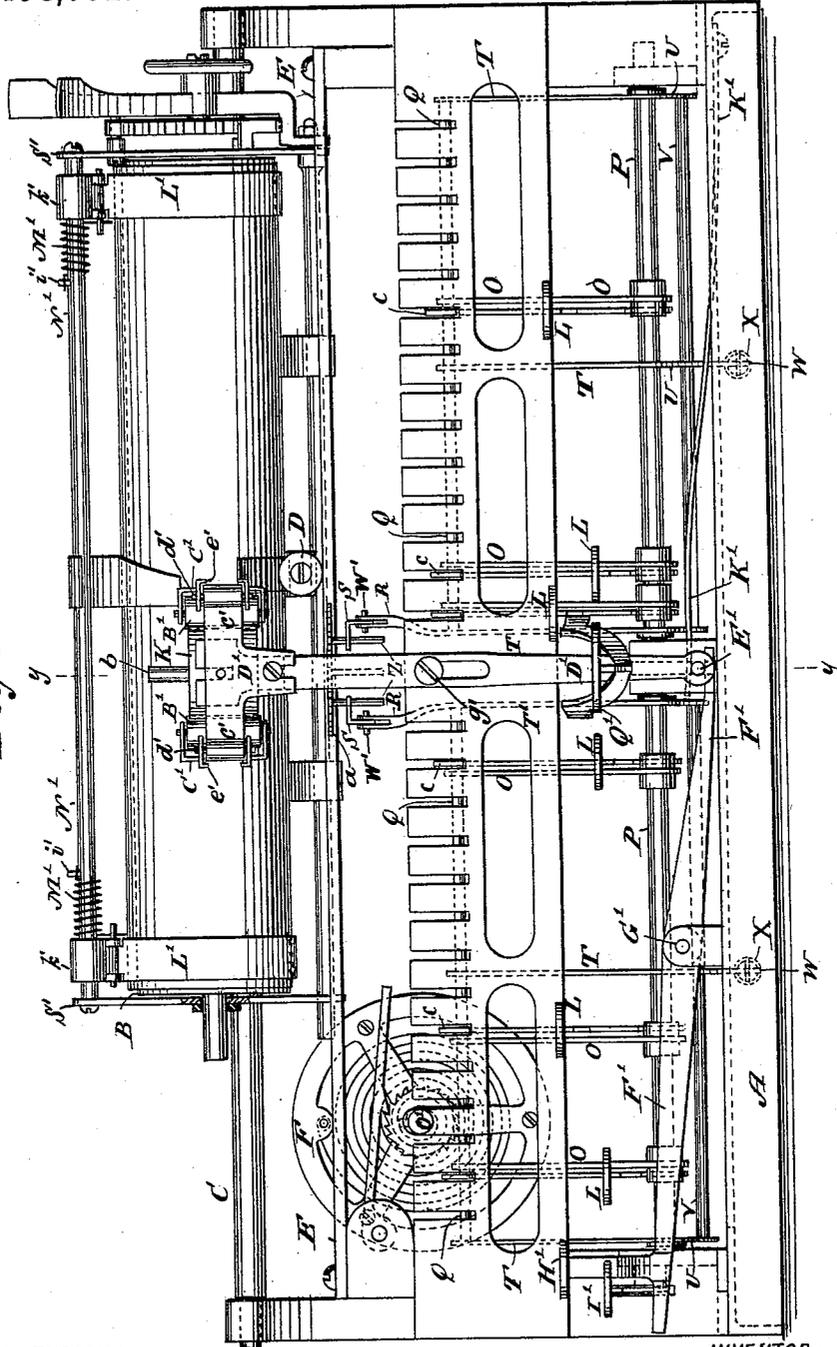


F. X. WAGNER.
TYPE WRITING MACHINE.

No. 454,692.

Patented June 23, 1891.

Fig. 1.



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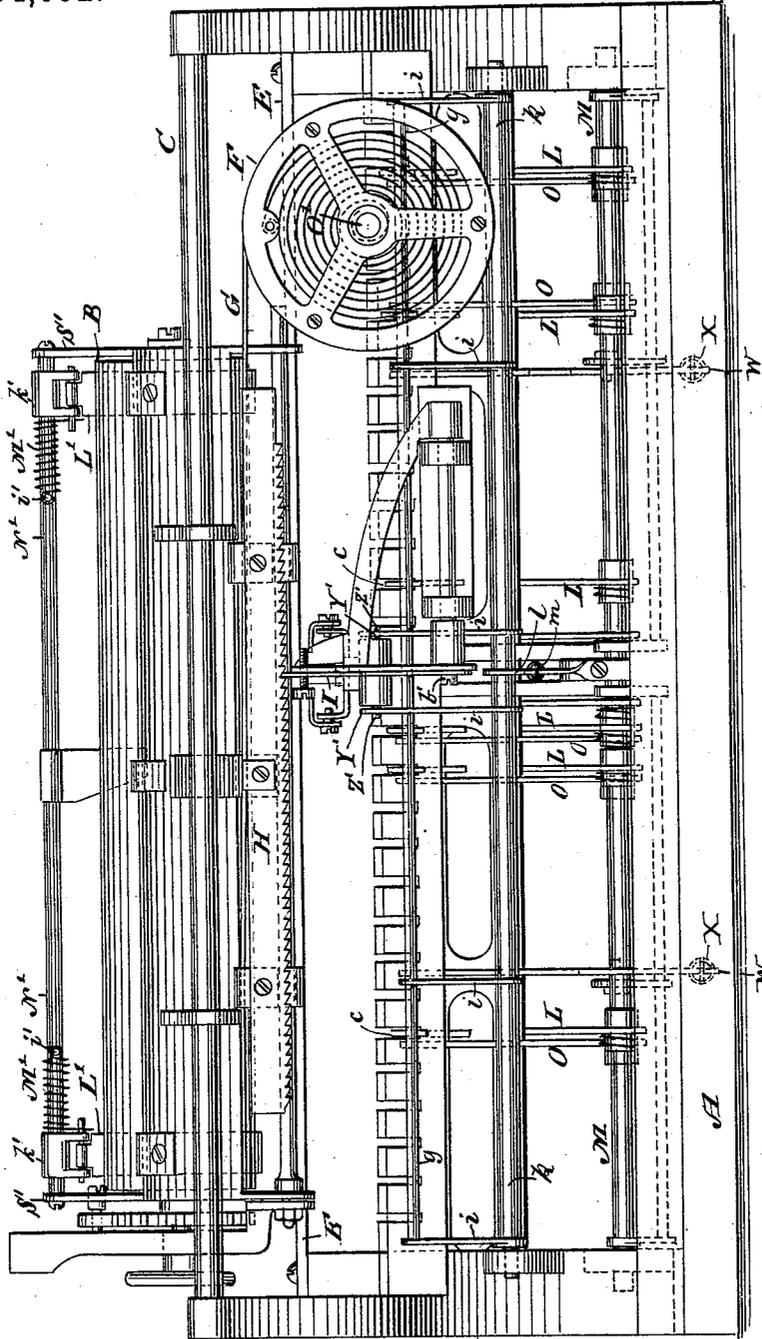
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F. X. WAGNER.
TYPE WRITING MACHINE.

No. 454,692.

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Fig. 2.



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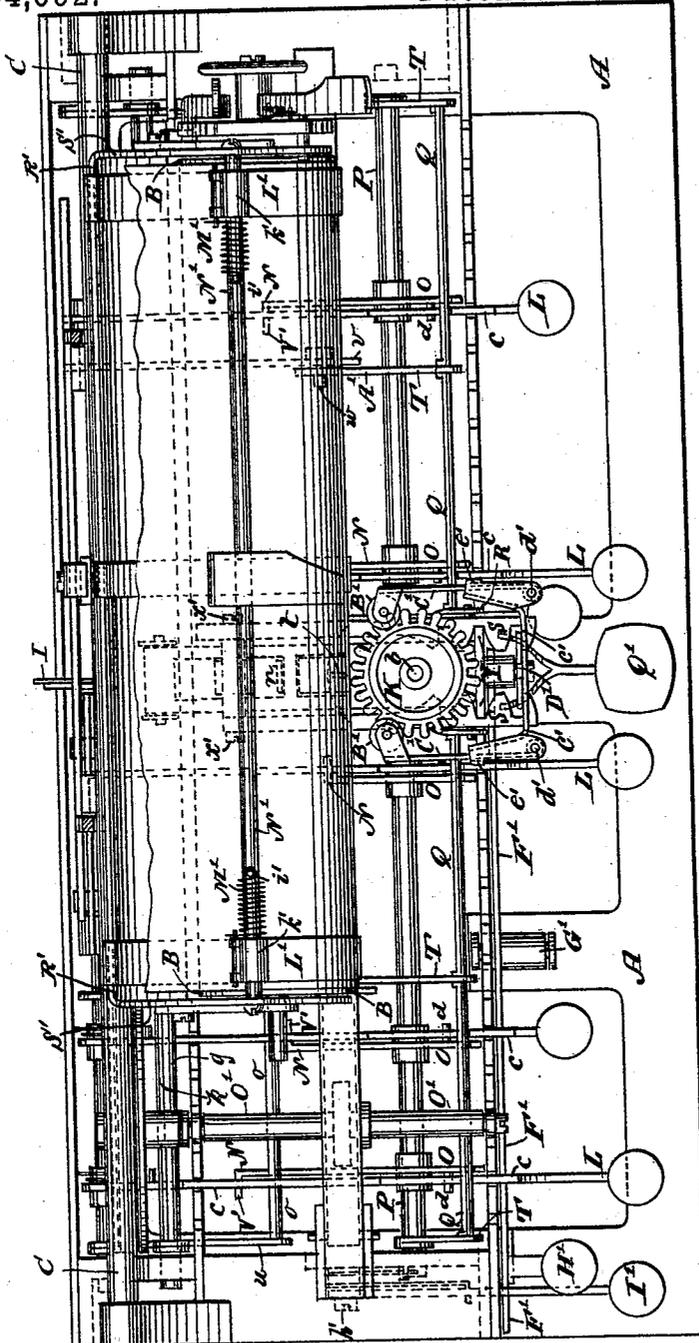
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Patented June 23, 1891.

Fig. 3.



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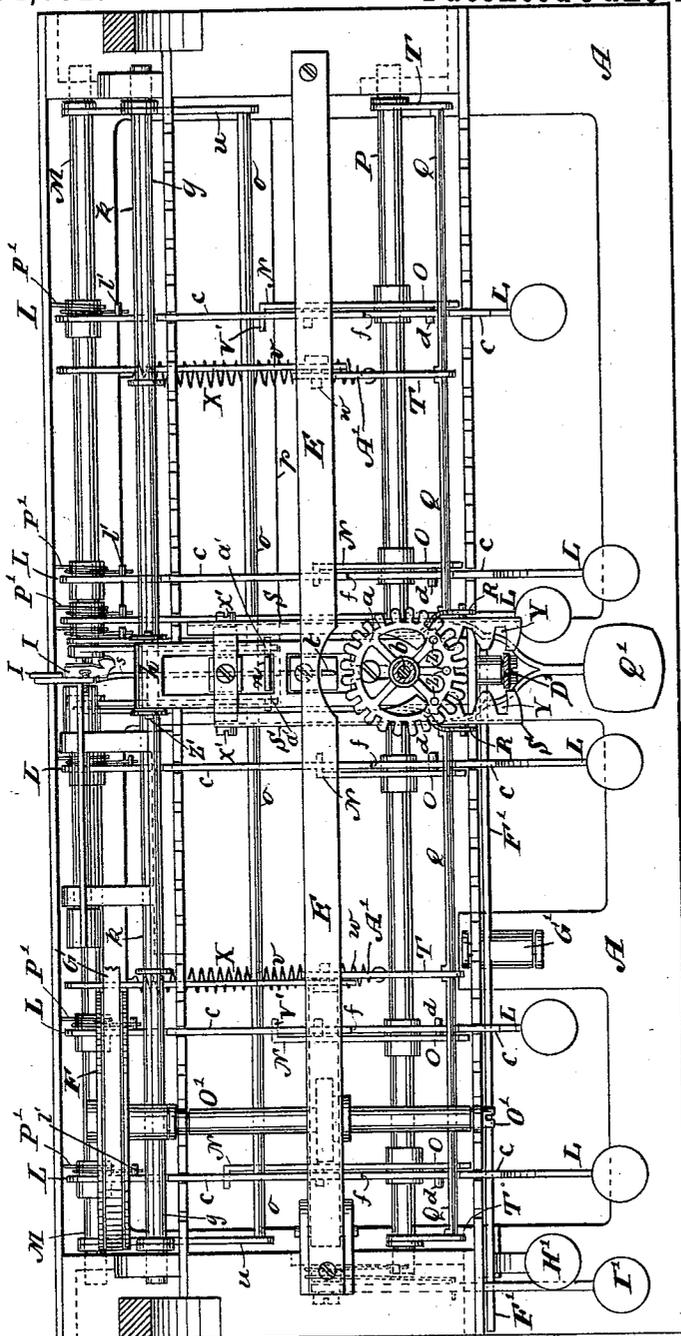
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Fig. 4.



WITNESSES

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ATTORNEYS

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Fig. 6.

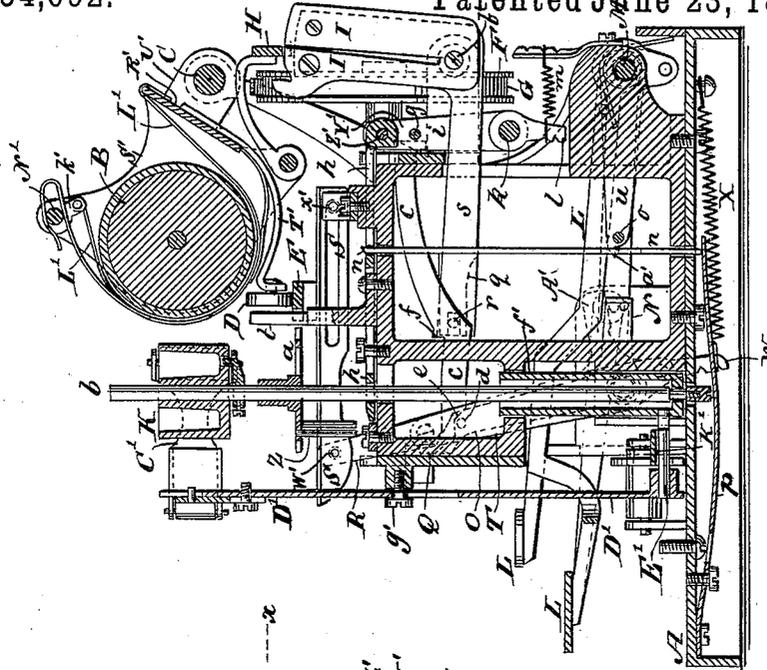
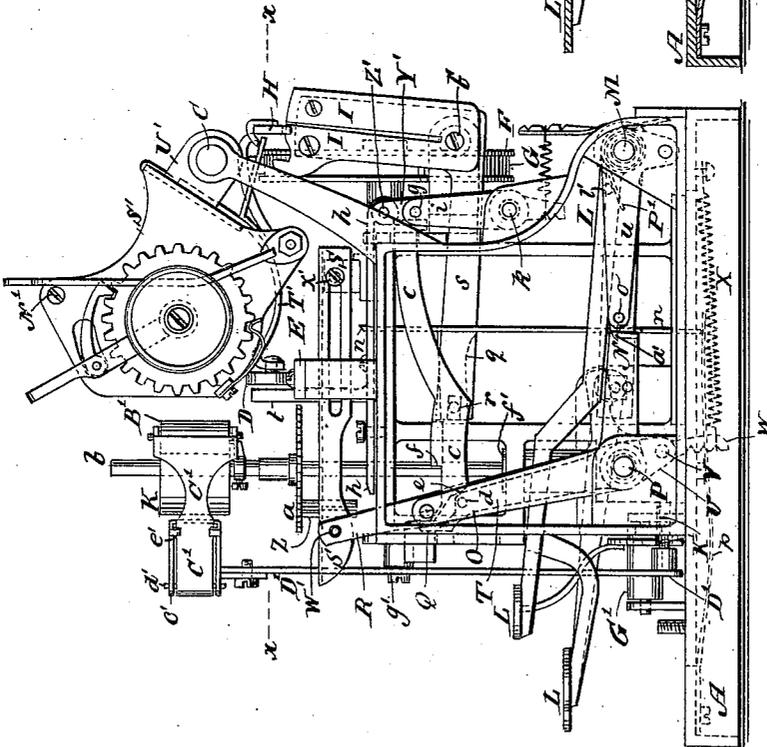


Fig. 5.



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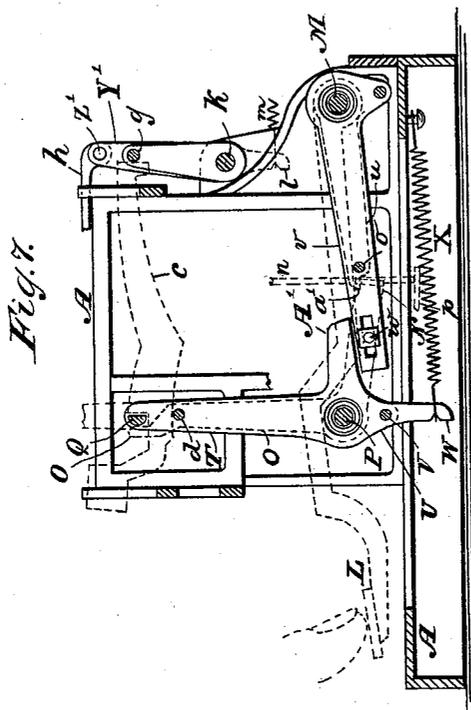
BY *Van Santvoord & Haupt*

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Franz X. Wagner

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Van Santvoord & Huff

ATTORNEYS

UNITED STATES PATENT OFFICE.

FRANZ X. WAGNER, OF NEW YORK, N. Y.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 454,692, dated June 23, 1891.

Application filed December 19, 1889. Serial No. 334,294. (No model.)

To all whom it may concern:

Be it known that I, FRANZ X. WAGNER, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to improvements in type-writing machines; and the invention consists in certain details of construction set forth in the following specification and claims and illustrated in the accompanying drawing, in which—

Figure 1 is a front elevation of a type-writing machine. Fig. 2 is a rear elevation of Fig. 1. Fig. 3 is a plan view of Fig. 1. Fig. 4 is a section along xx , Fig. 5. Fig. 5 is a side elevation of Fig. 1. Fig. 6 is a section along yy , Fig. 1. Fig. 7 is a side elevation of arms which assist in the motion of certain parts. Fig. 8 is a detail view of the spacing-key and contiguous parts.

In the drawings, the letter A indicates a suitable base or support.

The platen or paper-carrier B may be of any suitable well-known construction, adapted to travel along and swing on the guide-rod C, and being also supported by a roller or wheel D, traveling along a suitable track E. In the drawings the platen B is shown mounted in a carriage, the essential parts of which may be of any well-known construction—as, for example, a back or back plate R', Fig. 6, having arms or lateral frame-plates S', through which the axle of the platen passes, and from the back R' extends an arm T', on which is mounted the wheel D, and said back R' also has arms or lugs U', which are perforated for the reception of the guide-rod C, so that the carriage with the platen can swing and travel on said guide-rod. A spring-drum F, connected to the platen by a strap or band G, may be used in connection with a rack H and feed-dog I to feed the platen.

The type are supported by a carrier, wheel, or cylinder K. Said carrier K is capable of a rotary motion, by which the required type is brought opposite to the platen, and of a linear or printing motion, by which the carrier brings the required type against the platen, so as to print. Said type-carrier may also have two or more rows of type, in which

case an axial or rising-and-falling motion must be given to the carrier to bring different rows of type into the printing-line.

The keys L are fulcrumed at M. There are two independent sets of keys and intermediate type-carrier-rotating mechanisms, which are duplicates of one another and located on opposite sides of the type-carrier. Each of said keys when depressed by the operator imparts motion to a bell-crank lever N O, fulcrumed at P, there being one bell-crank lever for each key. Each arm N of the bell-crank levers has a lug or shoulder V', Fig. 3, which extends under the key L, so that the key rests on said shoulder V' and arm N, so as to move the bell-crank lever N O. The depression of a key moves the corresponding bell-crank so as to swing its arm O backward or toward the platen B. The arm O is extended up far enough to strike the actuating-bar Q, Fig. 7, so that the backward motion of the arm O is communicated to the actuating-bar Q, from which an arm R extends to the slide S, so that said slide moves with the bar Q. The arm R is rigidly fixed to the bar Q, so as to move with the same. Said bar Q is supported by arms T, fulcrumed at P, and said arms T are extended so as to form lugs U for the support of the bar V, to which an arm W is secured. The arms T may be fulcrumed at any convenient point along the shaft P. In the drawings the arms T are shown arranged in two sets, one set on each side of the type-carrier and having three arms T in each set, one arm of said set being located near the outer part of shaft P, another arm being located near the type-carrier, and the third arm being intermediate to said two arms. To the arm W is connected the restoring-spring X, and when the depressed key is released the restoring-spring X moves the key with the actuating-bar Q and slide S to the starting position. The slide S has teeth or grooves Y, which engage lugs Z, connected to the toothed wheel a , fixed to the axle b of the type-carrier K. Each slide S is supported by a pivot W', connecting the slide S with one of the arms R, and by a pivot X', fixed to a suitable part of the frame. The slide S, as shown in the drawings, can be readily formed from a piece of sheet metal suitably bent and shaped or cut to form the teeth Y and provided with a

slot for the reception of pivot X' , as seen in Figs. 5 and 6. When the slide S is moved toward the platen, the teeth Y rotate the lugs Z and type-carrier K , so as to bring the type corresponding to the moved key opposite to the platen, so as to be ready to print. The return of the slide S restores the type-carrier to its starting position.

For different types the carrier must rotate more or less to bring said type opposite the platen. For this purpose the arms N of the levers NO are of varying lengths. The longer arms N , being in contact with the keys L nearer to the fulcrum M , will not receive so great a degree of motion from the depression or swing of the keys as the shorter arms N , which, being in contact with the keys L , farther from the fulcrum M , receive so much more motion from the swing of the keys on the fulcrum M . The greater or less motion of the various arms N and levers NO causes greater or less motion of the slide S and consequent variety in the rotation of the type-carrier K . When the rotation of the type-carrier has ceased, said carrier is given a linear or printing motion to carry the required type against the platen, so as to print. To give this printing motion, the following mechanism is employed: Links c extend across the machine, there being one link for each key L and lever NO . As seen in Fig. 7, each link c is made to extend across the frame A , so as to be supported by said frame, said frame having slots or recesses, Fig. 1, into which the links c are set and in which said links are guided. When a lever-arm O swings backward, a pin d on said arm O presses against a lifting shoulder or incline e , Figs. 5 and 6, on the link c and raises the link, so as to bring the connecting-shoulder f on said link in the path of the actuating-bar Q . As the actuating bar moves back it strikes against the shoulder f and forces the link backward. As each link c is made to abut against the printing-bar g , Fig. 7, this backward motion of the link is imparted to said printing-bar g , which is connected by a link h , Figs. 5 and 6, to the axle b of the type-carrier, so that the backward motion of the printing-bar is communicated to the type-carrier to give the printing motion to said type-carrier. To the printing-bar g are fixed one or more arms Y' , Fig. 7, to which the link h is connected by a pivot Z' , so that the link h partakes of the motion of bar g .

As the printing motion of the type-carrier consists in the type-carrier moving backward toward the platen, and during such printing motion of the type-carrier the slide S and the type-carrier move backward simultaneously, said slide during the printing motion of the type-carrier will not rotate said carrier.

As the type-carrier must rotate more or less to make different types face the platen, the connecting-shoulders f of the various links c are placed farther from or nearer to the starting-point of the connecting-bar Q , so that the

connecting-bar will not move a link c to give the printing motion to the type-carrier until the proper type on said carrier faces the platen. That link c which is to be actuated, as already stated, is raised by the pin d and incline e , so as to lift its connecting-shoulder into the path of the actuating-bar Q , while the links which are to remain at rest are not raised, so that the bar Q swings over said links without imparting motion thereto. The printing-bar g is supported by arms i , fixed to a shaft k , swinging on the frame or support, and from the shaft k extends an arm l , Figs. 2 and 6, to which is secured a restoring-spring m to restore the printing-bar and the links c to the starting-points at the proper moment. The printing motion of the type-carrier should not occur until the proper type faces the platen. To prevent such printing motion at improper moments, a stop n , Figs. 5 and 6, is provided, which prevents the printing motion of the link h and type-carrier K until the proper time. This stop n , as seen in Figs. 4, 5, and 6, when in its normal position, projects up through an eye or perforation in the link h , so as to prevent said link sliding backward. When the printing motion is to occur, the stop n is withdrawn. This stop n is connected to a universal bar o , Figs. 4, 5, and 6, and as a key L is depressed said key presses on the universal bar o to withdraw the stop n . The connection between the stop n and bar o is readily formed by providing the bar o with a nose a' , Figs. 5, 6, and 7, which nose projects into or passes through an eye or perforation in the stop n , so that the descent of the bar o will depress the nose a' and withdraw the stop n . When the key is released, a restoring-spring, Fig. 6, carries the stop back to its locking position. This restoring-spring p is shown in Figs. 6 and 7, and as the stop n and bar o are connected, as described, the return of the stop by the spring p will return the bar o to its normal position after being depressed.

The stop n is provided with an arm q , connected by a pin r with an arm s , connected to the feed-dog I , so that the oscillations of the stop n oscillate the arm s and actuate the feed-dog. The feed-dog is mounted on the pivot b' , Figs. 2, 5, and 6, and said feed-dog may be of any suitable well-known construction. In the drawings the feed-dog is shown composed of two blades I , slightly separated or out of line with one another, as seen in Fig. 4, and as one of said blades passes out of gear with the rack H and the other blade passes into gear with said rack the platen-carriage moves or slips along a slight distance, sufficient to form a space between two letters.

During the printing motion rotation of the type-carrier is to be avoided. For this purpose a stop t is fixed in position to be engaged by the toothed wheel a , fixed to the type-carrier shaft b , when said shaft b moves the type-carrier toward the platen B . While

the toothed wheel *a* is in engagement with the stop *t* rotation of the type-carrier is prevented. When the type-carrier, with its shaft *b* and wheel *a*, moves back to the starting-point, the wheel *a* is carried clear of the stop *t*, and the type-carrier is again free to rotate.

The universal bar *o* is supported by swinging arms *u*, swinging on the fulcrum *M*. Said universal bar *o* is shown as having one or more arms *v*, Figs. 3 and 4, from which extend pins *w*, on which press arms *A'*, extending from the arm *T*, Fig. 7, so that the arms *T A'* in each case form a bell-crank lever. As the bell-cranks *T A'* are moved by the backward swing of the actuating-bar *Q*, the arms *A'* depress the pins *w* and arms *v*, so as to depress the universal bar *o*. The return movement of the universal bar by means of the arms *A' v* assists the return of the actuating-bar *Q* to its starting-point. As the arms *A'*, in connection with the arms *T*, form a bell-crank lever, and as the bar *Q* is connected to the arm *T*, the return movements of the arms *A'* will cause the arms *T* and bar *Q* to return to the starting point.

The type-carrier *K* is inked by the inking-rollers *B'*, pressed against the carrier by spring-arms *C'*. The arms *C'* are supported by an arm *D'*, which, with the type-carrier shaft *b*, has a common support *E'*. The arm *D'* has lateral arms *c'*, to which the spring-arms *C'* are connected by pivots *d'*, and to said arms *c'* are soldered or fixed lugs *e'*, Fig. 5, which lap over the arms *C'* to prevent excessive outward motion of said arms *C'* and to hold said arms *C'*, with their rollers *B'*, against the type. The support *E'* is simply a rod or bar fixed to the arm *D'* and to a sleeve or tube *f'*, in which the shaft *b* is supported, and in which it can rotate. The arm *D'* is guided in rising and falling by a screw or stud *g'*, fixed to a frame *A* and passing through a slot in the arm *D'*, Fig. 1. The lower end of shaft *b* is supported so loosely in the bottom of sleeve *f'* that the upper end of the shaft has enough freedom for lateral motion to move the type-carrier against the platen. The sleeve *f'* is guided in its rising and falling motion by suitable perforations or ways in the frame *A*. By making this support *E'* capable of rising and falling or an axial motion—that is to say, a motion in the longitudinal direction of the axle or shaft *b*—the type-carrier can be raised and lowered, so as to bring different rows of type into the printing-line.

A lever *F'*, fulcrumed at *G'*, can be made to raise the type-carrier. This lever *F'*, as seen in Fig. 1, has one arm passing under the support or rod *E'*, so that the upward swing of this lever-arm will raise the support *E'*, together with the shaft *b* and type-carrier. This lever *F'* can be actuated by a finger-button *H'*, attached directly to the lever *F'* or by a key *I'*, made to act on the said lever. The key *I'* is shown fulcrumed or pivoted to the frame *A* at *h'*, Figs. 3 and 4, and said key

passes over or rests upon the lever *F'*, so that the depression of the key will swing the lever. In practice it will be found convenient to arrange the key *I'* so as to actuate the lever *F'* to a certain degree to bring one row of type into the printing-line and to arrange the finger-button *H'* so as to actuate the lever *F'* to a different degree to bring another row of type into the printing-line. When the lever *F'* is released, a restoring-spring *K'* brings the lever *F'* and the type-carrier *K* back to the starting-point. The lugs *Z* on the toothed wheel *a* of the type-carrier shaft *b*, are so long that the rise and fall of the shaft *b* does not disengage the lugs *Z* from the slides *S*.

About the platen *B* pass flexible bands *L'*. One end of each of said bands is secured to the supporting-frame of the platen, and the other end of each of said bands is secured to a spring *M'*, seated on a bar *N'*, supported by the supporting-frame of the platen. The springs *M'* hold the bands *L'* snugly against the platen. The springs *M'*, as seen in Fig. 1, are coiled about the bar *N'*, and one end of each spring is secured to a stud *i'*, fixed to said bar, and the other ends of the springs are secured to arms *k'*, swinging on said bar *N'*, and to which arms *k'* the free ends of the bands *L'* are secured. The tension of the springs causes the arms *k'* to pull on the free ends of the bands *L'* and to draw said bands snugly about the platen. When a piece of paper is passed onto the platen, the edges of the paper come between the platen and the bands *L'*, so that said bands hold the paper snugly against the platen.

The spring-drum *F* for moving the platen is shown as having its axle *O'* extending through the machine, so that said axle has a firm seat, and said axle can be provided with a ratchet and pawl in any well-known way to enable the spring of the drum *F* to be put under proper tension.

In addition to the restoring-springs already named, each key *L* can be provided with its individual restoring-spring *P'*. In Figs. 4 and 5 the springs *P'* are shown coiled about the fulcrum or bar *M* and having one end braced against frame *A* and the other end passing under a stud *l'* on the key, so that the tension of the spring presses the key upward. The keys *L* are shown arranged in two sets, one set on each side of the type-carrier *K*. Each set of keys acts alike in rotating the type-carrier and imparting motion thereto, and each set of keys is provided with its actuating-bar *Q* and slide *S*. One slide *S* rotates the type-carrier in one direction and the other slide *S* rotates the type-carrier in the opposite direction.

The spacing-key *Q'* is made to actuate the universal bar *o* so as to actuate the feed-dog *I*, and, if desired, said spacing-key can also be made to rotate the type-carrier, so as to secure inking of said carrier; but said spacing-key should not be made to actuate the printing-bar *g*, so that during the spacing opera-

tion the type-carrier does not have any printing motion. The spacing-key can readily be prevented from actuating the printing-bar, since by not providing any link *c* for the spacing-key said key cannot communicate motion to the printing-bar. The spacing-key is mounted on fulcrum *M*, and is made to pass over and press on the universal bar *o* the same as any one of the keys *L*, and by providing the spacing-key *Q'* with its bell-crank lever *N O* said key *Q'* when operated will actuate the bar *Q* and rotate the type-carrier the same as a key *L*.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a type-writing machine, the combination of a type-carrier having a series of type thereon, mechanism for operating the carrier to bring any type opposite the impression-point, and means involving movable links having a movement independent of said mechanism for stopping the carrier when thus properly located.

2. The combination, with the platen, the type-carrier, and keys *L* for moving the type against the platen, of the slide *S*, arranged to rotate the type-carrier and reciprocating in a direction transverse to the platen, a lever *R*, pivoted to the slide, an actuating-bar *Q*, attached to the lever and having supporting-arms *T*, provided with a fulcrum placed parallel to the fulcrum of the keys, and means, substantially as described, for connecting the actuating-bar to the keys.

3. The combination, with the platen, the type-carrier, and actuating-keys *L*, distributed on each side of the type-carrier, of two slides *S*, located one on each side of the type-carrier and reciprocating in a direction transversely to the platen, the levers *R*, pivoted to the slides, the actuating-bars *Q*, attached to the levers and having supporting-arms *T*, provided with a fulcrum placed parallel to the fulcrum of the keys, and means, substantially as described, for connecting the actuating-bars to the keys.

4. The combination, with the platen, the type-carrier, and the keys *L*, of a space-dog *I* for actuating the platen and a universal bar *o*, actuated by the keys, an arm connected to the space-dog, and a rod *n*, connected to said arm *s* and to the universal bar *o*, said rod *n* being extended upward to form a stop for preventing printing motion of the type-carrier, substantially as described.

5. The combination, with the platen, the type-carrier, and the keys *L*, of a printing-bar *g*, connected to the type-carrier, an actuating-bar *Q*, intervening connections, substantially as described, for conveying motion to the bar from the keys, and links *c* for transmitting motion from the actuating-bar to the printing-bar, said links being actuated across the upper part of the main frame *A* and being guided in slots or depressions in said frame, substantially as described.

6. The combination, with the platen, the

type-carrier, and the keys *L*, of a printing-bar *g*, connected to the type-carrier by a link *h*, a bar *Q* for actuating said printing-bar, links *c*, extending from the actuating-bar to the printing-bar, levers *N O* for conveying motion from the keys to the actuating-bar, and a slide *S*, moved by the actuating-bar for rotating the type-carrier, substantially as described.

7. The combination, with the platen, the type-carrier, and the keys *L*, of a printing-bar *g*, connected to the type-carrier by a link *h*, a bar *Q* for actuating said printing-bar, links *c*, extending from the actuating-bar to the printing-bar, levers *N O* for conveying motion from the keys to the actuating-bar, a slide *S*, moved by the actuating-bar for rotating the type-carrier, and a movable stop *n* for preventing printing motion of the type during the rotation of the type, substantially as described.

8. The combination, with the platen, the type-carrier, and the keys *L*, of a printing-bar *g*, connected to the type-carrier by a link *h*, a bar *Q* for actuating said printing-bar, links *c*, extending from the actuating-bar to the printing-bar, levers *N O* for conveying motion from the keys to the actuating-bar, a slide *S*, moved by the actuating-bar for rotating the type-carrier, and a fixed stop *t* for preserving the printing position of the type-carrier, substantially as described.

9. The combination, with the platen, the type carrier, and the keys *L*, of a printing-bar *g* for giving motion to the type-carrier, a bar *Q* for actuating said printing-bar, links *c*, extending from the actuating-bar to the printing-bar, levers *N O* for conveying motion from the keys to the connecting-bar, and a slide *S*, moved by the actuating-bar for rotating the type-carrier, said levers *N O* being constructed to give different degrees of motion to the actuating-bar for varying the rotation of the type-carrier, substantially as described.

10. The combination, with the platen, the type-carrier, and the keys *L*, of a printing-bar *g* for giving printing motion to the type-carrier, a bar *Q* for actuating said printing-bar, links *c*, extending from the actuating-bar to the printing-bar, levers *N O* for carrying motion from the keys to the actuating-bar, and a slide *S*, moved by the actuating-bar for rotating the type-carrier, said levers *N O* being constructed to give different degrees of motion to the actuating-bar, and said links having engaging shoulders *f*, located at different points along the path of the actuating-bar to compensate for the varying movements of said actuating-bar, substantially as described.

11. The combination, with the platen, the type-carrier, and the keys *L*, of a printing-bar *g* for giving printing motion to the type-carrier, a bar *Q* for actuating said printing-bar, links *c*, extending from the actuating-bar to the printing-bar, levers *N O* for con-

veying motion from the keys to the actuating-bar, a slide S, moved by the actuating-bar for rotating the type-carrier, and a universal bar *o*, actuated by the keys, said universal bar
 5 having a movable stop *n* for preventing printing motion of the type at improper moments, substantially as described.

12. The combination, with the platen, the type-carrier, and the keys L, of a printing-
 10 bar *g* for giving printing motion to the type-carrier, a connecting-bar Q for actuating said printing-bar, links *c*, extending from the actuating-bar to the printing-bar, levers N O for conveying motion from the keys to the actuating-bar, and a slide S for rotating the type-carrier, said slide being moved for different
 15 distances by different keys, substantially as described.

13. The combination, with the platen and
 20 the type-carrier, of keys L for giving a rotary and printing motion to the type-carrier and inking-rollers B' for inking the type of the carrier, spring-arms for supporting said inking-rollers, an arm D' for supporting said
 25 spring-arms, and a support or bar E', connecting the arms D' to the type-carrier, substantially as described.

14. The combination, with the platen and the type-carrier having two or more of type-
 30 keys L, provided with connections, substantially as described, for giving a rotary and printing motion to the type-carrier, of inking-rollers B' for the type-carrier, and a lever F' for obtaining an axial motion of the type-carrier to bring different rows of type to the
 35 printing-line, spring-arms for supporting said inking-rollers, an arm D' for supporting said spring-arms, and a support or bar E', connecting the arm D' and the type-carrier, substantially as described.

15. The combination, with the platen and the type-carrier, of keys L, provided with connections, substantially as described, for giving a rotary and printing motion to the type-carrier and inking-rollers B' for the type-carrier, and intervening parts, substantially as
 45 described, for connecting said inking-rollers and type-carrier to a common support E', substantially as described.

16. The combination, with a platen, of flexible bands L', passing about said platen, and springs M' and arms *k'* for pressing said
 50 bands against the platen to secure smooth sitting of the paper against the platen, substantially as described.

17. In a type-writing machine, the combination of a rotatory type-carrier, an actuating-bar connected to said carrier, and a series of levers arranged in front of said bar and each
 60 having a different throw to move said bar varying distances and cause it to turn the type-carrier the distance of one or more type, said bar having supporting-arm T, provided with a fulcrum placed parallel to the fulcrum of the levers, substantially as described.

18. In a type-writing machine, the combination of a rotatory type-carrier, an actuating-

bar connected to said carrier and supported upon vertically-arranged swinging arms, and a series of angle-levers for moving said bar
 70 and a series of key-levers for vibrating said angle-levers.

19. In a type-writing machine, the combination of a rotatory type-carrier, an actuating-bar supported upon vertically-arranged swing-
 75 ing arms and arranged at right angles to the axis of said type-carrier and connected thereto, a series of key-levers arranged at right angles to said actuating-bar, and a series of transmitting-levers arranged between the key-le-
 80 vers and the actuating-bar.

20. In a type-writing machine, the combination of a rotatory type-carrier, an actuating-bar connected thereto, a series of key-levers
 85 beneath said actuating-bar, and a series of transmitting-levers of different lengths and throw arranged between the key-levers and the actuating-bar.

21. In a type-writing machine, the combination of a rotatory type-carrier, a series of
 90 key-levers, a series of transmitting-levers, and an actuating-bar supported upon vertically-arranged swinging arms and arranged in the path of movement of said transmitting-levers and connected to the type-carrier.

22. In a type-writing machine, the combination of a rotatory type-carrier, an actuating-bar connected thereto, and a series of parallel
 95 key-levers having a common fulcrum and a series of angle-levers having a common fulcrum, one set of the arms of the angle-levers being of different lengths and extending toward the
 100 key-lever fulcrum and the other set being of equal lengths and extending to and in front of the actuating-bar.

23. In a type-writing machine, the combination of a rotatory type-carrier, a horizontally-arranged actuating-bar connected thereto, supporting arms for said bar, a fulcrum for
 110 said arms, a series of parallel key-levers, and a series of angle-levers, said angle-levers and supporting-arms being mounted on a common fulcrum placed parallel to the key-lever fulcrum, and the horizontal arms of the angle-levers being arranged beneath the key-levers,
 115 and the vertical arms of the angle-levers extending above the key-levers to co-operate with the horizontally-arranged actuating-bar, substantially as described.

24. In a type-writing machine, the combination of a rotatory type-carrier, a vibratory
 120 lever-like frame carrying an actuating-bar and connected to the type-carrier, and a series of levers mounted on a common fulcrum, the said lever-like frame being also mounted on
 125 said fulcrum and having a cross-bar beneath the same, to which is connected a returning-spring.

25. In a type-writing machine, the combination of a rotatory type-carrier, a reciprocato-
 130 ry slide having a guide geared to rotate said carrier, an actuating-bar connected to said slide, supporting-arms for said bar, a fulcrum for said arms, and a series of levers, each

adapted to move said bar, the said fulcrums of the arms and levers being parallel, substantially as described.

26. In a type-writing machine, the combination of a rotatory type-carrier mounted on a shaft or spindle carrying teeth, a reciprocating slide-rack geared to the teeth, an actuating-bar connected to said slide, supporting-arms for said bar, a fulcrum for said arms, and a series of levers, each adapted to move said bar, the fulcrums of the arms and levers being parallel, substantially as described.

27. In a type-writing machine, the combination of a rotatory type-carrier, an actuating-bar connected thereto to effect its rotation, and a series of independent movable links having a series of abutments located at varying distances from said bar for the purpose of limiting the movements of said bar independently of the sliding or backward movement of the links and determining the extent of rotation of said type-carrier.

28. In a type-writing machine, the combination of a rotatory type-carrier, an actuating-bar connected thereto, a series of independent movable links having each an abutment located at a different distance from said bar, and a series of levers arranged to move said bar and said links.

29. In a type-writing machine, the combi-

nation of a rotatory type-carrier, an actuating-bar connected thereto, a series of vibratory links beneath said bar, a series of abutments on said links arranged to be engaged by said bar, and a series of levers for moving said bar and lifting said links.

30. In a type-writing machine, the combination of a type-carrier, a shaft or spindle, an actuating-bar connected thereto, a printing-bar, intermediate links, a sliding coupling between the shaft and spindle and the printing-bar, and a reciprocatory stop adapted to engage with said coupling.

31. In a type-writing machine, the combination of a type-carrier, a shaft or spindle, an actuating-bar, a printing-bar, intermediate links, a sliding coupling between the shaft or spindle and a printing-bar, a series of bell-cranks, a series of levers, a universal bar beneath the key-levers, and a reciprocatory stop connected to said universal bar and adapted to engage with the said coupling.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRANZ X. WAGNER.

Witnesses:

W. C. HAUFF,

E. F. KASTENHUBER.