2 Sheets—Sheet 1.

G. W. N. YOST.

TYPE WRITING MACHINE.

No. 343,655. Patented June 15, 1886.

Fig. 1.

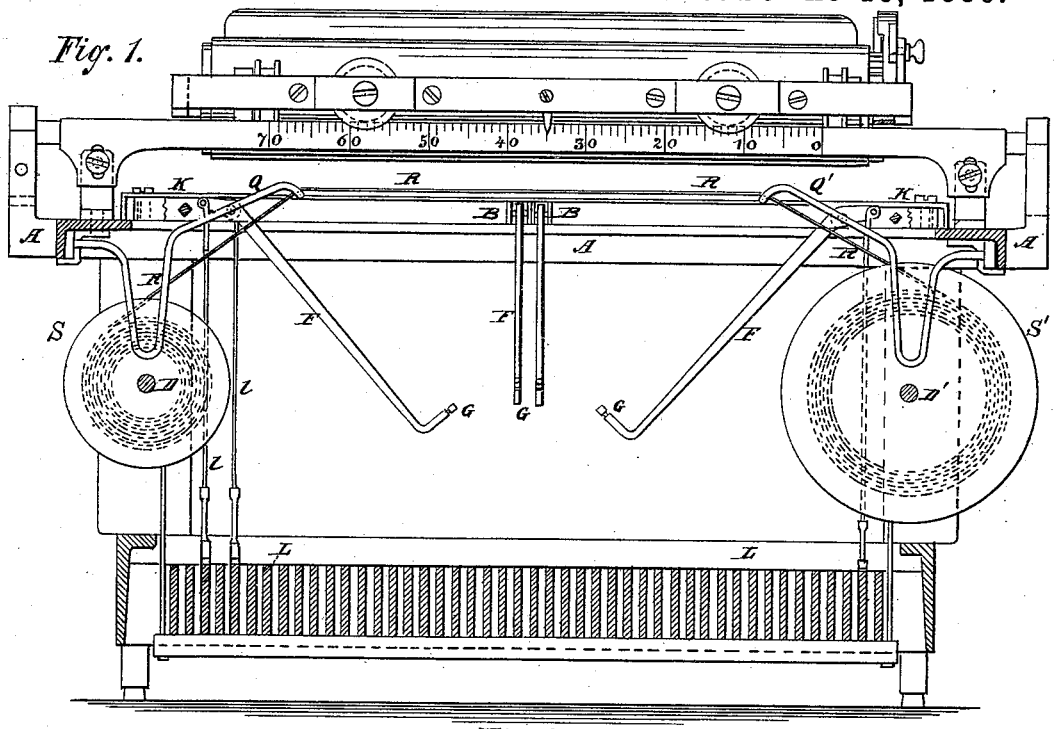
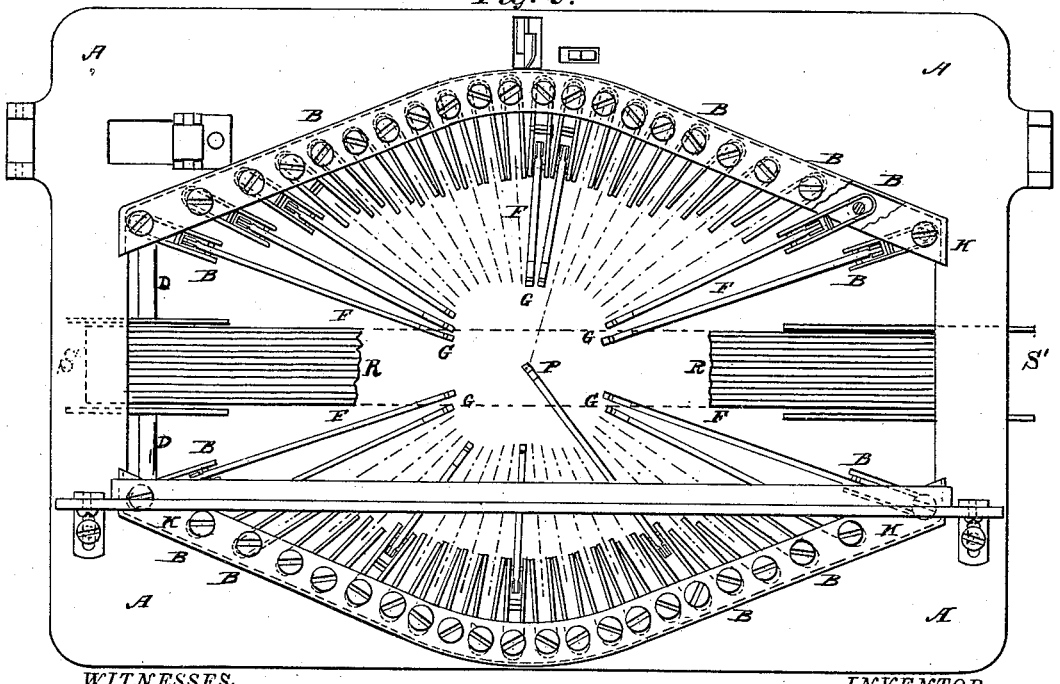


Fig. 2.



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2 Sheets—Sheet 2.

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TYPE WRITING MACHINE.

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Fig. 3

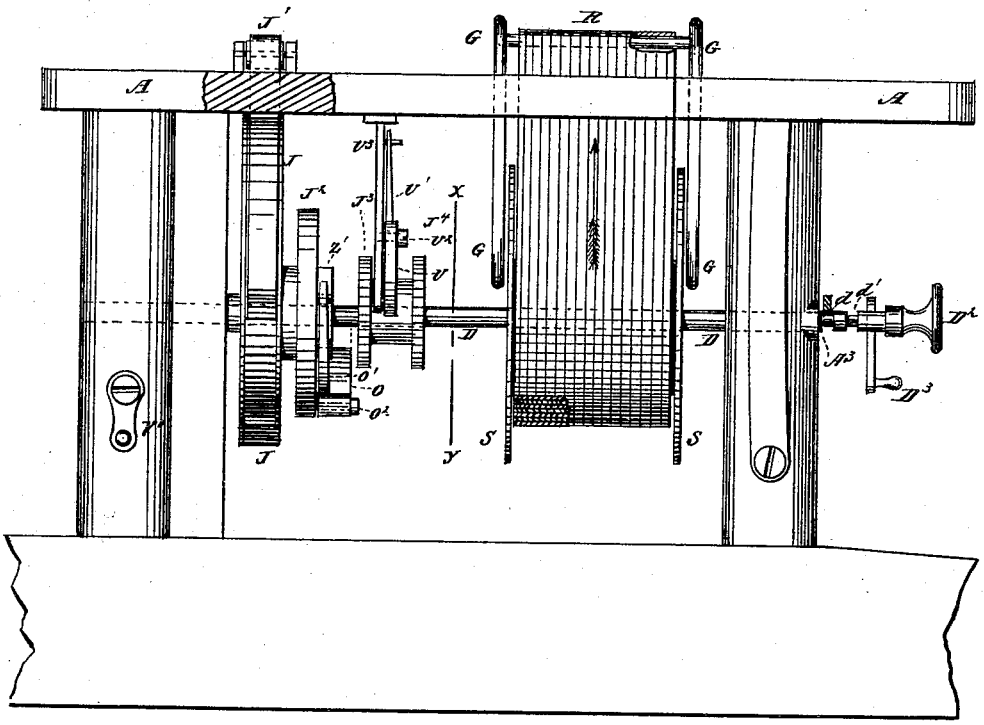


Fig. 4

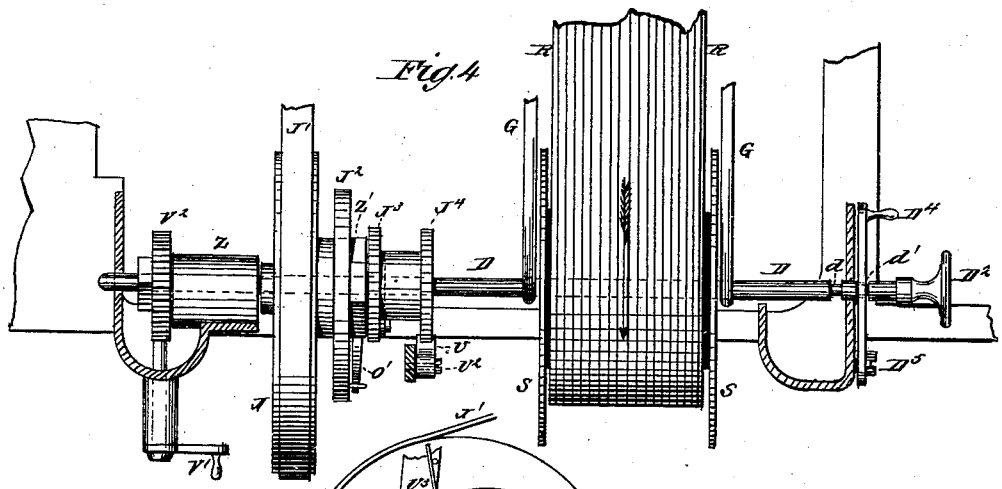
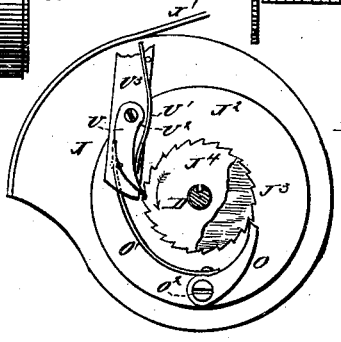


Fig. 5



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UNITED STATES PATENT OFFICE.

GEORGE W. N. YOST, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE AMERICAN WRITING MACHINE COMPANY, OF NEW YORK, N. Y.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 343,655, dated June 15, 1886.

Application filed August 12, 1879.

To all whom it may concern:

Be it known that I, GEORGE W. N. YOST, of the city, county, and State of New York, have invented a new and useful Improvement in Type-Writing Machines, of which the following is a specification.

The invention relates to that class of type-writing machines in which the successive depression and release of a series of keys one after another vibrate and throw a series of types against an inking substance and the substance to be written on, and after each depression and release of any key, and while the type and key are going back to place move the latter substance a type-space distance, and thus make impressions or write one letter or character at a time, and in which there is a platen for holding the paper to be printed on attached to a paper carriage, said platen and carriage moving horizontally over the types.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a front sectional elevation of a type-writing machine, showing a section of the key-levers, elevations of several connecting-rods and type-bars, the paper-carriage platen, &c. Fig. 2 is a horizontal plan of the top-plate with the rear guide-rail, paper-carriage, and all its appurtenances removed, showing an arrangement of type bars and hangers in two rows concave to one another. Fig. 3 is a partial end view of the machine, showing an elevation of the cam-spring wheel, and mechanism imparting motion to the inking-ribbon spool. Fig. 4 is a plan of the cam-spring wheel which moves the paper-carriage and mechanism for imparting motion to the inking-ribbon spool. Fig. 5 is a front view of the cam-spring wheel and the pawls and ratchet-wheels on the inking-ribbon-spool axle.

This invention consists, first, in a novel arrangement of adjustable type-bar hangers in two curved rows, in combination with type-bars which vibrate upon or about axles in said hangers and strike at a common impressing-point. This arrangement is shown in the drawings at Fig. 2, in which A represents the top plate of a type-writing machine; B, a series of adjustable type-bar hangers held upon the top plate, A, by screws and continuous washers K K; F, a series of type-bars, each having a type in its end G, which type-bars vibrate on pivoted journals in bearings in the hangers B, the longer arms of which are of varied lengths, so that each may impress its respective type at the common impressing-point P. Between the two rows of hangers, but in nearly the same plane with them, is an inking-ribbon, R, and the ribbon-guides Q Q′. In Fig. 1 the same parts are shown in elevation, together with the key-levers L and connecting-rods *l*. In the progress of the writing, the ribbon is unwound from the delivering-spool S′ on shaft D′, and passing over the guides Q′ Q is wound upon the winding-spool S on the shaft D by mechanism, to be hereinafter described.

I am aware that type-bar hangers have been heretofore arranged in a circle and in an oval or ellipse, in which case the ribbon-guides Q Q′ have to be outside of the circular or elliptical row, and consequently quite far apart. The ribbon also rests on and rubs over several of the hangers, coating the hangers and journals with ink, in which the dust sticks, so as to ultimately impede the free movement of several type bars. The present arrangement prevents any contact of the ribbon with the hangers or their journals, and allows the ribbon-guides Q Q′ to be brought near together and well in to the center of the machine.

In the drawings, R is the inking-ribbon, wound on the delivering-spool S′, from whence it passes over the guides Q′ Q to the winding-spool S. The spools are attached to shafts D D′ by keys, which allow them to slip longitudinally on the shafts for a short distance, so that the whole surface of the ribbon may be used. The shaft D′ is supported in bearings in the frame of the machine, and terminates at its front end in a crank and handle D^3. The other shaft, D, is supported at its front end in a bearing in the pillar, and at its back end in a bearing running longitudinally in the stud Z, upon which the spring cam-wheel J is mounted.

J′ is the carriage-strap connecting the cam-wheel and paper-carriage.

V′ is a crank attached to a worm-gear which meshes into the pinion V^2, by which the ten-

sion of the spring inside the cam-wheel is regulated.

J^2 is an enlargement on the hub of the cam-wheel J, to which is fastened the pawl O by the screw O^2.

J^3 and J^4 are two ratchet-wheels moving together, and fastened rigidly to the shaft D by a set-screw in the hub between them. By the spring O′ the pawl O is kept engaged with the teeth of the ratchet-wheel J^3.

Upon a hanger, U^3, attached to the top plate of the machine, turns the pawl U about the screw U^2, and it is held in contact with the teeth of the ratchet-wheel J^4 by the spring U′.

Near the front end of the shaft D are two grooves or shoulders, *d d′*, turned into the body of the shaft, into which fits a latch, D^4, hinged to the frame by the screw D^5. When the latch is out of the grooves *d d′*, the shaft D may be moved endwise. When the latch is in the groove *d′*, as is shown in Fig. 4, the ratchet-wheels J^3 J^4 are in contact with the pawls O and U, and the shaft D and spool S can only be turned in the same direction as the cam-wheel, as indicated by the arrow, Fig. 5. When the latch is in the groove *d*, as is shown in Fig. 3, the pawls O and U are not engaged with the ratchet-wheels J^3 and J^4, and the shaft D and spool S may be turned in either direction.

The operation of this mechanism is as follows: Starting with the greater part of the ribbon upon the delivering-spool S′, the latch D^4 being in the groove *d′*, so that the pawls O and U are acting upon the ratchet-wheels J^3 and J^4, let a succession of keys be struck. After each blow the carriage will be released and drawn a letter-space by the spring-cam J. The cam will turn in the direction of the arrow, Fig. 5, and carry with it the pawl O, whereby the ratchet-wheels J^3 and J^4, the shaft D and winding-spool S, will be turned and a portion of the ribbon R wound upon the spool S and unwound from S′. The pawl U during this movement slips over the teeth of the ratchet-wheel J^4. When a line has been printed, or when, for any other reason, the paper-carriage is moved back and the motion of the cam-wheel J is reversed, the pawl O slips over the teeth of the ratchet-wheel J^3, and the pawl U, acting upon the ratchet-wheel J^4, holds the ribbon-spool S stationary. This movement is continued until nearly all the ribbon has been wound upon the spool S. The operator then raises the latch D^4, draws the shaft D forward by the knob D^2, and lets the latch fall into the groove *d*. He then turns the shaft D′ by means of the crank D^3, and rewinds the ribbon upon the spool S′. The shaft D being put into gear with the pawls, the machine is again ready for work. The delivering-spool S′ is of larger diameter than the winding-spool S.

This combination of devices avoids the use of bevel-gears, and secures a direct connection between the cam-wheel and the ribbon-spool, thereby reducing to a minimum the duty imposed upon the cam-spring. The inconvenience of reversing the ribbon by hand is more than counterbalanced by the ease of movement of the whole mechanism due to the absence of gears.

What I claim is—

1. In a type-writing machine, adjustable type-bar hangers arranged in two curved rows, as shown and described, in combination with type-bars of unequal length pivoted and set so as to vibrate and strike at a common impression-point.

2. In a type writing machine, the combination of the type-bar hangers and type-bars arranged in two rows curved only in the middle of their length, as shown and described, with an inking-ribbon situated between said rows.

3. In a type-writing machine, the combination of ribbon-spools, of which one is a winding-spool located upon and rotating with the shaft of the main spring-wheel which moves the paper-carriage, and the other a delivering-spool freely rotating upon its shaft or axle, substantially as and for the purpose described.

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