C. MARTIN.

NUMBERING DEVICE.

APPLICATION FILED JAN. 4, 1912.

**1,066,827.**

Patented July 8, 1913.

3 SHEETS—SHEET 1.

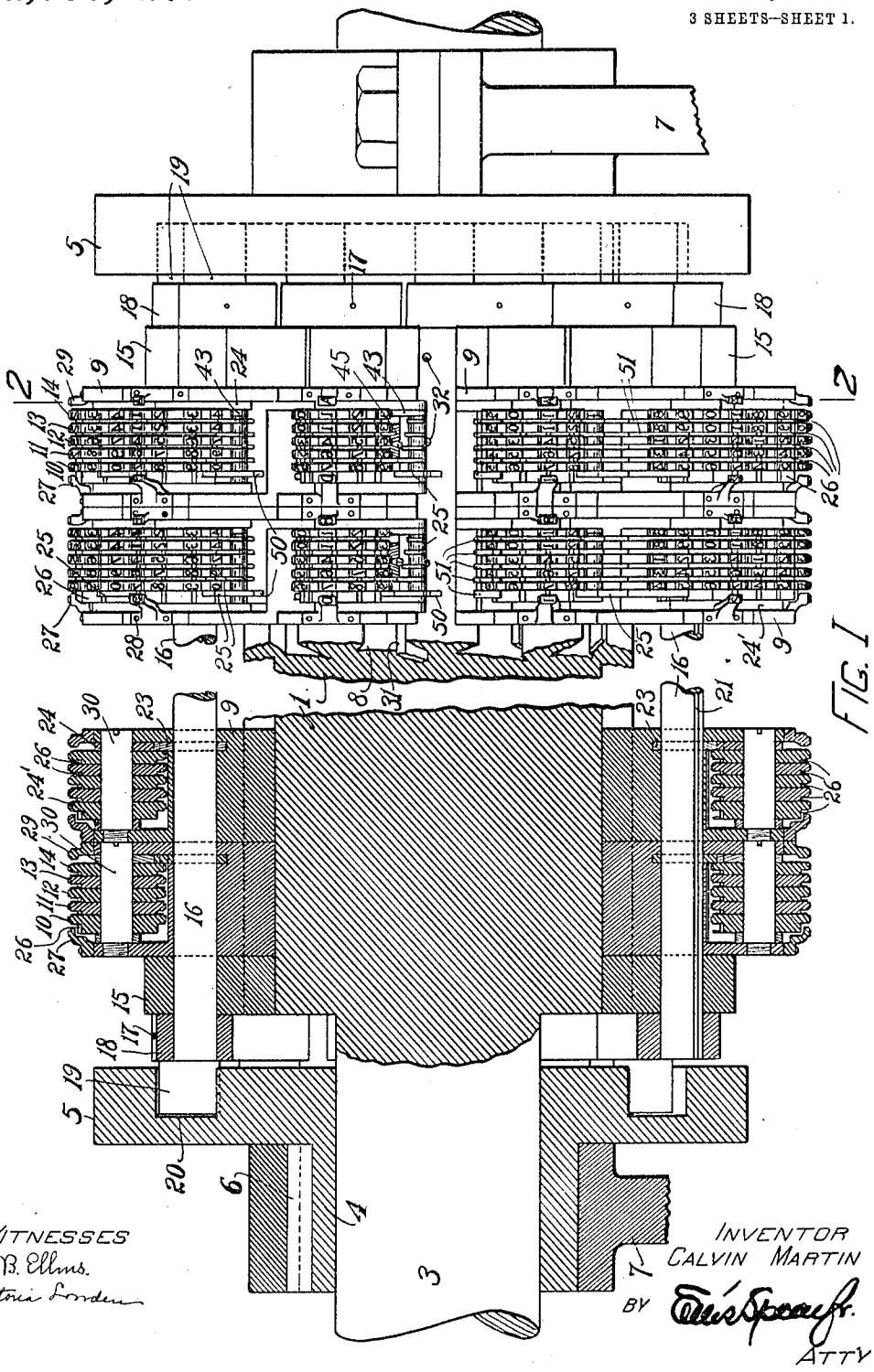


FIG. 1

WITNESSES

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3 SHEETS—SHEET 2.

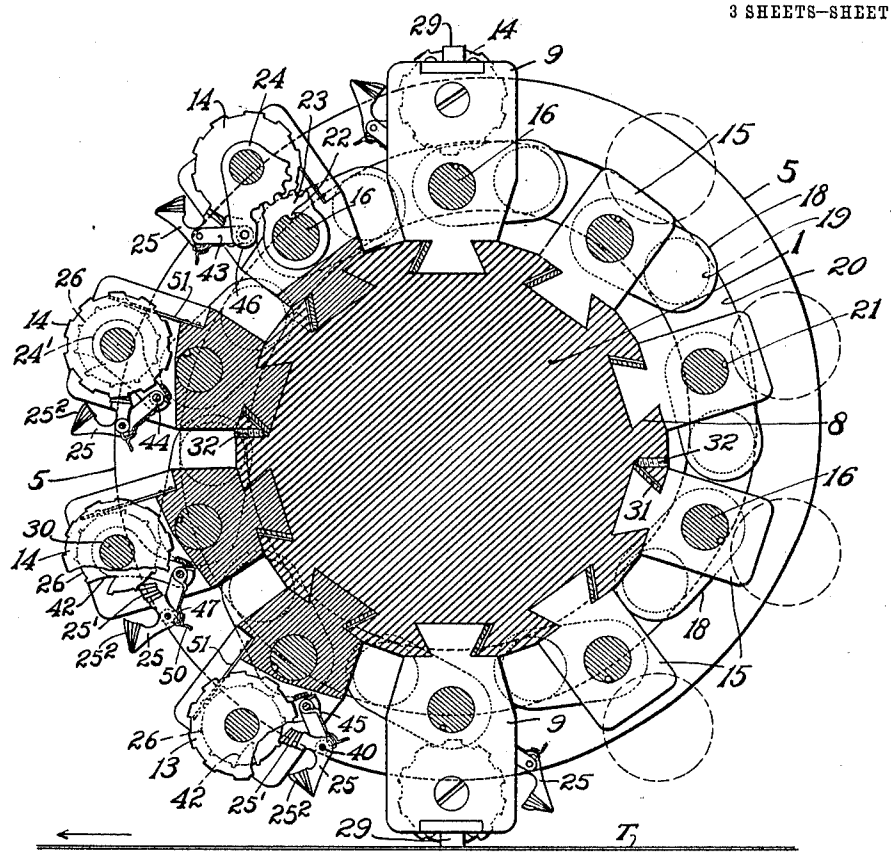



FIG. 2

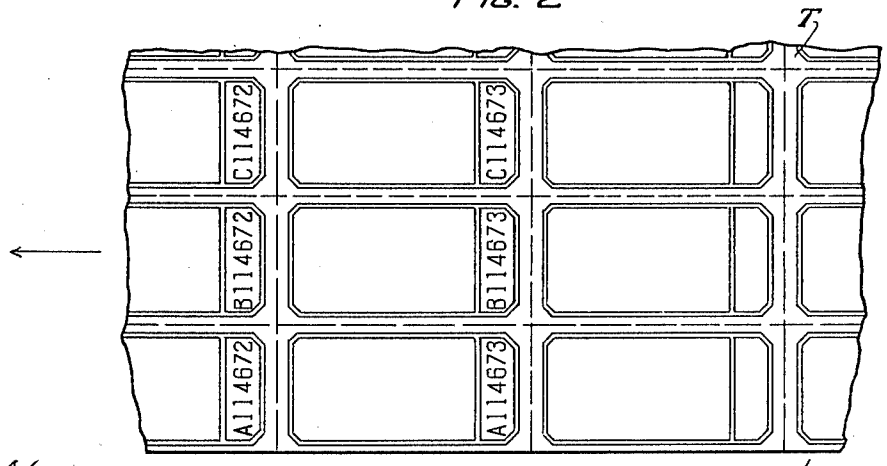



FIG. 3

WITNESSES

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APPLICATION FILED JAN. 4, 1912.

**1,066,827.**

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3 SHEETS—SHEET 3.

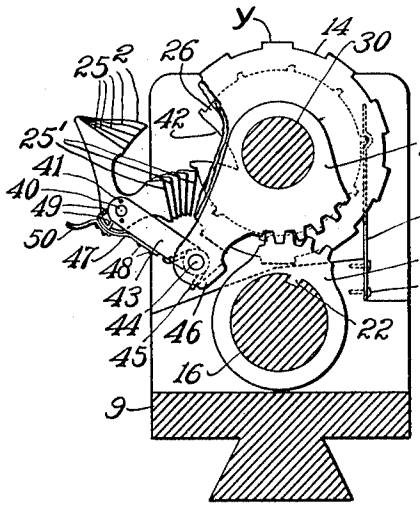



FIG. 5

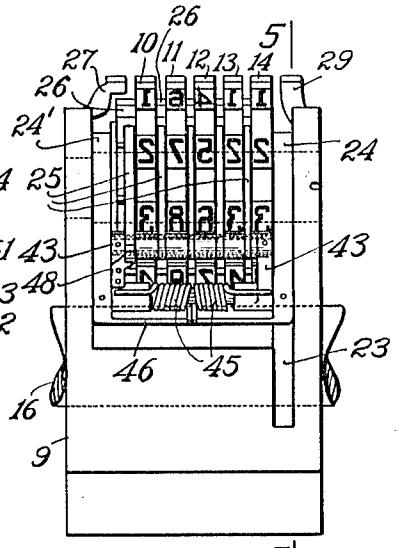



FIG. 4

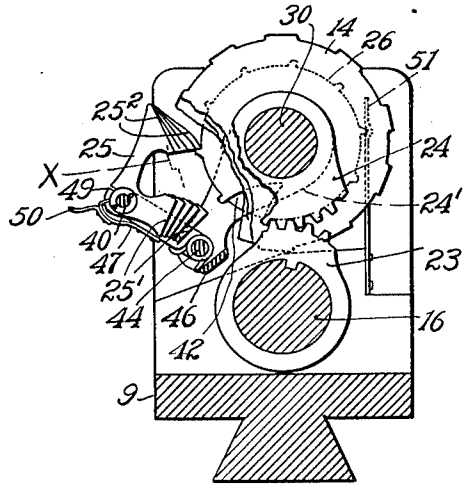



FIG. 6

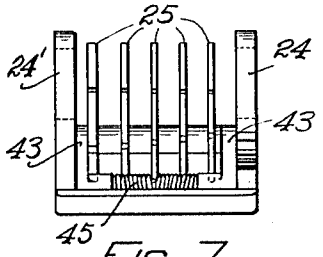



FIG. 7

WITNESSES

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# UNITED STATES PATENT OFFICE.

CALVIN MARTIN, OF PEABODY, MASSACHUSETTS, ASSIGNOR TO CARTER TICKET COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

## NUMBERING DEVICE.

1,066,827. Specification of Letters Patent. Patented July 8, 1913.

Application filed January 4, 1912. Serial No. 669,513.

*To all whom it may concern:*

Be it known that I, CALVIN MARTIN, a citizen of the United States, residing at 36 Lowell street, Peabody, county of Essex, Commonwealth of Massachusetts, have invented certain new and useful Improvements in Numbering Devices, of which the following is a specification.

This invention relates to numbering devices and particularly to a rotary numbering head for the printing of tickets, coupons, etc.

In the rapid numbering of printed articles which are issued in series or sets much difficulty has been experienced in providing mechanisms which would act continuously and without omission when once started on a given series. In printing from rotary numbering devices, it also has been desired to provide for the adjustment of numbering devices so as to secure different peripheral spacing while maintaining a continuity of numbering. It has furthermore been found desirable under some circumstances to number the series in reverse order, in order to simplify the calculation of the number of tickets used during any particular time.

It is the object of my present invention to provide a device capable of meeting these requirements and also having various other advantages and improvements, as will be more fully set forth in the specification which follows.

As illustrative of my invention, I have shown in the accompanying drawings and have particularly described in the specification a form of numbering head which I have found well adapted to practical use.

Throughout specification and drawings like reference numerals are employed to indicate corresponding parts and in the drawings: Figure 1 is a front elevation of a portion of my numbering head, part being in central section. Fig. 2 is a composite section of Fig. 1, being in general on line 2—2 of Fig. 1, and Fig. 3 is a partial plan view of a group of cards adapted for numbering. Fig. 4 is an enlarged view of a unit numbering head, in front elevation. Fig. 5 is a sectional view on line 5—5 of Fig. 4, with some of the numbering wheels removed for greater clearness. Fig. 6 is a similar sectional view with the numbering pawls reversed for back numbering, and Fig. 7 is a rear view of the numbering pawls seen in Fig. 6.

My numbering head consists of a drum 1 formed integral with a driving shaft 3, said shaft being journaled, as at 4, in a pair of stationary cams 5, 5, said cams being keyed, as at 6, in standards 7, 7. The drum 1 is shown as having ten dovetailed grooves 8 each adapted to slidably receive a series of supporting blocks 9 each of which carries a set of numbering wheels 10, 11, 12, 13, 14, the first, 10, representing the tens column and so on in succession to 14 which represents the hundred thousands column of the number to be printed. Each of the grooves 8 slidably receives at each end, a pair of boxes 15, each forming a journal for an oscillating rod 16 the outer ends of said rod being pinned, as at 17, to a pair of connecting arms 18, the free ends of which are provided with cam rolls 19 adapted to operate within cam grooves 20, 20 of the cams 5, 5. The rods 16 are splined, as at 21, to engage the tooth 22 of each sector 23, one of which is slidably mounted on the rod 16 within each supporting block 9. The corresponding sector-arm 24 and fingers 25 which operate the ratchets 26 will be later described. The cam grooves 20, 20 each operate together to cause an advance (or descent, according as the fingers 25 are set) of one number in the tens column (the numbering wheel 10) for each complete revolution of drum 1. The operation of the wheels 11, 12, 13 and 14 each depend upon the wheel 10 as will be described hereinafter. It is thus seen that, as there are ten series of numbering wheels arranged radially and equally around the drum 1, one revolution of shaft 3 will print consecutive numbers on a strip of ten tickets T. This arrangement permits me to make the unit die of each block stationary, and numbered consecutively on the ten blocks of each series. For instance, Fig. 1 shows, from top to bottom of the view, the unit dies 8, 9, 0, 1, 2 and 3, the remaining dies of the series being on the opposite side of the head, and concealed from view. These unit dies are each formed on a block 27 secured to one of the side walls of the block 9 by screws 28, 28. On the opposite wall of each block 9 I prefer

to similarly mount a character die 29, making each die 29 of a series print the same letter, figure or character so that each strip of tickets T will have its own serial character.

The pins 30 fast in blocks 9 rotatably support the numbering wheels with their ratchets 26.

Although the blocks 9 and the boxes 15 are slidably mounted in grooves 8, they may be secured in any desired position, by means of the gibs 31 and binding screws 32.

From an inspection of the drawings it will be clear that one cam 5 and one series of cam rolls 19 will successfully cause the operation of the numbering wheels; but, for purposes of better alinement in printing I prefer to use them in pairs as shown.

Each numbering drum forms a complete unit and can be readily removed from the standards 7, 7 if it is desired to repair the same, or, if it is desired to change the direction of the numbering, numbering the tickets T backward instead of forward, the drum is replaced in reversed position, end for end. When the drum is so reversed for backward printing, the series of pawls or fingers 25 of each numbering unit must be shifted so as to reverse the action of the numbering wheels without altering the direction of the external drive. The mechanism for these changes is best illustrated in Figs. 4 to 7 inclusive, and comprises a series of double pawls or fingers 25 properly alined and loosely mounted on a rod 40, but pinned together by pins 41. The ends 25′ are each adapted to engage its respective ratchet 26 for the purpose (as illustrated) of advancing its corresponding numbering wheel through one number, space or a part of a revolution. Figs. 4 and 5 show the tens pawl in engagement with the tens ratchet, the numbering wheel 10 being indicated by dash lines, as it is removed to show the ratchet. The corresponding edges of the remaining pawls are seen in the same figures, being likewise numbered 25′, each in turn up the row of numbering wheels being shorter than its predecessor so that only the ones needed will be operatively engaged, as is usual in devices of this character. At a certain place on the ratchet 26 there is formed a recess or pocket 42 which permits the pawl 25′ to drop farther between the teeth of the ratchet 26 so as to bring the next shorter pawl into engagement with its ratchet for the purpose of advancing, say, the wheels 10 and 11 together after the figure 9 on the wheel 10 has been printed. In Fig. 5, the pawl-ends 25′ have so advanced these two wheels and are in position for the next advance, which, however, will only advance the wheel 10, as the recess 42 has passed beyond their influence. The recess 42 is sufficiently deep to receive the tens pawl 25′ when the hundred thousandth pawl is in engagement with its ratchet 26, the latter needing no recess 42.

The foregoing is all old and is described here merely to prepare the way for the reversible feature which is to follow.

The rod 40 is fast in a pair of links 43 which are pivotally mounted on a pivot-pin 44 and held yieldingly toward the ratchets 26 by springs 45. The pivot-pin 44 is fast in ears 46 of the sector-arm 24 and its mate 24′. (See Fig. 2.)

The reverse finger-ends 25ª are adapted to engage the ratchets 26 on the return movement of sector-arm 24 instead of the forward movement as is the case of finger or pawl-ends 25′. Their arrangement permits the same sequence of operations of the numbering wheels 10, 11, 12, 13 and 14 as before described, but in the opposite direction, and they are also adapted to coöperate with the same recess 42 for this purpose, with the difference, however, that the next higher numbering wheel must be brought into operation after the zero has printed instead of before. Fig. 6 shows the completion of the wheel movement, and as the recess 42 is shown, the zero character is indicated at X, while in Fig. 5, the same character is indicated at Y.

For the purpose of reversing the pawls 25, I prefer to provide a spring latch 47 secured at 48 to one of the links 43, the free end of which is adapted to engage with either of the slots 49 formed on the boss of the tens pawl. A hand hold 50 secured to the spring latch 47 serves to withdraw the latter from engagement, whereupon the pawls 25 can be swung in the opposite direction and relocked by means of the other slot 49.

On the opposite side of the numbering wheels 10, 11, 12, 13 and 14, I prefer to mount a series of spring fingers 51, secured to the block 9 at 52 and each adapted to engage one of the teeth of its ratchet 26 for the purpose of preserving the register of the numbering wheels. These could of course be replaced by reversible, spring-controlled, pivoted pawls and it will be understood that I do not limit myself to the precise form of construction here and elsewhere shown. Such and various other modifications may obviously be made in my invention, all without departing from the spirit of the same if within the limits of the appended claims.

What I therefore claim and desire to secure by Letters Patent is:

1. A numbering head comprising a reversible support for a peripheral series of numbering devices, reciprocating means for actuating each numbering mechanism, and means for producing positive motion of said actuating means in each direction of said reciprocation at both ends of said support.

2. A rotary numbering head comprising a

reversible support for a peripheral series of numbering devices, a plurality of numbering devices, means for holding said numbering devices in series on said support, reciprocating means for actuating each member of said series and means for securing positive reciprocation in each direction at both ends of said reversible support.

3. A rotary numbering head comprising a reversible support for a peripheral series of numbering devices, a plurality of numbering devices, means for removably holding said numbering devices in series on said support, reciprocating means for actuating each member of said series and means for securing positive reciprocation in each direction at both ends of said reversible support.

4. A rotary numbering head comprising a reversible support for a peripheral series of numbering devices, a pair of bearings for rotatably supporting said head, a plurality of numbering devices on said support, means for holding said numbering devices in series on said support, reciprocating means for actuating each member of said series, and means for securing positive reciprocation in each direction at both ends of said reversible support.

5. A numbering head comprising a reversible support for a peripheral series of numbering devices, a rock arm for actuating each numbering mechanism, a pair of connected cranks on each arm, and a stationary cam at each end of said head for engaging said arms to give positive motion in each direction of their reciprocations.

6. A numbering head comprising a support for a peripheral series of numbering devices, reversible means for actuating each numbering device, and means at both ends of said support for producing positive motion of said actuating means in both directions to secure the actuation of said numbering mechanisms.

7. In a printing machine, a numbering head comprising a reversible support for a peripheral series of numbering devices, means for rotatably mounting said support, reversible means for actuating each numbering device, and means for effecting said actuation in either direction.

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

CALVIN MARTIN.

Witnesses:
VICTORIA LOWDEN,
RUTH B. ELLMS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."