

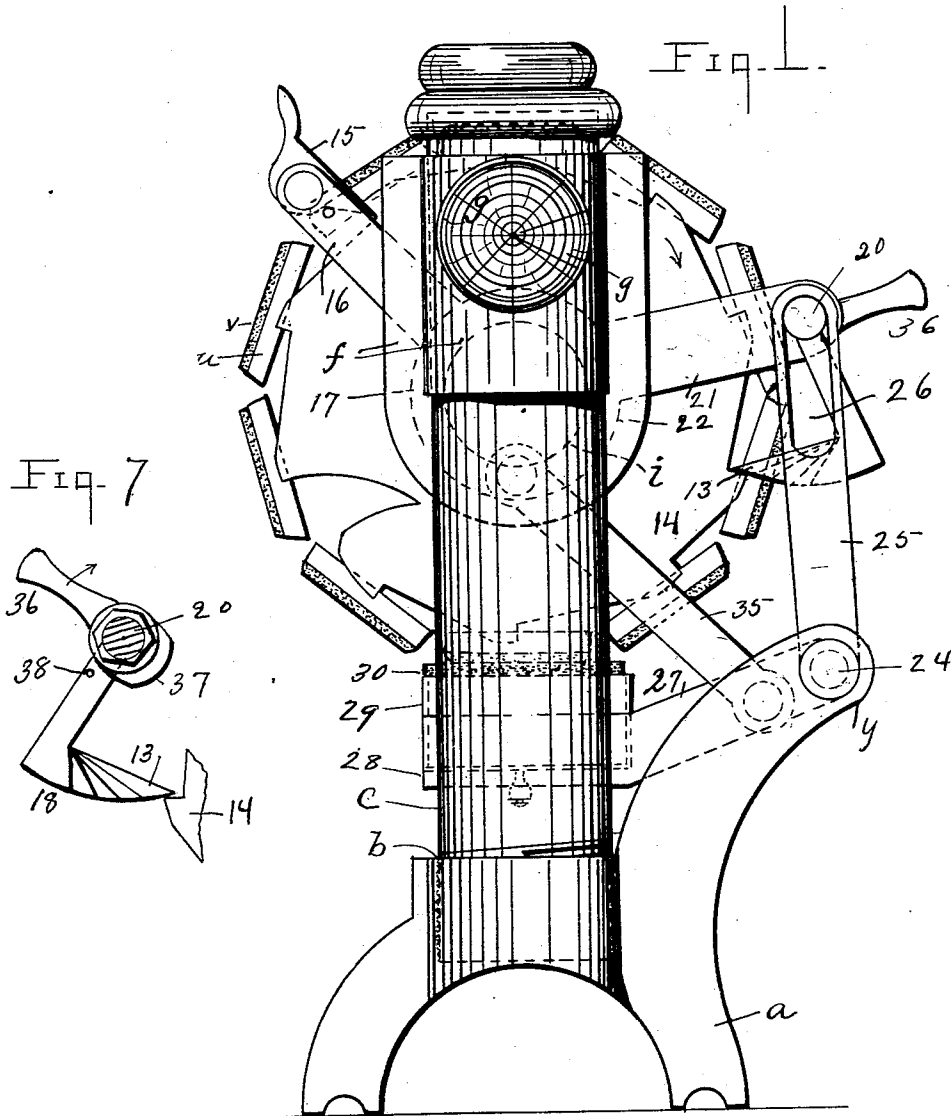
(No Model.)

2 Sheets—Sheet 1.

E. G. BATES.
NUMBERING MACHINE.

No. 587,913.

Patented Aug. 10, 1897.



WITNESSES:

E. H. Stocking
C. L. Belcher

INVENTOR

E. G. Bates

BY

Charles M. Catlin
ATTORNEY

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

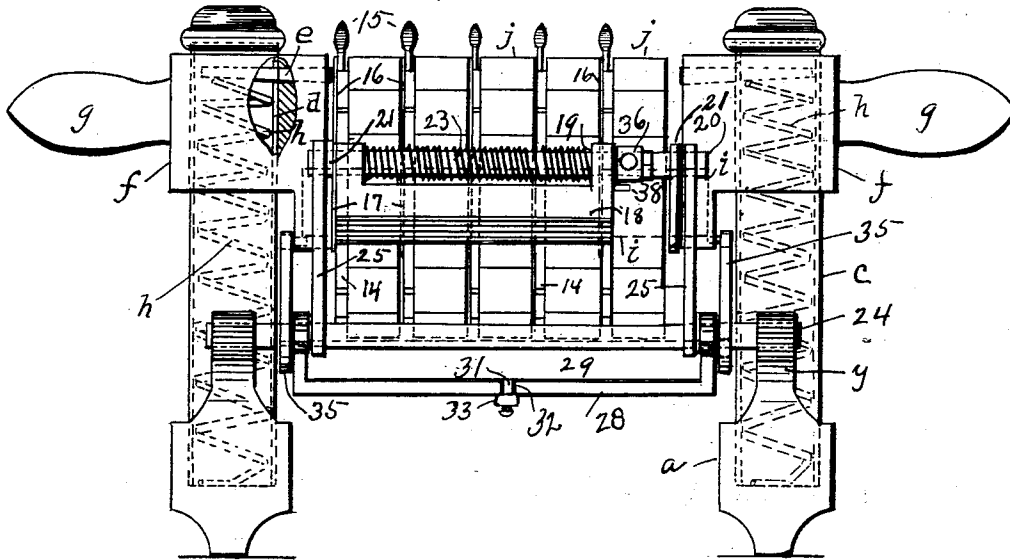


Fig. 3.

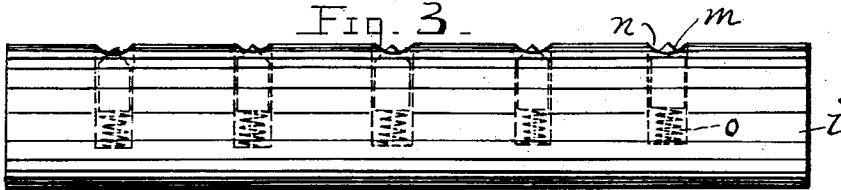


Fig. 4.

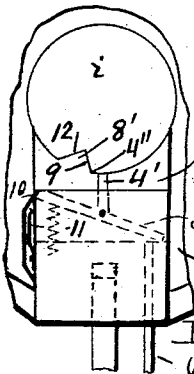


Fig. 5.

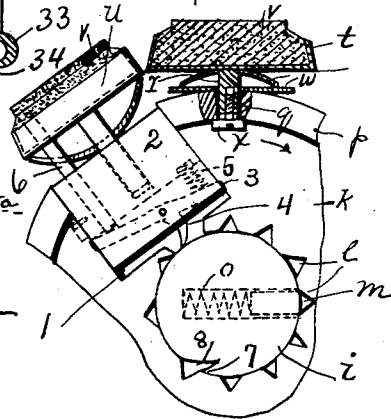
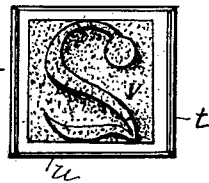


Fig. 6.



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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. 587,913, dated August 10, 1897.

Application filed December 12, 1895. Serial No. 571,846. (No model.)

To all whom it may concern:

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

This invention relates to numbering-machines.

10 The main objects of the invention are to provide an improved, simple, and cheap construction of frame, type, and drop-cipher for such machines. Other subordinate features will hereinafter appear.

15 The machine to be described may be made of any convenient size, but its construction is particularly adapted for large machines, in which the type and printing-characters are, say, an inch in height.

20 In the drawings, Figure 1 is an end view (full size) of one of the improved machines having inch type. Fig. 2 is a side view of the same, on a smaller scale, looking from the left. Fig. 3 is a side view of the main shaft. Fig. 4 is a view, partly in section, of the knob for holding the ink-pad in place. Fig. 5 shows a fragment of a type-wheel and the preferred construction of type and holder and also a side view of a drop-cipher. Fig. 5^a shows a modified form of drop-cipher. Fig. 6 is a plan view of a type and its holder, and Fig. 7 is an end view of the repeating device.

The machine-frame consists simply of two end tubes or tubular standards *c*, connected by the main shaft or axis and the pivot-rods. Each tube has a base *a*, which may be a casting having a screw-threaded or other socket *b*, in which the lower end of the tube *c* is firmly held. These tubes during the act of printing stand stationary and the handle-blocks and parts carried thereby reciprocate on them. Each tube on the side facing the other tube has a slot *d*, through which extends a pin *e*, carried by the handle-blocks *f*, adapted to slide up and down on its tube. There is a handle-block and a handle *g* at each end of the machine, and these and the printing mechanism are normally held in the upper position by springs *h h* in tubes *c*. Blocks *f* and handles *g* are preferably cast in one piece.

Between and supported by the handle-blocks is a non-rotary axis *i*, on which the type-wheels *j* are mounted and can turn. To avoid confusion of lines in Fig. 2, these wheels, of which five are shown, are not shown in detail, but the construction of type-wheel preferred is shown in Figs. 5 and 6.

k is the web of a wheel having a central opening adapted to fit the axis *i* and having notches *l*, with which engages a sliding spring-pressed retaining pawl or pin *m* in a recess *n* in the axis. There is a pin *m* and spring *o* for each wheel, the pins being held with their points projecting into notches in the wheels except when a wheel is being advanced, when the spring yields and allows the wheel to advance. In Fig. 3 all the pins are shown retracted. When a wheel is advanced, it comes to rest with its pin *m* in the proper notch to hold the wheel in its new printing position until it is again purposely moved. Around the periphery of wheel-webs *k* are flanges *p* with holes *q*, in which fit loosely shanks *r*, which support sheet-metal or other type-holders *s*, which preferably are cup-shaped, having flat bottoms, two inclined sides *t*, and two vertical sides *u*, which, however, are not essential.

The type are made from a thick, compact, and elastic variety of felt or similar elastic and absorbent fibrous material. Such type are durable and print on wood and on rough surfaces better than metal type. Numerals or characters are preferably cut in relief on the upper sides of rectangular blocks of felt *v*, said blocks being then forced into the holders *s*, where they are held, owing to their elasticity and to the shape of the holders, without special securing devices.

w are springs or spring-washers between the wheel-flange and the holders, normally projecting all the type far enough to print when the wheel is turned to bring them into printing position, allowing the latter to yield or adjust slightly in any direction under pressure—for example, when the type are brought down onto an uneven surface.

x are screws for securing the holders to the flanges and for separately adjusting the holders radially when necessary.

The type-wheels (except the last one) have

ten type or characters "0" to "9," inclusive, regularly arranged around their peripheries. In order that the wheels following the units-wheel may not print at each successive operation until they are advanced by their pawls at the end of a rotation of a preceding wheel, the cipher-type, except on the first and last wheels, are made so that they can drop toward the axis of their wheels, so that their surfaces shall be out of reach of the printing-surface. Without such a device it would be necessary to enlarge the type-wheels and divide their peripheries into eleven or more instead of ten equal subdivisions. The preferred construction of drop-cipher is shown in Fig. 5. The wheel web and rim have a slot 1, in which fits a block 2, so that it can move radially. In a groove in the block is pivoted a lever 3, having an arm 4, which rests on the surface of axis *i* and supports the zero-type in the printing-plane. A spring 5, normally held by the lever in the position shown, and a rod 6 extend through the block to the outer surface of the type. By pressing in on said rod lever 3 is tilted, carrying arm 4, which has a hooked end, forward, this being done when the cipher is in printing position—that is, when it is directly below the axis the hooked arm 4 will pass to the left of the overhanging lip 7, formed by the groove 8 in the axis, allowing the block 2 and cipher carried thereby to move toward the center. The hook engaging the lip locks the block and cipher down, the same being unlocked by the next movement of the wheel. When by movement of the wheel arm 4 rides up incline 8, lever 3 is moved to its original position. A slightly-modified construction is shown in Fig. 5^a. The block and its cipher-type are carried by the wheel, as already described. The pivoted lever 3' has a straight arm 4', (instead of a hook-arm,) and the groove 8' in the axis does not form an overhanging lip. When lever 3' is tilted by pressing in on rod 6', arm 4' moves over the corner 4'' and slides down the incline 9 as the block drops toward the center of the axis *i*. The end 10 of the lever wedges against the sides of its groove in the wheel or against a spring 11 in the groove, so that the block is held in position by friction until it is purposely moved. This is done by advancing the wheel, when the incline 12 will act against arm 4' and move it to the position illustrated and push the block outward. As shown in Fig. 5^a, the zero-type carried by block 2' is in condition to print.

The type-wheels have a stepped propelling pawl-plate, there being a separate step (or pawl) 13, which engages a ratchet 14, forming a part of each wheel. The ratchets are provided with teeth and with notches to admit the longer pawls or steps at the close of each revolution of a wheel in the usual manner. Each wheel also has a hand setting device consisting of a pivoted pawl 15, carried by an arm 16, terminating in a ring 17, having a bearing on axis *i*. Any one of these

pawls can be moved separately to engage the following tooth of its ratchet and then back to advance the ratchet and its type-wheel.

18 is the stepped pawl-plate, swinging on bearings 19 on rod 20, which is supported between arms 21, having rings 22 bearing on the axis *i*.

23 is a spring which presses the pawl-plate toward the type-wheels. Between said rod and a rod 24, supported by brackets *y*, are links 25, the upper ends being slotted, as shown at 26, so that when the head is depressed arms 21, rod 20, and the pawl-plate move along bodily with the head until arrested by rod 20 reaching the bottom of slots 26, when by further downward movement of the head the next tooth on the number-wheel being turned is brought under the operating-pawl to be operated on by the pawl at the proper moment when the head is thrown up by the springs in the tubular standards.

27 are arms also pivoted on rod 24 and carrying a plate 28, on which rests a box 29, holding the inking-pad 30. From the bottom of said box projects a post 31, which is adapted to fit into a slot 32 in plate 28.

33 is a knob or button pressed by a spring 34 so that it rests against the bottom plate and holds the box 29 from slipping out, but allows the box and pad to be slipped forward on the plate and removed by hand when desired.

35 are links pivoted to arms 27 and also to the slidable blocks *f*. When the head of the machine (that is, the axis, type-wheels, and handle-blocks) is moved down by handles *g* to print, links 35 move the inking-pad back out of the way and when the head rises move the pad back against the following type.

When it is desired to print a number several times in succession, the stepped pawl-plate (see Fig. 7) can be thrown out of reach of the ratchet-wheels by handle 36, sleeved on rod 20 and carrying a cam 37, adapted to press against a projection 38 on one of the pawl-carrying arms. When the stepped pawl-plate is thus retracted, the projection 38 will (or may) press on the highest part of the cam and in a line passing through the center of the type-wheel axis, so that the pawl-plate will remain retracted until handle 36 is moved back toward its first position. By then swinging handle 36 in the reverse direction the pawls will be allowed to return to operating position for consecutive numbering.

The massive parts of the machine—as bases *a*, tubes *c*, blocks and handles *f g*, and wheels *k*—are preferably made of aluminium to reduce the weight, so that the machine can be easily handled. Evidently several of the features described herein can be used in printing or impression devices other than numbering machines.

I am aware that inking-pads operated by links from a movable head are old, and this I do not broadly claim herein.

I claim—

1. The combination, in a hand numbering-machine, of tubular end standards, springs therein, handle-blocks adapted to slide on the standards and normally retracted by said
5 springs, a non-rotary axis between said blocks, type-wheels on the axis, and means for moving them consisting of a stepped pawl-plate at a distance to one side of the axis but supported by arms pivoted on it, and operated
10 by moving the handle-blocks on the standards against the tension of their springs, substantially as described.

2. The combination, in a hand numbering-machine, of tubular end standards, springs
15 therein, handle-blocks adapted to slide on the standards and normally retracted by said springs, a non-rotary axis between said blocks, type-wheels having felt number-type around their periphery on the axis, and means for
20 moving them consisting of a stepped pawl-plate at a distance to one side of the axis but held by arms pivoted on it, and operated by moving the handle-blocks on the standards against the tension of their springs, substantially
25 as described.

3. In a numbering-machine, the combination, of two bases having sockets in their upper sides, and having brackets, tubes carrying
30 springs in said sockets, two handle-blocks, one on each tube with handles projecting therefrom, a shaft between the handle-blocks, numbering-wheels thereon, means for turning the wheels consisting of a stepped pawl-plate, and operating-links and a pivot-rod for
35 the links connecting the brackets of the bases and connected to the stepped pawl to move it when the handle-blocks are depressed.

4. In a numbering-machine, the combination of two bases and two slotted tubes,
40 springs in the tubes, handle-blocks on the tubes, pins carried by the handle-blocks and extending through the slots above the springs, whereby the blocks are normally raised on the tubes, a shaft between the handle-blocks,
45 wheels rotatable thereon, a stepped pawl-plate having bearings on said shaft, and means for operating said pawl-plate by movement of the handle-blocks.

5. In a numbering-machine, the combination of two bases with brackets, slotted tubes
50 carried by said bases, springs in the tubes, handle-blocks on the tubes, pins carried by the handle-blocks and extending through the slots above the springs, a shaft between the handle-blocks, wheels rotatable thereon, a
55 stepped pawl coöperating with the wheels to move them, and slotted links carried by the said brackets, the stepped pawl-plate having parts extending into the slots of the links, whereby the stepped pawl is moved by movement
60 of the handle-blocks.

6. In a numbering-machine, the combination of two bases with projecting brackets, slotted tubes carried by said bases, springs in

the tubes, handle-blocks on the tubes, pins
65 carried by the handle-blocks and extending through the slots above the springs, a shaft between the handle-blocks, wheels rotatable thereon, a stepped pawl-plate coöperating with the wheels to move them, and slotted
70 links carried by the said brackets, the stepped pawl-plate having parts extending into the slots of the links, an inking-pad holder also pivoted to said projecting arms of the bases and links between the holder and handle-
75 blocks.

7. The combination in a numbering-machine, of end slotted tubes, springs therein, handle-blocks on the tubes normally raised
80 by said springs, a shaft between the handle-blocks, wheels rotatable thereon, a stepped pawl-plate for turning all of said wheels in regular order, and separate pawls for moving the wheels separately in any desired order.

8. The combination in a numbering-machine, of end slotted tubes, springs therein,
85 handle-blocks on the tubes normally raised by said springs, a shaft between the handle-blocks, wheels rotatable thereon, a stepped pawl-plate for turning all of said wheels in
90 regular order, and separate pawls for moving the wheels separately in any desired order, said separate pawls being centered on the same shaft as the wheels.

9. The combination with a type-wheel, of a
95 drop-cipher having a radially-movable block, a lever carried by said block and having an arm adapted to rest on the axis, said axis having a groove into which said arm can move when the lever is tilted on its pivot, thus
100 allowing the cipher and the block carrying it to drop out of the printing-plane.

10. The combination with a type-wheel, of a drop-cipher having a radially-movable block,
105 a lever carried by said block and having an arm adapted to rest on the axis, said axis having a groove into which said arm can move when the lever is tilted on its pivot, thus allowing the cipher and the block carrying it to drop out of the printing-plane, and a pin
110 extending where it can be reached from the outside of the machine, for tilting the lever.

11. The combination with a type-wheel, of a drop-cipher having a radially-movable block
115 supporting said cipher, a groove in said block, a lever pivoted in said groove, a spring tilting the lever in one direction, means for tilting the lever in the opposite direction, an axis for the type-wheel, said axis being grooved, and a hooked arm carried by the lever and
120 adapted to move into said groove and to engage one of the sides thereof.

Signed this 4th day of December, 1895.

EDWIN G. BATES.

Witnesses:

C. M. CATLIN,
K. L. ROCKWELL.