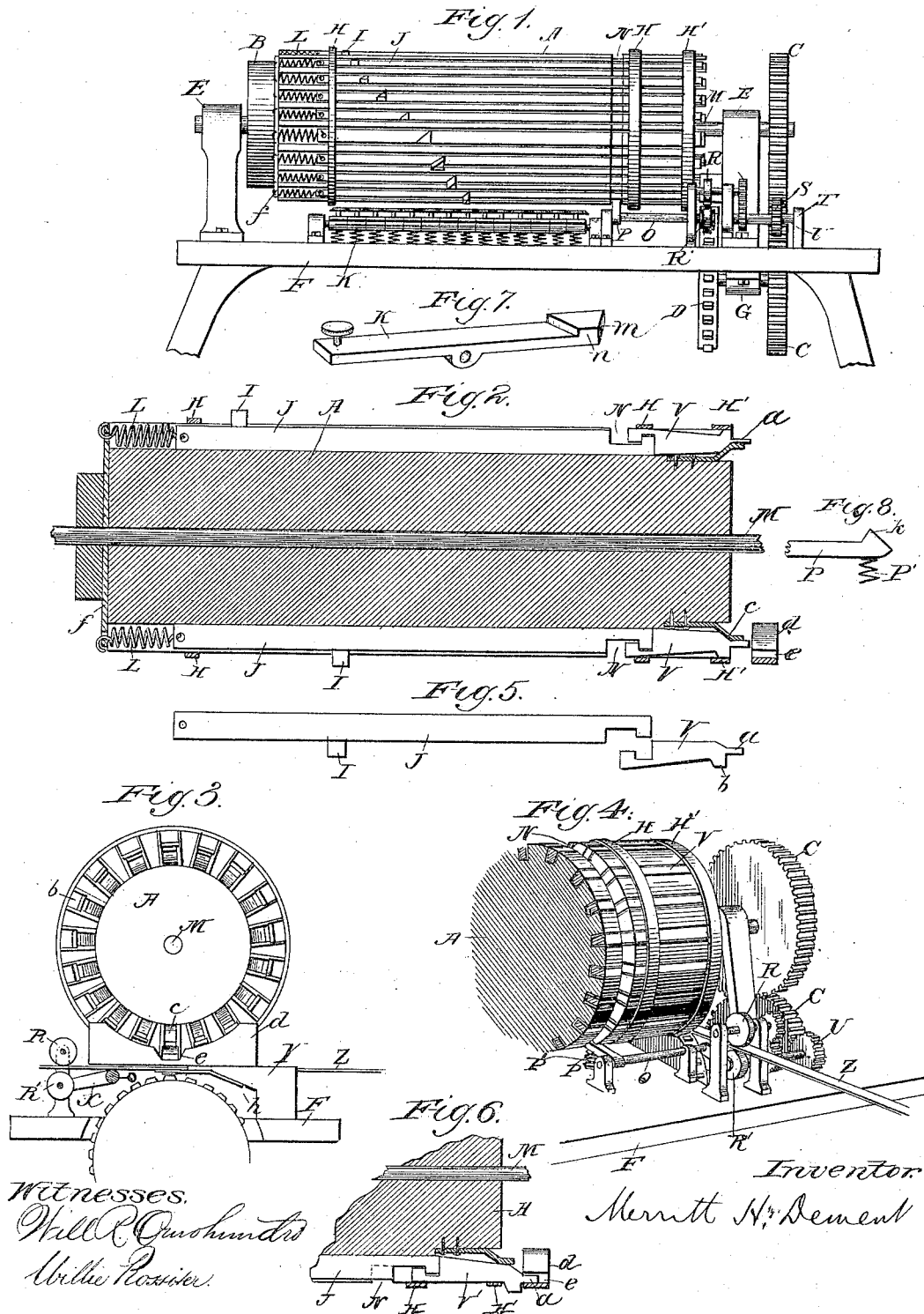


(No Model.)

M. H. DEMENT.
TYPE WRITING MACHINE.

No. 302,654.

Patented July 29, 1884.



UNITED STATES PATENT OFFICE.

MERRITT H. DEMENT, OF CHICAGO, ILLINOIS.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 302,654, dated July 29, 1884.

Application filed December 3, 1883. (No model.)

To all whom it may concern:

Be it known that I, MERRITT H. DEMENT, of the city of Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Type-Writing Machines, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to the art of printing; and it consists of the devices and combinations as hereinafter described, and specifically pointed out in the claims.

The improved machine consists, mainly, of a revolving cylinder and type-wheel, rods, and keys. The cylinder A is placed upon a shaft, M, running in standards E E, secured to a table or base-plate, F, with a pulley, B, at one end, by means of which power may be applied. Any desired number of longitudinal grooves are cut in the cylinder, in which are placed bars or rods J, secured in place by bands H H', and made capable of sliding when operated upon by cams m on the keys K, so that their ends will protrude from the end of the cylinder.

The type-ring D is placed beneath the end of the cylinder, on a separate shaft running in hanger G, which shaft is connected with the cylinder-shaft by gear-wheels C C, so arranged that the two shafts will revolve in unison. Each rod is provided with a cam-pin, I, which protrudes from the surface of the cylinder at such a point longitudinally upon the rod that as the cylinder revolves it will come in contact with the cam upon the corresponding key-bar.

A key-board consisting of the same number of keys as there are rods is placed beneath the cylinder. The key-bars are pivoted near their centers upon a rod resting in supports, so that by depressing the outer end the inner end of the key-bar will be pressed upward against the cylinder. Each key-bar is provided upon its inner end with a cam-surface, m, which operates, when printing, upon the cam-pin of a particular rod, and causes the rod to slide in the groove and protrude from the end of the cylinder and over the type-ring. Springs under the outer ends of the keys cause the inner ends to fall away from the cylinder when the pressure is removed. The type-ring and cylinder are so arranged that each rod, when pro-

truded, will cover the particular type designated by the key which has been depressed. After operating, the rods are returned to the cylinder or slid back in their grooves, so that their ends do not protrude, by means of springs L, one of which is placed in each groove at the inner end of the rod, one end of the spring being secured to the rod, and the other end being secured at the end of the groove to a disk or ring, f. During the operation of printing the rods are retained in their printing position by means of holding-surfaces n upon the key-bars, which prevent the cam-pins I and the rods from being drawn backward by means of the springs L until the rods shall have operated.

Between the rod ends, as they protrude when printing, and the type-ring is placed a grooved plate, Y, through which is passed a strip of paper, Z, in such a position that the rod ends may press it upon the type. A forked spring, h, is placed under the strip and next to the type-ring in such a position that as the paper is pressed upon the type the type will strike the paper between the forks (not shown) of the spring, the spring acting, when the rod is released, to throw the paper from the type. A suitable tension-spring regulated by a screw or other suitable device (not shown) operates to overcome the momentum of the strip and prevent its being pulled or advanced too far when operated upon for the purpose of advancing it, as hereinafter described. The rods are pressed upon the paper by means of bent springs c, one of which is placed in the bottom and near the end of each groove. To permit the rods to be pressed downward, the rods are made in two pieces, which are connected by a hook-joint, the piece V at the printing end, and which may be called the "printing-hammer," being much shorter than the remainder of the rod or other piece. The printing-hammers are each provided on their outer surfaces and near their ends with a printing plate or cap, b. As the rods lie at rest in the cylinder, these plates or caps b are in contact with the inner surface of the band H' at the end of the cylinder, and by this means the hammers are held in position; but as the rods are slid out these plates b pass from under the band H', and the ends of the hammers are then

free to be pressed downward or outward by the printing-springs *c*.

In order to relieve the printing-springs from strain or pressure while the rods are at rest, the rods are cut away, as shown, at the point where the ends of the springs press upon them when the rods are at rest, so as to permit the springs to be free from strain; but as the hammers are protruded the portions which are thus cut away or narrowed pass from the end of the spring, and the broader or full-width portion of the hammer passes upon the end of the spring, bending the end of the spring inwardly. To prevent the spring from acting at once, and before the printing-point is reached, the rods are each provided with a tongue or pin, *a*, upon the end thereof, and there is placed at the end of a cylinder a plate, *d*, upon which this tongue will pass, and by means of which the spring will be prevented from pressing the hammer outward until the printing-point is reached, at which point there is an opening or cavity, *e*, in the plate, and the spring is then left free to press the hammer outward or downward upon the paper, thus pressing the paper upon the type. The forward edge of the cavity or opening is in the form of a cam which operates to lift the hammer from the paper by a positive action. To retain the hammer in position, so that the plate or cap will pass under the band *H'*, as the rod is returned to the cylinder, by means of the spring *L* at the other end thereof, the plate after the cam which lifts the rods to position is made in the same form, although reversed, as that portion of the plate which held the rod in position until it reached the printing-point. The paper is advanced as each letter is printed the distance necessary to give each letter its proper space upon the paper by means of the following mechanism: The strip to be operated or printed upon is passed between two small milled rings or wheels, *R* and *R'*—one placed above the other—which are geared to the lower gear-wheel, *C*, by gear-wheel *U*, to revolve in unison with each other, and at the same rate of speed upon their surfaces that the faces of the type in the type-ring move. When at rest, the wheels are separated from each other sufficiently to permit the paper strip *Z* to lie between them and free from contact with either of them. One of these wheels—being the upper one, designated as *R*—is on a shaft running in stationary bearings, while the shaft of the other (designated as *R'*) is placed in suitable bearings upon the end of the arm of a lever, *X*, and adapted to be pressed upward against one edge of the paper strip, so as to press it against the upper wheel and catch it between the two wheels, the milling upon each penetrating and grasping the paper and pulling or advancing the strip until the lower wheel, *R'*, is caused to drop to its resting position by means of a spring, *P'*, and thereby release the paper. The arm *X* of the lever referred to is secured upon a rock-shaft, *O*, which lies parallel with the cylinder and

rests in suitable supports. Upon the other end of the rock-shaft is placed another arm or lever, *P*, which extends under the cylinder, and is provided with a cam, *k*, on its upper surface, which is adapted to come in contact with the full-width portion of the rods as they are operated upon and slid in their grooves, and by them be depressed, thereby lifting the other arm, *X*, so that the lower wheel, *R'*, will press the paper against the upper wheel, *R*, as aforesaid. To provide a channel in which this cam *k* may run as the cylinder revolves, and so that it will not come in contact with the rods, except as they are operated upon by the keys, a lateral groove, *N*, is cut around the cylinder, and the rods at the point which lies in this groove when the rods are at rest are cut away, so that the cam *k* will have a free passage in the lateral groove; but when a key shall have been operated upon and a rod slid in the groove there will be in the path of the cam *k* the full width or full height of the rod, which will strike the cam *k* and press the end of the lever downward, thus causing the paper to be seized between the two wheels and advanced. Immediately after the rod shall have passed the cam *k*, a spring, *P'*, underneath the lever *P*, on which the cam *k* is formed, will lift the lever to position, thus depressing the arm *X* and wheel *R'* and releasing the paper. The wheels are retained in contact with the paper for different lengths of time, and thus made to pull or advance the paper different distances, so as to give each of the different letters proper space upon the strip by making the rods of different widths, according to the width of the letter upon which each rod operates. For instance, the letter *m* will require a wide rod, and the letter *l* will require a very narrow rod.

In the drawings hereto annexed, Figure 1 is a front elevation of the improved machine; Fig. 2, a longitudinal section view. Fig. 3 is an end view with gear-wheels *C C* and hanger *E* removed, showing operation of printing. Fig. 4 is a perspective view of a portion of the cylinder and mechanism for advancing the paper strip. Fig. 5 is a view of a rod and printing-hammer. Fig. 6 is a sectional view of a portion of cylinder, showing rod and hammer in printing position. Fig. 7 is a perspective of a key, and Fig. 8 is a view of the end of lever *P* with cam *k*.

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

1. The combination of a series of rods in a revolving holder with a series of springs, by means of which the rods are pressed upon the material to be operated upon, substantially as shown and described.

2. The combination of a series of rods in a revolving holder, and springs by means of which the rods are pressed upon the material operated upon, with the plate *d*, substantially as and for the purposes shown and described.

3. A series of rods in a revolving holder,

and springs by means of which the rods are returned to resting position after operating, in combination with operating-keys provided with holding-faces, substantially as and for
5 the purposes shown and described.

4. The series of rods of different widths in a revolving holder, in combination with the milled rings, and mechanism, substantially such as shown and described, by means of

which the wheels are caused to grasp and ad- 10
vance or pull the paper different distances corresponding to the different widths of the types.

MERRITT H. DEMENT.

Witnesses:

CHARLES LANE,
L. M. DALTON.