

(No Model.)

E. G. BATES.

MACHINE FOR CONSECUTIVELY NUMBERING CHECKS, BONDS, &c.,
IN SHEETS.

No. 484,390.

Patented Oct. 18, 1892.

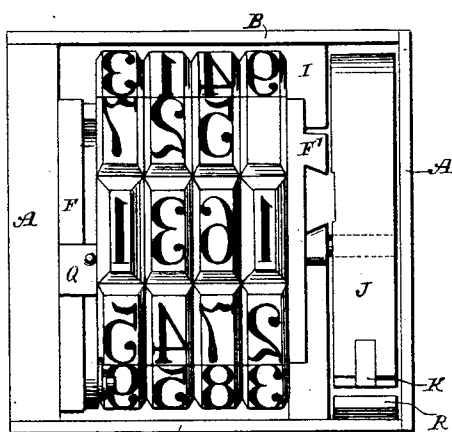


Fig. 2

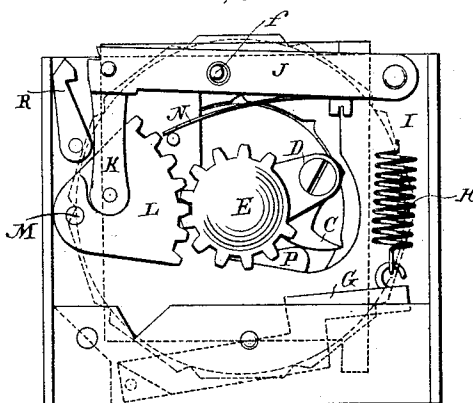


Fig. 3

1	2	3	4
5	6	7	8
9	0	1	2
3	4	5	6
7	8	9	0
1	2	3	4
5	6	7	8
9	0	1	2
3	4	5	6
7	8	9	0

Fig. 5

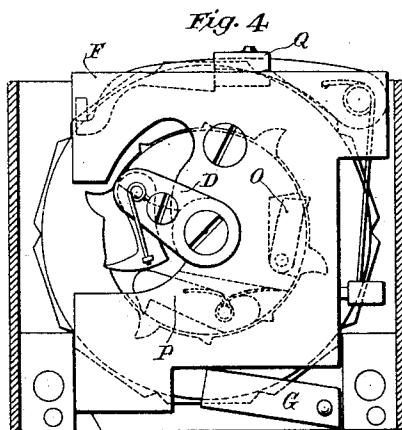
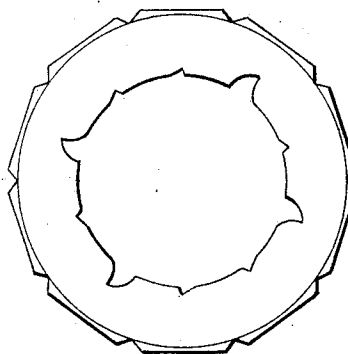


Fig. 4

Fig. 1

1	1
2	2
3	3
4	4

Fig. 6



Witnesses:

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UNITED STATES PATENT OFFICE.

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MACHINE FOR CONSECUTIVELY NUMBERING CHECKS, BONDS, &c., IN SHEETS.

SPECIFICATION forming part of Letters Patent No. 484,390, dated October 18, 1892.

Application filed September 15, 1890. Serial No. 365,086. (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 Machines for Consecutively Numbering Checks, Bonds, &c., in Sheets, of which the following is a specification.

The present method of numbering checks, bonds, bond-coupons, &c., when the same occur a number on a sheet is to print the check, bond, bond-coupons, &c., leaving a space for the number, and then by separate successive impressions numbering each check, &c. This method must necessarily be followed with the consecutive-numbering machines now known, it being impossible to employ such machines where more than one check, &c., is to be printed at a single impression either in the type-forms, where type are employed as the printing characters, or in blank forms after the engraved plates have been used.

The object of my invention is a consecutive-numbering machine which may be set up with type when a number of checks are printed at the same impression or used to number a sheet of checks, &c., at a single impression when the same have been produced in blank.

For a machine adapted to print, for example, five checks and five coupons on a sheet at the same operation I employ ten numbering-heads in two rows of five each. The mechanism of each numbering-head, so far as all the parts except the units-wheel is concerned, remain as heretofore. The units-wheel, however, is changed, both as to the order of the printing characters thereon and as to the notches with which the operative pawl engages. The units-wheel of the numbering-head designed to begin numbering with the unit will have the figures arranged thereon in the order of "1 6 1 6 1 6 1 6" and will have a deep or change notch for each figure "6." The units-wheel of the numbering-head designed to begin printing with "2" will have the figures arranged thereon in the following order: "2 7 2 7 2 7 2 7," with a change-notch for each figure "7." The units-wheel of the numbering-head designed to begin printing with "3" will have the figures arranged in the following order: "3 8 3 8 3 8 3 8," with a

change-notch for each figure "8." The units-wheel of the printing-head designed to begin printing with "4" will have the figures arranged in the following order: "4 9 4 9 4 9 4 9," with a change-notch for each figure "9." The units-wheel of the numbering-head designed to begin printing with "5" will have the figures arranged in the following order: "5 0 5 0 5 0 5 0," with a change-notch for each figure "5." When the first impression is taken, the column of numbers on both checks and coupons will read "1 2 3 4 5." When the next impression is taken, they will read "6 7 8 9 10," the change-notch of the numbering-head designed to begin printing with "5" having been operated at the first impression and having brought into printing position the numeral "1" on the tens-wheel. At the second impression the change-notches in the numbering-heads designed to begin printing with "1," "2," "3," and "4," respectively, are operated, and the numeral "1" on each of the tens-wheels thereof is brought into printing position, the tens-wheel of the last numbering-head remaining stationary, so that on the third impression the column will read "11 12 13 14 15." For succeeding impressions the operation will be similar. It will be noticed from the foregoing that the order of the figures on the units-wheels of all the numbering-heads bears a certain definite relationship, which is governed by the following principle, which serves, as a rule, to obtain the order of the figures to be carried by the units-wheel of any numbering-head: To the figure which the units-wheel is designed to print at the first impression add, to obtain the figure to be printed at the second impression, a number representing the number of numbering-heads employed in a column. For the figure to print the third impression add the same figure as before to the result first obtained. For the figures for further impressions continue adding to the right-hand figure last obtained the number representing the number of numbering-heads until the same figure is obtained used to print the first impression. The arrangement of figures for the units-wheel is now complete. To illustrate, take the units-wheel on the numbering-head designed to begin printing with "2," and suppose there are four

numbering-heads in a column. Then the second figure to be printed would be "2" plus the number of numbering-heads, four; result, "6," the second printing-figure. For the third figure add "4" to "6," with the result "10," the right-hand figure (cipher) being the third printing-figure of the units-wheel. For the fourth printing-figure add "4" to "0," with the result "4," the fourth printing-figure. For the fifth printing-figure add "4" to "4," result, "8," the fifth printing-figure. For the sixth printing-figure add "4" to "8," result, "12." The right-hand or unit of the resultant expression being the figure first employed need not be used, nor need further additions be made, as the result would be a duplication of the figures already obtained. The unit-wheel now will bear the figures "2 6 0 4 8 2 6 0 4 8," it being understood that ten printing characters are employed on each units-wheel. In other words, since each head is to print numbers in arithmetical progression, the progression in all cases having a difference of two or more, I arrange the numbers on the first or units wheel in each head in the order of the progression, the first number on each units-wheel being the first number in the progression which that particular head is designed to print. On the tens-wheel and each following wheel the numbers run from "0" to "9" in regular order, as in ordinary numbering-machines.

The position of the change-notches is found for the units-wheels by the following rule: When the result of any addition is two figures, it is an indication that the tens-wheel will be called upon to print, and a change-notch should be employed, so that the tens-wheel will be turned with the figure, the addition to which of the number representing the number of numbering-machines would produce as a result two figures. To illustrate, take the units-wheel of the numbering-head in a column of three designed to begin printing with "3." Then the figures on the wheel would be in the order "3 6 9 2 5 8 1 4 7 0" and the change-notches would occur at "9," "8," and "7."

It will be apparent from the foregoing that any of the known mechanisms employed for consecutive numbering-heads may be employed in a numbering-head embodying my invention.

In the accompanying drawings, illustrating my invention, Figure 1 is a diagram illustrating the arrangement of a number of numbering-heads in two columns for printing the numbers on four checks and their accompanying stubs at a single impression. Fig. 2 is a plan view of one of the numbering-heads. Fig. 3 is a side elevation thereof, looking to the left, with the side plate of the inclosing case removed. Fig. 4 is a side elevation, looking from the left, with the side plate on that side removed. Fig. 5 represents, diagrammatically, the development of the several units-wheels, the position of the notches also being

shown; and Fig. 6 is a side view of the units-wheel of the first numbering-head.

The mechanism shown in the drawings for operating the numbering-wheels is preferred by reason of its compactness and efficiency, and is the subject of an application for Letters Patent filed April 25, 1890, Serial No. 349,452.

The following will answer as a brief description of such mechanism:

A A are the two side plates of the case inclosing the mechanism, and B B are the end plates thereof. The printing-wheels are annular in shape and are operated through notches cut on their inner peripheries. They are mounted on a hub within a recess of which the oscillating pawls C operate, the said pawls being carried by arms D, which are rigidly carried by a stud, upon which is mounted the gear E. The hub, pawls, and printing-wheels are supported in two opposite side plates F F', which rest at their bottoms on a pivoted bridge G, the free end of which is connected by a coiled spring H to a partition I between the side plate A and plate F'.

When it is desired to print, the several heads are arranged in a form in any suitable frame or chase—such, for example, as used in type-printing—alone or in connection with other type, and the form which constitutes the printing-bed is used in connection with any well-known or suitable platen. (Not shown.) By this arrangement the impression of the platen of the printing-press effects an inward motion of the printing-wheels within the case of each head, the return movement thereof being effected through the bridge G and coiled spring H. This reciprocating or bodily movement of the type-wheels is utilized to effect their turning movement in the manner following: The lever J, pivoted to the partition I and connected to the plate F at f, carries at its free end a lever K, which is connected with a segmental rack L, turning on a stud M, extending from the partition, and is normally held slightly above the top of the case by the spring N. When the platen strikes the numbering-head, a depression of the numbering-wheels and lever K is effected, the downward movement of the lever acting through rack L and gear E, serving to oscillate the pawls C in one direction, their return oscillation being effected on the outward movement of the type-wheels, effected as above stated. In this manner the necessary rotary motion is given to the type-wheels step by step. The pawl-teeth and notches in the wheels being relatively arranged in the manner well understood, it is obvious that a regulated consecutive action of the type-wheels is the result. Suitable detents O P are employed to prevent undesirable motion in the type-wheels. A block to print the abbreviation "No." may be also employed, as indicated at Q, with suitable mechanism therefor, partly illustrated; also, there

may be employed a dog R to lock the lever K while setting the machine.

So far as the operation of the printing-head is concerned, it is of course immaterial whether a platen is moved against the printing-bed or whether the bed is itself moved to effect the printing.

In Fig. 1 the outer rectangle may indicate the outline of the chase, the parts marked 1, 2, 3, &c., being the printing-heads set up therein in the desired order.

The mechanism which more particularly relates to my present invention is shown in Figs. 1, 5, and 6. Fig. 6 shows the arrangement of shallow and change notches in the units-wheel *a* of the numbering-heads 1 1 of Fig. 1. *b* of Fig. 5 illustrates the arrangement of the figures and notches, and the relative depths of the latter of the units-wheel of the numbering-heads 2 2 of Fig. 1. *c* and *d* represent the same thing, respectively, of the numbering-heads 3 and 4 of Fig. 1.

It will be seen that by the construction and arrangement described the units-wheel in each head is advanced one space at each impression; but that instead of bringing the succeeding numeral into printing position it brings a numeral having a difference of two or more from the first into printing position, and that means are provided for advancing the tens-wheel every time the number in printing position on the units-wheel is so large that by adding the difference in the progression thereto a number of more than one figure is given, and, further, that the following wheels are advanced successively in the usual way as the numbers pass from tens to hundreds, &c.

I claim—

1. The combination, in a numbering-machine, of several numbering-heads arranged in the order in which their impressions are desired and adapted to print simultaneously, each numbering-head having several type-carrying wheels or bodies with figure-types, the first figure on the first or units printing-wheel in each head being the number to be first printed by said head, the second figure on said wheel being the same plus the number of numbering-heads, and so on for succeeding figures, the figures on the other wheels of each numbering-head being "0" to "9," consecutively, means for advancing the units-wheels of all the heads one figure at each impression, and means for advancing the other wheels of the numbering-heads successively as the numbers to be printed pass from units to tens, tens to hundreds, and so on, whereby as the numbering-machine is op-

erated all heads will print numbers and will be reset to print by a second operation numbers equal to the first plus the number of heads, substantially as described.

2. The combination, in a numbering-head for printing numbers of checks, &c., in arithmetical progression with a difference of two or more, of several wheels or bodies on which are printing-figure types, the first figure on the first printing-wheel being the number to be first printed, the second figure on said wheel being the same plus the difference in the progression, and means for advancing the first type-wheel one space for each impression and for advancing the other wheels successively as the numbers to be printed change from units to tens, from tens to hundreds, and so on, said means comprising a pawl operating on said first or units wheel, which wheel is provided with a notch for each type, said pawl being adapted to engage in the notches successively, the notch corresponding to each type representing a numeral which is so large that by adding the difference in the progression to it a number of two figures will be obtained, being a deep notch, so that the operating-pawl can advance the succeeding type-wheel, substantially as described.

3. The combination, in a numbering-machine, of several numbering-heads arranged in the order in which their impressions are desired, and adapted to print simultaneously, each numbering-head having several type-wheels on which are figure-types, the first figure on the first or units printing-wheel in each head being the number to be first printed by said head, the second figure on said wheel being the same plus the number of numbering-heads, and so on for succeeding figures, the figures on the other wheels of each numbering-head being "0" to "9," consecutively, and pawls for advancing said units-wheels one figure at each impression, said units-wheels having notches suitably arranged and in which the operating-pawl engages, there being a notch corresponding to each type, the notch corresponding to each type representing a numeral which is so large that by adding to it a number equal to the number of heads a number of two figures results, being a deep notch, whereby the pawl can advance the second wheel, substantially as described.

This specification signed and witnessed this 13th day of September, 1890.

EDWIN G. BATES.

Witnesses:

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