(No Model.)

C. S. ELLIS.

NUMBERING MACHINE.

No. 381,227. Patented Apr. 17, 1888.

Fig. 1.

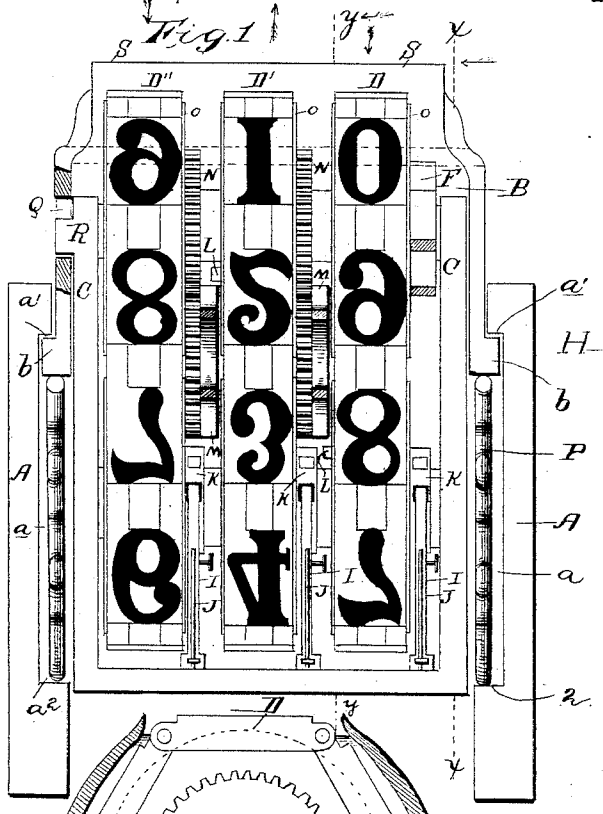
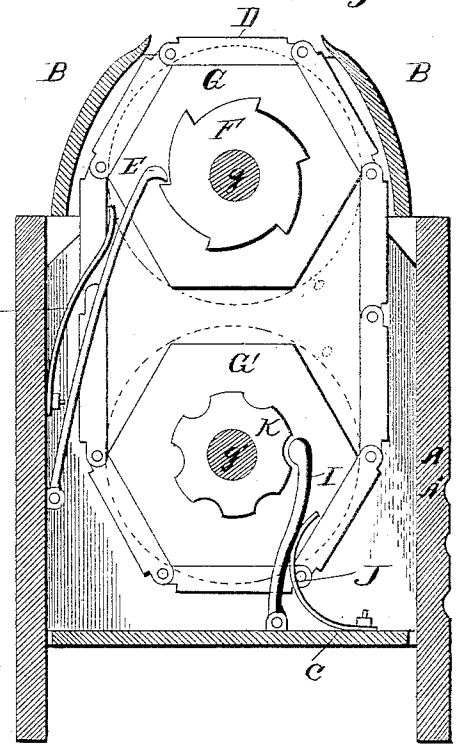


Fig. 2.



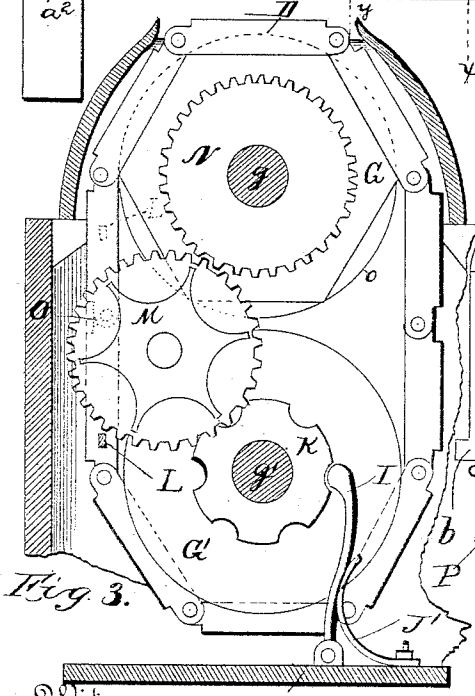


Fig. 3.

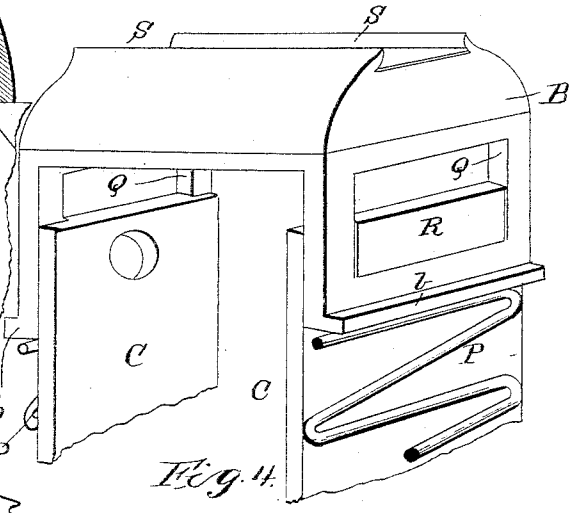


Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES S. ELLIS, OF MEMPHIS, TENNESSEE, ASSIGNOR OF ONE-HALF TO JACOB J. STURLA, OF SAME PLACE.

NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 381,227, dated April 17, 1888.

Application filed December 6, 1886. Serial No. 220,831. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. ELLIS, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Numbering-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to a numbering-machine which is designed to be locked in a chase, the same as a cut, stereotype, or electrotype, and will print the numbers or equivalent devices in succession, making a different character or combination of characters at each impression.

The object of the invention is to provide simple, convenient, and efficient means for producing the result above mentioned in a convenient, economical, and accurate manner.

The improvement consists in the novel features more fully hereinafter set forth, claimed, and shown in the annexed drawings, in which—

Figure 1 is a front view of the device having the front side of the case removed. Fig. 2 is a sectional view on the line X X of Fig. 1; Fig. 3, a sectional view on the line Y Y of Fig. 1, and Fig. 4 a perspective detail view of the case and the frame by which the operating parts are supported.

The device shown embodies three rows or chains, D D′ D^2, each having as many links as desired, according to the number of characters or combinations of characters to be printed.

The number of printing-chains may be varied in the construction of such devices to suit the work for which they are designed. The links comprising the printing-chains are of an equal size, and the chains are mounted upon rollers G and G′, journaled upon the shafts *g* and *g′*, and free to turn thereon independently. The rollers are preferably many-sided, and the width of a side corresponds with the length of the links of the chain. In the present instance the rollers are hexagonal in cross-section—any other form will answer equally as well, and I do not wish to be restricted to the exact form shown—and have flanges at each end to prevent the lateral displacement of the printing-chains.

The device, being especially adapted for numbering, is shown having the printing-chains composed of ten links corresponding with the cardinal numbers, which are alternately arranged upon the successive printing-chains. The numbers on the first chain are arranged in order from right to left, and the numbers on the second chain are arranged to read from left to right.

The shafts *g* and *g′* are located near each end of the frame C, the one near the top and the other, *g′*, near the bottom of the frame, and support the printing-chains. One roller, G, of the printing-chain D has the ratchet-wheel F secured thereto. The teeth of the ratchet-wheel correspond with the number of sides of the roller, which in the present case are six, so that a new link and character will be brought into position to print at each movement of the ratchet-wheel, which is moved forward step by step the distance of one tooth, which brings that side of the roller next in order uppermost to take the place of the one previously displaced. The frame C is encircled at its top portion by the rule or presser frame B, which permits of a slight movement of the frame C therein in a vertical direction. The opposite sides of the rule-frame are provided with slots Q, through which extensions R of the frame C extend and limit the movement, which is very slight—say about one-sixteenth or one-thirty-second part of an inch—of the rule-frame relative to the frame C. The case A has a recess, *a*, formed in its opposite sides, forming the shoulders *a′* near the top of the case and the shoulders a^2 near the bottom of the case. The springs P, seated in said recesses, are confined between the shoulders a^2 and the bottom of the frame B, which bottom is extended laterally, forming flanges *b* for catching under the shoulders *a′* and limiting the forward movement of the rule-frame B. The springs best adapted for the purpose are composed of a single wire bent alternately right and left.

The frame C is adapted to move one-eighth

of an inch, (more or less,) and at each downward movement the pawl E will ride over one of the teeth on the ratchet-wheel F and the springs P will be compressed, and during the upward movement of said frame, which is accomplished by the springs P, the pawl catches upon the tooth and will turn the roller G and chain D. The pawl E is connected at its lower end to the case A, and is held in engagement with the ratchet-wheel F by the spring H. Each of the lower rollers, G, has a notched disk, K, secured thereto; and the detent I, one to each disk, is adapted to drop into each notch of the disks and hold the printing-chains in a proper position, so that the type-surface will come equally upon the work. Springs J hold the detent-pawls in position. The first printing-chain, D, of the series is intermittently moved at each outward movement of the frame by the ratchet and pawl. The remaining printing-chains are moved forward one link at each complete revolution of the preceding chain, and have pinions N keyed to the supporting-rolls G, meshing with pinions O. Sprocket-wheels M, secured to the pinions O, are adapted to be struck by pins L, projecting laterally from the adjacent printing-chain, by which they are rotated and the corresponding roller moved the proper distance, carrying the chain forward one link. The number of spurs of the sprocket-wheel corresponds with the number of sides of the supporting-rolls, or are in sufficient number to advance the chain through the intermediate gearing forward one link. There are six spurs, corresponding with the six sides of the supporting-roll, and the spur-wheel and chain-supporting roll are moved one-sixth of their distance, when the pin L of one of the chains engages with one of the spurs of said spur-wheel, the pin L located within the path of the spur-wheel, as shown most clearly in Fig. 3.

The case A has a series of notches, A′, on one of its sides, to indicate the proper position it should occupy when set up in the chase, and its upper edge comes below the ordinary type-level.

In practice the device is locked up in a form of type, the same as a cut, type, &c., and the printing-surface of the chains D D′, &c., extends about one-eighth of an inch beyond the type in the form. The platen of the press first strikes the rule-frame projecting about one thirty-second of an inch above the printing-surface of the chains and brings it on a level with the first character or number on the printing-chain D. A continuous movement brings the printing-character on the chain D on a level with the type when the printing is done. During this operation the pawl E rides over one of the teeth of the ratchet-wheel, and as the platen leaves the type the springs P force the rule-frame and chain-carrying frame outward, turning the chain D one link, bringing the next character or higher number in position to be printed, and so on till the chain D makes one revolution, when the pin L will strike one of the spurs of the spur-wheel and, through the pinions O and N, move the adjacent chain forward one link. Thus at each complete revolution of the chain D the chain D′ will be moved forward one link, and at each complete revolution of the chain D′ the chain D^2 will be moved forward one link, and so on throughout the series.

The rule-frame, which will be made of steel, terminates in a fine straight edge above and below the type, and in practice prints a line on each side of the numbers which is so fine as to be almost imperceptible, and is not objectionable. The rule-frame pushes the paper away from the type the moment the platen leaves the same, so that the adjusting of the chains, which takes place at the same time, will not blur the numbers just printed.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A numbering device consisting of a case adapted to be locked in with a form of type, the rule-frame located within the case and movable in and out relative thereto, the frame carrying the printing devices supported by the rule-frame and having a limited movement relative thereto, a series of movable printing devices supported by the frame, a ratchet and pawl for moving the first printing device of the series at each movement of the frame in one direction, and devices interposed between the succeeding printing devices, whereby each is moved forward one step after each complete revolution of the preceding printing device, substantially as and for the purpose set forth.

2. The combination, with the case, the rule-frame, and the chain-carrying frame having a limited movement relative to the rule-frame, and both movable relative to the case, of the series of printing-chains and the ratchet and pawl for moving the first chain of the series, as and for the purpose described.

3. The combination, with the case and the chain-carrying frame having shafts near each end, of the chain-wheels supported by said shafts, the printing-chains, the ratchet-wheel, the pawl, the pinions O and N, the spur-wheel M, and the pin L, projecting laterally from a link of the adjacent printing-chain, substantially as and for the purpose described.

4. The combination, with the case, the frame, the printing-chains, and the connections consisting of the ratchet F and pawl E between the case and the first chain of the series, of the pinions O and N, the spur-wheel M, and the pin L, projecting laterally from the adjacent chain, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES S. ELLIS.

Witnesses:
JACOB J. STURLA,
H. E. ANDREWS.