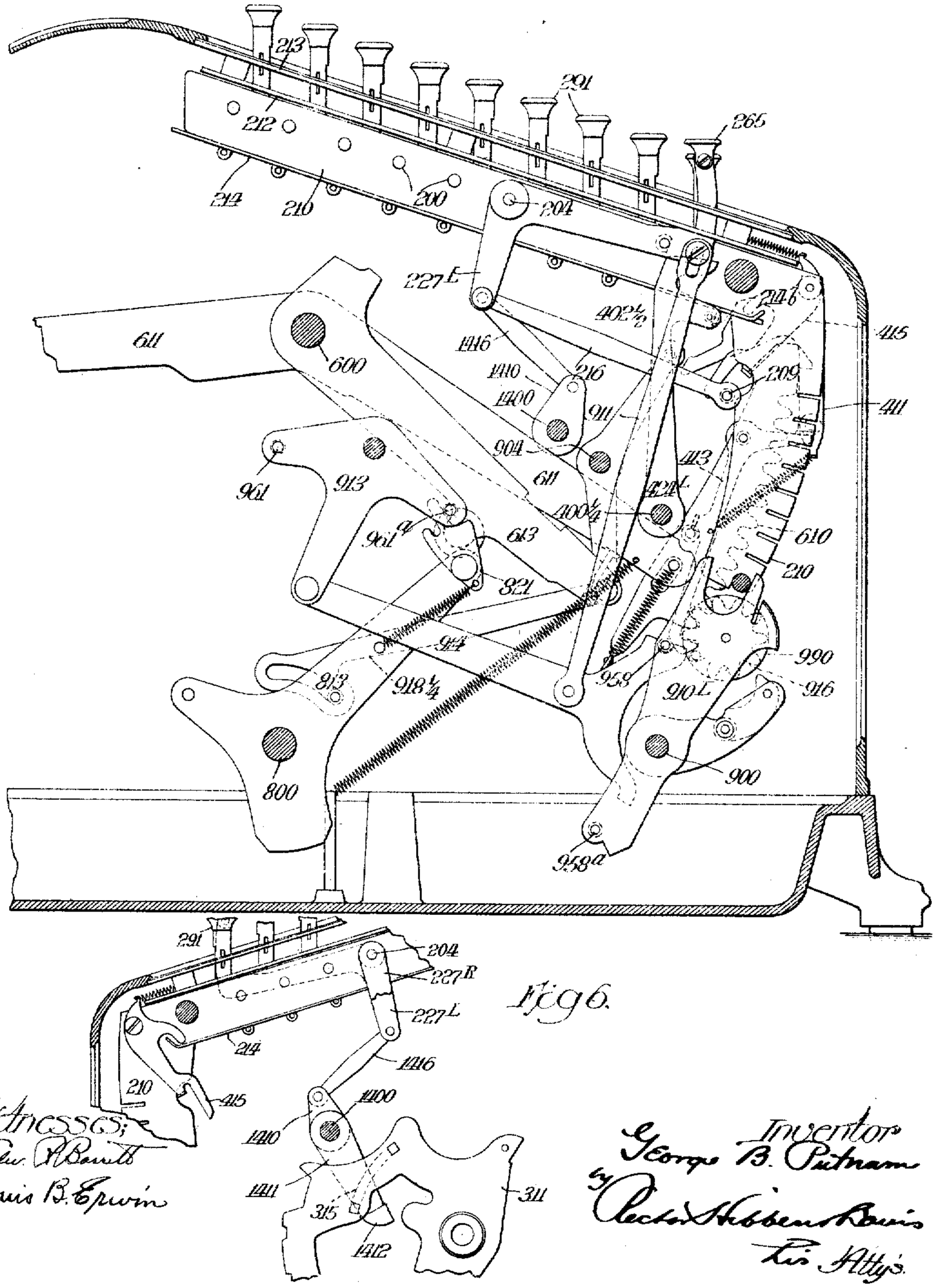


Fig 6.

Witnesses;
Edw. A. Bartlett
Louis B. Erwin

Inventor
George B. Putnam
by Peck, Hobens & Davis
his Atty's.

UNITED STATES PATENT OFFICE.

GEORGE B. PUTNAM, OF SEARSPORT, MAINE, ASSIGNOR TO BURROUGHS ADDING MACHINE COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

ADDING-MACHINE.

985,284. Specification of Letters Patent. Patented Feb. 28, 1911.

Application filed February 18, 1905. Serial No. 246,266.

To all whom it may concern:

Be it known that I, GEORGE B. PUTNAM, residing at Searsport, in the county of Waldo and State of Maine, have invented certain new and useful Improvements in Adding-Machines, of which the following is a specification.

My invention relates to adding machines, and is more particularly designed as an improvement upon what is commonly known as the Burroughs adding machine, substantially as illustrated and described, for instance, in Letters Patent of the United States, Numbers 504,963 and 505,078, issued to William S. Burroughs on September 12th, 1893, although, as will be understood, my invention is not limited, in its application, to such particular type of machine, but may be embodied and incorporated in adding machines of similar character and used for similar purposes.

As is well known, an adding machine of the type to which my invention has more particular reference, and in connection with which I have chosen to illustrate and describe my invention, is adapted to print, list, and add or accumulate individual items, and to total the same. In the Burroughs machine in connection with which my invention will now be described, the individual items are added or accumulated by the machine, and the total thereof may be taken by the operator—in the present instance, by simply depressing a total key or button which brings into operation the totaling and clearing mechanism, with the result that the total, as it appears on the adding wheels, is transferred to the printing mechanism, and caused, in the operation of the machine, to be imprinted upon the paper at the foot of the list of individual items. In this type of machine, moreover, when a total is taken, the construction is such that the machine is at the same time "cleared"—that is to say, after the total is taken or imprinted as stated, the accumulating devices or adding wheels are set to zero or "clear" position, ready to accumulate subsequent individual items. The printing of a total, that is a grand total, always insures the clearing of the machine and puts it into condition for receiving and accumulating other individual items, and it is the object of my invention to indicate to the operator by a visual indicator or signal or otherwise the fact whether the machine is clear or not, with the result that the operator at a mere glance, may be advised as to whether the machine is clear and if so he may at once proceed with his work without preliminarily going through any operation of taking a total or observing the adding wheels. The arrangement and construction of my signal is such that if the machine has not been cleared—that is to say, if an item or an accumulation of items has been left in the machine, the fact is at once indicated to the operator who is thus notified to clear his machine before beginning his work. In the present instance, the visual signal is under the control of the clearing mechanism, whose operation, in clearing the machine, resets the signal to "clear" position, such signal remaining in "non-clear" or danger position so long as any amount remains in the machine, and until the clearing mechanism is operated.

In the drawings, Figure 1 is a plan view of an ordinary Burroughs adding machine with my signal device embodied therein; Fig 2 a sectional elevation taken just inside of the right-hand side frame of the machine; Fig. 3 a detail view of the different parts of the signal device, together with some of the old parts of a Burroughs machine, with which the new parts are directly concerned; Fig. 4 a detail view of the pin or stud on one of the movable parts of the machine for causing a re-setting of the signal device to "clear" position; Fig. 5 represents a partial left-side elevation of the machine; and Fig. 6 is a detail of certain connections seen from the right hand side of the machine.

The Burroughs machine, in connection with which I have chosen to illustrate and describe my invention is so well known, both as to construction and mode of operation as not to require any detailed description and moreover, as my signal device is, in the present instance, an improvement upon or attachment to the machine and to machines of that general type, only those parts of the machine will be referred to which are directly concerned with the operation of the improvement or attachment.

The key-board of the machine has a plurality of rows of keys, 221, extending from front to rear of the machine, the nine keys in each row representing the nine digits, and the respective rows representing different

denominations increasing from right to left. The total key or button, 265, is located at the left-hand side of the machine (Fig. 1) and is operatively connected with a totaling and clearing mechanism in such manner as to permit a total to be taken and the machine to be cleared whenever the total button is depressed and kept depressed throughout a full operation of the operating handle or lever. This operating lever, 367, is arranged at the right-hand side of the machine and actuates the main shaft, 300, from which the power is transferred or communicated to the various working parts of the machine.

Whenever any one of the keys in any row is depressed or set by the operator, the sliding bar, 214, corresponding with that row (there being one of these bars or plates for each row of keys) is moved rearwardly, that is to the right in Fig. 2 and away from the operator as he stands at the front of the machine, with the result that the front hook-shaped end, 214ª, of the operated bar will contact with and rock the retainer, 415, thereby releasing its lower end from locking engagement with the notch in its rack, 210, (Figs. 2 and 3), so that such rack will be free to fall, in the operation of the machine, a distance corresponding in value with the particular key depressed.

The depressing of any key and the consequent sliding of the corresponding bar, 214, as above stated, also shifts rearwardly, a bail comprising a pair of rocking arms, 424, one at each side of the machine and connected together by a transverse universal rod, 402½, which is arranged adjacent to the forward ends of all of the sliding bars, 214, and arranged to be rocked rearwardly, that is to the right in Fig. 2 by the movement of any one of the bars, 214. In the present instance, as usual in the Burroughs machine, each sliding bar has a depending lug, 214ᵇ, which, when such bar is slid to the right in the setting of any key corresponding to its row of keys, engages the universal rod, 402½, and rocks it to the right. This bail constitutes the means for locking the clearing mechanism, as is well known to those familiar with the Burroughs machine, it being understood that whenever any key or keys are set on the key-board, the movement is at once communicated to the bail whose arm, 424, on the left-hand side of the machine is brought in position to interfere with the depression of the total button or key and the consequent operation of the totaling and clearing mechanism.

Another part of the ordinary Burroughs machine concerned in the operation of my attachment is the lever or arm, 1411, adapted to lock the total button in depressed or operative position after the initial movement of the operating handle and serving to hold that button and consequently the clearing mechanism controlled thereby, in such operative position throughout the forward stroke of the handle. As shown in Fig. 2, this arm, 1411, is secured to and suspended from a rock shaft, 1400, which extends transversely of the machine and is operatively connected with the total button. The lower end of the arm, 1411, terminates in and is provided with a block or lug, 1412, which coöperates with the usual lug, 315, arranged on the inner side of the oscillating sector, 311, as indicated in dotted lines in Fig. 2. This sector, 311, is secured to the main shaft, 300, of the machine, which shaft has its inner bearing in the triangular plate, 310 and together with the parallel arm, 312, also mounted on the main shaft, (Fig. 4) is arranged to transmit motion to the movable parts of the machine through the pitman connection, 366, in the usual and well known manner. The said rock shaft 1400 carries an upstanding arm 1410 (see Fig. 6) at its left-hand end connected by a link 1416 with the depending arm of the usual bell crank lever 227L which is secured to the left-hand end of a transverse rock shaft 204, (see Fig. 5) and on which the total button 265 is mounted. Said bell crank lever as usual has a slot-and-pin connection with a link 911, the latter being connected with the usual pitman 914 for regulating the periods of engagement between the pinions 916 of the accumulator and the actuating racks 610. Said pitman is connected at its rear end with one arm of a three armed lever 913 carrying studs 961 and 961ª arranged to be alternately operated upon by a wipe pawl or plate 821. The latter is pivotally mounted upon the upper end of an oscillating arm or lever 813 whose movements accompany that of the operating handle of the machine except that the direction of movement is reversed. The forward end of the pitman is branched for engagement with studs 958 and 958ª on one side plate 910L of the rocking frame in which the accumulator is carried. Normally the upper branch of the pitman engages with the upper stud 958, so that reciprocations of the pitman will move the accumulator pinions first out of and then into engagement with the operating rack 610. When the total key 265 is depressed this upper branch of the pitman is disengaged from the stud 958 so that during the forward stroke of the operating handle the accumulator pinions remain in mesh with the racks. When the handle is moved rearwardly with said key still depressed the lower branch of the pitman acts against the stud 958ª and the accumulator pinions are carried out of engagement with their actuating racks in the usual and well known manner. If a subtotal is desired the total key is released before the operating handle starts on its rearward journey, with the result

that no action of the pitman against the stud 958ª takes place and the accumulator pinions remain in mesh with their actuating racks. The latter are as usual carried upon the forward ends of the levers 611 independently journaled upon a central cross shaft 600 and carrying at their rear ends sets of type 618 as shown in Fig. 2.

The numeral 614 designates the usual restoring frame or bail which extends under all of the levers 611 and whose retreat, accompanying the forward stroke of the operating handle, permits the levers to drop. In itemizing operations they drop distances determined by stops set by depressions of amount keys in the customary way. When taking a total of course there is no depression of amount keys. The extent of movement of the racks is then determined by stops which limit backward rotation of the accumulator pinions to positions where zeros show through the accumulator sight openings. It has been hereinbefore described that individual rack latches 415 are displaced by rearward movement of the sliding bars 214 which the amount keys actuate. When a total is to be taken all the latches are simultaneously displaced by a universal rod 209 carried by links 216, the latter being connected with the arm 227R and the bell crank 227L respectively.

The parts above described are those which are usual and well known in the ordinary Burroughs machine and my invention, which is associated or concerned with such parts more particularly, will now be explained.

As hereinbefore stated, the purpose of my invention is to provide a visual signal to indicate the fact whether or not the machine is "clear" and as such signal is under the control of the clearing mechanism, I utilize, in the operation of my signal, the movement of the parts above described, as operated or brought into operation by the total button, as well as the parts operated in the setting of the keys or any one of them. In the present instance, the signal proper consists of a plate or strip, A, preferably slightly curved and held projected slightly above the top plate, 213, of the key-board. The signal is provided on its upper face in longitudinal arrangement with the letters "Clear" and adapted to coöperate with a case, B, secured to the top plate of the key-board, as seen in Figs. 2 and 3, and provided with a series of five sight openings, *b*, with the result that when the signal is in one position, as shown in Fig. 1, the word "Clear" will be exhibited through said openings, whereas when the signal is in another position the letters of said word will be concealed by the case and the intermediate spaces of the signal between said letters will be exposed or exhibited through such sight openings. By preference, I provide such spaces with a contrasting color, such as red, to indicate danger or non-clear position. For convenience, I will hereinafter designate the position of the signal as indicated in Fig. 1, as the "clear" position and the other position as the "non-clear" position.

The signal, A, is carried at the upper end of an arm, C, which extends through longitudinal slots, 212ª and 213ª, of the two plates, 212 and 213, respectively of the key-board (Fig. 3) in order to accommodate the movement of such signal arm. This signal arm which is pivoted or loosely mounted at its lower ends upon the shaft, 334, is provided with a spring, *c*, which tends, at all times, to draw and hold the signal arm and its signal to "non-clear" position, but such action is restrained, when the machine is "clear", by means of an interference which is under the control of, and operated by, any one of the keys. In the present instance, this interference consists of an irregular-shaped pivoted latch, D, arranged at the right-hand side of the machine, and arranged to swing loosely upon the shaft or stud, 253½. The rearward or right-hand end (Figs. 2 and 3) of this latch extends adjacent the signal arm and is provided at such end with a notch or shoulder, *d*. This shoulder is adapted to coöperate with a small pin or stud, c^1, extending laterally and outwardly from the signal arm, with the result that when the latch is in its normal position, as shown in full lines in Figs. 2 and 3, the signal arm is held to clear position. This latch is held to its normal position with yielding pressure, as by means of the coiled spring, d^1. The right-hand arm, 424, is provided with a stud or pin, 424ª, toward its upper end and in such position as to bear against the lower edge of the latch, which is downwardly curved adjacent such pin or stud, in such manner that the latch will be raised whenever the bail, of which the arms, 424, form parts, is rocked rearwardly.

It will be understood that whenever any one of the keys is depressed the bail will be rocked rearwardly and the arms, 424, will be correspondingly moved, with the result that the stud, 424ª, will raise the latch, D, to the position indicated in dotted lines in Fig. 3 and the shoulder, *d*, will be lifted from engagement with the stud or pin, c^1. The interference provided at this point against the tendency of the signal arm to move forwardly is now removed, but such arm is restrained against movement at another point by another interference under the direct control of the clearing mechanism, as hereinafter set forth.

The signal arm near its lower end and above its pivotal point is provided with a rearwardly extending bar or arm, E, whose extreme rearward end, which is somewhat narrowed, is doubled back upon itself so as

to form a substantially longitudinal slot, *e*, which is open at its forward end and at its lower edge, as clearly illustrated in Figs. 2 and 3. The other end of this slotted arm is pivotally connected with the signal arm in a suitable manner at the point, e^1. This slotted bar or arm is adapted to coöperate with a movable part of the machine, and to this end and in the present instance, I utilize the movement of the sector, 311, and its arm or plate, 312, and as indicated in Fig. 4, I extend the usual pin, 351, inwardly beyond the inner plate or arm, 312, to such position as to coöperate under certain conditions, with the slotted arm, E.

The slotted arm or bar E is sustained in proper position by means of a pivoted or swinging arm F, whose upper end is arranged to bear against the lower edge of the bar E and whose lower end is pivoted on the stud *f* arranged near the inner or upper end of the usual depending locking arm 1412. The arm F is held toward a vertical position with its end pressing against the intermediate portion of the bar E with yielding pressure, as by means of the coiled spring f^1, as seen in Figs. 2 and 3, with the result that when the operating handle is operated in the usual manner and after the same has been drawn forward a sufficient distance to disengage the stud or pin 351 from the slot *e*, the bar E will be forced upwardly out of coöperative relationship with any moving part of the machine, such as the stud 351 in the present instance. This bar E, in connection with the stud 351, constitutes a second interference for restraining the signal arm C from indicating "non-clear" position even though the latch D which constitutes the first interference, may have been moved to non-interfering position in the setting up of an amount on the key-board of the machine. The arrangement of the parts is such that when the operating handle and its sector 311 are in normal position, the stud or pin 351 bears against the closed end of the slot E and thereby holds the signal arm to "clear" position but, as is now evident from the description already given, upon the initial forward movement of the operating handle and the consequent forward movement of the stud 351 (to the left in Fig. 3) the signal arm, being no longer restrained by such second interference will move to "non-clear" position as indicated in dotted lines in Fig. 3, assuming that the latch D, that is, the first interference, has been moved to non-interfering position as indicated by the dotted lines in Fig. 3. As soon as the pin or stud 351 has been moved forwardly to a sufficient extent to clear the slot *e*, the constant pressure of the arm F will force or rock the arm or bar E upwardly, that is upwardly as to its rearward or slotted end, with the result that such bar is removed from coöperative relationship with the pin or stud 351, whereby the latter upon its return stroke will not reenter the slot E but will take its position at or below the lower edge of that bar. Consequently, the return of the operating handle and its sector to normal position will not restore the signal and its associated parts to normal or "clear" position, but such signal will remain in "non-clear" position so long as an item or accumulation of items remains in the machine.

Assuming that a number of items have been set up in the machine and the first interference or latch D has been operated to dotted line position, as shown in Fig. 3, and assuming also that the operating handle has operated a full stroke, that is forward and back again, the signal device has shifted or oscillated in a forward direction so that the plate A or signal proper no longer exhibits the word "Clear" through the sight openings in the case B, but indicates danger or "non-clear" position, such as for instance, red spaces which may be formed or provided on the signal plate A between the letters of the word "Clear." The operator can now observe by simply glancing at the key-board that the machine is no longer "clear." Assuming that the operator now desires to take a total or desires to "clear" the machine for further work, after observing from the signal that the machine is not "clear," the operator depresses the total key 265 and keeps it depressed during a full or complete stroke of the operating handle 367, whereby the machine is cleared and the total taken in the usual and well known manner, it being understood moreover, that the usual extra or spacing stroke of the operating handle is taken before the total key is depressed. When the total key is depressed and the "clearing" mechanism operated, the locking arm 1411, which is operatively connected with the total key in the well known manner, is swung in a clockwise direction when the machine is viewed on the right-hand side, as in Figs. 2 and 3, with the result that the lug or block 1412 at its lower end engages with the lug 315 on the inner side of the sector 311, for the purpose of holding the total key and its connections depressed independently of the operator during the forward stroke of the operating handle. Inasmuch as the swinging arm F is mounted upon the locking lever 1411, the upper end of such arm F will be withdrawn from coöperative relationship with the bar E the hub of the signal arm C limiting movement of the arm F under the impulse of the spring f^1 and such bar will thereupon fall by gravity into such a position that the stud or pin 351 will enter the slot E upon the return stroke of

the sector 311. Such pin moves along the slot E and bearing against the closed end thereof moves the bar E to the right (Figs. 2 and 3), and thereby moves the signal arm and signal in the same direction against the tension of its spring, so that such signal will now exhibit or indicate "clear," as shown in Fig. 1. The first interference or latch D will also assume its normal position of interference by dropping down in place with its shoulder against the stud c^1 of the signal arm so that such arm will be held or restrained to its normal or "clear" position, as indicated in dotted lines in Fig. 3. The machine is now "clear" and that fact is indicated by the visual indication or signal which is in position so as to be easily seen by the operator without any effort upon his part.

It will be understood that after the signal moves to "non-clear" position it remains in that position until the "clearing" mechanism is operated with the result that so long as any amount or item remains in the machine, that is so long as the machine is not "clear", the signal will indicate "non-clear." Moreover, it will be understood that when the machine is operated for the first item, the bar E is released from its engagement or coöperative relationship with the stud or pin 351 and that during the operation of the machine for all subsequent items, such bar E is sustained in a plane above the plane of movement of the pin or stud 351 and remains in such sustained position so long as the locking arm 1411 is normal, but when such locking arm is operated, as hereinbefore stated, the arm F which served to sustain the bar E is swung or moved bodily with the locking arm and the bar E thereby restored to coöperative relationship with the pin or stud 251, which, at the completion of the rearward movement of the handle, serves to restore the signal arm to its normal or "clear" position in the manner hereinbefore explained.

It is evident from the foregoing description that my signal device positively indicates the faot whether the machine is "clear" or not and that such signal indicates "non-clear" position so long as any item remains in the machine. Moreover, my signal device tends to show "non-clear" position at all times but is restrained by the two interferences hereinbefore referred to, the first interference being directly under the control of the key-mechanism and the second interference under the control directly of a part of the machine which is operated at every stroke of the handle, while the restoration of such signal device is under the direct control of the "clearing" mechanism of the machine, so that the signal is restored and can be restored only when the "clearing" mechanism is operated. The signal is therefore, essentially under the control of the "clearing" mechanism.

I claim:

1. In a machine of the character described, the combination with accumulating mechanism and means for adjusting the same for a "clearing" operation, of means adjustable as an accompaniment to such "clearing" adjustment to effect in the ensuing operation an indication denoting that the machine has been "cleared."

2. In a machine of the character described, the combination with accumulating mechanism and means for adjusting the same for a "clearing" operation, of a "clear" signal, and means adjustable as an accompaniment to such "clearing" adjustment to render said "clear" signal effective.

3. In a machine of the character described, the combination with accumulating mechanism and means for adjusting the same for a "clearing" operation, of a visual "clear" signal, and means adjustable as an accompaniment to such "clearing" adjustment to display said "clear" signal.

4. In a machine of the character described, the combination with accumulating mechanism and means for adjusting the same for a "clearing" operation, of "clear" and "non-clear" signals alternately effective, and means adjustable as an accompaniment to such "clearing" adjustment as to render said "clear" signal effective.

5. In a machine of the character described, the combination with accumulating mechanism and means for adjusting the same for a "clearing" operation, of visual "clear" and "non-clear" signals, and means adjustable as an accompaniment to such "clearing" adjustment to dispay said "clear" signal.

6. In a machine of the character described, the combination with accumulating mechanism and means for adjusting the same for a "clearing" operation, of "clear" and "non-clear" signals alternately effective, means adjustable as an accompaniment to such "clearing" adjustment to render said "clear" signal effective, and means for automatically rendering effective the "non-clear" signal in the next ensuing itemizing operation.

7. In a machine of the character described, the combination with accumulating mechanism and means for adjusting the same for a "clearing" operation, of visual "clear" and "non-clear" signals, means adjustable as an accompaniment to such "clearing" adjustment to display said "clear" signal, and means for automatically displaying the "non-clear" signal in the next ensuing itemizing operation.

8. In an adding machine, the combination with adding and printing and clearing mechanism, of a signal for indicating whether the machine is "clear" or not, said signal tending to indicate "non-clear" but

prevented from so doing under control of the adding mechanism, and means for restoring said signal to "clear" position upon operation of the clearing mechanism.

9. In an adding machine, the combination with adding and printing and clearing mechanism, of a signal for indicating whether the machine is "clear" or not, said signal tending to indicate "non-clear" but restrained under control of the adding mechanism, and means for adjusting the mechanism for "clearing" the machine and restoring said signal to "clear" position.

10. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether the machine is "clear" or not, said signal tending at all times to indicate "non-clear" but restrained under control of the adding mechanism, and means for adjusting the mechanism for taking a total and "clearing" the machine and for restoring said signal to "clear" position.

11. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether the machine is "clear" or not, said signal being spring pressed in one direction and tending to indicate "non-clear," and means for adjusting the mechanism for "clearing" the machine and operating the signal to indicate "clear" after such clearing.

12. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether or not the machine is "clear" and tending at all times to indicate "non-clear," but restrained when the machine is "clear," means for so restraining the signal but arranged to release the signal to indicate "non-clear" when the adding mechanism is operated for the first item, and means for adjusting the mechanism for "clearing" the machine and restoring the signal to "clear" position.

13. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether or not the machine is "clear" and tending at all times to indicate "non-clear," but restrained when the machine is "clear," means for so restraining the signal but arranged to release the same to permit it to indicate "non-clear" when the adding mechanism is operated for the first item, means for adjusting the mechanism for "clearing" the machine, and means coöperating with the signal and controlled by the "clearing" mechanism adjusting means to restore the signal to "clear" position when such "clearing" mechanism is operated.

14. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether or not the machine is "clear" and tending at all times to indicate "non-clear," but restrained when the machine is "clear," means for so restraining the signal but arranged to release the same to permit it to indicate "non-clear" when the adding mechanism is operated for the first item, means for adjusting the mechanism for "clearing" the machine, and means adapted to be moved at the operation of the "clearing" mechanism adjusting means into the path of a moving part of the machine and coöperating with the signal to restore the latter to "clear" position when the "clearing" mechanism is operated.

15. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether or not the machine is "clear" and tending at all times to indicate "non-clear," but restrained when the machine is "clear," a latch arranged to restrain the signal, means for adjusting the mechanism for "clearing" the machine, and means coöperating with the signal and controlled by the "clearing" mechanism adjusting means for restoring the signal when the machine has been "cleared" and for bringing the same within the restraint of the latch.

16. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether or not the machine is "clear" and tending at all times to indicate "non-clear" but restrained when the machine is "clear," means for so restraining the signal but arranged to release the same to permit it to indicate "non-clear" when the adding mechanism is operated for the first item, means for adjusting the mechanism for "clearing" the machine, and an arm coöperating with the signal and controlled by the "clearing" mechanism adjusting means, said arm being moved into the path of a moving part of the machine when the "clearing" mechanism adjusting means is operated and thereby actuated to restore the signal to "clear" position.

17. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether or not the machine is "clear" and tending at all times to indicate "non-clear"; but restrained when the machine is "clear"; means for so restraining the signal but arranged to release the same to permit it to indicate "non-clear" when the adding mechanism is operated for the first item, means for adjusting the mechanism for "clearing" the machine, and an arm coöperating with the signal and held toward a movable part of the machine, said "clearing" mechanism adjusting means normally restraining said arm from engagement with said part but when operated, arranged to

permit such engagement and the consequent actuation of the arm and the signal to "clear" position.

18. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether or not the machine is "clear" and tending at all times to indicate "non-clear" but restrained when the machine is "clear," means for so restraining the signal but arranged to release the same to permit it to indicate "non-clear" when the adding mechanism is operated for the first item, means for adjusting the mechanism for "clearing" the machine, and an arm coöperating with the signal and tending to move toward a movable part of the machine, said "clearing" mechanism adjusting means normally in position to hold said arm from engagement with said part, but, when operated, removed from such position to permit said engagement and cause the signal to be restored to "clear" position.

19. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether or not the machine is "clear" and tending at all times to indicate "non-clear" but restrained when the machine is "clear", means for so restraining the signal but arranged to release the same to permit it to indicate "non-clear" when the adding mechanism is operated for the first item, means for adjusting the mechanism for "clearing" the machine, a slotted bar coöperating with the signal and under the control of the "clearing" mechanism adjusting means, and a projection arranged on a movable part of the machine and adapted to engage said slotted bar and move it to restore the signal to "clear" position whenever the "clearing" mechanism is operated.

20. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether or not the machine is "clear" and tending at all times to indicate "non-clear" but restrained when the machine is "clear", means for so restraining the signal but arranged to release the same to permit it to indicate "non-clear" when the adding mechanism is operated for the first item, means for adjusting the mechanism for "clearing" the machine, an arm or bar cooperating with the signal and under the control of the "clearing" mechanism adjusting means, said arm having a slot open at one end, and a pin or stud arranged on a movable part of the machine and into the path of whose movement the slotted arm is adapted to move whenever the "clearing" mechanism adjusting means is operated, whereby said arm or bar is moved together with the signal to the latter's "clear" position.

21. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether or not the machine is "clear" and tending at all times to indicate "non-clear" but restrained when the machine is "clear", and a pair of interferences coöperating with said signal and arranged to restrain its movement to "non-clear" position, one interference being released when the adding mechanism is prepared for adding the first item and the second interference being released when the adding mechanism is operated.

22. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether or not the machine is "clear" and tending at all times to indicate "non-clear" but restrained when the machine is "clear", means for so restraining the signal but arranged to release the same to permit it to indicate "non-clear" when the adding mechanism is operated for the first item, means for adjusting the mechanism for "clearing" the machine, a bar coöperating with the signal and arranged to be actuated by a moving part of the machine to restore the signal to "clear" position, an arm coöperating with the bar and tending to interfere with its operation, and means for actuating said arm and thereby remove its interference when a total is to be taken.

23. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether or not the machine is "clear" and tending at all times to indicate "non-clear" but restrained when the machine is "clear", means for so restraining the signal but arranged to release the same to permit it to indicate "non-clear" when the adding mechanism is operated for the first item, means for adjusting the mechanism for "clearing" the machine, a bar coöperating with the signal and arranged to be actuated by a moving part of the machine to restore the signal to "clear" position, and an arm operated in the act of "clearing" the machine and normally tending to interfere with the operation of said bar but removed from its position of interference, when the machine is to be "cleared".

24. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether or not the machine is "clear" and tending at all times to indicate "non-clear" but restrained when the machine is "clear," means for so restraining the signal but arranged to release the same to permit it to indicate "non-clear" when the adding mechanism is operated for the first item, means for adjusting the mechanism for "clearing" the machine, a bar coöperating

with the signal and arranged to be actuated by a moving part of the machine to restore the signal to "clear" position, and an arm operating on said bar with a yielding pressure tending to remove it from such a position as to be operated, said arm being operated simultaneously with the adjustment for "clearing" of the machine to remove it from a position of interference with the bar.

25. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether or not the machine is "clear" and tending at all times to indicate "non-clear" but restrained when the machine is "clear," means for so restraining the signal but arranged to release the same to permit it to indicate "non-clear" when the adding mechanism is operated for the first item, means for adjusting the mechanism for "clearing" the machine, a bar coöperating with the signal and arranged to be actuated by a moving part of the machine to restore the signal to "clear" position, an arm which is spring pressed to operate on said bar and thereby tend to remove it from such a position as to be operated and so removing such bar and permitting the signal to move to show "non-clear" when the machine is operated for the first item, and means coöperating with the arm for eliminating its interference with the bar whenever the machine is to be "cleared."

26. In an adding machine, the combination, with adding and printing and clearing mechanism, of a signal for indicating whether or not the machine is "clear" and tending at all times to indicate "non-clear" but restrained when the machine is "clear," means for so restraining the signal but arranged to release the same to permit it to indicate "non-clear" when the adding mechanism is operated for the first item, means for adjusting the mechanism for "clearing" the machine, a bar coöperating with the signal and arranged to be actuated by a moving part of the machine to restore the signal to "clear" position, and a spring pressed arm bearing against the bar and normally tending to remove the latter from such a position as to be operated by the machine, said arm being controlled by the "clearing" mechanism adjusting means and operated simultaneously therewith for eliminating its interference with said bar.

27. In an adding machine, the combination with adding and printing and clearing mechanism and with "clearing" adjusting means therefor of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear" a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm but which is removed when the adding mechanism is prepared for adding the first item, and a bar operatively connected with the signal arm and actuated by a movable part of the machine, said bar acting as a second interference to restrain the signal arm when the machine is "clear."

28. In an adding machine, the combination with adding and printing and clearing mechanism and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear," a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm but which is removed when the adding mechanism is prepared for adding the first item, and a bar pivoted to the signal arm and actuated by a moving part of the machine, said bar normally restraining the signal arm and forming the second interference.

29. In an adding machine, the combination with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear," a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm, but which is removed when the adding mechanism is prepared for adding the first item, a slotted bar pivoted to the signal arm, and a pin or stud carried by a moving part of the machine and arranged to engage the slot in the bar and to normally restrain the bar and the signal arm, such bar forming the second interference.

30. In an adding machine, the combination with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear," a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference, which restrains the signal arm, but which is removed when the adding mechanism is prepared for adding the first item, a slotted bar pivoted to the signal arm, a pin or stud carried by a moving part of the machine and arranged to engage the slot in the bar and to normally restrain the signal arm, said bar forming the second interference, and an arm bearing against said bar and tending to withdraw the latter from its operative connection with the stud or pin.

31. In an adding machine, the combination with adding and printing and clearing

mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear" a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm but which is removed when the adding mechanism is prepared for adding the first item, a slotted bar pivoted to the signal arm, a pin or stud carried by a moving part of the machine and arranged to engage the slot in the bar and to normally restrain the signal arm, said bar forming the second interference, and a spring pressed arm bearing against said bar to force it from operative connection with the stud or pin and controlled by the "clearing" adjusting means.

32. In an adding machine, the combination with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear," a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm but which is removed when the adding mechanism is prepared for adding the first item, a slotted bar pivoted to the signal arm, a pin or stud carried by a moving part of the machine and arranged to engage the slot in the bar and to normally restrain the signal arm, said bar forming the second interference, and an arm bearing against said bar with a yielding pressure to withdraw it from operative connection with the stud or pin and moved simultaneously with the "clearing" mechanism to remove it from interference with said bar.

33. In an adding machine, the combination with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear," a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm but which is removed when the adding mechanism is prepared for adding the first item, a slotted bar pivoted to the signal arm, a pin or stud carried by a moving part of the machine and arranged to engage the slot in the bar and to normally restrain the signal arm, said bar forming the second interference, and an arm bearing against said bar to withdraw it from operative connection with the stud or pin and mounted on and movable with a moving part of the "clearing" mechanism to remove it from interference with the bar.

34. In an adding machine, the combination with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear," a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference, which restrains the signal arm, but which is removed when the adding mechanism is prepared for adding the first item, a slotted bar pivoted to the signal arm, a pin or stud carried by a moving part of the machine and arranged to engage the slot in the bar and to normally restrain the signal arm, said bar forming the second interference, an arm bearing against the bar for forcing it from coöperative relation with the stud or pin, and an arm 1411 movable with the "clearing" mechanism and arranged to operate the arm which bears against the bar.

35. In an adding machine, the combination with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear", a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference, which restrains the signal arm, but which is removed when the adding mechanism is prepared for adding the first item, a slotted bar pivoted to the signal arm, a pin or stud carried by a moving part of the machine and arranged to engage the slot in the bar and to normally restrain the signal arm, said bar forming the second interference, an arm bearing against the lower edge of the bar for forcing it from coöperative relation with the stud or pin, and a swinging arm 1411 movable whenever the "clearing" mechanism is operated and arranged to carry said arm which bears against the lower edge of the bar.

36. In an adding machine, the combination with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear", a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference, which restrains the signal arm, but which is removed when the adding mechanism is prepared for adding the first item, a slotted bar pivoted to the signal arm, a pin or stud carried by a moving part of the machine and arranged to en-

gage the slot in the bar to normally restrain the signal arm, said bar forming the second interference, a spring pressed arm normally tending to force said bar from coöperative relation with the stud or pin, and a swinging arm 1411 actuated by the "clearing" adjusting means and to which said spring pressed arm is pivoted.

37. In an adding machine, the combination with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the mechanism is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear", a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm but which is removed when the adding mechanism is prepared for adding the first item, keys for controlling the adding and printing mechanism and also said latch, and a second interference restraining said signal arm until the adding mechanism is operated for the first item.

38. In an adding machine, the combination with adding and printing and clearing mechanism and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear", a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm but which is removed when the adding mechanism is prepared for adding the first item, a series of keys of different values and denominations for controlling the adding and printing mechanism, operating connections for releasing said latch when any one of the keys is operated, and means constituting a second interference for restraining the signal arm until the adding mechanism is operated for the first item.

39. In an adding machine, the combination, with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear", a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm but which is removed when the adding mechanism is prepared for adding the first item, said latch being normally in position to prevent movement of the signal arm, but actuated to release the signal arm when the first item is set up on the machine, and means constituting a second interference for restraining the signal arm until the adding mechanism is operated for the first item.

40. In an adding machine, the combination, with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear", a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm, but which is removed when the adding mechanism is prepared for adding the first item, said latch being normally held in interfering position with a yielding pressure to prevent movement of the signal arm but actuated to release the signal arm when the first item is set up on the machine, and means constituting a second interference for restraining the signal arm, until the adding mechanism is operated for the first item.

41. In an adding machine, the combination with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear," a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm but which is removed when the adding mechanism is prepared for adding the first item, said latch being pivoted and normally in interfering position with respect to the signal arm but rocked from such position when the first item is set up on the machine, and means constituting a second interference for restraining the signal arm until the adding mechanism is operated for the first item.

42. In an adding machine, the combination with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear," a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm, but which is removed when the adding mechanism is prepared for adding the first item, said latch being spring pressed to interfering position, key mechanism for controlling the adding and printing mechanism and having connections for moving the latch from interfering position whenever any one of the keys is operated, and means constituting a second interference for restraining the signal arm until the adding mechanism is operated for the first item.

43. In an adding machine, the combination, with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating

whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear," a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm but which is removed when the adding mechanism is prepared for adding the first item, said latch being spring pressed to interfering position, key mechanism for controlling the adding and printing mechanism, a universal rod or bar actuated by the setting of any one of the keys and arranged to move the latch from interfering position, and means constituting a second interference for restraining the signal arm until the adding mechanism is operated for the first item.

44. In an adding machine, the combination with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear," a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm but which is removed when the adding mechanism is prepared for adding the first item, said latch being pivoted and spring pressed to interfering position, key mechanism for controlling the adding and printing mechanism, a bail actuated by the setting of any one of the keys and arranged, when moved, to rock the latch and move the same to non-interfering position, and means constituting a second interference for restraining the signal arm until the adding mechanism is operated for the first item.

45. In an adding machine, the combination, with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear," a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm but which is removed when the adding mechanism is prepared for adding the first item, said latch being pivoted and spring pressed to interfering position, key mechanism for controlling the adding and printing mechanism, a bail actuated by the setting of any one of the keys, and having a stud adapted to bear against the latch and rock the same to non-interfering position when the bail is operated, and means constituting a second interference for restraining the signal arm until the adding mechanism is operated for the first item.

46. In an adding machine, the combination with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear", a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm, but which is removed when the adding mechanism is prepared for adding the first item, said latch being pivoted at one end and, at its other end, arranged to interfere with the signal arm, key mechanism for controlling the adding and printing mechanism, a bail actuated by the setting of any one of the keys and provided with a projection arranged to contract the latch intermediate its length and move it to non-interfering position, and means constituting a second interference for restraining the signal arm until the adding mechanism is operated for the first item.

47. In an adding machine, the combination with adding and printing and clearing mechanism, and with "clearing" adjusting means therefor, of a signal for indicating whether or not the machine is "clear" and tending to indicate "non-clear" but restrained when the machine is "clear", a pivoted signal arm carrying the signal, a latch coöperating with the signal arm and forming a first interference which restrains the signal arm but which is removed when the adding mechanism is prepared for adding the first item, said latch being pivoted at one end and having a shoulder at its other end, a stud located on the signal arm and arranged to coöperate with said shoulder, key mechanism for controlling the adding and printing mechanism and also arranged to rock the latch to non-interfering position whenever any one of the keys is operated, and means constituting a second interference for restraining the signal arm until the adding mechanism is operated for the first item.

48. In an adding machine, the combination, with adding and printing mechanism and "clearing" adjusting means, of a case mounted on the machine within the vision of the operator, a signal arranged within the case, connections between the signal and the "clearing" adjusting means, and means for shifting the signal dependent upon an operation of said connections.

49. In an adding machine, the combination, with adding and printing mechanism, of a case mounted on the machine, within the vision of the operator, and provided with a sight opening, and a longitudinally movable signal arranged within the case and under the control of the said adding and printing mechanism, for alternately indicating through said sight opening "clear" and "non-clear" conditions of the machine.

50. In an adding machine, the combina-

tion, with adding and printing mechanism, of a case mounted on the machine within the vision of the operator, and provided with a series of sight openings, and a signal arranged within the case and having a series of marks or characters thereon which are exhibited through such openings in the different positions of the signal to indicate the fact whether or not the machine is "clear", said signal being controlled by the adding and clearing mechanism.

51. In an adding machine, the combination, with key controlled adding and printing mechanism, and with the key-board and having one or more sight openings, of a case mounted on the key-board, and a signal therein controlled by the said adding and printing mechanism for alternately indicating "clear" and "non-clear" conditions of the machine through the same opening or openings in said case.

52. In an adding machine, the combination with key controlled adding and printing mechanism and with a key-board having a slot, of a case fitting over said slot and provided with a sight opening, and a signal arranged within the case, and having operating connections extending through said slot to the adding and printing mechanism of the machine.

53. In an adding machine, the combination with key controlled adding and printing mechanism and with a key-board having a slot, of a case fitting over said slot and provided with a sight opening, a signal arranged within the case, and a signal arm connected at its upper end with the signal and extending through said slot, such signal arm being controlled and operated by the adding and clearing mechanism in its operations to indicate the fact whether or not the machine is "clear."

54. In an adding machine, the combination with key controlled adding and printing mechanism, and with a key-board having a slot, of a case fitting over said slot and provided with a sight opening, an oscillating signal arranged within the case, and operating connections extending through said slot and connected with the signal, said operating connections being controlled and operated by the adding and clearing mechanism to cause the signal to indicate the fact whether the machine is "clear" or not.

55. In an adding machine, the combination of printing and adding mechanism for printing individual items and accumulating and printing the total thereof, a special key requiring operation at the printing of a total, and means under the control of said key for alternately displaying indications to denote whether or not the machine is "clear".

56. In an adding machine, the combination of printing and adding mechanism for printing individual items and accumulating and printing the total thereof, a special key requiring operation at the printing of a total, a visual signal adapted to be displayed or concealed, and means under the control of said key for displaying said signal.

57. In an adding machine, the combination of printing and adding mechanism for printing individual items and accumulating and printing the total thereof, a special key requiring operation at the printing of a total, a signal tending to indicate "non-clear" condition of the machine and moved to such indication when the adding mechanism is operated for the first item, and connections between said key and signal for controlling and causing the return of the signal to "clear" position when the key is operated.

58. In an adding machine, the combination of manipulative amount-determining devices, adding mechanism, clearing mechanism, an index member, means for setting the latter by the clearing mechanism, and means for releasing said index member by the amount-determining devices.

59. In an adding machine, the combination of manipulative amount-determining devices, adding mechanism, clearing mechanism, a pivoted index member, means for setting the latter by the clearing mechanism, and means for releasing said index member by the amount-determining devices.

60. In an adding machine, the combination of manipulative amount-determining devices, adding mechanism, clearing mechanism, a pivoted spring drawn index member, means for setting the latter by the clearing mechanism, and means for releasing said index member by the amount-determining devices.

GEORGE B. PUTNAM. [L. S.]

Witnesses:
H. R. DYER,
A. H. NICHOLS.

Corrections in Letters Patent No. 985,284.

It is hereby certified that in Letters Patent No. 985,284, granted February 28, 1911, upon the application of George B. Putnam, of Searsport, Maine, for an improvement in "Adding-Machines," errors appear in the printed specification requiring correction as follows: Page 9, lines 43, 65, 88, and 111, the word "mechanism" should read *adjusting means;* page 12, lines 14–15, the words "and having one or more sight openings" should be stricken out, and inserted after the word "key-board," line 16, same page; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 28th day of March, A. D., 1911.

[SEAL.]

E. B. MOORE,

Commissioner of Patents.