J. MACDONOUGH.

Numbering-Machine.

No. 216,046. Patented June 3, 1879.

Fig. 1.

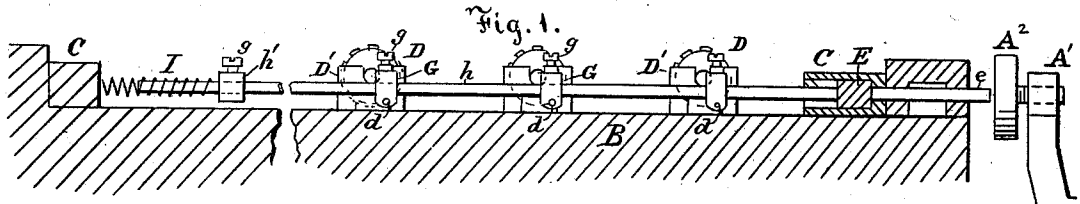


Fig. 3.

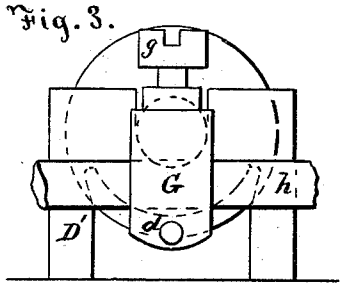


Fig. 4.

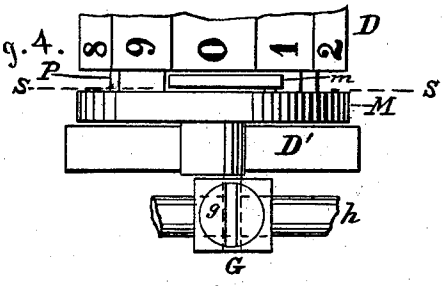


Fig. 2.

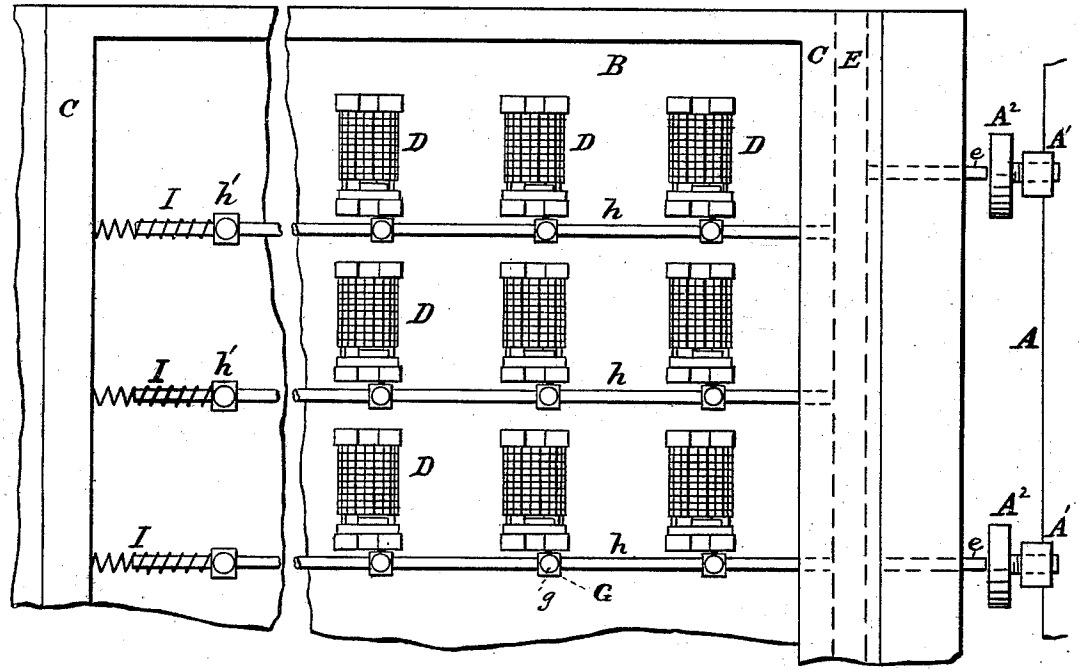
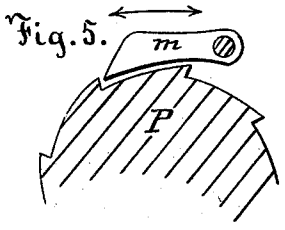


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES MACDONOUGH, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND AMERICAN BANK NOTE COMPANY.

IMPROVEMENT IN NUMBERING-MACHINES.

Specification forming part of Letters Patent No. **216,046**, dated June 3, 1879; application filed December 17, 1877.

To all whom it may concern:

Be it known that I, JAMES MACDONOUGH, of New York city, in the county and State of New York, have invented certain new and useful Improvements relating to Numbering-Machines, of which the following is a full and exact specification.

The object of the invention is to print coupon-bonds and corresponding papers in which there are a number of parts to be each separately numbered with the same number.

I have devised a machine which will allow of easy adjustment to adapt it to all sizes and characters of coupon-bonds and similar papers. The machine prints the same number simultaneously on all the different coupons or parts of the work, and in the interim between one impression and the next simultaneously changes all the numbers.

I use for the purpose a printing-press adapted for ordinary type-printing. Any form of press having a reciprocating bed may serve.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a vertical section. Fig. 2 is a plan view; Fig. 3, an elevation of one of the details on a larger scale with the crank in its lowest position; Fig. 4, a plan showing the same details with the crank a little out of its position, corresponding to the position shown in Fig. 1; and Fig. 5 is a section on S S in Fig. 4.

Similar letters of reference indicate like parts in all the figures.

A is a fixed frame-work, and A^1 a stop bolted thereon, which performs important functions. A disk, A^2, with a screw-shank, is held in a screw-threaded bearing in the upper end of each of the stops A^1. The disk is adjusted by turning the shank in the bearing.

B is the reciprocating bed, on which it is common to place a form of type. C is a peculiar chase or strong frame of iron, within which I adjust and firmly lock, by means of printers' furniture, (not represented,) a quantity of numbering-heads, D, each equipped with changeable type-wheels, acting upon each other in the well-known manner to communicate proper motion at the proper times from the unit-wheel to the tens-wheel, and from the tens to the hundreds, and so on. Each of the numbering-heads is mounted in a separate small frame, D′, with a crank, *d*, extending out from one end, and capable of receiving a vibratory motion to operate the units-wheel, as will presently appear.

I have shown three lines or series of these numbering-heads, with three heads in each line; but the number of lines may be varied, as also the distances apart in all directions.

M is a plain wheel or disk at the end of the series of each set of numbering-wheels D. A crank-pin, *d*, is fixed in the disk M, and protrudes beyond the housing or supporting-framing D′, the latter being formed to allow the same with freedom to be vibrated, as is plainly shown in Fig. 3. A pawl, *m*, is attached to the other face of each disk M, and works upon a ratchet, P, to turn the unit-wheel of the numbering-head D, according as the disk M is vibrated by acting upon its crank *d*.

A long bar, E, lies in a deep recess in the inner face of the chase C, and is of sufficient size to fill the recess loosely. Rods *e* extend horizontally outward from the bar E, and lie loosely held in holes in the bed B, or in an attachment thereto, with their ends projecting, so as to be brought in contact with the disk A^2, carried by the stop A^1, at each reciprocation of the bed B. On striking the disk A^2 the rods *e* are forced inward, and they compel the bar E to correspondingly move inward.

On the crank *d* of each numbering-head I fit a block, G. In each block G are bored two holes, one the hole to receive the crank-pin *d*, and another at right angles thereto and a little above it to receive one of the rods *h*, which can be adjusted by sliding it therein, and allow it to be firmly held by a pinching-screw, *g*. Each rod *h* extends through the blocks G of its entire line or series, and abuts at one end against the bar E. Its other end is encircled by a coiled spring, I, which presses against the interior of the chase C on the op-

posite side, and abuts against an adjustable piece, h', on the rod h. Each line of numbering-heads is equipped with one of the rods h and its attachments.

When all is properly adjusted the force of each spring I is sufficient to press its respective rod h with considerable force against the bar E. The crank-blocks G being in the proper positions on their respective rods h, and held by their respective set-screws g, stand in uniform positions. At each reciprocation of the bed B the rods e strike the disk A^2, held in the upper end of the stops A^1, and, being arrested before the end of the stroke of the bed, cause the bar E to move inward, communicating a corresponding motion to all the rods h, and compress the springs I. So soon as the bed B has reached the end of its motion, and commenced to return, the force of the springs I acts through the rods h, and urges the bar E back again to its place in the extreme depth of the recesses in the chase. This motion causes the rods e to protrude again to the same extent as before, ready for a new motion. The several rods h are thus reciprocated between each impression, and being connected with the respective cranks d of the several numbering-heads induce a corresponding vibration of each crank d. This vibration acts through the pawl m, as will be readily understood, to communicate an intermittent turning motion always in the same direction to the train of numbering-wheels D. This is just sufficient to induce a change of one number in the unit-wheel. When all is properly adjusted the continued operation of the press induces the changes of every numbering-head simultaneously and regularly, having the numbers all uniform and changing at each impression, as will be understood.

The furniture which secures the numbering-heads being made in short lengths corresponding to the numbering-heads themselves allows the lines of numbering-heads to be changed in position to any extent desired. Thus, if the coupons to be printed present six lines of coupons, I can introduce six numbering-heads close together; but if there are only four lines I can use the same numbering-heads set at a greater distance apart.

The rods h and the springs I may be correspondingly changed in positions to any extent desired, the rods h always finding a fair bearing against the bar E, and the springs I always finding a fair bearing against the inner face of the chase C. So, also, the numbering-heads may be increased or diminished in number in any one line. To change the positions, or to add new ones, it is only necessary to slacken the pinching-screws g. If twelve numbering-heads have been required in a line, and the next lot requires only nine, I take up the set when the furniture is removed, and slacking the screws g remove three of the numbering-heads, and spreading the remaining nine the proper distances apart retighten the screws g.

Various modifications may be made in many of the details.

It is not absolutely essential that the bar E be recessed into the inner face of the chase. It may serve well when allowed to slide freely in any suitable space provided for it.

There may be two or more of the rods e applying against a correspondingly-increased number of adjustable disks, A^2, or the rods may be made to press directly against the stops A^1.

The size and style of the numbering-heads may be varied within wide limits.

Instead of springs I, there may be means corresponding to that shown at the other edge of the bed for inducing the return motion. Such an arrangement might be successful and realize some of the advantages of the invention; but I prefer the whole as shown.

The springs I perform an important function in taking up all the slack and insuring that the several numbering-heads be firmly held in their respective positions against any disturbing force due to the adhesion of the inking-rollers or other cause.

It may sometimes be desirable to print upon the bonds, or upon the coupons, or on both, words, pictures, or various devices in the same ink as the numbers are printed. I can do this at the same printing by applying stereotypes upon the upper faces of what I have called "furniture"—the blocking which fills the spaces between each frame D′ and the next.

I believe it may be practicable, also, to include type, set in the ordinary manner, in small chases or frames secured in the form by means of printers' furniture, or otherwise, so as to print in the proper position upon any desired part of the bond.

I claim as my invention—

1. The combination, in a printing-machine, with a series of numbering-heads, of the crank-blocks and an operating-rod, adjustable with reference to each other, as set forth, whereby the series of numbering-heads simultaneously operated by said rod may be varied in position and increased or diminished in number, substantially as specified.

2. The combination, with the chase of a printing-machine, of a number of series or lines of numbering-heads and a number of operating-rods adjustable in said chase to increase or diminish the distance between said lines of numbering-heads, substantially as described, the said rods being arranged to simultaneously operate the numbering-heads, as set forth.

3. The combination, with the chase of a printing-machine, of a number of series or lines of numbering-heads, crank-blocks, and pinch-screws, corresponding in number with said heads, and operating-rods with a double adjustability, as described, the said crank-blocks and operating-rods being adjustable with respect to each other in each line or series of numbering-heads, and the said rods and lines of numbering-heads with their crank-blocks

being adjustable in the chase to increase or diminish the distance between them, substantially as set forth.

4. The combination, with the chase of a printing-machine, a number of lines or series of numbering-heads, crank-blocks, operating-rods, and springs, of the rods *e* and adjustable disks or plates on stops A^1, attached to the frame of the printing-machine, substantially as described.

In testimony whereof I have hereunto set my name in the presence of two subscribing witnesses.

J. MACDONOUGH.

Witnesses:
BUTLER PACKARD,
CHAS. C. STETSON.