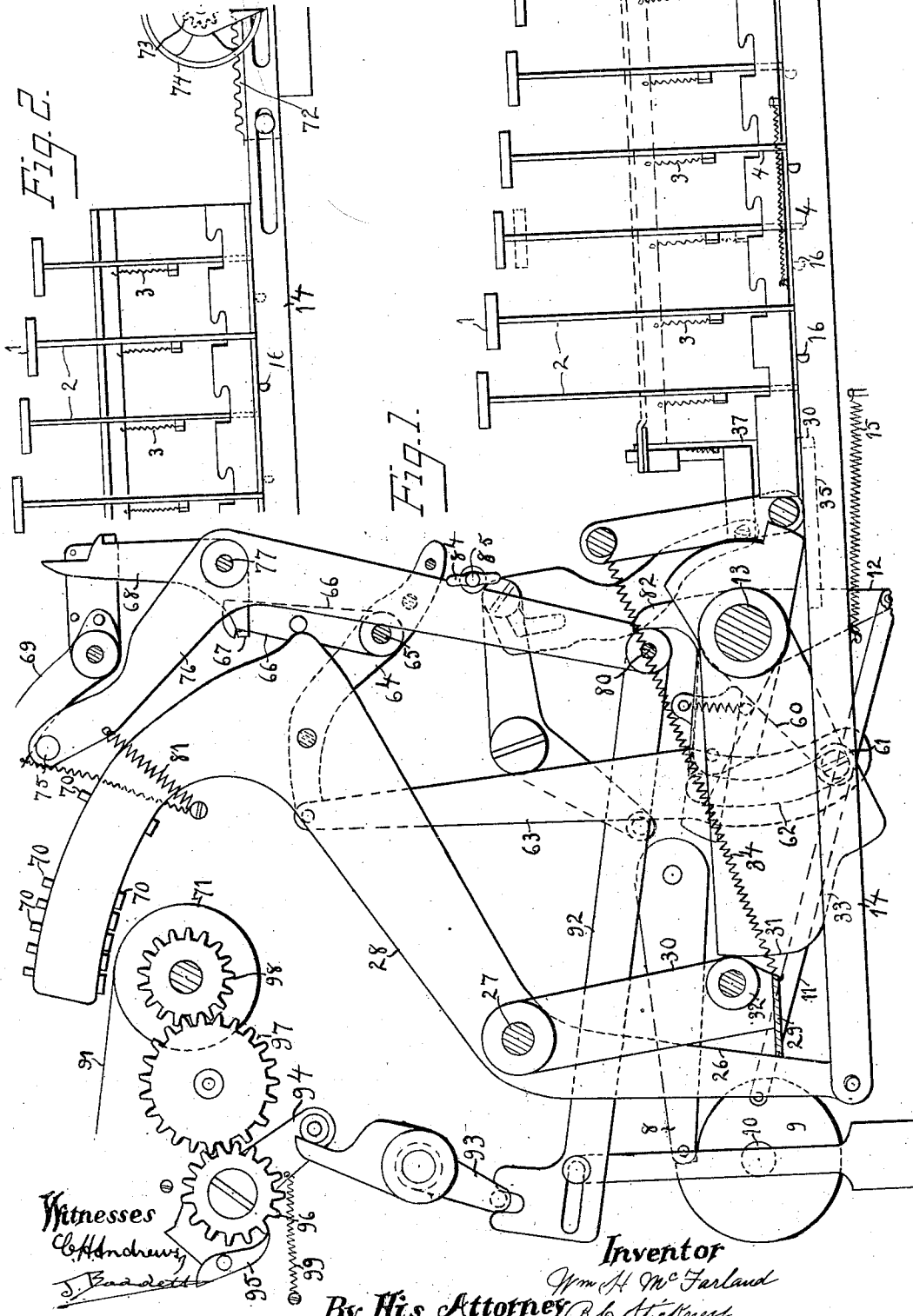


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3 SHEETS—SHEET 1.

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Fig. 5.

Fig. 4.

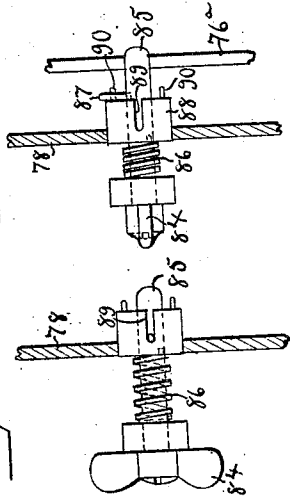
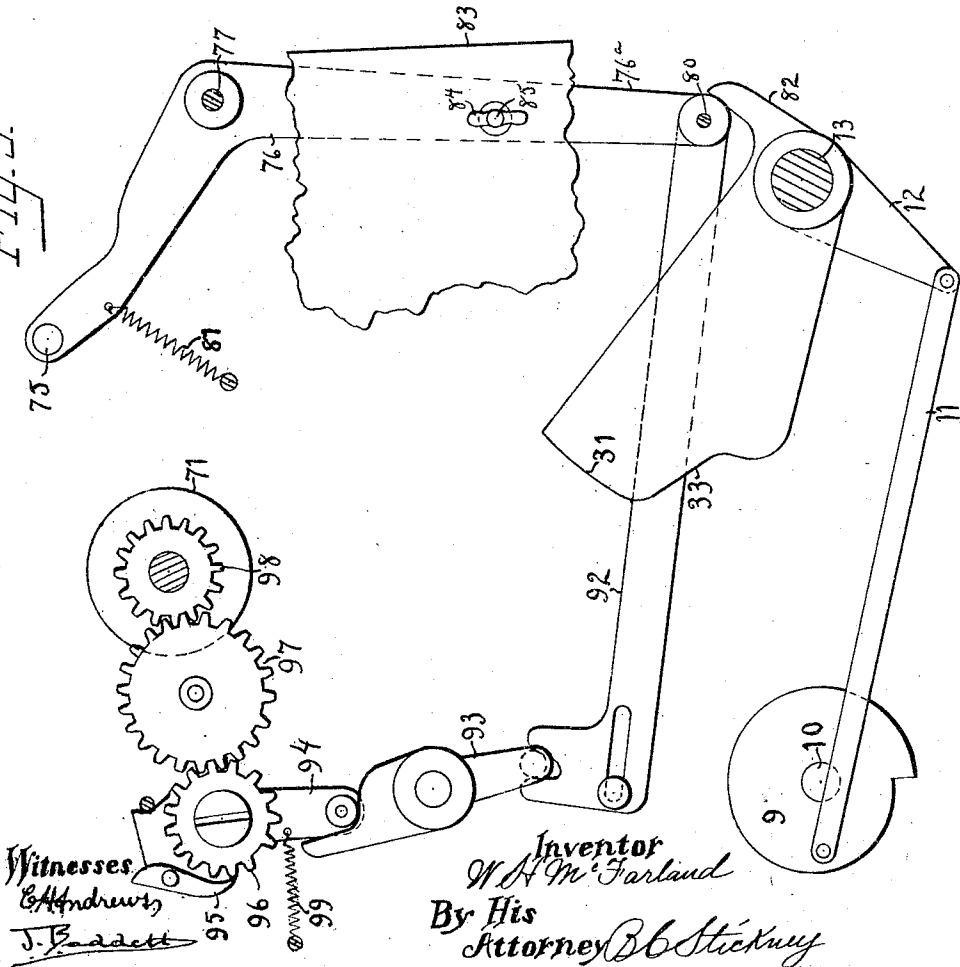


Fig. 3.



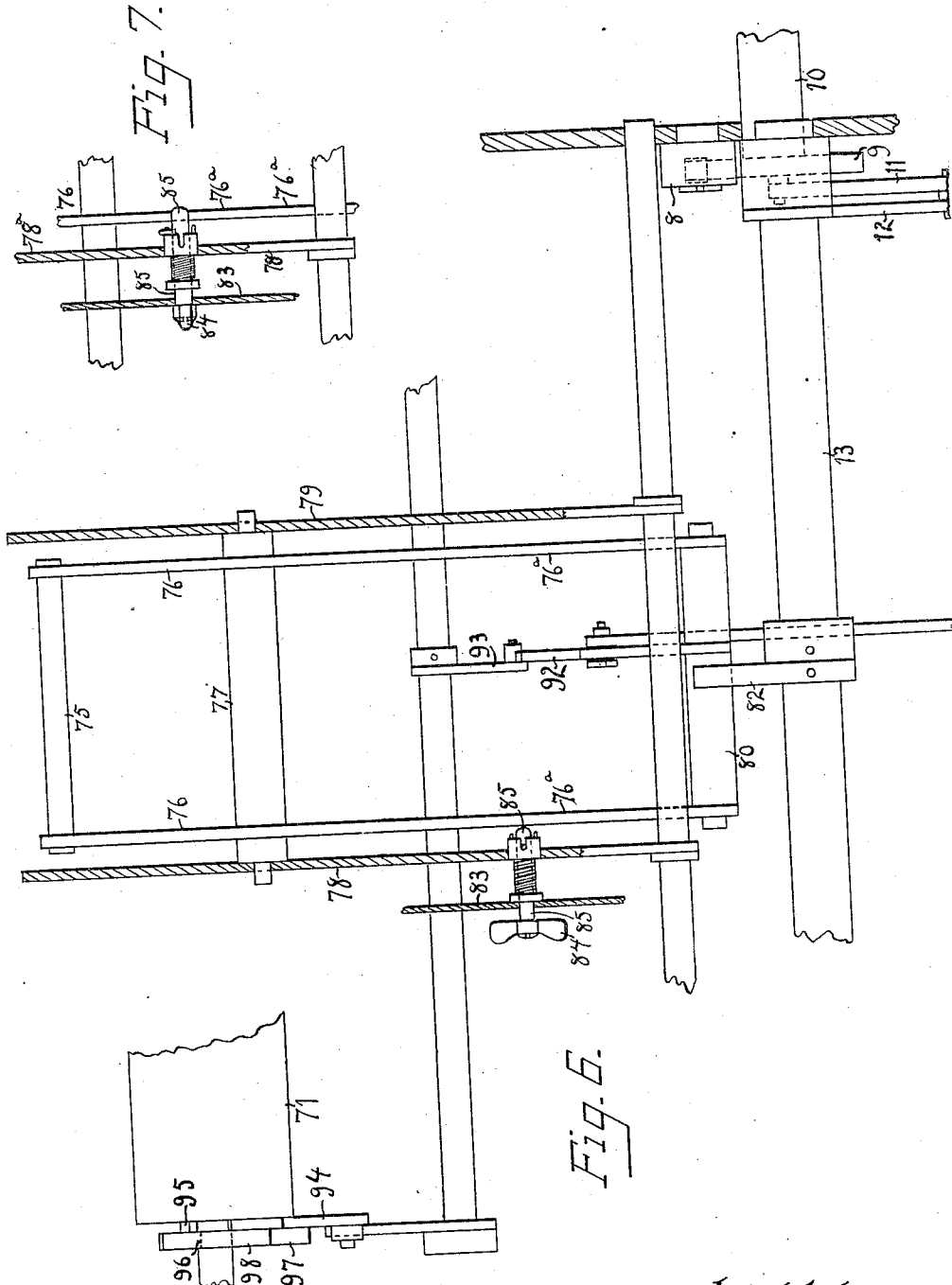
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UNITED STATES PATENT OFFICE.

WILLIAM H. McFARLAND, OF EAST ORANGE, NEW JERSEY.

COMPUTING AND RECORDING MACHINE.

936,652.

Specification of Letters Patent.

Patented Oct. 12, 1909.

Application filed November 9, 1905. Serial No. 286,538.

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 machines by which numbers may be both added and recorded or printed upon a slip of paper. In such machines, it is usual to depress the keys corresponding to the number to be added and then operate a mechanism for effecting both the adding and the printing of such number; such mechanism being usually driven by electric power or foot or hand power. It sometimes happens that an error is made in depressing the keys, and detected when the number is printed, and such error is immediately corrected by depressing the keys which would correspond to the "complement" of the erroneous number, the effect of this operation being to bring the adding mechanism to the point where it stood prior to the adding of the erroneous number. It is not desired, however, to print this complementary number, and in such cases, it has been the custom to insert a slip of paper between the types and the record strip, so that the complementary number will be printed on the inserted slip, which can then be withdrawn and thrown away. It is also sometimes desired to use the machine solely for adding without effecting any printing whatever; and the object of my invention is to make it practicable to use the machine for this purpose, as well as to avoid the necessity of inserting a slip of paper to receive the complementary number just referred to. To these ends, I have contrived by means of a finger piece and a simple part connected thereto to silence the printing mechanism at will, during the adding operation; and I also contrive by the same means to prevent the usual line feeding movement of the record strip, so that when an operator desires to correct a mistake by means of adding in a complementary number, he may first operate the silencing key or button, and then add in the complementary number, and then return the silencing key to normal position and proceed to add and write the correct number.

In the accompanying drawings, Figures 1 and 2 read together form a sectional eleva-

tion taken from front to rear of the well known "Pike" adding machine with my improvements applied thereto. In these figures, the parts are shown in normal positions. Fig. 3 is a view similar to Fig. 1, but showing the position of certain parts at the completion of the initial stroke of the power driven mechanism. Figs. 4 and 5 are front views of a key or button used for silencing the printing and paper feeding mechanisms; Fig. 4 showing the key in idle position, and Fig. 5 showing it in working position; a portion of the framework of the machine being shown in section. Fig. 6 is a front elevation partly in section illustrating the means whereby said key silences the printing and adding mechanisms; the parts being shown in normal positions. Fig. 7 shows in working position the key seen at Fig. 6.

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 the keys for a given number have been depressed, 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 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 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 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 from front to rear of the machine; these bars 14 being normally in their rear-most positions, but when released being drawn forward by springs 15 to positions determined by the depressed stops 4 on the

keys. Each 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.

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 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 a roll 32 provided upon the arms 30. During 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 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 toe 36 formed upon the bottom of an arm 37.

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. 1, 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 pawl 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.

The type hammers 69 which extend in a row transversely of the machine, are turned simultaneously to normal positions by means of a horizontal transverse bar 75 common or universal to all of said hammers. Said bar is mounted rigidly upon the upper ends of a pair of levers 76, which are fulcrumed upon a shaft 77 mounted in a framework seen at 78, 79, Fig. 6. Said levers have arms 76^a extending below said fulcrum and joined at their lower ends by a cross bar 80, whereby the levers may be rocked to lift the type hammers 69.

A spring 81 tends constantly to pull the arms 76 and the universal bar 75 away from the type hammers 69, but this movement is prevented by means of an arm 82, which is fixed to said rock shaft 13. When, however, said rock shaft is vibrated from the Fig. 1 to the Fig. 3 position, the arm 82 rocks forwardly so that the spring 81 may pull the universal bar 75 down, and hence permit the hammers to strike, upon their being released by the trips 68. During the return movement of the rock shaft 13 to normal position, the arm 82, acting upon the bar 80 forces the levers 76 back to normal position together with the universal bar 75 and the type hammers 69.

I mount partly in the framework 78 and partly in a portion of the casing 83, a finger piece or button 84 having a stem 85 journaled for a turning movement in each of said parts 83 and 78, and also capable of axial movement. Normally this button 84 is idle, but it may be pressed in from the Fig. 6 to the Fig. 7 position, so that the inner end of the stem 85 sets across the arm 76^a of the adjacent lever 76 in position to prevent any movement of said lever from normal position, Figs. 1, 5 and 7. Thereby said levers and hammers are prevented from acting, so that the printing mechanism is effectually silenced even though the type carriers 28 are moved to different working positions. It will be understood that the arm 82 may move idly from the Fig. 1 to the Fig. 3 position and back again, while the member 80 remains stationary, because of the restraint put by the stem or stop 85 upon the levers 76 which are rigidly connected. A spring 86 coiled about the stem 85 serves to return the button to normal position when released.

The button 84 may be retained in working position by means of a lock pin 87 projecting from the stem 85, Fig. 5; said pin 87 bearing against a boss 88 fixed in the framework 78 and forming a bearing for the stem 85. Said pin 87 normally occupies a slot 89 formed in said boss; but when the button is pushed in, said pin emerges from the slot and the button may then be rotated, so that

the pin 87 may lock the device in working position. Stops 90 may be provided upon the boss to limit the turning movement of the button. Thus when it is desired to make a correction in the adding, it is only necessary to press in the button or key 84 during the operation of the power driven mechanism; and if it is desired to add a series of numbers without printing, the button after being pressed in may be turned and locked, thus leaving both ends free to manipulate the keys.

A strip of paper 91 which is passed around the platen to receive the type impressions, is fed line by line after each printing operation substantially in the manner set forth in said patent; said feeding mechanism comprising a link 92 extending from the cross bar 80 to a lever 93, which at one end engages another lever 94, the latter carrying a pawl 95 to act upon a tooth wheel 96, which by means of an idle wheel 97 is connected to a tooth wheel 98 rigid with the platen 71. It will be seen that under normal conditions, the initial stroke of the line feeding mechanism is effected by the spring 81, aided by a spring 99, which is attached to the lever 94; but when the button 84 is pressed in, the movement of the bar 80 and hence of the link 92 is prevented, so that the paper feeding mechanism is also silenced. Thus when the silencing key is used, there is neither a type impression made upon the paper, nor is the paper fed, so that the next written line may fall in its place upon the paper strip 91, the same as if an error had not been made; while it is an advantage to be able to use the machine, simply for adding without making type impressions or feeding the paper.

Many variations may be resorted to within the scope of the invention in applying the same to the "Pike" and other adding or computing machines; and portions of my improvements may be used without others.

The "Pike" and other machines are constructed so that before the number-wheels can be set to zero, for beginning a new column, or in other words before the footing can be thrown out, it is necessary to print said footing on the paper; but the provision of the silencing key enables the footing to be thrown out, or the machine to be cleared for a new column, without printing the total on the paper.

Having thus described my invention, I claim:

1. In an adding and printing machine, the combination with an adding mechanism and a printing mechanism operatively connected thereto, of a finger piece mounted for turning and axial movements; said printing mechanism including a series of printing devices and a universal member for controlling the same, said finger piece having

a part which by an axial movement is set into the path of said universal member so as to prevent operation thereof, and said finger piece being also provided with a part which by a turning movement is caused to detain said finger piece in working position. 70

2. In an adding and printing machine, the combination with an adding mechanism and a printing mechanism operatively connected thereto, of a finger piece mounted for turning and axial movements; said printing mechanism including a series of printing devices and a universal member for controlling the same, said finger piece having a part which by an axial movement is set into the path of said universal member so as to prevent operation thereof, and said finger piece being also provided with a part which by a turning movement is caused to detain said finger piece in working position; and a stop for limiting the turning movement of said finger piece. 75

3. In an adding and printing machine, the combination with a series of adding devices and a series of printing devices operatively associated therewith, of a power driven mechanism for operating said adding and printing devices and including a member common or universal to all of said printing devices for returning them to normal positions, a spring being provided for moving said universal member away from normal position to permit the operation of said printing devices; and a normally idle part movable at will to prevent the movement of said universal member from normal position at the operation of said power driven mechanism. 80

4. In an adding and printing machine, the combination with a series of adding devices and a series of printing devices, of a member common or universal to the printing devices, a finger piece which may be operated to prevent the movement of said universal member, and power driven means for operating said adding devices either with or without said printing devices. 85

5. In an adding and printing machine, the combination with a series of adding devices and a series of printing devices, of a member common or universal to the printing devices, a finger piece which may be operated to prevent the movement of said universal member, and power driven means for operating said adding devices either with or without said printing devices; and means for detaining said finger piece in operative position. 90

6. In an adding and printing machine, the combination with a series of adding devices and a series of printing devices operatively associated therewith, of a power driven mechanism for operating said adding and printing devices and including a member common or universal to all of said printing 95

devices for returning them to normal positions, a spring being provided for moving said universal member away from normal position to permit the operation of said printing devices; and a normally idle part movable at will to prevent the movement of said universal member from normal position at the operation of said power driven mech-

anism; and a paper feeding device connected to said universal member so as to be silenced therewith.

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Witnesses:

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KITTIE FRANKFORT.