C. T. WARD.
Type-Writing Machine.

2 Sheets—Sheet 1.

No. 209,634. Patented Nov. 5, 1878.

Fig - 1.

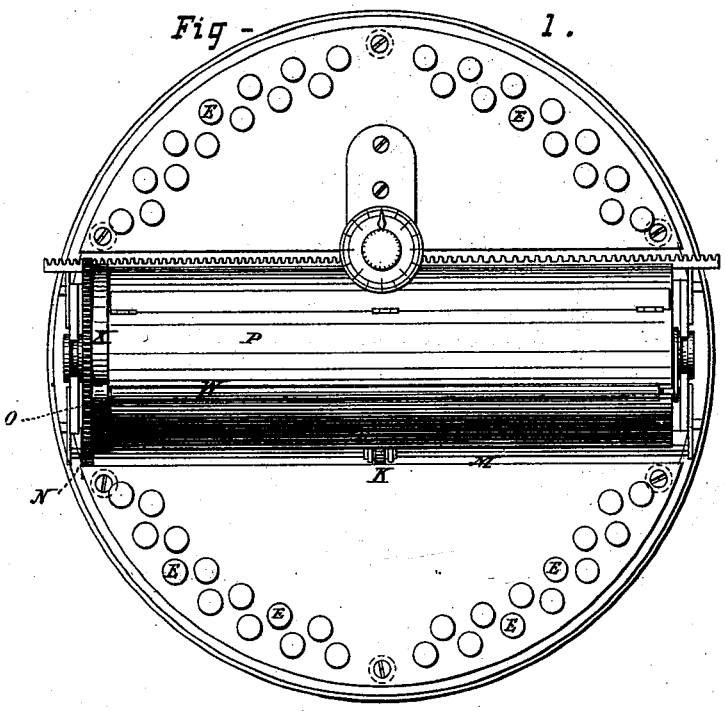
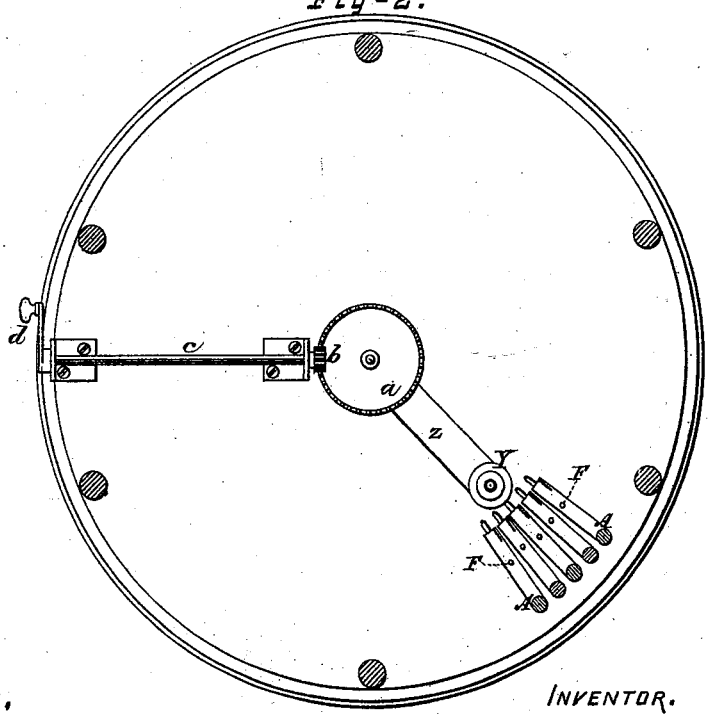


Fig-2.



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2 Sheets—Sheet 2.

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Fig - 3.

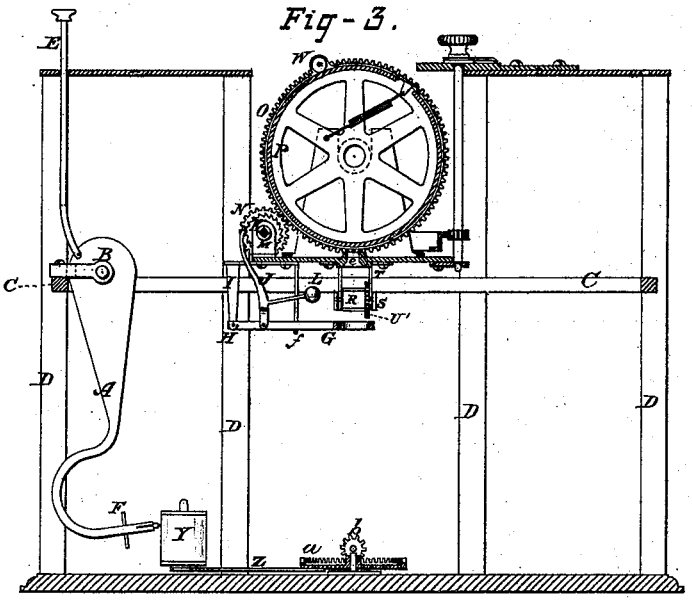
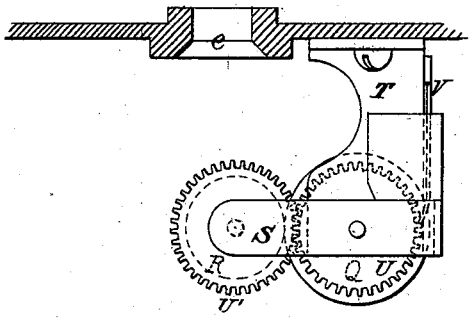


Fig - 4.



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UNITED STATES PATENT OFFICE.

CALEB T. WARD, OF NEW YORK, N. Y.

IMPROVEMENT IN TYPE-WRITING MACHINES.

Specification forming part of Letters Patent No. **209,634**, dated November 5, 1878; application filed March 30, 1878.

To all whom it may concern:

Be it known that I, CALEB THEOPHILUS WARD, of the city, county, and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

This invention relates to certain new and useful improvements in type-writing machines, and is constructed in such manner that all its parts may be placed within the smallest possible compass and work with accuracy, each type being carried up by suitable mechanism, so as to ink itself prior to making the impression, and simultaneously cause the cylinder to turn sufficiently to space the letters uniformly, according to their respective widths, by an ingenious contrivance hereinafter described.

My invention consists, first, in the construction and method of operating the type-rods; secondly, in the mechanism for operating the cylinder, causing it to space all letters uniformly; thirdly, in the arrangement of the inking-rollers, so as to present a fresh surface for every type; fourthly, in having an adjustable revolving griper for holding the paper to the cylinder; fifthly, in having the cylinder set flush with the top of the key-board, so as to occupy as little space as possible; and, sixthly, in the method of keeping the type clean by a revolving sweep.

Figure 1 represents a plan of my invention. Fig. 2 is a sectional plan, showing the method for keeping the type clean. Fig. 3 is a sectional side elevation. Fig. 4 is an enlarged detail side view of the inking device, showing its position with the central guide for the type-arms.

Similar letters of reference indicate corresponding parts.

In the case here presented the type-rods A are made thin and flat, with a broad face at their upper ends, and gradually taper down to a round rod, which is bent in the form shown, so as to cause such type, letter, or symbol which may be placed therein or engraved thereon to strike squarely on the paper when making an impression. The tapering form of hole *e* serves to guide each type in true position upon the cylinder by bringing them all to a common center. The said type-rods swing on bearings B attached to segments C, supported by the uprights D, and are operated by depressing the button on top of such rod E as may be desired. The said rods have their lower ends slotted, so as to straddle the flat portion of the type-arms, and are pivoted thereto in a line off the center, so as to cause the said type-arms to be raised with ease and fall by their own gravity.

In order to provide for the uniform spacing of letters of irregular width, I provide each type-arm with a pin, lug, or projection, F, at such distance from its end as to regulate the lift of the arm G by coming in contact with the rim of the eye on its extremity. The said arm G is pivoted at H to the hanger I, and bears in the yoke *f* when at rest. J is a pawl, pivoted to the arm G about one-third its length from the fulcrum, more or less. The said pawl is held bearing constantly against the ratchet K by means of a balance-weight, L. It will thus be seen that each time a key is depressed it raises a type-arm, and the spacing is regulated by the distance the pawl is made to act on the ratchet K. The said ratchet-wheel is set loose on the square rod M, on whose extremity there is a pinion, N, which meshes in the gear O on one or both ends of the cylinder P.

The inking device consists of two rollers, Q and R, which are of different diameters and pivoted in a swinging frame, S, from the hanger T. It will here be observed that the said rollers are connected by gear-wheels U U′ on their ends, so as to cause the type-inking roller to travel over the face of the fountain-roller each time the type-arm strikes it in its passage to the paper on the cylinder; and the spring V, serving to hold the fountain-roller from slipping, necessarily causes the inking-roller to revolve in falling back to position, and thus present a fresh surface for each type to strike.

W represents an adjustable revolving griper, pivoted to an arm or arms extending from and turning freely upon the central shaft of the cylinder P, and the opposite end of the said revolving griper is pivoted or turns in a bearing on a loose band, X, which allows the said revolving griper to be shifted on the cylinder,

so as to accommodate any size or thickness of paper. If found more desirable in practice, I propose to connect the said revolving griper by a pinion meshing directly in the gear-wheel O, on one or both ends of the cylinder P, in lieu of the loose band X.

In order to have the above device as compact and occupy as little space as possible, I have the cylinder countersunk flush with the key-board, as shown in Fig. 3. This also enables all the keys, as well as the lateral movement of the cylinder, to be reached and manipulated with the greatest ease and facility.

The type-arms, when at rest, hang perpendicularly. Consequently all their type ends point inward in a true circle; and for the purpose of wiping and cleaning them I have provided a brush or roller, Y, composed of any suitable elastic absorbent material, which is situated on an arm, Z, which is attached to a gear-wheel, *a*, actuated by the pinion *b* on shaft *c* by turning the crank *d*.

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

1. In combination with the type-rods A of a type-writing machine swinging from radial bearings B attached to segments C, the vertical rods E for operating and the pins or projections F for regulating the spacing, substantially as described.

2. In a type-writing machine, an automatic inking device consisting of a fountain-roller, Q, set between the hangers T, on whose axis a frame, S, with feed-roller R, swings, in combination with gearing U U′, of different diameters, for the purpose of producing a fresh surface on the feed-roller for each type to strike, substantially as described.

3. In a type-writing machine, an adjustable revolving griper, W, constructed of rubber or other elastic substance, in combination with the cylinder P, for the use and purpose specified.

4. In a type-writing machine, the combination of the brush or elastic spool Y, the radial arm Z, central gear-wheel *a*, pinion *b*, and shaft *c*, substantially as herein set forth, shown, and described.

CALEB T. WARD.

Witnesses:
CHARLES H. NASH,
A. BELL MALCOMSON, Jr.