(No Model.)

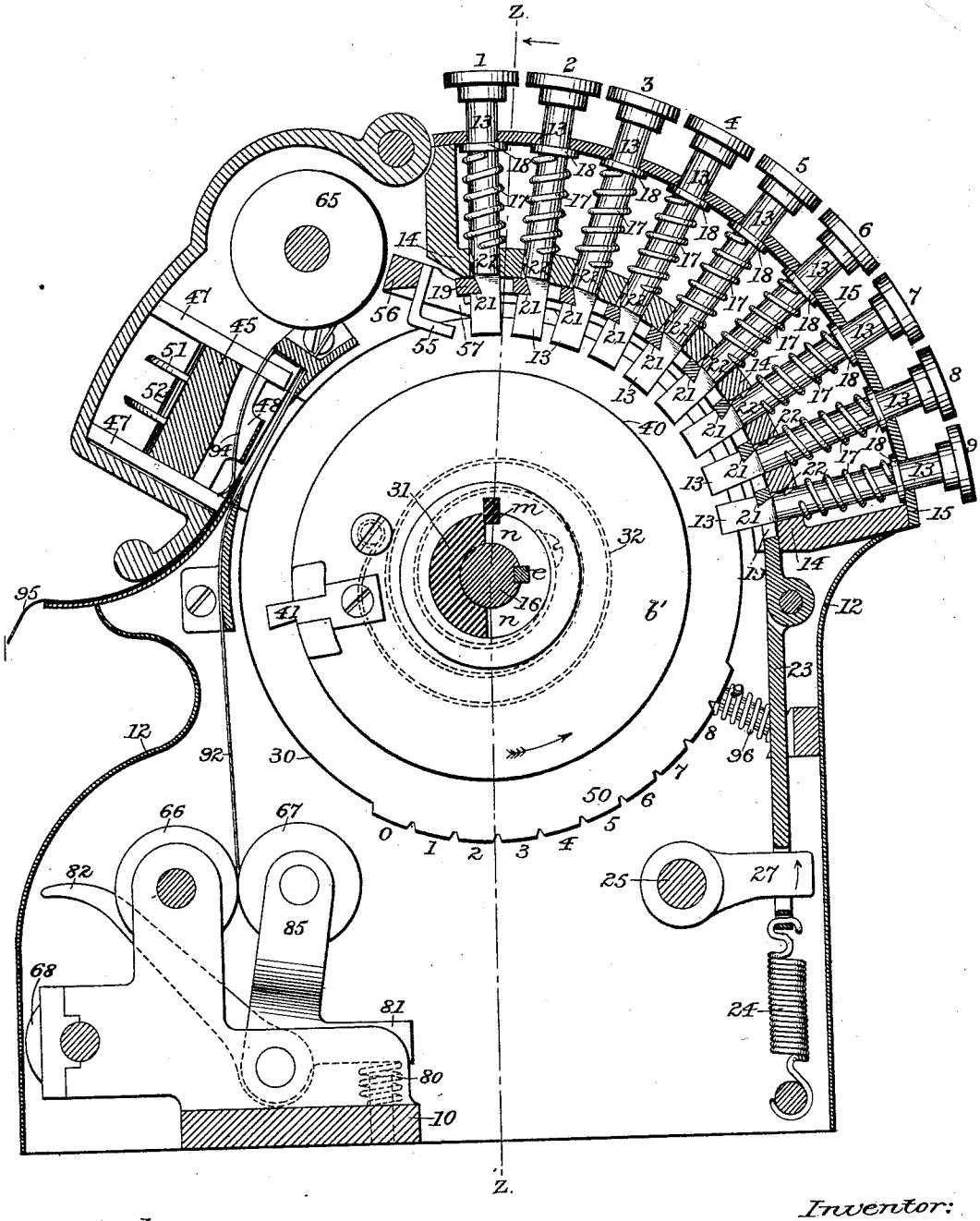
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CASH RECORDING MACHINE.

No. 433,728. Patented Aug. 5, 1890.

Fig. 1.



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E. M. Watson

Inventor:

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Atty.

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(No Model.)

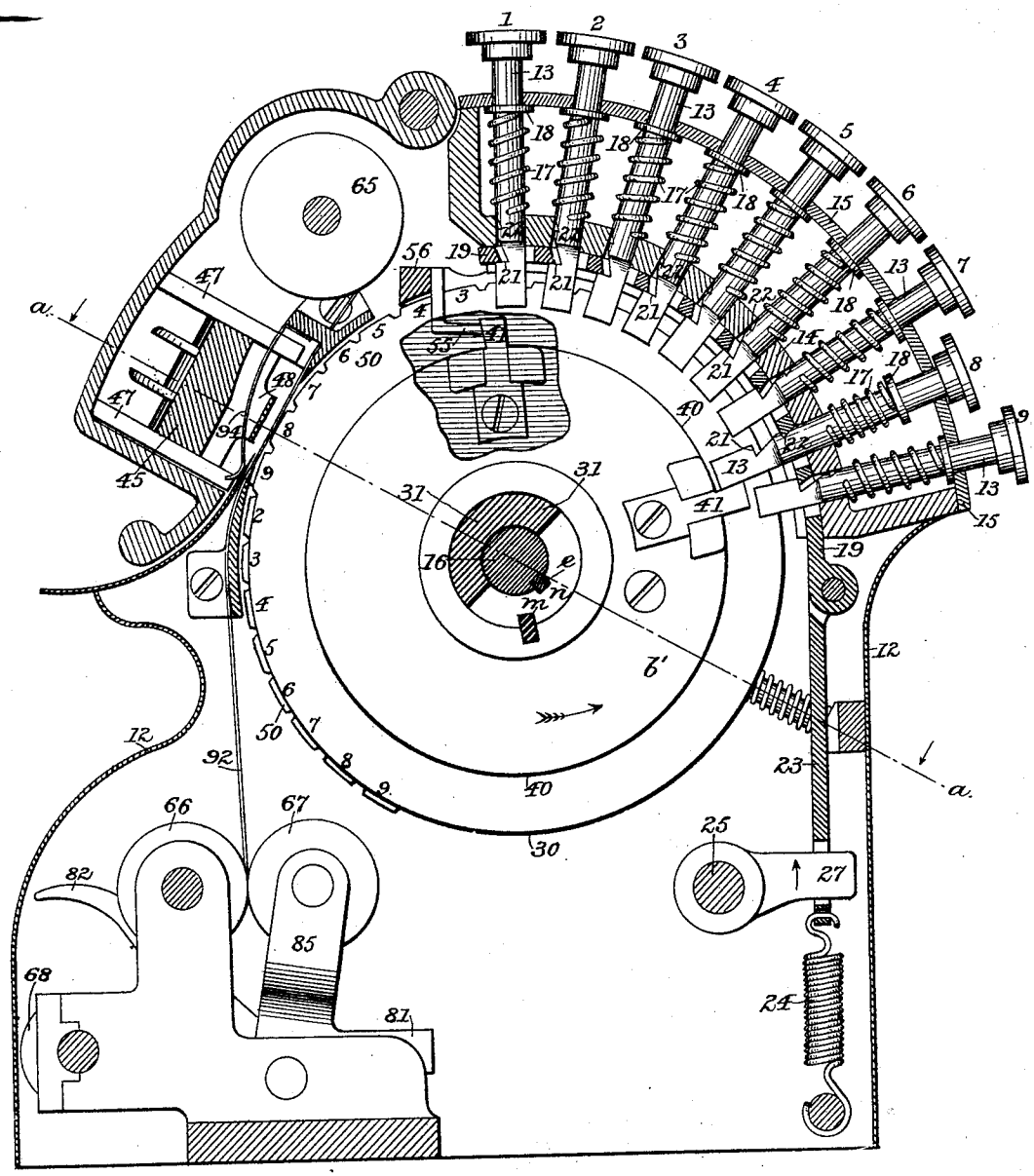
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Fig. 2.



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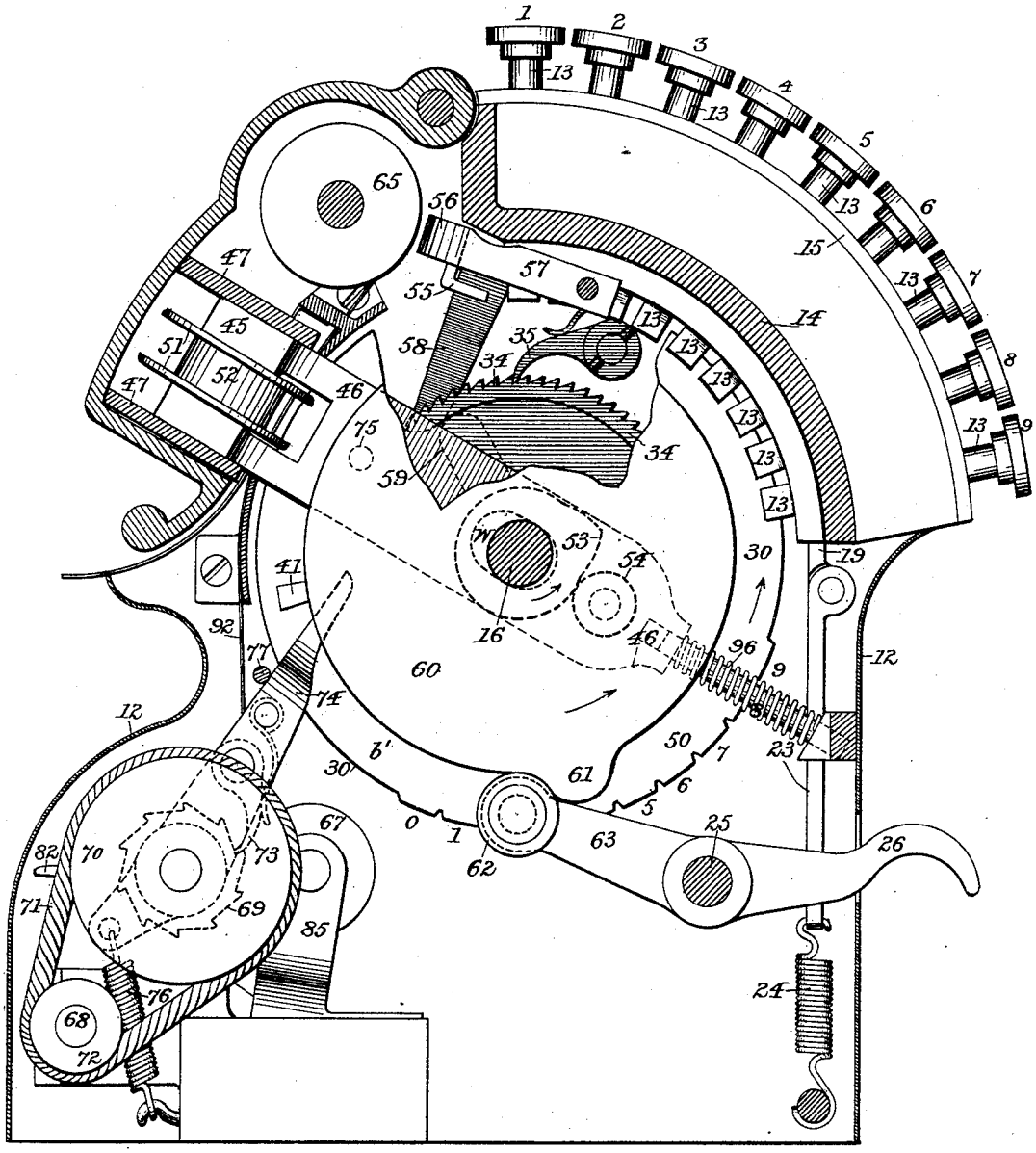
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Fig. 3.



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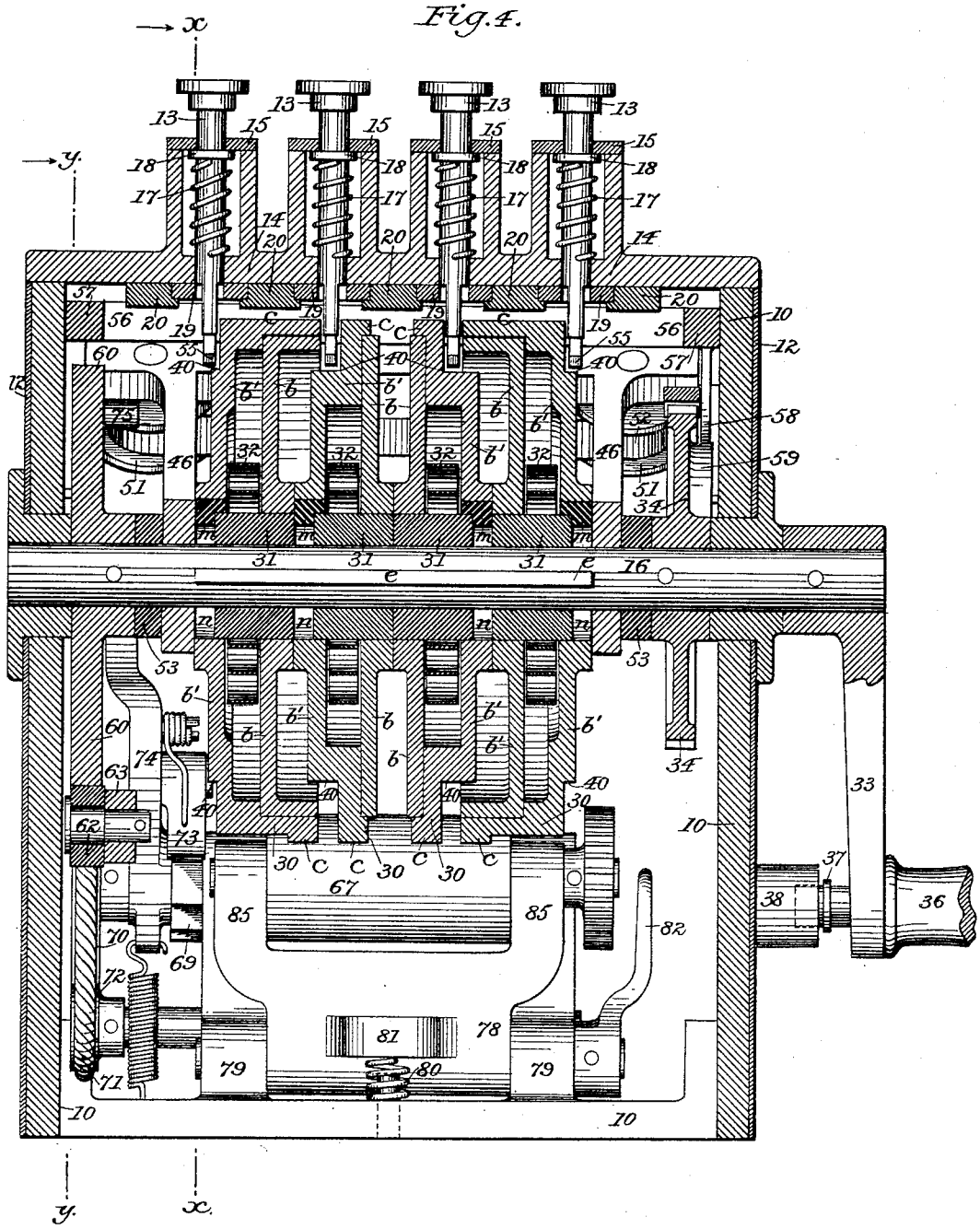
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Fig. 4.



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Fig. 5.

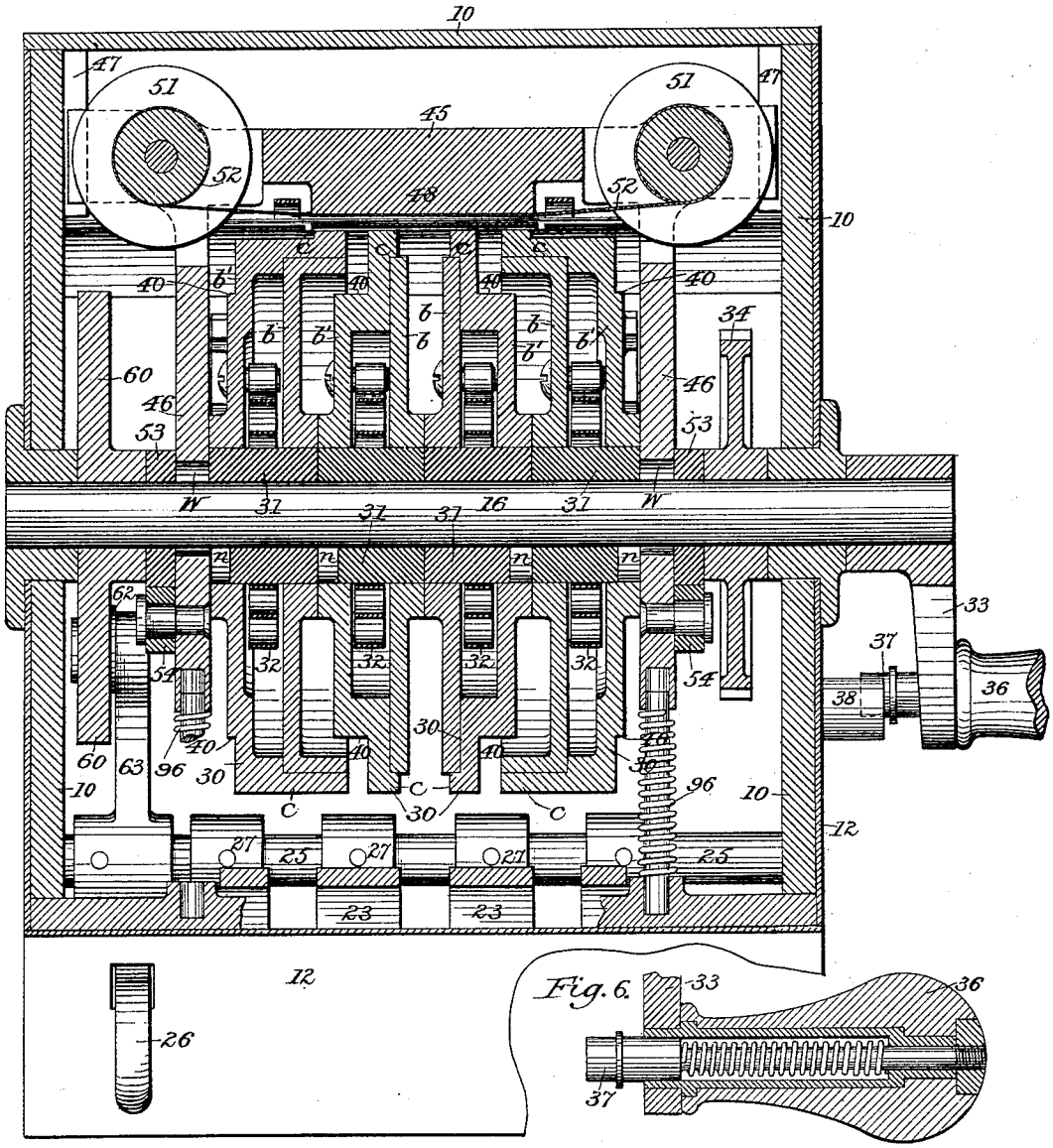


Fig. 6.

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No. 433,728. Patented Aug. 5, 1890.

Fig. 7.

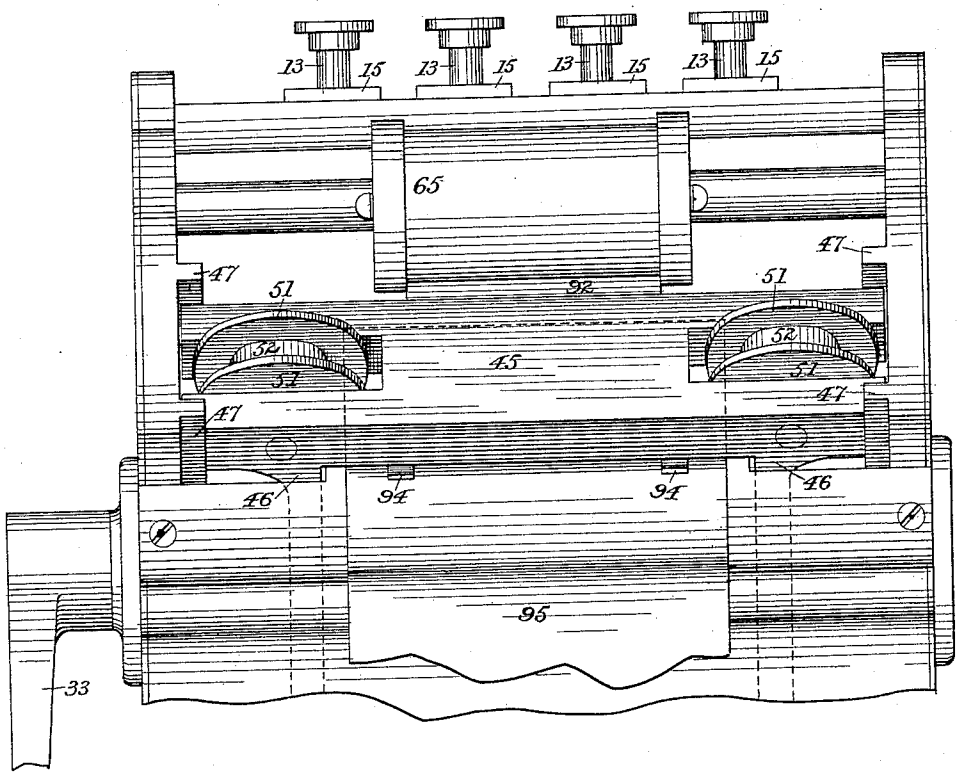


Fig. 8.

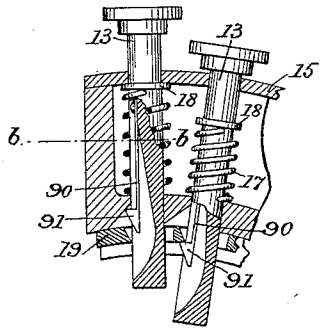
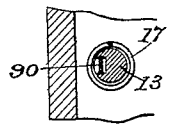


Fig. 9.



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UNITED STATES PATENT OFFICE.

CHARLES E. HADLEY, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE KRUSE CHECK AND ADDING MACHINE COMPANY, OF NEW YORK.

CASH-RECORDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 433,728, dated August 5, 1890.

Application filed September 22, 1888. Serial No. 286,076. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. HADLEY, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Cash-Recording Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, making a part of this specification, in which—

My invention relates to that class of machines for recording successive cash payments upon a strip of paper simultaneously with a duplicate imprint upon a ticket or bill in which the amount to be recorded is noted by playing one or more keys, which when played are automatically locked, and in which, by the revolution of a crank, the paper strip is moved, suitable type are brought to line of print, an impression is obtained therefrom upon the strip, and the depressed keys are released.

It consists in the combination of devices hereinafter described and claimed, whereby these results are obtained in a new and useful manner.

In the accompanying drawings, Figure 1 is a vertical transverse section in line *x x* of Fig. 4, showing the entire organism at rest; Fig. 2, a similar section illustrating the movements of keys and type-wheels; Fig. 3, a transverse vertical section in line *y y* of Fig. 4; Fig. 4, a vertical longitudinal section through the axis of the actuating-shaft in line *z z* of Fig. 1; Fig. 5, a longitudinal section through the axis of the shaft in the line *a a* of Fig. 2; Fig. 6, a sectional detail of the crank-handle and its stop device; Fig. 7, a rear view of the upper part of the machine, illustrating more fully its printing mechanism; Fig. 8, a sectional detail illustrating a modification in the keys and the device for locking them, and Fig. 9 a cross-section in line *b b* of Fig. 8.

Similar letters and numbers indicate like parts in all of the figures.

The frame 10 and case 12 of the machine are of the usual construction adapted to properly support and inclose its working parts, and need not be described in detail.

The keys 13 13 13, by which the movements of the type-wheels are controlled, consist of pins each having a suitable head. These keys are mounted in the upper part of the machine to play longitudinally through suitable apertures in concentric curved plates 14 and 15, fitted above a horizontal shaft 16, mounted to rotate in suitable bearings in the frame 10, and whose axis forms the center of the arc described by said plates.

The keys 13 13 13 are severally arranged to radiate from the shaft 16 in rows of nine each in four parallel vertical planes transversely to the shaft 16, the keys denoting cents from 1 to 9 being in the first row, those denoting cents from 10 to 90 in the second row, and those denoting dollars from 1 to 9 and from 10 to 90 in the next two rows. They are each encircled by a spiral spring 17, interposed between the guide-plates 14 and 15 to uphold the key normally in an outward position, the outward movement being limited by a collar 18, encircling the key under the outer plate 15. A series of curved plates 19 19—one for each row of keys—are fitted to slide freely longitudinally in suitable ways formed by strips 20 20 (see Fig. 4) under the inner guide-plate 14 and concentrically therewith. These curved sliding plates 19 19 will hereinafter be designated as "locking-plates," because of the function which they perform.

The lower ends of the keys in each row pass through elongated apertures in the locking-plate 19 appropriate to the row, and each key is notched on its inner side to form two offsets 21 22, each at a right angle with the length of the key. These offsets are separated by an interval equal to the length of the throw or longitudinal play of the key when depressed. The first or outer notch and offset 21 is formed in position to be engaged by the locking-plate 19 when the key is in its outward or normal position, the sliding plate being automatically carried into said notch by its gravity, assisted by that of a bar 23, (see Fig. 3,) pivoted to the lower end of the locking-plate, to depend vertically therefrom, and, furthermore, when required, by a spring 24, attached to the lower end of said pendent bar. The inner face of this first or outer notch

21 on each key is outwardly inclined or beveled to the edge of the second or inner offset 22, as shown in Figs. 1 and 2, so that whenever a key is depressed or forced inward the contact of said inclined face with the end or wall of the aperture in the locking-plate will operate to slide the plate backward, in readiness to enter the second notch and engage the second offset 22, and thereby hold and lock the key in its depressed position. This second notch is not so deep as the first; hence if a second key in the row or group of keys which pass through the same locking-plate be depressed while any other key in the group is locked by the plate the locked key will be released by reason of the movement imparted to the plate by the depression of said second key, which will necessarily carry it back clear of the inner offset 22 of the first key.

The lower end of each pendent bar 23 is slotted to receive an arm 27, (see Figs. 1 and 2,) projecting radially from a horizontal rock-shaft 25, mounted to oscillate in the frame, and which may be actuated by an arm or lever 26, (see Fig. 3,) projecting from one end thereof out through the front casing of the machine. The weight of the pendent bar 23 (in connection with the stress of the spring 24 when it is used) will operate automatically to slide each locking-plate forward, so as to cause it to normally engage the notches on the keys appropriate thereto, and when the pendent bars are in their normal depressed position the upper ends of the slots through which the arms 27 of the rock-shaft 25 project will rest upon said arms, as shown in Fig. 1; hence by lifting the outer ends of the levers 26 the locking-plates 19 19 may be moved inward to release them from the keys and set the latter free if locked.

As an equivalent substitute for the two notches or re-entrant offsets 21 and 22 on the stem of each key 13, a flat spring 90, carrying a hook 91 at its outer end, may be inserted longitudinally in a suitably-extended recess formed laterally in the stem of the key, as shown in Figs. 8 and 9, so that the hook shall spring outwardly automatically into engagement with the under side of the locking-plate 19 when the key is depressed, the hold of the hook upon the plate being so adjusted that a longitudinal movement of the plate against the stress of the spring 24, as above described, will suffice to disengage it from the hook, and thereby allow the key to move outward.

A series of type-bearing wheels or revolving type-carriers 30 30—one for each row of keys—are mounted upon the rotating shaft 16. Each of these wheels is constructed in two sections consisting of two parallel plates or disks $b\,b'$, united by a peripheral flange c, projecting laterally from the one to overlap the rim of the other, as shown in Figs. 4 and 5. Each wheel 30 is fitted to revolve upon a collar 31, either formed upon the shaft 16 or united thereto to turn therewith by a spline e or other suitable device. Each wheel is coupled to its collar by means of a spring 32, (see Figs. 4 and 5 and dotted lines, Fig. 1,) coiled about the collar between the disks $b\,b'$ and made fast at one end to the wheel and at the other to the collar in such manner that when the shaft is rotated in the right direction it will carry the wheel with it; but if the revolution of the wheel be arrested the shaft may still continue to turn independently thereof, with the effect simply of winding up the spring, so that the resiliency of the spring will thereafter come into play to turn the wheel back to its normal position when released. The independent movement of the shaft and wheel beyond a partial revolution is prevented by means of a stop m, projecting from the inner periphery of the wheel into a semicircular recess n cut in the face of each collar, as shown in Fig. 1.

The shaft 16 is rotated by means of a crank 33 on its outer end, and a reverse movement thereof is prevented by means of a ratchet-wheel or disk 34, (see Figs. 3, 4, and 5,) fixed upon the shaft at one end thereof, and a pawl 35, engaging the same, as shown in Fig. 3. It is, furthermore, automatically locked when the crank has completed one full revolution, by means of a spring-actuated pin 37, fitted within the crank-handle 36 to project through the end of the crank toward the casing, as shown in Figs. 4, 5, and 6, and which, under the stress of the spring in the handle, is automatically forced outward to engage a stop 38 on the outside of the casing. (See Fig. 5.) By this engagement of the pin with the stop, which prevents a forward movement of the crank in connection with the pawl 35, which prevents its reverse movement, the crank is completely locked until by drawing the handle 36 outward the pin is disengaged from the stop.

An annular offset or shoulder 40 is formed concentrically upon the outer face of each flanged disk or section b' of each type wheel or carrier 30, and the wheels are severally so constructed and adjusted upon the shaft 16, as shown in Figs. 4 and 5, that these lateral annular offsets 40 40 are severally in the same vertical plane as the keys 13 13, so that the offset of each wheel is in line directly under its appropriate row of keys. The diameter of the offsets is so proportioned that the inner ends of the keys may not strike them even when depressed. (See Figs. 1, 2, and 4.) A stop-finger 41 (see Figs. 1 and 2) is, however, fitted on each wheel to project beyond the peripheral face of its annular offset 40 far enough to strike the inner end of any key which may be depressed in the row, as shown in Fig. 2.

A printing-plate 45 is mounted parallel with the shaft 16 at one side of the machine in proximity to the outer periphery of the wheels 30 30 and upon radial arms 46 46, which are pivoted upon the shaft. This printing-plate 45 is guided at each end to permit a slight movement thereof radially to and from

the shaft between cleats 47 47, (see Figs. 1 and 3,) which form radial ways for the printing-plate, the movement of the plate being permitted by elongated apertures in the arms 46 46, through which the shaft 16 is carried, as shown at W W in Fig. 5 and by dotted lines in Fig. 3.

A printing-platen 48 is formed or fitted upon the inner face of the printing-plate 45, and the flanged peripheries of the four type wheels or carriers 30 30 are so adjusted as to severally revolve opposite said platen. The periphery of each type-wheel 30 is adapted to receive upon a segment thereof a set of type 50, fitted thereto in any suitable manner, so that the face of each type may be brought into position opposite the platen to permit an impression to be taken therefrom by the pressure of the platen in the customary manner. The intervals between the several type on each wheel correspond to the intervals between the inner ends of the keys 13 13, and they are so located peripherally in relation to the stop 41 on the wheel, and the platen likewise is so located with reference thereto that when any one key is depressed and engages the stop and arrests the revolution of the wheel the type corresponding to the depressed key will then be opposite the platen, as illustrated in Fig. 2.

It is evident that it is not necessary that wheels 30 30, having an unbroken circumference, be used to carry the type, but that the body of the wheel intermediate the ends of the type may be cut away, leaving the segmental type-bearing portion to be carried and supported upon radial arms projecting from the hub of the wheel which revolves upon and is connected with the shaft 16 in manner as described; hence where a type-wheel is mentioned in this specification it will be understood to relate to a type-bearing segment revolving as the section of a wheel about the shaft 16, the segment being provided with a stop-finger 41, or otherwise adapted to engage the key depressed in line therewith.

The platen is depressed and brought to bear against the type at the proper moment by means of cams 53 53, (see Fig. 5 and dotted lines, Fig. 3,) secured upon the shaft 16 in position to engage friction-rollers 54 54, mounted upon the ends of the arms 46 46. These cams operate to draw the arms inward toward the shaft so soon as in the rotation of the shaft it has made a half-turn and brought the appropriate type on the several wheels to line of print. The platen is lifted and moved outward after its depression by means of springs 96 96, (see Figs. 3 and 5,) placed under the inner end of each arm 46 46. If a wheel or type-bearing segment be not arrested by the depression of a key, its stop-finger 41 will at the moment the cipher-type is brought to line of print under the platen strike, as shown in Fig. 2, against a catch 55, projecting into line therewith from a movable bar 56, swinging upon pivoted arms 57 57 at each end thereof, (see Fig. 3,) and will be arrested by said catch. So soon as the platen 48 has been drawn against the type and released therefrom a finger 58, projecting from one end of the bar 56, or the outer end of one of its arms 57, is engaged and the bar lifted by a cam projection 59, which is formed on the outer face of the ratchet-disk 34, (see Fig 4 and dotted lines in Fig. 3,) or is otherwise carried by the shaft 16, so that after an impression has been taken from the type the type wheels or segments held by the catches 55 on the bar 56, as aforesaid, are released. The remaining type wheels or segments arrested and held by the depressed keys are also simultaneously released by means of an offset 61 upon the periphery of a cam-wheel 60, (see Figs. 3 and 5,) which is made to strike a friction-roller 62 upon a lever 63, projecting from the rock-shaft 25, as shown in Fig. 3, whereby the lever is depressed and the shaft oscillated sufficiently to cause its arms 27 27 to lift the several pendent bars 23, and thereby move the locking-plate 19, so as to free the keys and allow them to spring up to their normal position, clear of the type-wheels or segments.

Suitable spools 51 51 (see Figs. 5 and 7) are mounted to revolve in bearings at each end of the printing-plate 45, and an inking-ribbon 52 is carried from the one spool to the other over the face of the platen 48, as shown in Fig. 5, the proper tension of the ribbon being maintained by the friction of the spools in their bearings.

A reel 65, Fig. 2, is journaled in the upper part of the casing over the platen 48, and a strip 92 of thin paper wound thereon is led transversely between the inking-ribbon 52 and the several type-wheels 30 30 to and between a pair of feed-rollers 66 67, journaled in the lower portion of the casing, and finally to a parallel take-up roller 68, geared to said feed-rollers. One of the feed-rollers 66 is journaled in fixed bearings and is fitted at one end with a ratchet-wheel 69 (see Fig. 4 and dotted lines, Fig. 3) and with a grooved pulley 70, carrying a cord or belt 71, by which it is geared to a smaller pulley 72 on the take-up roller 68. The ratchet-wheel 69 is actuated, and an intermittent rotation of the feed-rollers is produced at each revolution of the shaft 16 and of the type carried thereby, by means of a spring-actuated pawl 73, pivoted upon a lever 74, swinging upon the axis of the roller 66, and whose outer end extends out in position to be struck and depressed by a pin 75, projecting laterally from the disk 60, (see Fig. 4 and dotted lines, Fig. 3,) the upward movement of the lever after its depression being produced by a spring 76 and limited by a stop 77, as shown in Fig. 3. The opposite feed-roller 67 is journaled in the ends of two standards 85 85, projecting from a cross-block 78, pivoted in bearings 79 79 on the bed-plate of the machine, and these pivoted standards, with the feed-roller 67 carried

thereby, are swung toward the opposite roller 66 and a yielding contact of the rollers maintained with an elastic pressure by means of a spring 80, inserted under an arm 81, projecting radially from the axis of the block 78, as shown in Fig. 4 and dotted lines, Fig. 1. The roller 67 is drawn away from the fixed roller 66, when it is required to insert the paper between them, by means of a thumb-lever 82, projecting radially from one of the journals of the block 78.

Springs or elastic clips 94 94 (see Figs. 1, 2, and 7) are fitted to the casing or frame of the machine to bear at their ends upon the outer face of the casing immediately below the slot therein, through which the platen moves toward the keys, and these serve to retain in position outside of the inking-ribbon and between it and the platen over the type the end of a cash-ticket or of a bill-head inserted through a suitable opening in the casing and slipped under said clips.

In the use and operation of the machine a bill-head or cash-ticket 95 is slipped under the clips 94 94, (see Fig. 1,) and after a cash payment has been made the keys severally indicating the dollars and cents included in the amount paid are respectively pushed inward. (See, for example, the key 8 in Fig. 2.) When thus pressed inward, the depressed keys are each caught and held by the engagement of the locking-plate 19 appropriate thereto, with the inner notch 22 on the stem of the key, (or with the hook 91, Fig. 8, if a hook be substituted for the notch.) In the meantime the type-wheels or revolving type-bearing segments are all held and locked with the type thereon at a point intermediate the printing-platen and the lowermost or 9 keys by the engagement of the crank 33 with the stop 38. After the proper keys denoting the amount of the payment have been depressed the crank 33 is released from its stop 38 by withdrawing the pin 37, carried by the handle, and upon turning the crank forward (its reverse movement being prevented by the pawl and ratchet 34 and 35) the type-wheels are all turned simultaneously, so as to carry the type toward and under the printing-platen 48. If the movement of the wheel be not sooner arrested by the contact of its stop-finger 41 with the end of a depressed key, as shown in Fig. 2, it will be arrested when its cipher-type is brought to line of print under the platen by the contact of said finger with the catch 55, also illustrated in Fig. 2. If a key be depressed over the wheel, the stop-finger 41 on the wheel will by striking the end of the key arrest the wheel with the type corresponding to the number on said key in line of print under the platen. After either wheel or segment is thus arrested at the one point or the other the rotation of the shaft 16 is permitted to continue independently of the wheel by the winding of the spring 32, connecting the hub of each wheel with the shaft, so that all the wheels are brought to line of print irrespective of the arrest of any one of them. So soon as this is accomplished the platen 48 is made, by the action of the cams 53 on the shaft 16 upon the arms carrying the printing-plate, to bear the cash-ticket, inking-ribbon, and recording-strip against the face of the underlying type, so as to produce an impression thereof in duplicate from the ribbon upon the strip and the ticket. So soon as the printing is thus effected the further rotation of the shaft will, just before a complete revolution of its crank is accomplished, cause the cam 61 on the disk 60 to bear down the lever 63 of the rock-shaft 25, and by oscillating said shaft will lift the pendent bars 23 and move the locking-plates 19 19 so as to release all the depressed keys, and thereby liberate the wheels arrested thereby, and immediately thereafter the cam 59 on the ratchet-wheel 34 will bear against the finger 58 of the catch-bar 56 and lift the catches 55, so as to release the wheels arrested thereby. The wheels or segments thus liberated will all, under the action of their springs, turn upon the shaft 16 until they have reached their first or normal position, being stopped by the engagement of the stop *m* with the wall of the recess *n*, as shown in Fig. 1. After the wheels have been liberated the further rotation of the shaft as the crank completes its revolution will cause the pin 75 to strike and depress the lever 74, and thereby move the ratchet-wheel 69 on the feed-roller 66 forward one notch, so as to feed the paper strip forward one line and bring a fresh surface to the line of print. The take-up roller geared to the feed-roller will be turned by the same movement to wind up the slack of the paper, the cord 71 allowing the necessary lost motion between the feed and take-up rollers.

By using thin paper for the recording-strip 92 and a double-faced inking-ribbon and leading, as described, the paper strip between the type and ribbon the amount recorded upon the strip at each revolution of the crank-handle is simultaneously printed upon the bill-head or cash-ticket or other loose piece of paper inserted under the clips 94 94, as hereinbefore described. A duplicate imprint is thus obtained, (one from each side of the inking-ribbon,) first upon the recording-strip locked up within the machine and simultaneously upon the bill-head or other loose piece inserted for the purpose under the clips. To this end the recording-strip 92 is made of transparent paper, so that the reversed imprint thereon may be read through it. This recording-strip may be afterward cut in suitable lengths and pasted in a scrap-book for future reference as to the number and amount of the sales recorded by the machine. Where, however, a recording-strip alone is needed, a single-faced inking-ribbon is used and is passed between the type and strip.

It is evident that perforating or embossing type may be substituted for the plain-faced type and an inking-ribbon dispensed with, and I contemplate in my invention such an adaptation of the machine otherwise constructed as described.

By omitting wholly the printing mechanism and bringing the type to view at a suitable opening in the casing in manner as described for bringing them under the printing-platen the machine may be used simply to indicate the cash payment last made, as noted by a play of the keys.

I claim as my invention—

1. The combination, with the several series of radially-movable keys, of a numbered or type disk to each series of keys provided with a contact-piece and a shaft carrying the wheels, but movable independently thereof, substantially as set forth.

2. The combination of the series of keys, series of type-wheels, one wheel to each series of keys, shaft, and means for turning the same, and spring-connections between the shaft and each wheel, substantially as set forth.

3. The combination of the series of keys, locking devices whereby each key is held in its depressed condition, series of type-wheels having stops for making contact with the keys, and a shifting device actuated by the revolution of the shaft, whereby all the locking devices are shifted as the shaft completes its revolution, substantially as set forth.

4. The combination of the radial keys and revolving type-wheels having stops and catches 55, substantially as and for the purpose set forth.

5. The combination of the series of radial keys, type-wheels and stops mounted on a shaft to permit an independent movement of the latter, and a printing device opposite the edges of the wheels, substantially as set forth.

6. The combination, in a cash-recording machine, with a series of spring-actuated keys radiating from a common center, of the longitudinally-sliding spring-actuated plate longitudinally curved upon an arc described from the same center, mounted to intersect said keys and formed with elongated apertures through which the keys are made to pass, each key having an inclined surface engaging the plate to move it against the stress of the spring as the key is pushed inward, substantially in the manner and for the purpose herein set forth.

7. The combination, in a cash-recording machine, with a series of spring-actuated keys radiating from a common center, of a longitudinally-sliding locking-plate longitudinally curved upon an arc described from the same center, mounted to intersect said keys and formed with elongated apertures through which the keys are made to pass, each key having a bearing to be engaged by the plate when the key is pushed inward, substantially in the manner and for the purpose herein set forth.

8. The combination, in a cash-recording machine, of a series of spring-actuated radially-mounted longitudinally-moving keys, a curved longitudinally-moving locking-plate automatically engaging the keys to lock them, a rock-shaft having a radial arm actuating said plate to release the keys when the shaft is oscillated, and means, substantially as described, for actuating said rock-shaft, all substantially in the manner and for the purpose herein set forth.

9. The combination of a central rotating crank-shaft, a parallel rock-shaft, means, substantially as described, for producing an oscillation of the rock-shaft by each revolution of the crank-shaft, a series of spring-actuated longitudinally-moving keys mounted in lines radiating from the axis of the crank-shaft and in a plane at a right angle therewith, a longitudinally-moving locking-plate intersecting the keys in the same plane upon an arc having said axis as its center, and which automatically engages the several keys to lock them when depressed, a bar depending from each locking-plate, and an arm projecting from the rock-shaft through an elongated aperture in each bar, whereby the oscillation of the rock-shaft will move the bar and connected locking-plate, and thereby unlock the depressed keys, substantially in the manner and for the purpose herein set forth.

10. The combination of a rotating shaft, two or more type-bearing wheels revolving upon said shaft, a spring coupling each wheel to the shaft, a printing device for taking an impression from the type, and a series of adjustable stops to engage each wheel and determine the particular type thereon which shall be brought to line of print, substantially in the manner and for the purpose herein set forth.

11. The combination of the rotating shaft, the wheels mounted movably thereon, the springs severally coupling each wheel to the shaft, the stops carried by the shaft, and a lug moving with each wheel to engage said stops and prevent an independent movement of the wheel upon the shaft beyond a complete revolution thereof, substantially in the manner and for the purpose herein set forth.

12. The combination of the central rotating crank-shaft, means, substantially as described, for preventing a reverse movement thereof, two or more type-bearing wheels mounted movably upon said shaft, a coiled spring coupling each wheel to the shaft in manner to be wound when the shaft is rotated independently of the wheel, a stop to prevent such independent movement beyond a complete revolution, a printing device for taking an impression from the type, a series of spring-actuated longitudinally-moving keys mounted in the plane of each wheel outside its periphery to radiate from its axis

upon a concentric arc and to move into engagement with the wheel, and thereby arrest an appropriate type under the printing device, and means, substantially as described, for detaining each key when inwardly depressed in position to engage the wheel, substantially in the manner and for the purpose herein set forth.

13. The combination of a central rotating crank-shaft, two or more type-bearing wheels mounted movably upon said shaft, a coiled spring coupling each wheel to the shaft in manner to be wound when the shaft is rotated independently of the wheel, a stop to prevent such independent movement beyond a complete revolution, a bar oscillating in a vertical plane transversely above the peripheries of the wheels and parallel with their axis, and a catch projecting from the bar in proximity to each wheel to engage a stop thereon when the bar is depressed and the last or cipher type upon the wheel has reached its normal line of print or sight, substantially in the manner and for the purpose herein set forth.

14. The combination of a central rotating crank-shaft, two or more type-bearing wheels mounted movably upon said shaft, a coiled spring coupling each wheel to the shaft in manner to be wound when the shaft is rotated independently of the wheel, a stop to prevent such independent movement beyond a complete revolution, a bar oscillating in a vertical plane transversely above the peripheries of the wheels and parallel with their axis, a catch projecting from the bar in proximity to each wheel to engage a stop thereon when the bar is depressed and the last or cipher type upon the wheel has reached the normal line of print or sight, and an automatic device, substantially as described, whereby the rotation of the shaft is made to lift the catch-bar after an imprint has been made from the type, substantially in the manner and for the purpose herein set forth.

15. The combination of a central rotating crank-shaft, means, substantially as decribed, for preventing a reverse movement thereof, two or more type-bearing wheels revolving upon said shaft, a coiled spring coupling each wheel to the shaft in manner to be wound when the shaft is rotated independently of the wheel, a stop to prevent such independent movement beyond a partial revolution, a printing device for taking an impression from the type, a series of spring-actuated longitudinally-moving keys mounted in the plane of each wheel outside its periphery to radiate from its axis upon a concentric arc and each having a locking-bearing, a longitudinally-sliding spring-actuated locking-plate curved upon said arc and arranged to engage said locking-bearing when the key is depressed, a bar depending from the end of each locking-plate, a rock-shaft mounted parallel with the central shaft opposite the lower ends of said bars, arms projecting from said shaft through slots in the bars, a lever extending from the rock-shaft towards the central shaft, and a cam revolving with the central shaft and made to strike and depress the lever at each revolution, substantially in the manner and for the purpose herein set forth.

16. The combination of a central rotating crank-shaft, a type-bearing wheel mounted movably upon said shaft, a coiled spring coupling the wheel to the shaft in manner to be wound when the shaft is rotated independently of the wheel, a series of adjustable keys to arrest the movement of the wheel when either of the type thereon is at the line of print, a platen moving radially in ways to and from the axis of the wheel, spring-actuated arms mounted by means of longitudinally-elongated apertures upon the shaft and connected to the platen, and cams upon the shaft engaging said arms to draw the platen inwardly against the type by a continued rotation of the shaft after a type has been brought in line with the platen, substantially in the manner and for the purpose herein set forth.

17. The combination, with the rotating crank-shaft, one or more type-bearing wheels revolving upon said shaft, a coiled spring coupling each wheel to the shaft in manner to be wound when the shaft is rotated independently of the wheel, a series of ajustable keys to arrest the movement of the wheel when either of the type thereon is at the line of print, a platen moving radially in ways to and from the axis of the wheel, and means, substantially as described, for moving the platen against the type after the latter have been brought to line of print, of a reel of paper mounted at one side of the platen, a pair of contacting feed-rolls mounted upon the opposite side, a ratchet-wheel upon the axial shaft of one of said rolls, an oscillating spring-actuated pawl-lever pivoted upon the same axis, a pawl carried by said lever to engage the ratchet, a wheel revolving with the crank-shaft, and a pin upon said wheel made to engage and oscillate the pawl-lever at each revolution after the platen has been carried against the type, whereby a strip of paper carried from the reel between the platen and type to and between the feed-rollers is intermittently fed forward after each imprint thereon, substantially in the manner and for the purpose herein set forth.

18. The combination, with the type-setting devices in a cash-recording machine, and with a platen for producing an impression from the type, of a continuous strip of paper mounted within the machine and carried over the type at line of print, an inking-ribbon carried over and upon the continuous strip at line of print, a platen reciprocating to and from the inking-ribbon and type at line of print, and a guideway and clips for the retention of a separate detached strip of paper between the platen and inking-ribbon over

the type at line of print, substantially in the manner and for the purpose herein set forth.

19. The combination, with the series of type wheels or carriers, of a series of movable keys for each type-wheel to define the movements of the latter, an operating-shaft to move said type-carriers, and a yielding connection between each carrier and the shaft, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHAS. E. HADLEY.

Witnesses:
A. N. JESBERA,
E. M. WATSON.