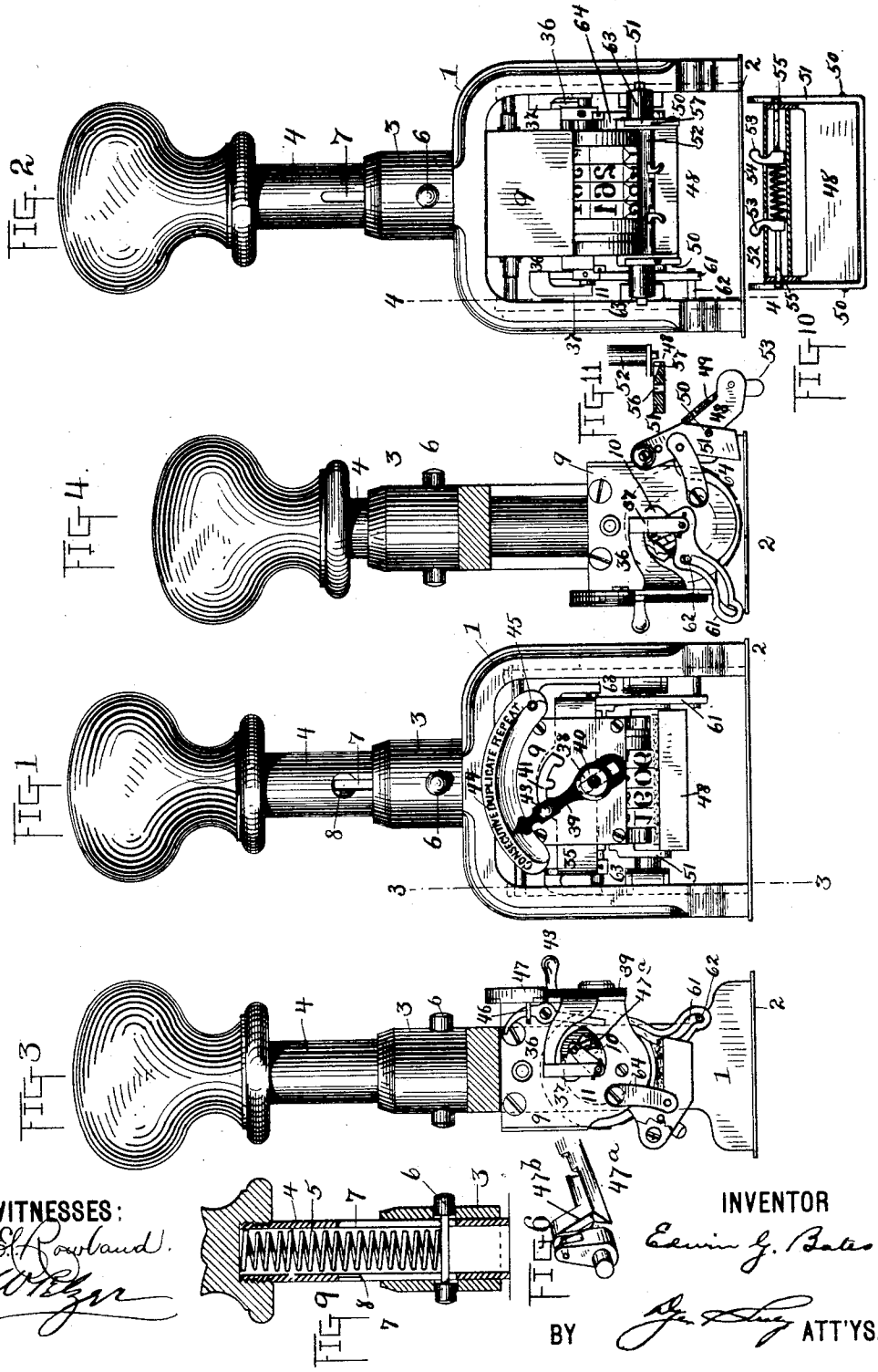
(No Model.) 2 Sheets—Sheet 1.

E. G. BATES.

NUMBERING MACHINE.

No. 456,874. Patented July 28, 1891.



WITNESSES:
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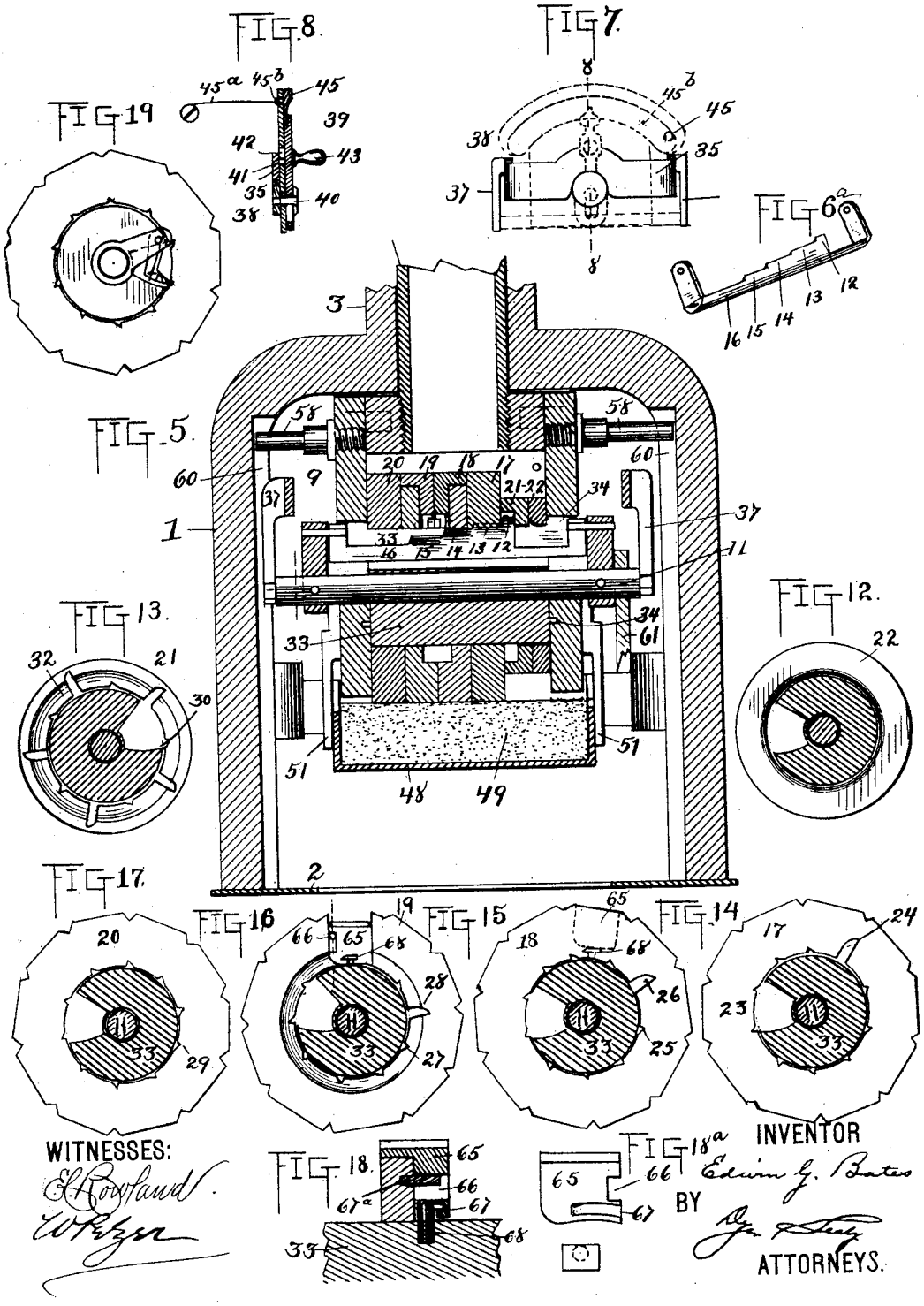
THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y.

NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 456,874, dated July 28, 1891.

Application filed March 4, 1890. Serial No. 342,564. (No model.)

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a certain new and useful Improvement in Numbering-Machines, of which the following is a specification.

The object of my invention is a numbering-machine which shall be readily adjustable to print the same number an indefinite number of times, repeat any given number twice, and then automatically change to the next higher number, or print numbers consecutively, all the changes of which machine shall be controlled by a single adjustable lever, which may serve as a pointer, and to that end is preferably arranged in front of a scale indicating the nature of the work required from the machine, which machine shall have an ink-pad capable of being brought into position for inking without liability of soiling the fingers, the whole machine occupying a comparatively small space and being economical of manufacture and efficient in the character of the work produced.

In carrying out my invention I preferably employ for the operation of the required number of type-wheels to effect printing consecutively an arrangement of oscillating pawls for rotating the type-wheels located within an annular space in the type-wheels, said wheels being provided with the usual number of deep and shallow notches, by which arrangement economy of space, of cost of manufacture, and efficiency of work is attained.

In addition to the printing type-wheels I employ two governing-wheels—one for governing the adjustments of the machine in printing the same number twice, or "duplicating," as it is termed, and the other for governing the adjustment of the machine in printing the same number continuously, or "repeating," as it is termed. Both governing-wheels are located in line with the type-wheels, the first one being provided with ten notches, alternately deep and shallow, so that it shall be moved but once for every two oscillations of its pawl, and the other having no notches whatever, being simply an idler-wheel. The pawls which I prefer to employ are carried on the main shaft and may be formed as teeth from the same piece. This pawl-shaft is hung so as to be capable of being shifted bodily, so that for the purpose of duplicating the tooth for the wheel governing the duplicating movement may be brought into operative position, and so that it may also be brought into position with respect to the wheel governing the repeating-printing, in which position all the other teeth are held out of operative position. The pawl-shaft is preferably supported by the hub which supports the type-wheels, and passes entirely through such hub and being loose to allow it to be shifted. This shifting movement is effected, preferably, by a changing indicator, lever, or other device operating in front of a suitably-marked scale, the movable frame being held in any of its determined positions by locking the changing lever or indicator, means being provided positively operating to effect the locking at the desired point. Further, I provide a lock for the reciprocating type-wheel case or frame, whereby the same is held in a given position while ink is being applied to the ink-pad, the ink-pad being also provided with a lock, which, when the type-wheel case is in the locked position, may be manipulated to turn the pad into the inking position without soiling the fingers. I also provide each of the numbering-wheels intermediate the units-wheel and the last wheel of the series with a novel form of drop-cipher, which, when the numbering-machine is set to begin printing, is out of printing position, and which will be brought into printing position automatically at the proper time. This arrangement results in a reduction of the size of the type-wheels, as where a blank is used in addition to the cipher the perimeters of the wheels thereby are increased.

In the accompanying drawings, forming a part of this specification, Figure 1 is a front elevation of my improved numbering-machine. Fig. 2 is a rear elevation thereof. Fig. 3 is a side elevation taken with one leg of the main frame removed on the line 3 3 of Fig. 1, showing the parts in their raised position. Fig. 4 is an elevation of the opposite side to Fig. 3, with the opposite leg of the main frame removed, on the line 4 4 of Fig.

2, showing the parts slightly raised out of the printing position, with the ink-pad in position for inking. Fig. 5 is an enlarged central section showing the arrangement of wheels and pawls, the pawls, for clearness of illustration, being shown somewhat out of position. Figs. 6 and 6ª are detached views of the oscillating pawls, showing in Fig. 6 the manner of hanging the same to the main shaft. Fig. 7 is a detached view of the movable frame in which the pawls are hung. Fig. 8 is a vertical section taken on the plane of the line 8 8, Fig. 7. Fig. 9 is a vertical section through the follower of the numbering-wheel case and the collar through which it operates, showing the method of locking the same when near its lowest position. Fig. 10 is a detached view of the ink-pad, partly in section. Fig. 11 is an enlarged detail of one side of the locking device for the ink-pad, the other side being similar. Fig. 12 is a view of the wheel governing the operation of the machine for repeating the same character or characters indefinitely. Fig. 13 is a view of the wheel for governing the operation of the machine in duplicating the same character or characters taken, looking toward it from the left of Fig. 5. Fig. 14 is a view of the units-numbering wheel. Figs. 15 and 16 are views of the numbering-wheels intermediate the units-wheel and the last printing-wheel of the series. Fig. 17 is a view of the last wheel of the series. Figs. 18 and 18ª are enlarged details showing the manner of locking the cipher, and Fig. 19 is a detail showing a pawl-tooth in a notch of a numbering-wheel.

In the drawings, 1 is the standard or main frame of the machine. This frame, as shown in the drawings, is of a U shape, the operating mechanism being located between its legs. At its bottom it is provided with a plate 2, having an opening, at the edges of which the usual printing-guides are cut. At its top this frame terminates in a collar 3, through which reciprocates the follower 4 of the numbering-head. Within this follower is arranged a spiral spring 5, (shown in Fig. 9,) the tendency of which is to return the numbering-head to its highest position. Below this spiral spring, passing through the collar 3 and follower 4, is a pin 6, free to move transversely, but having no vertical movement. The follower 4 is slotted at 7 7 to permit of its movement past the pin 6. The slot at one side of the follower is enlarged to about the size of the head of the pin 6; but this enlarged portion is not cut all the way through the material of the follower, as shown at 8, Figs. 1 and 9, so that when the enlargement 8 in the downward movement of the follower is in alignment with pin 6 the head of said pin may be pushed into said enlargement, thereby locking the follower and the parts carried by it from further movement. The follower carries at its lower end a case 9, which sustains the operative parts of the machine. Each side piece of this case is cut away, as shown at 10, Figs. 3 and 4, to receive the main shaft 11, upon which is hung the operating-pawls, which, when the machine is to be used for printing four figures, comprise five teeth 12, 13, 14, 15, and 16, preferably formed from a single piece, as shown in Fig. 6ª. The teeth from 13 to 16 are designed to operate the numbering-wheels, they coming into operation successively, as is well understood, the largest tooth 13 of the four last mentioned first operating to move the units-wheel, the tooth 14 next to move the tens-wheel, and so on throughout the series of wheels.

17 is the units-wheel; 18, the tens-wheel; 19, the hundreds-wheel, and 20 the thousands-wheel.

21 is the wheel governing the duplicating-printing movement of the machine, and 22 is the wheel governing the repeating-printing movement of the machine.

The units-wheel is provided with nine shallow notches 23 and one deep notch 24. The tens-wheel is likewise provided with nine shallow notches 25 and one deep notch 26 of less depth than the deep notch 24 of the units-wheel. The hundreds-wheel is also provided with nine shallow notches 27 and one deep notch 28 of less depth than the notch 26 of the tens-wheel. The thousands-wheel is provided with ten shallow notches 29. The governing-wheel 21 is provided with five shallow notches 30 and five deep notches 31, alternately arranged, as shown in Fig. 13, where it will be seen that the governing-wheel 21 is recessed on one face at 32, so that the tooth 12 may rotate in the recess without carrying the wheel with it; but when the tooth 12 is shifted into engagement with the inner notched periphery of the wheel 21, then it will rotate said wheel once for each oscillation of the pawl-shaft 11, but will not permit the tooth 13 or other teeth of said pawl-shaft to drop into the notches on the type-wheels opposite them, except when the tooth 12 is in the deep notch, which, as will be plainly seen, is at each second oscillation of the pawl-shaft. By this arrangement the duplicating of characters is permitted. When the tooth 12 of the pawl-shaft is shifted into position within the wheel 22, then the remaining teeth of the pawl-shaft will be held out of engagement from the notches opposite them in the type-wheels, whereby the oscillations of the pawl-shaft are rendered ineffective to move any of the type-wheels, and, as a result, the printing of the same number continuously is effected.

Surrounding the pawl-shaft 11 is a hub 33, recessed longitudinally, as shown in the sections, Figs. 14 to 17, inclusive, and rigidly supported in the side pieces of the frame 9 by the pins 34. The pawls are free to oscillate freely within this recess of this hub, the hub itself serving to support the type and other operating-wheels, as well as the pawl-shaft 11.

The manner of shifting the pawls so as to bring them into operative position either with

relation to the numbering-wheels, so that they will print consecutively, or with relation to the duplicating governing-wheel, so that the same number will be duplicated twice, or with relation to the repeating governing-wheel, so that the same number may be repeated an indefinite number of times, is as follows: Behind the front plate of the casing 9 extends the plate 35 of the movable frame, the side plates of the casing being slotted to permit of the free movement of said plate 35. This movable frame extends rearwardly at each side along the side of the casing 9, as shown at 36, Figs. 3 and 4, and terminates at each side in a depending piece 37, and bearing against the ends of the pawl-shaft 11. The plate 35 at its center is cut out, as shown at Fig. 7, in the form of a portion of a circle, and within this cut-out portion the eccentric 38 works. This eccentric is rigidly secured to the change lever or indicator 39, located in front of the casing 9. It will be seen that when this lever or indicator 39 is moved from one side to the other the eccentric 38 will operate to move the plate 35, and with it the shaft 11 and operating-pawls, by reason of the arms 37 bearing against each end of the pawl-shaft.

As there are three changes in the character of the work done by my machine, it is desirable to provide means for locking the machine in each printing position. This is done in the manner following: The tail end of the lever 39 is slotted, as shown in Figs. 1 and 8, and may be moved backward and forward on its fulcrum 40, which is a screw passing through a slot in the front plate of the casing 9 and set into the eccentric 38 and having a head on its outer end to prevent the lever falling off. An arc of a circle 41, Figs. 1 and 8, is cut in the front plate of the casing 9, with the pivot 40 as a center. This arc 41 is provided with three notches at equal distances apart. A pin 42, which may be an extension of the handle 43, employed to move the lever 39, extends into this arc 41, and is of such size that it will enter the notches cut on the lower side of said arc. Now it will be seen that the lever 39, by reason of the slot in its tail, may be moved upward from its fulcrum and out of any notch in the arc 41 and be swung around over to the next notch, into which it is caused to drop and thereby be locked.

The movement of the lever 39 effects the changing of the work of the machine in the following manner: Said lever 39 is at its upper end in the form of a pointer and works in front of a scale 44, which bears upon it the proper marking, as shown in Fig. 1. This scale is free to move upward, being pivoted at one end at 45, the upward movement being given to it by the upward movement of lever 39, a shoulder of which bears against its under surface, as shown in Fig. 8. A spring 45^a, Fig. 8, bears against a lip 45^b on the rear face of the scale, as indicated in Fig. 7, tending to return the scale to its lowest position. At its front or free end this scale carries a hook 46, which engages with the curved end of the pivoted lever 47 and acts, when raised, to throw the lower straight end of said lever 47 into contact with the projecting end 47^a of the pawl-carrying piece, and thus moves said pawl-carrying piece, so that all the pawls are disengaged from the notches of their respective wheels.

It will be seen from the foregoing description that to change the machine it will be necessary only to move the lever 39 upward until its pin 42 is free from a notch in the arc 41 and to shift the lever over to the desired notch in the arc, when the pin of the lever will automatically drop therein by the downward movement of the scale actuated by its spring, and the machine will then be locked in the desired operating position. The shifting of the lever, as before explained, through its connection with the shifting frame acts to bring the pawls into a different position with relation to the notches of the various wheels. The pawls, as shown in Fig. 6, are provided with a spring 47^b, which tends to throw them outward.

The arrangement for inking the ink-pad will now be described. 48 is the box in which the ink-pad 49 is contained. This box is pivoted at 50 in a swinging frame 51. At its front end this box 48 is provided with a tube 52, which is slotted, as shown in Figs. 2 and 10, to permit of the movement of two thumb-pieces 53, between which is arranged in said tube a spiral spring 54, which tends to keep them at the ends of their respective slots. Each of these thumb-pieces carries a pin 55, which, when the thumb-pieces are at the ends of their slots, project beyond the side of the box 48, as shown in Fig. 11, and which may be drawn wholly within said box by the movement of the thumb-pieces toward each other. The swinging frame 51 is provided with a recess 56 to receive the pins 55, which, when entered therein, lock the ink box and pad, but which may be withdrawn therefrom by simply moving the thumb-pieces 53 toward each other, so as to withdraw the pins 55 within the said frame of said ink-box, thereby permitting the ink-box to be turned on its pivot 50 to the position shown in Fig. 4, ready to receive the supply of ink. The swinging frame 51 is provided with an incline 57, leading to this recess 56, whereby the return of the ink box and pad to the locked position is facilitated. By locking the follower 4 in its lowermost position the operation of inking the pad will be greatly facilitated.

The oscillating movement is given to the pawl-shaft as follows: Carried by the frame 9 at each side thereof are pins 58, which are rigidly attached to said frame and project into grooves 60, cut in the legs of the main frame 1. This arrangement serves effectually to guide the working parts in their reciprocating movement. Rigidly secured to the shaft 11 is a depending arm 61, which is slot-

ted, as shown in Figs. 3 and 4. A pin 62, projecting from a leg of the main frame, enters the slot in the depending arm 61, the relationship of said slotted arm and said pin when in the raised position being shown in Fig. 3 and when in the depressed position in Fig. 4. By this arrangement the reciprocating movement which the arm 61, and consequently the said shaft to which it is rigidly attached, will have is converted into a rocking movement.

The ink-pad is operated so as to bring it in contact with the type in the raised position to ink the same and to swing it away from the type when they are descending to print, as follows: The swinging frame 51 is pivoted or hinged at each side in the projections 63 from the legs of the main frame of the machine. Links 64 connect this swinging frame with the casing 9 of the numbering-wheels to effect the swinging thereof by the reciprocating motion of said casing. The drop-cipher, as is usual, is used on the printing-wheels intermediate the units-wheel and the last wheel of the series. When the machine is first set to begin printing consecutively, the drop-ciphers should be in the position shown in Fig. 16; but as the wheels bearing the drop-ciphers are brought into operation the drop-cipher will be forced out and will be in the position shown in Fig. 15, which is the printing position. 65 is the drop-cipher, which is L-shaped in vertical cross-section, as shown in Fig. 18, its upper leg being provided with a type and its lower leg having a slot 66, into which projects a pin 67^a, projecting from the face of the numbering-wheel. This arrangement permits the drop-cipher to be forced outward to the printing position, but prevents it from dropping altogether out of the type-wheel. Below the slot 66 is a recess 67, into which a hook-shaped piece 68, projecting from stationary hub 33, is adapted to engage. This hook acts as a wiper, and when the rounded edge of the drop-cipher meets the inclined edge of said hook the drop-cipher is forced outward into the printing position. In setting the machine the type-wheel is turned so that the drop-cipher will be forced into the printing position. Then the type-wheel is turned so as to carry the drop-cipher beyond its printing position and out of contact with the hook 68. Then the type-wheel is turned backward and the side flange 68^a of the hook 68 enters the recess 67, as shown in Fig. 18, and locks the drop-cipher in that position.

What I claim is—

1. The combination, in a numbering-machine, of a series of printing-wheels, a series of operating-pawls, a governor, an indicator, and mechanism, substantially as described, intermediate said indicator, and operating-pawls, whereby by the movement of the indicator the pawls are brought into operative relationship with the governor, substantially as set forth.

2. The combination, in a numbering-machine, of a series of printing-wheels, a series of operating-pawls, a movable piece in which said pawls are hung, a governor, an indicator, and mechanism, substantially as described, intermediate said indicator, and operating-pawls, whereby by the movement of the indicator the pawls are withdrawn from engagement with the printing-wheels and are brought into operative relationship with the governor, substantially as set forth.

3. In a numbering-machine, the combination, with the printing-wheels and operating-pawls, of a pivoted scale, an indicator operative to move said scale on its pivot, mechanism, substantially as described, connected with said scale, operated by its outward movement and adapted to withdraw the pawls from the notches of the printing-wheels, and mechanism, substantially as described, connected with said indicator, operative to move said pawls into a changed operating position, substantially as set forth.

4. The combination, in a numbering-machine, of a series of printing-wheels, a series of operative pawls, a pivoted lever, one end of which is adapted to move said pawls, an indicator, mechanism, substantially as described, between said indicator and said pivoted lever, whereby by the movement of the indicator the pivoted lever is operated to disengage the pawls from the notches of the printing-wheels, substantially as set forth.

5. The combination, in a numbering-machine, of a series of printing-wheels, a series of pawls, an indicator, an eccentric operated by said indicator, and a movable piece connected with the pawls, moved by said eccentric, substantially as set forth.

6. In a numbering-machine, the combination, with the printing-wheels and operative pawls, of a pivoted scale, mechanism, substantially as described, between said scale and said pawls, whereby by the outward movement of said scale the said pawls are withdrawn from the notches of the printing-wheels, substantially as set forth.

7. In a numbering-machine, the combination of a pivoted scale, an indicator operative to move said scale on its pivot, a pin on said indicator, and a slot and notches to receive said pin, substantially as set forth.

8. In a numbering-machine, the combination, with a series of annular printing-wheels notched on their inner peripheries, of a series of oscillating pawls within said annular printing-wheels, means, substantially as described, for shifting said pawls longitudinally, and a non-printing-governing wheel receiving one of said pawls when in the shifted position, whereby the character of the printing is changed, substantially as set forth.

9. In a numbering-machine, the combination, with a series of annular printing-wheels notched on their inner peripheries, of a series of oscillating pawls within said annular printing-wheels, a blank annular disk provided with alternate deep and shallow

notches, a pawl connected with the printing-wheel pawls adapted to engage with the notches in said blank disk, and means, substantially as described, for shifting both the printing-wheel pawls and the pawl for the blank disk together, whereby the latter may be brought into engagement with said blank disk, substantially as set forth.

10. In a numbering-machine, the combination, with a series of annular numbering-wheels notched on their inner peripheries, of a series of oscillating pawls within said annular numbering-wheels, a blank annular disk having a recess 32 and alternate deep and shallow notches cut on its inner periphery, a pawl connected with the printing-wheel pawls adapted to oscillate freely in said recess 32 and to be brought into engagement with said deep and shallow notches, and means, substantially as described, for shifting both the printing-wheel pawls and the pawl for the blank disk together, whereby the latter may be brought into engagement with the notches on said blank wheel, substantially as set forth.

11. The combination, in a numbering-machine, of a series of annular numbering-wheels, a blank annular wheel having alternate deep and shallow notches, a blank annular wheel without notches, a series of oscillating pawls within said annular wheels operative to effect the consecutive numbering operation of the type-wheels, an additional pawl connected with the printing-wheel pawls adapted to engage with the notches in the blank toothed wheel and to oscillate freely in the annular space of the blank unnotched wheel, and means, substantially as described, for shifting both the printing-pawl and the pawl for the blank disk together, whereby the latter may be brought into position with reference to said blank wheels, substantially as set forth.

12. The combination, in a numbering-machine, of a pivoted ink-pad box and a spring-pressed pin for locking said box in the operative position, substantially as set forth.

13. The combination, in a numbering-machine, of a frame, mechanism, substantially as described, for moving said frame, and an ink-pad box pivoted in the said frame, substantially as set forth.

14. In a numbering-machine, the combination, with a stationary hub, of a wiper mounted thereon, a type-wheel provided with a loose section adapted to be moved outward by contact with said wiper, a recess in the bottom of said section adapted to engage with a side flange 68^a on said wiper, whereby the section is held in its lowest position, and a pin and slot operative to prevent said section falling out, substantially as set forth.

This specification signed and witnessed this 21st day of February, 1890.

EDWIN G. BATES.

Witnesses:
D. H. DRISCOLL,
W. R. ZER.