

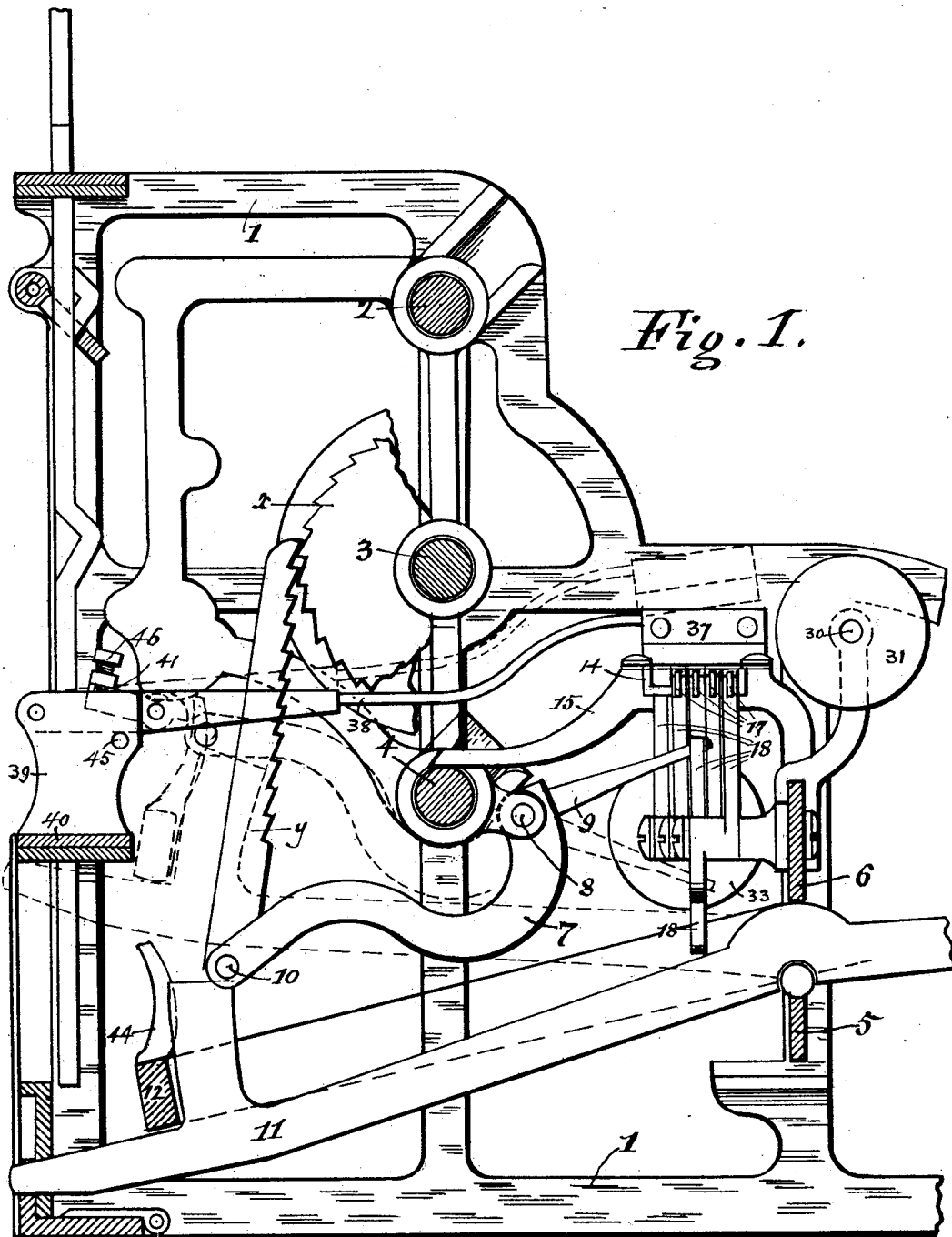
(No Model.)

5 Sheets—Sheet 1.

J. F. PFEFFER.  
CASH INDICATOR AND RECORDER.

No. 463,706.

Patented Nov. 24, 1891.



*Fig. 1.*

Witnesses:  
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*E. Hosen*

Inventor:  
*John F. Pfeffer*  
by *W. L. Hosen*  
Attorney

(No Model.)

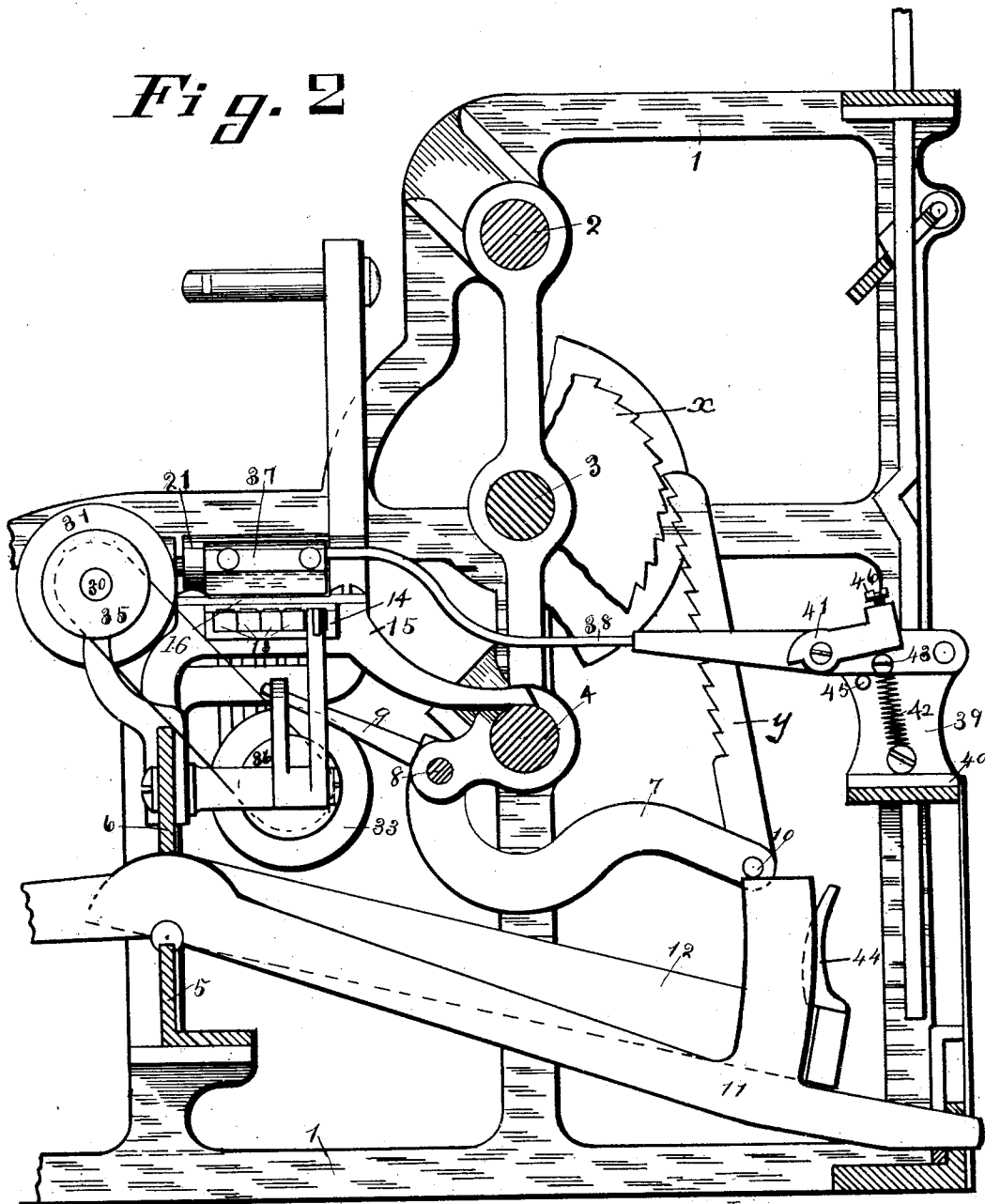
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*Fig. 2*



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Fig. 3.

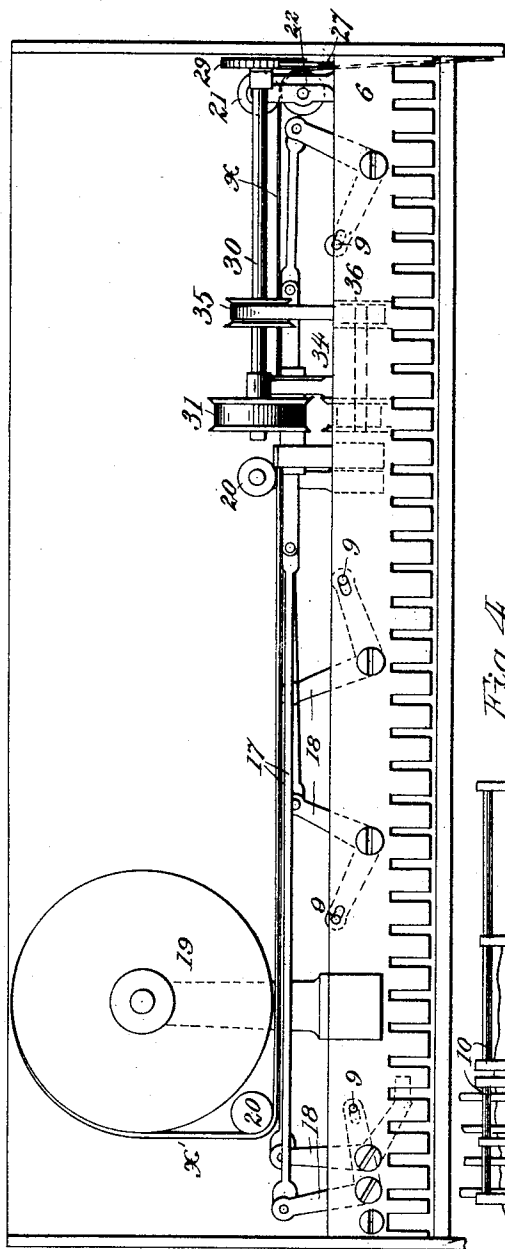
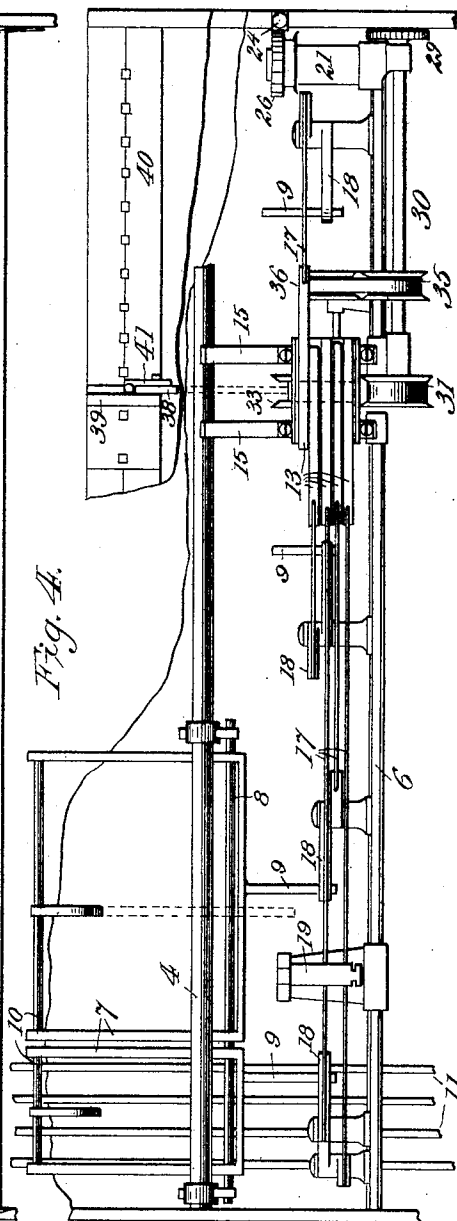


Fig. 4.



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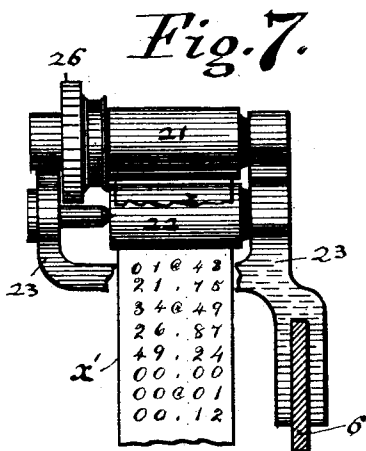
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5 Sheets—Sheet 4.

No. 463,706.

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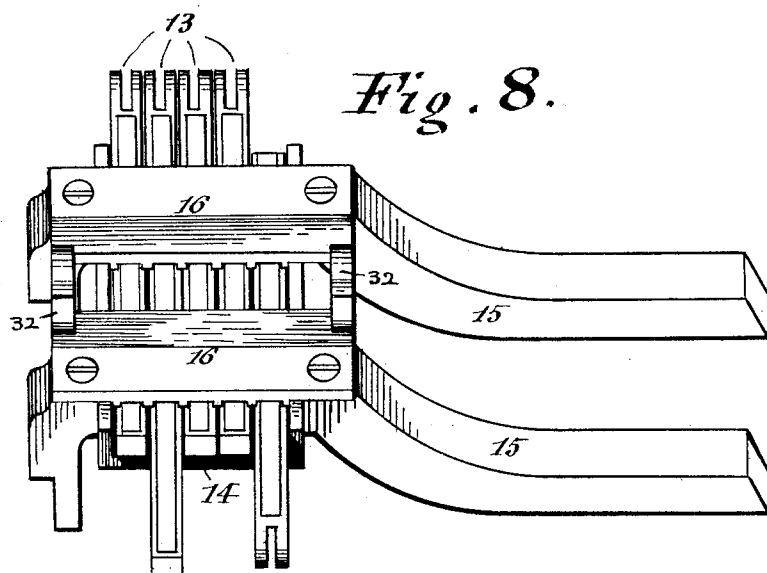
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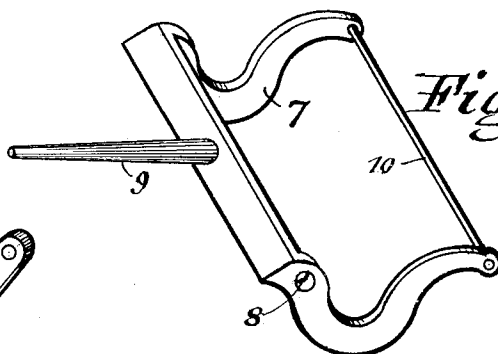
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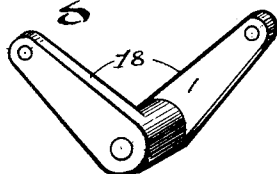


*Fig. 8.*

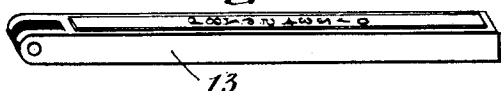


*Fig. 9.*

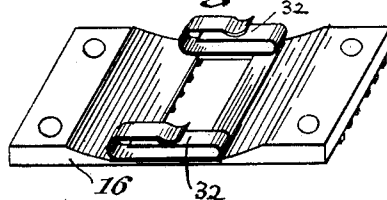
*Fig. 10.*



*Fig. 11.*



*Fig. 12.*



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# UNITED STATES PATENT OFFICE.

JOHN F. PFEFFER, OF CINCINNATI, OHIO.

## CASH INDICATOR AND RECORDER.

SPECIFICATION forming part of Letters Patent No. 463,706, dated November 24, 1891.

Application filed March 26, 1891. Serial No. 386,438. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. PFEFFER, a citizen of the United States, residing at Cincinnati, Ohio, have invented new and useful Improvements in Cash-Recorders, of which the following is a specification.

My invention relates to cash-recorders, having reference primarily to a device for recording cash received, in the form of a printed record of consecutive sales.

To this end it consists, essentially, in a series of interadjustable type-bars, one for each decimal or other place to be represented, brought into proper relations by suitable actuating devices to print or impress upon or in a paper strip the desired numbers, and suitable mechanism for feeding the paper strip and securing the impression of the type upon or in the paper.

The device may be attached to and operated by the key-levers of an ordinary cash-register, or it may be provided with operating-keys and used independently.

The nature and constructive features of the invention will be more clearly apparent from the subjoined description and claims.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is an end view of the recording mechanism as applied to a cash-register in use; Fig. 2, an opposite end view; Fig. 3, a side or front elevation of the recording mechanism; Fig. 4, a plan view of the same; Fig. 5, a partial reproduction of Fig. 3 on an enlarged scale, showing constructive details and particularly the paper-advancing mechanism; Fig. 6, a side elevation of the paper-advancing rolls and an end elevation of the ribbon-advancing rolls, showing operative details; Fig. 7, an opposite side elevation of the paper-advancing rolls; Fig. 8, a plan perspective view of the type-bar guide-frame and the ink-ribbon guides; Fig. 9, a detached perspective view of one of the operating-yokes; Fig. 10, a detached perspective view of one of the operating bell-cranks; Fig. 11, a detached perspective view of one of the type-bars; and Fig. 12, a detached perspective view of the type-bar guide-plate, showing constructive details of the ink-ribbon guides.

Referring now to the drawings, the figures 1 1 designate the end pieces of the general

supporting-frame of the cash-register, 2 3 4 the cross-bars constituting a portion of the supporting-frame of the registering mechanism, and 5 6 two of the fixed cross-bars of the general supporting-frame, one of which 5 is utilized as a pivot-support for the entire system of registering-keys.

The recording mechanism hereinafter described does not depend for its action upon the peculiar construction and action of the register, excepting its limitation to the common type of registers, having a series of key-levers, registering successive values. In the present illustration of the invention the adaptation is shown to a register in which the keys are divided into successive groups, each representing successive unit-values belonging to a given decimal-place, as cents, dimes, dollars, and tens of dollars. Each group of keys acts upon a yoke 7, having a cross-bar 10, lying above the key-levers 11 and moved by the respective key-levers through given portions of a possible arc of rotation, and transmitting said motion correspondingly to a register-wheel *x* by means of a pawl *y* in the usual manner. These yokes I utilize as initial prime movers for a series of type-bars, to be hereinafter referred to, part of the type-writing mechanism constituting the subject of the present application; but it may be premised that other means may be substituted when they are not used in the register. I also avail myself in the present case of a feature common in registers—to wit, a yoke 12 lying across the entire series of keys and moved equally by all, as a means of operating the type-hammer, hereinafter described; but, similarly, other means may be employed where the conditions of structure render it necessary.

No further descriptive reference to the cash-register structure is deemed necessary in the present application.

The mechanism embodying my invention embraces a series of type-bars disposed horizontally side by side in parallel relations upon an anvil-frame and moved into appropriate relations as to relief types upon their upper surfaces by the action of the register to receive the impact of a hammer, which by means of an intervening ink-ribbon impresses the type-marks upon a paper strip. The paper strip, with the ink-ribbon, is properly ad-

vanced after each action. The differential motion of the type-bars is derived from the several key-group yokes 7, while the motion of the hammer and of the strip and ribbon-rollers are derived from the general yoke 12.

A more particular description of the mechanism is as follows: The types are carried upon or formed as part of bars 13, which are adapted to slide longitudinally upon a recessed base or anvil plate 14 side by side, forming guides for each other and presenting their type-faces in a common horizontal plane. The plate 14 is part of a general frame, secured to the cross-bar 6 of the register-frame and having arms 15 15 extended back to obtain a resting-support upon the cross-bar 4 of the register-frame. The upper guide of the type-bars is formed by a centrally-perforated plate 16, secured across the top of the arms 15, in parallel relations with the base-plate 14, the central perforation defining the cross-line at which the types are brought into proper relations for the printing.

The movements bringing the type-bars into proper relations are effected as follows: Each type-bar 13 is, by means of a pivoted connecting-rod 17, attached to a bell-crank lever 18, pivoted to the frame cross-bar 6 at an appropriate position to receive motion from one of the key-yokes 7. An extension 9 from each of said yokes entering a slot formed in one of the arms of the bell-crank forms an operative engagement by which the relative differential motion of the yokes 7 is transmitted to the type-bars singly or together, according to the manner in which the register may be operated. Each type-bar has a succession of type-faces 0, 1, 2, &c., to 9, inclusive, and at the common normal position of rest the 0 types stand exhibited at the opening of the plate 16. The movement of each type-bar longitudinally, being in exact accord with that of its key-group yoke, presents the same type-figure at said opening as that of the key struck, and if two or more keys of different groups are struck simultaneously the corresponding type-bars are also moved, each type-bar being independent of the other. A paper strip  $x'$ , carried rolled upon a reel 19, is paid out under guide-rolls 20 across the plate 16 and its aperture in the direction of the length of the type-bars 13, as impelled by a pair of feed-rolls 21 22, journaled in the frame 23, secured at the end of the register upon the cross-bar 6. The feed-rolls are driven by the upward movement of the yoke 12 by means of a pawl-standard 24, pivoted to the yoke and carrying a spring-pawl 25, engaging a ratchet 26, secured to the shaft of one of the feed-rolls, Figs. 5 and 6. A similar pawl-standard 27 and a pawl 28, attached to and operated by the downward movement of the yoke 12, engages a ratchet-wheel 29, attached to the end of a shaft 30, journaled in brackets upon the cross-bar 6 and parallel thereto, extending far enough to carry an inking-ribbon reel 31 in front of and in line with the aperture of plate

16, across which and beneath the paper strip the inking-ribbon passes in the guides 32 32 at opposite sides of the aperture to a wind-up reel 33 upon a counter-shaft 34, journaled below and at the rear of the type-bars. A pulley 35 upon shaft 30 and a corresponding pulley 36 upon shaft 34 transmit the motion of the former shaft to the latter by means of a connecting-belt over both pulleys, and wind up the inking-ribbon as it is paid out, thus bringing a fresh surface to the types at each action of the mechanism.

The impression of the types is made upon the paper strip  $x'$  by the blow of a hammer 37, carried at the extremity of a spring-arm 38, pivoted upon a bracket 39 at one of the rear cross-bars 40 of the register-frame and operated by a spring 42. The hammer-arm is provided with a pivoted dog 41, resting against a back stop 43 by gravity with or without the aid of a spring. Spring 42 may be arranged to hold the dog 41 normally against the back stop 43 and also hold the arm 38 at its lowest position. The hammer-arm is actuated by a spur 44, attached to the rear of the yoke 12. The spur in rising with the yoke engages the forward end of the dog 41 and carries upward the arm 38 against the force of the spring 42. This engagement takes place near the upper limit of the yoke movement, and just before the spur reaches its upper limit of movement the divergence of the respective arcs of movement of the spur 44 and the dog 41 disengages the latter from the spur and allows the hammer to fall as impelled by its spring 42, the curvature of the spur allowing the pawl to pass down outside without touching it. Upon release of the yoke 12 the spur 44 again descends with it and frictionally engages the dog 41 upon its upper side. The dog being formed to an eccentric upper surface forward of its pivot, the frictional contact of the spur therewith causes the dog to turn upon its pivot against the tension of the spring 42 until released by the continued descent of the spur when the dog again resumes its original position. A lower stop or abutment 45 is provided upon the bracket 39 for the hammer-arm 38, adjusted to hold the hammer-head 37, just above and out of contact with the type-bars. The momentum of the hammer in falling, as permitted by the elasticity of the hammer-arm 38, causes it to pass beyond the normal limit, as defined by the stop 45, and strike the type a quick rebounding blow and impress the paper and inking-ribbon against the type faces. The relative time of engagement of the spur 44 with the dog 41 is regulated by a set-screw 46 upon the dog bearing against its back stop 43, whereby the dog may be canted over and engage sooner or later, as desired.

In the present case I have shown five type-bars—viz., one for each of four decimal places from cents to tens of dollars, inclusive, and one (center) for the decimal point dividing dollars from cents. The central bar may be

fixed or movable. In the present case it is shown provided with operating attachments, and may carry designating-symbols—such as a diamond, a cross, &c.—to indicate any desired fact in addition to the decimal division. In such case the operation will be by special key or keys for this purpose.

It should be noted that in general operation of the device as actuated by the keys the type-bars are moved to ultimate positions, the paper shoved forward, and the hammer raised all on the direct stroke of the keys, and that just at the conclusion of said stroke the hammer-arm is tripped and the hammer acts instantly by its own spring independently. The inking-ribbon is fed forward on the return stroke while the type-bars are being restored to their original positions. A full opportunity is thus secured for the due performance of each function with certainty and accuracy.

I may dispense entirely with the inking devices and mechanism and rely upon the impression of sharp-faced type in the paper by the yielding face of the hammer.

In the ordinary operation of the device as attached to the best type of "total-adding" cash-registers it presents upon a strip of paper continuously fed from the machine a column of figures representing each separate increment of cash received, as in Fig. 7, in convenient form for making the addition. At any time the sum of the column of figures may be read from the registering-wheels and reproduced at the foot of the column by manipulating the proper keys in the ordinary manner. The strip being then torn off, the full and exact record up to that point may be preserved and the labor of addition saved. The system of register-wheels, being then set back to zero, is ready to begin a new column.

While I have shown herein a series of keys each having a specified indicating value, each operating a type-bar appropriate to a group, it will be obvious that the system of type-bars may be operated each by a single key having appropriate differential motions.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. In a cash-recording apparatus, in combination with a key or series of keys for indicating successive numerical values, a longitudinally-adjustable type-bar having a series of type-faces representing corresponding values, paper-feeding mechanism, a spring-hammer for impressing the paper against the type-bar, and direct connections between the key or keys and the elements named, whereby upon and by the actuation of a key the type-bar is adjusted to a desired position, the paper fed, the spring-hammer set and released, and the type-bar finally restored to its initial position, substantially as set forth.

2. In a cash-recorder, a series of operating-keys or groups of operating-keys, a series of adjacent interadjustable type-bars, direct operating connections between the type-bars, respectively, and the keys or groups for dif-

ferential action according to the number intended by the action of the key and for restoring the type-bars, respectively, to initial position upon release of the key, paper-advancing mechanism, and a hammer or pressure device for impressing the paper against said type-bars simultaneously, substantially as set forth.

3. The combination, in a cash-recorder, of a series of keys horizontally arranged in successive groups indicating successive multiple values, a yoke or other transmitting device for each group arranged to be operated differentially by the several keys of a group, and a series of parallel type-bars, one for each class of multiple values, corresponding with the key-groups and connecting with and operated longitudinally by a key-group yoke differentially as the yoke is moved, substantially as set forth.

4. The combination of a series of keys representing successive numerical values, an oscillating yoke differentially actuated by the keys severally, a type-bar having a series of type-faces corresponding with the keys and adjustable longitudinally, operating connections between the yoke and type-bar for adjusting the same to corresponding differential positions, a second yoke operated equally by all the keys severally, paper-feeding mechanism, and an impression-hammer, both the latter being actuated by the second yoke, substantially as set forth.

5. The combination of an extended series of keys operating upon a common pivot and arranged in successive groups representing successive classes of numerical values, and the keys of each group representing successive numerical values of a class, a series of oscillating yokes, one for each key-group and operated differentially by the several keys thereof, a corresponding series of bars in parallel relations and interadjustable in a common plane, operating connections between each yoke and its appropriate type-bar to adjust the latter to corresponding differential positions, a general yoke operated by the several keys of all the groups uniformly, paper-feeding mechanism, and an impression-hammer, both the latter being operated by the general yoke, substantially as set forth.

6. In a printing-recorder of the character indicated, in combination with the operating-keys of different value, the type-bars, the paper-containing roll, the paper-feed rolls, one of which is provided with a ratchet, the actuating-yoke 12, the standard attached thereto, and the spring-pawl attached to the standard and engaging the ratchet, substantially as set forth.

7. In a printing-recorder of the character indicated, in combination with the operating-keys of different value, the type-bars, paper strip, the impression-hammer, and their actuating mechanism, the ribbon-feeding reel provided with a ratchet, the operating-pawl connected with the yoke 12, the take-up reel, and

the belt connection between the feed and take-up reels, substantially as set forth.

8. In a printing-recorder of the character indicated, in combination with the type-bars, the keys of different value, the key-group  
5 yokes provided with projections, the slotted bell-cranks, and the connecting-rods, arranged and operating substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN F. PFEFFER.

Witnesses:

L. M. HOSEA,  
E. HOSEA.