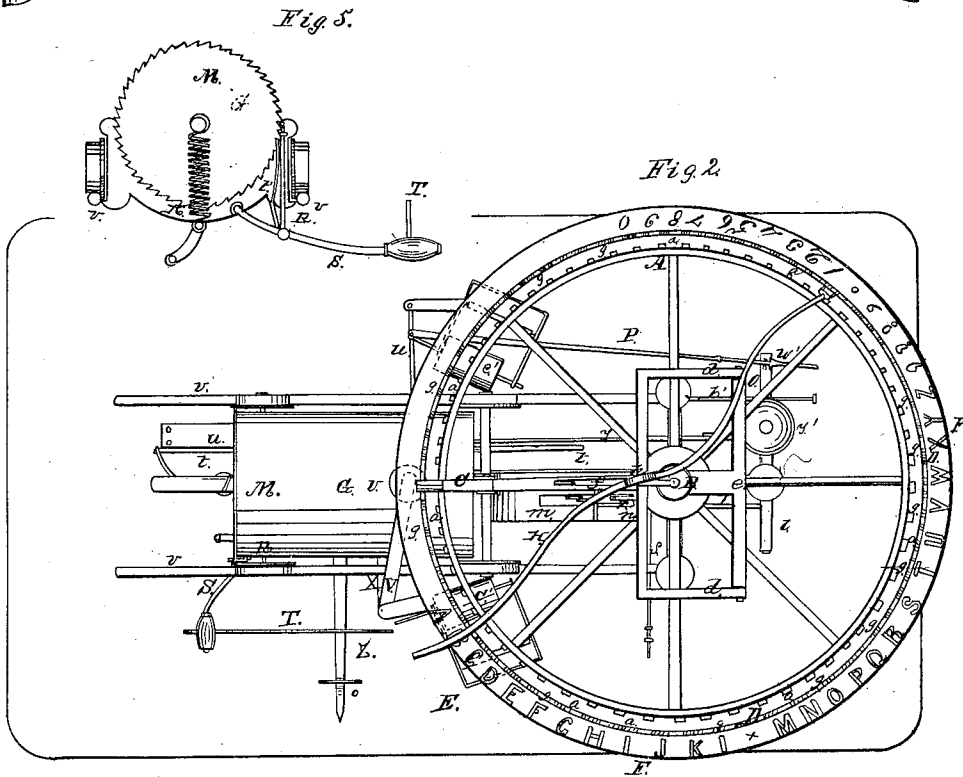
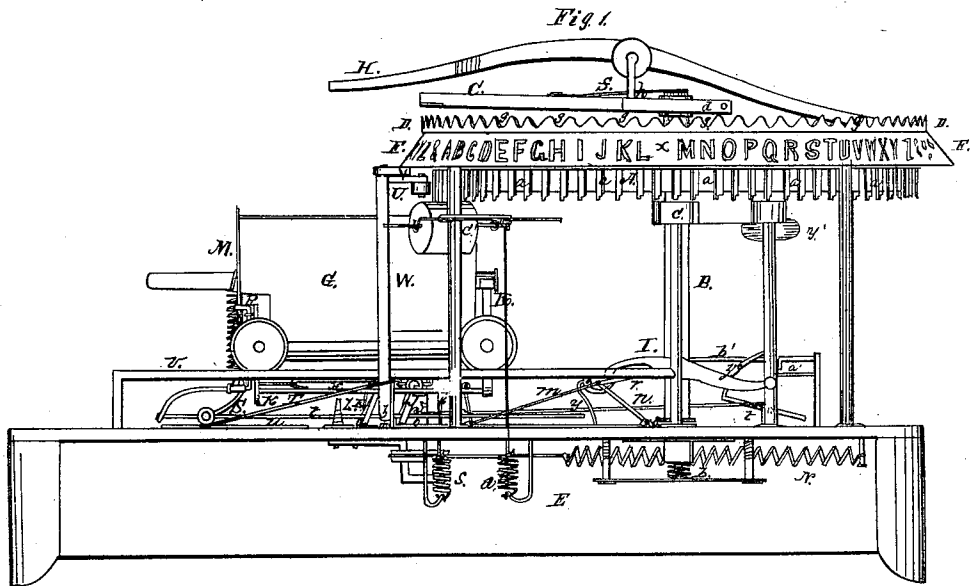


J. JONES.
MECHANICAL TYPOGRAPHER.

No. 8,980.

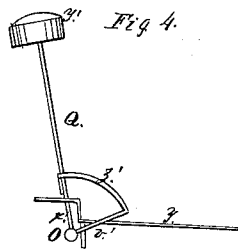
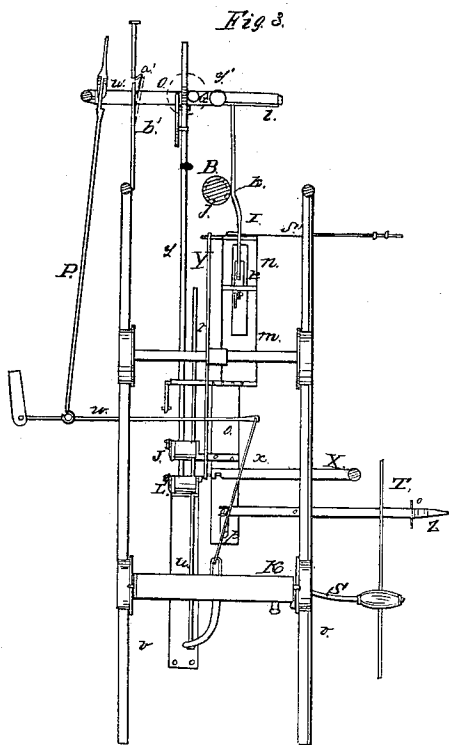
Patented June 1, 1852.



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UNITED STATES PATENT OFFICE.

JOHN JONES, OF CLYDE, NEW YORK.

IMPROVEMENT IN COPYING MANUSCRIPT.

Specification forming part of Letters Patent No. 8,980, dated June 1, 1852.

To all whom it may concern:

Be it known that I, JOHN JONES, of Clyde, in the county of Wayne and State of New York, have invented a new and useful apparatus or machine by which a person may copy manuscript or convey his thoughts directly upon paper with type, and which apparatus or machine I term a "Mechanical Typographer;" and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side view of the machine in elevation. Fig. 2 is a plan or bird's-eye view of same. Fig. 3 is a plan or bird's-eye view of the mechanism by which the cylinder is operated, the cylinder having two motions—viz., a motion in a straight line in the direction of its axis and a rotating motion. Fig. 4 is a section of a portion of the mechanism shown in Fig. 3. This is a side view, and shows the manner in which the rod is operated that opens the clutches and allows the cylinder to return after being drawn or forced out the required distance. Fig. 5 is a front view of the cylinder, showing the ratchet and the pawl which works between the teeth of the ratchet, as also the lever and inclined rod by which the pawl is operated and the cylinder consequently made to rotate.

Similar letters of reference indicate corresponding parts in each of the several figures.

The nature of my invention consists in placing upon the periphery of a wheel the several kinds of type used in ordinary printing, said type having the different forms of letters with numeral signs, marks of punctuation, &c. These types are placed vertically upon the periphery of a wheel which is horizontal and has two motions, one motion in the direction of its axis, which is vertical, and also a rotating motion. The paper upon which the types are pressed and leave their impression is placed or fastened upon a cylinder in any proper manner. This cylinder is mounted on a carriage underneath the horizontal wheel above mentioned, the carriage running upon ways, and so arranged that the upper surface of the cylinder is a short distance below the face of the type when the horizontal wheel is not de-

pressed. The cylinder also has two motions, one motion in the direction of its axis and a rotating motion. The horizontal wheel is made to rotate, and is also depressed by means of a lever, which will be hereinafter described. Surrounding the horizontal wheel there is a circular rack having a rim on its lower edge projecting outward. On this rim are marked or stamped the letters and all characters which are on the type attached to the horizontal wheel, a letter or character being opposite each groove or niche in the rack. An index is attached to the horizontal wheel and so adjusted that when the end of the index is placed over a groove or niche in the rack, and the horizontal wheel depressed by means of the lever above mentioned, a type will be pressed upon the surface of the paper upon the cylinder, said type printing a letter corresponding to that marked on the rim opposite to the niche in which the index is pressed. By thus turning the horizontal wheel and depressing it any desired letter may be printed on the paper. Every time the horizontal wheel is depressed the cylinder is moved forward before the type reaches the cylinder, by mechanism which will be presently described, and thus a sufficient space is left between the letters. There is also a roller placed in the end of a lever and operating in such a manner that types of different sizes will be correctly spaced. The printing on the paper is formed lengthwise of the cylinder, and hence the motion of the cylinder in the direction of its axis and the rotating motion of the cylinder are for the purpose of changing or shifting the cylinder, so that the required space is left between the different lines, the cylinder being rotated the requisite distance in a manner which will be presently shown, as it passes back after having been forced out the requisite distance and a line printed.

The circular rack or guide for the index with the letters attached, the horizontal wheel with the type placed on its periphery, in combination with the roller and levers or other equivalent device for spacing properly different-sized letters, and the cylinder having a motion in the direction of its axis and also a rotating motion given it by the devices which will be presently shown, or their equivalents, constitute the invention.

To enable others skilled in the art to make and use my invention, I will proceed to describe fully its construction and operation.

A, Figs. 1 and 2, is the horizontal wheel hung on the shaft B. *a* represents the type placed vertically on its periphery, the sides of the type being attached to the wheel, the face of the type projecting a short distance below the under surface of the rim of the wheel. (See Fig. 1.) The lower end of the shaft B rests upon a spiral spring, *b*, and a bearing, *c*, encompasses the shaft just below the wheel A.

C is an index attached to the upper part of the shaft B in the following manner: one end of the index is forked or has prongs *d d*, which are attached by pivots to the ends of a cross-rod, *e*, said cross-rod being attached firmly to the shaft on its upper end, (see Fig. 2,) the index being supported or held up by the spring *f*.

D is the circular rack or guide surrounding the horizontal wheel A, and supported by rods from the base E of the machine. This rack has niches *g* in it, (seen more particularly in Fig. 1,) and opposite each niche there is a letter or character marked or stamped upon a rim, F, said rim being attached to the under surface of the rack. All the letters marked or stamped upon the rim correspond to the type on the horizontal wheel A.

G is the cylinder, upon which the paper is secured in any proper way, and this cylinder works underneath the horizontal wheel A. The types on the horizontal wheel are pressed on the paper and at the upper part of the cylinder.

H is the lever by which the horizontal wheel is made to rotate, and is also depressed. This lever has at one end a roller, *i*, which bears against the under surface of the rack D. (Seen more particularly in Fig. 2.) The center of the lever is attached to and bears or rests upon the index at the point *h*. The opposite end of the lever is where the hand is applied to operate it. Now, in order to print upon the paper on the cylinder, the hand is applied to the end of the lever H, and the horizontal wheel A turns, and with it the index C. When the outer end of the index is over the niche opposite to which the desired letter is stamped or marked, the end of the lever H is depressed, the end of the index fitting in the niche, and consequently the horizontal wheel is depressed and the type immediately over the cylinder presses upon the paper and leaves its impression corresponding to the letter on the rim opposite the niche in which the end of the index is pressed, it being understood that the wheel is depressed after the index is in the niche, as the lever H then bears directly upon the shaft B, the index being attached to the cross-rod *e* by pivots before mentioned. The wheel A, after being depressed, is elevated by the spiral spring *b* underneath or within the base E, and the end of the index is elevated, after being depressed, by the spring *f*, as the end of the index should

be elevated sufficiently to clear the rack as the wheel A rotates.

The manner in which the desired letters may be printed on the paper on the cylinder will now be understood; but it will be seen that if the cylinder is stationary the letters will be printed over each other, and in order to form words it is necessary that the cylinder should move in the direction of its axis, so that the letters may be placed side by side and a sufficient space be left between them.

I will proceed to describe one method of operating the cylinder; but there may be various ways of doing it, and all answer equally well.

Around the shaft B there is a groove or recess, *j*, (seen in Fig. 3,) to which figure I will principally refer in describing the movements of the cylinder. In this groove a pin, *k*, attached to a lever, I, fits. One end of this lever is attached to a socket, *l*, which works on a rod attached to an upright from the base. The other end of the lever I bears upon a small spring-plate, *r*, attached to the upper joints of two levers, *m n*. These levers are also seen in Fig. 1. At the lower end of the lever *m* there is attached a plate, *o*, which rests upon the base E, the end of the plate having a slot in it through which passes a pin or screw, *p*. Now, when the wheel A is depressed, one end of the lever I acts upon the small spring-plate *r* and forces out the plate *o*, the plate *o* being forced back again to its original position by the spring *s*, (see Fig. 1,) attached by suitable levers to it. Thus as the wheel A is depressed by the lever H and elevated by the spiral spring *b* a reciprocating motion is given this plate *o*, the small spring-plate *r* also being elevated to its original position when the wheel A is raised by a suitable spring.

Attached to the plate *o*, and moving with it, is a clutch, J, through which a rod, *t*, attached to the carriage K of the cylinder, passes. This clutch, as the plate *o* moves forward, grasps or bites the rod *t*, and consequently the carriage and cylinder are moved along with it. The carriage and cylinder are prevented from slipping back by means of a stationary clutch, L, attached to a plate, *u*. The clutch L is precisely similar to the clutch J, and holds the rod *t* permanent while the clutch J is moving back. The clutches are merely small gates resting or held on the rod *t* by springs. A short distance out of center or from the points of suspension they are commonly used. The manner in which the cylinder is thus operated or moved in the direction of its axis will be readily seen, it being seen by the drawings that the carriage runs upon ways *v v*.

When the paper to be printed upon is placed upon the cylinder, and it is desired to operate the machine, the cylinder is placed inward toward the shaft B as far as it will go, and the type on the horizontal wheel A press upon the paper at the end where the ratchet M is placed, Figs. 1 and 2, and when the cylin-

der is forced outward a certain distance, till the inner end of the cylinder nearly reaches the periphery of the wheel A and the line of printing is finished, the cylinder is forced back or inward to its original position by a spiral spring, N, placed within the base E and connected to the carriage by the levers *w* *z*, it being understood that the spiral spring is acted upon or stretched as the cylinder is forced outward; and when the rod *t* is relieved from the clutches L J the cylinder is forced back. This rod *t* is relieved from the clutches in the following manner:

y is a rod having two inclines, *z* *z*, upon it, which are directly back of the gates of the clutches. These inclines are seen in Fig. 1. The end of this rod is bent, or has a shoulder upon it, (see Fig. 4,) and is acted upon by a wire, *z'*, bent in quadrant form. The quadrant *z'* is attached to a small horizontal shaft, O, and this shaft O is turned by a rod, P, attached to the lever *w*. There is a rod, Q, on the shaft O, having a weight, *j'*, on its upper end. (See Fig. 4 and dotted lines in Fig. 5.) The outer end of the rod P has two shoulders upon it, and the rod between the shoulders fits in a slot in the upper end of a small lever or shaft, *w'*, attached to the shaft O. Now, when the cylinder is moved forward a certain distance, the outer shoulder will act upon the small lever or shaft *w'* and turn gradually the shaft O, and when the shaft O is turned sufficiently to bring the weight *j'* past the vertical point or position of the rod Q the weight *j'* will fall by its own gravity and also cause the shaft O to turn rapidly, as well as the quadrant *z'*. The rod Q in descending acts upon the shoulder on the end of the rod *y*, or, rather, a pin, *x'*, on the rod, and the rod *y* is thrown forward, the inclines *z* *z* throwing open the gates of the clutches and allowing the spiral spring N to force or throw back the cylinder to its original position. As the cylinder is thrown back, the other or inner shoulder acts upon the small lever or shaft *w'*, turning the shaft O back, raising the rod G and weight *j'*, and also raising the quadrant *z'*, a pin, *v'*, on the lower side of the quadrant elevating the end of the rod *y* and placing it in its original position. (See Fig. 4.) Before the weight *j'* passes the vertical point a stud, *a'*, on the shaft O acts upon a wire, *b'*, (see Fig. 3,) causing it to vibrate and sound an alarm. This alarm is sounded before the cylinder is released, giving a person time to print two letters before the clutches are opened. By this arrangement the words at the end of the line may be perfectly divided, or, if there is not room enough, the word may commence with the next line.

As the cylinder is forced back it is made to turn or rotate in a simple manner. This will be seen principally by referring to Fig. 5. M is a ratchet attached to the front of the cylinder, and R is a pawl which catches between the teeth of the ratchet. The pawl is connected by a pivot to a lever, S, having a roller on its

end, which works on the inclined wire T. As the cylinder is forced back the end of this lever S is raised in consequence of the roller passing up the inclined wire, and the pawl R is also raised and the ratchet and cylinder turned, a spring, *t'*, keeping the pawl between the teeth. The cylinder is turned far enough to allow a sufficient space between the lines.

By referring to Fig. 1, a roller, U, will be seen a short distance from the type on the horizontal wheel. This roller is placed on the end of a lever, V, attached to a vertical shaft, W, which has a lever, X, on its lower end. To the end of this lever X there is attached a rod, Y, which is also attached to the lower end of the lever *n*. (See Fig. 3.) It will be borne in mind that the types on the horizontal wheel will vary in thickness according to the letters on them, and if some provision is not made for their inequality the printing will not be even, the large letters will crowd or overlap the smaller ones. The arrangement just shown obviates this, for a thick type will bear or press upon the roller U, by which the lever X draws upon the rod Y, which acts upon the lower part of the lever *n* and forces the cylinder a little farther out, the bottom part of the lever being returned to its original position after the large or thick type has passed or been depressed by the spring *s*, before mentioned. There is also a small spring, *s'*, which serves to regulate the lever *n*, this spring acting upon the lower end of the lever.

The necessary spaces between words and sentences are formed by bringing the end of the index over a notch opposite to which, on the rim, there is no letter, and consequently no type on the wheel. By depressing the wheel A, when the index is in what may be called the "blank niche," the cylinder will be moved forward, but no impression made on the paper. Spaces may also be made by operating the lever Z, the end of which is connected to the plate *o*, Fig. 3. By this means the cylinder may be moved with facility. It may be proper to state that the axis of the cylinder fits in a socket or bearing on one end of the carriage, and a spiral spring passes over the other end of the axis, keeping the cylinder in a concave rim. In Fig. 3 the cylinder is omitted. The types on the horizontal wheel are inked by means of the rollers *c' c'*, which are pressed up against the type by means of springs, one of which, *d'*, is shown in Fig. 1.

The several parts are now described, and I will briefly go over the manner of operation.

The paper to be printed is placed upon or around the cylinder G, and secured to it in any proper manner. The cylinder is then placed upon the carriage K, and the carriage is placed as far inward or as near the shaft B of the wheel as it will go, so that the type will be over the end of the cylinder near the ratchet. The horizontal wheel A is then operated by the lever H. The end of the index C is brought over the proper niche in the rack and the wheel depressed by the lever H, which causes

the type directly over the cylinder to be impressed upon the paper, the same letter as that marked or stamped upon the rim opposite the niche in which the index is placed. The index is then turned to the niche opposite to the letter which is next wanted, and the wheel A again depressed by the lever H, the cylinder being moved forward or outward before the type reaches the paper by means of the mechanism before described. Thus the second letter is printed, and so on. At the end of a word or sentence the requisite space is made by bringing the index over the blank niche, (indicated by +,) which may be seen in Figs. 1 and 2, and then depressing the wheel, thus causing the cylinder to be moved without any impression being made on the paper, there being no type on the wheel corresponding to the blank niche. When the cylinder is moved forward or outward nearly its length and the line consequently completed, the cylinder is thrown or forced back to its original position by means of the inclines on the rod opening the gates of the clutches and allowing the spring N to act upon the cylinder, as above described, the cylinder being turned or made to rotate as it is forced back by means of the pawl R, working between the teeth of the ratchet M, the pawl being operated by the lever S, the end of which is raised in passing up the inclined wire T, as before shown, the turning or rotating of the cylinder leaving or causing the necessary space between the lines.

Having thus described the nature and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The employment or use of the circular rack D, which serves as a guide to the index C, said rack having a rim, F, attached to its under surface and projecting outward, with the necessary letters and characters stamped or placed upon it corresponding to the type placed on the periphery of the horizontal wheel, as specified.

2. Placing or securing the type vertically to the periphery of a horizontal wheel having a rotating motion, and also a motion in the direction of its axis, by which, with the aid of the rack D and index, the required letters may be printed upon the paper, in combination with the roller U, levers V X, and the shaft W, or other equivalent device, for the purpose of operating upon the cylinder and adjusting it to allow for the different thickness of type on the wheel, as herein described.

3. The employment of the cylinder G, upon which the paper is secured, said cylinder having a motion in the direction of its axis, and also a rotating motion, said motions being communicated to it by the devices, as shown and described, or in any other equivalent manner.

JOHN JONES.

Witnesses:

O. D. MUNN,
S. H. WALES.