(No Model.)

2 Sheets—Sheet 1.

C. A. HANEY.

NUMBERING HEAD.

No. 510,912. Patented Dec. 19, 1893.

Fig. 1.

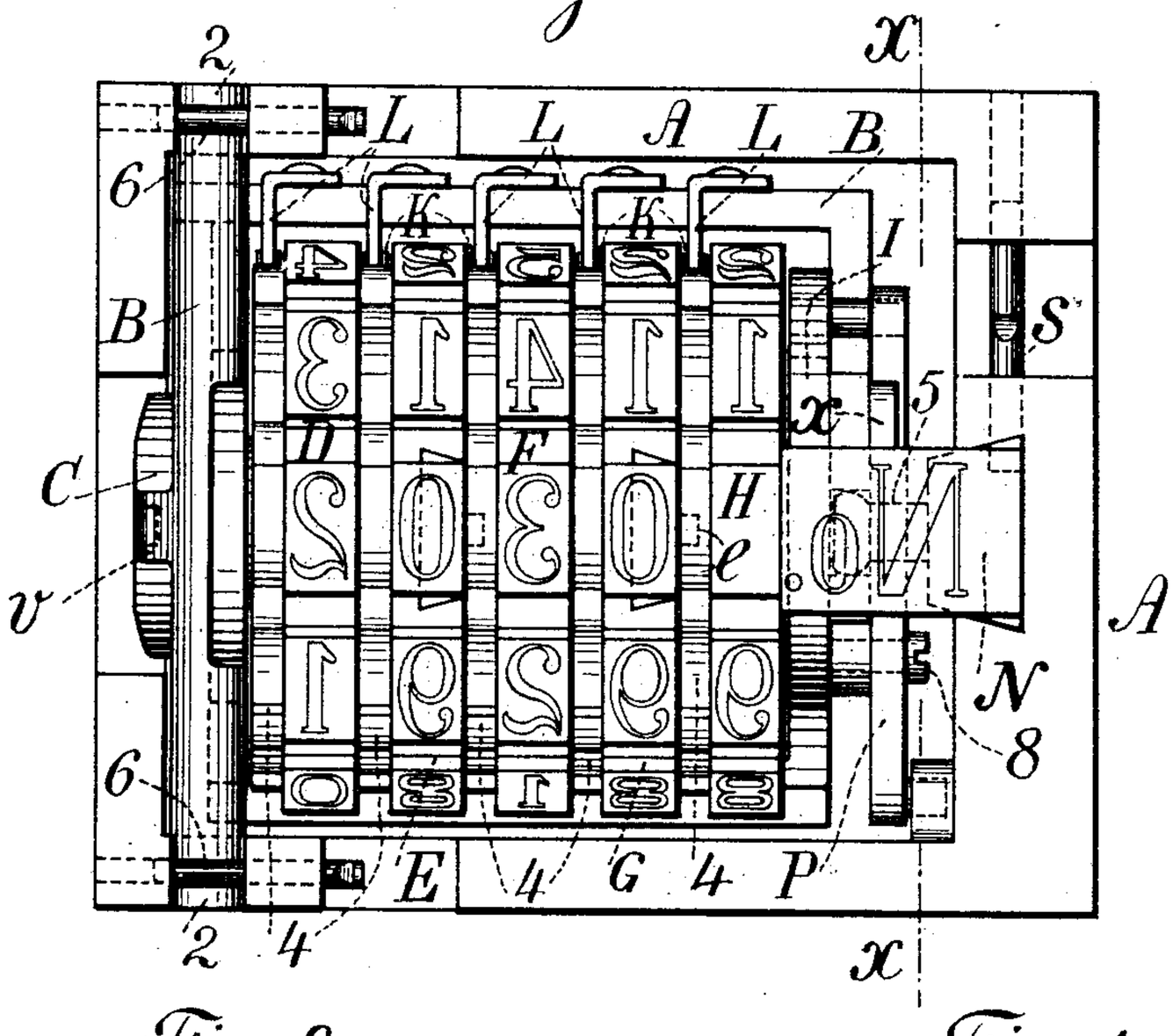


Fig. 3.

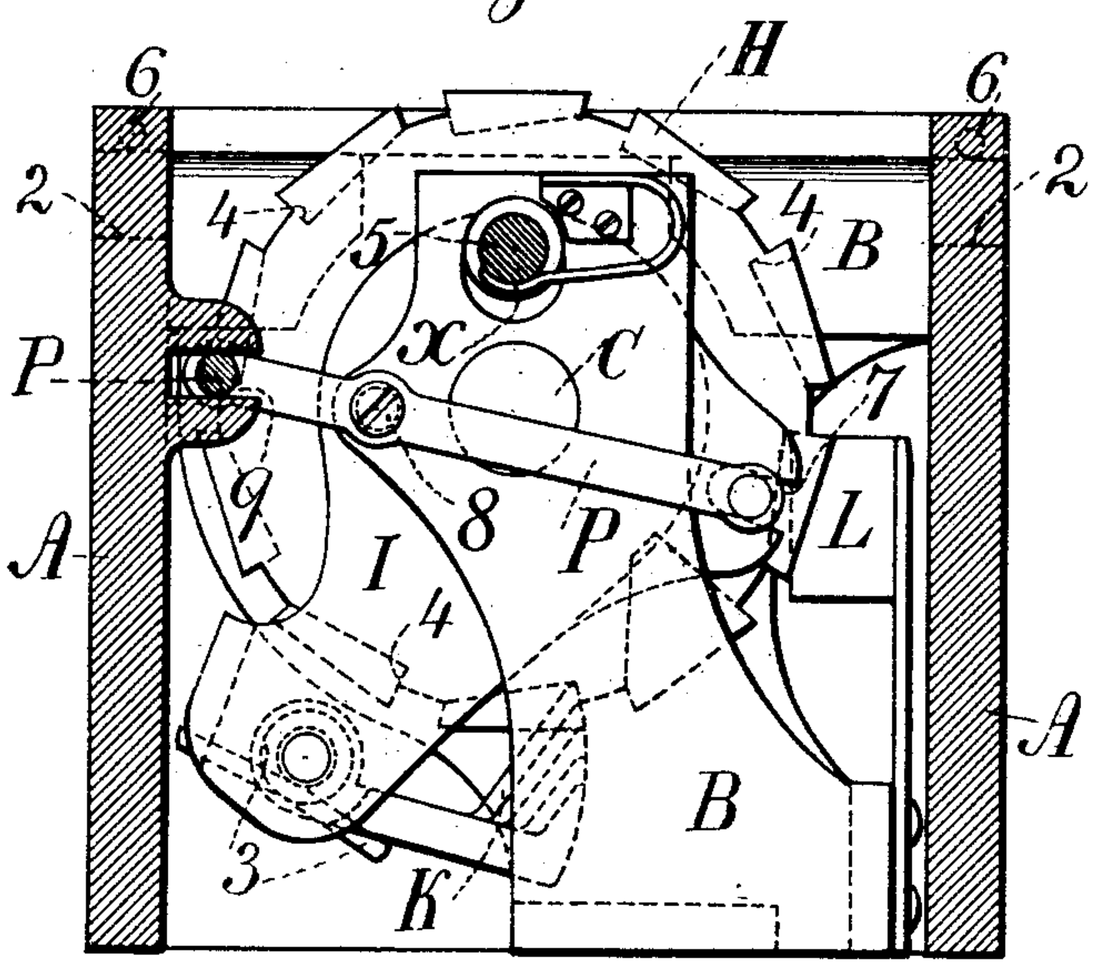
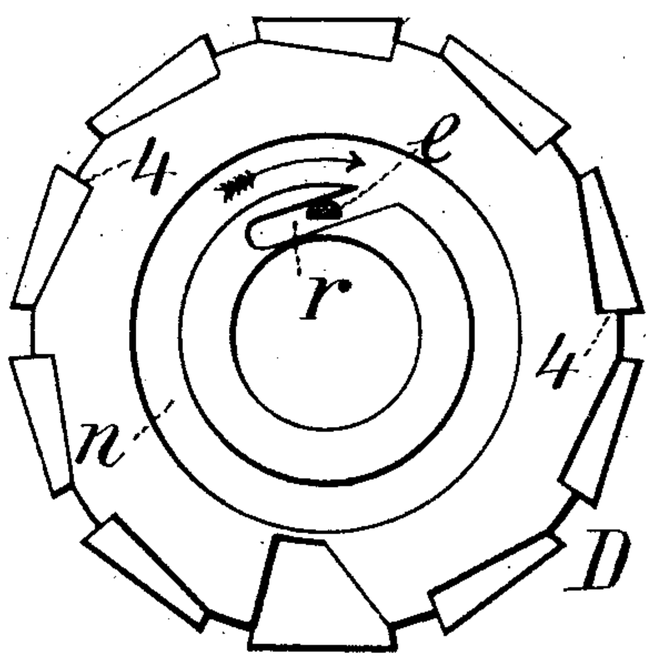


Fig. 4.



Witnesses:
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Chas. H. Smith

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THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

C. A. HANEY.

NUMBERING HEAD.

No. 510,912. Patented Dec. 19, 1893.

Fig. 2.

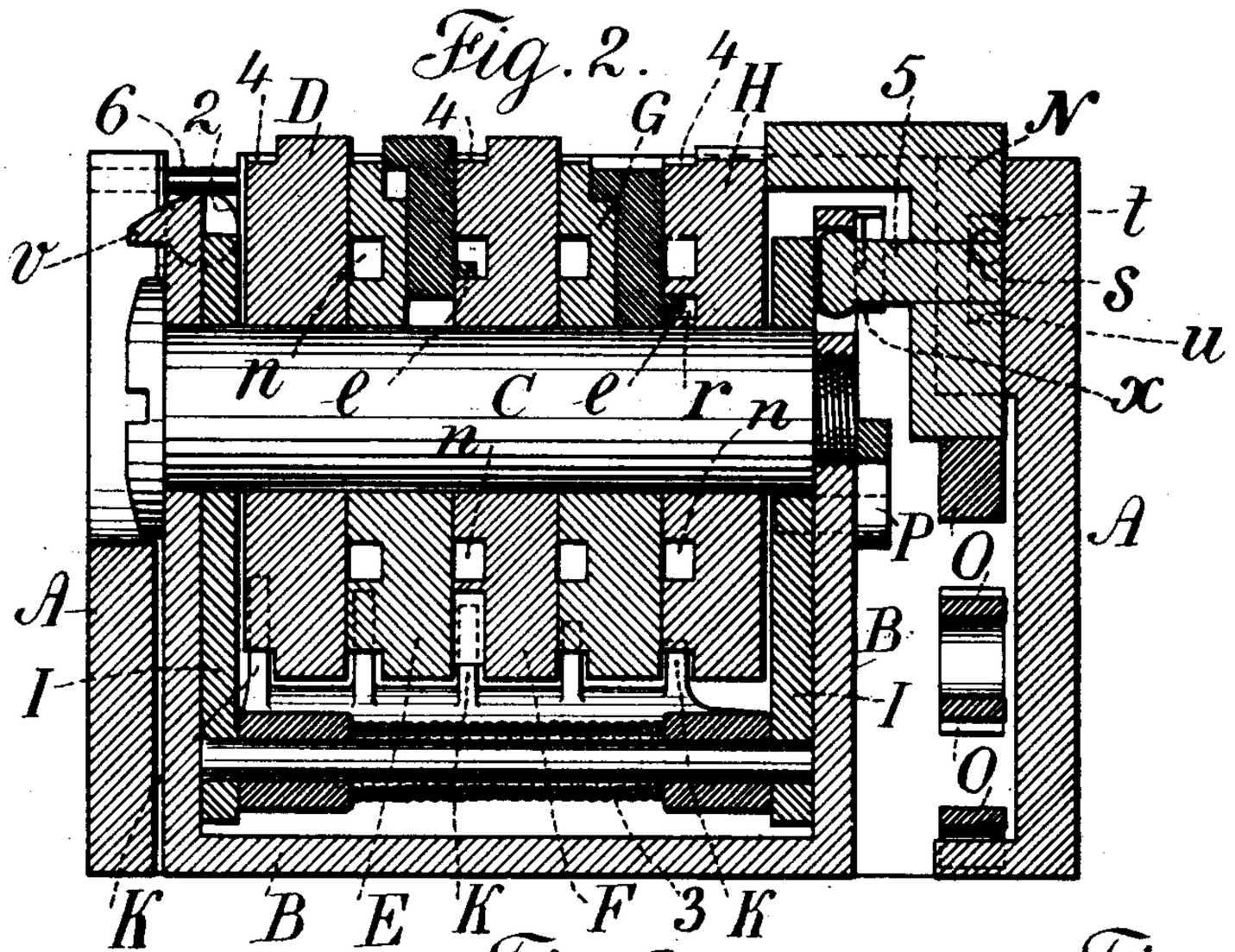
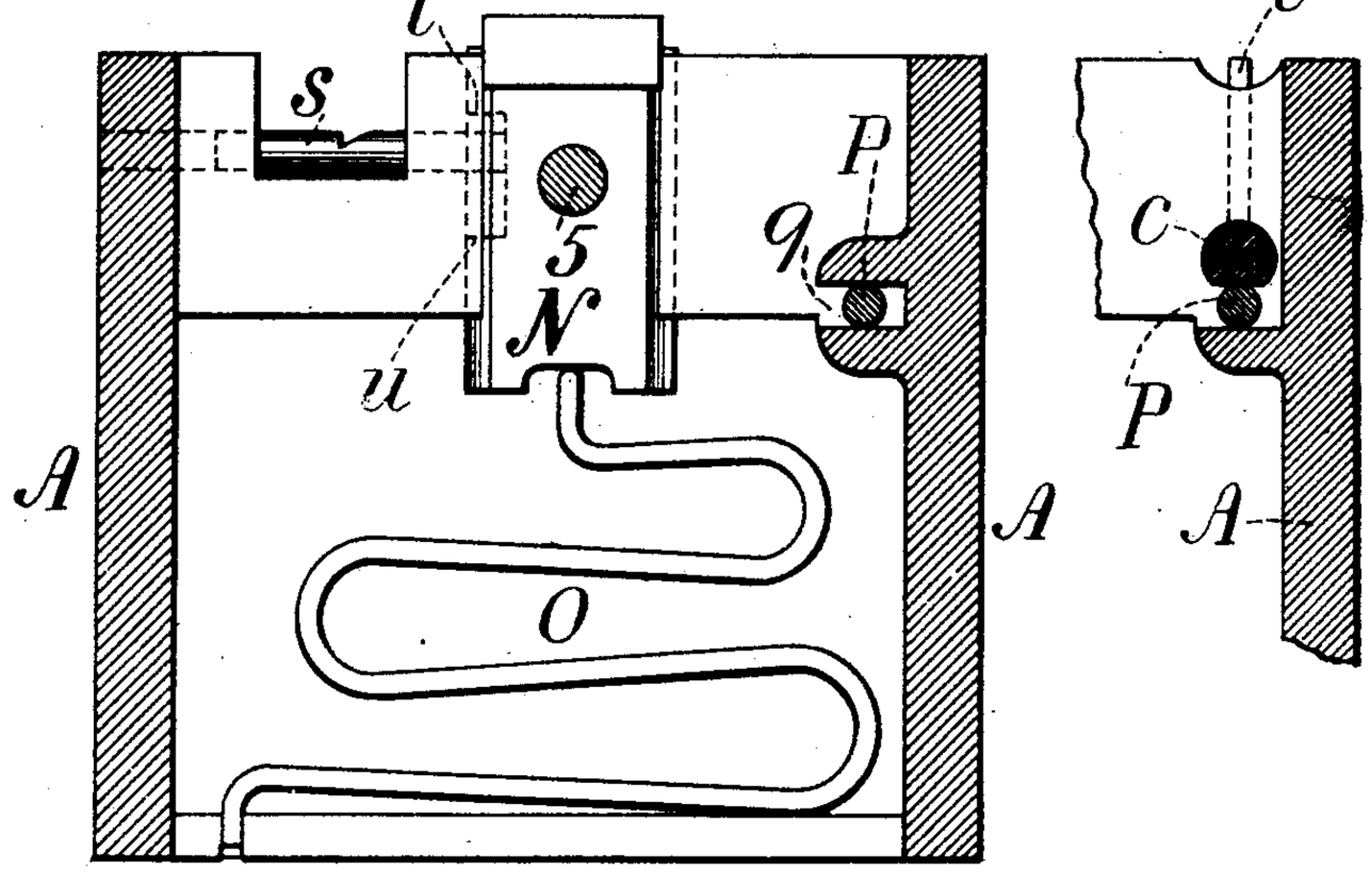


Fig. 5.

Fig. 6.



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THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES A. HANEY, OF BROOKLYN, NEW YORK.

NUMBERING-HEAD.

SPECIFICATION forming part of Letters Patent No. 510,912, dated December 19, 1893.

Application filed January 13, 1893. Serial No. 458,215. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. HANEY, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Numbering-Heads, of which the following is a specification.

Consecutive numbering heads have been made in which a series of number wheels has been placed within a box and corresponding in height to the types made use of in printing, and the numbers have been moved progressively by the impression, so that the printing of the successive numbers is automatic; and the present invention relates to the peculiarities of construction and combination of devices hereinafter set forth, whereby the numbering head is simplified in its construction and rendered more efficient and less liable to injury and disarrangement. I make use of a box containing the numbering devices, and the range of number wheels is mounted upon a shaft within a swinging frame that is lifted at one end, and in the elevation of this frame after the printing operation the parts are moved so as to turn the number wheels progressively, and in some of the number wheels the cipher or 0 is upon a separate sliding stock and it is held out in an operative position by a pin and can be moved inwardly and out of action when the parts are turned to bring the pin into a cam slot or incision. By this means the axial pin of the number wheels is left cylindrical without any groove or channel and the number wheels themselves bear with uniformity upon this axial pin.

In the drawings, Figure 1 is a plan view. Fig. 2 is a section longitudinally of the axial pin. Fig. 3 is a cross section near the line $x\ x$, and Fig. 4 shows the face of one of the type wheels with the groove therein and the pin in such groove shown in section, and Fig. 5 is a cross section near the line $x\ x$, looking in the other direction to Fig. 3, and Fig. 6 shows a modification.

All the figures of the drawings are upon a magnified scale.

The box A is rectangular and of less height than the types, and the exterior surfaces of this box are preferably flat, so that the numbering head can be locked up easily in the chase that contains the types, and in the upper edges of the box A near one end thereof there are notches for the pivots 2 of the swinging frame B, and this frame B receives through it the axial pin C for the type wheels; and I remark that there may be any desired number of these type wheels according to the numbers that may require to be printed. I have represented five of these type wheels marked respectively D, E, F, G, H, adapted to printing from one to ninety-nine thousand nine hundred and ninety-nine; the type wheel D printing units, the type wheel E tens, the type wheel F hundreds, the type wheel G thousands, and the type wheel H tens of thousands.

Between the frame B and the end type wheels are the ends of the pawl frame I, and this pawl frame I carries a range of pawls K, the points of which are pressed toward the type wheels by a spring 3, and the pawl points of this range of pawls are of successively increasing length, and the pawls act upon ratchet teeth 4 at the side of each type wheel, and in the range of teeth of each wheel there is one deep tooth so placed in relation to the number that is uppermost and being printed, that as the units wheel D makes a complete rotation its pawl drops into the deeper notch to allow the next shorter pawl tooth in the range of teeth to act upon the ratchet wheel of the tens wheel E to turn the same and bring the next figure into its appropriate place for printing. These type wheels, the pawl frame, the range of pawls and the ratchet teeth upon the respective type wheels are of ordinary construction, except in the particulars hereinafter mentioned, and hence the same do not require description, and upon the frame B there is a range of holding pawls L that prevent the type wheels being turned backwardly. Each of these holding pawls is made as a flat spring with a right angle flange at the end thereof forming the pawl, such flange passing down between one type wheel and the next and acting upon the ratchet teeth of such type wheel. In this manner the spring and pawl are combined. By making these holding pawls of flat springs with flanged ends, I am enabled to obtain great elasticity in the springs themselves, and the right angle flanges forming the pawl ends pass in freely between one type wheel and the next so as to act with the ratchet teeth.

One feature of my present improvement relates to the means for lifting the moving end of the frame B; this is effected by the lifter block N which slides vertically in a dove-tailed groove within the box A at one end, and it has a projecting pin 5 with an enlarged or globular head passing into a hole in the end of the frame B, and there is a spring O beneath the lifter block and of sufficient strength to raise the lifter block and lift the frame B at one end together with the type wheels, such frame B swinging upon the pivots 2.

Within the box A at one end thereof and below the lifter block N is a recess containing the spring O, and this spring O is preferably in the form of a thin narrow plate or strip bent backward and forward, as represented in Fig. 5, so as to obtain the proper length of strip and the desired elasticity. One end of this spring O passes into a notch in the bottom flange below the recess in the box A, and the other end of the spring passes into a notch in the lower end of the lifter block N. It will now be understood that the lifter block N can be raised and taken out of the box A together with the frame B, the type wheels and the other parts carried by such frame, without disturbing the box A. Hence the numbering head can be cleaned or adjusted without removing the box A from the chase or form of types, which is a great convenience in the use of these numbering heads. The pressure in printing being downwardly, is supported by the pivots 2 at one end of the frame B and by the pin 5 at the other end of the frame B, or the bottom of this frame B may come down flat upon the bed or follower supporting the types; and under some circumstances it is desirable to prevent the frame B and its pivots 2 accidentally becoming disconnected from the box A. With this object in view small holes are drilled horizontally in the box A above the pivots 2 for the reception of pins 6 which can be moved along over the pivots 2 to hold the same down in place, and the heads or ends of said pins 6 may be within notches in the upper edges of the box A.

It is generally advantageous to have upon the upper end of the lifter block N the raised letters No., so that these will be printed before the numbers and the lifter block will be depressed in the act of printing.

I avail of the movement of the frame B at the end adjacent to the lifter block N for giving motion to the pawl frame I, and with this object in view said pawl frame I is notched at 7, and there is a lever P pivoted at 8 upon the end of the frame B and having a pin at one end projecting into the notch 7, and a pin at the other end projecting into a notch or slot 9 within the box A near one end thereof. Hence by this means the pivot 8 is carried up and down bodily with the frame B, and the end of the lever P in the slot 9 is held stationary while the other end of the lever P receives an increased movement, and the pin of such lever in the notch 7 gives to the pawl frame I a swinging movement of the extent required to turn the number wheels one-tenth of a revolution.

In numbering heads the cipher or 0 marks upon the type wheels, except in the units wheel, have heretofore been made separate so that such characters can be pressed down and out of action while the units wheel makes one revolution, and then the moving type in the tens wheel will be brought up into position for printing 10, and so on, such moving types will be brought up into position successively as required, but in cases where this has been effected by bringing a projection at the inner end of the moving type down into a groove in the axial pin, such axial pin could not be round, and the wear upon the same and at the central opening in the type wheels was not uniform. I avoid these difficulties by making each movable type to slide within its corresponding recess in the type wheel and provide upon such moving type a projecting pin *e* which passes into an annular groove *n* in the adjacent type wheel, and there is a diagonal incision in the metal extending from the annular groove *n*, as shown at *r*, into which the pin *e* can be passed when the type is depressed.

It is now to be understood that before the numbering is commenced, all the movable types are pressed downwardly by hand and the wheels so rotated upon the axial pin that the pins *e* will be passed into the incisions *r*. Hence the depressed types will be below the printing surface and there will be no impression from such depressed types, and when the units wheel is being moved from 9 to 0 and the tens wheel is being moved to bring the figure 1 into position for printing, the pin *e* upon the cipher type is moved along the incision *r* in the face of the hundreds wheel and brought out of that incision to rest upon the annular surface at the bottom of the groove *n*. Hence the cipher type will remain in position and be supported while it is being printed from in all subsequent movements, and the pin of such movable type cannot again pass into the incision during the rotations, because the pin will be moving in the direction of the arrow in Fig. 4 and will pass over the end of the diagonal incision; and when units and tens have been printed and the hundreds wheel is moved between the impression of 99 and 100, the movable cipher type of the hundreds wheel is projected into position by its pins in the diagonal incision adjacent to the annular groove in the thousands wheel, and so on, but where there are but five type wheels, as shown, it is usually unnecessary to have a movable type in the tens of thousands wheel, the numbering head being adapted to printing up to ninety-nine thousand nine hundred and ninety-nine. The units wheel does not require a movable type, and the end type wheel is usually made

with a blank space instead of a cipher, as a cipher would be useless.

This entire apparatus is simple and easily constructed, and none of the parts are liable to injury and they can be easily taken apart for cleaning or repairs, and the number wheels and the frames can be removed or replaced without disturbing the box that is locked into the chase with the types.

It is sometimes advantageous to leave a space between the bottom of the frame B and the bed upon which the types rest, so that the movements of the parts will not be obstructed by any piece of paper or foreign substance that may pass beneath the frame B, and it is also advantageous to limit the upward and downward movements of the lifter block N. To accomplish this object any suitable device may be employed; I have represented a sliding bolt or pin *s* within a hole in the box A, the point of which pin passes in between the ends *t*, *u* of a groove in the lifter block, so that when the impression takes place the pin *s* will support the lifter N and the frame B at the swinging end thereof, and when the bolt or pin *s* is drawn back, to clear the part *u*, the lifter block frame B and the parts connected therewith can be lifted out from the box A, and this part *t* upon the lifter block N is a convenient point beneath which the finger nail can be placed in raising up the parts, and I provide on the frame B at the other end thereof and near the pivots a suitable projection for the same object, and I have represented a projection at *v* beneath which the finger nail can be passed in lifting the parts. If the upper or printing surface of the lifter block N is on the same level or nearly so as the type of the adjacent type wheel, the numbers printed by the type wheels may be blurred in consequence of touching the paper during the time that the frame B swings down to position through an arc of a circle. To prevent this the hole in the frame B for the head of the pin 5 is elongated upwardly, and a suitable spring such as the spring *x* is applied to lift the pin 5 and the lifter block N so that the top surface of such lifter block may be above the types of the type wheels, and this spring should be sufficiently strong to swing the frame B on its pivots when the pressure comes upon the upper end of the lifter block N. Thereby the type wheels and frame B will be swung down to position before the paper comes into contact with either of the types of the type wheels, and the character No. that is printed by the upper end of the lifter block will not be blurred, because this lifter block moves vertically and a continuation of the pressure will depress the lifter block against the action of the spring *x* as the impression is made from the type of the type wheels.

In lifting the parts out of the box A it is convenient to liberate the end of the lever P at the slot 9. To effect this there may be a sliding pin *c* over the end of such lever P, as seen in Fig. 6, such pin *c* having upon it a stud *c'* projecting upwardly through a slot and into a recess in the upper edge of the box A, so that the thumb or finger nail can be used to draw back the end of the pin *c* from over the said lever P to allow the latter to be lifted bodily with the frame and other parts.

I claim as my invention—

1. The combination in a numbering head, of a rectangular box adapted to be locked into the chase with the type, type wheels, an axial pin and frame carrying such type wheels, pivots at one end of the frame passing into notches in the upper part of the box near one end thereof, a spring and lifter block acting to elevate the other end of the frame, and pawls for acting upon the type wheels to rotate the same progressively, substantially as set forth.

2. The combination in a numbering head, of a box adapted to be locked with the type into the chase, type wheels, a swinging frame and axial pin carrying such type wheels, pivots at one end of the frame passing into openings in the box, a lifter block moving vertically in grooves in the inner face of the box and having a round headed pin entering an opening in the frame, a spring formed of a strip bent backward and forward and occupying a recess at one end of the box and acting between the flange at the bottom of the box and the lifter block, substantially as set forth.

3. The combination in a numbering head, of a box adapted to be locked with the type into the chase, type wheels, a swinging frame and axial pin carrying such type wheels, pivots at one end of the frame passing into openings in the box, a lifter block moving vertically in grooves in the inner face of the box and having a round headed pin entering an opening in the frame, a spring formed of a strip bent backward and forward and occupying a recess at one end of the box and acting between the flange at the bottom of the box and the lifter block, a pawl frame and pawls acting to rotate the type wheels progressively, and a lever for giving motion to the pawl frame by the depression of the lifter block and frame carrying the type wheels, substantially as set forth.

4. The combination in a numbering head, of a rectangular box adapted to be locked into the chase with the type, type wheels, an axial pin and frame carrying such type wheels, pivots at one end of the frame passing into notches in the upper part of the box near one end thereof, a spring and lifter block acting to elevate the other end of the frame, pawls for acting upon the type wheels to rotate the same progressively, pins passing over the pivots and within holes in the upper part of the box, substantially as set forth.

5. The combination in a numbering machine of type wheels, an axial pin for the same, and the frame and pawls for moving the type

wheels progressively, a movable type in one or more of the number wheels and a pin on the same, there being an annular groove in the adjacent type wheel for such pin for holding the type in its projected position, and a cam groove or incision for receiving the pin when the type is depressed, and which acts to project the type substantially as set forth.

6. The combination with the box and the type wheels, of an axial pin and frame for carrying the type wheels, pivots for one end of the frame, a lifter for the other end of the frame, a swinging pawl frame and pawls for moving the type wheels progressively, a lever pivoted upon the type wheel frame and acting to give motion to the pawl frame and pawls, substantially as set forth.

7. The combination with the box and the type wheels, of an axial pin and frame for carrying the type wheels, pivots for one end of the frame, a lifter for the other end of the frame, a swinging pawl frame and pawls for moving the type wheels progressively, a lever pivoted upon the type wheel frame and acting to give motion to the pawl frame and pawls, there being a slot in the box for the reception of the other end of the lever, substantially as set forth.

8. The combination in a numbering head of a box adapted to be locked with the types in the chase, type wheels, an axial pin and frame for supporting the same, pivots at one end of the frame for connecting the same to the box, a spring for lifting the other end of the frame and a lifter block sliding in grooves in the inner face of the box and having an indicating type at the upper end, whereby the type wheels and frame are swung upon their pivots in giving an impression from the indicating type upon the lifter block, substantially as specified.

9. The combination in a numbering head, of a box adapted to be locked with the type in the chase, type wheels, an axial pin and frame for supporting the same, pivots at one end of the frame for connecting the same to the box, a lifter and spring at the other end of the box for raising the frame and type wheels, there being a projection upon the lifter block passing into an elongated hole in the swinging frame, and a spring for holding the upper surface of the lifter block in an elevated position in relation to the types upon the type wheels, substantially as set forth.

10. The combination in a numbering head, of a box adapted to be locked with the types in the chase, type wheels, an axial pin and frame for supporting said type wheels, pivots at one end of the frame for connecting the same to the box, a spring and lifter block at the other end of the frame sliding in grooves in the box, and a stop for limiting the movement of the lifter block, substantially as set forth.

11. The combination in a numbering head, of a range of type wheels, a movable type on one of the wheels, a projection thereon and an annular groove and cam slot in an adjacent wheel acting upon such projection to move the type outwardly and hold the type while being printed substantially as set forth.

12. The combination in a numbering head, of a box, a range of numbering wheels, a shaft and frame for the same detachable from the box, so as to be lifted out without disturbing the box, substantially as set forth.

Signed by me this 9th day of January, 1893.

CHARLES A. HANEY.

Witnesses:
WILLIAM G. MOTT,
A. M. OLIVER.