No. 655,249. Patented Aug. 7, 1900.

R. KÜBLER.

TELEGRAPHIC TYPE WRITER.

(Application filed Aug. 29, 1898.)

(No Model.) 2 Sheets—Sheet 1.

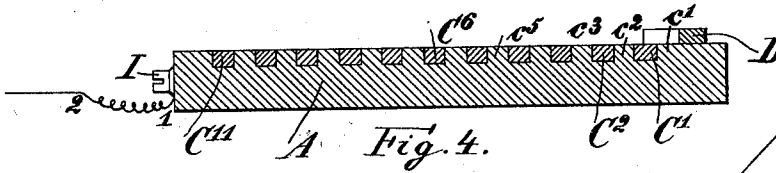
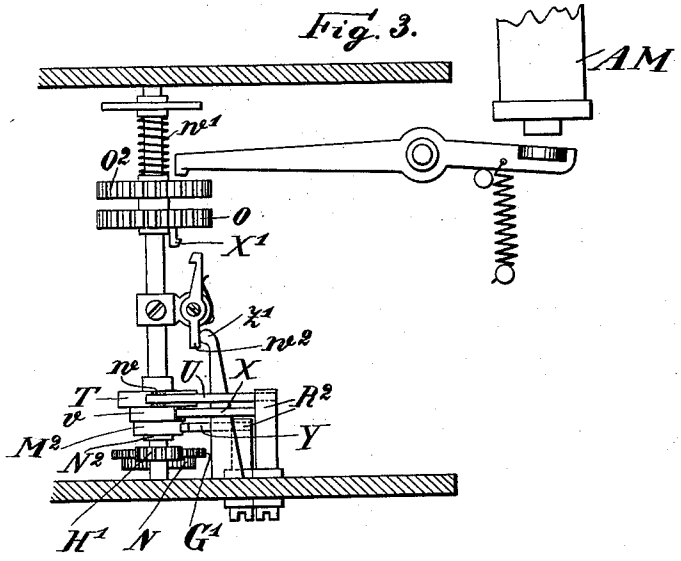


Fig. 4.

Fig. 1.

Fig. 3.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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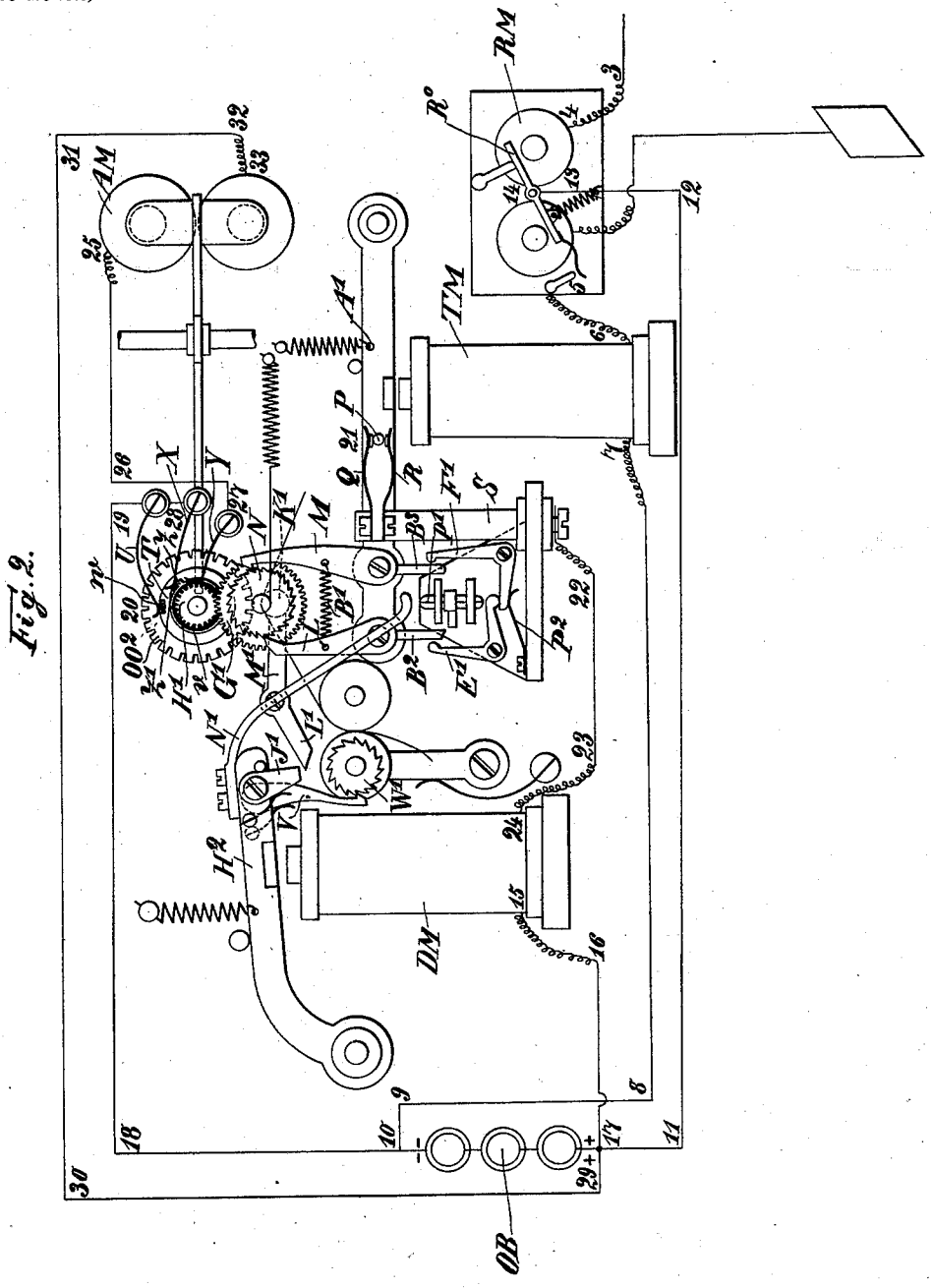


Fig. 2.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

REINHOLD KÜBLER, OF BERLIN, GERMANY.

TELEGRAPHIC TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 655,249, dated August 7, 1900.

Application filed August 29, 1898. Serial No. 689,783. (No model.)

To all whom it may concern:

Be it known that I, REINHOLD KÜBLER, a subject of the King of Prussia, German Emperor, residing at Berlin, Germany, have invented a certain new and useful Improved Telegraphic Type-Writer, of which the following is a full, clear, and exact description.

The present invention relates to a telegraphic type-writer the effect of which is the same as the ordinary type-wheel type-writer.

The invention involves mainly the following principle: Electric impulses produced by means of a contact-bar and metallic pointer forming the sender are transmitted to the receiving apparatus and produce the rotation of a type-wheel, the type of which after being adjusted to the operative or printing position is caused to effect the impression at the moment a somewhat-longer electric impulse or a longer interruption of the electric current is effected at the sender end. As soon as the sign has been printed the type-wheel is returned to its initial position.

In order to render the present specification more easily intelligible, reference is had to the accompanying drawings, in which similar characters of reference denote similar parts throughout the several views.

Figure 1 is a representation in plan view of the sender device; Fig. 2, a diagrammatical representation of the receiver apparatus; Fig. 3, a plan view of a part of the latter apparatus, showing the type-wheel shaft and some parts in connection therewith; and Fig. 4, a longitudinal vertical section through the device shown at Fig. 1.

The sender device, Fig. 1, consists of a metal bar B, mounted in a guide-board of ebony A and provided with eleven pieces of ebony C' C^2 C^3, let into the same at equal distances apart and being flush with the remaining metallic surfaces c' c^2 c^3, a stop D being provided at one end next to the strip C'. The signs to be transmitted are arranged after the manner of a type-writer along both edges of the ebony base-plate A. One wire of the line-battery LB is secured, by means of a screw F, to the pointer or writing utensil E by means of the metal sleeve G, the said pointer being provided with a handle or holder H after the manner of a pen or pencil. The line-wire 1 2 3 4 is attached at one end to the sender apparatus by a clamping-screw I and at the other end to the receiver at 4 to one end of the coil of a relay-magnet RM, Fig. 2, the other end of which is connected with the earth.

From the construction of the keyboard of the sender apparatus it will be evident that if the pointer is placed on the strip of metal c^5, representing the letters "g" at one side and "b" at the other, and passed along the edge of the base-plate A to C' until it strikes D four impulses will be produced; but if, on the other hand, it is passed along the lower edge of A to c' five impulses will result. In the first case the contact of the pointer E with the strip C' will produce a somewhat-longer breakage of the circuit, C' being non-conducting, and in the latter at c' a somewhat-longer closure of the circuit will result. This is due to the fact that when the pointer is moved somewhat quickly from C^5 to C' or c' it will be arrested suddenly by the stop D and will necessarily remain a moment longer on the end strip, since the sudden arrest will cause a slight delay in removing it. Accordingly in the first case the armature R^0 of relay RM will be released for a longer period, and in the second case it will be attracted for a correspondingly-longer period. Thus it will be clear that if the pointer is placed on one or the other strip of ebony or metal and passed along over the others to the stop D the final result after a certain number of impulses will vary according to whether the pointer finally reaches a conducting or non-conducting strip—*i. e.*, according to whether the pointer is passed along the upper or lower edge of the base-plate A. Thus each of the strips C' or c' will be capable of transmitting two different signs. The magnet TM of the type-wheel is arranged in the circuit 5 6 7 to 14 of a local battery, which circuit is closed or otherwise according to the operation of the line-wires.

A' is the spring-retracted pivotally-mounted armature of the magnet TM, and mounted at its forward end are two pawls L and M, adapted to engage at diametrically-opposite points the teeth of a ratchet-wheel N, revolubly mounted in proximity to a shaft close to the type-wheel shaft. These pawls are so arranged that when the armature A' is attracted

the pawl M will turn the wheel N half a tooth, the pawl L sliding over the last half of its tooth into engagement with the next tooth, so that on the armature being released the pawl L will operate to turn the ratchet-wheel N in the same direction half a tooth further, the pawl M this time sliding over the last half of its tooth into engagement with the next. The ratchet-wheel shaft carries a gear G′, adapted to engage a pinion H′ of the type-wheel shaft, and the two pawls L and M are connected by a spring B′.

From the above it will be clear that each impulse which is conveyed to the magnet TM will cause the type-wheel to be rotated a distance corresponding to one tooth of the ratchet-wheel, but two types of the type-wheel.

The telegraphic signs are arranged on two type-wheels O and O^2, those signs on O corresponding to the sign on the sender-board, Fig. 1, at either end of the interrupting-strips thereof, while those on O^2 correspond to the signs on the sender-board which are placed against the contact-making strips c' c^2, &c. Thus the type-wheel O would have "e" as the second type to the right of the printing-roll, one type being right in front of said roll, then "n" as the third, "a" as the fourth, "r" as the fifth, and so on, while the wheel O^2 would commence with the space marked by an open space in Fig. 1, this being the spacing-type and second to the right of the printing-roll, "i" the third, "t" the fourth, "s" the fifth, and so on, to correspond with the signs as indicated on the sender-board, so that the wheel O will always be operated if the pointer commences on an insulating-strip, while O^2 will be turned a corresponding distance if the pointer commences on a conducting-strip, as will be hereinafter more particularly set forth. At each impulse and at each interruption of the current, as mentioned previously, the type-wheel will be rotated to the extent of one type. Thus if the pointer E is placed on the insulating-strip at the top of the board indicating "a" and moved along to the upper edge of the stop D the type-wheel O will be rotated to the extent of four types, and since, as previously set forth, "a" is the fourth type this one will be brought in position to print. The wheel O^2 is operated in exactly the same manner as regards the conducting-strips, only that, as hereinafter more particularly set forth, the somewhat-longer first impulse, caused when the pointer commences with a conducting-strip, has the effect of causing the necessary axial movement of the type-wheel to bring the second wheel O^2 into alinement with what has already been printed by the wheel O.

A pin P is mounted on the armature A′, which on the movement of the armature makes contact alternately with one or other of the contact-springs Q or R. These springs are mounted on a metal post S, which is connected with one end of the coil of the printing-magnet DM, the other end of the said coil being connected to the positive pole of the local battery OB. The negative pole of this battery is connected to a flat spring U, resting on a small metallic disk T, fast on the type-wheel shaft. Thus a local circuit will exist from the battery OB, through the disk T and the body of the apparatus to the armature A′ and along the same to the contact-pin P, spring R or Q, post S, and back to the battery. A second disk V is mounted on the type-wheel shaft and provided with a contact-tooth Z, with which a flat spring X is in contact, the said spring, like U, being in connection with the negative pole of the local battery. A third spring *y*, which is in contact with the body of the apparatus through its contact with disk M^2, Fig. 3, of the type-shaft, is connected to one end of the coil of the magnet AM, the other end of which leads to the positive pole of the local battery OB. When the type-wheel shaft is in its initial position, the flat springs U and X rest on pieces of ebony let into the peripheries of the disks T and V and designated by W and Z′, respectively, and the circuit 15 to 22, which effects the printing, and the circuit 25 to 28, 19, 18, 17, 29, to 33 are thus broken, in spite of the fact that contact is formed at P and Q. As soon, however, as the electromagnet TM comes into operation the current will pass to AM from the first impulse; but it will not pass to DM until the second movement of the armature A′ in the opposite direction, owing to the fact that the width of the pieces of ebony Z′ and W on the disks V and T, on which the flat springs X and U rest, is in the first case less than the path of movement described by the respective disk on one movement of the armature, and in the second case greater than the first and less than the space described by the disk, owing to the second swing of the armature—*i. e.*, than the path described by the disks in two movements of the armature. The armatures of both magnets DM and AM are adjusted to turn somewhat slowly, so that they will not be attracted by the short local currents closed in the receiving apparatus by the movement of the pointer at the sender end. The printing-magnet will not attract its armature until the longer impulse is imparted, as explained—*i. e.*, after the type has been adjusted to impress the strip. When the printing-magnet has attracted its armature H^2, the arm J′ will depress the end L′ of the double-arm lever L′ M′, the latter arm of which carries the printing-roll K′, and will slide out of engagement with the same at the moment the roll K′ has raised the paper strip against the type, thus allowing the printing-roll to fall back to its initial position by gravity or by any suitable spring device. Immediately after this has taken place the downwardly-extending arm N′ engages the upper end of a vertically-guided bar P′, the lower end of which rests on the horizontal arms of two pivotally-mounted bell-crank levers F′

F′, having their upwardly-extending arms in engagement with downwardly-extending pins B^2 B^3, fast on the pawls L and M. This action of the bar P′ releases the ratchet-wheel N from the pawls and allows the same, and with it the type-wheel and shaft, to return to their initial position under the influence of a spring W′, Fig. 3. The return movement of the type-wheel shaft will interrupt the circuit of the local battery, so that the printing-magnet will release its armature H^2, which on rising will turn the ratchet-wheel W′ by means of the pawl V, the said ratchet-wheel being mounted on a spring-pressed pivotally-supported arm and adapted to carry the spring-pressed roll of the strip-transporting-roll pair. The electromagnet AM serves to adjust the type-wheel O O″ axially on its shaft in order to bring the second disk O″ of the same into operation when required.

Since, as already mentioned, the magnet AM is magnetized on the first movement (attraction) of the armature A′ of the magnet TM, but remains demagnetized during all the following vibrations of this magnet, owing to the fact that the flat spring X is out of contact with the contact-making tooth Z of the disk V, it will be evident that AM can only be operated by the first current impulse of the local circuit, and only then on the condition that this impulse, although short, is of a certain duration, the armature being adjusted to move somewhat slowly. The attraction of this armature will, however, only take place when the signs are telegraphed which are opposite the metal strips of the keyboard, in that in this case the pointer will be placed on the metal strip, at which moment its speed of movement is zero, which will cause a somewhat-longer contact, and consequently line-current, although the pointer may be immediately moved at a greater speed along the edge of the base-plate A. Thus this first and somewhat-longer impulse is the sole means of magnetizing the magnet AM by the aid of the local current 25 to 28, 19, 18, 17, 29, to 33. The axial movement of the type-wheel resulting therefrom will be seen from Fig. 3. As soon as the wheel has been moved a spring-pressed pawl *w*″, mounted on the type-wheel shaft, comes into engagement with a hook *x*′ of the type-wheel and couples the same in this position. On the return of the wheel to its initial position the pawl *w*″ is disengaged by a stationary pin *z*′, which it strikes as the wheel returns. Thus it will be clear that the signs corresponding to the metal strips of the keyboard will have to be on the type-wheel O″, while those corresponding to the insulating-strips will be on the wheel O. Thus it will be clear that since two type-wheels are employed which may be brought into operation as required, according to whether the pointer is placed on a metal strip or on a non-conducting-strip, (in which latter case the first impulse will be short, as the pointer passes rapidly over the same, having started on a non-conducting-strip,) the number of impulses necessary to produce the signs will be only half of those which would be required were only one type-wheel required. The capacity of the telegraphic type-writer will thus be nearly doubled for the same amount of current.

Although in the specification the non-conducting parts have been described as ebony, it will of course be clear that they may be made of any suitable non-conducting material.

I claim as my invention—

1. A telegraphic type-writer having a keyboard with alternating contact and breaking fields or surfaces, said keyboard forming one pole of an electric circuit, and a pointer forming the other pole and adapted to be passed along said keyboard, a rotary longitudinally-movable type-wheel and a series of actuating electromagnets and line-wire and local conductors and means for energizing the type-wheel-adjusting magnet when the pointer is passed over the keyboard, means for energizing the printing-magnet when the pointer is on the last field or strip and means for energizing the wheel-sliding magnet when the pointer is placed first on a conducting (in contradistinction to a non-conducting) strip of the keyboard substantially as described.

2. In a telegraphic type-writer, the combination of a keyboard having a series of conducting and non-conducting strips to indicate the various signs to be transmitted, a stop at the end of said keyboard to stop the pointer at one edge on a conducting and at the opposite edge on a non-conducting field, said board forming one pole of an electric circuit and a pointer forming the opposite pole, a rotary longitudinally-movable type-wheel, and actuating-magnets for the type-wheel, to cause the same to rotate, to shift the same longitudinally and to move the printing-strip against the type-wheel, and electric conductors, to operate the type-wheel-rotating magnet by a series of impulses, and to operate the printing-magnet at the longer end impulse and to operate the type-wheel-shifting magnet, when the pointer commences with a conducting-field, and means for returning the parts to their initial positions when the pointer is removed from the keyboard substantially as described.

3. The combination of a keyboard forming one pole of an electric circuit and a pointer forming the other pole, and means in connection with the said keyboard for producing in the line-wires a series of impulses, an electromagnet, ratchet mechanism actuated thereby to turn the type-wheel, a type-wheel in gear with the ratchet mechanism, a type-wheel-shifting magnet and a local battery to operate the same and means for retaining the said type-wheel in its shifted position until the letter has been printed and then releasing it, a printing-magnet and means in connection

therewith for pushing a printing-strip against the type-wheel at the longer impulse at the end of the movement of the pointer over the keyboard as specified, and means for energizing the local battery and energizing the type-wheel-shifting magnet when the pointer is initially placed on a conducting-field of the keyboard, and means for returning all parts to their initial positions when the pointer is removed from the keyboard substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

REINHOLD KÜBLER.

Witnesses:
C. H. DAY,
HENRY HASPER.