

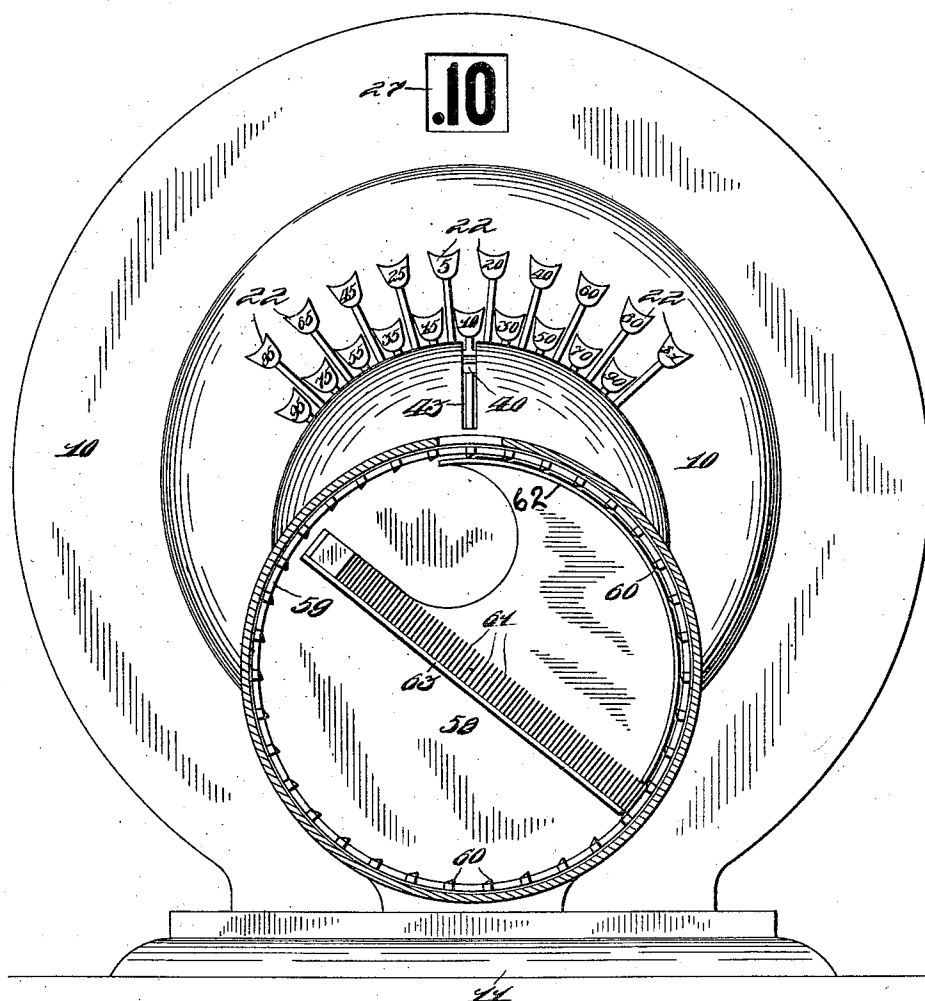
No. 831,626.

PATENTED SEPT. 25, 1906.

F. C. OSBORN.
CHECK PRINTING CASH REGISTER.
APPLICATION FILED OCT. 22, 1901.

3 SHEETS—SHEET 1.

FIG. 1.



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3 SHEETS—SHEET 2.

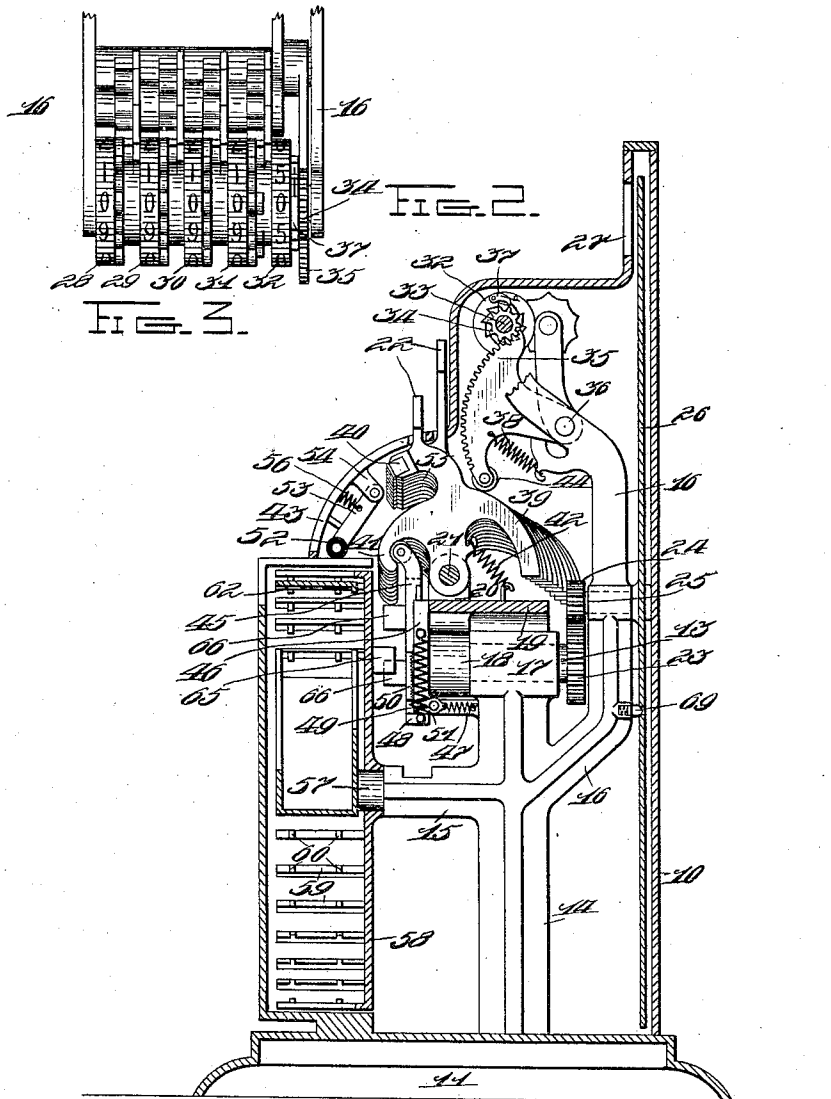


FIG. 4.

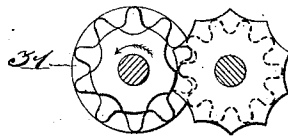
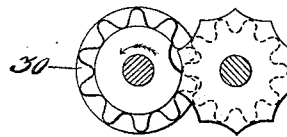


FIG. 5.



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3 SHEETS—SHEET 3.

FIG. 6.

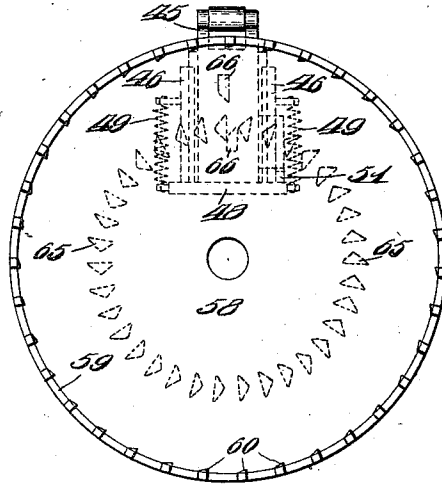
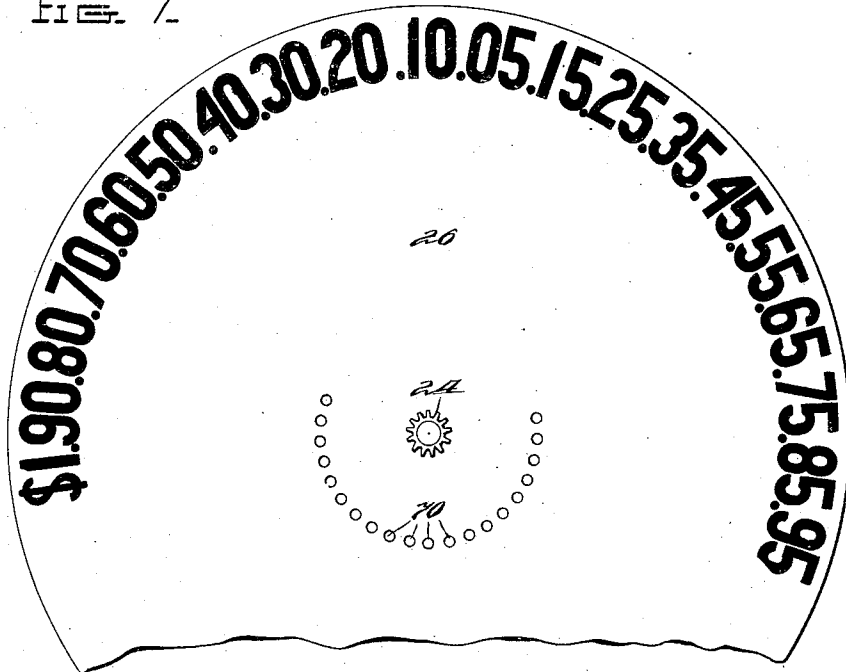


FIG. 7.



Witnesses

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UNITED STATES PATENT OFFICE.

FRANCIS C. OSBORN, OF DETROIT, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO, (INCORPORATED IN 1906.)

CHECK-PRINTING CASH-REGISTER.

No. 831,626.

Specification of Letters Patent.

Patented Sept. 25, 1906.

Application filed October 22, 1901. Serial No. 79,551.

To all whom it may concern:

Be it known that I, FRANCIS C. OSBORN, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Check-Printing Cash-Registers, of which I declare the following to be a full, clear, and exact description.

My invention relates to improvements in cash-registers, and, as shown in the drawings, comprises a registering, indicating, and check-printing mechanism.

The object of my invention and the points of novelty will appear in the following specification and particularly in the claims.

In the drawings, Figure 1 shows a view of the complete machine in front elevation, partly in section. Fig. 2 is a vertical section through the center of the machine. Fig. 3 shows a top plan view of the counter. Fig. 4 shows a section through the counter with the star-wheel which effects the transfer from the "five-cents" wheel to the "dimes-wheel." Fig. 5 is a like view showing the star-wheel for effecting the transfer from the "dimes-registering" wheel to the "dollars-registering" wheel. Fig. 6 shows a front elevation view of the check-carrying cylinder and the arrangement for feeding one step at a time at each operation of the machine. Fig. 7 is a front elevation view of the indicator-disk.

Referring to the drawings, the numeral 10 designates the fixed frame of the machine. It is generally circular as seen from the front, but it rests upon a base 11. Within the case the registering and printing mechanisms are located. No cash-drawer is shown, though, of course, if desired, one could readily be employed.

Most all of the mechanism is arranged concentric to the central shaft 13. (Shown in Fig. 2.) Rising from the floor within the case 10 is a standard 14. It has a front arm 15 and a rear arm 16. The central shaft is journaled in a suitable bearing 17 in the upper end of the standard. Rigidly secured upon the front end of the central shaft is what might be called a "frame." It consists of the socket 18, a rearwardly-extending arm 19, and above that the brackets 20, in which are formed bearings which are pierced to receive and support the key-shaft 21, which is curved and extends, preferably,

concentric to the central shaft and upon which the keys are pivoted. The finger-pieces 22 of the keys extend vertically upward through long slots formed in the case 10. Thus the keys are supported upon a frame which is fast upon the front end of the central shaft 13. Secured upon the rear end of the latter is a gear 23, in mesh with a second gear 24, fast upon the front end of a stub-shaft 25, which is journaled in the rear arm of the standard 14. Secured upon the rear end of the stub-shaft is the large indicator-disk 26.

It will be readily understood from the construction just described that by swinging the keys to the right or to the left, as the case may be, any desired indicating-numeral can be shown through the wicket 27 near the top of the case, because the indicator is geared directly to the shaft upon which the keys may be swung laterally.

The counter, which consists of a series of registering-wheels 28, 29, 30, 31, and 32, turns upon the counter-shaft 33, which is supported in bearings formed in the bifurcated upper ends of the rear standard-arm 16. There is nothing unusual about the counter. It is provided with well-known means whereby when one registering-wheel has made a complete rotation its value is transferred to the adjacent wheel of next higher denomination. This transfer mechanism is shown in Figs. 3, 4, and 5 and needs no specific description.

As the machine shown in the drawings is arranged to print amounts of five cents and multiples thereof, the wheels of lowest denomination is the five-cent registering-wheel 32. Secured to it upon its right-hand side is a pinion 34, through which the registering movement of the keys is transmitted to the counter. The registering-segment 35, which is pivoted upon the short transverse shaft 36, meshes at all times with this pinion, a slip-pawl and ratchet 37 being arranged to transmit to the counter the movement of the registering-segment in one direction, but not in the other. When the registering-segment is moved back to normal position by its spring 38, the counter therefore is not affected thereby.

The keys, as stated, are all pivoted, preferably, concentric to the central shaft 13,

and each comprises besides the finger-pieces 22 a registering-arm 39, which extends toward the rear, the type 40, and a stop-arm 41. There are a number of springs 42—that is to say, one for each key—which respectively connect said keys with the arm 19. The registering-arms 39 at their upper ends adjacent their juncture with the keys are all the same distance from the key-shaft 21; but the distance of their respective lower ends from the central shaft increases in direct proportion to their numerical value.

Extending vertically downward from the lateral slot, through which the keys move collectively about the central shaft as a pivot, is the vertical slot 43, and no key can be swung downward upon its key-shaft 21 unless it is in line with this slot. In the position of the keys as shown in Fig. 1 the ten-key is the only one that can be operated. An antifriction-roller 44 is secured in suitable bearings in the lower end of the registering-segment 35 and lies at all times in the vertical plane of the key that is in position to enter the vertical slot. From this it results that when the key is operated its graduated registering-arm 39 in swinging forward strikes the antifriction-roller, and thereby swings the registering-segment 35 upward and turns the registering-wheel to record the amount of the operated key, as will be readily understood. Of course the indication is made just as soon as the keys are moved about the central shaft 13, so as to bring the key whose denomination it is desired to register in line with the operating-slot 43. Therefore the amount is indicated before it is registered; but if this were objectionable for any reason it would be very easy to provide a shutter, so as to close the wicket 27 until the registering movement was complete—that is to say, until the key had been entirely operated. Shutters of this kind are very well known in the art, and I have not thought it necessary to describe one in connection with my invention.

The full-stroke device to compel the operated key to be swung the full length of the operating-slot comprises a slide 45, which is vertically movable in slideways 46, Figs. 2 and 6, formed, preferably, integral with the standard 14, being connected therewith by the horizontal arm 47. There is a transversely-extending cross-piece 48, secured to the bottom of the slide 45, which forms a stop to limit the upward movement of said slide. Springs 49, Fig. 6, connect the ends of the cross-piece with the fixed slideways 46. The springs therefore tend always to return the full-stroke slide 45 to normal position whenever it is displaced therefrom. It is provided with a series of fine ratchet-teeth 50, which coöperate with the full-stroke pawl 51, which is pivoted to a fixed part of the standard-frame. It results from this construction that whenever the full-stroke slide is started

downward by the operation of a key it must complete the downward stroke before it can be moved upward, and in like manner it must complete its upward stroke. At its upper end the full-stroke slide carries an antifriction-roller which lies directly under the operating-slot 43, and is therefore always in position to be struck and swung downward by the operated key. The stop-arm 41 of the operated key strikes the full-stroke slide and slides it downward, and the shape of the stop-arm is such, as will be readily understood, that the key can only move upward or downward with the full-stroke device. The arm 41 also acts to stop the operated key and prevent its swinging too far backward under the impulse of its spring 42.

I have provided my improved cash-register also with printing devices. These consist principally of the type 40, one of which is carried by each key and arranged to print upon a card which is moved into its path the numerical value of the operated keys. The type are inked by an ink-roller 52 upon the lower end of an arm 53, which is hinged to a bracket 54, secured to the main frame of the machine. When a key swings downward through the operating-slot, its type strikes the ink-roller in such manner as to cause it to roll over the type-face and then swing inward into the recess 55, which for this purpose is formed in each key just below the type. When the key is returned to normal position, the spring 56 swings the ink-roller outward to its normal position.

Paper checks or tickets are presented in the path of the type of an operated key through the instrumentality of a cylindrical carrier, which is journaled in the front of the machine upon a horizontal journal 57, which is supported upon the front arm 15 of the standard. The carrier consists of a drum comprising a rear circular wall 58 and the cylindrical periphery 59. The latter has a series of ticket-feeding teeth 60, which project inward. (See Fig. 1.) The teeth are distant from each other a little more than the length of one of the tickets 61. Concentric with the periphery of the drum is a curved flange 62, which extends from the foot of the inclined ticket-magazine 63, around and just beyond the bottom of the operating-slot 43. The space between the flange 62 and the inner wall of the periphery 59 of the drum is just sufficient to accommodate the thickness of one of the paper tickets. The drum, with its feeding-teeth, is turned a distance equal to the length of a ticket at each operation of the key. The feed-teeth are of such nature that as they pass the foot of the ticket-magazine each one removes the bottom ticket and slides it upward in the space between the curved flange 62 and the periphery 59 of the drum. In this manner a blank ticket is moved into the path of the type of the oper-

ated key just before that key reaches the lowermost point of its stroke. The result is that the type on the operated key strikes the ticket and prints thereon its numerical value.

5 The drum is fed at each operation of the key a distance equal to the length of a ticket by the mechanism shown in Fig. 6. It consists of a series of triangular projections 65 in number equal to the number of feeding-teeth 60. The triangular projections are arranged in a circle concentric with the axis of rotation of the drum. Coöperating with the triangular projections are two driving projections 66, which are formed upon and 15 move with the full-stroke slide 45. These are arranged, as shown in Fig. 6, above and slightly to one side of each other. The opposing faces of the driving projections are inclined in opposite directions, as shown. It results from this construction that when a 20 key is swung downward through the operating-slot the lower driving projection is moved downward below the triangular projection 65 and the upper driving projection in moving downward strikes the upper edge of the triangular projection and turns the drum to the left a distance equal to one-half the distance between two of the feeding-teeth 60. At this point the printed impression is made. 30 Then as the key and the full-stroke slide move upward the drum is released by the upper driving projection and the inclined face of the lower one then strikes the next adjacent triangular projection and again the drum is turned to the left the same distance as before. In this manner at each operation of the key the drum is turned to the left a distance equal to the length of a ticket.

When a ticket has been printed upon, it 40 passes to the upper end of the flange 62, from which it may be readily removed by the operator.

In the rear side of the rear arm 16 of the standard there is a recess in which operates 45 a spring-pressed alining plunger 69. This coöperates with a series of alining holes 70; formed in the indicator disk or dial, whereby if, when the machine is operated, the indicator should stop, so that its numerals are slightly out of alinement with the wicket 27 50 of the case, the round-pointed alining plunger 69 will force itself into the alining-shoulder 70, and thereby bring the indicating-dial into proper alinement.

55 Having thus described my invention, I claim as new and desire to secure by Letters Patent of the United States—

1. In a ticket-printing machine, the combination with a series of independently-movable type-carriers, of a ticket-magazine for 60 containing individual tickets, and means operated upon the movement of any one of said type-carriers to advance the tickets in said magazine and bring a new ticket to printing position. 65

2. In a ticket-printing machine, the combination with a series of independently-movable type-carriers, of a ticket-magazine for containing individual tickets normally out of printing position, and means operated upon 70 the movement of any one of said type-carriers for successively conveying tickets from said magazine to the printing-point.

3. In a ticket-printing machine, the combination with a rotatable member carrying a 75 series of individual manipulative printing devices any one of which may be brought to a common printing-point, of a ticket-magazine for containing individual tickets, and means operated upon the movement of any one of 80 said manipulative printing devices for advancing the tickets in said magazine and bring a new ticket to a common printing-point.

4. In a ticket-printing machine, the combination with a rotatable member carrying a 85 series of pivoted type-bars, of individual ticket-feeding devices operated by the pivotal movement of any one of said type-bars to bring a new ticket to printing position. 90

5. In a ticket-printing machine, the combination with a series of independently-movable type-carriers, of a magazine for containing individual tickets in stack formation, a 95 movable member for conveying tickets from said magazine to printing position, and means controlled by said type-carriers for operating said movable members to bring a succession of tickets to printing position.

6. In a ticket-printing machine, the combination with a series of individual manipulative printing devices mounted upon a rotatable member to permit any one of said printing devices to be brought to printing position, 100 of a ticket-magazine for containing individual tickets arranged in stack formation, a revoluble member having provisions for conveying individual tickets from said magazine to a printing position, and means controlled by said individual printing devices 105 for operating said revoluble member to bring a succession of tickets to printing position.

7. In a ticket-printing machine, the combination with a series of pivoted type-bars movable to a common printing-point, of a 110 ticket-feeding device arranged to be actuated by the type-bar brought to said printing-point.

8. In a ticket-printing machine, the combination with a series of independently-movable type-carriers, of a ticket-magazine for 120 containing individual tickets, and means positively actuated by any one of said type-carriers for advancing the tickets in said magazine to bring a new ticket to printing position. 125

9. In a ticket-printing machine, the combination with a series of independently-movable type-carriers, of a magazine for containing individual tickets in stack formation, a 130

movable member for conveying tickets from said magazine to printing position, and means controlled by said type-carriers for positively moving said movable member to bring a succession of tickets to printing position.

10. In a ticket-printing machine, the combination with a series of reciprocatory and independently-movable type-carriers, of a magazine for containing individual tickets in stack formation, a movable member for conveying tickets from said magazine to printing position, and means controlled by said type-carriers for positively moving said movable member upon each direction of reciprocation of said type-carriers to bring a succession of tickets to printing position.

11. In a ticket-printing machine, the combination with a series of keys arranged to have collective lateral movements, and individual vertical movements, of means for successively bringing the tickets to the printing-point of said keys.

12. In a ticket-printing machine, the combination with a series of printing-keys arranged to be brought to a common printing-point, of a rotary ticket-carrier automatically operated by said keys for presenting tickets successively at the common printing-point.

13. In a ticket-printing machine, the combination with a series of printing-keys, of a slide operated by any one of said keys, a rotary ticket-carrier, and means intermediate the ticket-carrier and slide for advancing said carrier one step upon each reciprocation of the slide.

14. In a ticket-printing machine, the combination with a series of independently-movable type-carriers, of a ticket-magazine for containing individual tickets, a movable member actuated by any one of said type-carriers during its printing movement and having full-stroke provisions to compel the complete movement of the operated type-carrier, and means connected with said movable full-stroke member for advancing the tickets in said magazine to bring a new ticket to printing position.

15. In a ticket-printing machine, the combination with a series of independently-movable type-carriers, of a ticket-magazine for containing individual tickets arranged in stack formation, a revoluble member for conveying individual tickets from said magazine to printing position, a movable member actuated by any one of said type-carriers during its printing movement and having full-stroke provisions to compel the complete movement of the operated type-carrier, and means connected with said movable full-stroke member for operating said revoluble member to convey the individual tickets to printing position.

16. In a cash-register, the combination

with a series of printing-keys having lateral and vertical movements, of a common full-stroke device for said keys, arranged to cooperate with the key in printing position.

17. In a ticket-printing machine, the combination with a series of independently-movable type-carrying keys, of a movable frame carrying said keys to permit any one of the same to be moved to a common printing-point, a ticket-conveyer formed with operating projections, an operating-slide moved by any one of said keys in its printing movement, and a projection formed on said slide for engaging the operating projections of said conveyer and actuate the conveyer to bring a succession of tickets to the printing-point.

18. In a cash-register, the combination with a series of keys provided each with a printing-type arranged whenever a key is operated, to make a printed impression at the printing-point, a ticket-magazine, and means operated by the keys to deliver a ticket from said magazine to the printing-point at each operation of the machine.

19. In a cash-register, the combination with a series of keys, means arranged to print the value of an operated key at the printing-point, a ticket-magazine, and means actuated by the operation of the keys for delivering a ticket from the magazine to the printing-point whenever the machine is operated.

20. In a cash-register, the combination with a series of keys, means for operating the keys so as to print the value of each operated key at the printing-point, a ticket-magazine, a conveyer arranged to carry the tickets from the magazine to the printing-point, and means operated by the keys respectively for actuating the conveyer.

21. In a cash-register, the combination with a series of keys, printing means whereby each key when operated will cause its numerical value to be printed at the printing-point, a ticket-magazine, a conveyer arranged to receive tickets from the magazine and deliver them in position to receive a printed impression from the operated keys, and means controlled by the respective keys for actuating the conveyer.

22. In a cash-register, the combination with a central shaft, a frame carried thereby, keys pivoted concentric to the central shaft and arranged to be swung on said shaft into printing position, type controlled by the keys, a ticket-magazine, and a conveyer which is actuated by the operation of the keys to bring a ticket from the magazine into printing position whenever a key is operated.

23. In a ticket-printing machine, the combination with a series of independently-movable type-carriers mounted upon a movable member to permit any one of said type-carriers to be moved to a common printing-point, of an inking device actuated by the

printing movement of the operated type-carrier to ink the latter prior to its printing impression.

24. In a ticket-printing machine, the combination with a series of independently-movable type-carriers mounted upon a movable member to permit any one of said type-carriers to be moved to a common printing-point, of an ink-roller positioned in the path of the operated type-carrier and arranged to be struck by said carrier to ink the latter and then moved thereby into inoperative position.

25. In a cash-register, the combination with a series of printing-keys arranged to have both lateral and vertical movements, of a counter and a counter-operating device arranged to be operated by any one of the keys which is brought to the printing position.

26. In a cash-register, the combination with a series of printing-keys having lateral and vertical movements and provided with cam-arms, of a counter and a counter-operating rack which is actuated by the cam-arm of the key which is brought to printing position.

27. In a cash-register, the combination with a counter, of a registering rack or segment, a central shaft, a frame turning thereon, a series of keys pivoted upon the frame whereby the keys may be collectively adjusted about the central shaft so as to bring the desired key into operative relation with the registering-segment, and means whereby the individual operation of any key will actuate the registering-segment.

28. In a cash-register, the combination with a central shaft, and a frame journaled thereon, of a key-shaft supported by the frame, a series of keys mounted on the key-shaft whereby the keys have a collective movement about the central shaft and an individual movement upon the key-shaft, a counter, a registering-segment arranged to actuate the counter, and graduated registering means controlled by the respective keys whereby the keys may be moved collectively to bring the desired one into operative relation with the registering-segment, and then individually so as to register its value on the counter.

29. In a cash-register, the combination with a counter, and registering-segment of a central shaft, a frame supported thereby, a series of keys pivoted upon the frame in a plane at right angles to the direction of the central shaft, whereby the keys may be moved in one direction collectively so as to bring the desired key into operative relation with the registering-segment, and in a direction at right angles thereto so as to actuate the counter, a rotary indicator, and connections between said indicator and the central shaft substantially as described.

30. In a cash-register, the combination with a series of printing-keys having lateral and vertical movements, of an indicator set by the lateral movements of the keys, a counter and counter-operating devices actuated by the vertical movements of the keys.

31. In a cash-register, the combination with a suitable support, of a frame pivoted thereon, a series of keys pivoted in the frame, an indicator set by the pivotal movement of the frame, a counter and a counter-operating device actuated by the pivotal movement of the keys.

32. In a ticket-printing machine, the combination with a series of independently-movable type-carriers, of a ticket-magazine for containing individual tickets, and ticket-issuing means controlled by the movement of any one of said type-carriers to issue the printed ticket from the magazine.

33. In a ticket-printing machine, the combination with printing devices, of a ticket-magazine, a movable ticket-conveyer having provisions for extracting tickets successively from said magazine to carry a succession of tickets toward printing position, and a platform for supporting said succession of tickets said platform extending only to such position relatively to the printing-point that further feeding movement to the last printed ticket will move the latter beyond said platform.

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

FRANCIS C. OSBORN.

Witnesses:

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FRANK A. DUWE.