No. 616,708. Patented Dec. 27, 1898.

E. B. HESS.

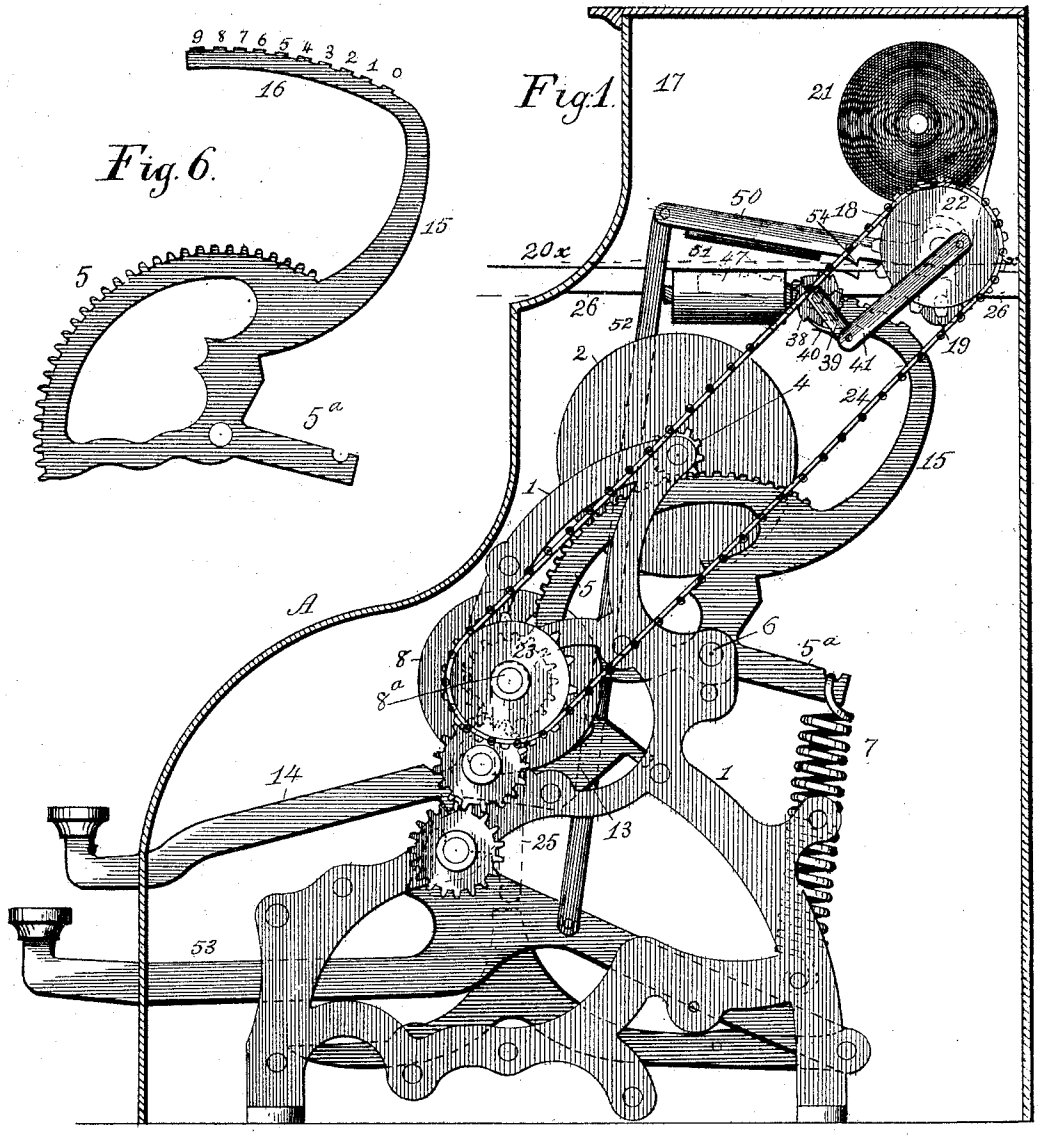
PRINTING ATTACHMENT FOR CASH REGISTERS AND INDICATORS.

(Application filed Jan. 18, 1897.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 6.

Fig. 1.



WITNESSES

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(No Model.) 4 Sheets—Sheet 2.

Fig. 2.

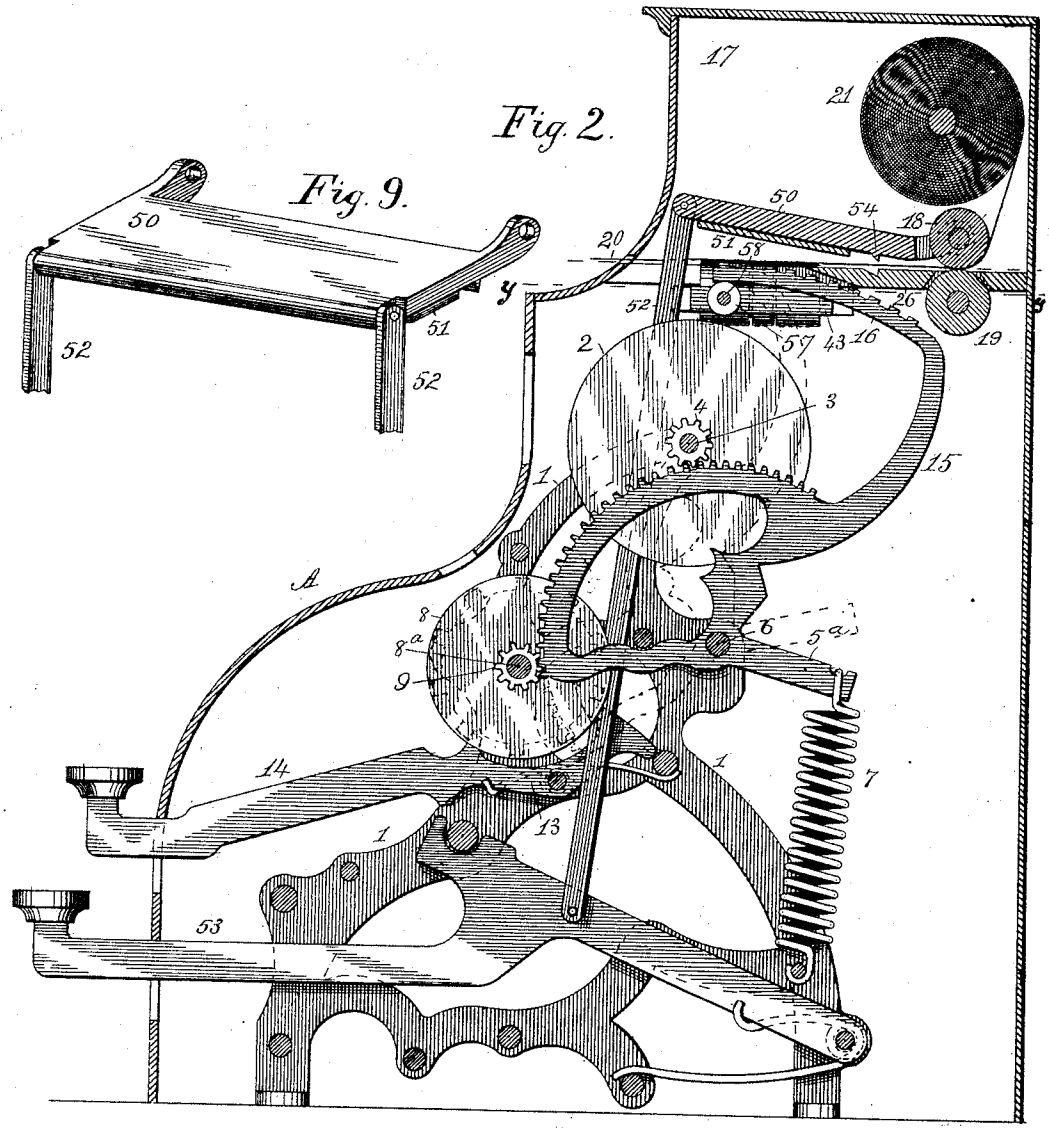
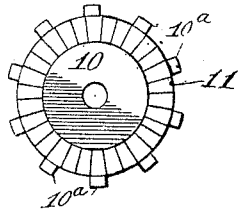


Fig. 9.

Fig. 7.



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(No Model.) 4 Sheets—Sheet 3.

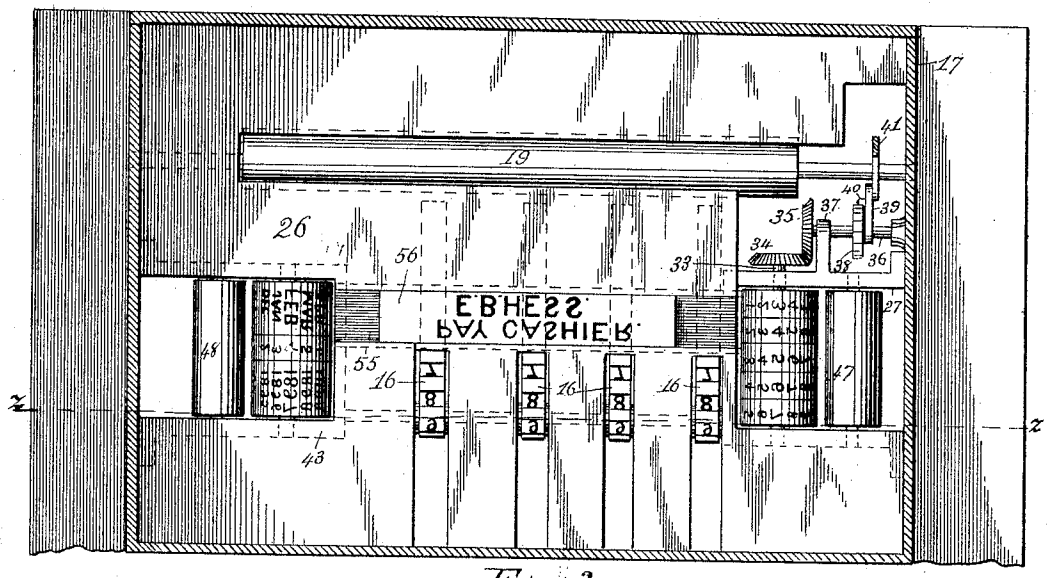


Fig. 3.

Fig. 8.

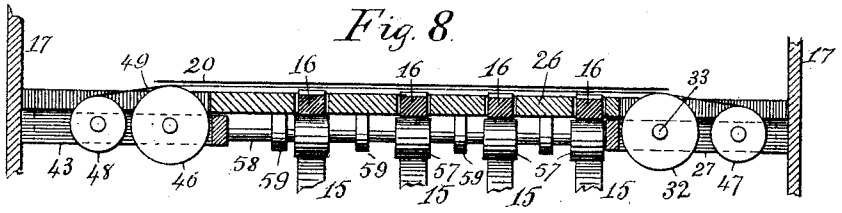
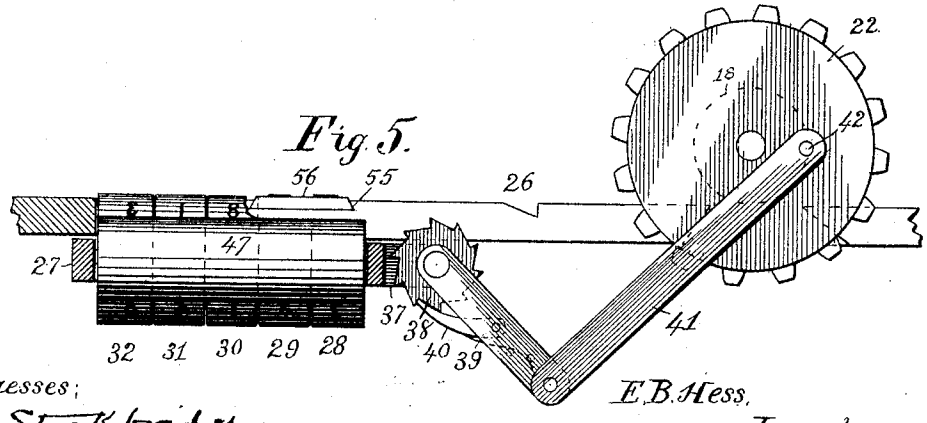


Fig. 5.



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PRINTING ATTACHMENT FOR CASH REGISTERS AND INDICATORS.

(Application filed Jan. 18, 1897.)

(No Model.) 4 Sheets—Sheet 4.

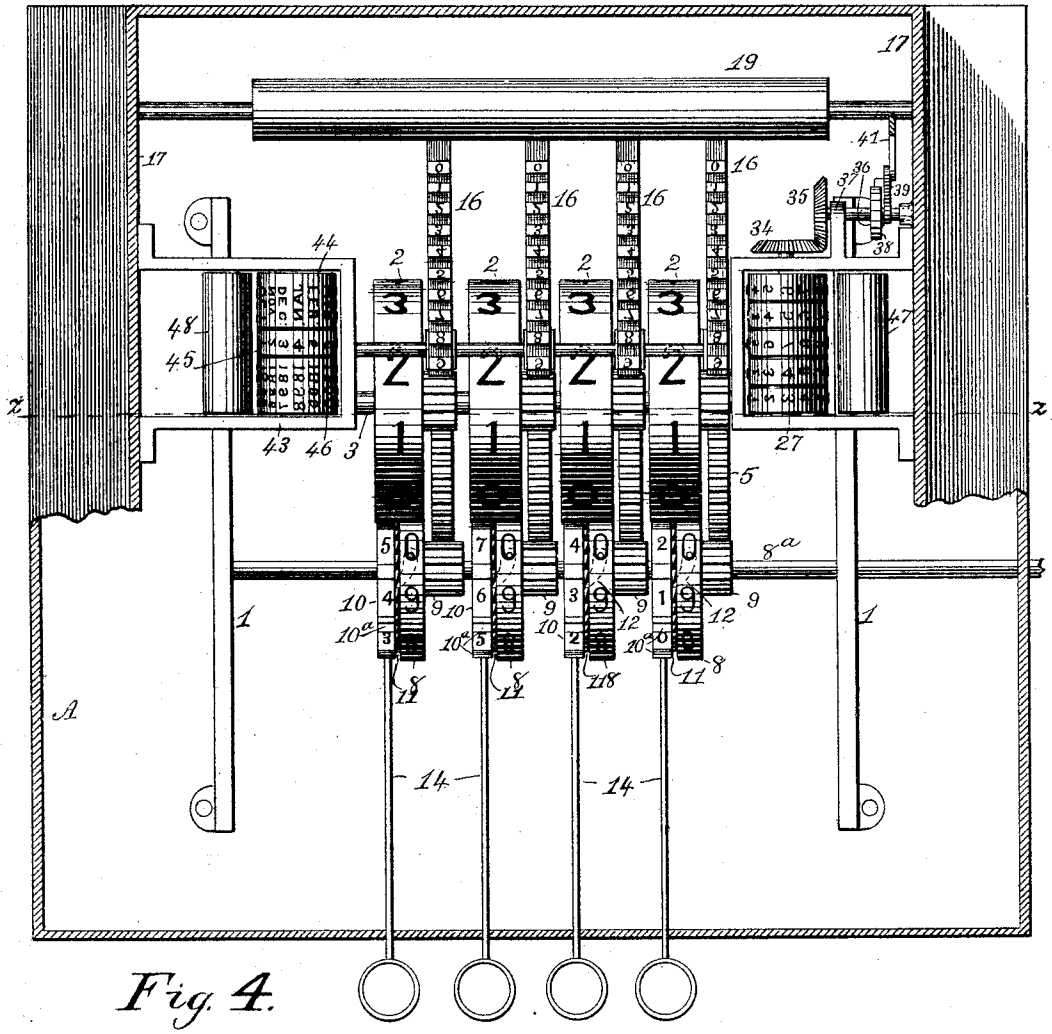

Fig. 4.

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UNITED STATES PATENT OFFICE.

EDWARD B. HESS, OF NEW YORK, N. Y., ASSIGNOR TO THE METROPOLITAN REGISTER COMPANY, OF NEW YORK.

PRINTING ATTACHMENT FOR CASH REGISTERS AND INDICATORS.

SPECIFICATION forming part of Letters Patent No. 616,708, dated December 27, 1898.

Application filed January 18, 1897. Serial No. 619,641. (No model.)

To all whom it may concern:

Be it known that I, EDWARD B. HESS, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Printing Attachments for Cash Registers and Indicators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Cash registers and indicators are frequently used in establishments where cashiers are employed who receive the proceeds of sales and make change for the customer, the machine in such cases being used as a check on the cashier to register the aggregate amount of sales and also as a check on the clerk or salesman by indicating to the customer and to others in the establishment the amount registered. Whether the cash is received by a cashier or whether it is taken by the clerk or salesman and deposited in the till of the machine it is often desirable to make and preserve a record of the individual transactions, and therefore registers have been provided with printing mechanisms arranged and adapted to print on cards or checks or on strips of paper the amount registered at each operation, such machines being known in the art as "check-printing" machines.

This invention comprehends a check-printing attachment constructed and arranged with special reference to machines of the character shown and described in Letters Patent No. 597,676, issued to J. M. Stoughton and myself January 18, 1898.

It comprehends, first, a printing attachment arranged and adapted to be operated by the release-key in the operation of opening the cash drawer or till; second, an automatically-operating numbering attachment arranged and adapted to operate, in conjunction with the printing mechanism, to number the checks consecutively; third, a dating attachment also arranged and adapted to operate in connection with the printing mechanism to print upon each check or slip the date of the transaction represented by the check, and, fourth, certain details of construction and combinations of parts, as hereinafter fully described, and specifically defined in the claims.

In the accompanying drawings, Figure 1 represents a side view of a cash-register having my printing attachment applied thereto. Fig. 2 is a central vertical section from front to rear; Fig. 3, a horizontal section on the line $x\ x$ in Fig. 2, the front of the casing being broken away. Fig. 4 represents a similar section on the line $y\ y$ in Fig. 2; Fig. 5, a detail plan view, on an enlarged scale, of the numbering mechanism; Fig. 6, a side view of one of the combined segment-gears and printing-segments; Fig. 7, a side view of one of the register-wheels; Fig. 8, a transverse vertical section on the line $z\ z$ in Figs. 3 and 4. Fig. 9 is a perspective view of a certain combined platen and paper-cutting device used in connection with the machine.

Referring to the drawings, 1 1 are the frame-standards which, with the several rods and shafts by which they are connected, constitute the frame of the machine.

2 designates a series of rotary indicators, four being shown, loosely mounted on a rod 3 and capable of turning back and forth thereon. Each of these indicators has secured to the side thereof a pinion 4, which meshes with a segment-gear 5, mounted on a rod 6 in rear of and below the rod 3. The segment-gears are capable of rocking back and forth, and they are formed with rearwardly-extending arms 5^a, to which springs 7 are applied to draw them down and turn the segments backward. Below the indicators 2 is a second series 8, loosely mounted on a shaft 8^a and capable of rotating thereon. These lower indicators are provided with pinions 9, which also mesh with the segment-gears 5. At the sides of the respective indicators 8 are register-wheels 10, each having formed on the side thereof toward the adjacent indicator-wheel 8 a series of ratchet-teeth 11, which are engaged by pawls 12, pivoted within the indicator-wheels 8 on the rims thereof, as indicated by broken lines in Fig. 4, the arrangement being such that when the indicator-wheels turn forward the pawls carry the reg-

ister-wheels forward also, but when the indicators turn backward they move independently.

Each register-wheel has ten radial teeth 10^a, which are engaged by anchor-escapements 13, whereby the movements of said wheels are controlled. The escapements 13 are provided with arms 14, which serve as key-levers for operating them to permit step-by-step movements of the register-wheels under the influence of the springs 7, whose force is transmitted through the segment-gears, the indicator-wheels 8 and their pinions 9, and the pawls 12.

The machine as thus far described is the same as that shown and described in the patent above referred to and involves no part of the present invention, except in so far as the printing mechanism to be described is connected with and operated by or through the register mechanism.

The segment-gears 5 are formed with arms 15, which rise from their rear portions and support segments 16 concentric with the gears 5 and which I denominate "printing-segments." These carry on their upper faces nine numeral-types from "0" to "9," running from rear to front in regular numerical order, as represented in Fig. 6, and so arranged and proportioned with reference to the segment-gears 5 that when the latter are at the limit of their backward movement, as represented in full lines in Figs. 1 and 2, the highest or "9" type will stand vertically above the shaft 6 in the highest position and when at the limit of their forward movement, as represented by broken lines in Fig. 2, the "0" or zero character will stand in said highest position.

The means for moving the segments forward and resetting the machine to zero are not shown in the drawings, for the reason that they form no part of the present invention and are not necessary to an understanding of the same.

In a casing 17, which surmounts the register-case A, is mounted a feed-roll 18, which coacts with a roll 19 to feed the strip of paper 20 forward from a roll 21. The journal of the feed-roll 18 carries a sprocket-wheel 22, and on the end of the shaft 8^a is a similar sprocket-wheel 23, the two being geared together by a sprocket or drive chain 24. The shaft 8^a projects through the casing A, and the projecting end is provided with a crank-handle 25, (shown by broken lines in Fig. 1,) whereby the shaft is rotated and the strip of paper fed forward over a table 26, which forms the bottom of the casing 17 and which stands slightly below the plane of the highest types on the segments 16. The table is slotted for the passage of the segments therethrough, as represented in Figs. 2 and 3.

In a frame 27, extending from one of the end walls of the case 17 below the table 26, is a numbering apparatus consisting of a series of operatively-connected type-wheels 28, 29, 30, 31, and 32, mounted on a shaft 33, journaled in the frame 27. On the end of said shaft is a bevel-gear 34, which meshes with a similar gear 35 on the end of a shaft 36, journaled at right angles to said shaft 33 in a lug 37, projecting from the frame 27, and in the end wall of the casing 17. The shaft 36 has a ratchet-wheel 38 fast thereon and at the side of said ratchet-wheel a loose arm 39, which carries a pawl 40, that engages the teeth of the ratchet-wheel. The swinging end of the arm 39 is connected by a pitman 41 with a crank-pin 42 on the sprocket-wheel 22, the arrangement being such that each rotation of the wheel 22 advances the ratchet-wheel 38 one step and operates the type-wheels.

The type-wheels work through an opening provided therefor in the table 26, and their types in the highest position stand in the same plane with the highest types on the segments 16.

Directly across from the numbering-wheels, at the opposite side of the machine, is a frame 43, in which is mounted a dating apparatus consisting of three type-wheels 44, 45, and 46, with types thereon to print the month, the day of the month, and the year. These also stand in the same plane with the types of the segments 16, so that the latter, the numbering-wheels, and the dating-wheels are all printed from at the same time by the same operation.

In the frames 27 and 43, outside of the numbering and dating wheels, are two spools or drums 47 48, which carry an ink-ribbon 49, that extends across the segments and the numbering and dating wheels. The spools or drums 47 48 may be either manually operated or controlled by any suitable and well-known automatic mechanism that can be arranged to operatively connect said spools with any suitable moving part or parts of the register.

It will be observed that the dating-wheels have no connection with the operative mechanism of the machine, and it will be understood, therefore, that they are not automatically operated, but that they are set by hand, after the manner of the ordinary dating-stamp.

Above the table 26 is a vertically-swinging frame 50, which may be denominated the "platen." It is fulcrumed on the journals of the feed-roll 18, and it has on its under side a pressure-plate 51, which extends across the segments 16 and across the numbering and dating wheels. At its front it is connected by a rod 52 with the release-key 53 of the register, so that when said key is depressed the platen is drawn down upon the types and an impression taken. Simultaneously with the taking of the impression a knife 54 on the under side of the frame 50 severs the printed portion of the strip, which is then free to be drawn out through an opening in the front of the case.

For the purpose of marking the printed tickets or slips with the name of the proprietor, or with the name of the clerk or sales-

man having sole charge of the machine, or with such other marks of identification as may be desirable I form in the table 26 one or more dovetail grooves or channels 55 for the reception of type-plates 56, which are removable and interchangeable, thus making provision for printing upon the tickets different names, identification-marks, or directions, as may be found expedient from time to time. With the view of avoiding confusion I have not attempted to show these grooves and type-plates in Figs. 1 and 2 of the drawings, but the same are shown in Figs 3 and 4 and in enlarged view in Fig. 5.

It will now be understood from the foregoing that the indicators 2 and 8 being driven by the springs 7 through the segment-gears 5 and controlled by the escapements 13 the operation of the latter gives step-by-step movements to the indicators, the segment-gears, and the type-segments 16; also, that the types on the segments 16 are brought successively under the platen in printing position and that the types in printing position correspond with the figures or numerals on the indicator-wheels exhibited through the sight-openings in the case A, so that the amount printed corresponds with the amount indicated; also, that at each turn of the crank 25 the strip of paper is fed forward and the numbering-wheels operated and that at each depression of the release-key 53 the platen 50 is drawn down to make an impression and sever the printed portion from the strip 20; further, that the checks or slips are consecutively numbered, making it impracticable for the clerk, salesman, or cashier to defraud by withholding checks and abstracting the amount represented thereby, and that by printing on the check a name or other matter whereby the check may be readily identified it is impracticable to withhold or abstract checks and substitute therefor checks of smaller amount printed on other machines.

I am not aware that printing attachments have heretofore been constructed to afford the safeguards referred to above, and I regard this feature as being particularly valuable and important.

To give stability to the type-segments 16 under the pressure of the platen 50, I support said segments on rollers 57, mounted on a transverse rod 58, the ends of which are mounted in the frames 27 and 43 and which are or may be supported intermediately by lugs or bearings 59 on the under side of the table 26.

I may dispense with the frames 27 and 43 and provide bearings for the devices mounted therein by forming lugs on the under side of the table 26 similar to the lugs 59.

Having now described my invention, I claim—

1. In a printing attachment for cash-registers having rotary indicators, the combination with segmental driving-gears for said indicators having suitable operating means and provided with integral concentric arms, of type carried by said arms, substantially as described.

2. In a printing attachment for cash-registers having rotary indicators, the combination with segmental driving-gears for said indicators having suitable operating means and provided with integral concentric arms, of type carried on the outer faces of said arms and a platen and paper-feeding mechanism operatively arranged with respect to said type and having suitable operating means, substantially as described.

3. In a printing attachment for cash-registers having rotary indicators, the combination with segmental driving-gears for said indicators having suitable operating means and provided with integral concentric arms, of type carried on the outer faces of said arms, a platen and paper-feeding mechanism operatively arranged with respect to said type and having suitable operating means, and a table situated beneath said platen and provided with slots penetrated by the type-bearing portions of said gears, substantially as described.

4. In a printing attachment for cash-registers having rotary indicators, the combination with segmental driving-gears for said indicators having suitable operating means and provided with integral concentric arms, of type carried on the outer faces of said arms, a platen operatively arranged with respect to said type and having suitable operating means, a paper-feeding mechanism also operatively arranged with respect to said type, a sprocket-and-chain connection between one of said indicators and the paper-feeding mechanism, and a table situated beneath said platen and provided with slots penetrated by the type-bearing portions of said gears, substantially as described.

5. In a printing attachment for cash-registers having rotary indicators, the combination with segmental driving-gears for said indicators having suitable operating means and provided with integral concentric arms, a platen operatively arranged with respect to said type, carrying a paper-cutting knife and having suitable operating means, a paper-feeding mechanism also operatively arranged with respect to said type, a sprocket-and-chain connection between one of said indicators and the paper-feeding mechanism, numbering and dating contrivances, and a table situated beneath said platen and provided with slots penetrated by the type-bearing portions of said gears and by the numbering and dating contrivances, substantially as described.

6. In a printing attachment for cash-registers having rotary indicators, the combination with the release-key of the register, spring-actuated segmental driving-gears for said indicators provided with integral concentric arms carrying type on their outer faces, anchor-escapements for said indicators

and resetting means for said segments, of a table provided with slots penetrated by the type-bearing portions of said segments, a platen pivotally supported above said table and operatively connected to said release-key, and a paper-feeding mechanism having a chain-and-sprocket connection with one of said indicators, substantially as described.

7. In a printing attachment for cash-registers having rotary indicators, the combination with segmental driving-gears for said indicators having suitable operating means and provided with integral concentric arms, of type carried on the outer faces of said arms, a platen operatively arranged with respect to said type and having suitable operating means, a paper-feeding mechanism and a numbering contrivance operatively connected with each other and also operatively arranged with respect to said type, a sprocket-and-chain connection between one of said indicators and the paper-feeding mechanism, and a table situated beneath said platen and provided with slots penetrated by the type-bearing portions of said gears and by the numbering contrivance, substantially as described.

8. In a printing attachment for cash-registers having rotary indicators, the combination with segmental driving-gears for said indicators having suitable operating means and provided with integral concentric arms, of type carried on the outer faces of said arms, a platen operatively arranged with respect to said type and having suitable operating means, a paper-feeding mechanism also operatively arranged with respect to said type, a sprocket-and-chain connection between one of said indicators and the paper-feeding mechanism, a numbering contrivance consisting of a series of operatively-connected type-wheels and also operatively arranged with respect to said platen, a ratchet connected to one of said type-wheels, a pawl adapted to engage said ratchet and operatively connected to said sprocket, and a table situated beneath said platen and provided with slots penetrated by the type-bearing portions of said gears and by the numbering contrivance, substantially as described.

9. In a printing attachment for cash-registers having rotary indicators, the combination with segmental driving-gears for said indicators having suitable operating means and provided with integral concentric arms, of type carried on the outer faces of said arms, a platen operatively arranged with respect to said type and having suitable operating means, a paper-feeding mechanism also operatively arranged with respect to said type, a sprocket-and-chain connection between one of said indicators and the paper-feeding mechanism, a numbering contrivance consisting of a series of operatively-connected type-wheels and also operatively arranged with respect to said platen, a ratchet, bevel-gearing connecting said ratchet with one of said type-wheels, an arm arranged concentrically with and independently of said ratchet, a pawl mounted on said arm and engaging said ratchet, a pitman connecting said arm with said sprocket, and a table situated beneath said platen and provided with slots penetrated by the type-bearing portions of said gears and the numbering contrivance, substantially as described.

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

EDWARD B. HESS.

Witnesses:

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