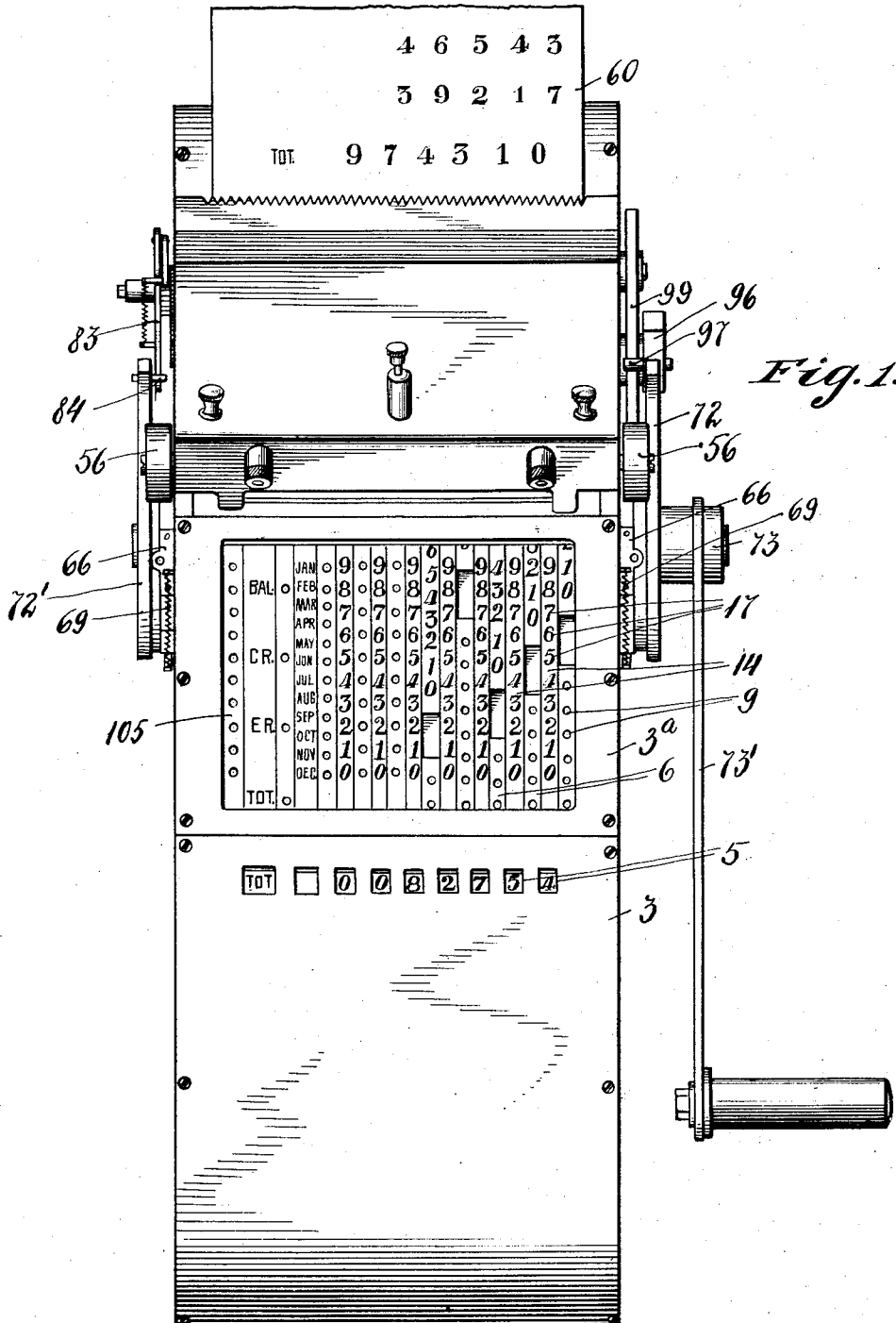


A. I. GANCHER.  
 ADDING AND LISTING OR RECORDING MACHINE.  
 APPLICATION FILED SEPT. 27, 1911.

1,047,199.

Patented Dec. 17, 1912.

6 SHEETS—SHEET 1.



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APPLICATION FILED SEPT. 27, 1911.

Patented Dec. 17, 1912.

6 SHEETS—SHEET 2.



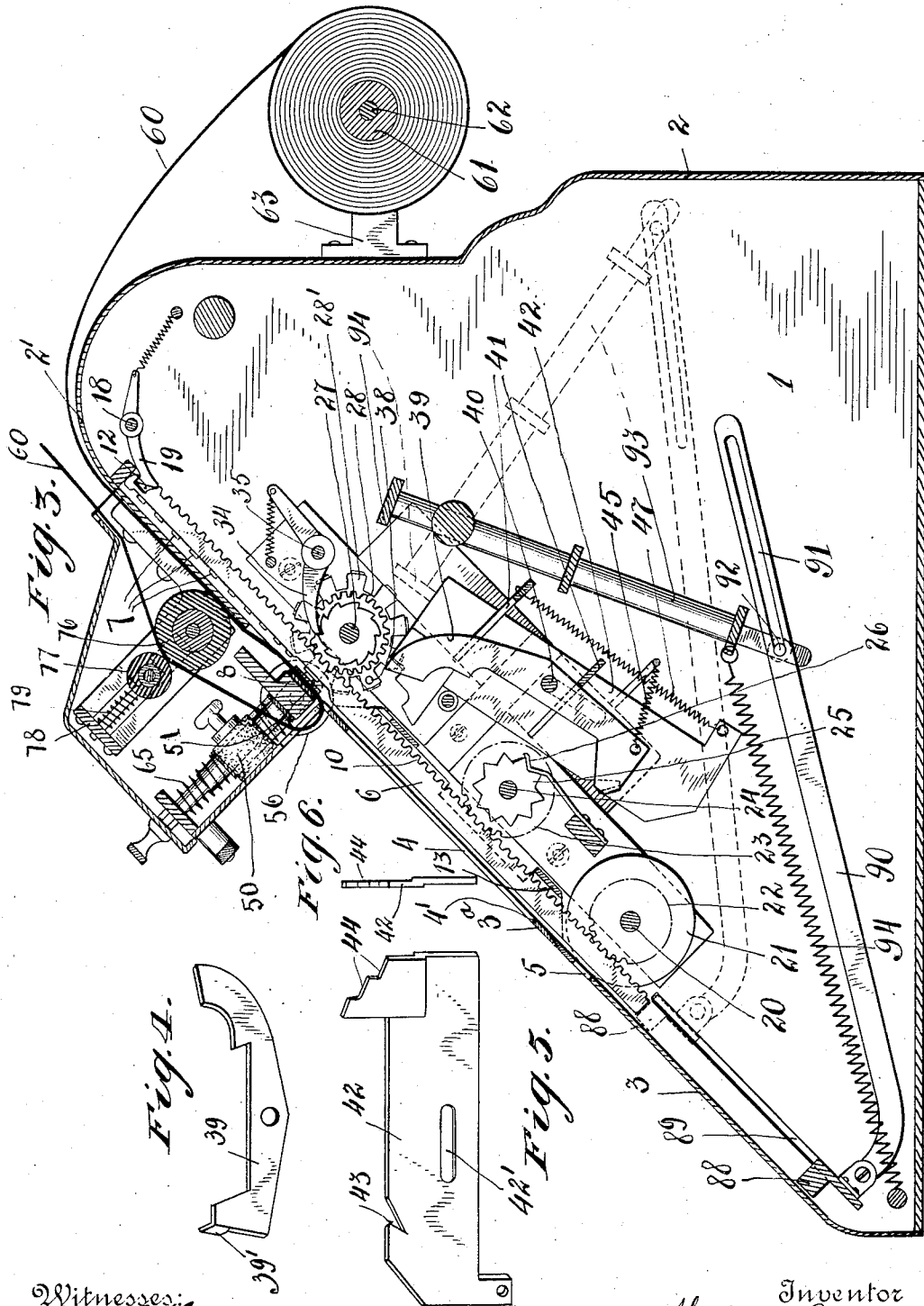
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6 SHEETS—SHEET 3.



Witnesses:  
*Sam'l. Hebig*  
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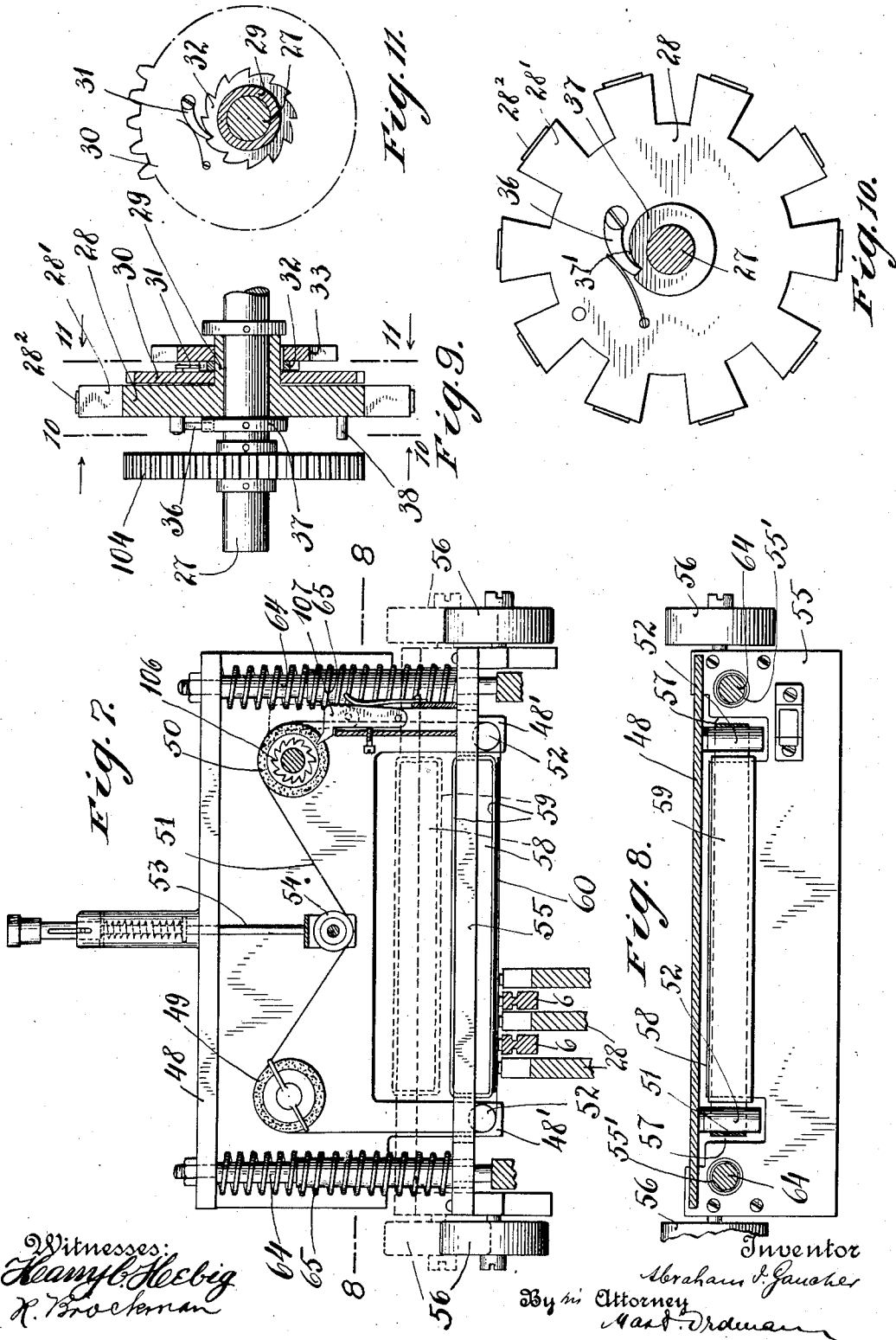
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6 SHEETS—SHEET 4.

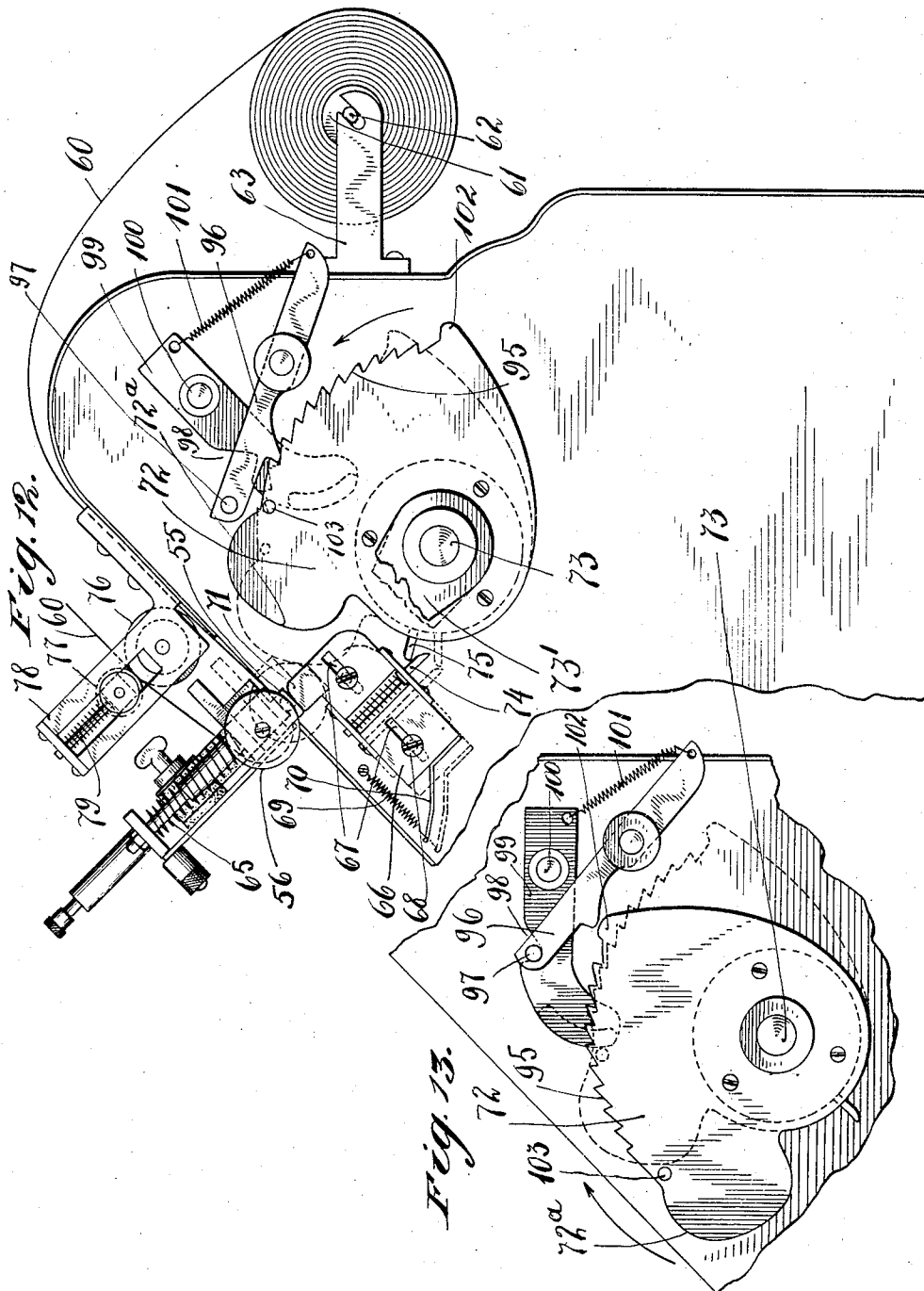


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6 SHEETS—SHEET 5.



Witnesses:  
*Samuel Arbig*  
*E. Brockman*

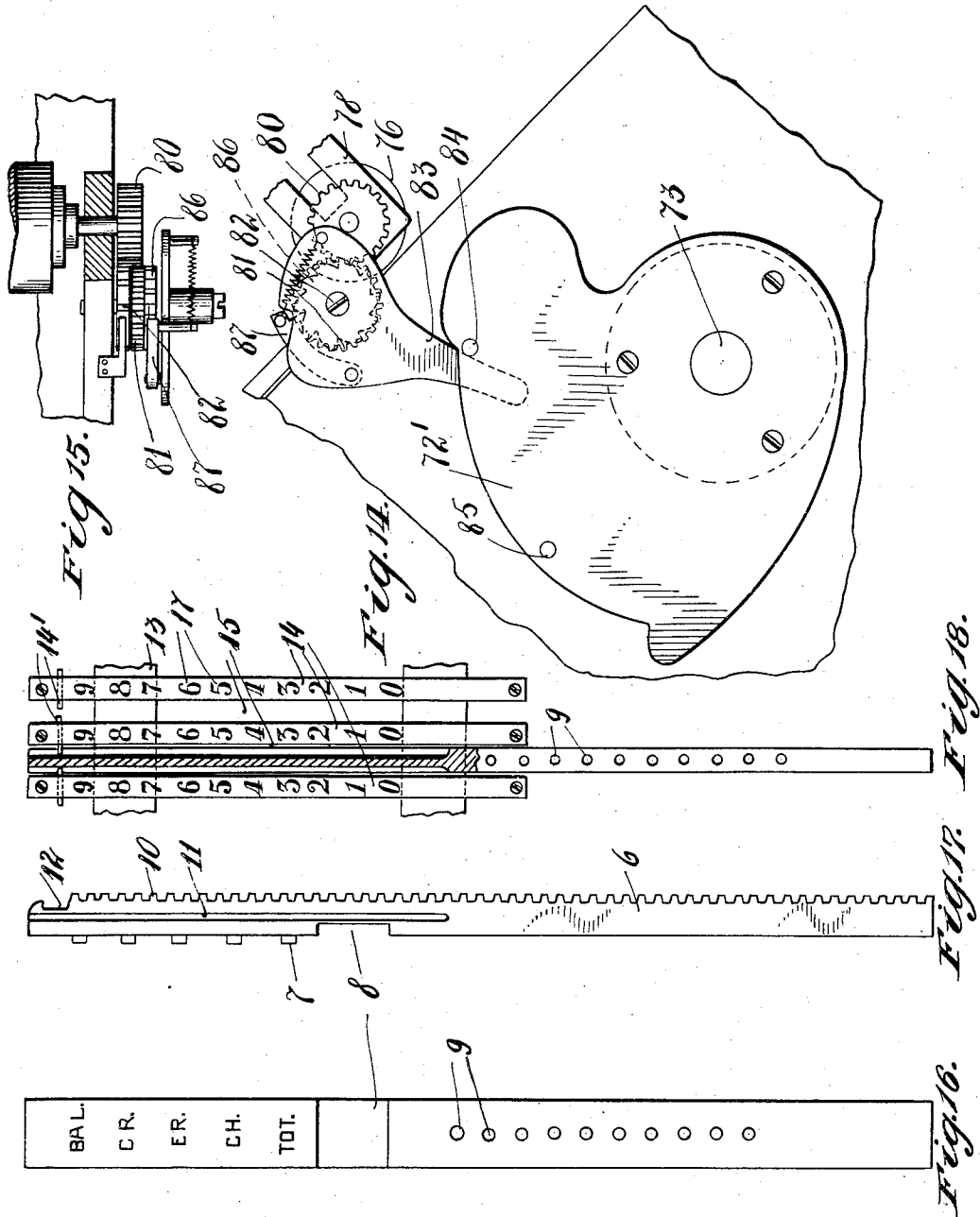
Inventor  
*Abraham I. Gancher*  
 By *his* Attorney  
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6 SHEETS—SHEET 6.



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# UNITED STATES PATENT OFFICE.

ABRAHAM I. GANCHER, OF NEW YORK, N. Y.

ADDING AND LISTING OR RECORDING MACHINE.

1,047,199.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed September 27, 1911. Serial No. 651,485.

*To all whom it may concern:*

Be it known that I, ABRAHAM I. GANCHER, a citizen of the United States of America, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Adding and Listing or Recording Machines, of which the following is a specification.

The present invention relates to adding and listing or recording machines, whereby separate transactions and the total of such transactions may be recorded.

The object of this invention is to simplify the hitherto used machines of this nature, so as to avoid keys and such like mechanisms and to provide a machine, whereby various operations can be accomplished by a single and simple manipulation.

Another object of my invention is to provide a self-inking device for recording or printing machine.

Another object of my invention is to so construct the machine, that the same can be easily disassembled and assembled, without requiring much skill and thus permitting the same being thoroughly cleaned.

With these and other objects in view, my invention consists in the construction, arrangement and combination of parts that hereinafter are fully specified and claimed.

My invention is illustrated in the accompanying drawing, in which similar reference letters denote corresponding parts and in which—

Figure 1 is a front view of the assembled machine; Fig. 2 is a similar view of the same, from which the upper or front cover, the printing device and the paper feeding mechanism are removed to show the inner arrangement of the machine; Fig. 3 is a vertical longitudinal section of the machine; Figs. 4, 5 and 6 are details; Fig. 7 is an enlarged elevation of the printing device; Fig. 8 is a cross section on line 8—8 of Fig. 7; Fig. 9 is a detail of a part of the total recording mechanism; Fig. 10 is a section on line 10—10 of Fig. 9; Fig. 11 is a section on line 11—11 of Fig. 9; Fig. 12 is a side elevation of a part of the machine showing the mechanism for resetting the item recording members and for the operation of the printing device; Fig. 13 shows the same mechanism in another position; Fig. 14 is a side elevation of a part of the machine, showing the paper feed mecha-

nism; Fig. 15 is a top plan view of the paper feed mechanism; Figs. 16 and 17 show, respectively, a front and a side elevation of an item recording member; Fig. 18 is an enlarged detail showing the mechanisms for guiding the item recording members.

In the drawings, which form a part of this specification, 1 denotes a casing, which has a removable back 2 and the side walls of which have slanting front edges, to which a front cover composed of two plates 3, 3<sup>a</sup> are fixed, of which plate 3<sup>a</sup> is provided with a large rectangular opening 4, through which the item recording members to be hereafter specified can be manually operated by means of an appropriate implement (not shown). Provided in the part 3 of the cover are a number of apertures 5, which serve the purpose of exposing the items of item wheels to be hereafter specified.

The item recording members consist of bars 6, which on their upper faces and at their upper portion are provided with embossed figures or other legends 7. Following the lowermost figure on each bar there is an undercut portion 8 and following this portion, a number of perforations 9, or the like, which are arranged longitudinally of the bar and which serve for the engagement of the above named implement to manipulate the said members, the number and spacing of said perforations corresponding with those of the embossed legends at the upper portion of the bar. The rear face of each bar is formed with teeth 10 forming a rack and the side surfaces thereof are provided with longitudinally extending grooves 11. At the upper end and at the back, each member or bar is provided with a notch 12 (Fig. 3).

Secured within the casing immediately below the plate 3<sup>a</sup> is a frame 13, the upper face of which is composed of a number of stationary bars 14 extending parallel to the front edges of the casing and separated from one another by a free space 15, the width of which substantially corresponds to that of the slidable bars 6. Projecting from the side walls of each bar 14 are pins 14', which are adapted to engage the lateral grooves 11 in the slidable bars 6 and to serve as guides for the latter. The outer or front faces of each stationary bar 14 have printed thereon or attached thereto numbers or legends

17 corresponding in number and spacing to those of the embossed legends on the bars 6 (Fig. 18). Normally the slidable bars 6 are in such position in the spaces 15 of the frame, that opposite each legend 17 on the bars 14 there is a perforation 9, the stationary bars 14 and the perforated portion of the slidable bars 6 being exposed through the aperture 4 of the plate 3'. The position of the bars 6 which carry the embossed legends 7 are normally concealed partly by the upper solid portion of the plate 3<sup>a</sup> and partly by the forwardly and downwardly bent portion 2' of the removable back 2 (Fig. 3).

At the upper portion of the casing and below the part 2' of the back, a cross spindle 18 is provided, which bears spring actuated catches 19, one for each bar 6, adapted to engage the notches 12 thereof and tending to hold the bars in raised or normal position. At the lower portion of the casing, a spindle 20 is provided on which are loosely borne wheels 21, having upon their circumference printed or attached numbers or legends, which correspond to those of the bars 6.

The wheels 21 are interposed between the bars 6 and each wheel is integral with or has attached to it a toothed wheel 22 to mesh with the rear teeth 10 of the corresponding bar 6 (Figs. 2 and 3). The apertures 5 in the plate 3 are adapted to expose only one legend at a time of each wheel 21 (Fig. 1). As a further guide for the bars 6, toothed wheels 23 are provided on a cross spindle 24, one for each bar, which mesh with the rear teeth 10 thereof. These wheels are integral or connected with ratchet wheels 25 and co-operating with the latter are spring pawls 26. The wheels 25 and the pawls are so shaped that while they permit the wheels 23 of turning in both directions, they prevent the bars from becoming accidentally displaced and from being shifted to a greater extent than desired (Fig. 3).

The bars are manipulated by the pointed implement, which is inserted into one of the perforations thereof through the aperture 4 of the plate 3<sup>a</sup> and the lower edge 4' of the said aperture serves as a stop for said implement. It may, however, happen that the operator so holds the implement that its point passes somewhat below the lower edge 4' of the aperture 4 and that would bring the bar more down than is necessary for the proper printing position of the respective bar. To avoid this drawback, the teeth of the ratchet wheels 25 are arranged at a slightly larger space from each other than that which the implement at any time may move below the edge 4'. It is clear that in case of an excess of movement being given to the bars 6, the latter by the coöperation of the corresponding pawl 26 and ratchet

wheel 25 will be caused to adjust themselves in proper position (Fig. 3).

Loosely borne on a cross spindle 27 are the total recording wheels 28 which are interposed between the bars 6. The hubs of these wheels are extended to form sleeves 29. Loosely borne on the sleeve 29 of each recording wheel and adjacent to one face thereof, is a toothed wheel 30 which, by means of a pawl 31, is operatively connected to a small ratchet wheel 32 keyed to said sleeve 29. Adjacent to the said ratchet wheel 31 is a larger ratchet wheel 33, (Fig. 9), with which a spring actuated pawl 34 co-operates (Fig. 2). There are a number of such pawls 34 arranged on a cross spindle 35 (Figs. 1 and 2), which number corresponds to that of the number of total recording wheels. Each total recording wheel has on its circumference tooth-like projections 28' (Figs. 3 and 9), of which each is formed with an embossed figure or other legend 28<sup>2</sup>. Projecting from the face opposite to that directed toward the ratchet wheel 30 each recording wheel has a spring actuated finger 36, which is adapted to bear on the circumference of a disk 37 fixed on the spindle 27 (Figs. 9 and 10). This disk has at a point corresponding to a certain legend, as the zero tooth, a notch 37' into which the finger 36 will engage when the spindle 27 is turned into a certain direction, and thus couple the wheel 28 to the spindle 27, so that all recording wheels may be reset to zero position. The recording wheels are so arranged relative to the bars 6, that the latter with their rear teeth will mesh with the toothed wheels 30 of the recording wheels. The connection of the wheel 30 by its pawl 31 to the ratchet wheel 32 is such that when the corresponding bar 6 is shifted downward, the toothed wheel 30 will transmit rotation to the recording wheel, but when shifted upward, the pawl 31 will idly travel over the teeth of the ratchet wheel 32, while the recording wheel 28 will be securedly held in its position by the strong pawl 34 (Figs. 2, 9 and 11). Of the recording wheels 28 counted from left to right, one is for units, the next for tenths, the next for hundredths, etc.

When one of the wheels, say the unit wheel, has completed a full revolution, a transfer is to be made to the next wheel, in the case put, to the wheel denoting the tenths. This I accomplish by the following mechanism: Each recording wheel is provided on one of its faces with a laterally projecting pin 38 (Figs. 3 and 9), which is arranged adjacent to the zero tooth. Projecting into the path of the said pin 38 is a bar 39 (Figs. 3 and 4), which is tiltably borne on a spindle 40 and which at its lower end is provided with a nose 39'. Slidably guided between suitable guides 41 near each tiltably bar 39

is a second bar 42 (Figs. 3 and 5), which at its lower end is formed with a notch 43 and at its upper end with teeth 44. These bars 42 are formed with longitudinal slots 42', through which the spindle 40 is passed. The bar 39 by a spring 45 normally is held with its nose in engagement with the bar 42 locking the same in such position, that it is out of the path of the ratchet wheel 3. The teeth 44 of the bar 42 are made to conform with the teeth of the said ratchet wheel 33, so that when the bar, as it will be presently shown, is thrust into the path of the said ratchet wheel 33, it will engage the latter and impart to it a fraction of a revolution. The bar 42 is actuated by a spring 47, which tends to throw the bar upward into the path of the ratchet wheel 3. As long, however, as the bar 42 is engaged with the bar 39, the same is locked in its lower position. The upper end of the bar 39, as already stated, projects into the path of the pin 38, so that when this pin in the course of rotation of the recording wheel 28 strikes the upper end of the said bar 39, it will tilt the latter against the tension of its spring 45, thus releasing the nose 41 thereof from the notch 43 and permitting now the bar 42 of being thrust upward by its spring 47 and feed the ratchet wheel 33 of the recording wheel. The bars 39 and 42 are arranged in pairs and in such relation to the recording wheels 28, that while the bar 39 of one pair is operated by the pin 38 of one recording wheel, the bar 42 of the same pair when released, operates the ratchet wheel 33 of the next following recording wheel situated at the left of the first named recording wheel.

The position of the recording wheels relative to the bars 6 is such that when the bars are in normal position, one of the teeth of each recording wheel and the legend or number carried thereby will project outward in alinement with and beyond the undercut portion 8. When, however, any one of the bars carrying the recording items is displaced from its normal position, the said legend of the bar will project beyond that of any of the recording wheels.

Arranged on the outside of the casing and above the item recording members and total recording wheels is a printing device. This device consists of two principal parts, the self-inking device and the impression hammer (Figs. 3, 5, 7 and 8). The self-inking device consists of a frame 48, in which are rotatively secured two rollers 49, 50, of felt, or the like, adapted to be saturated with ink and over which an endless ribbon 51 substantially as used with typewriters is fed and by which the same is constantly inked. The lower end of the frame 48 is provided with two extensions 48' which carry guide pins or rollers 52 over which the ribbon 51 is guided with its lower portion substan-

tially in horizontal direction. The frame 48 is also provided with a suitable tensioning device, which consists of a spring actuated rod 53, carrying at its lower end a roller 54 bearing against the upper transversal portion of the ribbon and adapted to hold the ribbon taut. The impression hammer consists of a frame 55 which at its ends is provided with rolls or wheels 56. The front face or edge of this frame 55 is provided with inwardly extending recesses 57, the width and depth of which are so admeasured as to permit the pins or rollers 52 carried by the frame 48 of loosely engaging the same when the parts are assembled (Fig. 8). The part of the frame located between the said two recesses 57 is formed to a block 58, around which an endless band 59 of rubber or the like, is mounted. Between the lower edge of this band 59 and the ribbon 51, the width of which is made to substantially correspond with that of the block 58 and band 59 is adapted to be occupied by the paper 60, on which the records are to be printed. The paper 60 is wound around a roll 61, which is rotatively suspended from a spindle 62 journaled in a bracket 63 which is fixed to the back of the machine (Fig. 3). Projecting from the upper or front edges of the machine are bolts or pins 64, on which the hammer frame 55 having corresponding perforations 55' is movably mounted. The frame 48 carrying the inking device is also mounted on and fixed to the said bolts 64 and arranged between the upper end of the frame 48 and the hammer frame 55 and adapted to actuate the latter is a spring 65, one around each bolt 64. Normally, the hammer frame 55 is adapted to be held against the tension of the springs 65 in raised position, that is to say, away from the printing ribbon 51 and the recording paper 60. To this end, I provide slidable members 66 (Figs. 2 and 12) at each side of the machine, which members consist of plates having longitudinal slots 67 engaging pins or bolts 68 projecting from the machine and which by pressure springs 69 acting on arms 70 are normally held in a position, in which noses 71 thereof support the frame 55 of the impression hammer 58, 59 in raised position. When these plates, by means hereinafter specified, against the tension of their springs 69 are moved downward, the springs 65 will thrust the frame 55 downward, causing the hammer 58, 59 to strike against the paper and the ribbon below the same, whereby, as the case may be, the embossed legends of the item recording members or of the total recording wheels will be printed on the paper.

The rollers or wheels 56 of the frame 55 are adapted to project into the path of cam disks 72, 72' secured to the main operating spindle 73 of the machine. These cams in course of rotation and after the printing

operation is completed, will engage the said rollers 56 lifting the frame 55 and the hammer 58, 59 thereof into its normal position shown in dotted lines (Fig. 7) or in full lines (Fig. 12).

The disengagement of the hammer frame 55 from the slidable supports 66 is accomplished in the following manner: Each slide 66 is provided with a spring actuated pin or nose 74, which projects into the path of a pin 75 fixed to each disk 72, 72' in such a position that prior to the engagement of the cam portion 72<sup>a</sup> of the cam disks 72, 72' with the corresponding wheels 56 of the hammer frame 55, the pins 75 will strike against the pins 74 of the corresponding slides 66 and move the latter downward out of engagement with the frame 55. In consequence thereof, the hammer will be shot downward by the spring 65 and cause the printing of the legends on the strip 60. The latter is conveyed from the roll 61 over the upper rounded part 2' of the back 2 of the machine through the space between the hammer and the ribbon and passed backward over the hammer between two feeding rollers 76, 77 of any suitable material. These feeding rollers 76, 77 are arranged in a frame 78 and are held in frictional contact with one another by a spring 79. At one side of the machine, the spindle of the roller 76 carries a toothed wheel 80 which meshes with a toothed wheel 81 arranged on a spindle 82 (Figs. 14 and 15). Loosely mounted on the spindle 82 is a rocking arm 83 which extends downward between two pins 84, 85 projecting from the cam disk 72'. By these pins, the arm 83 during the rotation of the cam 72' is given a reciprocatory motion. A ratchet wheel 86 is fixed on the spindle 82 and cooperating with said wheel is a pawl 87 connected to the said rocking arm, whereby by the rocking movement of the said arm and through the medium of the gears 80, 81, the paper strip will be fed after each printing operation.

The mechanism for returning the displaced item recording members into normal position after each transaction consists of a cross bar 88 (Figs. 2 and 3) which is slidably engaged in lateral grooves 89 provided in the inner surfaces of the side walls of the machine and extending parallel to the front edges thereof. This bar 88 is connected to rods 90 which at their rear ends have longitudinal slots 91. Engaging by pins 92 with these slots 91 are lateral bars or rods 93 fixed to the main operating spindle 73 and the lower ends of which are attached to a strong spring 94, which tends to hold said rods in the full line position shown in Fig. 3. By turning the spindle 73 by means of the handle 73' the rods will be swung rearward and in pulling along with

them the rods 90 will move the cross bar 88 upward, which in its turn will shift the displaced item recording bars 6 into normal position. The upper ends of the bars 93 are connected by a cross bar 94 the forward edge of which is adapted to operate the members 42 to release the same from the total recording wheels 28 and shift them back into the lower position, in which they become locked by the corresponding member 39.

By the spring 94 and through the medium of the bars 90 and rods 93 the spindle 73 and the handle 73' have the tendency to swing back into the normal position. By this return movement, as it has been seen, the item recording members are reset. In order to prevent a premature resetting of the said members, I provide the cam disk 72 with ratchet teeth 95, with which cooperates a pawl 96 fulcrumed in the side wall of the machine. By these means, the spindle 73 and handle 73' will not be allowed to swing backward until the transaction is completed and printed on the paper strip and after the displaced recording bars 6 are reset in their normal position. To allow of the release of the spindle 73 and handle 73' the pawl 96 has a pin 97, which is adapted to engage a notch 98 made in an arm 99 pivoted at 100 in the side wall of the machine. The arm 99 and pawl 96 are connected by a spring 101 and the disk 72 has a projecting shoulder 102 at the rear end of the series of teeth 95, which shoulder is adapted to lift the pawl 96 out of engagement with the teeth 95. As soon as the pawl is swung sufficiently upward, the spring 101 will tilt the arm 99, so as to cause the notch 98 to engage the pin 97 and lock the pawl 96 in raised position. A pin 103 projecting from the cam 72 will when coming in contact with the arm 99 during the upward swinging of the cam 72 or return of the spindle 73, tilt the same downward, releasing the pin 97 of the pawl 96 and permitting the latter by the action of the spring 101 to swing into engagement with the teeth 95 of the disk 72 (Figs. 12 and 13).

The spindle 27 carries a toothed wheel 104 which serves for the resetting of the total wheels into normal or zero position (Fig. 9). To manipulate the said toothed wheel, a blank ratchet bar 105 (Fig. 1) which is longitudinally slidable and is guided in a similar manner as the item recording bars 6, meshes with said toothed wheel 104 and may be operated through the aperture 4 to reset the total recording wheels.

In the self-inking device, one of the inking rollers, as 50, (Fig. 7) has connected to it a ratchet wheel 106 and projecting from the frame 55 of the impression hammer 58,

59 into the range of said ratchet wheel is a finger or pawl 107 adapted to coöperate with and feed the latter each time the hammer after making an impression returns into its raised position. The ribbon 51 will thus be automatically fed around the inking rollers 49 and be constantly inked.

The mode of operation of the machine is as follows: Suppose one of the items of a transaction is \$927.54. The adjacent recording bars 6 are consecutively displaced by means of the pointed implement. When the entire figure is set, the item will be visible through the apertures 5 (Fig. 1). The displaced members 6 are now in printing position, that is to say, the embossed figures 7 on the bars are located just below the printing ribbon 51, paper strip 60 and hammer 58, 59, which is held in its normal or lifted position by the slides 66. The handle is now turned from its raised position downward, whereby the cams 72, 72' are given a swinging motion, during which they first displace the slides 66. The hammer 58, 59 by the force of the springs 65 is then thrust against the embossed figures of the members 6 and through the medium of the inked ribbon, the item is recorded on the paper 60. By continuing to turn the handle 73' downward, the cam portion 72<sup>a</sup> of the cams 72, 72' are brought into contact with the rolls 56 and lift the hammer from the paper 60 into the raised position. During this rotation of the handle, the spindle 73 is prevented from turning back by the pawl 96 engaging the ratchet teeth 95 of the disk 72. Just before the handle reaches the lowest position, the rods 90 and 93 actuate the cross bar 88, which returns the displaced members 6 into normal position. An additional short downward movement of the handle causes the shoulder 102 to release the pawl 96 allowing the handle to jump back into its initial position owing to the action of the spring 94. A second item, a third item and so forth may then be recorded in a similar manner. During the recording or printing of the figures of the recording bars, the recording wheels are fed by the bars 6, so that the items are added. The printing of the total can be effected only when the recording members are in normal position. Thus, when two or more items have been recorded and the members 6 returned into the normal position, the handle 73' may be swung down, whereby as already described, the cams 72, 72' will first release the hammer that will make the impression of the total figures on the paper 60 and will then return the hammer to its normal position. In addition to the item recording members, there may be similar sliding members having on their upper portions embossed abbreviations of the names of the months of the year, members having embossed numbers to record the days

of the months and members having embossed abbreviations of such words as "Error", "Credit", "Debit", "Balance", etc. (Figs. 1, 16 and 17).

No special keys for operating the printing device being necessary, the machine is rendered very simple and the cost of manufacture thereof considerably reduced.

As the different parts of the machine may be modified in various ways, I do not wish to restrict myself to the construction shown and specified, but

What I claim and desire to secure by Letters Patent is:

1. In an adding and listing or recording machine, a slidable item recording bar having on its outer face embossed legends arranged longitudinally thereon and an undercut portion following the lowermost legend.

2. In an adding and listing or recording machine, a slidable item recording bar having on its outer face embossed legends arranged longitudinally thereon, an undercut portion following the lowermost legend and teeth on the rear face thereof.

3. In an adding and listing or recording machine, a slidable item recording bar having on its outer face embossed legends arranged longitudinally thereon, an undercut portion following the lowermost legend, teeth on the rear face thereof, and a notch at the upper end of its rear face.

4. In an adding and listing or recording machine, a slidable item recording bar having on its outer face embossed figures arranged in consecutive order below one another, an undercut portion following the lowermost legend and means for manually operating said bar.

5. In an adding and listing or recording machine, a slidable item recording bar having on its outer face embossed figures arranged in consecutive order below one another, an undercut portion following the lowermost legend and longitudinally arranged perforations serving for the engagement of a pointed implement to manually operate the said bar.

6. In an adding and listing or recording machine, the combination with a printing device, of a series of total recording wheels each having embossed legends on its circumference, a corresponding number of slidable item recording bars interposed between said wheels, each bar having embossed figures on its upper face arranged longitudinally thereon in consecutive order and corresponding to those of the said total recording wheels, the said bars and total wheels being adapted to coöperate with said printing device to record the items and totals respectively and being so arranged relative to each other that while any of the said bars co-operate with said printing device to make

an impression, the total recording wheels are out of the range of the printing device and vice versa.

7. In an adding and listing or recording machine, a series of total recording wheels, a ratchet wheel fixed to each of said wheels, a loose toothed wheel for each of said recording wheels, a pawl on each of said toothed wheels, adapted to cooperate with said ratchet wheel, and slidable item recording members formed as racks and meshing with the said toothed wheels to feed the said total recording wheels.

8. In an adding and listing or recording machine, a series of total recording wheels, a ratchet wheel fixed to each of said wheels, a loose toothed wheel for each of said recording wheels, a pawl on each of said toothed wheels adapted to cooperate with said ratchet wheel, slidable item recording members formed as racks and meshing with the said toothed wheels to feed the said total recording wheels and means for preventing the return movement of the latter.

9. In an adding and listing or recording machine, a series of total recording wheels each formed with an extended hub, a toothed wheel loosely borne on said hub, a ratchet wheel fixed on said hub, a pawl projecting from said toothed wheel and cooperating with said ratchet wheel, and slidable item recording members formed as racks and meshing with the said toothed wheels to feed the said recording wheels.

10. In an adding and listing or recording machine, a series of total recording wheels each formed with an extended hub, a toothed wheel loosely borne on said hub, a ratchet wheel fixed to said hub, a pawl projecting from said toothed wheel and cooperating with said ratchet wheel, slidable item recording members formed as racks and meshing with the said toothed wheels to feed the said recording wheels and means for preventing the return movement of the latter.

11. In an adding and listing or recording machine, a spindle, a series of total recording wheels loosely borne on said spindle and each formed with an extended hub, a toothed wheel loosely borne on said hub, a ratchet wheel keyed to said hub, a pawl pivoted to said toothed wheel and cooperating with said ratchet wheel and manually operated slidable item recording members formed as racks and meshing with said toothed wheels to feed the said total recording wheels.

12. In an adding and listing or recording machine, a spindle, a series of total recording wheels loosely borne on said spindle and each formed with an extended hub, a toothed wheel loosely borne on said hub, a ratchet wheel fixed to said hub, a pawl pivoted to said toothed wheel and cooperating with said ratchet wheel, manually operated slidable item recording members formed as

racks and meshing with the toothed wheels of said total recording wheels to feed the latter and means for preventing a return movement of said total recording wheels.

13. In an adding and listing or recording machine, a spindle, a series of total recording wheels loosely borne on said spindle and each formed with an extended hub, a toothed wheel loosely borne on said hub, a ratchet wheel fixed to said hub, a pawl pivoted to said toothed wheel and cooperating with said ratchet wheel, manually operated slidable item recording members formed as racks and meshing with the toothed wheels of said total recording wheels to feed the latter, a second ratchet wheel for each total recording wheel fixed to the hub thereof and a pawl engaging with said ratchet wheel and preventing the return movement of the total recording wheel.

14. In an adding and listing or recording machine, a series of total recording wheels, manually operated slidable item recording members having embossed legends and meshing with the said total recording wheels, a printing device cooperating with said total recording wheels and said slidable members, and spring actuated members arranged in pairs, the members of each pair being normally interlocked with one another, means on said total recording wheels adapted to operate one member of each pair to release the other, the latter when released being adapted to cause a transfer of a fraction of rotation from one total wheel to the next adjoining one.

15. In an adding and listing or recording machine, slidable item recording members having a longitudinal row of embossed legends and an undercut portion following the lowermost legend, and a printing device comprising an impression hammer movably arranged above and extending transversely to said members to coincide with the undercut portions thereof when said members are in normal position.

16. In an adding and listing or recording machine, a series of total recording wheels, manually operated slidable item recording members having embossed legends and meshing with the said total recording wheels, a printing device cooperating with the said total wheels and said slidable members and spring actuated members arranged in pairs, the members of each pair being normally interlocked with one another, and a laterally projecting pin on each of said total wheels adapted to operate one of said members to release the other, the latter when released being adapted to cause a transfer of a fraction of rotation from one total wheel to the other.

17. In an adding and listing or recording machine, slidable item recording members having a longitudinal row of embossed leg-

ends and an undercut portion following the lowermost legend, and a printing device comprising a spring actuated impression hammer movably arranged above and extending transversely to said members to coincide with the undercut portions thereof when said members are in normal position, means supporting the said hammer in raised position and manually operated means adapted to cooperate with said first named means to release the said hammer.

18. In an adding and listing or recording machine, slidable item recording members having a longitudinal row of embossed legends and an undercut portion following the lowermost legend, and a printing device comprising a spring actuated impression hammer movably arranged above and extending transversely to said members to coincide with the undercut portions thereof when said members are in normal position, means normally supporting the said hammer in raised position, manually operated means adapted to cooperate with said first named means to release the said hammer, and means operatively connected to the said second named means and adapted to reset the displaced slidable members.

19. In an adding and listing or recording machine, slidable item recording members having embossed legends, a printing device comprising a spring actuated impression hammer, means normally supporting the said hammer in raised position, manually operated means adapted to cooperate with the said first named means to release the said hammer and other means operatively connected to the last named means and so arranged relative to the same that subsequent to the making of an impression by the said hammer, the slidable members which have been previously displaced are reset to normal position.

20. In an adding and recording or listing machine, manually operated slidable item recording members having a longitudinal row of embossed legends and an undercut portion following the lowermost legend, total recording wheels interposed between said slidable members and a printing device comprising an impression hammer movably arranged above said bars and wheels, and cooperating with the same to make an impression, said hammer being adapted to coincide with the undercut portions of the said slidable members when the latter are in normal position.

21. In an adding and listing or recording machine, the combination with a casing, of slidable item recording members therein each having embossed legends and an undercut portion and a printing device fixed to the outside of the casing and comprising an impression hammer movably arranged above and extending transversely to the said

recording members to coincide with the said undercut portions when the said members are in normal position.

22. In an adding and listing or recording machine, the combination with a casing, of slidable item recording members therein each having embossed legends and an undercut portion and a printing device fixed to the outside of the casing and comprising an impression hammer movably arranged above and extending transversely to the said recording members to coincide with the said undercut portions when the said members are in normal position, said impression hammer cooperating in conjunction with paper and a ribbon feed mechanism to record items.

23. In an adding and listing or recording machine, the combination with a casing, of slidable item recording members each having embossed legends and an undercut portion following the lowermost legend, total recording wheels interposed between and operatively connected with said slidable members, and a printing device secured to the outside of said casing and comprising an impression hammer movably arranged above and extending transversely to the said members and said wheels and adapted to coincide with the said undercut portions when the said slidable members are in normal position and cooperate only with the said wheels to record totals and upon displacement of any of said members to cooperate only with the said displaced members to record items.

24. In an adding and listing or recording machine, the combination with a casing, of slidable item recording members each having embossed legends and an undercut portion following the lowermost legend, total recording wheels interposed between and operatively connected with said slidable members and a printing device secured to the outside of said casing and comprising an impression hammer movably arranged above and extending transversely to the said members and said wheels and adapted to coincide with the said undercut portions when the said slidable members are in normal position and cooperate in conjunction with paper and a ribbon feed mechanism only with the said wheels to record totals and upon displacement of any of said members to cooperate only with the said displaced members to record items.

25. In an adding and listing or recording machine, the combination with manually operated slidable bars having embossed legends arranged longitudinally thereon, of a printing device, comprising a spring actuated impression hammer cooperating with the said bars, spring actuated sliding members normally supporting the said hammer in raised position, a manually operated

spindle, means on said spindle adapted to actuate the said sliding members and the said hammer and other means connected to said spindle adapted to reset the said bars into normal position, the said two last named means being so arranged relative to one another that prior to the resetting of the said bars, the said hammer will be first released to make an impression and then returned into its raised position.

26. In an adding and listing or recording machine, the combination with a set of number wheels, of manually operated slidable bars interposed between said number wheels and operatively connected thereto to feed the same, mechanisms for causing a transfer motion being transmitted by one number wheel to the next following number wheel upon the completion of a full revolution of the said first named number wheel, said mechanism comprising spring actuated bars arranged in pairs, the members of each pair being normally interlocked with one another, one member of each pair being tiltable and projecting into the path of one number wheel to be operated thereby so as to release the second member and the latter being movable and adapted to be thrust into the path of the next following number wheel to feed the latter a fraction of a revolution, and means for returning the said second member into its normal or locked position.

27. In an adding and listing or recording machine, the combination with a set of number wheels, of manually operated slidable bars interposed between said number wheels and operatively connected thereto to feed the same, mechanisms for causing a transfer motion being transmitted by one number wheel to the next following number wheel upon the completion of a full revolution of the said first named number wheel, said mechanism comprising spring actuated bars arranged in pairs, the members of each pair being normally interlocked with one another, one member of each pair being tiltable and projecting into the path of one number wheel to be operated thereby so as to release the second member and the latter

being movable and adapted to be thrust into the path of the next following number wheel to feed the latter a fraction of a revolution, a manually operated spindle and means connected thereto and adapted to act upon the said second member of each pair and return the same into normal or locked position.

28. In an adding and listing or recording machine, the combination with a set of number wheels, of manually operated slidable bars interposed between said number wheels and operatively connected thereto to feed the same, mechanisms for causing a transfer motion being transmitted by one number wheel to the next following number wheel upon the completion of a full revolution of the said first named number wheel, said mechanism comprising spring actuated bars arranged in pairs, the members of each pair being normally interlocked with one another, one member of said pair being tiltable and projecting into the path of one number wheel to be operated thereby so as to release the second member and the latter being movable and adapted to be thrust into the path of the next following number wheel to feed the latter a fraction of a revolution, a manually operated spindle, means connected thereto and adapted to act upon the displaced slidable bars to return the same to normal position and other means connected to said manually operated spindle adapted to act against the displaced second member of said each pair to return the same into normal or locked position.

29. In an adding and listing or recording machine, manually operated slidable item recording bars, a manually operated spring actuated spindle, means connected to said spindle adapted to cooperate with the displaced item bars to reset the same into normal position and means for preventing a premature resetting of said bars.

In testimony whereof I affix my signature in presence of two witnesses.

ABRAHAM I. GANCHER.

Witnesses:

JOHN T. CARMODY,  
MAX D. FREEMANN.