

(No Model.)

C. W. WEISS.
CHECK PRINTING AND ADDING MACHINE.

No. 457,140.

Patented Aug. 4, 1891.

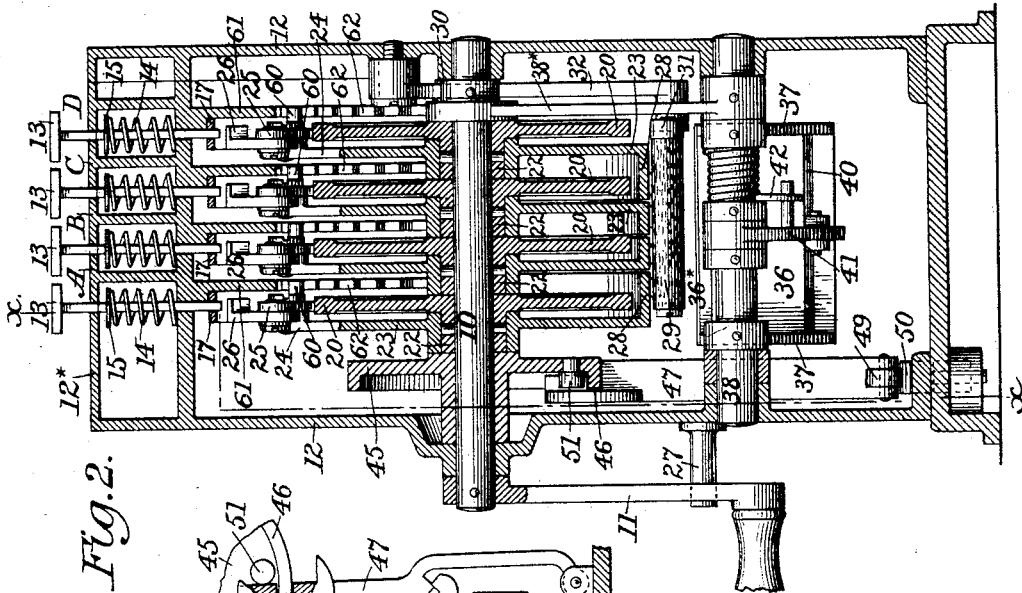


Fig. 2.

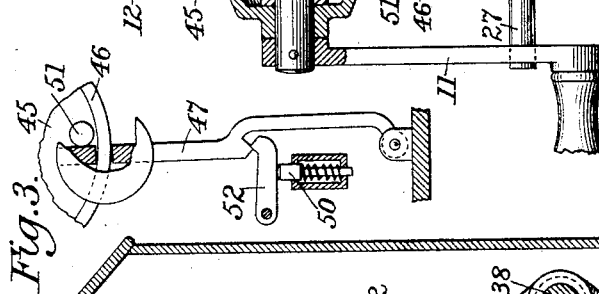


Fig. 3.

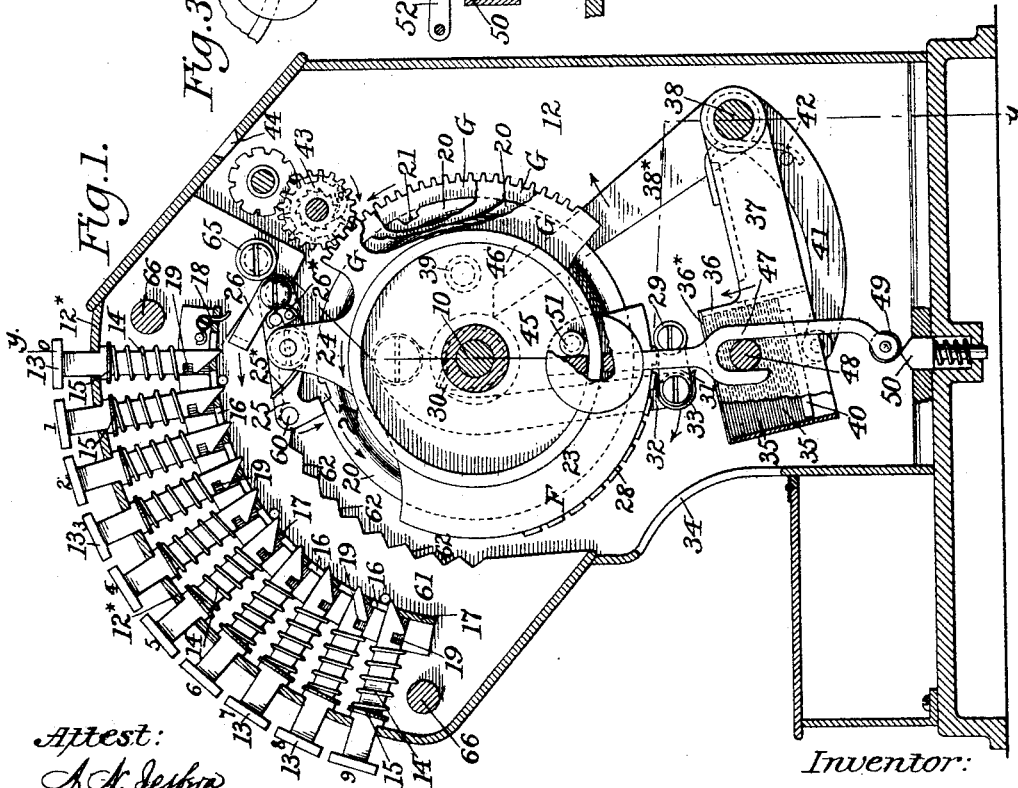


Fig. 1.

Attest:
A. H. Fisher.
C. W. Weiss.

Inventor:

Carl W. Weiss
By Sandars & Co. Attys.

UNITED STATES PATENT OFFICE.

CARL W. WEISS, OF BROOKLYN, NEW YORK.

CHECK-PRINTING AND ADDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 457,140, dated August 4, 1891.

Application filed April 23, 1891. Serial No. 390,145. (No model.)

To all whom it may concern:

Be it known that I, CARL W. WEISS, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Check-Printing and Adding 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 numerals and letters of reference marked thereon, forming a part of this specification.

My invention relates to that class of check-machines which are operated by the reciprocating movement of a crank actuating disks or segments bearing the type for printing the checks, the disks or segments being controlled by a series of keys intercepting and arresting them at different points in their movement.

It has for its object to simplify the construction of such a machine and reduce its cost without impairing its efficiency.

It consists in the novel construction, combination, and arrangement of the several parts thereof, as is hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a vertical transverse section of my improved check-machine in line *x x* of Fig. 2, all of its parts being shown as in their first or normal position at rest. Fig. 2 is an irregular vertical section on the line *y y* of Fig. 1. Fig. 3 is a detailed view illustrating a modification in the device for preventing a reverse movement of the crank.

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

In said drawings, 10 represents the oscillating crank-shaft, and 11 the crank of the machine. The crank-shaft 10 is mounted horizontally in a casing 12, whose upper front portion 12* is made partially cylindrical in form, describing in transverse section a regular curve, having the axis of the shaft as its center. A series of longitudinally-movable keys 13 13 are fitted to project in parallel rows through this curved upper plate 12* of the casing, each row being in a plane at a right angle to the axis of the shaft. The keys in each row are mounted in lines radiating from said axis. Each row embraces ten keys, the upper one of which is designated by a cipher

and the remainder, in consecutive order, by the digital numbers from 1 to 9.

Preferably four rows of keys are provided in each machine, the first row being made to represent pennies up to nine, the second dimes up to ninety cents, the third dollars up to nine, and the fourth tens of dollars up to ninety. Each key 13 is permitted to have free longitudinal movement in its bearing in the casing, its outward movement being automatically enforced by a coiled spring 14, encircling its stem within the casing and limited by a transverse stop-pin or collar 15, fixed thereon inside of the upper outer plate 12*. The inner end of each key in each of the rows is beveled to a point, and this point is made to register with one end of a slot 16, cut longitudinally in a movable locking-plate 17, mounted under the row of keys in the same vertical plane and which is curved upon an arc having the axis of the shaft 10 as its center, so as to be concentric with the outer plate of the casing. Said curved locking-plate 17 is left free to move longitudinally in its bearings and is carried to and is held in its normal position by the action of a spring 18 at one end thereof. It is moved against the stress of this spring by the depression of any one of the keys in the row above it, the beveled end of the key operating as the key is pressed inward as a wedge to force the plate forward. The beveled portion of the key terminates in a notch 19, into which the plate will spring back under the tension of its spring as soon as the key is depressed sufficiently to bring the notch into register therewith. The key will thus be automatically locked in its depressed position until by the depression of some other key in the same row the locking-plate is moved sufficiently to liberate the first key and lock the second.

A disk 20, having a single notch 21 in its periphery, is mounted on the crank-shaft 10 and fixed thereto under each separate row or series of keys. This disk 20, hereinafter designated as the "actuating-disk," is formed with a hub 22, upon which a second disk 23, hereinafter designated as the "indicating-disk," is mounted to revolve loosely and freely. This indicating-disk is formed with a radial peripheral projection 24, to which is pivoted a

detent 25, adapted to overlap the rim of the first actuating-disk and to ride upon the periphery thereof so as to drop into engagement with the notch 21 therein, and thereby couple the two disks together. Its engagement with the notch is automatically enforced by a spring 25*. When thus coupled the indicating-disk will partake of the movements of the crank-shaft in unison with the first disk. The heel of the detent 25 carries a tripping-arm 26, which is pivoted thereto at its outer end in a manner to project into contact, as the detent moves forward, with the end of that one of the keys in the row above it which may be depressed, and to be arrested thereby. It is held in this position by a coiled spring 26*, which will allow it to yield when brought into contact with the depressed key from the opposite direction.

The detent, as shown, consists of a substantially straight lever having a tooth on the under side of its forward end and having the tripping-arm pivoted to its outer or rear end and projecting upwardly therefrom at an angle, as indicated. If the end of the tripping-arm meet with resistance to its further forward movement, such resistance will exert a downward pressure upon the rear end of the detent and so raise the forward or toothed end. Consequently in the forward movement of the crank-shaft and connected disks, when the arm of the detent is brought into contact with the end of the depressed key it will operate to trip the detent and release it from the notch in the actuating-disk, thereby uncoupling it from the indicating-disks, so that the crank-shaft and actuating-disk will be free to continue their movement independently of the indicating-disk to the end of the stroke of the crank. The crank is prevented from making a complete revolution in either direction by means of a stop pin or lug 27, which projects from the outer face of the casing to intersect the line of travel of the crank.

When the return-stroke of the crank is completed to bring the machine to its first position at each movement thereof, the heel of the detent is made to pass under a stud-pin 65, by which it is tripped, so as to disengage the detent from the notch on the actuating-disk. This disengagement of the detent upon the return or backward movement of the crank is required to allow the fourth, third, and second indicating-disks to be severally stopped, each in advance of the other, while the several actuating-disks uncoupled from the indicating-disks are all carried back in unison with the crank to the first position, each of the indicating-disks in their order from the first to the fourth having completed its forward movement before that succeeding it, as will be hereinafter more fully described.

A pin 60 is made to project laterally from the end of the detent 25 under the edge of a plate 61, overhanging the pin, and which is curved to form an arc concentric with the axis

of the shaft, about which the detent revolves, and is indented with a series of notches 62 62, with which the pin on the detent will be brought into engagement when the detent is disengaged from the notch of the actuating-disk. These notches in the fixed plate 61 serve to prevent an overrunning of the printing or adding mechanism by positively arresting and locking the detent and the indicating-disk which carries it at the moment the detent becomes disengaged from its actuating-disk, and until it is again coupled to said disk.

A section F, embracing about one-third of the periphery of each indicating-disk 23 under each row of keys is provided with a lateral flange 28 to overlap the rim of the proximate actuating-disk 20, and upon this flange are formed or fitted type corresponding in number with the keys in the row above it, and bearing characters corresponding with the cipher and digital numbers designating said keys. The type-flange 28 of each indicating-disk is so located as that when the disk is in its normal position at rest the cipher-type thereon will be but slightly removed from the line of print, which is preferably located in the vertical plane of the axis of the shaft.

An inking-roller 29 is mounted upon the end of an arm 31, which is pivoted to the end of a lever 32, which is itself pivoted to the proximate inner lateral face of the casing. The arm 31 is actuated by a spring 33, which operates to carry the roller automatically into contact with the face of the type on the disk 23. The roller is swung back from the type at line of print at the proper moment to permit of an imprint therefrom by means of a cam 30, (see dotted lines, Fig. 1,) fixed upon the shaft 10 in position to bear against the lever 32.

The checks 35 35 to be printed (see dotted lines, Fig. 1) are placed one upon the other in a case or receptacle 36, mounted upon the end of parallel swinging arms 37 37, extending from a rock-shaft 38, which is mounted parallel with the crank-shaft 10 and below it in suitable bearings in the rear portion of the casing. The arms 37 37 are so located as to carry the top of the receptacle 36 when it is swung upward to a horizontal plane to the line of print, so as to bear the uppermost check 35 in the receptacle against the type on the disk at line of print. When left free, the receptacle drops by its own weight far enough from the disk to allow the check to be removed therefrom through an opening 34, provided for the purpose in the front of the casing. The receptacle is swung up against the type each time one of them is brought to line of print by means of a friction-roller upon a stud-pin 39 (see dotted lines, Fig. 1) on the lateral face of the last actuating-disk 20, which, as soon as said disk is uncoupled from the indicating-disk 23, is made to bear against an arm 38*, projecting from the rock-

shaft 38, and by pushing it forward produce an oscillation of the rock-shaft to the extent required.

A plunger or follower 40 is fitted to play within the receptacle 36 upon the end of the lever 41, pivoted upon the rock-shaft 38 centrally between the arms 37 37 of the receptacle, and the plunger is automatically carried and held against transverse strips 36* 36* at the top thereof by the action of a spring 42 applied to its pivoted arm. By means of this spring-actuated plunger a fresh check-blank is presented in readiness for imprint so soon as the last one printed is removed, the plunger serving as an elastic platen in obtaining an imprint for the type.

A segmental section G (see Fig. 1) of the periphery of each indicating-disk 23 is toothed to engage a toothed wheel 43, gearing with the pinion actuating a train of indicating and adding wheels constructed and arranged to operate in manner well known to the art. The indicating-disk 23 for the first row of keys is thus geared to the unit-wheel in the adding train, that for the second row of keys to the tens-wheel, &c., and the gearing is so adjusted as that a movement of the indicating-disk to bring the type of the highest or lowest denomination or any intermediate type thereon to line of print will move the adding-train a corresponding distance.

The adding-wheels are brought to sight at sight-openings 44 44 in the rear plate of the casing. To obtain the successive movement of the adding-train at a single movement of the crank, in connection with the depression of the keys in two or more of the rows, so that the value of the key depressed in each row, beginning with the first, shall be added next after the values of the depressed key in the preceding row, the notches 21 in the actuating-disks 20 are located at different points on the peripheries of the several disks, the intervals between the notches on the first and second disks and on the second and third disks, and so on, being so determined as that the second indicating-disk shall not be coupled to its actuating-disk until the first indicating-disk has completed its movement and been uncoupled, and the third indicating-disk shall not be coupled until the second has completed its movement, and so on. The indicating-disks are all alike, and in the initial position of the machine all stand in the same position, as shown in Fig. 1, the projections 24 standing in line at the top, the type-bearing segments being in line in the lower left-hand quadrant, and the gear-segments being in line at the right and engaging the adding mechanism. The extent of movement of each indicating-disk is somewhat less than ninety degrees. The extent of movement of the actuating-disks, which are fixed to the crank-shaft, is slightly less than three hundred and sixty degrees, owing to the interposition of the pin 27 in the path of the crank. Consequently in order to secure the successive

operation of the indicating-disks referred to above, the notches 21 in the several actuating-disks are placed somewhat less than ninety degrees apart. In the initial position of the machine the notch in the first actuating-disk is just in the rear of the tooth of the detent on the first indicating-disk, so as to engage the detent as soon as the movement of the crank is commenced. The notch in the second actuating-disk is then about in the position shown by the notch at the right in Fig. 1, and will reach the detent of the second indicating-disk immediately after the first detent has reached the limit of its motion, supposing that the first detent was not stopped until it reached the last key in its row. The arrangement of the notch in each successive disk with relation to its predecessor is the same, and as a result the indicating-disks are moved one at a time in order, and no indicating-disk is moved far enough to carry the type-segment beyond the line of print or the gear-segment out of engagement with the adding mechanism.

To facilitate mounting the disks for the several rows of keys upon the common oscillating shaft 10, the casing of the machine is preferably divided transversely to the axis of the shaft into sections A B C D, the joints between the sections being made upon the central line of each row of keys, so that the stems of the keys are embraced between the two divisions of the joint. These sections are united by means of transverse bolts 66 66 to form a single case inclosing the entire machine.

A return movement in either direction of the oscillating shaft 10 and of the actuating-disks 20 20, fixed thereto, before the end of the stroke begun in that direction is completed may be prevented by any of the devices well known to the art. Preferably I employ for this purpose a disk 45, which is fixed upon one end of the shaft within the casing. This revolving disk is formed with a concentric peripheral flange 46, adapted to enter a slot in the edge of a brake-bar 47, which is mounted vertically against the inner side of the casing to extend nearly to the bottom thereof, and is pivoted about midway its length upon a stud-pin 48, projecting from the casing, the bar being longitudinally slotted or forked to embrace the stud, so that it may not only swing but also have longitudinal play thereon. The slot in the brake-bar which embraces the flange 46 is made somewhat wider than the width of the flange, so as to allow the bar to be swung upon its pivot in either direction into a slightly-inclined position. When the bar is in its vertical position, the flange on the disk will, in the revolution of the shaft, pass freely through the slot without binding; but if the bar be inclined it will, if the disk be turned in a direction to cause the lowermost point of its flange to move in the direction in which the bar is inclined, clamp and bind upon the edges of the flange and there-

by lock it, although the disk will remain free to move through the slot in a direction opposite to that of the inclination of the bar, with a tendency to bring the bar to a vertical position. An anti-friction roller 49 is fitted upon the lower end of the bar 47, and a wedge-shaped or conically-pointed spring-seated pin or detent 50 is mounted immediately under this roller to bear against its periphery and force it out of the perpendicular to the one side or the other, so as to operate automatically to cause the upper end of the bar to bind the disk, as above set forth, on the one side or the other.

A pin 51, projecting from the face of the disk inside of its flange, is brought to bear against the upper end of the bar 47 at the end of the stroke of the crank in either direction, so as to trip the bar, and thereby reverse its inclination and permit of a return movement of the crank as soon as its stroke in either direction is completed, the binding of the bar upon the flange of the disk serving in the meantime, in manner as described, to prevent a reversal of its movement before the completion of the stroke. A modification of this device for preventing a reversal of the movement of the crank and of the parts operated thereby is illustrated in Fig. 3 of the drawings, in which a spring-actuated detent 52, having an angular end, is brought to bear against an angular offset at the side of the bar 47 above its pivotal point as an equivalent for the wedge-shaped spring-actuated detent 50, made to bear against the lower end of the bar below its pivotal point, as shown in Fig. 1. It is evident that if the oscillation of the crank-shaft be limited so that it shall make a partial or semi revolution instead of nearly a full revolution, as hereinbefore described, the disk may be segmental instead of circular in form, the length of the concentric curved flange 46, embraced by the slotted bar, being determined by the length of the arc described by the crank-arm in its oscillation. With the shorter flange a pin is required at each end thereof to trip the bar at the completion of the movement of the crank in each direction.

In the operation of the machine, when it is desired to obtain a check of any given denomination—say ninety-five dollars and fifteen cents—the keys corresponding to that denomination are depressed. By the consequent movement of the spring-actuated locking-plate 17 the depressed key in each row will be locked in its inward position and the key last played will be released. The crank 11 of the crank-shaft 10 is then turned from its normal position until it has made nearly a complete revolution, its further movement being arrested by the stop 27. During the first movement of the crank and shaft the indicating-disks 23 will be made to revolve with the actuating-disks 20 by reason of the engagement of the detents 25, carried by the indicating-disks, with the notches 21 in the actuating-disks, and the cipher-type normally at line of print

will be carried forward, bringing, successively, the remaining type in order to and past the line of print until the upper arms 26 of the detents 25 come into contact with the depressed keys, at which point the type corresponding with said keys will be at line of print. The contact of the detent-arms with the depressed pins will operate to release the detents from the actuating-disks 20, so that the indicating-disks 23 will no longer move with them, their immediate arrest being insured by the engagement of the released detents with the notches 62 in the locking-plate 61, while the actuating-disks will continue to move independently with the crank 11 to the end of its stroke, a reverse movement thereof at any other point being prevented by the brake-bar 47, as hereinbefore described. As the crank approaches the end of its stroke after the actuating-disks 20 have been uncoupled from the indicating-disks 23, the friction-roller 39 will come into contact with the arm 38* of the rock-shaft 38, and by tripping it will cause the check-receptacle 36 to be carried up against the type left at line of print, and thereby produce an imprint of the denomination of the depressed keys—viz., \$95.15—upon the uppermost check-blank in the series placed in the receptacle. So long as the indicating-disk 23 is coupled to the actuating-disk 20 to move with it, it will operate, by means of its toothed segment G, to move the adding-wheels so that they will be carried forward the proper distance to indicate and add the amount of the value of the key by which the movement of the disk is arrested, the further movement of the adding-train ceasing with that of the disk, and an overrunning being prevented by the engagement of the detent with the locking-plate 61 at the moment of its disengagement from the actuating-disk. After the crank has made a full stroke forward it is at once returned to its first position, and so soon as the notch in the actuating-disk 20 comes into register with the detent the latter will drop back into engagement therewith, and thereby couple the indicating-disk to it, so that they will both move back together to the first position. As the pivoted arm of the detent in this return or backward movement strikes the key 13, which was last depressed by the operator and which is held depressed by the engagement of the locking-plate 17 with the notch 19 in the key, the spring upholding the arm will allow the arm to yield and pass under the key without moving the detent. As each indicating-disk reaches on the return-stroke its first position of rest the heel of its detent 25 will pass under the fixed stud-pin 65, provided for the purpose, and the detent will be thereby lifted out of engagement with its actuating-disk, leaving the latter free to continue its movement independently with the crank until the latter has completed its movement. A reverse movement of the adding mechanism is prevented, as is customary, by the action of a pawl device interposed in

the gearing. During the movement of the crank 10 the inking-roller 29 is, in the interval in which the check-receptacle 36 is withdrawn therefrom, carried over the face of the type, in manner as described.

I have herein shown the crank as adapted to be turned backwardly by the operator; but the means by which this movement is effected does not in any way affect my present invention.

I claim as my invention—

1. The combination, in a check-machine, of an oscillating shaft, a disk fixed thereto having a peripheral notch, a longitudinally-adjustable key mounted in a line radial to the shaft in bearings outside thereof, a second disk mounted to revolve loosely on the shaft by the side of the first disk, and a coupling device carried by said second disk automatically engaging the notch on the periphery of the first to couple the disks and in the oscillation of the shaft be automatically disengaged from said notch to uncouple the disks by contact with the inner end of the key when pressed inward, substantially in the manner and for the purpose herein set forth.

2. The combination, in a check-machine, of an oscillating crank-shaft, an actuating-disk fixed upon the shaft to partake of its movements, a second indicating-disk mounted to revolve loosely on the shaft at the side of the first, a coupling device automatically connecting the two disks, a series of keys mounted above the coupling device and severally adapted each to be moved into a position intersecting its line of travel and by contact therewith actuate the same to uncouple the disks, type carried by the indicating-disk corresponding with the number of keys and bearing corresponding characters and which are located on said disk in position to be severally brought at line of print each at the moment the disks are uncoupled by a key whose designation corresponds with the particular type, and mechanism for obtaining an imprint from the type at line of print, substantially in the manner and for the purpose herein set forth.

3. The combination, in a check-machine, of an oscillating crank-shaft, an actuating-disk secured upon the shaft to partake of its movements, a second indicating-disk mounted to turn loosely on the shaft at the side of the first, a coupling device automatically connecting the two disks, a series of keys mounted above the coupling device and severally adapted to be moved into a position intersecting its line of travel and by contact therewith actuate the same to uncouple the disks, an adding mechanism, and a pawl-and-ratchet coupling the indicating-disk to the adding mechanism, substantially in the manner and for the purpose herein set forth.

4. The combination, in a check-machine, of an oscillating crank-shaft, an actuating-disk fixed upon the shaft and having a single notch in its periphery, a second indicating-

disk mounted to turn loosely on the shaft at the side of the first, a coupling-detent pivoted to the indicating-disk to overlap the periphery of the actuating-disk and engage the notch therein, a series of keys mounted over the detent in the plane of its movement and severally movable into position to contact with the detent in its revolution, and thereby release it from the notch in the actuating-disk, and adding mechanism geared to the indicating-disk, substantially in the manner and for the purpose herein set forth.

5. The combination, in a check-machine, of an oscillating crank-shaft, an actuating-disk fixed upon the shaft, a second indicating-disk mounted to turn loosely upon the shaft at the side of the actuating-disk, a coupling-detent pivoted to the indicating-disk to engage the actuating-disk, a series of keys severally movable into position to intersect the path of travel of the detent and by contact therewith release it from the actuating-disk, and a stationary locking-plate conforming to the line of travel of the detent in proximity thereto to be engaged by said detent upon its disengagement from the indicating-disk, substantially in the manner and for the purpose herein set forth.

6. The combination, in a check-machine, of an oscillating crank-shaft, an actuating-disk fixed upon the shaft, a second indicating-disk mounted to revolve loosely on the shaft at the side of the first, a coupling device automatically connecting the two disks, a series of keys mounted above the coupling device and severally adapted each to be moved into a position intersecting its line of travel and by contact therewith actuate the same to uncouple the disks, type carried by the indicating-disk corresponding with the number of keys and bearing corresponding characters and which are located on said disk in position to be severally at line of print each at the moment the disks are uncoupled by the key whose designation corresponds with the particular type, a rock-shaft, an arm extending from the rock-shaft to contact with a pin on the face of the actuating-disk and to be oscillated by its revolution, a lever extending from said rock-shaft, and a receptacle for check-blanks movable to and from the line of print and actuated by said lever, substantially in the manner and for the purpose herein set forth.

7. The combination, in a check-printing machine, of a type-carrier, a receptacle for check-blanks movable to and from the line of print for the type on the carrier, mechanism for moving the receptacle against the type, and an elastic follower or platen within the receptacle and acting upon the checks therein, whereby the checks placed in the receptacle are carried against the type and supported for imprint, substantially in the manner and for the purpose herein set forth.

8. The combination, in a check-printing machine, of a type-bearing disk, a receptacle

for check-blanks movable to and from the line of print for the type, a rocking lever actuating said receptacle and actuated by the revolution of the disk, a follower within the receptacle, and a spring actuating the follower to bear it automatically toward the type, whereby the follower is made to serve as an elastic platen in obtaining an impression from the type upon the outermost blank in the receptacle, substantially in the manner and for the purpose herein set forth.

9. The combination, in a check-machine, of the oscillating crank-shaft, the several rows of keys, the several actuating-disks fixed on the crank-shaft and corresponding in number with the rows of keys, each having a peripheral notch located at a different point from the other relatively to the vertical plane of their common axis, the several indicating-disks revolving loosely on the shaft, each by the side of one of the actuating-disks and in the plane of one of the rows of keys, the pivoted detents carried by the several indicating-disks, each in position to engage the notch on the proximate actuating-disk in the revolution of the latter, and become thereby coupled to said disk to be carried in unison therewith into contact with a key depressed for the purpose, whereby the key will operate to release the detent and uncouple the disks, and the adding mechanism actuated by the movement of each indicating-disk while the latter is coupled to the actuating-disk, substantially in the manner and for the purpose herein set forth.

10. The combination, in a check-machine, of an indicating-disk fixed on an oscillating shaft and carrying type upon its periphery, a lever pivoted to a fixed support eccentrically to

the shaft and extending beyond the periphery of the indicating-disk, a spring-actuated arm pivoted to the end of the lever and swung automatically inward toward the axis of the shaft by the action of its spring, an inking-roller carried by said spring-actuated arm over the face of the type parallel with the axis of the shaft, a cam upon the shaft engaging the lever to produce an oscillation thereof, and a printing mechanism actuated by the shaft to produce an imprint from the type in the interval during which the inking-roller is swung back by said cam, substantially in the manner and for the purpose herein set forth.

11. The combination, with an oscillating shaft, of a curved flange carried thereby describing an arc having the pivot of the shaft as its center, a bar laterally slotted to embrace the flange and pivoted to a fixed support with freedom of longitudinal play on its pivot, a spring-actuated beveled detent engaging a corresponding angular bearing on the bar, and a pin carried with the curved flange by the oscillating shaft to engage the free end of the arm when the shaft has completed its oscillation in either direction, whereby the position of the bar is reversed at the end of each movement of the shaft and a reversal of said movement is meanwhile prevented, substantially in the manner and for the purpose herein set forth.

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

CARL W. WEISS.

Witnesses:

A. N. JESBERA,
A. WIDDER.