F. F. WARNER.

Type-Writing Machine.

No. 215,082. Patented May 6, 1879.

Fig. 1

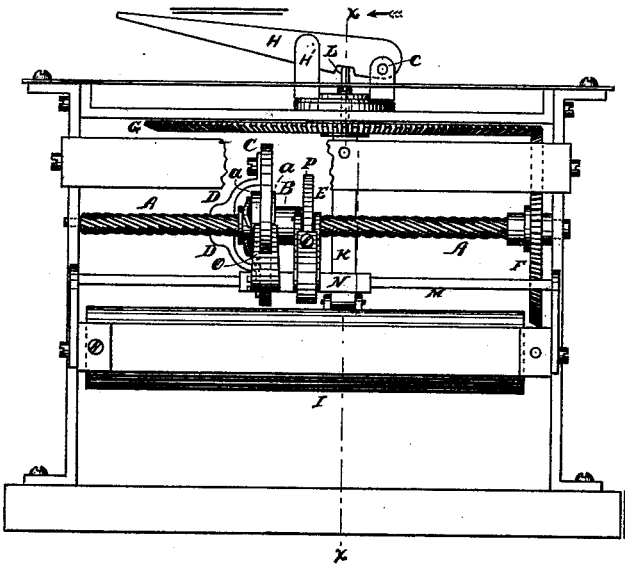
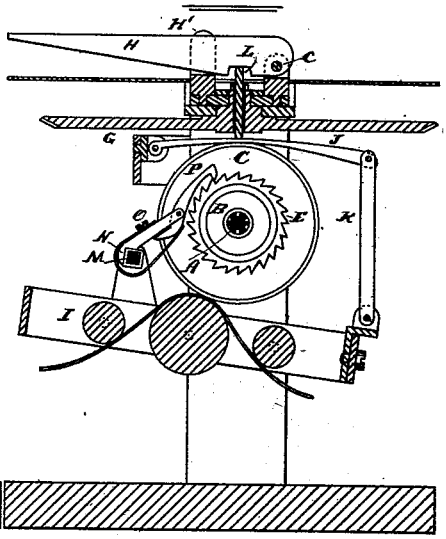


Fig. 2



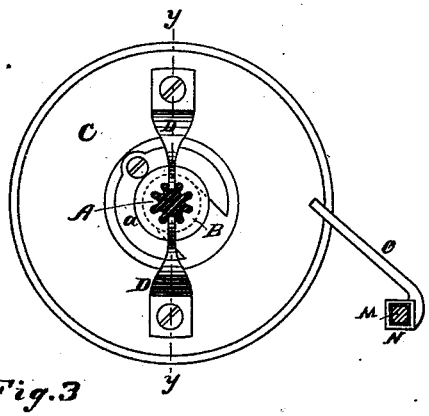


Fig. 3

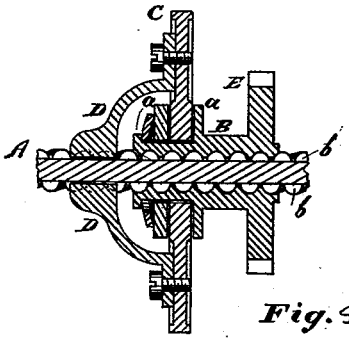


Fig. 4

Attest:

L. K. Boughton

S. S. Schoff

INVENTOR

Francis F. Warner.

UNITED STATES PATENT OFFICE

FRANCIS F. WARNER, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF HIS RIGHT TO GILBERT A. BRADY, OF SAME PLACE.

IMPROVEMENT IN TYPE-WRITING MACHINES.

Specification forming part of Letters Patent No. **215,082**, dated May 6, 1879; application filed September 25, 1878.

To all whom it may concern:

Be it known that I, FRANCIS F. WARNER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Type-Writing Machines, of which the following, in connection with the accompanying drawings, is a specification.

Figure 1 represents a front elevation of a machine embodying my improvements; Fig. 2, a section in the plane of the line *x x;* Fig. 3, a side elevation of the type-wheel and its nut, showing the type-wheel shaft in vertical longitudinal section; and Fig. 4, a section in the plane of the line *y y.*

Like letters of reference indicate like parts.

My invention relates to the class of type-writing machines shown and described in Letters Patent of the United States of America issued to Gilbert A. Brady and myself the 9th day of April, 1878, and numbered 202,143, for the improvements therein set forth. In that machine the type-wheel was moved laterally on its shaft by being connected to nuts mounted on screw-shafts separate from the type-wheel shaft; also, the paper-holder was vibrated by being connected to a yielding platform arranged under a yielding pin in the outer end of the operating-lever.

This invention relates to the means employed to produce the results above referred to, and I aim to improve the construction and operation of those parts of the machine.

To this end my invention consists of the novel feature of construction hereinafter specifically set forth.

In the drawings, A represents a spirally-ribbed shaft, and B is a nut thereon. C is a type-wheel, loosely mounted on the said nut, and prevented from being moved laterally thereon by means of collars, as shown at *a a.* D D are arms, extending from the type-wheel into straight grooves *b b*, made longitudinally in the shaft. By this means the type-wheel, though loosely mounted on the nut B, is made rotary with the shaft, and may also be carried laterally. By rotating the shaft any letter on the type-wheel may be brought to a given place. Unless the nut B is especially prevented, it will also rotate with the shaft; and if this rotation of the nut with the shaft is prevented, or if the nut is rotated when the shaft is not, the nut will move laterally on the shaft and carry the type-wheel with it, so that spacing between the letters and words may be made, and so that the type-wheel may be set with relation to the margins of the paper.

E is a toothed wheel, made rigid on the nut B. F is a beveled gear, made rigid on the shaft A. G is a beveled gear, engaging the gear F. H is a lever, pivoted at one end to a standard extending from a disk attached to and concentric with the gear G, as shown at *c;* and H′ is a vertically slotted or notched post on the same disk, and receiving the lever H. It is to be understood that the shaft A and the gear G have suitable bearings in the frame of the machine. I is the paper-holder, which consists of rollers mounted in a vibrating frame. J is an arm or lever, hinged at one end to the frame of the machine, and passing underneath the central part of the gear G. The opposite end of the arm J is connected to the holder I by means of a connecting arm or link, K. The holder I is either so hung or weighted as to raise the arm J. L is a pin or post, resting freely on the arm J and supporting the lever H.

It will now be perceived that the type-wheel will be rotated by carrying around the lever H, and that the holder I may be thrown up against the letter thus presented by depressing the lever H.

M is a square arm, extending across the frame of the holder I, and N is a sleeve or box on the arm M. O is a forked arm, extending from the box N, and engaging the perimeter or outer edge of the type-wheel. P is a hook or pawl carried by the box M, and hinged thereto, so as to allow the free end of the hook to rise and fall to some extent. The hook P is so arranged and supported as to engage the wheel E, but only when the lever H is depressed, and for a little while after it is released or raised.

When the lever H is released and the holder I falls from the wheel, or, in other words, after the letter presented is printed, the hook P, by reason of its engagement with the wheel E at that time, and by reason of the down movement of the holder I, rotates the wheel E

slightly on the shaft A, which then stands still. This rotation of the wheel E causes it to move laterally on the shaft A, and carries the wheel C laterally thereon sufficiently to set it so that a space will exist between the letter already printed and the one to be next printed; and by the time the wheel C is thus set the hook P slips off from the teeth of the wheel E, so as not to prevent the next letter from being presented in the proper position.

Spaces between words may be made in like manner by turning the type-wheel to present a blank instead of a letter, and then depressing the lever.

If the lever H be held down to cause the hook P to engage the wheel E, and then turned during this engagement, the type-wheel will be moved laterally as long as this engagement and turning movement is continued, and hence may be moved laterally at one time a greater distance than may be necessary in order to set it merely for producing the proper spaces between the letters and words.

In other respects the machine may be made in the manner shown and described in the Letters Patent hereinbefore referred to, or in any well-known or suitable way compatible with my present invention.

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

1. The combination, in a type-writing machine, of a spirally-ribbed rotary shaft, a type-wheel splined to the said shaft, and a nut run upon the said shaft and swivel-jointed to the said wheel, in connection with means for rotating the shaft and nut simultaneously, and also independently, for the purposes set forth.

2. The combination, in a type-writing machine, of the spirally-ribbed rotating shaft A, having therein the grooves *b b*, the type-wheel C, keyed in the said grooves, the nut B, swivel-jointed to the said wheel and carrying a toothed wheel, and a sliding pawl carried by a vibrating paper-holder, substantially as and for the purposes specified.

3. The combination of the lever H, shaft A, gears F and G, pin L, arm or lever J, link K, holder I, pawl P, nut B, wheels E and C, and arm O, all arranged and operating together substantially as and for the purposes specified.

FRANCIS F. WARNER.

Witnesses:
CHARLES H. SCHOFF,
D. K. BOUGHTON.