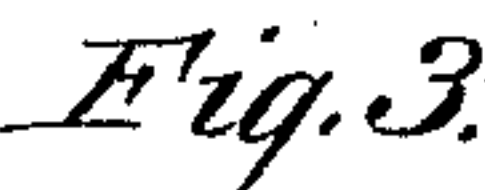
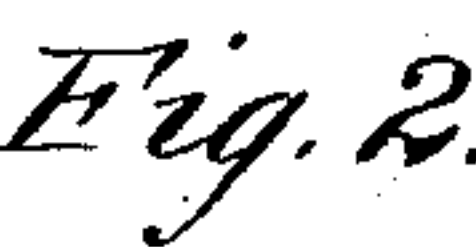


D. W. DODSON.
TYPE WRITING MACHINE.

Patented June 3, 1884.



Donn Twitcheell.
L. Sedgwick



D. W. Dodson
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ATTORNEYS.

UNITED STATES PATENT OFFICE.

DARIEN W. DODSON, OF TOWN LINE, PENNSYLVANIA.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 299,754, dated June 3, 1884.

Application filed May 4, 1883. (No model.)

To all whom it may concern:

Be it known that I, DARIEN W. DODSON, of Town Line, in the county of Luzerne and State of Pennsylvania, have invented a new and Improved Type-Writer, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved type-writing machine, which is very compact, can write very rapidly, and in which the keys must be depressed but slightly, and which exhibits the whole sheet as fast as written.

The invention consists in a type-writer constructed with one or more wheels provided with teeth carrying types at the outer ends, which wheels are journaled between two revolving disks surrounded by a casing provided on its inner surface with an inking cushion or pad, with which the teeth of the type wheel or wheels can come in contact, whereby the said type wheel or wheels will be rotated more or less, so that when it arrives at a slot in the inking cushion or pad a certain letter will appear at the slot and pass through the same and make an impression. The said revolving disks are combined with a series of key-levers, which, if depressed at the outer ends, are raised at the inner ends and turn the type wheel or wheels in such a manner that the ends of the teeth of the same will come in contact with the inking-pad, whereby the said type-wheel will be rotated. The type-wheel is not provided with teeth around its entire periphery, but it has a blank space, so that when the blank space appears at the slot in the inking-pad no impression will be made.

The invention also consists in the peculiar construction and arrangement of the several parts, all as hereinafter fully described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is plan view of my improved type-writing machine, parts being broken out. Fig. 2 is a longitudinal sectional elevation of the same. Fig. 3 is a perspective view of the inner end of one of the key-levers. Fig. 4 is an inverted plan view of one of the printing-wheels. Fig. 5 is a sectional plan view of

part of the machine, showing the device for moving the paper. Fig. 6 is a cross-sectional elevation of the same.

A vertical shaft, A, passes through the top plate, A', of a table, and is provided at its lower end with a beveled cog-wheel, A², which engages with a beveled cog-wheel mounted on a suitable shaft, which can be operated by means of a treadle, or by any other suitable motor. On the upper end of the shaft A two disks, B, are rigidly mounted, so as to revolve with the said shaft. A cylindrical casing, C, surrounds the revolving disks B B, and is provided in its front with a slot, C', through which the key-levers D pass, which are all pivoted on a transverse rod, C². The key-levers have their outer ends bent and arranged, as shown in Fig. 1, so that the keys *d* on the outer ends of the said levers will form a very small circle, the keys being very small, as they are not to be operated by the fingers, but by means of a stylus. The keys are all provided with letters, marks, figures, &c., in the usual manner, and one lever, D', is provided with a key, *d'*, which is outside of the circle of keys, but may be within the circle. The object of this key will be described hereinafter.

Between the disks B B a series of horizontal wheels, E, are journaled, which project beyond the edges of the disks. The said wheels E are provided on their peripheries with a series of teeth, E', carrying the letters, as many teeth E' being provided as there are key-levers D. Each wheel E is provided with a blank space, E², equal to about one-fifth of the circumference, the edge of the said blank space E² being within the circle formed by the outer ends of the teeth E'. Each wheel E is provided with an aperture, *s*, adapted to receive a pin, F, held loosely in the top disk B in such a manner that it can pass freely through the said disk, which pin F is held on the outer free end of a spring, F', secured to the top of the upper disk. The free ends F² of the several springs F' are bent rectangularly, and are arranged on a circular line near the center of the upper surface of the upper disk B, so that they can pass upon a semicircular cam-track, G, held on the under surface of the cover of the casing C. Each wheel E is provided on its under surface with a stud, H,

which is just in the middle of the recessed part E^2 . On the under side each wheel is also provided with a beveled stud, I, at the beginning of the row of teeth E' , and on its upper surface each wheel is provided with a triangular or beveled tooth, J, which is adapted to engage with a series of triangular teeth, K' , of a segmental rack, K, secured to the inner surface of the cylindrical casing C. The cylindrical casing C is provided on its inner surface with an inking pad or cushion, L, of leather, rubber, or analogous material, which is such a distance from the centers of the wheels E that when the teeth of the wheels are presented to the said surface they will catch on the same and will revolve the wheels; but if the recessed or blank parts E^2 are presented to the surface they will not catch on the same, and the wheels will not be revolved. The said cushion or pad L is gradually narrowed down toward a vertical slot, L' , in the same, opposite which slot a vertical bar or rod, N, is held, and between the edge of which bar N and the outer surface of the cushion or pad L, which at that point forms a very thin and elastic diaphragm, L^2 , the sheet of paper O to be written on is held by means of suitable devices. Any one of the teeth E' carrying the letters or type can pass through the slot L' , and can make an impression on the paper O. Every time an impression or an imprint has been made the paper must be moved the distance of one letter. The paper is held in a paper-carrier, P, which stands vertically and is at an angle of about forty-five degrees to the longitudinal axis of the key-levers, so that a person sitting or standing in front of the circle of keys d can see the sheet of paper held in the paper-holder. The said paper-holder is adapted to move from right to left. In order to move the paper-holder a suitable distance after each letter has been printed, a vertical spring, Q, is held in a recess, Q' , in the cylindrical casing C in such a manner that the upper end of the said spring can be pressed outward. The upper end of the said spring is provided with a head, Q^2 , of rubber, leather, or analogous material, which head is so located that it can be acted upon by the teeth of the wheels E and can be pressed outward. The spring Q is provided at about its middle with an outwardly-projecting tooth, m , which is so located that it can act on the beveled teeth n of a rack, N' , of the paper-carrier P in a manner that will be described hereinafter.

The cushion L is provided with ink, and forms a pad for inking the type. The key-levers D are provided at their inner ends with upwardly-projecting arms M, which are each provided at the upper end with a laterally-projecting arm, M' , terminating in a triangular or beveled tooth, M^2 .

One wheel E only may be pivoted between the disks B, or a number of wheels E, as shown, may be pivoted between the same. If more than one wheel E is provided, the machine will operate much more rapidly than if one wheel E only is provided. The disks B

on the shaft A must make one revolution for every letter printed; but if more wheels E are provided more imprints than one can be made for each revolution of the disks B. The paper-carrier P is provided with pulley-wheels P' , and with suitable devices for adjusting the sheet of paper higher or lower by hand, as may be desired.

The operation is as follows: I will now describe the operation of one wheel E, all the wheels E operating in the same manner. If the pin F is in the aperture or recess s of the wheel E, the wheel E will be locked in such a position that its recessed part E^2 will face the surface of the inking-pad L. As the disks B rotate in the direction of the arrow a' , the end F^2 of the spring F' passes upon the cam-track G, and thereby raises the outer end of the spring F' and draws the pin F upward, thereby releasing the wheel E, which is now free to turn. If the wheel E is not set in motion or partly turned by means of a key-lever, it remains in the position it had when released, and if the end F^2 of the spring F' has passed over the cam-track G the spring snaps down and presses the pin F into the aperture of the wheel E again, thus holding the said wheel locked in position during the rest of the revolution. The wheel is thus locked during half of the revolution and unlocked during the other half. If, as soon the wheel is released, it is partly rotated by means of some suitable devices, the types on the ends of the teeth E' will be brought in contact with the surface of the pad L, and the friction will revolve the wheel E more or less, and accordingly as the said wheel E is revolved a greater or less distance one or the other tooth will pass into the slot L' of the diaphragm L^2 when the wheel E arrives at the said slot. For instance, if the wheel is revolved a great distance, the tooth carrying the letter E would be in position to pass through the slot L' when the wheel E arrives at the said slot; or, if the wheel is revolved but a short distance, the letter M might be in such a position as to pass through the slot L' when the wheel E arrives at the said slot, and so on. Thus it is evident that the different letters can be caused to project through the slot L' according to the time at which the wheel E is caused to rotate—that is, according to the time at which the wheel E is moved—so that its teeth will engage with the surface of the pad. So that the writing shall not be blurred, and the edges of the slot L' shall not be injured, it is absolutely necessary that the wheels shall rotate a precise and certain distance. In order to accomplish this, I have provided the rack K on the inside of the casing C, and the triangular teeth J on the wheels E. If a wheel begins to rotate, its triangular tooth J must first pass between two triangular teeth, K' , of the rack K, and the position of the wheel is thus fixed. The wheel E then revolves the distance of a certain number of teeth, and the distance it revolves will always be equal to the length of

one or more teeth—that is, the wheel E can never revolve the distance of a number of teeth and a fraction of a tooth. The teeth K' are so spaced and arranged in relation to the slot L' that, whether the wheel E revolves the distance of one, two, five, fifteen, or any number of teeth K', the tooth E' which is at the slot L' will always pass equally through the slot, and will not strike against the edges of the same. It next remains to start the wheels E in such a manner that they will revolve the required distance to bring the desired letter to the slot L' at the desired time. For this purpose the key-levers D are so arranged that they will start the wheels E at different times. For instance, if a letter is to be printed which is so located on the wheel E that the wheel E must make almost an entire revolution in order to bring that letter to the slot L' at the proper time, the key-lever must be so arranged that the wheel E will be started a considerable time before the said wheel arrives at the slot L'. The other key-levers must be arranged in a corresponding manner, so that the wheel E will be started sooner or later, as may be required, according to the position of the tooth of the desired letter on the rim of the wheel. If the outer end of a key-lever D is depressed, its inner end will be raised, and the stud H on the under side of the wheel E will strike against the upper end of the arm M, whereby the wheel will be rotated in the direction of the arrow b' sufficiently to cause the first tooth E' to come in contact with the surface of the inking-pad L, whereby the said wheel will be rotated more or less, according as its tooth has been brought in contact with the pad L a greater or less distance from the slot L'. As the wheel passes over the arm M' at the upper end of the arm M, the tooth I on the bottom of the wheel strikes against the beveled tooth M² on the end of the lever D, and presses the same downward, so that it will be in position to be raised immediately in case the same letter is to be printed over again by means of another wheel. If desired, springs may be provided for pressing the inner ends of the levers D downward. It would not seem necessary that the wheel E should rotate after the impression has been made; but the diaphragm L², which is a continuation of the pad or cushion L, is carried beyond the slot L', so that the wheel E will be rotated after it has passed the slot L', so that the pin F can snap into the aperture s, for the purpose of locking the wheel E in place. Just after passing the slot L', the wheel E encounters the head Q² of the spring Q, and presses the upper end of the said spring Q outward, thereby pressing its tooth m outward and against one of the beveled teeth n of the rack N', and thereby moving the rack in the direction of the arrow c' the distance of one tooth n. As soon as the wheel has passed, the spring Q is thrown back by its own tension. If a blank is to occur in the line of writing, it is necessary that the paper shall be moved the distance of

a letter, but yet no impression be made. For that reason one of the key-levers, which in this case is D', is so arranged that when it is depressed it revolves the type-wheel to such an extent that the blank or recessed part E² will be at the slot L', and thus no impression will be made, but at the same time the teeth E will press the diaphragm L² outward after passing the slot L', and the upper end of the spring Q will be pressed outward to cause the paper-carrier to move the paper a short distance in the direction of the arrow c'.

As stated above, I do not propose to use the ordinary finger-keys—such as are used in type-writers—but to use very small keys, which are to be operated by means of a stylus, thus permitting a person to operate very rapidly. For this reason it is necessary that the levers D shall be raised but a very short distance, and this can be accomplished by means of my improved machine, as the levers do not make the impression, but start a wheel in such a manner that it will make the impression. The throw of the levers is very slight, and by suitably pivoting the levers D they can be arranged so that the least depression at the key end will be sufficient to operate the machine. As stated above, the shaft a can be revolved by means of foot-power or by means of a suitable motor, as may be desired.

The machine can be provided with a lever for each letter, or any number of additional letters, numbers, signs, &c., can also be provided, as may be desired. The wheels E must be absolutely alike.

The disks B are to be revolved continually, and may be in the form of a wheel with spokes, in which case the type-teeth will be outside of the tire. The disks B may be arranged to revolve in the vertical plane, if desired, by simply changing such parts as may be necessary to adapt the type-wheels to the motor, the keys, and the paper-carrying device.

Instead of providing each type-wheel with a single cog, it may be provided with a sufficient number to engage with the rack during the entire revolution; or the rack and cogs can be dispensed with entirely.

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

1. In a type-writer, the combination, with a revolving disk, of a type-wheel journaled on the outer rim of said disk, and having at the same time two independent horizontal motions—one on its own axis, and the other on the axis of the disk on which it is journaled—substantially as herein shown and described.

2. In a type-writer, the combination, with a casing, a revolving disk, and a type-wheel journaled on said disk, of a pad or cushion on the inner surface of the casing, substantially as herein shown and described, whereby the said pad or cushion is made to serve the double purpose of an inking-pad and also a means for revolving the type-wheel by frictional contact, as set forth.

3. In a type-writer, the combination, with the revolving disks, of one or more type-wheels journaled in the same, a pad or cushion partly surrounding the said disks, and of key-levers adapted to act on the said type-wheels, substantially as herein shown and described, and for the purpose set forth.

4. In a type-writer, the combination, with revolving disks, of one or more type-wheels journaled in the same, a circular inking pad or cushion partly surrounding the disks, a series of levers adapted to act on type-wheels, and of a spring adapted to be acted upon by the type-wheels, and provided with a tooth for acting on the teeth of the rack in the paper-holder, substantially as herein shown and described, and for the purpose set forth.

5. In a type-writer, the combination, with revolving disks, of one or more type-wheels journaled in the same, pins attached to springs for the purpose of locking the type-wheels in position in the disks, devices, substantially as described, for raising the said springs to release the type-wheels, an inking pad or cushion partly surrounding the disks, and levers for acting on the type-wheels, substantially as herein shown and described, and for the purpose set forth.

6. In a type-writer, the combination, with the revolving disks, of type-wheels journaled in the same, a segmental rack surrounding the disks, and a tooth on each type-wheel, which tooth is adapted to pass in between the teeth of the rack, substantially as herein shown and described, and for the purpose set forth.

7. In a type-writer, the combination, with the revolving disks, of type-wheels journaled in the same, an inking pad or cushion partly surrounding the disks, which cushion is provided with a vertical slot through which the teeth carrying the type can pass, and of a bar held outside of the said slot, substantially as herein shown and described, and for the purpose set forth.

8. In a type-writer, the combination, with

the revolving disks B B, of one or more type-wheels, E, journaled in the same, which type-wheels are provided with apertures s, with pins F, and with springs F', having bent ends F², and the semicircular cam-track G, substantially as herein shown and described, and for the purpose set forth.

9. In a type-writer, the combination, with the disks B, of one or more type-wheels, E, journaled in the same and provided with a downwardly-projecting stud, H, on the under surface, the inking cushion or pad L, partly surrounding the disks B, and the levers D, pivoted in such a manner as to adapt their upper ends to be raised to such an extent that the studs H will strike against the same, substantially as herein shown and described, and for the purpose set forth.

10. In a type-writer, the combination, with the revolving disks B, of a pad or cushion, L, partly surrounding the same, one or more type-wheels, E, journaled in the disks B, which type-wheels are each provided on the under side with a stud, H, and a beveled stud, I, and the key-levers D, provided at the inner ends with arms M, having arms M', provided at the outer ends with beveled teeth M², substantially as herein shown and described, and for the purpose set forth.

11. In a type-writer, the combination, with the disks B, of the inking pad or cushion L, partly surrounding the same, one or more type-wheels, E, journaled in the said disks, and the spring Q, provided with the head Q², and with the tooth m, substantially as herein shown and described, and for the purpose set forth.

12. In a type-writer, the type-wheel E, constructed, as herein shown and described, with a series of teeth, E', at the outer ends of which the types are fastened, and with a recess or blank space, E², substantially as set forth.

DARIEN W. DODSON.

Witnesses:

D. L. RHONE,
CHARLES ERATH.