No. 778,229. PATENTED DEC. 27, 1904.

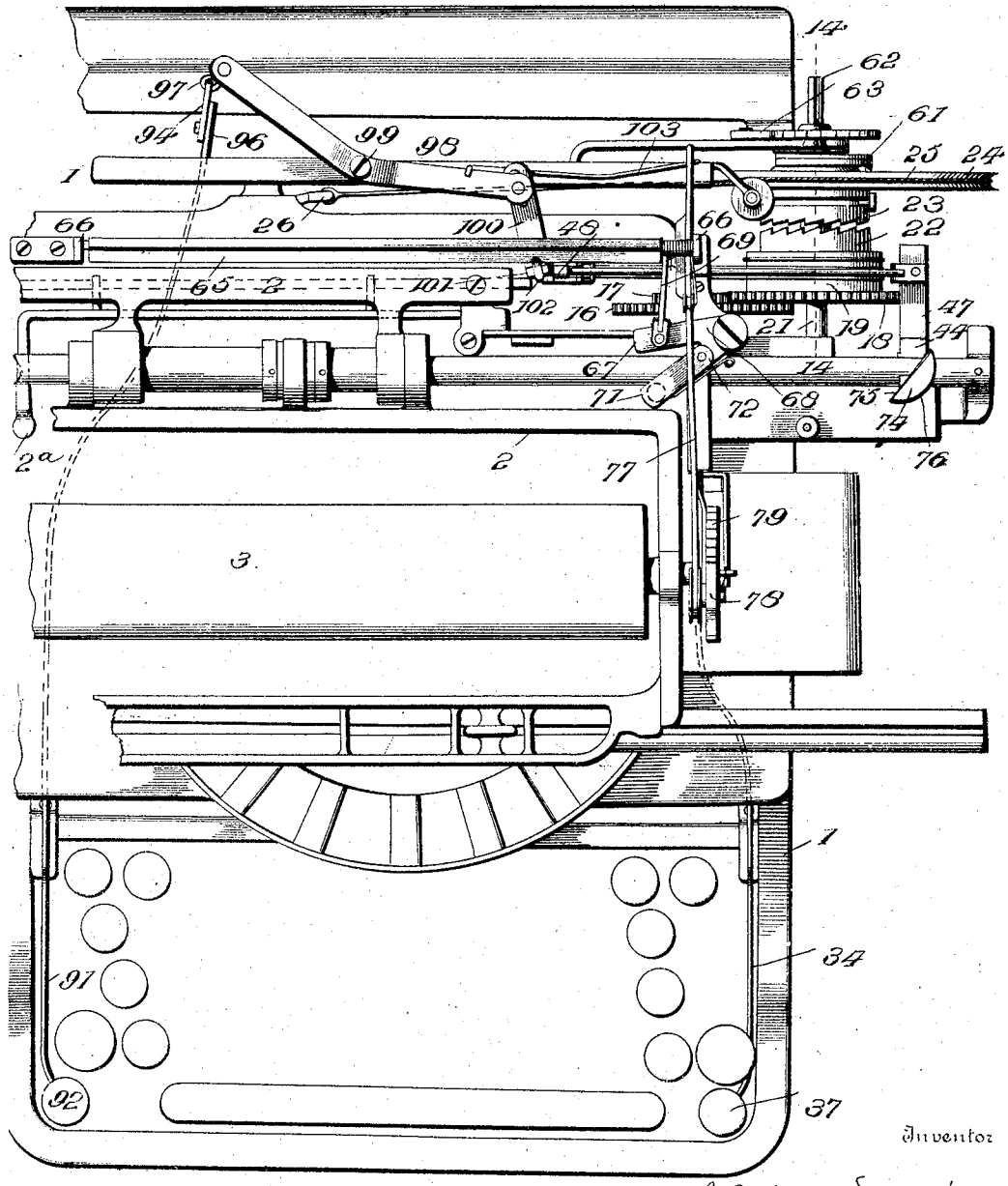
L. DOEDERLEIN.

TYPE WRITER.

APPLICATION FILED OCT. 21, 1902.

6 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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6 SHEETS—SHEET 2.

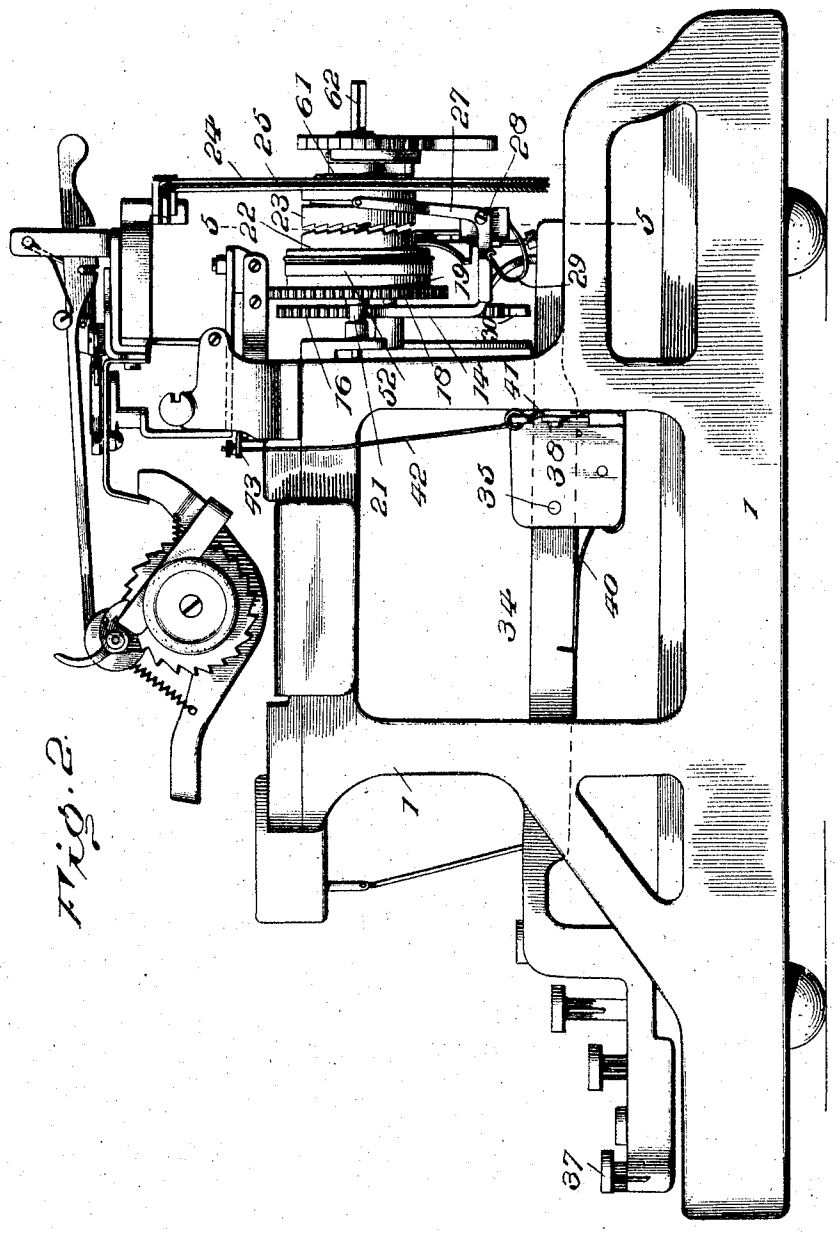


Fig. 2.

Witnesses
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his Attorney

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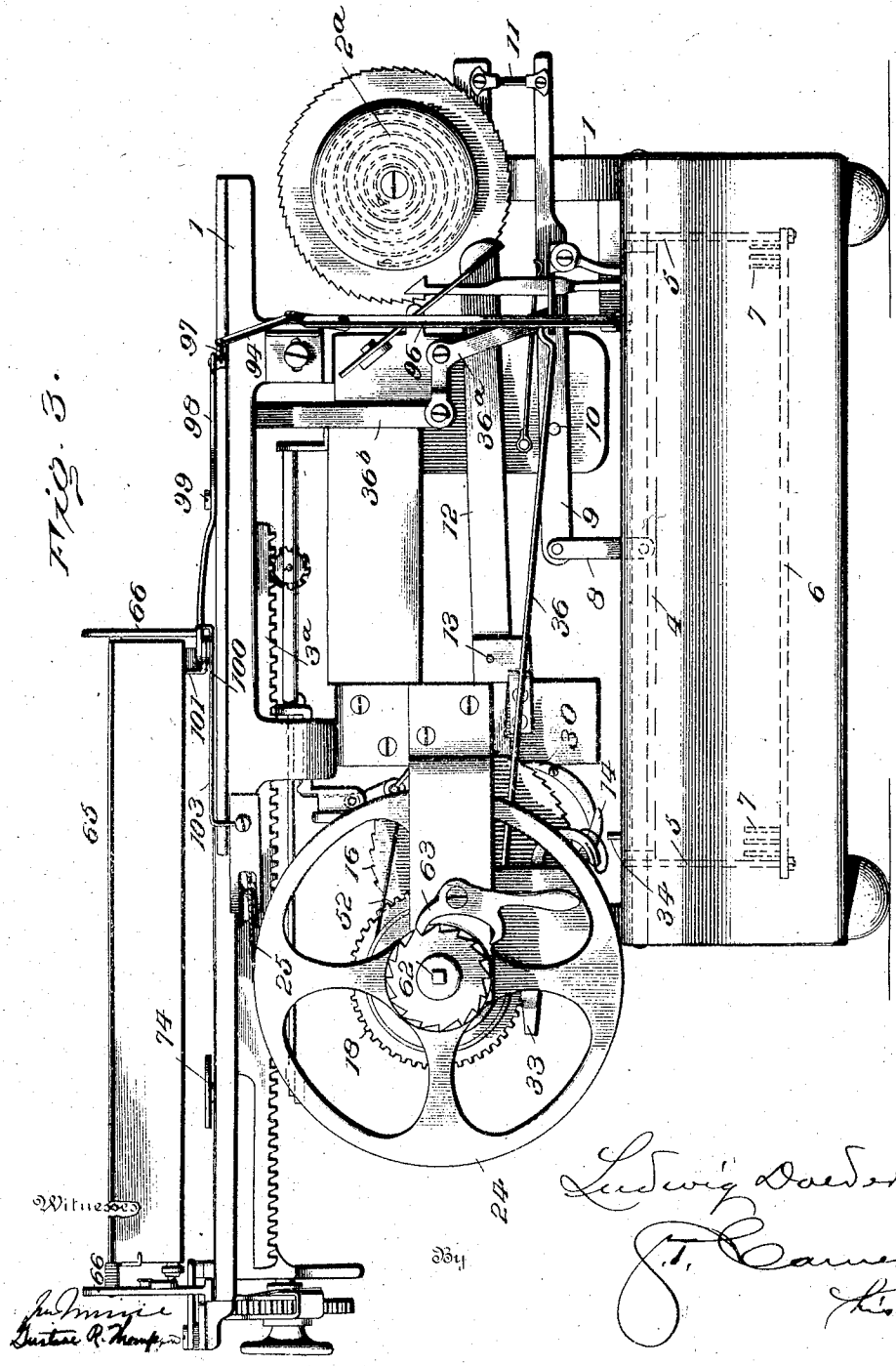
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6 SHEETS—SHEET 3.

Fig. 3.



Witnesses:

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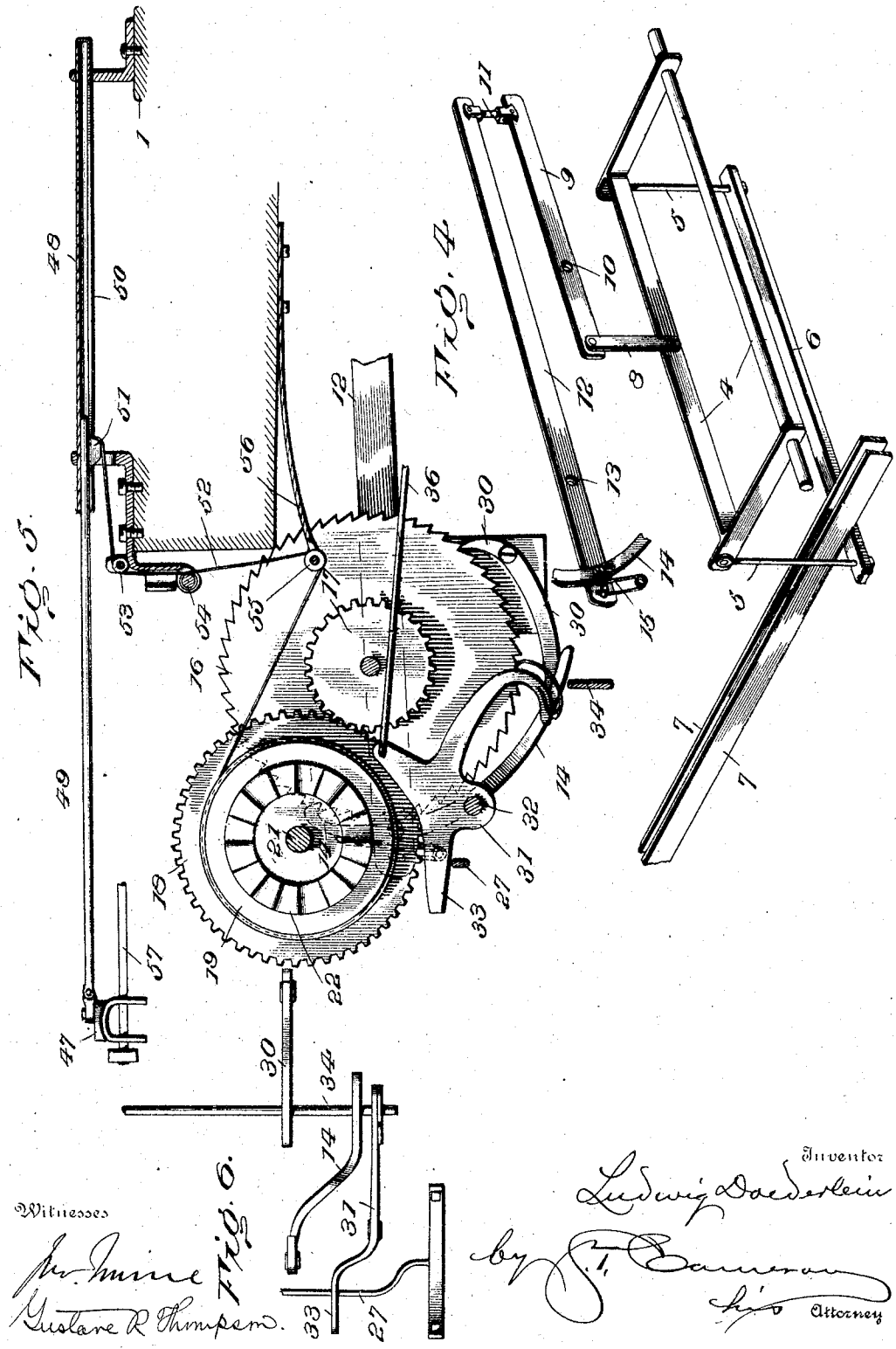
No. 778,229. PATENTED DEC. 27, 1904.

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TYPE WRITER.

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6 SHEETS—SHEET 4.



Witnesses

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No. 778,229. PATENTED DEC. 27, 1904.

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TYPE WRITER.

APPLICATION FILED OCT. 21, 1902.

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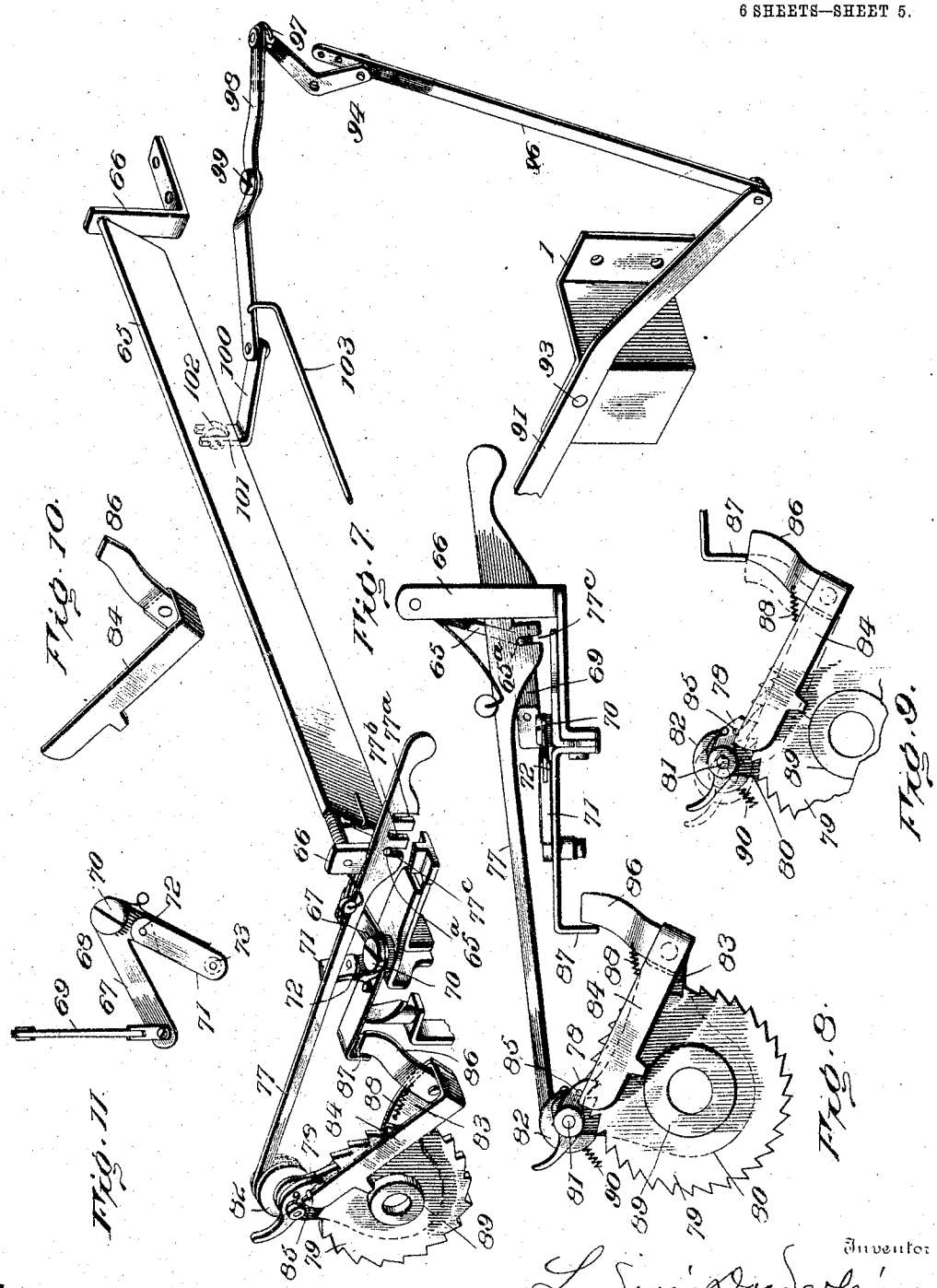


Fig. 10.

Fig. 7.

Fig. 9.

Fig. 11.

Fig. 8.

Witnesses

Inventor

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Attorney

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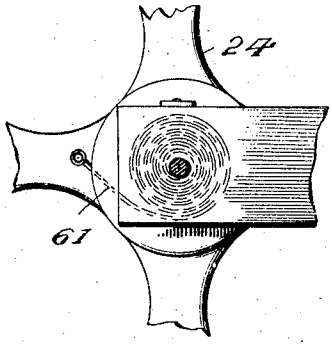
L. DOEDERLEIN.

TYPE WRITER.

APPLICATION FILED OCT. 21, 1902.

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Fig. 15.



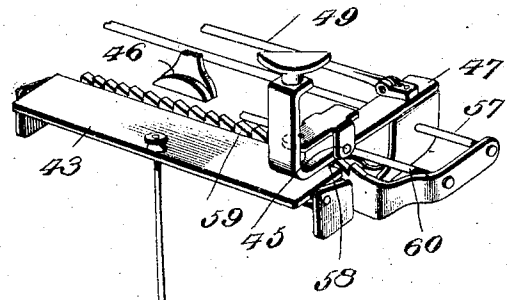


Fig. 12.

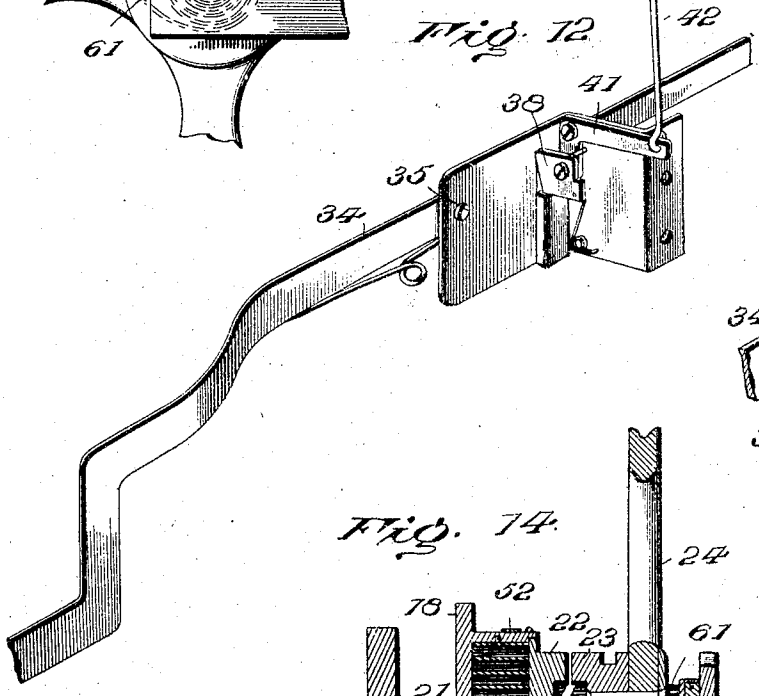


Fig. 13.

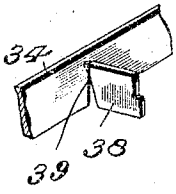
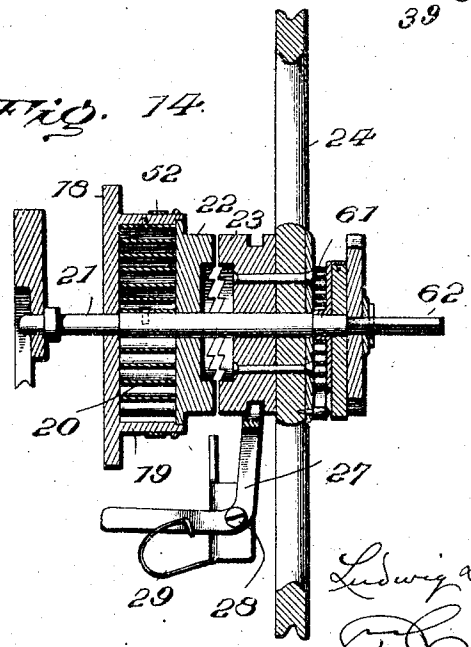


Fig. 14.



Witnesses

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S. T. Cameron

Sol.

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No. 778,229. Patented December 27, 1904.

UNITED STATES PATENT OFFICE.

LUDWIG DOEDERLEIN, OF STAUNTON, VIRGINIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO TYPEWRITER IMPROVEMENT COMPANY, OF STAUNTON, VIRGINIA, A COPARTNERSHIP.

TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 778,229, dated December 27, 1904.

Application filed October 21, 1902. Serial No. 128,183.

To all whom it may concern:

Be it known that I, LUDWIG DOEDERLEIN, a citizen of the United States, and a resident of Staunton, Virginia, have invented a new and useful Improvement in Type-Writers, which invention is fully set forth in the following specification.

My invention relates to type-writers, and more particularly to the carriage-return and line-spacing mechanism.

The object of the inventon is to provide simple and efficient means for automatically returning the carriage to its initial point when it has reached the end of a line and at the same time provide platen-actuating means which are operated by the carriage on its return movement, thereby advancing the paper the proper distance for the next line to be printed, and, furthermore, to provide for operating the same platen-actuating means by hand from the keyboard.

With this object in view the invention consists in a carriage-return spring strong enough to overcome the ordinary carriage-advancing spring, which carriage-return spring is wound up step by step by a system of levers and ratchet mechanism actuated by the depression of each key-lever or the spacing-bar. During the winding of the return-spring it is disconnected from the carriage. A lever having a suitable key located at the keyboard is provided, which lever operates clutch mechanism whereby the return-spring is operatively connected to the carriage and acts to return it to its initial position. During the return movement of the carriage it actuates the platen-turning devices, and thereby advances the paper to secure the line-spacing. Said platen-turning devices may also be operated by a lever on the keyboard.

In studying the invention by the aid of the accompanying description and drawings the skilled mechanic will readily perceive that the inventive idea involved may receive various mechanical expressions differing in form, but not in principle, from that shown in said drawings, and I therefore wish it distinctly understood that said drawings are illustrative only and not designed to indicate the limits of the invention, reliance being placed upon the claims for this purpose.

In the drawings, Figure 1 is a top plan, partly broken away, of a type-writer embodying my invention, only the parts necessary to illustrate the invention being shown. Fig. 2 is a right-hand elevation of Fig. 1. Fig. 3 is a rear elevation. Fig. 4 is a perspective of the lever devices which are used to operate the winding mechanism for the carriage-return spring. Fig. 5 is an enlarged section on the line 5 5, Fig. 2, looking to the left. Fig. 6 is a detail plan view. Fig. 7 is a perspective view of the line-spacing devices segregated so as to more clearly show their construction and operation. Fig. 8 is a side elevation of the pawl and ratchet for turning the platen, together with the operating-bar therefor and parts associated therewith. Figs. 9 and 10 are details showing the construction of the pawl of Figs. 6 and 7, and Fig. 11 is a plan view of the lever through which the line-spacer is actuated by the carriage. Fig. 12 is a detailed perspective of the lever for actuating the clutch of the carriage-return spring and the lock for said lever. Fig. 13 is a detail of the lock for said lever. Fig. 14 is a section on line 14 14, Fig. 1, and Fig. 15 is a detail.

Referring to the drawings, 1 is the frame of a type-writer of any suitable construction, and 2 is the carriage mounted to reciprocate thereon and carrying the platen 3, the carriage being advanced from right to left by the usual spring 2^a and controlled by any suitable or well-known form of escapement operated by the key and space levers to permit a step-by-step feed of the carriage.

Referring to Fig. 4, 4 is a frame pivoted in a horizontal plane, preferably to the rear side of the machine 1, and supporting by suitable hangers 5 5 a bar 6 in position to be operated by the key and spacing levers 7 when the latter are depressed. This frame 4 is connected by a link 8 to a lever 9, fulcrumed at 10 to any suitable support, preferably frame 1, and connected by link 11 to lever 12, pivoted at 13,

and carrying a pawl 14 and its spring 15. It will be observed that the arrangement of levers is such that the depression of the key and space levers 7 causes a corresponding downward movement of pawl 14.

Mounted to turn on a suitable bearing at the rear of the machine is a ratchet-wheel 16, Figs. 1, 2, 3, and 5, in position to be engaged and actuated by the ratchet 14 on lever 12, and this ratchet-wheel has a gear 17 keyed to revolve therewith and meshing with a gear 18 on the face of a spring-drum 19, carrying a spring 20, attached at one end to the drum and at the other end to the shaft 21. Rigidly secured to the face of the drum 19, opposite to the gear 18, is a clutch member 22, the other clutch member, 23, being mounted to slide, but not to turn, on shaft 21 and being rigidly secured to a pulley 24, having a cord 25 secured at one end to the periphery of the pulley and at the other end to the carriage, as shown at 26. The clutch member 23 has the usual lever 27 fulcrumed at 28 and acted on by spring 29 to normally hold the clutch members apart, and a retaining-pawl 30, Fig. 5, is mounted so that its overweighted end serves to normally hold it in engagement with ratchet-wheel 16, while a lever 31 is fulcrumed at 32, with one arm 33 extending over the free arm of clutch-actuating lever 27 and the other arm over a lever 34, which also extends under the tails of pawls 14 and 30 and is fulcrumed on the frame 1 at 35, Fig. 2. When the clutch 22 23 is open, the spring 20 is disconnected from the carriage, the spring being wound by the key and space levers as the carriage moves from right to left and unwinds when it (the spring) acts to return the carriage from left to right. It is frequently desirable to advance the carriage from right to left rapidly by lifting the well-known escapement-releasing lever by hand instead of the step-by-step movement due to the key-levers, and in this case the carriage would be advanced without correspondingly winding the return-spring 20. To overcome this, I connect the hand-lever 2^a, Fig. 1, which frees the escapement 3^a to permit the carriage to advance, to the lever 31 by rod 36, lever 36^a, and link 36^b, so that when the escapement-lever is operated by hand the lever-arm 33 is depressed and operates the clutch member 23 to connect spring 20 to the carriage, so that the spring is wound as the carriage advances.

As clearly shown in Fig. 2, the lever 34 extends forward to the keyboard and has a key 37 attached thereto, whereby it may be depressed against the tension of spring 40, thereby elevating its rear end, which as it moves upward first hits the pawl 14 and throws it out of engagement with ratchet-wheel 16 and then almost simultaneously operates lever 31 and pawl 30, thereby freeing ratchet-wheel 16 and throwing clutch members 23 into engagement with clutch member 22. This leaves spring 20 free to unwind, and thereby operate pulley 24 to wind the cord 25 thereon, and thus return the carriage from the left-hand to the right-hand side of the machine, and since the spring 20 is stronger than the carriage-advancing spring 2^a the latter is rewound thereby. It is important that the lever 34 should be held with its forward end depressed and its rear end elevated until the carriage has fully returned to its right-hand position, and if the operator were to prematurely remove his finger from the key 37 the clutch 22 23 would be opened and the carriage stopped. To avoid this, I provide means for locking the lever 34 in its depressed position until the instant before the carriage reaches the right-hand limit of its movement, when the lever is automatically released. This locking and releasing device is best shown in Figs. 2, 12, and 13, wherein 38 is a spring-actuated latch pivotally mounted in such position that its nose engages in a notch 39 on the rear arm of lever 34 when said arm is elevated, and thereby retains said arm in that position. For the purpose of withdrawing the latch 38 to unlock or free lever 34 I employ any suitable device operated by the carriage itself. The device shown is a bell-crank lever 41, fulcrumed on the frame, on one arm of which the latch 38 is pivotally mounted, and the other arm is connected by adjustable rod 42 to one edge of a tilting bar 43, the opposite edge of which bar 43 rests under one arm of a lever 44, fulcrumed at 45 to an arm 47, adjustable transversely of the machine. A cam 46, Fig. 12, depends from the carriage in such position as to pass under the outer end of lever 44 and cause the other or inner end of the lever to be depressed, thereby tilting bar 43 and effecting an upward pull on rod 42 and disengaging the latch 38 from bar 34. This frees the lever 31, which allows the clutch members 22 and 23 to separate and also permits the pawls 14 and 30 to reëngage the ratchet-wheel 16. The clutch being open, the spring 20 is disconnected from the carriage and the carriage-advancing spring 2^a may again advance the carriage step by step in the usual or any desired manner. Since the spring 20 is a comparatively strong one, it causes the clutch members 22 and 23 to engage each other with such friction that the spring 29 might not be able to overcome it and separate the clutch members, and I therefore provide means for taking up or sustaining the tension of spring 20 just prior to the instant for the opening of the clutch. For this purpose I mount a hollow guide-tube 48, Fig. 5, on the frame 1 of the machine and secure one end of a rod 49 to the adjustable bar 47, while the other end telescopes with the tube 48, the tube having a slot 50 on its under side, through which slot a lug 51 projects. A strap 52 is secured at one end to the lug 51 and is then passed around guide-pulleys 53, 54, and 55, and the other end is wound part

way around the drum 19 and secured thereto. One of the pulleys, as 55, is mounted on a spring-arm 56, which acts to take up any slack in strap 52. The bar 47 is preferably mounted so as to have turning movement around and to slide along a guide-rod 57 and has on its under side a tooth or catch 58, which engages with a ratchet-bar 59 and is yieldingly retained in such engagement by a spring 60. By adjusting the rod 49, Fig. 5, in tube 48 the length of strap 52 to be wound on drum 19 can be regulated, and as soon as the strap is drawn taut by the revolution of the drum 19 in returning the carriage the tension of spring 20 is resisted by the strap and the return movement of the drum ceases, while the carriage has a slight momentum, which is sufficient to slack the cable 25, and thereby relieve the friction between clutch members 22 and 23, so that spring 29, Fig. 2, is able to operate the lever 27 to open the clutch. It is to be observed that the bar 47, to which the rod 49 is secured, also supports the trip-lever 44, which operates the latch 38 to release lever 34. The result of this is that the lever 34 is released, so as to bring clutch-lever 27 and pawls 14 and 30 into operation just as strap 52 is drawn taut. A light coiled spring 61, Figs. 14 and 15, is attached at one end to the shaft 21 and at the other end to wheel 24, and the tension of this spring acts to keep the weeel 24 turned so as to keep the cord 25 taut and in place on the wheel 24, even when the clutch 22 23 is open and the tension of spring 20 is removed from cord 25. An ordinary clock-winding or other suitable key may be applied to the squared end 62 of shaft 21 for the purpose of winding springs 20 and 61 when it is found desirable to increase their tension, an escapement 63, Fig. 3, being provided so that the tension can be decreased if the springs should be overwound.

The spring 20, which operates the carriage-return mechanism, also operates the automatic line-spacing devices. Referring to Figs. 1, 3, 7, and 11, 65 is a bar pivoted between suitable supports 66 66 on the carriage, while one arm 67 of a lever 68 is connected by a link 69 to the lower edge of bar 65, said lever being fulcrumed to the carriage at 70 and having an arm 71 provided with a knuckle-joint 72. (See Fig. 11.) On the under side of arm 71 is a pin 73, preferably provided with an antifriction-roller, and in the path of this roller, as the carriage reciprocates, is a cam-block 74, Fig. 1, mounted on the frame of the machine, which block is provided with a straight cam-face 75 and a curved face 76. As the carriage moves from left to right the pin 73 strikes the straight cam-face 75 and vibrates the lever 68, which moves as a unit and vibrates the bar 65. On the reverse movement of the carriage the pin 73 strikes the curved face 76 of the cam-block and the knuckle-joint 72 yields, so that neither the lever 68 nor the bar 65 is vibrated. A bar 77 connects the bar 65 with a pawl 78, engaging the usual ratchet 79 on the end of the platen, and the vibrations of the bar 65 are thus imparted to the pawl to turn the platen. This bar 77 has notches 77^a, 77^b, and 77^c for engaging a pin 65^a on the bar 65, so that the platen may be turned one, two, or three spaces, as may be desired. The specific construction, mounting, and operation of pawl 78 is best shown in Figs. 7, 8, and 9, wherein 80 is a plate loosely hung on the shaft of the platen as an axis and provided with an upwardly-projecting part carrying a horizontal pin 81, forming the bearing for the pawl 78 immediately over the ratchet 79 and also the bearing for a deeply-grooved roller 82 at one side of the ratchet. The plate 80 also has an arm or part 83 projecting rearward along the side of the ratchet 79, and to the outer extremity of this arm 83 is pivoted a bell-crank lever one of whose arms, 84, is bent so as to allow it to extend along the face of the ratchet 79 on the opposite side from but parallel with plate 80, so that it normally rests with its extremity under a pin 85, projecting from the side of the pawl 78. The other arm, 86, of the bell-crank lever projects upward under and to the rear of an abutment 87, serving to normally hold the bell-crank lever, composed of the two arms 84 and 86, in position, so that arm 84 has no lifting action on pawl 78. If desired, arm 84 may normally rest upon a boss 89, concentric with and preferably a part of ratchet-wheel 79, and a light spring 90 is employed to hold plate 80 and its supported parts drawn toward the front of the machine with the arm 86 resting in contact with abutment 87.

The line-spacing device operates as follows: As the carriage returns to its right-hand position lever 68 is rocked on its fulcrum by cam-face 75, as above described, and vibrates plate 65, thereby exerting a pull on bar 77 and causing the pawl 78 to turn the ratchet 79, and thus revolve the platen. In some machines the platen is shifted forward for upper-case work, and this shift would result in a pull on bar 77, which would turn the platen if means were not provided to prevent it. Figs. 8 and 9 illustrate how this is done. As the platen moves forward (from right to left in Fig. 8) the arm 86 engages abutment 87 and rocks the arm 84, so as to lift pawl 78 out of engagement with ratchet 79, (see Fig. 9,) and the forward movement of the platen is therefore made without causing any turning movement thereof. On the return of the platen to lower-case position spring 88 rocks lever-arms 84 86, so as to permit pawl 78 to reengage ratchet 79 and elevate arm 86 behind abutment 87. Fig. 9 illustrates in full lines the position of the lever 86 and pawl 78 as the platen is in the act of shifting from lower-case to upper-case position, while the dotted lines show the position of these parts when the platen is in

upper-case position. I have explained above that by reason of the lifting of the pawl from the ratchet by the lever 84 86 the forward movement of the platen is accomplished without turning it. The device is also constructed for either automatic or key-lever spacing when the platen is in upper-case position. It will be readily seen that if while the platen was in upper-case position the pawl were permitted to drop into the same tooth of the ratchet from which it was raised as the platen shifted from lower to upper case position a vibration of bar 65 would cause the pawl to turn the platen too far—that is, give it an overthrow—which would result in too wide spacing for upper-case work. To avoid this, provision is made whereby the pawl skips one tooth when the platen is in upper-case position and the platen-turning mechanism is actuated either automatically or by the key-lever. The parts are so proportioned that when the platen is in upper-case position and the pawl skips one tooth and then engages the ratchet it will act to turn the platen through the same distance as it would be turned if in lower-case position without skipping a tooth. An inspection of Fig. 9 will show how this is accomplished. In that figure if the pawl were advanced from left to right it would pass over one tooth before the arm 84 would permit it to descend into engagement with the ratchet to actuate it, and it then continues to move far enough from left to right to turn the platen the desired distance. When the pull on the bar 77 is released, the pawl returns to the position of Fig. 9 ready to again skip one tooth in the ratchet, and so on as long as the platen remains in upper-case position.

The foregoing devices thus far described would serve to shift the platen for line-spacing only when the carriage was fully returned to the right-hand position, whereas it is often desirable to shift the platen without returning the carriage, and I therefore provide means whereby the platen may be shifted by a touch of a key-lever on the keyboard. Referring to Figs. 1, 3, and 7, 91 is a lever provided with a key 92 and pivoted at 93 to the frame 1, while 94 is a bell-crank lever pivoted to frame 1 at 95 and having its lower arm connected to lever 91 by a link 96, its upper arm being connected by a link-like joint 97 to lever 98, pivoted at 99 to the top of the frame. This lever 98 has an arm 100 pivoted thereto so as to turn in a horizontal plane, said arm extending under the bar 65 on the carriage and having a lug 101 projecting upward in front of the bar, said lug being preferably provided with an antifriction-roller 102. A spring engages this system of levers, so as to normally keep the key 92 elevated and the roller 102 out of contact with bar 65. As here shown, this spring 103 is secured to the frame and bears against one arm of lever 98. As the carriage reciprocates the bar 65 is carried back and forth past the lug 101 and roller 102 without being in any way affected thereby, but with the lug and roller always in position in front of the bar. When the operator desires to turn the platen by hand, the key 92 is depressed, thereby causing a rearward thrust of arm 100, which swings the bar 65 rearward and effects a pull on bar 77 to turn the platen.

From the foregoing it will be apparent that I am able to return the carriage automatically, as well as by hand, in the ordinary or other well-known way, and whether the carriage is returned automatically or manually the platen is automatically turned for line-spacing. Moreover, it is apparent that in addition to the well-known hand-operated spacing devices and the automatic devices above mentioned I have provided a means whereby the line-spacing may be accomplished with great facility by merely touching a spacing-key on the keyboard.

Having thus described my invention, I claim—

1. The combination in a type-writer, of a reciprocating carriage, and a revoluble platen carried thereby, with a carriage-advancing spring, a carriage-return spring normally disconnected from said carriage and strong enough to overpower said advancing-spring, means for rewinding the return-spring and operated by advancing the carriage, means for connecting the return-spring to the carriage, and platen-turning devices operated by the carriage.

2. The combination in a type-writer, of a reciprocating carriage and a revoluble platen carried thereby, with a carriage-advancing spring attached to said carriage, a carriage-return spring strong enough to overpower said advancing-spring and normally disconnected from the carriage, means operated by the key-levers for winding said return-spring, and devices controlled from the keyboard for connecting the carriage to the return-spring.

3. In a type-writer, the combination of a reciprocating carriage, a revoluble platen thereon, a vibratory blade supported on the carriage, a platen-turning means operatively connected to said blade, a knuckle-jointed lever fulcrumed on the carriage connected to said blade, a cam in the path of said lever whereby the reciprocation of the carriage operates said lever and rotates the platen.

4. In a type-writer, the combination of a reciprocating carriage, a revoluble platen, a vibratory blade supported on the carriage-frame and parallel to said platen, a ratchet-wheel connected to the platen, a pawl therefor, connections between said pawl and vibratory part, and automatic means intermittently vibrating said part.

5. In a type-writer, the combination of a reciprocating carriage, a revoluble platen there-

on, and means shifting said platen for upper-case impressions, with a ratchet on said platen, a pawl engaging said ratchet, a pull-bar connected to said pawl to operate it, and automatic means disengaging the pawl from the ratchet when the platen is shifted for upper-case impressions.

6. In a type-writer, the combination of a reciprocating carriage, a carriage-return spring, and its drum, with a stop-strap secured to said drum and the machine-frame, a carriage-stop, a platen, platen-turning devices connected thereto, a cam for actuating said devices, and means for simultaneously adjusting the carriage-stop, the cam and the length of said strap.

7. In a type-writer, the combination of a reciprocating carriage, a platen shiftable transversely to the line of movement of the carriage, rotating mechanism for said platen, and means throwing said mechanism out of operative relation with the platen while the latter is shifted for upper-case work.

8. In a type-writer, the combination of a reciprocating carriage, a platen shiftable transversely to the line of movement of the carriage for upper-case impressions, a pawl and ratchet and means for operating said pawl to turn the platen, and means disengaging the pawl from the ratchet while the platen is shifted for upper-case impressions.

9. In a type-writer, the combination of a rotatable platen and a movable carriage therefor, a ratchet connected with the platen, a plate pivotally supported on the platen and provided with a pawl for engaging the ratchet, a pivoted member adjustably connected to the pawl to operate it, and a pivotally-supported blade mounted on the carriage for vibrating said member to turn the platen for line-spacing.

10. In a type-writer, the combination of a carriage, a revoluble platen shiftable laterally on said carriage for upper-case impressions, a vibratory blade supported on the carriage, means for turning the platen when in either upper or lower case positions connected with said blade, and automatic controlling devices for said means, whereby the platen is turned the same distance whether in upper or lower case position.

11. In a type-writer, the combination of a reciprocating carriage, a revoluble platen supported by said carriage and shiftable for upper-case impressions, a pawl-and-ratchet device for turning said platen, an actuating-rod for said pawl, and means causing the pawl to skip one tooth of the ratchet when the pawl is actuated with the platen in upper-case position.

12. In a type-writer, the combination of a carriage and a revoluble platen thereon shiftable for upper-case impressions, a pawl and ratchet for turning the platen, an actuating-rod for said pawl, means for operating said rod, and a lever engaging said pawl and lifting it from the tooth of the ratchet when the platen is shifted for upper-case impressions, but permitting it to engage the next succeeding tooth when said rod is actuated.

13. In a type-writer, the combination of a carriage, a revoluble platen shiftable laterally on said carriage for upper-case impressions, pawl-and-ratchet mechanism on the platen, a pivoted member adjustably connected to the pawl to operate it, means for vibrating said member to turn the platen for line-spacing and automatic means engaging the pawl and operated by the lateral movement of the carriage whereby the platen is turned the same distance whether in upper or lower case position.

14. In a type-writer, the combination of a rotatable platen, a reciprocating carriage supporting the same, automatic platen-rotating mechanism actuated by the reciprocation of the carriage, and a pull-bar provided with notches for adjusting such mechanism for a greater or less amount of rotation of the platen.

15. In a type-writer, the combination of a reciprocating carriage, a revoluble platen thereon, a vibrating blade supported on the carriage and extending longitudinally of the same, a pawl-and-ratchet mechanism on the end of the platen, a bar connecting the blade and said mechanism, a cam-block on the machine-frame, and a lever engaging the blade and in the path of said cam-block for automatically tilting the blade.

16. In a type-writer, the combination of a reciprocating carriage, a revoluble platen thereon, a vibrating blade supported on the carriage and extending longitudinally of the same, pawl-and-ratchet mechanism on the end of the platen, a pull-bar intermediate the blade and said mechanism, a cam on the machine-frame, means actuated by said cam for automatically tilting the blade, and a key-operated lever provided with an antifriction-roller for independently operating said blade.

17. In a type-writer, the combination of a reciprocating carriage, a revoluble platen thereon, means for shifting said platen for upper-case impressions, pawl-and-ratchet mechanism on the end of the platen, a vibrating blade on said carriage and extending longitudinally of the same, a pull-bar intermediate the blade and said mechanism, a cam on the frame, means actuated by said cam for automatically tilting the blade, and automatic means for disengaging said pawl while the platen is shifted for upper-case impressions.

18. In a type-writer machine, the combination of a reciprocating carriage, a revoluble platen thereon, means for shifting said platen for upper-case impressions, pawl-and-ratchet mechanism on the end of the platen, a stationary cam, means actuated by said cam to revolve said platen, and a bell-crank lever and an abutment for automatically releasing said

pawl while the platen is shifted for upper-case impressions.

19. In a type-writer, the combination of a reciprocating carriage, a revoluble platen thereon, a vibrating blade supported on the carriage and extending longitudinally thereof; means for rotating the platen, a connecting-bar engaging said means and blade, a stationary cam on the frame, and a lever provided with a knuckle-joint for engaging the cam and tilting the blade.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

LUDWIG DOEDERLEIN.

Witnesses:

GEO. KENNARD,

A. HUME SPRINKEL.