W. F. C. FOSTER.

NUMBERING MACHINE.

APPLICATION FILED AUG. 19, 1907.

955,785. **Patented Apr. 19, 1910.**

2 SHEETS—SHEET 1.

Fig. 1

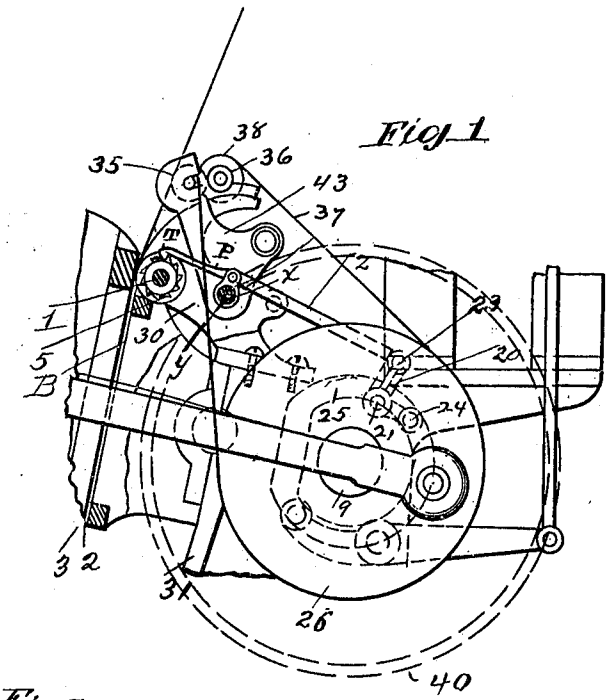

Fig. 7

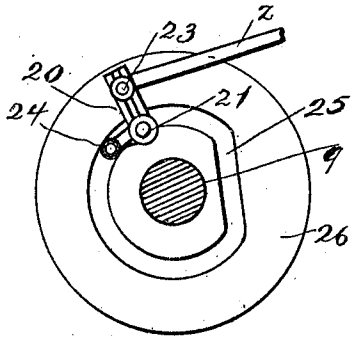

Fig. 8

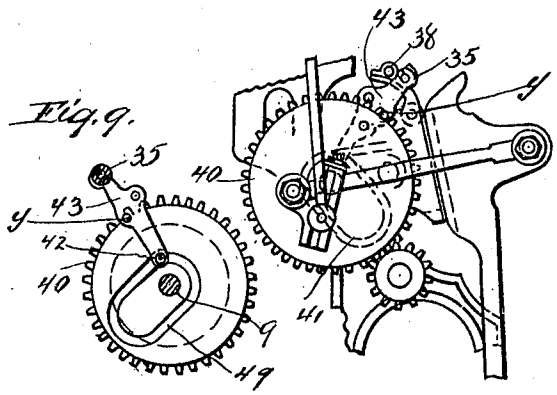

Fig. 9.

Witnesses
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2 SHEETS—SHEET 2.

Fig. 2

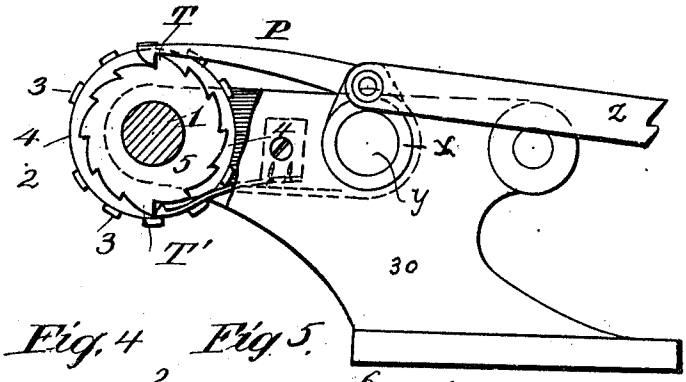


Fig. 4

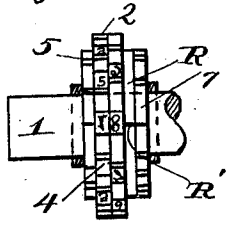


Fig. 5

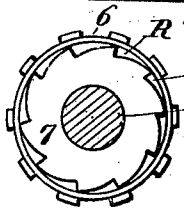


Fig. 6

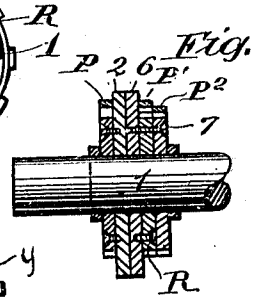
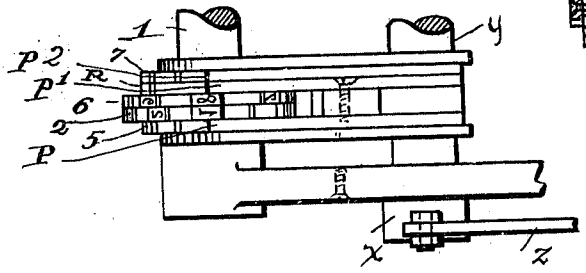


Fig. 3



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UNITED STATES PATENT OFFICE.

WILLIAM FREDERICK CHARLES FOSTER, OF WAWANESA, MANITOBA, CANADA.

NUMBERING-MACHINE.

955,785. Specification of Letters Patent. Patented Apr. 19, 1910.

Application filed August 19, 1907. Serial No. 389,156.

To all whom it may concern:

Be it known that I, WILLIAM FREDERICK CHARLES FOSTER, a citizen of Canada, and resident of Wawanesa, Province of Manitoba, have invented certain new and useful Improvements in Numbering-Machines, of which I hereby declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

The objects of the invention are to provide numbering devices for a printing machine or press, in which the numerals are attached to the peripheries, of rotatable disks, so arranged and operated as to present each numeral in turn to the paper until the pages or sheets of paper are numbered in succession to the required greatest number of pages in the book or packages.

The invention comprises the employment of a disk for units and one for tens and to exemplify the invention the disk for tens designed to print only tens up to 50 and repeat over again indefinitely as long as desired.

The invention consists in the units disk having numerals from 0 to 9 inclusive upon its periphery and a tens disk, having numerals 1 to 5 inclusive, twice repeated upon its periphery and having blank spaces located between the sets of figures. These numbering disks are rotated to bring successive numbers into view by means of ratchet wheels upon the disks and pawls to which a reciprocating movement is given.

The ratchet wheel for the units disk has ten teeth to correspond to the ten numerals on its adjacent disk and the ratchet wheel which actuates the "tens" disk is furnished with twelve teeth, and two of these teeth located opposite each other, are longer than the others. These longer teeth are located on the disk relatively to the location of the spaces on this disk, so that the pawl will return the disk after 50 has been pointed to present 1 as the next numeral.

The device is exemplified in connection with a Gordon press having a main shaft and crank wheels. The manner of using this numbering device and the combination and arrangement of the various parts and operating means therefor connected with the moving parts of the press and construction of the various details is hereinafter described, shown in the accompanying drawings, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a portion of the press showing the cam wheel and connections therewith and with the numbering device; Fig. 2 is an enlarged elevation of the numbering device; Fig. 3 is a plan view of the device showing the "tens" wheel; Fig. 4 is an edge view of the ratchets and numbering disks; Fig. 5 is a side elevation of the disk having 10 teeth; Fig. 6 is a longitudinal section through the disks and ratchet wheels; Fig. 7 is a detail view of the operating cam and shaft and connecting mechanism of bell crank and link. Fig. 8 is a side elevation (reduced) showing the inking rollers; and Fig. 9 is a detail view of operating cam therefor.

In those views 1 is a shaft upon which as many printing disks as may be required are loosely placed, one set of numbering disks only being shown.

2 is the "tens" disk provided with ten numerals 1 to 5 twice repeated and set in slightly raised dies or type 3, on its edge.

The blank spaces 4 separate the sets of numerals. This disk is provided with a ratchet wheel 5 having 12 teeth two of these T T′ being longer than the others and also placed opposite to one another.

6 is the units disk provided with numerals 0 to 9 inclusive and also has its ratchet wheel 7 having 10 teeth. This units wheel and ratchet wheel are attached together. A third ratchet wheel R is provided with only one notch or tooth R′ which registers with 0 on the units disk and the units wheel and ratchet wheels 7 and R are secured together so that they move in unison. The ratchet wheel having only one tooth R′ lies between the units disk 6 and its ratchet 7 and is attached to them.

The two pawls P and P′ are secured together and pawl P rests upon the ratchet wheel having 12 teeth, while pawl P′ rests upon the ratchet wheel having only one tooth or notch. The other pawl P^2 rests upon the ratchet wheel having 10 teeth and is not connected with the other pawls.

The action of this device is as follows: The "tens" disk having 12 spaces and 10 numerals presents one of the blanks first to

the printing bed B (Fig. 1) and the units disk having 10 numerals presents the numeral one thereto. The pawl P^2 at every movement rotates the units disk one space thus constantly presenting the numbers in succession to the impression bed B until the numeral 0 is reached. In the meantime the pawls P and P′ have been lifted by the circular surface of the ratchet wheel R having only one tooth so that the pawl P has not been to engage with and rotate the tens wheel. But as soon as the wheel R has rotated to bring its notch R′ (which registers with the numeral 0 on the unit wheel) in engagement with pawl P′, the pawls P, P^2 engage their respective ratchet wheels and move both the numbering disks one notch. This movement is constantly repeated and the "tens" wheel is brought into use until one set of 5s on the tens wheel are completed, the last numeral 5 making with the zero of the units wheel 50, which is the highest number used. The next movement should be to bring the blank space on the tens wheel into position, so that the units wheel can impress units up to 9 before the numeral 1 on the tens wheel comes into use. The pawl P′ has by this time been raised out of the single notch in which it rests every time a ten is formed. Hence to enable it to reach another tooth on the tens ratchet wheel, the tooth T is raised above the other teeth and hence is engaged by the pawl and the tens disk is turned to present the blank. As soon as the units up to 9 are completed the pawl P′ will fall into the single notch again and the device will repeat as before.

The press shown is provided with the frame 31, the platen 32, and the rotating shaft 9 and crank wheel 26. The pawls P and P′ and P^2 are pivoted at the outer end upon a sleeve x, mounted upon the shaft Y secured in brackets 30 upon the frame 31, and are given a reciprocating movement at the proper time to adjust the position of the numerals in the disks by means of the connecting rod Z, and the bell crank 20, which is pivoted at 21 to the frame 31 of the machine. One end of the connecting rod Z is radially adjustable at 23 in one arm of the bell crank, the other arm of which is provided with a roller 24 which moves in the groove 25 in the fly and crank wheel 26 upon the main shaft 9 of the machine. The radial adjustment for the bell crank arm is designed to accommodate the movement of the link to the diameter of the numbering disks and to spaces between the numerals thereon.

It will readily be observed that the tens wheel can contain any number of spaces desired within the limits of its pawl to control it in relation to the ten spaces of the units wheel, so as to page 40, 50 or 60 sheets. Each series of numerals should be doubled however and separated by blank spaces.

It is essential to provide instrumentalities for applying fresh ink to the numbering disks and this is accomplished by means of an inking roller 35 and a second or ductor inking roller 36 mounted in the frame and kept in constant rotation, so as to bring all its surface into contact with the inking roller by means of a belt 37 upon a small pulley 38 mounted upon the ductor roller shaft. A belt 37 passing over this pulley and over the crank wheel 26 serves to rotate both the ductor roller and inking rollers when in contact.

The mechanism for alternately bringing the inking roller into contact with the ductor roller and the numbering disks is shown to consist in a cam groove 41 in the crank wheel 40, in which runs a roller 42 mounted upon an arm 43, in which one end of the inking roller is pivoted. This arm and a similar one for the other end of the inking roller are pivoted upon the brackets at Y. The cam groove 41 serves to first throw back the inking roller into contact with the ductor roller, and then to rapidly move the inking roller over the numbering disks, to supply them with ink to make the impression, so that the inking roller and disks coact to form the impression.

Having described my invention what I claim as new and desire to secure by Letters Patent is:—

1. A numbering device, comprising a units and a tens disk, ten numerals in succession on the units disk, and two equal sets of numerals on the tens disk, said equal sets being separated by oppositely placed blanks, a ratchet wheel attached to said unit disk and having ten teeth, a ratchet wheel attached to the tens disk having a number of teeth corresponding to the number of numerals on said tens disk and the blanks on said tens disk and having two opposite long teeth, a second ratchet wheel attached to said units disk, having ten teeth and a third ratchet wheel with only one tooth or notch secured between the units disk and ratchet wheel having ten teeth, a shaft, upon which said disks and attached ratchets are loosely mounted, and pivoted actuating pawls for said ratchets, the pawls for the tens ratchet wheel and for the ratchet wheel containing only one tooth being arranged to act in unison, substantially as described.

2. In a printing press, the combination with the frame and platen and a rotating shaft and wheel on the frame, of brackets on the frame, numbering disks and supporting shaft therefor, mounted in said brackets and adjacent to said platen, ratchets for operating said numbering disks, rock arms and a pivoted rock shaft for said pawls, a cam

in said rotating wheel, a lever pivoted upon the frame and having an arm engaging said cam, and a link adjustably connecting one end of said lever and a rock arm on said rock shaft, substantially as described.

3. In a printing press, the combination with the frame and crank shaft and crank wheels thereon, of brackets on said frame, numbering disks, and a supporting shaft therefor mounted in said brackets, and an inking device for said numbering disks, comprising a ductor roller fixed on said machine frame, a movable roller adapted to engage alternately with said ductor roller and with said numbering disks, arms in which the said movable roller is mounted, one of said arms having an extension, a cam in one crank wheel in engagement with the said extended arm, the said cams in the two wheels being arranged to operate the ratchet device and inking device alternately, and a rotating device for the inking roller operatively connected with one of the crank wheels, substantially as described.

In testimony whereof I hereunto set my hand this tenth day of April 1907.

WILLIAM FREDERICK CHARLES FOSTER.

In presence of—

CHARLES LORRAINE ATKINSON,
WILLIAM SMITH FOSTER.