

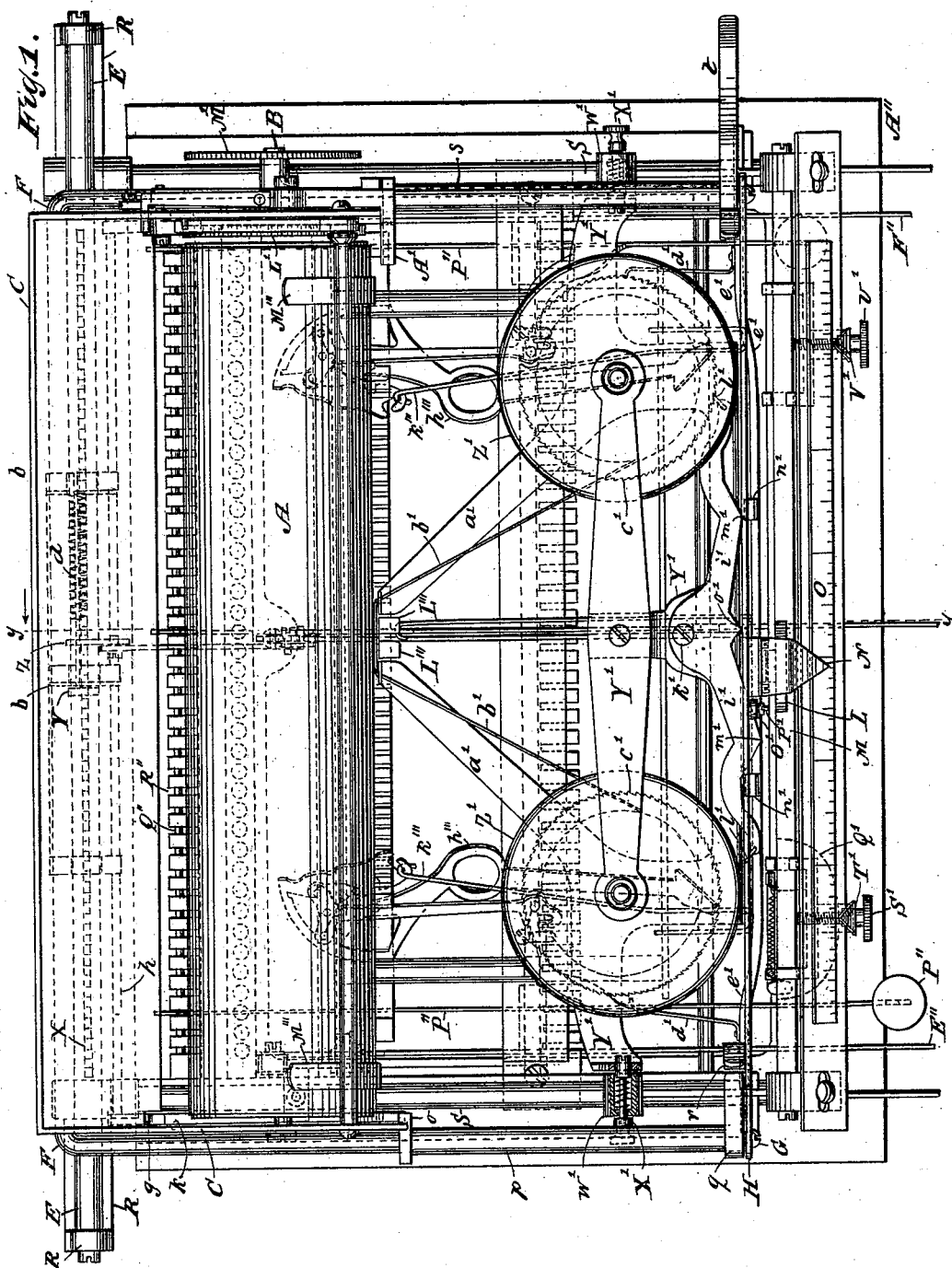
(No Model.)

6 Sheets—Sheet 1.

H. L. WAGNER.  
TYPE WRITING MACHINE.

No. 523,698.

Patented July 31, 1894.



WITNESSES:

Edward Wolff.

Chas. E. Drensgen.

**INVENTOR:**

*Herman L. Wagner.*

**BY**

BY  
Hauft & Hauft  
ATTORNEYS.

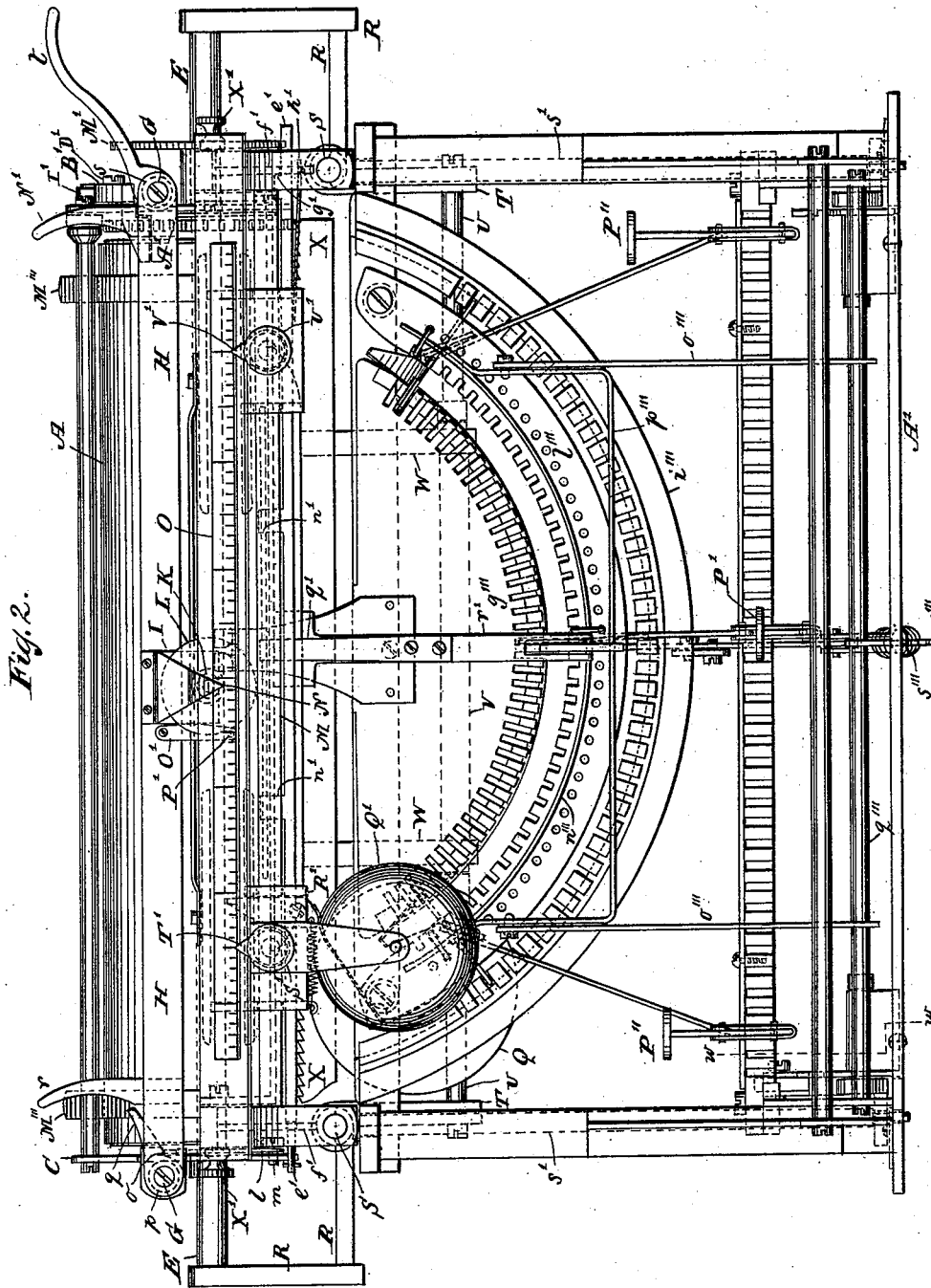
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6 Sheets—Sheet 2.

H. L. WAGNER.  
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WITNESSES:

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INVENTOR:

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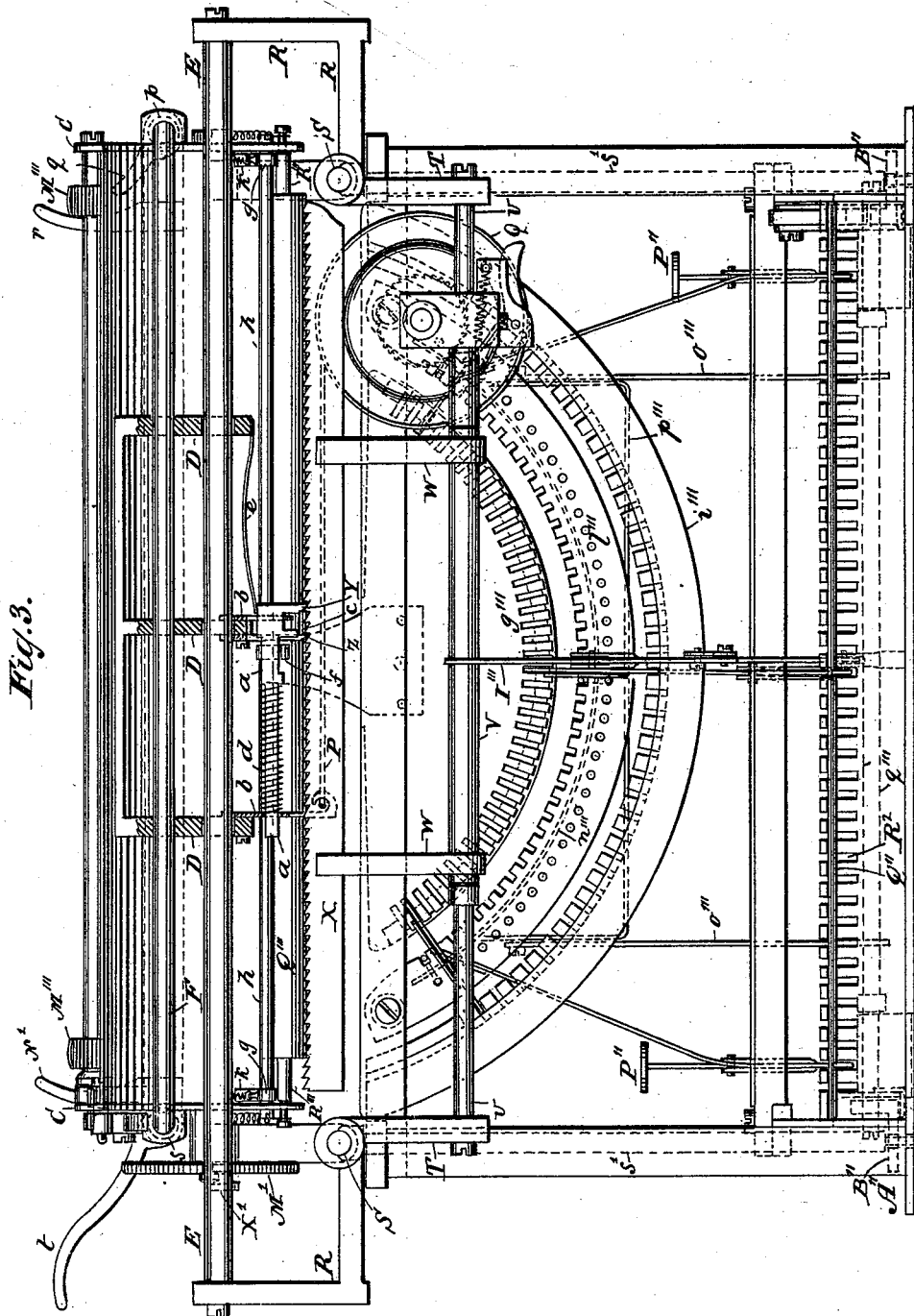
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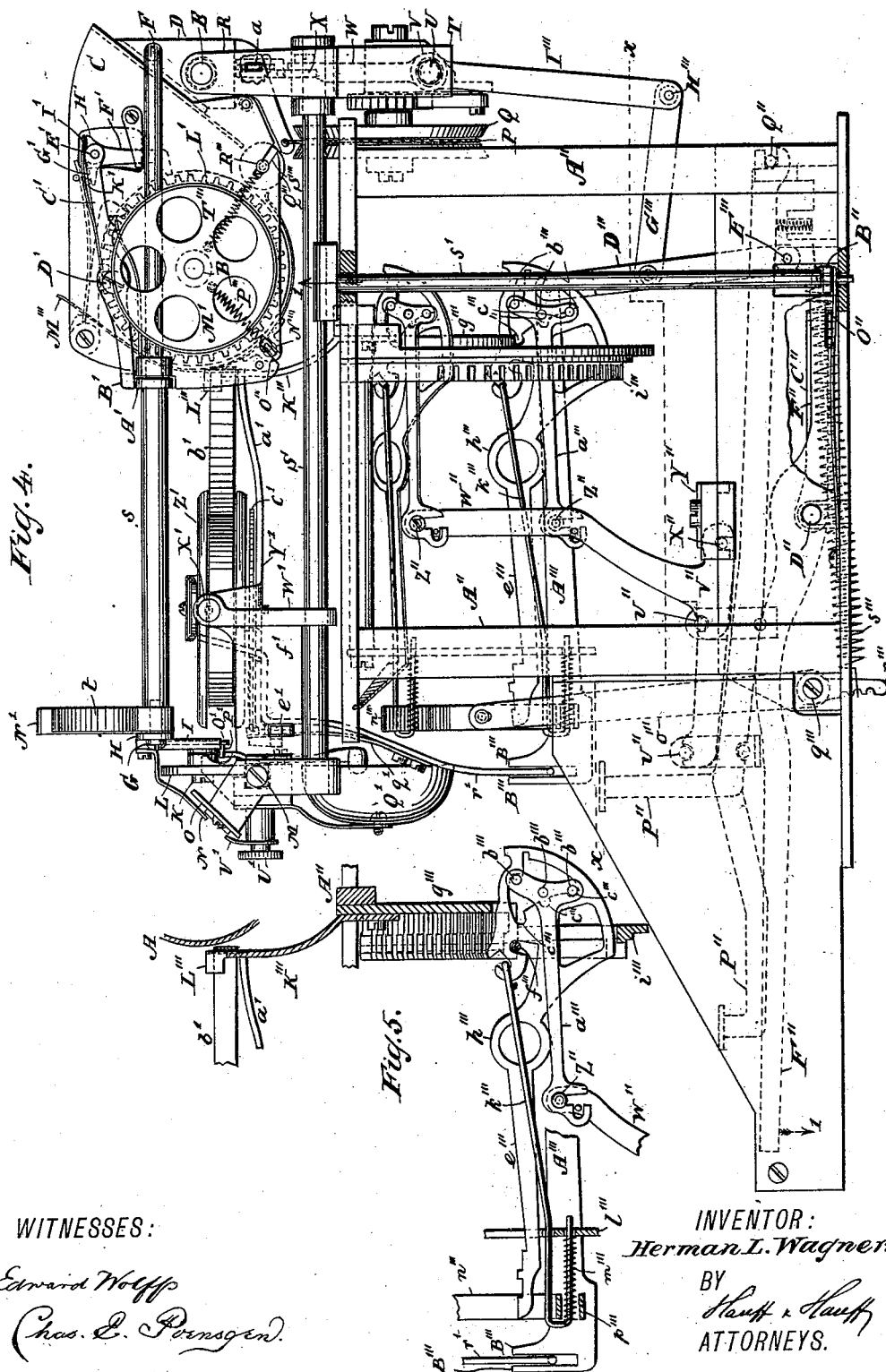
(No Model.)

6 Sheets—Sheet 4.

H. L. WAGNER.  
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**WITNESSES:**

Edward Wolff  
(Chas. E. Fensgen.)

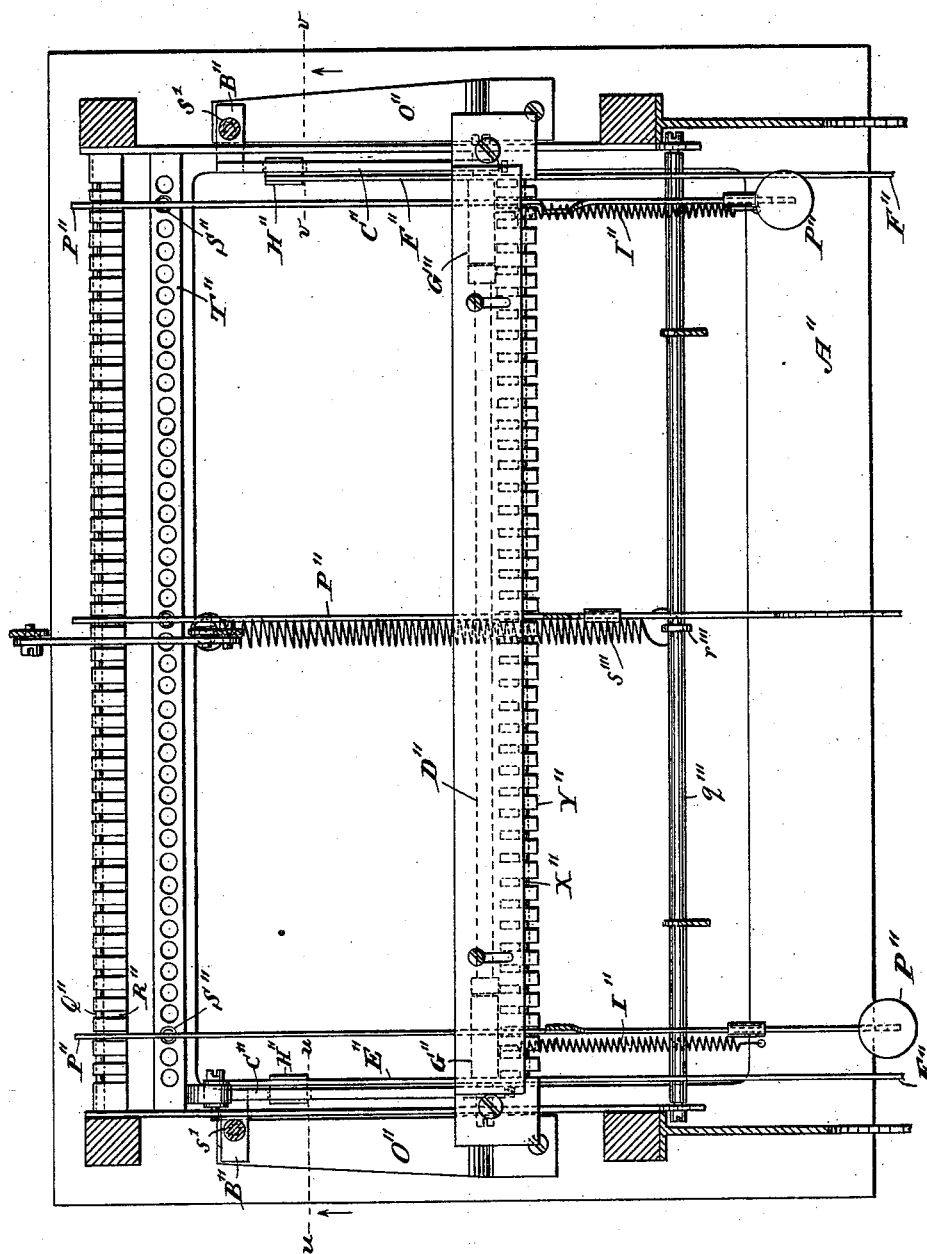
INVENTOR:  
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H. L. WAGNER.  
TYPE WRITING MACHINE.

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Fig. 6.



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Fig. 7.

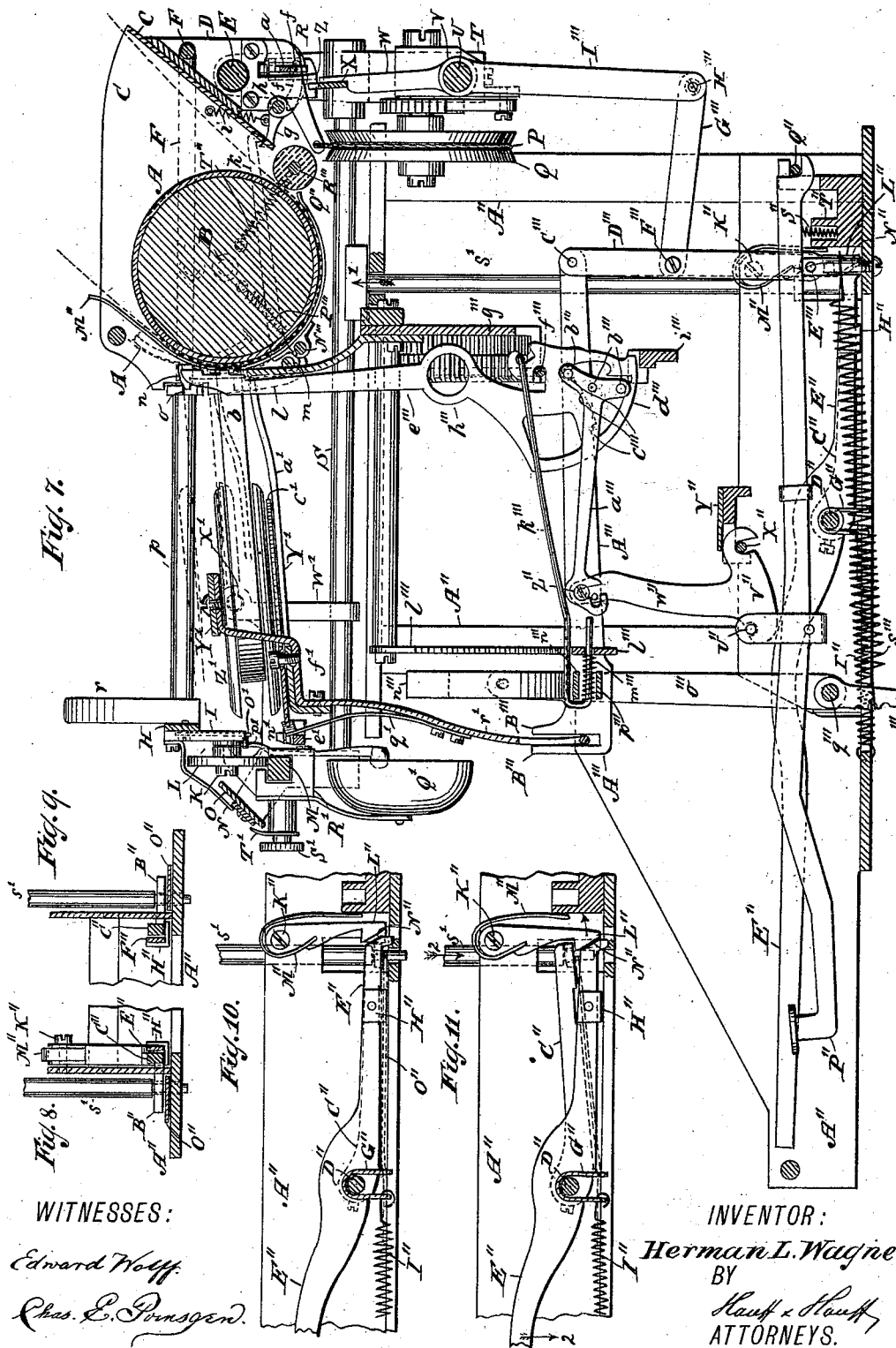
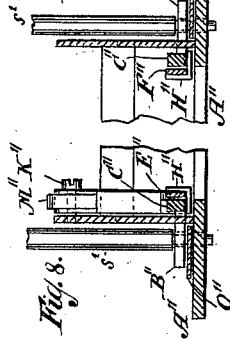


Fig. 9.



WITNESSES:

Edward Wolff.  
Chas. E. Dunsen.

Fig. 10.

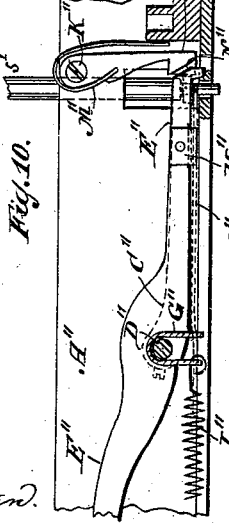
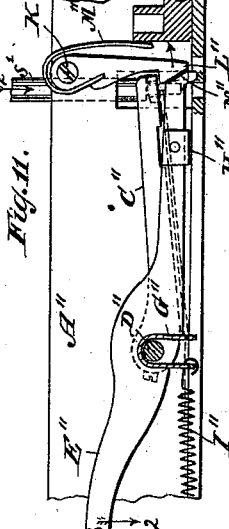


Fig. 11.



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BY  
Hauß & Hauß  
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# UNITED STATES PATENT OFFICE.

HERMAN L. WAGNER, OF BROOKLYN, ASSIGNOR TO FRANZ X. WAGNER,  
OF NEW YORK, N. Y.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 523,698, dated July 31, 1894.

Application filed April 27, 1893. Serial No. 472,093. (No model.)

*To all whom it may concern:*

Be it known that I, HERMAN L. WAGNER, a citizen of the United States, residing at Brooklyn, in the county of Kings 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 an improvement in type writing machines and the invention consists in the novel features of construction pointed out in the following specification and claims and illustrated in the annexed drawings, in which—

Figure 1 is a plan view of the type writing machine. Fig. 2 is a front elevation of the machine. Fig. 3 is a rear elevation of the machine. Fig. 4 is a side elevation of the machine. Fig. 5 is a section along *yy* Fig. 1. Fig. 6 is a section along *xx* Fig. 4. Fig. 7 is a section similar to Fig. 5 with parts in a different position than in Fig. 5. Fig. 8 is a section along *uu* Fig. 6. Fig. 9 is a section along *vv* Fig. 6. Fig. 10 is a sectional side elevation of Fig. 8. Fig. 11 is a view similar to Fig. 10 with parts in a different position than in Fig. 10.

In the drawings the letter A indicates a platen or roller having its shaft B journaled in a carriage C which carriage has at its rear depending arms D (Fig. 3) clasping or hinged on a transverse bar E on which the arms D with carriage C and platen A can travel or be fed back and forth. A U-shaped metallic frame or rod F extends along the back and sides of the carriage C and to the free ends of this frame F is screwed or secured at G a bar H having a depending arm I (Figs. 2 and 7) carrying a stud or screw K forming a shaft for roller L traveling on the cross bar or track M as the carriage moves back and forth on rod E. The bar H also carries an index or pointer N traveling over scale O as the carriage C moves. A cord P secured to carriage C and to spring drum Q as well known tends to move the carriage in one direction.

The rod E is supported by arms R rising from the rods S which extend from the rear of the machine toward the front thereof. At their front ends the rods S support the track or way M for the roller L. From the rear ends of rods S depend the arms T (Figs. 3, 4

and 7) carrying the transverse rod U on which turns or swings the sleeve V carrying the arms W supporting the feed rack X. The sleeve V with the arms W and rack X are vibrated back and forth as hereinafter described to allow the carriage C and platen A to move or be fed step by step under the action of cord P and spring drum Q. The feed rack X in vibrating engages alternately the dog Y and the stop Z. The stop Z is fixed on carriage C. The dog Y is secured to an arm or short rod *a* slidably arranged in eyes or hangers *b* depending from carriage C or from the arms D supporting the rear of said carriage. The degree of sliding of the rod *a* is limited by the dog Y and by a stop *c* (Fig. 3) depending from rod *a* on opposite sides of an eye *b*. A spring *d* coiled about rod *a* and braced against a shoulder thereon tends to force the rod *a* and dog Y in the direction of feed of the carriage, that is in the direction in which the cord P moves the carriage. When the rack X is swung backward said rack engages one of its teeth with dog Y and the tension on cord P being greater than the power of spring *d* the carriage C will be drawn along by the cord until the eye or hanger *b* between dog Y and stop *c* strikes against dog Y thus arresting the carriage as the dog Y is braced against a tooth of rack X. When the rack X vibrates toward the front of the machine said rack frees the dog Y and engages one of its teeth with the fixed stop Z so that the carriage does not move for the forward swing of the feed rack X, during which forward swing it may also be noticed occurs the printing action of the device as hereinafter explained. As soon as the feed rack has swung far enough forward to clear the dog Y the latter under the action of spring *d* is moved until the stop *c* strikes eye *b* to arrest further motion of the dog Y. The rack X on now moving backward will engage a different tooth with the dog Y from the tooth formerly engaged and as soon as the rack X is far enough back to clear the fixed stop Z the cord P will move the carriage C to carry the eye *b* between stop *c* and dog Y out of contact with said stop *c* and against dog Y when the feed of the carriage is again arrested. The backward and forward vibration of feed rack X thus tends to impart to

carriage C and platen A the well known step by step or feed motion.

The eye *b* near the dog Y is of such size that the dog Y can be moved or lifted vertically out of engagement with the rack X. A spring *e* (Fig. 3) extending from an arm D and pressing on dog Y normally holds the latter down toward the rack X. When the carriage is to be set the dog Y is lifted against pressure of spring *e* out of engagement with rack X thus leaving the carriage free to be set by hand.

The dog Y can be lifted out of action or away from rack X by a lever arm *f* (Figs 3 and 7) extending from fulcrum or rotary bar *h* in carriage C and from which fulcrum extends a lever arm *g* (Fig. 7) acted on by spring *i* to normally hold the lever arm *g* up and the arm *f* down so that dog Y will engage rack X. The lever arm *g* is engaged or pressed down by arm *k* of lever *h l* fulcrumed at *m*. The upper or free end of lever arm *l* is formed with an inclined face *n* adapted to be pressed by nose *o* projecting from sleeve *p* rotatably mounted on a leg of the U shaped frame F. From sleeve *p* projects a finger lever *q* (Figs. 1 and 3) by depressing which the sleeve *p* and nose *o* are vibrated or turned so that the nose *o* pressing on inclined face *n* of lever *h l* will vibrate the latter together with lever arms *g f* so that the latter will lift dog Y out of rack X. A finger rest or handle *r* (Figs. 1, 2, 3 and 7) is secured to the bar H in proximity to finger lever *q* said handle *r* being serviceable in sliding the carriage by hand.

The rotary or vibratory sleeve *p* as stated is on one leg or branch of the U shaped frame F. On the other leg or branch of this frame F opposite the sleeve *p* is a similar rotary or vibratory sleeve *s* which can be actuated by finger lever *t*. This sleeve *s* can lift the dog Y out of action by a similar lever system to that marked *h k g* so that the actuation of either finger lever *q* or *t* will vibrate fulcrum bar *h* and lever arm *f* to free the dog Y. Said lever *t* and sleeve *s* have however a further function namely to rotate platen A.

The sleeve *s* has a nose *A'* (Figs. 2 and 4) similar to nose *o* of sleeve *p*. This nose *A'* when the sleeve *s* rotates or vibrates will actuate lever B' C' fulcrumed at D' to carriage C. To lever arm C' at E' is fulcrumed a lever F' G' having a nose H' pressed by spring I' on lever arm C' so that when lever arm C' swings downward the hooked lever arm F' will catch into toothed wheel L' on platen shaft B so as to rotate said shaft with platen A. A stop K' (Fig. 4) on carriage C pressing on the tail or lever arm G' of lever F' G' as the latter rises will swing the lever arm F' out of engagement with toothed wheel L' at the proper moment. The platen A it may be noted can also be rotated by the hand wheel M' on shaft B. In proximity to the finger lever *t* is arranged a handle N' on bar H similar to the handle *r* fixed on bar H near the lever *q*. From bar H depends the swinging

or pivoted arm O' (Fig. 2) the stud P' of which on the carriage C and bar H approaching the end of their travel will engage the hammer arm of bell Q' so as to sound the latter. While actuating the bell hammer the arm O' braces itself or presses against arm I so as not to swing or move but on the return movement of the carriage the arm O' will swing away from arm I so as to clear or glide over the bell hammer lever without actuating the latter.

The bell Q' is secured to a hanger or slide R' (Figs. 2 and 7) on bar M and said slide can be set along the bar M by a set screw S' a pointer T' on the slide traveling over scale O so as to show where the bell Q' is set. Another set screw U' with a pointer V' can be set toward or from pointer T' the space between the pointers T' V' indicating the desired limit of travel of the carriage C. The slides carrying the set screws S' U' being mounted on the bar or track M on which travels the roller L said slides will form stops for the roller so as to limit the travel of the roller and the consequent travel of the carriage. The bringing of the screws S' U' more or less together thus limits or enlarges the travel of the carriage C.

From each of the rods S rises an arm W' (Figs. 4 and 7) said arms W' carrying pivots X' for supporting the ribbon frame Y' carrying the ribbon spools Z'. From the ribbon frame Y' extend arms *a'* the free ends of which lie near the platen A and are slightly separated (Fig. 1). The ribbon *b'* passes from one spool Z' across the free separated ends of arms *a'* to the other spool Z'. As will be seen later on the type bars are arranged to strike on the ribbon *b'* between the free ends of arms *a'* so as to drive or stretch the ribbon toward the platen when producing an impression.

The ribbon frame Y' with arms *a'* and the ribbon *b'* oscillate on the pivots X' so that when the machine is not printing the free ends of arms *a'* with the interposed ribbon portion are down or below the printing line of the platen so as to expose the printing, but when a type bar moves toward the platen to print the free ends of arms *a'* rise or swing up to the printing line so that the type bar in making its printing stroke will land on the ribbon portion between the free ends of arms *a'*. The means for producing this oscillation of the ribbon frame will be presently explained.

Each ribbon spool Z' has on its under face a ratchet wheel *c'*. Pawls *d'* (Fig. 1) project from a bar or rod *e'* adjustably mounted in frame plates *f'* (Figs. 2 and 4) one frame plate *f'* rising from each rod S. The rod *e'* has near one end a projection *g'* (Fig. 2) forming shoulders and by depressing this end of rod *e'* against the spring *h'* the rod *e'* can be slid to about one shoulder or another of the projection *g'* against frame plate *f'*. This setting of the rod *e'* can be made to bring either one spring pawl *d'* or another into action. In Fig.



1 the right hand spring pawl  $d'$  is shown in action and the left hand one out of action. As the ribbon frame  $Y'$  now oscillates on pivots  $X'$  the ratchet engaged by a pawl  $d'$  is moved or swung toward the platen a sufficient distance to cause the engaging pawl  $d'$  to jump into a tooth of the ratchet  $c'$  succeeding the one just previously engaged by the pawl so that on the return swing of the frame  $Y'$  the spool  $Z'$  will be slightly rotated to feed the ribbon a certain degree onto the actuated spool and from the other. As one pawl  $d'$  or another is in engagement the ribbon will be fed in one direction or another and should the rod  $e'$  be so set that neither pawl  $d'$  is in engagement said pawls will evidently not rotate the spools  $Z'$ .

Stop pawls prevent retrograde rotation of one or another of the ratchets  $c'$  and spools  $Z'$ . These stop pawls are formed by an arm  $i'$  (Fig. 1) pivoted at  $k'$  to the ribbon frame  $Y'$ . The ends of arm  $i'$  are provided with spring blades or fingers  $l'$  forming the stop pawls and as the arm  $i'$  is set or turned on its pivot  $k'$  one pawl  $l'$  or another will come into action. In Fig. 1 the right hand stop pawl  $l'$  is shown in action and the left hand one out of action. On the arm  $i'$  are noses  $m'$  and on the setting rod  $e'$  are projections  $n'$ , and as the rod  $e'$  is slid or adjusted to bring one or another of pawls  $d'$  into action one or another of the projections  $n'$  strikes one or another of the noses  $m'$  to swing the arm  $i'$  on pivot  $k'$  so as to shift one or another of the stop pawls  $l'$  into action. The arm  $i'$  also has a nose  $o'$  and as the arm  $i'$  is swung on pivot  $k'$  the spring  $q'$  (Figs. 4 and 7) will press on one side or the other of the nose  $o'$  to hold the arm  $i'$  against accidental movement.

It is seen from the above that if the sliding rod  $e'$  is slid to one side a sufficient distance one pawl  $d'$  with the corresponding stop pawl  $l'$  is in action, and if the rod  $e'$  is slid far enough to the other side of the machine the other pawl  $d'$  and stop pawl  $l'$  are in action while if the rod  $e'$  occupies an intermediate position all the pawls  $d'$   $l'$  are out of action and the spools  $Z'$  can then be turned by hand in either direction. The spring  $q'$  (Figs. 4 and 7) rises from an arm or hanger  $r'$  depending from the ribbon frame  $Y'$  and this hanger  $r'$  serves to oscillate the ribbon frame on the pivots  $X'$  as will presently appear.

The ribbon frame with the carriage platen and feed rack it is noticed are all supported on the rods  $S$  which rest on the legs  $s'$ . These legs are adapted to slide vertically up and down a certain distance to bring the platen into position for each type bar to print with one or another of its types, or as generally expressed for printing with the upper or lower case. The legs  $s'$  are guided or supported in the frame or support  $A''$ , the lower ends of the legs  $s'$  being diminished in diameter to form shoulders resting on feet  $B''$  as seen in Figs. 8 and 9. The feet  $B''$  project from or are fixed to arms  $C''$  one at each side

of the machine or frame  $A''$  and each of said arms  $C''$  is fixed to a rock shaft  $D''$  so that said arms  $C''$  will swing or oscillate together. 70

At one side of the machine in proximity to an arm  $C''$  is arranged a lever  $E''$  and at the other side of the machine in proximity to the other arm  $C''$  is a corresponding lever  $F''$ . These levers  $E''$   $F''$  have saddles or seats  $G''$  loosely straddling or seated on the rock shaft  $D''$  so that the levers  $E''$   $F''$  can be actuated independently of one another. These levers  $E''$   $F''$  extend from the rear of the machine forward to within reach of the operator. Each lever  $E''$   $F''$  engages under its adjacent arm  $C''$  by means of a shoulder or projection  $H''$  so that the depression of the outer end of any one lever  $E''$  or  $F''$  will actuate the adjacent arm  $C''$  and the rock shaft  $D''$  consequently also the other arm  $C''$  so as to raise the legs  $s'$ . Each lever  $E''$   $F''$  has a restoring spring  $I''$  to return its lever when released. 85

To the frame  $A''$  at  $K''$  is pivoted a hook or catch  $L''$  which tends to swing forward or into engaging position under the influence of spring  $M''$ . When the arms  $C''$  are raised by lever  $F''$  the catch  $L''$  will snap under one of the arms  $C''$  so as to hold the feet  $s'$  and the devices thereon raised as seen in Fig. 11. To release the catch  $L''$  the lever  $E''$  is actuated, said lever having at its rear end an inclined face  $N''$  (Figs. 10 and 11), which striking against the catch  $L''$  will force said catch back or out of action against the pressure of its spring  $M''$  and thus allow the legs  $s'$  to sink. Should the lever  $E''$  be used to raise the legs  $s'$  the inclined face  $N''$  of said lever will hold back the catch  $L''$  so that the legs  $s'$  will sink as soon as the lever  $E''$  is released. By thus either actuating lever  $F''$  or  $E''$  the legs  $s'$  will be raised and locked in raised position or said legs will be merely raised to sink again on the release of the lever  $E''$ . 95 100 105 110

Upwardly pressing springs  $O''$  under the feet  $B''$  ease the descent of the legs  $s'$  but said springs  $O''$  are not powerful enough to raise or hold up the legs  $s'$  with the mechanism carried by said legs. 115

The finger keys or levers  $P''$  are fulcrumed on a suitably supported cross bar  $Q''$  near the rear of the machine and said rear ends of levers  $P''$  are seated or guided in slots or ways  $R''$  (Fig. 6). A suitable distance in front of the fulcrum rod  $Q''$  are springs  $S''$  seated in a cross bar  $T''$  and which springs  $S''$  serve to quickly lift or restore the keys  $P''$  when released. Each key  $P''$  is jointed at  $U''$  to a bell crank lever  $V''$   $W''$  the arm  $V''$  of which is fulcrumed on a cross bar  $X''$  supported by a cross brace  $Y''$  suitably grooved to form seats or guide grooves for the lever arms  $V''$ . The lever arms  $W''$  are jointed at  $Z''$  to links  $a'''$  having at their rear ends studs or teeth  $b'''$  adapted to successively engage into recesses  $c'''$  in the flaring tail piece  $d'''$  of each type bar  $e'''$ . Each 120 125 130

type bar is fulcrumed at  $f'''$  in a plate or hanger  $g'''$  suitably grooved to form guide ways for the swinging type bar.

When a key  $P''$  is depressed the arm  $W'''$  is swung forward so as to cause at first that tooth  $b'''$  of the link  $a'''$  which is situated farthest from the type bar fulcrum  $f'''$  to pull on the tail piece  $d'''$  for swinging the type of type bar  $e'''$  toward the platen A. As the link  $a'''$  swings the type bar up the teeth  $b'''$  nearer to the fulcrum  $f'''$  successively come into action and at the end of the swing of type bar  $e'''$  toward the platen the tooth  $b'''$  nearest the fulcrum  $f'''$  acts to move the type bar. In consequence of this continually shortening leverage of link  $a'''$  on type bar  $e'''$  the link  $a'''$  tends to continually accelerate the motion of the type bar toward the platen so that the type bar will deliver its printing stroke in the sharp quick manner desired for clear work.

The type bars  $e'''$  have each an eye or perforated portion  $h'''$  and by compressing the rim of the eye  $h'''$  either transversely or longitudinally the type bar is lengthened or shortened as required for proper adjustment.

The tail piece  $d'''$  of each type bar in addition to being guided in the slots or grooves of the hanger  $g'''$  is further guided by the grooves or slots in the cross piece  $i'''$  (Figs. 3 and 7). From each tail piece  $d'''$  extends a link  $k'''$  the front part of which is guided in one of the eyes or perforations in cross piece  $i'''$ . A restoring spring  $m'''$  for the link  $k'''$  braced against said cross piece  $i'''$  is useful for quickly returning link  $k'''$ . The front part of link  $k'''$  hooks over or engages the part  $n'''$  of the frame  $n''' p'''$  (Figs. 2 and 7) said frame  $n''' p'''$  being jointed or pivotally supported on the arms  $o'''$  fixed to the rock shaft  $q'''$  provided with a depending arm  $r'''$  engaged by restoring spring  $s'''$ .

From the frame  $n''' p'''$  extends an arm  $A'''$  the front part of which is forked at  $B'''$  (Figs. 4 and 7). Into this fork  $B'''$  extends the arm  $r'$  for vibrating the ribbon frame  $Y'$ , said arm  $r'$  being capable of rising and falling in the fork  $B'''$  without coming out of engagement therewith. When a type bar  $e'''$  swings up to print this type bar draws back on the link  $k'''$  thus oscillating or moving the frame  $n''' p'''$  with the arm  $A'''$  backward and oscillating the arm  $r'$  and ribbon frame  $Y'$  on the pivots  $X'$  so as to swing the free ends of the arms  $a'$  with the ribbon  $b'$  up to the printing line.

The backwardly moving arm  $A'''$  by means of joint or pivot  $C'''$  actuates the lever  $D'''$  on its fulcrum  $E'''$  (Fig. 7). The lever  $D'''$  is jointed at  $F'''$  to link  $G'''$  which at  $H'''$  is jointed to the arm  $I'''$  depending from the rocking sleeve  $V$  to which is fixed the feed rack  $X$  so that the latter being thus vibrated will effect the feed of the platen carriage as already noted.

In order to have the type bars  $e'''$  strike

accurately on the printing point, a guide or arm  $K'''$  (Fig. 5) is provided having a forked head or top  $L'''$  (Figs. 1 and 5) between the tines or branches of which fork  $L'''$  each of the type bars  $e'''$  enters toward the end of its stroke so as to be guided by said fork to the printing point or exact spot where the impression is required.

The fulcrum support or cross brace  $Y''$  carrying the fulcrum  $X''$  acts as a stop for limiting the upward movement of the finger keys  $P''$  as seen in Fig. 4. The fork  $L'''$  is situated so that the engagement of the fork with the type bar will occur at a point inside the type, or between the type and the type bar fulcrum, so as to leave the type which are at the free end of the type bar unobstructed in their printing action. The link  $k'''$  it is noticed engages the tail piece of the type bar at the opposite side of the fulcrum  $f'''$  from that on which the link  $b'''$  or its studs or teeth  $c'''$  engages said tail piece and said link  $k'''$  will aid in restoring the type bar to its starting point when released, so that said link  $k'''$  in one sense acts as a withdrawing link for moving the type bar from the platen.

The paper to be printed on can be held snugly about the platen by arms or springs  $M'''$  clasp the platen said arms  $M'''$  being movably or slidably mounted in the platen carriage on a transverse bar or rod  $N'''$  (Figs. 4 and 7) so that said arms  $M'''$  can be slid or adjusted on the rod  $N'''$  toward or from one another to correspond to the adjustment of the stops or pointers  $T' V'$ . The rod  $N'''$  lies in slots or recesses  $O'''$  (Fig. 4) in the platen carriage and is held toward the platen by springs  $P'''$  secured to the rod  $N'''$  and to the carriage. The springs  $P'''$  allow the rod  $N'''$  a certain play from and toward the carriage. A roller  $Q'''$  also serves to hold the paper toward the platen the axle  $R'''$  of said roller being movably mounted in slots or recesses  $S'''$  in the platen carriage and held toward the platen by springs  $T'''$ .

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

1. The combination, with a suitably actuated type bar provided with a plurality of type, of a platen or paper carriage made vertically shiftable in a rectilinear direction so as to bring the paper to the printing points of the various types movable arms  $C''$  located on opposite sides of the machine and on which the carriage permanently rests and independent levers for shifting the arms, and a detent for holding the carriage after being shifted or raised substantially as described.

2. The combination with a suitably actuated type bar of a platen or paper carriage, movable legs for the carriage, arms  $C''$  made to engage said legs, a rock shaft to which said arms are fixed and an actuating lever for each of said arms, each actuating lever being loosely mounted on the rock shaft so as to be capable of independent actuation thereon substantially as described.

3. The combination with a suitably actuated type bar of a platen or paper carriage, movable legs for the carriage, arms C'' made to engage said legs, a rock shaft to which said arms are fixed, an actuating lever for each of said arms, and a detent for engaging one of said arms, the actuating lever of said last named arm being made to engage the detent to release the latter substantially as described.

4. The combination with a suitably actuated type bar of a platen or paper carriage, movable legs for the platen, independent cushioning springs O'' for said legs, arms C'' made to engage said legs and an actuating lever (one or more) for said arms said springs O'' and arms C'' being located on opposite sides of the carriage substantially as described.

5. The combination with a suitably actuated type bar of a platen or paper carriage, movable legs for the carriage, arms C'' made to engage said legs, a rock shaft to which said arms are fixed and an actuating lever for each of said arms, each actuating lever being loosely mounted on the rock shaft and provided with its individual restoring spring substantially as described.

6. The combination with a platen, of a type-bar having a series of engaging recesses, and an actuating lever or key provided with a link having corresponding studs or projections made to successively enter said recesses during the movement of the type-bar, said type-bar turning on a pivot or fulcrum, and said recesses being located at varying distances from said fulcrum, so that the leverage is varied by the successive engagement of the recesses, substantially as described.

7. The combination with a platen, of a type-bar provided with a flaring tail piece having recesses, and an actuating lever or key provided with a link having corresponding studs or projections made to successively enter said recesses during the movement of the type-bar, said type-bar turning on a pivot or fulcrum, and said recesses being located at varying distances from said fulcrum, so that the leverage is varied by the successive engagement of the recesses, substantially as described.

8. The combination with a platen, of a type bar provided with a tail piece having recesses or seats and an actuating lever provided with a link having corresponding studs or projections to successively enter said recesses during the movement of the type bar substantially as described.

9. The combination with a platen, of a type bar provided with a tail piece having recesses or seats and an actuating lever or key, a bell crank lever actuated by said key, and a link jointed to said bell crank lever and having its free end provided with studs or projections made to correspond to and to successively enter the recesses of the tail piece of the type bar substantially as described.

10. The combination with a platen, of a type bar provided with a tail piece having recesses

or seats, and an actuating lever or key, a bell crank lever actuated by said key and having its fulcrum support arranged to act as a stop for the key, and a link jointed to said bell crank lever and having its free end provided with studs or projections made to correspond to and to successively enter the recesses in the tail piece of the type bar substantially as described.

11. The combination with a suitably actuated type-bar provided with a plurality of type, and a pivot about which the type bar swings, of a platen or paper carriage made vertically shiftable so as to bring the paper to the printing points of the various types, movable arms C'' located on opposite sides of the machine and on which the platen permanently rests, and independent levers for shifting the arms, said levers being loose or detached from the arms C'' so that the latter can move independently of the levers substantially as described.

12. The combination with a platen, of a type-bar actuating mechanism, substantially as described, for the bar, and a withdrawing link l''' formed separate from the actuating mechanism and permanently connected to the bar at one end, the other end of the link being arranged in a guide l''' and provided with a withdrawing spring braced against said guide, substantially as described.

13. The combination with a platen, of a type-bar provided with a flaring tail piece, actuating mechanism, substantially as described, connected to said tail piece, and a withdrawing link formed separate from the actuating mechanism and permanently connected to said tail piece at one end, the other end of the link being arranged in a guide l''' and provided with a withdrawing spring braced against said guide, substantially as described.

14. The combination with a platen of a type bar provided with a flaring tail piece mounted on a fulcrum or support, actuating mechanism substantially as described connected to the tail piece at one side of the fulcrum and a withdrawing link formed separate from the actuating mechanism and permanently connected to the tail piece at the other side of the fulcrum said link being led in a guide l''' and provided with a withdrawing spring braced against said guide substantially as described.

15. The combination with a platen of a type bar, actuating mechanism substantially as described for the bar, a withdrawing link for said bar and a spring actuated lever or frame n''' p''' engaged by the withdrawing link substantially as described.

16. The combination with a suitably fed platen of a type bar, actuating mechanism substantially as described for the bar, a withdrawing link for the bar and a spring actuated lever or frame n''' p''' engaged by the withdrawing link, said spring actuated lever being connected to the feed of the platen substantially as described.

17. The combination with a suitably fed

platen of a type bar, a ribbon frame adapted to bring its ribbon toward the platen during the forward or printing motion of the type bar and to withdraw the ribbon during the return movement of the type bar, actuating mechanism substantially as described for the bar, a withdrawing link for the bar and a spring actuated lever or frame engaged by the withdrawing link, said spring actuated lever being connected to the platen feed and ribbon frame substantially as described.

18. The combination with a platen having a fixed stop or catch and a movable spring actuated dog of a vibrating rack for alternately engaging the stop and the dog, a spring actuated lever or frame for actuating the rack, a type bar, actuating mechanism substantially as described for the type bar, and a withdrawing link made to extend from the type bar to the spring actuated lever or frame substantially as described.

19. The combination with a platen provided with a fixed stop and a pair of guides or eyes of a bar arranged to slide in said eyes a spring braced or compressed against one of said eyes and against the bar, a dog and a shoulder made to extend from the bar at opposite sides of an eye so as to limit the vibration or sliding of the bar in the eyes, and a vibrating rack for alternately engaging the stop and the dog substantially as described.

20. The combination with a platen provided with a fixed stop and a movable dog, of a vibrating rack for alternately engaging the stop and the dog, a spring *e* for pressing the dog toward the rack, an arm *f* for lifting the dog out of engagement with the rack, and a lever for actuating said dog lifting arm, said lever being made to extend forward of the platen substantially as described.

21. The combination with a platen carriage of a platen rotatably mounted in said carriage a toothed wheel for rotating the platen, a lever made to actuate the toothed wheel, a movable dog on said carriage, a feed rack adapted to be engaged by said dog and a lifting arm for moving the dog out of engagement with the rack, said gear actuating lever being made to engage said lifting arm for actuating the said bar and axle and a rotary sleeve *s* mounted on the platen carriage and made to engage said lever, said sleeve being made to extend to the forward part of the carriage and being provided with a laterally projecting finger piece *t* substantially as described.

22. The combination with a platen carriage of a platen mounted in said carriage, clasp- ing arms or springs made to extend about the platen, a movable bar or support *N'''* for the arms and springs *P'''* secured to the carriage and to the bar for holding the latter with the arms toward the platen said bar *N'''* being guided in ways *O'''* at the forward part of the platen substantially as described.

23. The combination with a platen carriage of a platen mounted in said carriage, clasp-

ing arms or springs made to extend about the platen, a movable bar or support *N'''* for the arms, a roller *Q'''* made to bear against said platen and having a movable axle or support and independent springs secured to said carriage and to the movable bar and axle for moving the said bar and axle independently of one another toward the platen substantially as described.

24. The combination with a platen, a type bar and actuating mechanism substantially as described for said parts of a movable ribbon frame or carrier provided with a rigid hanger *r'* depending therefrom, and a forward and backward oscillating fork *B'''* made to engage the hanger for moving the ribbon frame to carry the ribbon toward the platen during the forward or printing stroke of the type bar and to withdraw the ribbon during the return stroke of the type bar.

25. The combination with a platen, a type-bar, and an actuating key for the type-bar, of a swinging or pivotally supported ribbon frame or carrier provided with a rigid hanger *r'* depending therefrom, an arm *A'''* provided with a fork *B'''* made to engage the hanger, an oscillating frame *n''' p'''* connected to the type-bar and made to support the arm *A'''*, and swinging arms *o'''* to which said oscillating frame is jointed, substantially as described.

26. The combination with a platen, a type bar and actuating mechanism substantially as described for said parts, of a swinging or pivotally supported ribbon frame or carrier provided with spools or bobbins for the ribbon, and with a rigid hanger *r'*, and a forward and backward oscillating fork *B'''* made to engage the hanger for swinging the ribbon frame and mechanism substantially as described for rotating the spools during the operation of the device.

27. The combination with a platen, a type bar and actuating mechanism substantially as described for said parts of a swinging or pivotally supported ribbon frame or carrier provided with spools or bobbins for the ribbon, and with a rigid hanger *r'*, and a forward and backward oscillating fork *B'''* made to engage the hanger for swinging the ribbon frame and shiftable rotating mechanism for enabling the spools to be turned one way or the other during the operation of the device substantially as described.

28. The combination with a platen, a type bar and actuating mechanism substantially as described for said parts of a swinging or pivotally supported ribbon frame or carrier, a rigid hanger and horizontally oscillating fork *B'''* for swinging the ribbon frame ribbon spools or bobbins mounted on the ribbon frame and provided with ratchets, and pawls placed in such proximity to the ratchets that the swing of the ribbon frame will cause successive engagement of the teeth of a ratchet with a pawl so as to feed the ribbon substantially as described.

29. The combination with a platen, its supporting carriage, a vertically shiftable support for the carriage a type bar and actuating mechanism substantially as described for the carriage and bar, of a ribbon frame made to swing in the vertically shiftable carriage support and provided with ribbon spools or bobbins carrying ratchets, and pawls mounted in the carriage so as to remain fixed during the swing of the ribbon frame so that one or the other of said ribbon spools will carry its ratchet teeth into successive engagement with the pawl to rotate the spool substantially as described.

30. The combination with a platen, its supporting carriage, a vertically shiftable support for the carriage a type bar and actuating mechanism substantially as described for the carriage and bar, of a ribbon frame made to swing in the carriage support and provided with ribbon spools or bobbins carrying ratchets, pawls for said ratchets and a shifting bar mounted in the carriage and made to support the pawls for shifting the latter substantially as described.

31. The combination with a platen, its supporting carriage, a vertically shiftable support for the carriage a type bar and actuating mechanism substantially as described for the carriage and bar, of a ribbon frame made to swing in the carriage support and provided with ribbon spools or bobbins carrying ratchets, stop pawls for the ratchets, a shifting bar for throwing one stop pawl or another into action, and actuating pawls for said ratchets carried by the shifting bar substantially as described.

32. The combination with a platen, its supporting carriage, a vertically shiftable support for the carriage a type bar and actuating mechanism substantially as described for the carriage and bar, of a ribbon frame made to swing in the carriage support and provided with ribbon spools or bobbins carrying ratchets, an arm jointed to the ribbon frame and provided with stop pawls for the ratchets, a shifting bar for swinging the stop pawl arm to bring one stop pawl or another into action, and actuating pawls for the ratchets secured to the shifting bar substantially as described.

33. The combination with a type bar provided with a plurality of type and actuating mechanism substantially as described for the bar, of a platen, a carriage for the platen made shiftable so as to bring the platen into correspondence with the various types on the bar, a ribbon frame provided with bobbins and pivoted or made to swing in the platen carriage support and mechanism substantially as described for swinging the frame to bring the ribbon toward the platen during the forward or printing stroke of the type bar and to withdraw the ribbon during the return stroke of said bar said bobbins being made to swing with the frame so as to preserve uni-

form tension of the ribbon substantially as described.

34. The combination with a type bar provided with a plurality of type and actuating mechanism substantially as described for the bar, of a platen, a carriage for the platen mounted on a shiftable support so as to bring the platen into correspondence with the various types on the bar, a ribbon frame carried by the shiftable support, a feed rack for the platen said feed rack being carried by the shiftable support, a lever frame for actuating the feed rack, and a link for conveying motion from the type bar to the lever frame substantially as described.

35. The combination with a platen and a feed rack therefor of a series of type bars, actuating keys or levers for said type bars, a lever frame a link made to extend from each of the type bars to the lever frame a forward and backward oscillating arm A''' connected to the lever frame, a lever D''' connected to said arm A''', a link G''' connected to the lever D''', and a depending arm I''' connected to the link G''' and to the rack so as to convey motion to the latter substantially as described.

36. The combination with a platen and a feed rack therefor of a series of type bars, actuating keys or levers for said type bars, a lever frame connected to the rack for actuating the latter, a link made to extend from each of the type bars to the lever frame and a rod or bar provided with an eye or guide for each of the links substantially as described.

37. The combination with a platen, its feed rack and its shiftable carriage of a type bar, an actuating key or lever for said type bar, a lever frame connected to the rack for actuating the latter, a link made to extend from the type bar to the lever frame, a ribbon frame movably supported in the carriage support, an actuating arm made to extend from the ribbon frame into movable connection with the lever frame so as to be actuated by said lever frame in any position to which said ribbon frame may be carried by the carriage support substantially as described.

38. The combination with a platen and its carriage of a transverse rod or support N''' in the carriage and arms or clasps M''' adjustably or slidably mounted on said rod or support said rod N''' being movably mounted in slots or seats in the carriage and springs P''' for holding the rod N''' toward the platen substantially as described.

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

HERMAN L. WAGNER.

Witnesses:

WM. C. HAUFF,

E. F. KASTENHUBER.