No. 774,686. PATENTED NOV. 8, 1904.

G. H. MILLER.

NUMBERING MACHINE.

APPLICATION FILED MAR. 29, 1902.

NO MODEL.

Fig. 1

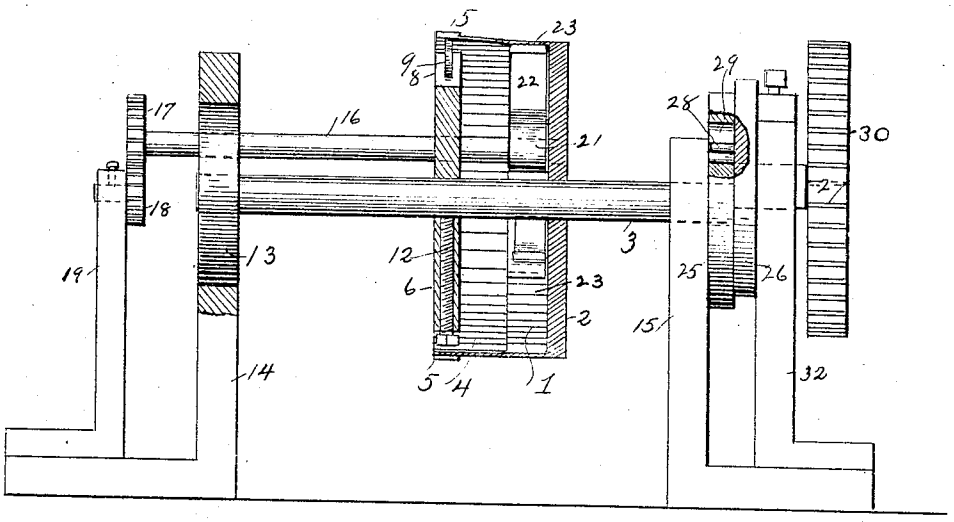


Fig. 2

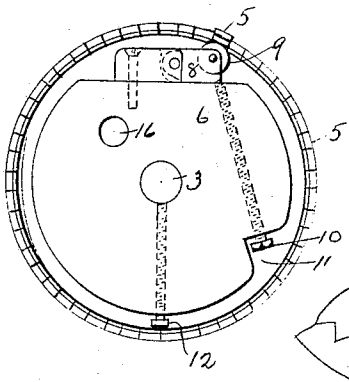


Fig. 3.

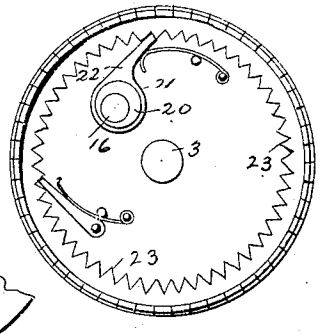


Fig. 6.

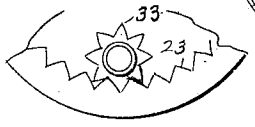


Fig. 4.

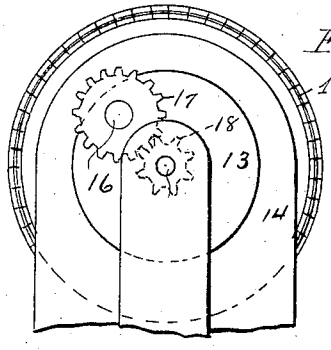
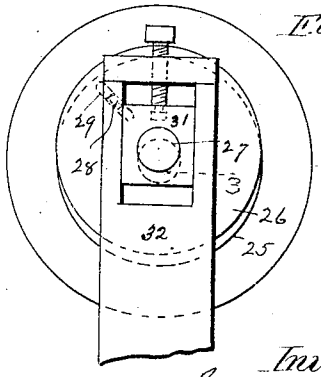


Fig. 5.



Witnesses

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PHOTO-LITHOGRAPHED BY SACHETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 774,686. Patented November 8, 1904.

UNITED STATES PATENT OFFICE.

GEORGE H. MILLER, OF NORWALK, OHIO.

NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 774,686, dated November 8, 1904.

Application filed March 29, 1902. Serial No. 100,526. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. MILLER, a citizen of the United States, and a resident of Norwalk, county of Huron, State of Ohio, 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.

My invention relates to improvements in numbering-machines, and is especially designed to facilitate numbering salesmen's check-slips and other similarly-arranged printed matter in which numerals or characters are printed in succession upon paper slips or pages, and is designed as an improvement upon Letters Patent granted to me on December 31, 1901, for numbering-machines, in which I describe a printing-head provided with an elastic periphery upon which the numerals or characters are raised and an impression-roller arranged to rotate within the head at a different rate of speed and raise alternately the characters upon the periphery. In the present invention I employ slightly different forms of construction and obtain an advance movement of the periphery at the end of the desired revolution of the head in a different manner. It also has in addition a capacity for duplicating or triplicating the characters not found in the other machine.

The invention further consists in the combination and arrangement of parts and construction of details, as hereinafter described, shown in the accompanying drawings, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal vertical section of the printing-head, showing in side elevation the actuating-gearing therefor. Fig. 2 is a face view of the head. Fig. 3 is a view of the interior of the head, showing the device for advancing the periphery to present new characters in turn to the tympan-wheel. Fig. 4 is an end view showing sun and planet gearing. Fig. 5 is a view of the other end, showing variable-speed driving-gear; and Fig. 6 shows a modified device to take the place of the pawl shown in Fig. 3.

In the views, 1 is the printing-head comprising the disk portion 2, set loosely upon the main central shaft 3, and the cylindrical elastic periphery slotted to form individual bars 4, at the outer extremities of which are placed the raised characters 5, as in the device previously described and patented, which I have referred to above.

6 is a disk placed upon the shaft 3 just within the edge of the cylindrical periphery, which serves as a support for the block 8 pivoted thereto, in which is pivoted in turn the roller 9, arranged to engage the periphery and to force out in turn each elastic bar and character thereon. This is made adjustable, so as to regulate the projection of the roller to give the exact degree of force required in the printing by means of the adjusting-screw 10, the head of which is sunk within a recess 11 in the disk. A set-screw 12 secures this disk to the head.

At 13 is seen a cylindrical disk which rotates freely in the bearing 14 and supports one extremity of the shaft 3, the bearing for the other extremity being in the standard 15. Through this disk and through the disk 6, which carries the roller 9, passes a shaft 16 parallel to the shaft 3. Upon the outer end of this shaft is mounted the spur-gear 17, which engages the gear 18, secured rigidly upon a standard 19 and having the same axis of revolution as the shaft 3 and printing-head. Upon the inner extremity of the shaft 16 is secured the eccentric 20, Fig. 3, which is inclosed by the strap 21, provided with the pawl 22, which engages the ratchet-teeth 23 upon the inner surface of the printing-head.

It will readily be seen that as the shaft 3 and disk 13, secured rigidly thereto, rotate the entire head and parallel shaft will move therewith and the gear 17 will revolve about the stationary gear 18. Supposing the gear 17 to have the same number of teeth as the fixed gear 18, the planet-gear will then rotate once on its axis in one of its revolutions about the stationary gear or in one rotation of the head on its axis. This would move the eccentric once backward and forward, and hence would move the head forward one notch in the ratchet and present a new character in the printing-

ring. If, however, the number of teeth in the planet-gear were twice the number of the teeth in the stationary gear, the planet-gear and its shaft would only turn one-half of a rotation in one revolution about the fixed gear, and hence two revolutions about the fixed gear would be required to move the eccentric and dog to advance another number on the printing-ring. For this reason the same number would print twice in succession every time or be duplicated instead of printing only once. The number could be printed three times, if desired, in succession by tripling the number of teeth in the gear 17.

At the right of Fig. 1 are seen the adjacent disks 25 and 26, one mounted upon the main shaft 3 and the other mounted upon a shaft 27, eccentrically placed relatively to shaft 3. The shaft 27 is the driving-shaft, and a variable-speed movement is given to the shaft 3 by means of a pin 28 in the disk 26 and a diagonal slot 29 in the disk 25, which the pin engages.

30 is a driving-gear upon the shaft 27.

By means of the vertically-adjustable bearing 31 in the standard 32 I obtain greater or less variability in speed. If the axes of the two shafts 3 and 27 coincide, I have a uniform degree of speed throughout the revolution of the disks; but if the axis of one shaft varies diametrically from the axis of the other the movement of the driving-shaft will be faster at one point than at the opposite point, the degrees of variability increasing as the axes separate.

In Fig. 6 I show an eight-toothed gear 33 upon the end of the parallel shaft, which is employed in place of the eccentric and pawl to advance the head successively, one character at a time, with this gear. The gear at the outer end of the parallel shaft should be eight-toothed, and only a stationary pin need be used in place of gear 18.

The variable-speed movement given to the shaft 3 is for the purpose of making a numbering-head of greater diameter than the cylinder in the printing-head make one revolution in the same time that the cylinder is making one revolution. The speed of the head is of course variable in one revolution, and the speed is only just as slow as that of the cylinder at the time of making the impression, so that the type will not smear the ink as would be done if they were traveling at a higher rate of speed than the cylinder. The greater the difference in diameter between the numbering-head and the cylinder the more the centers of the shafts 3 and 27 must be separated to cause them to make a revolution each in the same time. This makes the pin go nearer the center of the opposed shaft at one part of the revolution and farther away at the other extremity of its throw, acting as an adjustable crank. In this manner any speed is attainable by adjustment of the crank-centers, depending upon the size of the head.

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

1. In combination, a printing-head provided with an elastic periphery and type thereon, of an engaging device for the periphery arranged to throw out each type-bearing portion that it engages, and means for rotating the printing-head and engaging device in unison, and for advancing the periphery to bring the type-bearing portions in succession into engagement with the engaging device, consisting of a main driving-shaft, a support for the engaging device, a shaft parallel to the main shaft arranged to rotate therewith, a planet-gear upon the parallel shaft, a fixed gear upon the central axis of the printing-head engaging the planet-gear, an eccentric and pawl sleeved thereon upon the parallel shaft and a ratchet upon the printing-head engaged by said pawl, substantially as described.

2. In a printing-head, a main shaft, a disk-shaped body portion for the head loosely secured thereon, an elastic periphery provided with a band of annularly-arranged type on its outer surface, a roller engaging the inner surface of the periphery, a support therefor secured to the main shaft, and means for revolving the head and roller about the shaft and for advancing the said periphery at a predetermined portion of the revolution of the roller about the shaft, consisting of a parallel shaft to the main shaft, supports therefor secured to said shaft, a planet-gear at one extremity of the shaft, a fixed gear in the axial line of the printing-head, an eccentric upon the parallel shaft and pawl sleeved thereon, and a ratchet on said head engaged by said pawl, substantially as described.

3. In combination with a cylindrical printing-head and shaft therefor, means for giving an alternately fast and slow motion to said shaft, consisting of a disk at one extremity of the shaft, an adjacent disk facing the same, a shaft for the second-named disk diametrically adjustable in relation to the first-named disk and a pin in one disk and radial slot in the other disk in which said pin is adapted to travel, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE H. MILLER.

Witnesses:
WM. M. MONROE,
A. M. BEATTIE.