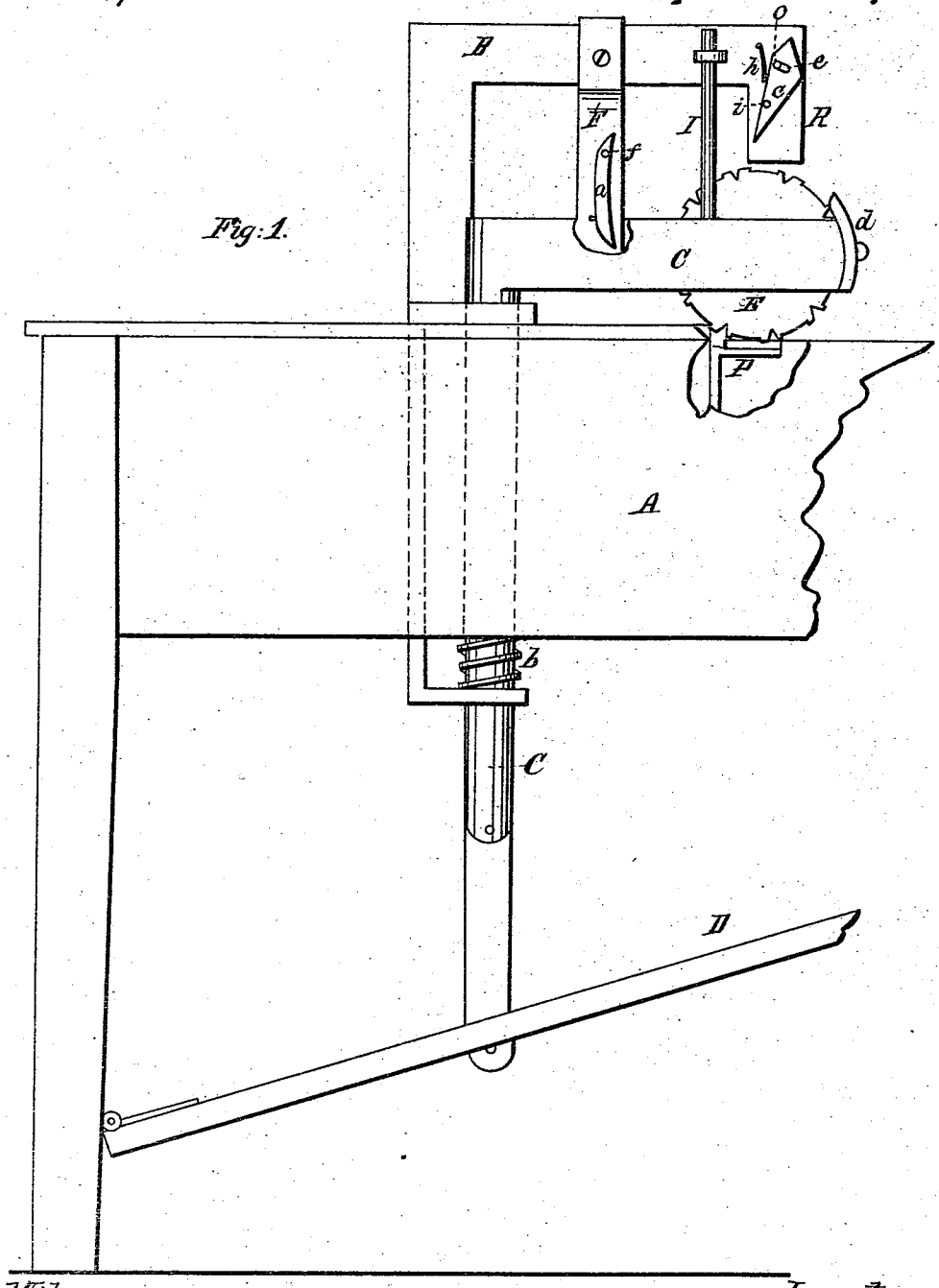
C. L. Sholes Sheet 1. 2 Sheets.

Mach. for Printing Numbers.

No. 64375. Patented Apr. 30. 1867.

Fig: 1.



Witnesses:

P. F. Dodge

John W. Richardson

Inventor:

C. L. Sholes.

By Dodge & Shumm

Attorneys

THE ECKERT LITHOGRAPHING CO., WASHINGTON, D. C.

C. L. Sholes. Sheet 2. 2 Sheets.

Mach. for Printing Numbers.

No. 64375. Patented Apr. 30. 1867.

Fig. 2.

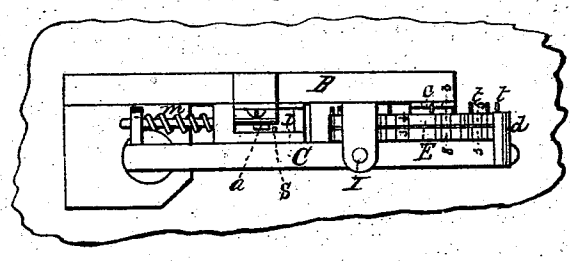


Fig. 3.

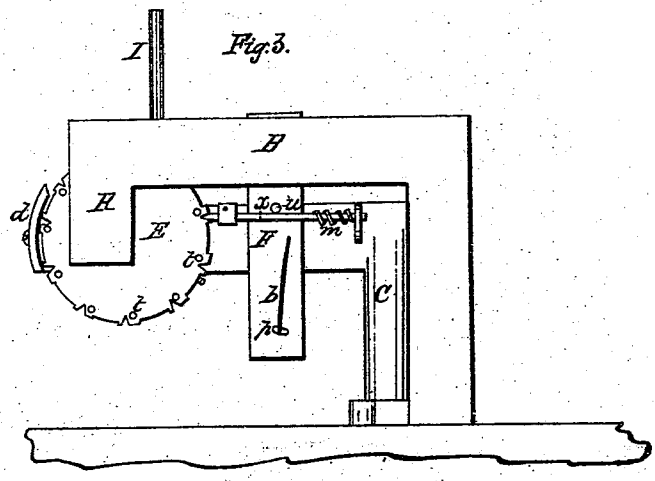
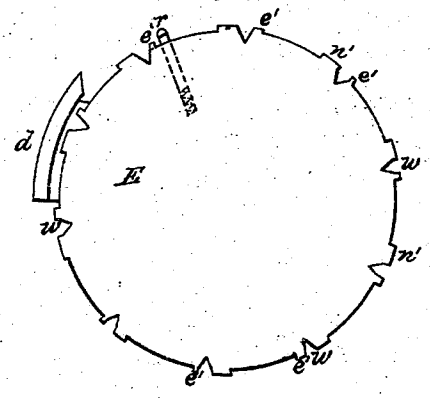


Fig. 4.



Witnesses:

P. F. Dodge

John Richardson

Inventor:

C. L. Sholes.
By Dodge & Munn
Attorneys.

THE ECKERT LITHOGRAPHING CO., WASHINGTON, D. C.

United States Patent Office.

C. LATHAM SHOLES, OF MILWAUKEE, WISCONSIN.

Letters Patent No. 64,375, dated April 30, 1867.

MACHINE FOR PRINTING NUMBERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, C. L. SHOLES, of Milwaukee, in the county of Milwaukee, and State of Wisconsin, have invented certain new and useful improvements in Machines for Printing Numbers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use my invention, I will proceed to describe it.

My invention consists in improved devices for operating or moving the disks, and in a novel arrangement of devices for aligning them, so as to cause the numbers to be printed in straight lines with accuracy.

Figure 1 is a side elevation.

Figure 2, a top plan view.

Figure 3, a side view, taken from the side opposite to that represented by fig. 1.

Figure 4, a side view of the disks, enlarged and detached.

In constructing machines for printing numbers consecutively, by the use of rotating disks, having the type or figures for printing the numbers on their periphery, two conditions must be fulfilled in order to secure success in the operation, namely, the disks must be caused to move, with a positive motion, the required distance, and the type or figures must be brought directly opposite to each other, so as to print the numbers in a straight line. It is to accomplish these objects that my invention is especially adapted.

A represents a table, on which the machine is mounted. B represents a fixed arm, to which are secured the operating cams, and C is a sliding arm, on which are mounted the disks, as hereinafter explained. E represents the disks, having the figures or numbers engraved on projections n', as shown in fig. 4, these numbers being arranged consecutively from one to ten, as usual in machines of this kind. A V-shaped notch, w, is cut in the periphery of the disks E, between each of the numbers, and there is also a small projection, e', arranged on the periphery of the disks, between each of the numbers, as shown in fig. 4. A radial hole or recess is formed in the edge of the disks, in which is seated a dog, r, which has its outer end bent at a right angle, and projecting from the side of the disk E far enough to reach nearly across the face of the adjoining disk, when two or more are located side by side. This dog r has a spiral or other suitable spring, arranged to shove the dog out far enough to keep its bent portion from coming in contact with the projections e' on the adjoining disk, except when pressed in, as hereinafter explained. One of the disks is also provided with a series of pins, t, projecting laterally from one side, and located equidistant from each other, as shown in figs. 2 and 3. A series of these disks, equal in number to the number of figures required to express the largest number that it is desired to print, is mounted on a journal attached to the sliding arm C, as represented in fig. 1, and arranged to be carried by the upward movement of said arm, up alongside of the portion R of arm B, as shown in figs. 1 and 3. Upon the side of the arm R is pivoted a V-shaped cam, c, as shown in fig. 1. This cam is pivoted at i, and has a slot, e, formed in its upper portion, which slot encloses a pin, o, by which the oscillating movement of the cam c is limited, a spring, h, serving to keep the upper end of c thrown forward when in a state of rest. As the arm C is elevated by the spring b under the table A, the disks are also raised, and the pin t on the disk next to R comes in contact with the front face of the cam c, which, being inclined as shown in fig. 1, causes the disk to perform one-tenth of a revolution, the inclination of the cam c and the upward movement of the disks being suitably proportioned and adjusted to produce that result. The arm C, with the disks E, being depressed, by means of the treadle D, will bring the figures on the under side of the disks down on the paper placed on the bed or platen P, and will print thereon. As they are again thrown up, the succeeding pin t will strike against the inclined face of the cam c, which will cause another tenth of a revolution of the outer disk, and thus bringing successively all the numbers on that disk in contact with the platen. When the outer disk, which has the pins t on it, has performed an entire revolution, it will have brought the dog r around, so as to come in contact with the plate d attached to the end of arm C, by which the dog r will be pressed in towards the centre, as indicated in red in fig. 4; and when thus depressed, the bent portion of the dog r will come in contact with the rear face of the small projection e' on the adjoining disk; and consequently, when the outer disk is again moved, the next disk, being locked to it by the dog r, will also move one-tenth of a revolution, when the dog,

having passed from under the plate *d*, will be freed from contact with the second disk, which will then cease to revolve until the first one shall have completed its revolution and brought the dog *r* again around to the plate *d*. In this way motion is imparted to the printing disks, each one making ten revolutions to one made by the next succeeding disk, and thus bringing the proper figures in position to print the numbers consecutively, as required. Two disks, having ten characters each, will thus print 99, three will print 999, and four 9,999, and so on indefinitely according to the number of disks used.

In order to align the figures, that is, to so regulate the position of the disks that the numbers shall be printed in a straight line, I attach to the arm C, in rear of the disks, a lock-bar or dog *x*, as shown in fig. 3. This bar *x* is mounted in suitable bearings, to permit it to slide to and fro, and its front end is made wedge shaped, to engage in the V-shaped notches *w* cut in the periphery of the disks E, as shown in fig. 3, a spiral spring, *m*, serving to throw it forward and hold it in the notches until removed therefrom. As the notches are V-shaped, and the point of the bar *x* is also wedge-shaped, it will be seen that even if the disks are slightly out of line, still, as the bar is forced into the notches, the disks will be brought to the same relative position, and thereby bring the figures in a straight line across the edges of the disks.

In order to remove the bar *x* from the notches, and unlock the disks, to permit of their being rotated during their upward movement, I attach a pendent bar, F, rigidly to the arm B, as shown in figs. 1 and 3, where it passes through an opening in the bar *x*. On the side of this bar F is pivoted at its upper end a cam, *a*, as shown in fig. 1. Near the lower end of this cam *a* is a pin, *p*, which projects through a slot in bar F, and rests against a spring, *l*, on the opposite side of said bar, as shown in fig. 3. On the inner edge of the bar *x* is a pin, *s*, (fig. 2,) resting against the front face of cam *a* as the arm C descends. The instant that the pin passes below the point of *a* the latter is thrown slightly forward by the spring *l*, so that, as the arm C, with bar *x*, ascends, the pin *s* will strike against the rear inclined face of cam *a*, which will thus draw the bar *x* back out of the notches *w*, and hold it back until the arm C has almost or entirely reached the end of its upward movement, when, as it passes above the cam *a*, the spring *m* will drive it forward again into the notch *w*, where it will be held by the pin *s*, passing down on the front side of cam *a*; and this operation is repeated at each movement of the disks. A guide-rod, I, is attached to the sliding arm C, and works in a bearing attached to the stationary arm B, for the purpose of guiding the arm C accurately in its movements. But other devices may be used for this purpose, if preferred.

An inking apparatus must of course be so connected with the machine as to ink the type or figures at each upward movement of the disks; but this not constituting any portion of my present invention, need not be described herewith.

Having thus described my invention, what I claim, is—

1. The disks E, provided with the dogs *r* and projections *e'*, in combination with the plate *d*, when arranged to operate as and for the purpose set forth.

2. I claim operating the disks E by means of the projecting pins *t*, and the cam *e*, arranged to operate as shown and described.

3. I claim aligning the disks E by means of the V-shaped notches and the locking-bar *x*, operating substantially as set forth.

4. I claim the sliding-bar *x*, with its spring *m*, and the oscillating cam or guide *a*, when said parts are arranged for joint action, substantially as herein set forth.

C. LATHAM SHOLES.

Witnesses:
G. E. WEISS,
LEVI BURNELL.