W. E. SWALM.

ADDING MACHINE.

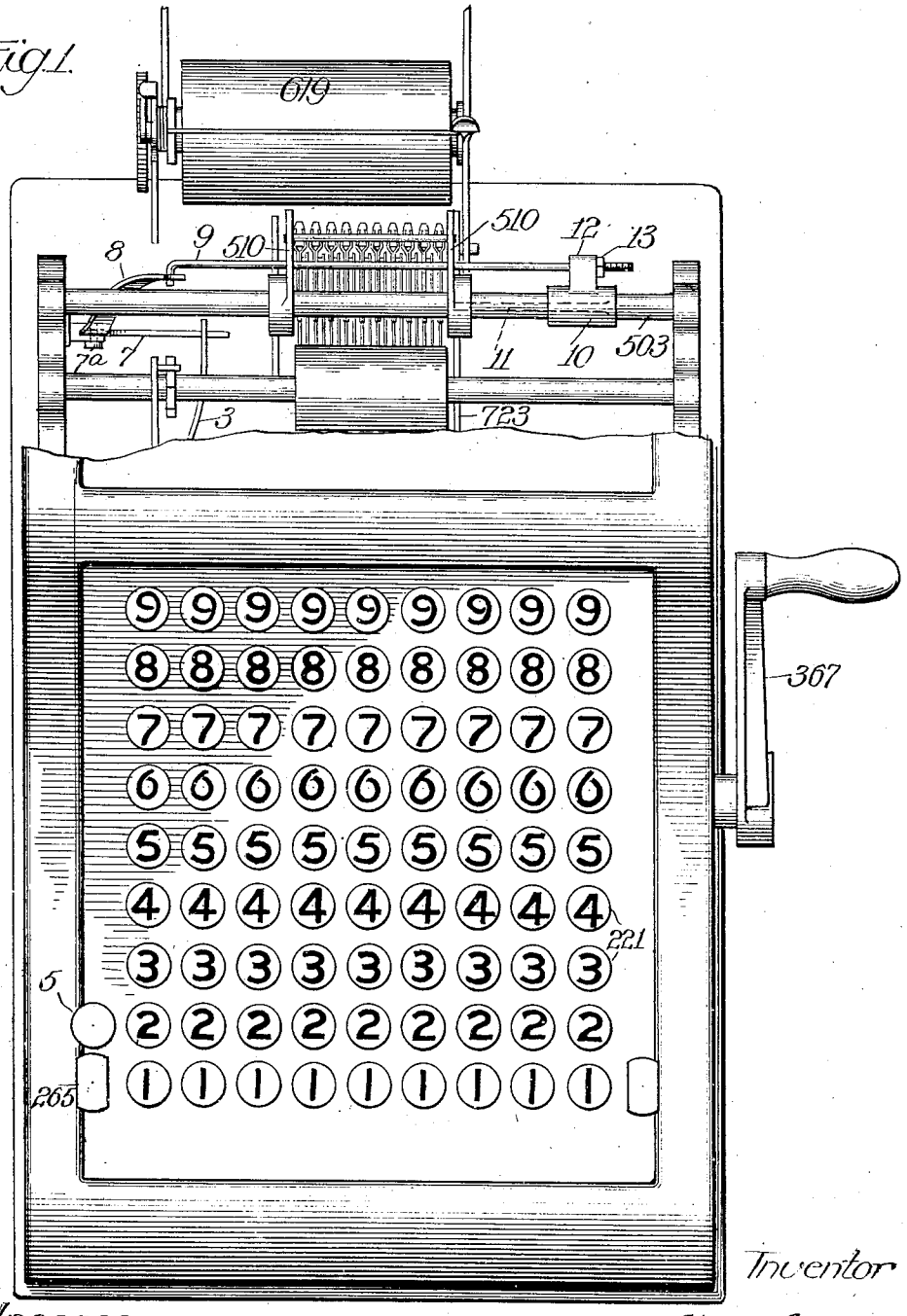
APPLICATION FILED MAY 2, 1904.

1,131,620.

Patented Mar. 9, 1915.

3 SHEETS—SHEET 1.

Fig. 1.



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Louis B. Erwin

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By Rector & Gibbon
His Att'ys.

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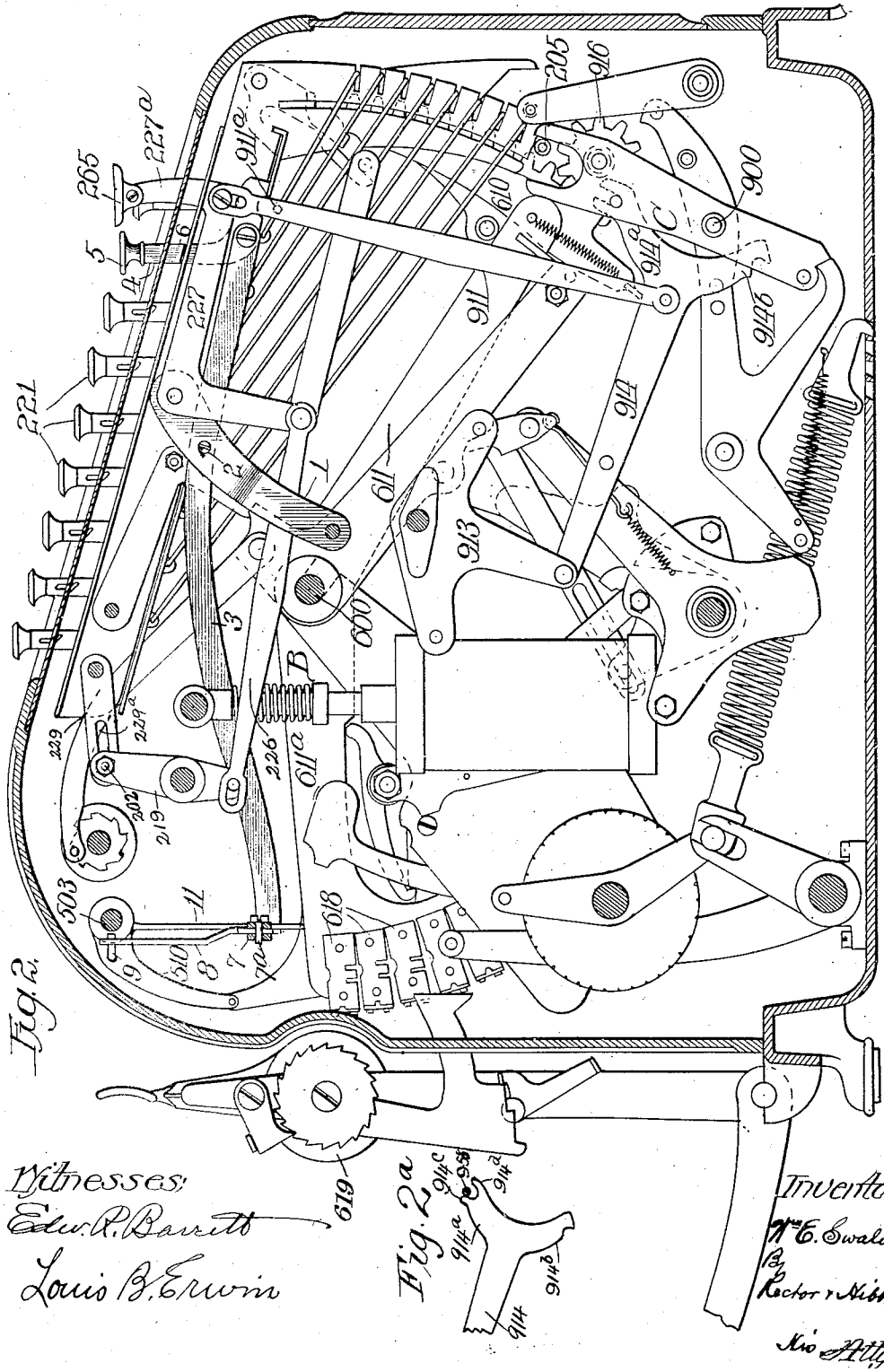


Fig. 2.

Fig. 2a

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3 SHEETS—SHEET 3.

Fig. 3.

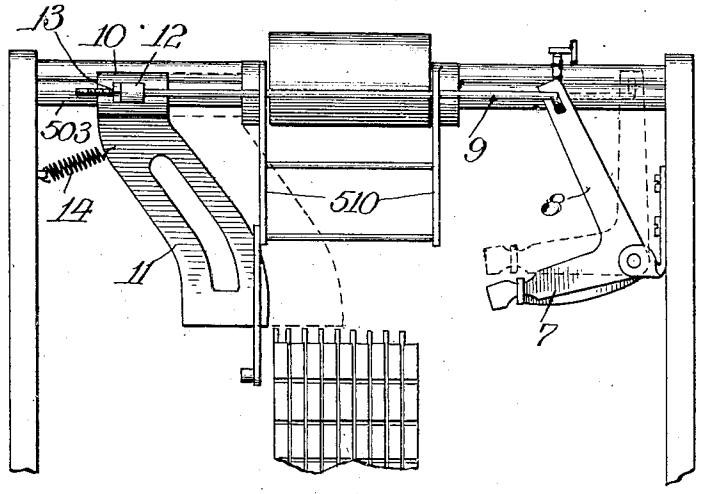


Fig. 4.

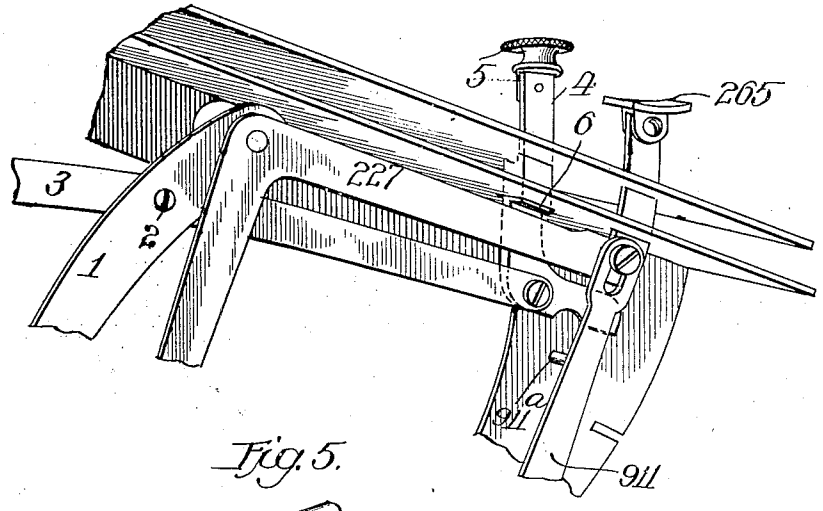
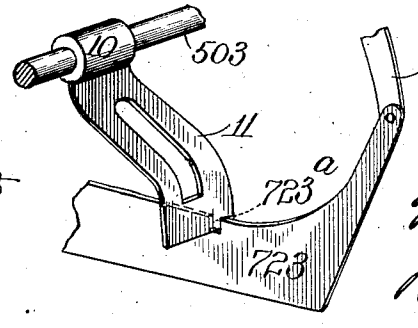


Fig. 5.



Witnesses;

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UNITED STATES PATENT OFFICE.

WILLIAM E. SWALM, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO BURROUGHS ADDING MACHINE COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

ADDING-MACHINE.

1,131,620. Specification of Letters Patent. Patented Mar. 9, 1915.

Application filed May 2, 1904. Serial No. 206,016.

To all whom it may concern:

Be it known that I, WILLIAM E. SWALM, a citizen of the United States, residing at Los Angeles, Los Angeles county, California, have invented certain new and useful Improvements in Adding-Machines, of which the following is a specification.

My invention relates to what are commonly known as adding machines by which individual items are printed, listed and added, and the object of my invention is to so arrange and adapt a machine of this character that the adding mechanism proper may be thrown out of action at the will of the operator, with the result that such machine is enabled to print and list numbers or figures which are not required to be added or totalized as well as to print and list amounts which are to be totalized in the usual and well known way.

An adding machine embodying my invention finds useful application for a variety of different classes of accounting work and, for the purpose of affording a clear and definite understanding of my invention I will describe it as employed in the work of listing cotton sales, which require to be printed not only the price but also the number of each bale of cotton. The amounts representing the prices are listed and added by the machine in the ordinary manner, but, of course, the numbers of the bales require listing and not adding.

My invention therefore contemplates and provides for the throwing out or elimination of the adding feature of the machine when such numbers, which are not to be added, are being printed by the machine.

My invention is more particularly designed as an improvement upon what is commonly known as the "Burroughs" adding machine, illustrated and described, for instance, in Letters Patent of the United States Nos. 504,963 and 505,078, issued to William S. Burroughs on September 12, 1893, but my invention, considered in its broad aspect, is not to be understood as limited in its application to the Burroughs machine, inasmuch as the same may be embodied and incorporated in adding machines of similar character and used for similar purposes.

In the drawings, Figure 1 is a plan view of a Burroughs adding machine, with the rearward end thereof partially broken away to expose certain of the parts of my attachment comprising my invention; Fig. 2 a sectional elevation of the left hand side of the machine; Fig. 2ª a detail of a portion of lever 914; Fig. 3 an end elevation of the machine showing the principal parts concerned; Fig. 4 an enlarged detail view of the special key and connection with the usual "total" key of the machine; and Fig. 5 a detail view of the sliding plate which I have provided to prevent the operation of certain of the type levers.

Inasmuch as, in the present instance, my invention comprises an attachment to the well known Burroughs adding machine substantially as disclosed in said prior Burroughs patents, the old parts will be designated as in such patents and only those old parts will be considered which are concerned directly with my invention.

The machine has a keyboard provided with 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 usual "total" key 265 is also provided on the keyboard to enable a total to be taken whenever desired by the operator. The levers B, which correspond in number with the rows of keys, are hung upon the main rock shaft 600, Fig. 2, and are each provided with the rearwardly extending sector-shaped arms 611ª carrying the usual type-plates 618 and provided with forwardly and downwardly extending arms 611 operatively connected with a gear-tocthed rack 610. The movements of this rack are controlled and determined by the rods 270 operated and set by the keys 221 in the well known way. The series of racks 610 coöperate with a corresponding series of adding wheel pinions 916 which are swung out of mesh with the racks upon the forward movement of the operating handle 367, and downward movement of the racks, but swing into mesh therewith upon the rearward movement of the operating handle and upward movement of those racks which had been released, with the result that the pinions, corresponding to the particular racks released, are turned by such racks distances corresponding to the previous down-

ward movement thereof. To this end, the pinions 916 are mounted in a swinging frame consisting of two arms C located at opposite sides of the machine and secured to a rock shaft 900 journaled in the frame thereof. This frame is limited in its backward and forward movements by the engagement between the bifurcated end of the arms C and a stop 205.

The pinion frame is adapted to be swung, by the movements of the main operating lever 367, by means of the arm 914 and the three-armed lever 913 to which the former is pivoted at its rearward end. This arm 914 is supported near its forward end by the long substantially vertical link 911 operatively connected at its upper end with the bell crank 227 of the total key 265. The front end of the arm 914 has two diverging arms or branches 914^a and 914^b adapted to coöperate with and engage the swinging pinion frame, with the result that the pinions are removed from engagement with their racks and reëngaged therewith at the proper times in order that upon the upward movement of the released or operated racks the pinions will be turned distances corresponding to the previous downward movements of the respective racks.

As is well known, the depression of the "total" key 265 during both forward and rearward movements of the operating handle 367, enables a total to be printed and the machine to be cleared, inasmuch as the consequent swinging of the arm 914 by the link 911 permits the pinions to remain in mesh with their racks during their downward movement, with the result that such racks are permitted to descend distances corresponding to the values of the adding wheels associated with such pinions and the levers B and their type plates to be raised or swung upward corresponding distances, whereby the total will be printed. In printing a sub-total and therefore not clearing the machine, the total key 265 is held depressed only during the forward movement and is released prior to the backward movement thereof, with the result that the pinions will remain in mesh with their racks in both movements of the operating handle, such pinions, after the printing of the sub-total, being restored to the positions which they occupied prior to the downward movement of the racks.

The printing mechanism of a Burroughs machine is so well known as not to require any detailed description, and it will therefore suffice to say that the movable type plates 618 upon the respective levers are forced rearwardly against the platen 619 by means of the hammers or strikers which are actuated by latches in the manner fully explained in said Burroughs patents. In this connection it may be stated that upon the first forward movement of the operating handle the rearward ends of all the levers carrying the type-plates are swung upward—those which have been set or operated by the keys being swung a distance corresponding with the value of such keys and those which have not been set being swung slightly so as to bring the cipher of their upper type plate in printing position, with the result that ciphers will be printed by the levers which have not been operated or set by the keys, owing to the tripping of their latches by the adjacent latch on the left. Of course, this tripping takes place with relation to the latches on the right so that ciphers will never be printed to the left of any figure.

The construction and operation of the machine, so far described, is that of the well known Burroughs adding machine, sufficient of which construction having been explained to afford a clear comprehension of my invention, now to be described.

Before proceeding to a detailed explanation of my invention, it will be observed that the object thereof is, in general terms, to render the adding mechanism of the machine inoperative at the will of the operator while permitting the printing mechanism to perform the usual functions, excepting that, in the construction herein shown, a certain predetermined number of the levers and rows of keys on the right hand side are rendered inoperative when the printing (without addition) is being done, for which purpose the remaining levers and rows of keys on the left are employed.

For the purpose of more clearly indicating and distinguishing between the old and new parts, I have, in the drawings, shaded the new parts and have left the old parts in outline.

A supporting plate 1 is arranged at the left hand side of the machine and provided with a pin or stud 2 constituting a fulcrum for a substantially horizontal lever 3 extending forwardly adjacent the total key connections, and rearwardly adjacent the printing mechanism. As shown in Figs. 2 and 4, the forward end of the lever 3 is connected to the lower end of the stem 4 of a special key 5. This key stem has an offset or shoulder 6 adapted, when depressed to bear upon the upper edge of the bell crank 227 and rock the latter in the same manner as when the total key is slightly depressed. The lower end of this key stem is extended forwardly and made hook shape in order to hook over and engage a pin or stud 911^a on the vertical arm or link 911. By these means both the bell crank 227 and the arm 911 will be positively moved downward whenever the special key 5 is depressed. It will be understood that when the special key 5 is depressed and the machine operated the pinions and pinion frame C are swung for-

wardly to inoperative position as usual, and such pinions remain in such position so long as the special key is depressed, with the result that the adding feature of the machine is eliminated as to operation and the printing feature alone utilized, at the will of the operator.

Referring to the herein illustrated embodiment of my invention, when the special key 5 is depressed the total key and is connections are moved to a slight extent but sufficient to prevent the arm or lever 914 (on its rearward stroke) from returning the adding wheel pinions to mesh with their racks without affecting its preliminary function (on its forward stroke) of throwing such pinions out of mesh. Referring particularly to Figs. 2 and 2ª, the adding wheels, normally, are in engagement or mesh with the racks, but when an item or amount is set up on the keyboard, and the special key 5 is depressed and the arm or lever 914 is thereby depressed or swung down to a position intermediate its two regular positions, and when the machine is operated, such lever 914 moves forwardly, as usual, on the first or forward stroke of the operating handle, its upper and rearward finger or prong 914ᶜ contacting the pin 958 thereby throwing out the adding wheels. During the return movement of the operating handle, the lever 914 is moved rearwardly, as usual, but, owing to the depressed position, to which it is held, its other finger or prong fails to strike pin 958 on frame C as heretofore, in order to return the adding wheels to coöperative relationship with their racks, and consequently the adding wheels remain in inoperative position. Nor does the lower hook 914ᵇ accomplish the result of returning the adding wheels, for it is not in a low enough position. The adding wheels of the machine are thus thrown out, as usual, at the beginning of the movement of the operating handle or lever, but owing to the movement of the lever 914 to its said intermediate position, such wheels are held out until such handle returns to normal position. Meanwhile, the amount or item set up on the keyboard has been printed by the machine, but not accumulated.

In the regular operation of the total key or button, the act of depressing the same causes a releasing and restoration of any value keys which may have been operated but, as herein shown, the arrangement is such that the act of depressing the special key and the consequent slight depression of the total key and connections, while sufficient to accomplish the temporary elimination of the adding function of the machine, does not have the effect of releasing and restoring the operated key or keys, but permits such keys to remain set and the amount represented thereby to be printed without addition. As shown, the bell crank is connected by means of a link 226 with the left hand side arm of a releasing bail having the cross rod 202 which is movable in the longitudinal slots 229ª of the arms 229 in advance of the usual sliding bars 214. When any value key is depressed, its bar 214 is slid a short distance to the rear, and, in order to restore such bar, the total key 265 may be depressed with the result that the cross rod 202 is swung forwardly against the operated bar which is thereby forced back to normal position. However, the rod 202 moves a short distance forwardly before contacting with the rearward end of the operated bar 214 and it is this idle movement only that the operating of the special key 5 can accomplish so that while the act of depressing the special key does indeed cause the rod 202 to be moved in the direction of the ends of the bars 214, such movement is not sufficient to force them to normal and thereby cause a restoration of the operated keys on the keyboard. The action of the special key thus has no material effect upon the key restoring mechanism, but through the medium of the totalizing mechanism positively effects the adding or accumulating function of the machine, besides which, according to the present construction now being described, the same act of eliminating the adding function of the machine results in rendering inoperative the printing mechanism corresponding to a predetermined number of the denominations represented on the keyboard, as now to be explained.

The rearward end of the lever 3 is bent inwardly toward the printing mechanism and is operatively connected to the lower arm 7 of a bell crank which is pivoted at 7ª to a fixed point on the machine frame (Fig. 3). The upper arm 8 of this bell crank is slotted to receive the bent end of a horizontally movable rod 9 passed through the end plates 510 of the ribbon frame or guide and supported and guided thereby.

The right hand end of the rod 9, which is movable longitudinally, is adjustably secured to a sleeve 10 encompassing, and arranged to slide freely upon, the usual stay rod 503 which supports the plates 510 of the ribbon frame or guide. Depending from this sleeve is a curved wing or blade 11 movable with the sleeve 10 and in a vertical plane. The lower end of this blade is in substantially the same horizontal plane as the top edges of the series of levers B when in normal condition, and the width and the degree of movement of the blade to the left is such as to interfere with the movement of a predetermined number of the levers B beginning on the right hand side. In the present instance, the blade is arranged to interfere with and prevent the

operation of the levers corresponding with the five rows of keys of the lower denominations, leaving the remaining four rows to serve for printing purposes when the special key referred to is operated. In order to be guided, the lower end of the blade travels in a cross slot 723ª in the upper edge of the usual link or bar 723 which supports the lower end of the ribbon guide frame at one side. The adjustment between the rod 9 and its sleeve 10 may be obtained in any suitable manner, and in the present instance the right hand end of the rod 9 passes through a lug 12 and is screw-threaded to receive an adjusting nut 13 arranged to bear against one end of the lug 12. A spring 14 fastened at one end to the blade 11 serves to hold the latter to its right hand position.

Normally the blade 11 is positioned at one side of the levers B as indicated by full lines in Fig. 3, but upon the depression of the special key 5, the rearward end of the lever 3 is rocked upward and the lower arm 7 of the bell crank is likewise rocked in the same direction, with the result that the rod 9 is moved or shifted longitudinally toward the left hand side of the machine (Fig. 1), or toward the right when viewing the machine from the rear as in Fig. 3, where the dotted lines indicate the shifted position of the parts. By this movement of the rod 9 the blade or wing 11 is shifted laterally in a position immediately above five of the levers B of the lower denomination. These five levers are thus rendered inoperative, and, moreover, their hammers are also rendered inoperative inasmuch as the blade is interposed in their path, thereby preventing them from striking the type plates of these particular levers. The object of thus rendering these five levers inoperative is to eliminate that portion of the machine associated therewith and leave the remaining mechanism absolutely free and uninterfered with for the purpose of printing numbers, with the result that any accidental setting of the keys in any of the five rows corresponding with these five inoperative levers will not interfere but will be negatived. Moreover, the positioning of the blade immediately above the levers and interposing the same in the path of the five hammers on the right, prevents the levers from rising and the hammers from striking, with the result that no ciphers or other characters are or can be printed at the right of the figures or numbers printed by the left hand side of the machine during the same operation or movement of the operating handle.

It will be understood by reference to the above-mentioned Patent 505,078 that the hammers are released by the action of pawls in withdrawing detaining latches from engagement with hammer-driving levers and further that these pawls are disabled by the contact of their tails with inclined shoulders on the type-carrying levers when such levers are not moved in obedience to depression of amount keys. Hence of course the holding down of type-carrying levers in the manner described will cause the pawls associated with such levers to be disabled. However, as hammers may be released notwithstanding disablement of associated pawls, in order to provide for a filling in of ciphers as explained in said Patent 505,078, the blade is arranged to intercept such hammers as already explained. While the aforesaid plate will thus intercept five hammers when the key 5 is fully depressed, a less number of hammers and a correspondingly less number of levers B may be intercepted by partial depression of said key. In fact, the number can be varied from one to five by regulating the degree of depression of the key 5.

In practice, and referring to cotton bale transactions, the operator utilizes the four rows of keys on the left and sets the keys according to the identifying number of the particular cotton bale. Ordinarily, if the machine should now be operated, a row of ciphers would be automatically printed to the right of the figure or number printed according to the keys set, but to prevent this and also to throw out the adding mechanism or feature of the machine at this moment in the operation of the machine, the parts constituting my invention are brought into action by the operator by depressing the special key 5, with the result that the blade 11 is moved laterally to interfere with the movements of the five levers B on the right and the arm or lever 914 is depressed or shifted so that the adding pinions will be thrown out of mesh with their racks when the operating handle is manipulated. The result is that the number of the bale of cotton will be printed, for the machine, under the conditions named, now acts simply as a printing machine. The special key is now released, and the operator then sets the keys of the right hand rows (which had previously been rendered inoperative) according to the price of the bale of cotton, and upon operating the machine the price is printed and registered on the adding wheels. This latter operation is precisely the same as the usual operation of a Burroughs adding machine.

The operations just described are repeated for each transaction, with the result that the numbers of the bales will be printed (without addition of course), and the prices thereof will be likewise printed but will in addition be totalized, so that a total can be

taken at any time, in the manner well known to users of Burroughs machines. The machine is thus normally capable of both printing and adding in the usual and well known manner but by reason of my attachments, the machine is capable of being, in effect, divided into two parts, one capable of printing without adding and the other at that time incapable of either printing or adding. In other words, one part of the machine is rendered entirely inoperative when the other part of the machine is used for printing only. In this manner, a number which is not required to be added may be printed by the machine at the left side of a sheet of paper, and a number to be added may be printed at the right side thereof, both said respective numbers being listed but only one set of numbers being totalized.

My improved machine may be used for a variety of transactions involving the printing of numbers requiring to be totalized and the simple printing of other numbers not requiring to be totalized. My machine is therefore not limited in its usefulness to merely accounting cotton sales, which is taken as a convenient and simple illustration or example of the character of the work of which the improved machine is capable.

It is evident that the keyboard and machine generally may have any desired capacity, but the machine shown, with its nine rows of keys of different denominations, will be found sufficient for many ordinary transactions, such as the accounting of cotton bale sales, for in the present machine herein illustrated the four rows of keys on the left of the key board are sufficient to take care of the numbers of the bales, and the five remaining rows are sufficient to take care of the prices to be listed and totalized. Moreover, it is evident that the blade may be adapted to cover or interfere with more or less of the levers, and thereby lessen or decrease the range of the machine for the two functions or purposes stated.

I claim:—

1. In a machine of the character described, the combination with accumulating means, printing means adapted to print both items and totals, the latter in coöperation with the accumulating means, and independently manipulative means for disabling the accumulating means at will to prevent accumulation while permitting the continued printing of items.

2. In a machine of the character described, the combination of an accumulator, type-carriers, actuators for the accumulator which also operate to set the type-carriers, and means for varying the periods of engagement and disengagement between the accumulator and actuators to effect either item printing and accumulating or total printing, with provisions for eliminating accumulation at will for the purpose described.

3. In a machine of the character described, the combination of an accumulator, type-carriers, actuators for the accumulator which also operate to set the type-carriers, means for varying the periods of engagement and disengagement between the accumulator and actuators to effect either item printing and accumulating or total printing, and manipulative devices for so adjusting said means as to eliminate accumulation for the purpose described.

4. In a machine of the character described, the combination of an accumulator, type-carriers, actuators for the accumulator which also operate to set the type-carriers, means for varying the periods of engagement and disengagement between the accumulator and actuators to effect either item printing and accumulating or total printing, and a key for establishing an intermediate adjustment of said means to eliminate accumulation; substantially as and for the purpose described.

5. In an adding machine having printing and adding mechanism and normally arranged to both print and add, and means for eliminating the adding function of the machine at the will of the operator, with provisions for partially eliminating the printing function.

6. In an adding machine having printing and adding mechanism and normally arranged to both print and add, means for eliminating the adding function of the machine at the will of the operator, and mechanism for rendering inoperative the printing mechanism corresponding to a predetermined number of the denominations; substantially as described.

7. In an adding machine, the combination of printing and adding mechanism, and means under the control of the operator for rendering inoperative the printing mechanism corresponding to a predetermined number of the denominations; substantially as described.

8. In an adding machine, the combination of printing and adding mechanism, and means under the control of the operator for rendering inoperative the printing mechanism corresponding to a predetermined number of the denominations and by the same act eliminating the adding function of the machine; substantially as described.

9. In an adding machine, the combination of printing and adding mechanisms comprising type carriers, an accumulator, and actuators for the type carriers and the accumulator; totalizing mechanism which, when operated, permits a "total" to be taken by varying the periods of engagement

and disengagement between accumulator and actuators; and means coöperating with the totalizing mechanism for rendering the adding mechanism inoperative while permitting the printing mechanism to operate.

10. In an adding and listing machine, the combination of printing devices; an accumulator coöperative therewith; actuators for the accumulator; devices for regulating the periods of engagement between the latter and the actuators according as a total is to be printed or an item printed and accumulated, the accumulator being turned one way by the actuators when items are being accumulated and the opposite way by the same actuators when a total is to be printed; and means coöperating with such regulating devices to keep the accumulator disengaged from the actuators during movement of the latter in both directions when the printing of a number is to be effected without accumulation.

11. In an adding and listing machine, the combination of printing devices; an accumulator coöperative therewith; actuators for the accumulator; devices for regulating the periods of engagement between the latter and the actuators according as a total is to be printed or an item printed and accumulated, the accumulator being turned one way by the actuators when items are being accumulated and the opposite way by the same actuators when a total is to be printed; and means coöperating with such regulating devices to keep the accumulator disengaged from the actuators during movement of the latter in both directions when the printing of a number is to be effected without accumulation, such last-mentioned means being manipulated prior to the commencement of the operation of the machine.

12. In an adding machine, the combination of printing and adding mechanisms, totalizing mechanism which, when operated, permits a "total" to be taken, and a special key having an operating connection with the totalizing mechanism for rendering said adding mechanism inoperative without interfering with the printing mechanism corresponding with said mechanism; substantially as described.

13. In an adding machine, the combination of printing and adding mechanisms, totalizing mechanism in position to coöperate with the adding mechanism normally to permit accumulation but when operated to cause a total to be printed, and means for moving said totalizing mechanism to a position to render the adding mechanism inoperative; substantially as described.

14. In an adding machine, the combination of printing and adding mechanisms, totalizing mechanism normally in position to permit the adding mechanism to receive accumulations but arranged to be moved to a position to cause a total to be printed, and means for moving the totalizing mechanism to an intermediate position to render the adding mechanism inoperative; substantially as described.

15. In an adding machine, the combination of printing and adding mechanisms, totalizing mechanism normally in position to permit the adding mechanism to receive accumulations but arranged to be moved to a position to cause a total to be printed, and a special key operatively connected with the totalizing mechanism for moving the latter to an intermediate and ineffective position to render the adding mechanism inoperative; substantially as described.

16. In an adding machine of the multiple key bank type, the combination, with the adding and printing mechanisms thereof, of means for rendering the same inoperative as to a predetermined number of the rows or banks of keys; substantially as described.

17. In an adding machine of the multiple key bank type, the combination, with the adding and printing mechanisms thereof, of means for rendering the same inoperative as to a predetermined number of the rows or banks of keys and also eliminating the adding function of the machine as to the remainder of the rows of keys; substantially as described.

18. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type levers, totalizing mechanism for controlling the operation of the printing mechanism to print a total, and means coöperating with the totalizing mechanism for rendering a predetermined number of said type levers inoperative and for eliminating the adding function of the mechanism; substantially as described.

19. In an adding machine, the combination of printing and adding mechanism, and means for eliminating the adding function of the mechanism at the will of the operator and also rendering a portion of said mechanism inoperative as to its printing function; substantially as described.

20. In an adding machine, the combination of printing and adding mechanism, and means for eliminating the adding function of the mechanism at the will of the operator and simultaneously rendering a portion of said mechanism inoperative as to its printing function; substantially as described.

21. In an adding machine, the combination of printing and adding mechanism, a "total" key and connections for controlling the operation of the printing mechanism to print a total, and means coöperating with the "total" key connections for eliminating the adding function of the machine at the will of the operator; substantially as described.

22. In an adding machine, the combination of printing and adding mechanism, a "total" key and connections for controlling the operation of the printing mechanism to print a total, and means coöperating with the "total" key connections for eliminating the adding function of the machine at the will of the operator and simultaneously rendering a portion of said mechanism inoperative as to its printing function; substantially as described.

23. In an adding machine, the combination of printing and adding mechanism, a "total" key and connections for controlling the operation of the printing mechanism to print a total, and key-controlled means cooperating with the "total" key connections for eliminating the adding function of the machine at the will of the operator; substantially as described.

24. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, and means for eliminating the adding function of the mechanism and preventing the movement of a predetermined number of the type-carriers; substantially as described.

25. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, and key-controlled means for rendering a predetermined number of said type-carriers or levers inoperative and for eliminating the adding function of the mechanism; substantially as described.

26. In an adding machine, the combination of printing and adding mechanism having a series of movable type-carriers or levers, and key-controlled means for eliminating the adding function of the entire mechanism and for rendering a predetermined number of said type-carriers at one side of the machine inoperative; substantially as described.

27. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, a "total" key and connections for controlling the operation of the printing mechanism to print a total, and key-controlled means coöperating with the "total" key connections for rendering a predetermined number of said type-carriers or levers inoperative and for eliminating the adding function of the mechanism; substantially as described.

28. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, a blade or wing movable in the path of movement of a predetermined number of said type-carriers or levers, and means for elminating the adding function of the machine at the will of the operator; substantially as described.

29. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, a blade or wing movable in the path of movement of a predetermined number of said type carriers or levers to interfere with and prevent the printing operation by such particular type-carriers, and means for simultaneously eliminating the adding function of the mechanism and operating said blade; substantially as described.

30. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, a blade laterally movable to a position immediately above a predetermined number of said type-carriers or levers, and means for eliminating the adding function of the mechanism at the will of the operator; substantially as described.

31. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, a blade yieldingly held to an inoperative position but adapted to be laterally shifted to a position of interference with a predetermined number of said type-carriers or levers, and means for eliminating the adding function of the mechanism at the will of the operator; substantially as described.

32. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, an adjustable blade movable to a position immediately above a predetermined number of said type-carriers or levers, and means for eliminating the adding function of the mechanism at the will of the operator; substantially as described.

33. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, a blade laterally movable to a position immediately above a predetermined number of said type-carriers or levers, a special key having connections for eliminating the adding function of the mechanism, and operating connections between said key and blade; substantially as described.

34. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, a blade laterally movable to a position immediately above a predetermined number of said type-carriers or levers, a link 723 provided with a slot for guiding said blade, and means for eliminating the adding function of the mecha-

nism and for operating the blade; substantially as described.

35. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, a blade laterally movable to a position immediately above a predetermined number of said type-carriers or levers, a supporting rod 503, a sleeve 10 arranged to slide on the rod and carrying the blade, and means for eliminating the adding function of the mechanism and for operating the sleeve; substantially as described.

36. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, a blade laterally movable to a position immediately above a predetermined number of said type-carriers or levers, a supporting rod 503, a sleeve 10 arranged to slide on the rod and carrying the blade, and an operating rod 9 adjustably connected to the sleeve, and means for eliminating the adding function of the mechanism and for actuating said rod; substantially as described.

37. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, a blade laterally movable to a position immediately above a predetermined number of said type-carriers or levers, a supporting rod 503, a sleeve 10 arranged to slide on the rod and carrying the blade, an operating rod 9 adjustably connected to the sleeve, a bell crank operatively connected with said rod 9, and key controlled mechanism for operating said bell crank and for eliminating the adding function of the mechanism; substantially as described.

38. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, a blade laterally movable to a position immediately above a predetermined number of said type-carriers or levers, a supporting rod 503, a sleeve 10 arranged to slide on the rod and carrying the blade, an operating rod 9 adjustably connected to the sleeve, a bell crank connected with the rod 9, a lever 3 connected with the bell crank and with the "total" key connections and a special key operatively connected with the lever 3; substantially as described.

39. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, a "total" key and connections for controlling the operation of the printing mechanism to print a total, a special key coöperating with said "total" key connections for throwing the adding mechanism out of action, and a blade controlled by said special key for rendering a predetermined number of said type levers inoperative; substantially as described.

40. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, a "total" key and connections for controlling the operation of the printing mechanism to print a total, a blade for rendering a predetermined number of said type levers inoperative, a lever 3 operatively connected with said blade and coöperating with the "total" key connections, and a special key for operating the lever 3; substantially as described.

41. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, a "total" key and connections for controlling the operation of the printing mechanism to print a total, a laterally movable blade arranged to prevent the movement of a predetermined number of type-carriers, a lever 3 having a bell crank connection with the blade and coöperating with the "total" key connections, and a special key for operating the lever 3; substantially as described.

42. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, a "total" key and connections for controlling the operation of the printing mechanism to print a total, a blade 11 arranged to prevent the movement of a predetermined number of type-carriers, a lever 3 operatively connected with the blade and a special key connected with said lever 3 and having a hook-shaped end to engage the "total" key connections; substantially as described.

43. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, means for preventing the operation of a predetermined number of said type levers or carriers, a "total" key, a link or arm 911 actuated by the "total" key for controlling the operation of the printing mechanism to print a total and having a stud 911^a, and a special key adapted to operate said stud; substantially as described.

44. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, means for preventing the operation of a predetermined number of said type levers or carriers, a "total" key, a link or arm 911 actuated by the "total" key for controlling the operation of the printing mechanism to print a total and having a stud 911^a, a lever

3 for operating said means, and a special key for operating said lever 3 and having a hook-shaped end to engage said stud; substantially as described.

45. In an adding machine, the combination of printing and adding mechanism, said printing mechanism having a series of movable type-carriers or levers, means for preventing the operation of a predetermined number of said type levers or carriers, a "total" key, a link or arm 911 actuated by the "total" key for controlling the operation of the printing mechanism to print a total and having a stud 911[a], a bell-crank 227 actuated by the total key, a lever 3, and a special key operatively connected with said lever 3 and having a stem provided with a shoulder arranged to bear against said bell-crank; substantially as described.

46. In an adding machine, the combination of printing and adding mechanisms, a lever 914 moved at every operation of the machine and controlling the operative relationship between the printing and adding mechanisms, and means coöperating with said lever to hold the latter at an inoperative position to prevent action of the adding mechanism; substantially as described.

47. In an adding machine, the combination of printing and adding mechanisms, a lever 914 moved at every operation of the machine and controlling the operative relationship between the printing and adding mechanisms, a link 911 connected with the lever and arranged to be operated when a total is to be printed, and means coöperating with the link 911 to cause a partial movement of the latter and thereby so position the lever as to maintain the adding mechanism in operative relationship; substantially as described.

48. In an adding machine, the combination of printing and adding mechanisms a lever 914 moved at every operation of the machine and controlling the operative relationship between the printing and adding mechanisms, a link 911 connected with the lever and arranged to be operated when a total is to be printed, and a key coöperating with the link 911, the depression of which key causes a shifting of the link 911 and the lever 914 less than that which occurs in the operation of taking a total, whereby the lever is maintained at an inoperative position and the adding mechanism rendered inoperative; substantially as described.

49. In an adding machine, the combination, with the printing and adding mechanism and the setting-up means and key-controlling mechanism thereof, and also with the totalizing mechanism coöperating with the adding mechanism and normally arranged, when operated, to restore the key mechanism, of means coöperating with the totalizing mechanism for rendering the adding mechanism inoperative and for preventing restoration of the key mechanism, whereby the machine is capable of printing without accumulating an item or amount set up on said setting-up means; substantially as described.

50. In an adding machine, the combination, with the printing and adding mechanism and the setting-up means and key-controlling mechanism thereof, and also with the totalizing mechanism coöperating with the adding mechanism and normally arranged, when operated, to restore the key mechanism, of means coöperating with the totalizing mechanism for partially moving the latter toward its operated position for the taking of a total and thereby rendering the adding mechanism inoperative and for preventing restoration of the key mechanism, whereby the machine is capable of printing without accumulating an item or amount set up on said setting-up means; substantially as described.

51. In an adding machine, the combination, with the printing and adding mechanism and the setting-up means and key-controlling mechanism thereof, and also with the totalizing mechanism coöperating with the adding mechanism and normally arranged, when operated, to restore the key mechanism, of a special key operatively connected with the totalizing mechanism and whose actuation moves the latter mechanism partially but to a position to render the adding mechanism inoperative without restoring the key mechanism, whereby an item set up on the machine may be printed without accumulation; substantially as described.

52. In an adding machine, the combination, with the adding mechanism and printing mechanism normally adapted, when the machine is operated, to automatically print ciphers corresponding with denominations to the right of a digit, means for preventing such printing of ciphers of a predetermined number of denominations, means for eliminating the adding or accumulating function of the machine, and a key common to both of said means for operating them.

53. In an adding machine, the combination, with the adding mechanism and printing mechanism normally adapted, when the machine is operated, to automatically print ciphers corresponding with denominations to the right of a digit, means for preventing such printing of ciphers of a predetermined number of denominations, means for eliminating the adding or accumulating function of the machine, a key common to both of said means for operating them, and means for locking the key in operated condition.

54. In an adding machine, the combination, with the adding mechanism and printing mechanism, of means for preventing

any printing action of a portion of the printing mechanism corresponding with a predetermined number of the denominations.

55. In an adding machine, the combination, with the adding mechanism and printing mechanism including hammers corresponding with the different denominations, of means for preventing any hammer action of a predetermined number of the hammers at the will of the operator.

56. In an adding machine, the combination, with the adding mechanism and printing mechanism including hammers corresponding with the different denominations, of means arranged to be interposed in the path of movement of a predetermined number of the hammers to arrest them and thereby prevent hammer action of a portion of the machine.

57. In an adding and recording machine, printing levers or segments, printing hammers, means holding said hammers in idle position, means for releasing said hammers, and settable means for preventing operation of predetermined numbers of said segments and of said hammers after the latter have been released.

58. In an adding machine, in combination, multiple order adding mechanism and percussive digital type-impression mechanism and an optionally operable means adapted selectively and at the will of the operator to prevent the percussive action of the digital type-impression mechanism in a varying plurality of orders.

59. In an adding and recording machine, printing hammers, means holding said hammers in idle position, means for releasing said hammers, and means acting independently of the number of orders set for operation for preventing operation of varied numbers of said hammers after they have been released.

WILLIAM E. SWALM.

Witnesses:
T. W. PHELPS,
GEORGE BUGBEE.