

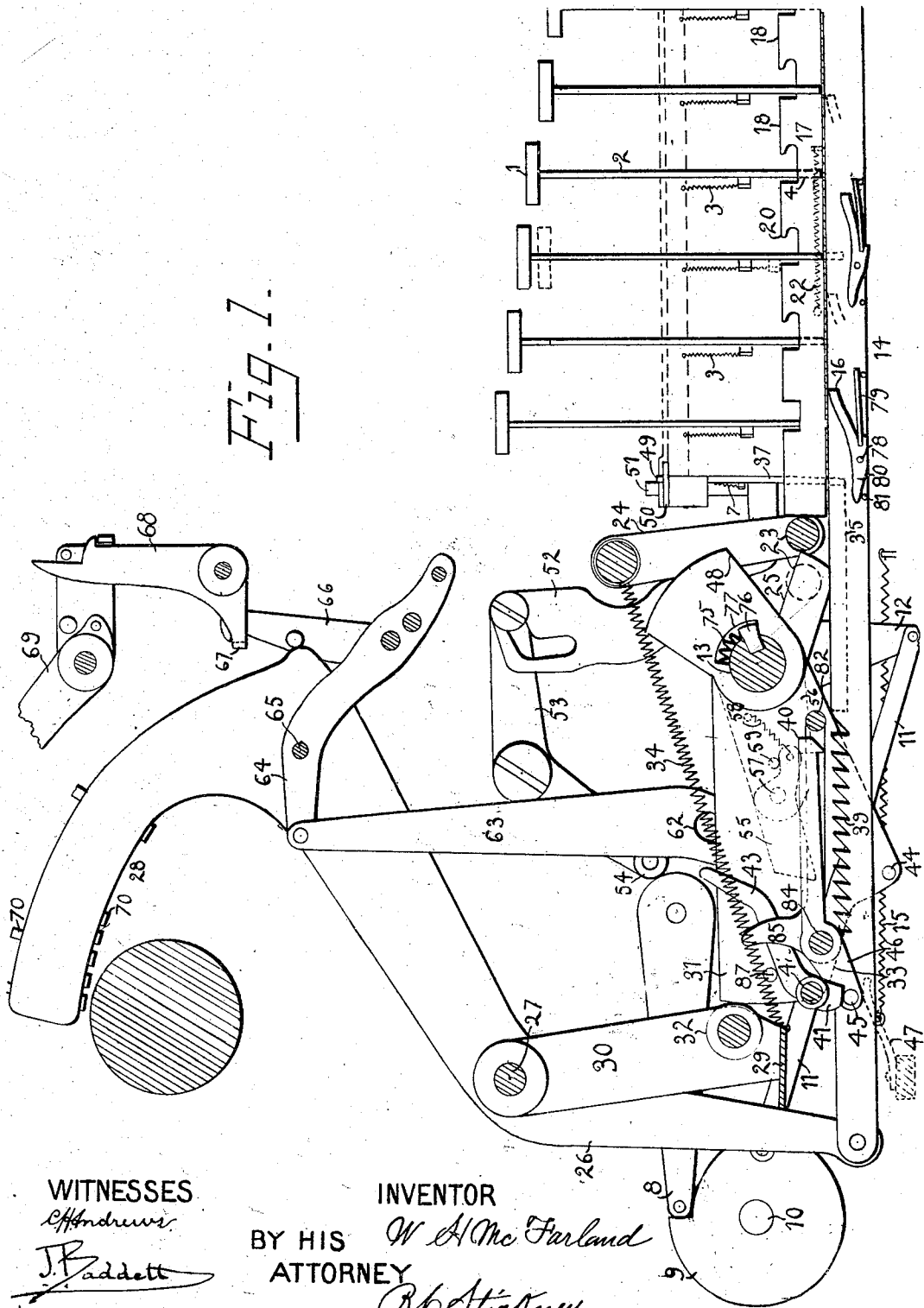
No. 895,664.

W. H. McFARLAND. PATENTED AUG. 11, 1908.
COMPUTING AND RECORDING MACHINE.

APPLICATION FILED OCT. 19, 1905.

6 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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5 SHEETS—SHEET 2.

Fig. 8^a.

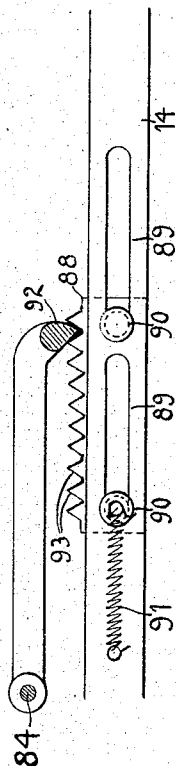
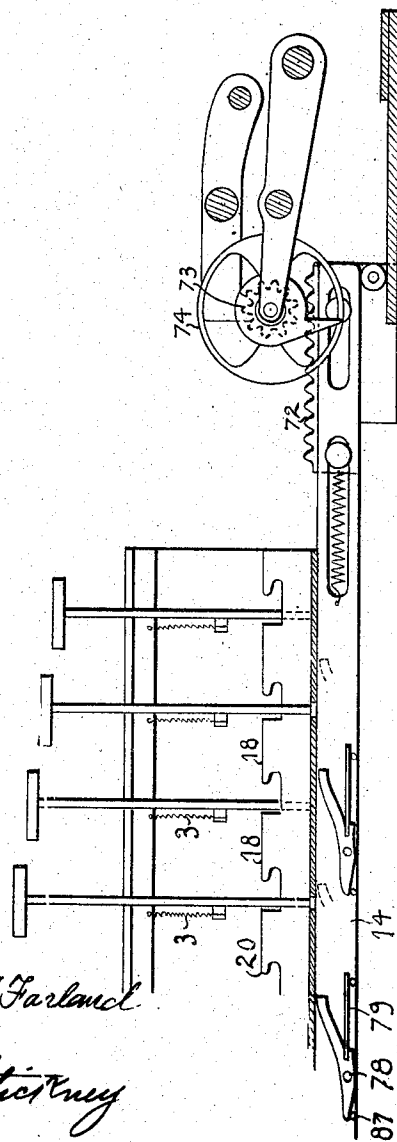


Fig. 2.



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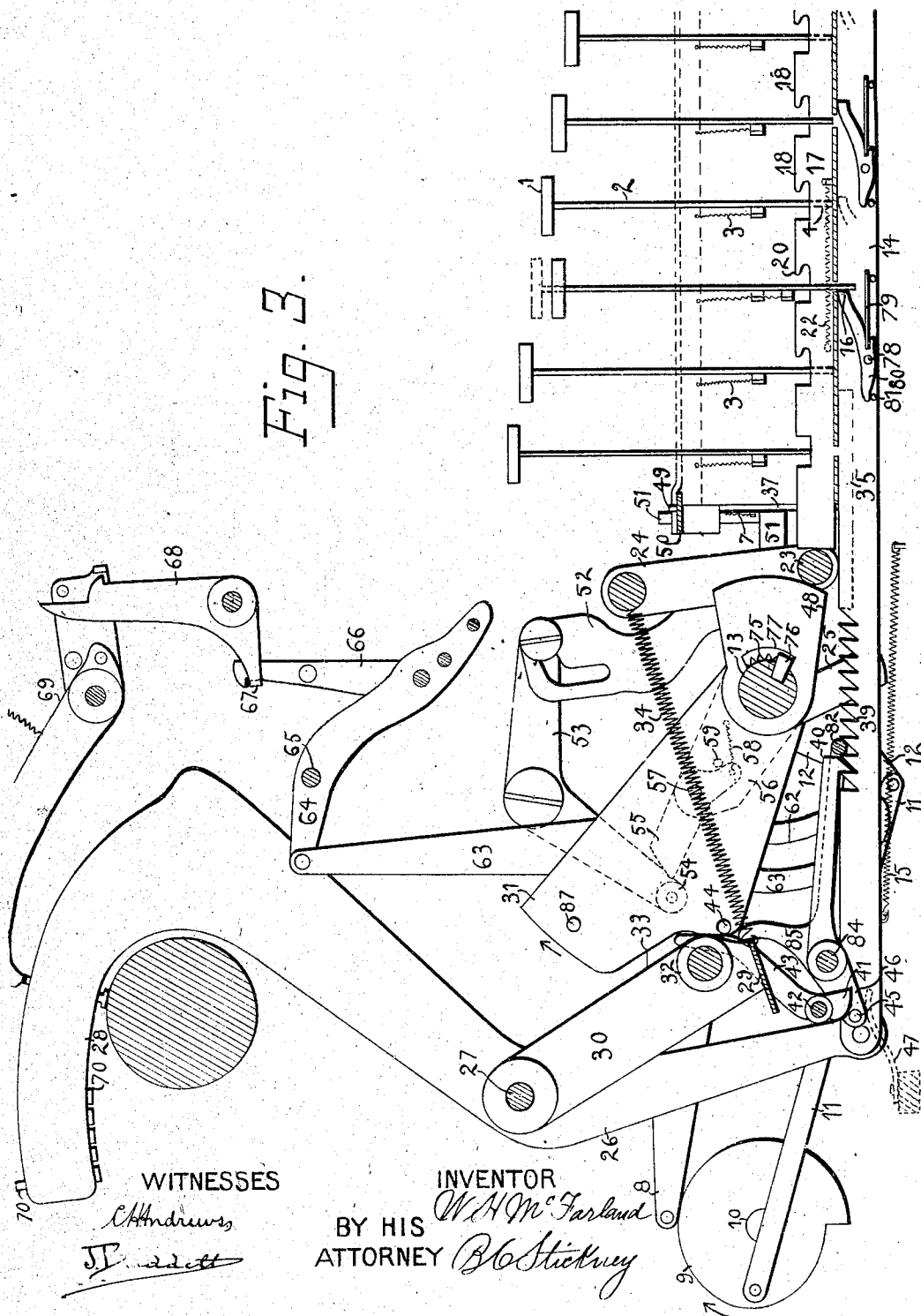
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5 SHEETS—SHEET 3.



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5 SHEETS--SHEET 4.

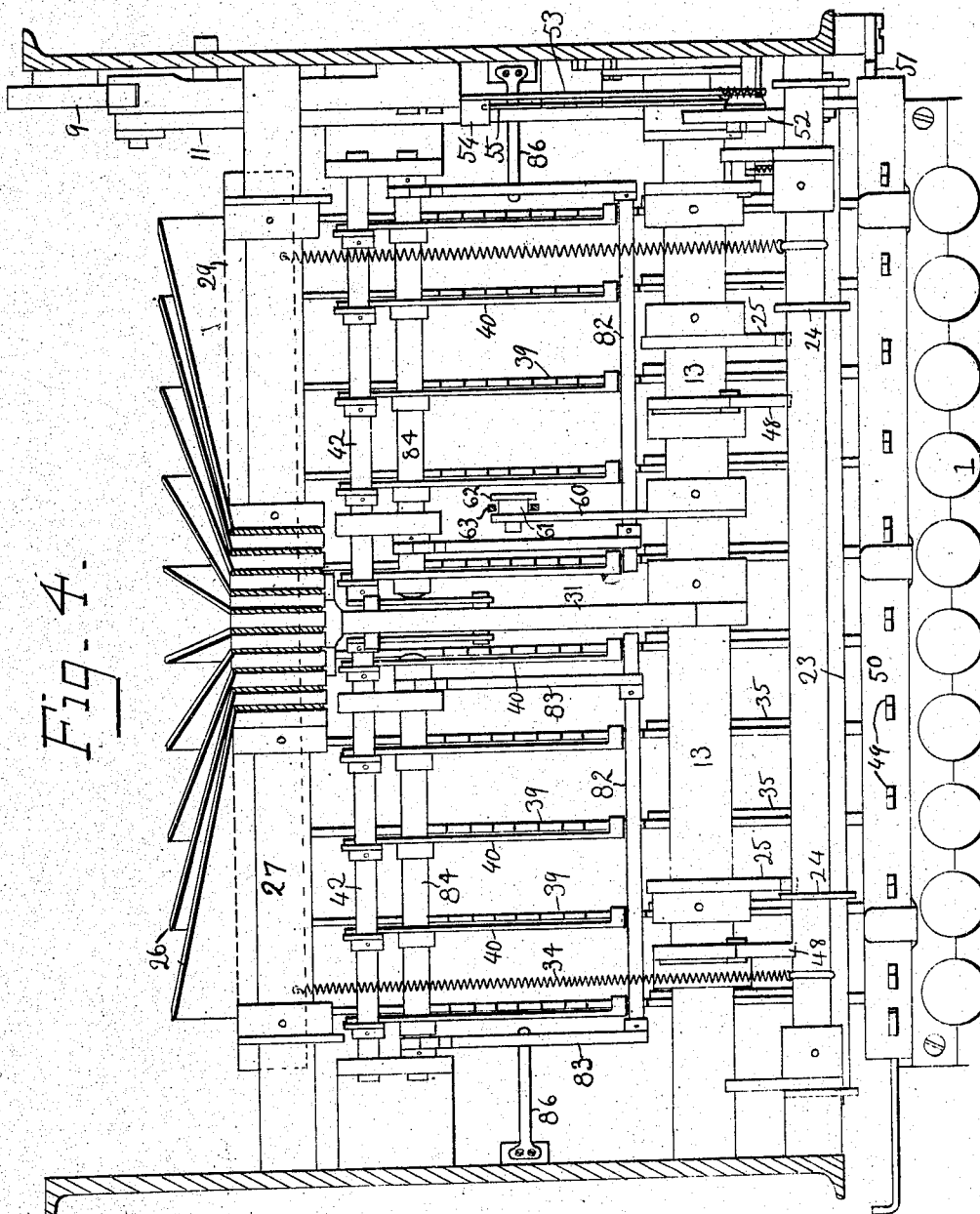


Fig. 4.

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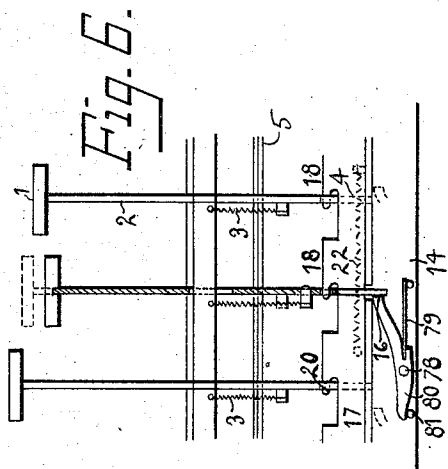
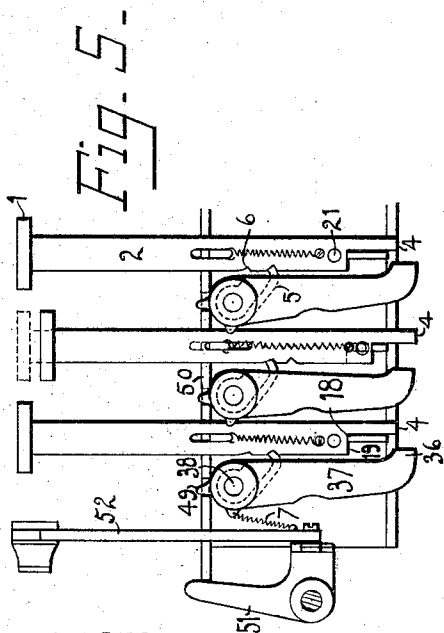
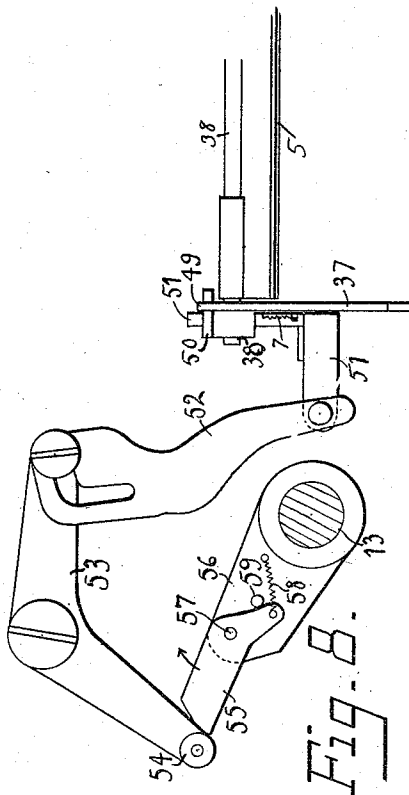
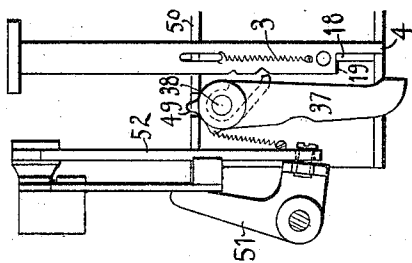
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APPLICATION FILED OCT. 19, 1905.

5 SHEETS—SHEET 5.



WITNESSES

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Fig. 7.

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UNITED STATES PATENT OFFICE.

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COMPUTING AND RECORDING MACHINE.

No. 895,664.

Specification of Letters Patent.

Patented Aug. 11, 1908.

Application filed October 19, 1905. Serial No. 283,443.

To all whom it may concern:

Be it known that I, WILLIAM H. McFARLAND, a citizen of the United States, residing in East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Computing and Recording Machines, of which the following is a specification.

This invention relates to computing machines, and particularly to those in which multiple sets of figure keys are employed, and in which means are provided for holding down the keys as they are depressed until the desired number is completed, and for thereupon effecting the adding of said number by means of mechanism driven by electrical, manual or other power; the extent of movement of the various members of the adding mechanism having been determined by said depression of the keys.

The invention is adapted also for machines which both add and record or print the numbers selected by the keys. In machines of this character, owing to the many mechanical operations that have to be performed after the setting of the keys before all the parts are restored to their normal positions, a relatively long interval of time elapses after depressing the keys for one number before they can be depressed for the succeeding number, and the operator usually after having turned over the check from which he has just copied finds it necessary to wait for an appreciable interval for the keys to become unlocked, so that he can copy the number or amount from the next check.

One of the main objects of my invention is to provide for the resetting or manipulation of the keys after the operation of a power-driven mechanism is begun and before said operation is finished. According to my invention, the keys when depressed are held down, but are released preferably during the initial stroke of the power-driven mechanism, and may be reset for the next number during the final or return stroke of the power-driven mechanism. Thus the machine at each operation adds and records the number which was selected by the keys during the preceding operation. The operator is thus enabled to set the keys while the power driven mechanism is performing its functions, so that when said mechanism comes to rest it may be set in motion again without any delay, to add and record a new number. Thus much time is saved to the operator;

and a skilled operator will be able to keep the power-driven mechanism in operation practically without intermission.

In the accompanying drawings, Figures 1 and 2 read together form a sectional elevation taken from front to rear of an adding and recording machine constructed in accordance with my improvements; said machine being generally similar to the well known "Pike" adding machine. In these figures the parts are shown in normal positions. Fig. 3 is a view similar to Fig. 1, but showing the position of the parts at the moment when the type impressions are being made; the figure keys being released for return to normal positions. Fig. 4 is a sectional plan of the lower rear portion of the machine. Fig. 5 is a rear elevation of several keys with their releasable locking or detaining devices. Fig. 6 illustrates the manner in which the keys are locked against either upward or downward movement at the beginning of the initial movement of the power-driven mechanism. Fig. 7 illustrates the manner of releasing the keys; and Fig. 8 is a sectional side elevation of parts seen at Fig. 7. Fig. 8^a shows diagrammatically a modification of means for temporarily detaining the adding devices in abnormal positions after the release of the keys, and before the completion of the operation of the power-driven mechanism.

Keys 1 mounted on stems 2 are held up in normal position by springs 3, the stems having formed on their lower ends stops 4, the latter serving to position the adding and printing or recording devices substantially in the manner shown in patent to W. H. Pike Jr., No. 763,692. When a key is depressed it is held down by means of a latch 5 which springs into a notch 6 formed in the edge of the key stem; said latch being pressed into the notch by a spring 7, (Fig. 5). The keys are mounted in files, one file for each denomination, and each of the latches 5 is in the form of a long strip seen endwise at Fig. 5 and sidewise at Fig. 6 so that each latch may lock down any of the keys in its file. Each stem may be provided with two notches to facilitate making corrections as set forth in said patent.

When the keys for a given number have been depressed and the stops 4 set, a trip 8 seen at the rear of Fig. 1 is lifted by the operator from a recess formed in a disk 9 fixed upon a shaft 10, which by means of a suitable

clutch tends constantly to rotate. By means of a single rotation of said shaft the number which has been selected by the keys is both added and recorded, and thereupon
 5 said shaft is again arrested by the trip 8. A pitman 11 extends from the disk 9 to an operating arm 12 depending from a rock shaft 13 journaled in the sides of the machine frame, so that said shaft is caused to rock
 10 first rearwardly and then forwardly during each revolution of the shaft 10. At the initial or rearward rocking of said arm 12 and shaft 13, the operation of the adding and printing mechanism is effected, and at the
 15 return movement of said shaft the parts are restored to normal position.

The adding and recording mechanism includes a set of bars or devices 14, one for each denomination, lying side by side and extending
 20 from front to rear of the machine; these bars 14 being normally in their rearmost positions, but when released being drawn forward by springs 15 to positions determined by the depressed stops 4 on the keys. Each
 25 of said adding devices 14 carries a set of stops 16 to engage the stops 4; said stops 16 corresponding in function and location to the stops shown in said patent for this purpose. The depressed key-stops 4 are temporarily
 30 bolted down, and other keys are locked against depression during the advance movements of said adding bars 14; this result being effected by means of a series of bolts 17 shown at Fig. 1 in key releasing positions,
 35 and at Fig. 6 in key-locking positions; each of said bolts having rests 18 to slide beneath shoulders 19 formed upon the keys to prevent the latter from descending, and also having points 20 to enter eyes 21 formed in
 40 the key stems to prevent the depressed keys from rising. As soon as the rock shaft 13 begins to turn, said bolts 17 are thrown rearwardly by springs 22 to the key bolting positions seen at Fig. 6. Normally said bolts
 45 are held forward by a bar 23 supported by depending arms 24; said bar being held in normal position by a pair of arms 25 projecting forwardly and downwardly from the rock shaft 14 and fixed upon the latter. The
 50 arms 25 are barely caught upon the rear face of the bar 23, so that at the beginning of the initial movement of said rock shaft 13 the bar 23 and the bolts 17 are released and thrown back to key-locking positions.

At their rear ends, the adding bars or devices 14 are pivoted to the lower ends of arms 26 depending from a transverse horizontal shaft 27 and rigidly connected to type carriers 28. The arms 26 are held back by
 60 means of a horizontal universal bar 29 upon arms 30 mounted on said shaft 27. This universal bar 29 is controlled by the main power shaft 13; a rearwardly extending cam 31 being fixed upon the latter and engaging
 65 a roll 32 provided upon the arms 30. Dur-

ing about the middle portion of the initial movement of said rock shaft 13, said roll 32 rides forwardly along an incline 33 formed upon said cam (being drawn back by springs 34) thus releasing the bars 14, which are
 70 drawn forwardly by the springs 15 as far as permitted by the stops 4 on the keys, the latter being engaged by the stops 16 on the bars 14. Where no key has been depressed in a file, the bar 14 of that file remains in normal position with a stop 35 resting against a
 75 toe 36 formed upon the bottom of an arm 37 mounted upon the same shaft 38 as the latch 5.

In order to permit the keys to rise in advance of the printing and adding operations, I preferably provide the bars 14 with racks 39, pawls 40 being adapted to fall into the racks to detain them where they have just
 80 been set. Said pawls 40 are normally held above the racks or in inoperative positions by means of cams 41 provided upon a transverse rock shaft or rock shafts 42, each of the latter provided with an operating arm
 85 43 which during the latter part of the upward movement of the cam 31, is thrown up by a pin 44 projecting from said cam and thereby releasing pins 45 provided upon arms 46 formed upon said pawls 40, which thereupon drop into the racks either by the
 90 action of gravity or by means of springs 47. After the racks are thus locked against further advance movements, the bolts 17 are moved forward to ineffective positions during the completion of the initial stroke of the
 95 main rock shaft 13, these movements being effected by means of a cam 48 which extends downwardly from said shaft 13 and engages the transverse bar 23, forcing the same forwardly to the Fig. 3 position. At
 100 the same time the key stems 2 are released from the control of the latches 5. Said latches are vibrated away from the key stems, Fig. 5, by means of short arms 49 provided upon the rock shafts 38; a universal
 105 release bar 50 engaging all of said short arms and being moved toward the right at Fig. 5, by a bell crank 51 as seen at Fig. 7, so that the keys may be lifted by their springs 3. Said bell crank 51 is operated by a link 52
 110 and a bell crank 53, the latter having a roll 54, driven by a trip 55 pivoted upon an arm 56 extending upwardly and rearwardly from the rock shaft 13 and fixed thereon. At Fig. 8 the bell crank 53 and its connections
 120 are shown in inoperative positions to which they have just been moved by the trip 55, which has nearly completed its upward movement. It will be understood that during the return stroke of the main rock shaft
 125 13, said trip 55 rides freely over the roll 54 being pivoted at 57 upon said arm 56 for this purpose. The trip is normally held by a spring 58 against a stop 59 upon said arm 56. Thus it will be seen that at the terminal por- 130

tion of the initial stroke of the main rock shaft 13 the keys are both unbolted and also released from the latches and return to normal position, so that the keys may be set for a new number during the back stroke of the power driven shaft 13.

The printing is effected during the terminal portion of the initial stroke of the main rock shaft 13 by means of an arm 60, Fig. 4, extending back from said shaft and having a wrist 61 engaging a slot 62 formed in the lower end of a link 63. During nearly all of the upward stroke of the arm 60 said wrist travels idly in the slot 62; but finally the wrist reaches the upper end of the slot and lifts the link 63, thereby vibrating a lever 64, Fig. 1, and moving it upon its fulcrum 65 to the Fig. 3 position. As set forth in said patent said lever 64 is one of a pair of levers between which is mounted a series of hooks 66 catching over lips 67 formed on trips 68, whereby said trips are pulled back to the Fig. 3 position, thereby releasing the hammers 69 which strike types 70, and cause them to make impressions upon the paper rolled around the platen 71. At this time the type carriers 28 stand in different positions corresponding with the positions of the bars 14 which have been arrested by the depressed stops 4 and detained by the pawls 40; and hence those types are imprinted upon the paper which correspond to the previously depressed keys.

During the final half of the revolution of the shaft 10, the return movement of the rock shaft 13 is effected and the cam 31 acting upon the roll 32 throws back the universal bar 29, thereby restoring the type carriers to normal positions as well as the bars 14, the latter having upon their forward ends racks 72, Fig. 2, to cooperate during their return strokes with pinions 73, to add the number just printed, the result showing upon a series of number wheels 74, as set forth in said patent.

During such return stroke of the rock shaft, keys may be freely depressed to set the stops 4 for the next adding and printing operation; the latches 5 serving to lock the keys down when so depressed. During said return stroke of the rock shaft 13, the cams 48 remains stationary in the Fig. 3 position acting as locks to hold the bar 23 forward, and to retain the bolts 17 in inoperative positions so as to permit actuation of the keys and stops. The cams 48 are mounted loosely upon the rock-shaft 13 so as to permit the return of the latter while the former remain in the Fig. 3 position. During the final portion of the return stroke of said rock shaft, the arms 25 which are longer than the cams 48 engage the bar 23, forcing the latter forwardly a trifle so as to release the cams 48 which are then returned to normal positions by means of springs 75. The downward

movements of cams 48 are effected by keys 76 projecting from the shaft and working in recesses 77 in said cams.

The return to normal position of the bars 14 is not impeded by such stops 4 as may be set for the next operation because each of the stops 16 is pivoted upon the bar 14 as at 78 so that it may ride freely back past any depressed stop 4; recovering its normal position by the reaction of a spring 79, which normally presses an arm 80 of the stop against a pin 81. At the moment of printing the types 70 are alined by aliner bars 82 each mounted upon a pair of arms 83 fixed upon rock shafts 84 (upon which the pawls 40 are loosely mounted). At the final portion of the forward movement of the universal bar 29 effected by the springs 34, the forward edge of said universal bar engages projections 85 formed upon all of said arms 83 and yieldingly forces the aliner bar 82 into the notches of the racks 39 upon the bars 14, thereby bringing the types upon the several carriers 28 into proper alinement for printing. At the beginning of the return stroke of the universal bar 29, said aliner bars are lifted by springs 86. The pawls 40 slip freely over the rack teeth during the return of the latter; and projecting pins 87 upon the cam plate 31 engage the arm 43 to rock the shaft 42 and restore the pawls 40 to the normal positions seen at Fig. 1. Thus it will be seen that the extent of movement of the adding devices 14 is determined by the depression of the keys although the latter have the novel operation of returning to normal positions in advance of the adding devices, means being provided independent of the keys for detaining the adding devices during the restoration of the keys; that the key locks or latches 5 are released as at Fig. 7, while the adding devices 14 are detained in abnormal positions by the pawls 40; that said latches 5 constitute releasable means called into operation at the depression of the keys for detaining the latter in their depressed positions, said latches being releasable by the power-driven mechanism; that each complete operation of the power driven mechanism, that is a single revolution of the shaft 10 or reciprocation of the rock shaft 13, causes the movement away from and back to normal positions of the printing and adding devices, and that means are provided for mechanically effecting the selection during one operation of said power driven mechanism of stops which are to determine the positions of the adding and printing devices at the next operation of said power driven mechanism; that each of the racks 39 may be regarded as consisting of a series of stops for positioning the adding and printing devices at the printing operation; said stops being selected by means of the depression of the keys 1, so that in each case the pawl 40 en-

gages that particular one of the stops 39 which corresponds with the depressed key in the file of keys.

Variations may be resorted to within the scope of my invention, and portions of my improvements may be used without others.

In the form of the invention seen at Fig. 8, the system of rack holding pawls is omitted, and the racks instead of being formed upon the bars are provided upon plates 88 mounted to slide along the bars, one plate upon each bar. The bars have longitudinal slots 89 engaged by studs 90, upon the plates 88. Springs 91 constantly hold the plates in their rearmost positions upon the bars. Transverse bars 92, analogous to the aliner bars already described, stand normally above teeth 93 upon said plates 88, so that the bars 14 may advance independently of the cross bars 92; and when the bars 14 are arrested by the key stops, the detent bars 92 fall into the notches or teeth 93, and prevent the bars 14 from advancing, when the keys are restored to normal positions; the bars 92 being shown in working positions at Fig. 8. During the return of the bars 14 rearwardly to normal positions, the plates 88 and the bars 92 remain stationary, the latter being lifted at the final portion of the return movement of the power-driven mechanism, whereupon the springs 91 restore the plates 88 to normal positions.

Having thus described my invention, I claim:

1. The combination with a series of adding devices, of means for moving them from normal positions, a system of keys, locks to hold said keys in depressed positions, means for enabling the extent of movement of the adding devices from normal positions to be determined by the depression of the keys and for detaining the adding devices in abnormal positions, means for releasing said key locks while said adding devices are detained in abnormal positions, and means for subsequently returning said adding devices to normal positions.

2. The combination with a system of adding and printing devices, of power-driven means for operating said system, keys having means to determine the extent of movement of the adding and printing devices from normal positions, and means for detaining the adding and printing devices where positioned by said keys during the return of the latter to normal positions; locks for holding the keys in depressed positions, and lock-releasing means operable by said power-driven means.

3. The combination with a system of adding and printing devices, of power-driven means for operating said system, a system of keys, means controlled by said keys for positioning said adding and printing devices, means for holding said keys depressed, and

means for releasing said key-holding means in advance of the return of said adding and printing devices to normal positions, so that before the adding and printing devices are returned to normal positions, the keys may be again depressed to determine the positions to be taken by the adding and printing devices at the succeeding operation of the latter.

4. The combination with a system of adding devices, of power-driven mechanism for operating said system, a system of keys, means called into action by the depression of said keys for detaining the latter in their depressed positions, means controlled by said keys for positioning said adding devices, and means connected to said power-driven mechanism for releasing said key-detaining means so that the latter may rise and be again depressed prior to the return to normal positions of said adding devices.

5. The combination with a series of adding devices, of power-driven means for operating said series, stops for positioning said adding devices, keys through which there may be selected, during the operation of said adding devices, the stops for positioning said adding devices at the next operation of the latter, and releasable means called into operation at the depression of said keys for detaining them in their depressed positions.

6. The combination with a series of adding devices, of power-driven means for operating said series, stops for positioning said adding devices, keys through which there may be selected, during the operation of said adding devices, the stops for positioning said adding devices at the next operation of the latter, means called into operation at the depression of said keys for detaining them in their depressed positions, means for enabling said adding devices to return to normal positions independently of the stops, and means operable by said power-driven means, for releasing all of the depressed keys simultaneously.

7. The combination with a series of adding and printing devices, of power-driven mechanism for operating said series, a system of keys, means called into operation at the depression of the keys for detaining them in their depressed positions, key-releasing means operated by said power-driven mechanism prior to the return to normal positions of said adding and printing devices, a system of stops which may be selected through said keys both before and during the operation of said adding and printing devices, and means for causing the selected stops to position said adding and printing devices when the latter are next operated.

8. The combination with a series of adding devices and power-driven mechanism for operating them of a system of stops, keys depressible during the operation of said power-driven mechanism, for setting the stops for

positioning said adding devices at a succeeding operation of the latter, and means for detaining the keys when first depressed, releasing them during the operation of said power-driven mechanism, and subsequently detaining such keys as are depressed during the completion of the operation of said power-driven mechanism; the adding devices being returnable to normal positions independently of the stops selected through said keys during the operation of the power-driven mechanism.

9. The combination with a series of type carriers and a series of adding devices associated therewith, of power-driven mechanism for operating said type carriers and adding devices, impression mechanism, a series of devices which detain said adding devices and type carriers during the impression operation, a system of keys, means locking said keys when depressed, and key-releasing means operable through said power-driven mechanism before the return of said adding devices and type carriers to normal position; said keys being returnable to normal positions independently of said series of detaining devices, and again depressible during the completion of the operation of said power-driven mechanism, and means being provided whereby the positions of the adding devices and type carriers at a succeeding operation of the power-driven mechanism are predetermined by the depression of said keys.

10. The combination with a series of adding and printing devices, of a power-driven mechanism which at each complete operation causes the movement away from and back to normal positions of said adding and printing devices, stops for positioning said adding and printing devices, a system of keys, keys for selecting said stops, means returning the keys to normal positions while said adding and printing devices are still under the control of said stops, said keys being capable of a second operation before the completion of the operation of said power-driven mechanism, and means for enabling the keys at their said second operation to select the stops to be employed at the next operation of said power-driven mechanism; means called into operation at the depression of the keys for detaining them in depressed positions, and key-releasing means operated by said power-driven mechanism so as to permit said second operation of the keys.

11. The combination with a series of keys, a series of adding and printing devices controlled by the keys, means for detaining the keys when depressed, means for releasing the keys, and means effective at the release of the keys for detaining the adding and printing devices in the positions that were determined by the depression of the released keys.

12. In a computing machine; the combination with a system of type-carriers and means

for moving them from normal positions, of stops for variably arresting said type carriers, a system of keys for setting said stops, means for retaining the keys and stops in working positions, means for enabling the keys and stops to return to normal positions in advance of the type carriers, means independent of said keys and stops for temporarily detaining said type carriers where they are arrested by said stops and means for returning the type carriers to normal positions.

13. In a computing machine, the combination with a system of adding devices and type carriers and means for moving them from normal position, of a system of keys, means controlled by the keys for variably arresting said type carriers, locks for holding the keys depressed, releasing means for said locks, and means independent of said keys for detaining said type carriers where they are arrested so as to permit the keys to return to normal positions.

14. The combination with a series of adding devices, of a system of keys, stops set by the keys, for positioning said adding devices, means for detaining the keys and stops in operative positions, means for releasing the keys and stops, and means effective at the release of the keys and stops for detaining the adding devices where they were positioned by said stops.

15. The combination with a series of bars, adding and printing means controlled by said bars, racks upon said bars, detents for said racks, springs for operating said bars in one direction, key-operated releasable stops for positioning said bars, and means operating upon the release of said stops for causing engagement of said detents with said racks.

16. The combination of a system of key-operated stops, means for holding the stops in depressed positions, a series of bars, means controlled by said bars for adding and printing, racks and detents for said bars, springs for moving said bars from normal positions against the depressed stops, means for both releasing the stops and keys and effecting engagement of said detents and racks, and means for returning to normal positions the bars together with the adding and printing means.

17. The combination of a system of key-operated stops, means for holding the stops in depressed positions, a series of bars, racks upon said bars, both adding and printing means controlled by said bars, springs for advancing said bars, the advance of said bars being arrested by said key-operated stops, normally ineffective pawls for engaging said racks to prevent advance thereof, means for releasing said key-operated stops and causing said pawls to engage said racks, and means for returning to normal positions said bars with their adding and printing means.

18. The combination of a system of key-operated stops, means for holding the stops in depressed positions, a series of bars, racks upon said bars, both adding and printing means controlled by said bars, springs for advancing said bars, the advance of said bars being arrested by said key-operated stops, normally ineffective pawls for engaging said racks to prevent advance thereof, means for releasing said key-operated stops and causing said pawls to engage said racks, means for returning to normal positions said bars with their adding and printing means, and means operating at the completion of the return of said bars to normal positions, for moving said pawls to ineffective positions.

19. The combination of a system of key-operated stops, means for holding said stops in depressed positions, a series of endwise movable bars lying side by side, racks upon said bars, both adding and printing means controlled by said bars, springs for advancing said bars, the advance of said bars being arrested by said key-operated stops, pawls capable of preventing advance movement of said bars, a rock-shaft extending transversely of said bars and having cams which normally hold said pawls out of operative positions, means for releasing said keys and rocking said rock shaft to release said pawls, means for returning to normal positions said bars with their adding and printing means, and means operating at the completion of the return of said bars to normal positions, for returning said rock-shaft to normal position.

20. The combination with a series of adding devices and means for moving them, of a set of keys, key-locking means, stops operated by the keys, key-releasing mechanism, and means for preventing further progress of the adding devices after the release of the keys.

21. The combination with a series of adding and printing devices provided with racks, of an aliner bar in position to engage said racks, yielding means for operating the aliner bar so as to aline the printing devices at the printing operation, and means for restoring said aliner bar to normal position immediately after the printing operation and before the adding and printing devices begin to return to normal positions.

22. The combination of a system of keys, latches for holding said keys depressed, normally idle bolts for restraining both depressed and undepressed keys against action, means for causing said bolts to act, an adding and printing mechanism including a series of bars and means for moving them, means normally restraining said bars against movement, means releasing said bars after said bolts are operated, stops set by the keys for arresting said bars, a set of normally idle

detents for said bars, means for causing said bar detents to operate and said keys and stops to be released, the construction and arrangement being such that the keys after being released may be immediately again operated and held depressed by said latches before the return of said bars to normal positions, and means for returning said bars to normal positions after the printing operation, said bars being returnable independently of the stops set during the second operation of the keys.

23. The combination with an adding and printing mechanism including a series of bars and a power-driven rock shaft, and also including means whereby said bars are advanced at one stroke of said rock shaft and restored at the other stroke thereof, of keys for positioning said bars, means for detaining the keys in depressed positions, and means whereby the keys may be restored and permitted to be again depressed during the return stroke of said rock shaft and said bars.

24. The combination with an adding and printing mechanism including a series of bars and a power-driven rock-shaft, and also including means whereby said bars may be advanced at one stroke of said rock shaft and said printing mechanism caused to effect an impression at about the completion of said stroke, of self-locking keys for positioning said bars, and means for releasing the keys at the printing operation so that they may be again depressed during the return strokes of the rock shaft and bars.

25. The combination with an adding and printing mechanism, of self-locking figure keys for controlling the extent of movement of the adding and printing devices, and means for releasing said keys immediately prior to the printing operation so that they may be again operated before the restoration of the adding and printing devices.

26. The combination of a system of keys, latches for holding said keys depressed, bolts for restraining undepressed keys against action, a power-driven rock shaft having means which normally hold said bolts out of action but causing said bolts to advance at the first portion of the initial movement of said rock shaft, adding and printing devices including a series of bars, means releasable during the latter part of the initial movement of said rock shaft for causing said bars to advance, stops set by the keys for arresting said bars, a set of normally idle detents for said bars, means operating during the final part of the initial stroke of said rock shaft for causing said detents to operate and for releasing said keys from said latches and said bolts, and for effecting the printing of the numbers corresponding with the depressed keys, and means operated by said rock shaft during its return stroke for returning said adding and print-

ing devices to normal positions; said parts being returnable independently of the stops set by the second depression of the keys during the movement of the rock shaft.

5 27. The combination with a system of keys and stops operated thereby, of releasable means for locking or detaining the keys and stops in depressed positions, an adding and printing mechanism including a series of
10 bars, and pawls upon said bars, to engage said stops; means being provided for releasing said keys and permitting their second operation before the return of said bars to

normal positions, and said pawls permitting the retraction of said bars independently of the stops. 15

28. The combination with a system of key operated stops, of an adding and printing mechanism including a series of bars having pawls to engage said stops; said pawls permitting the retraction of the bars independently of the stops. 20

W. H. McFARLAND.

Witnesses:

B. C. STICKNEY,
KITTIE FRANKFORT.