

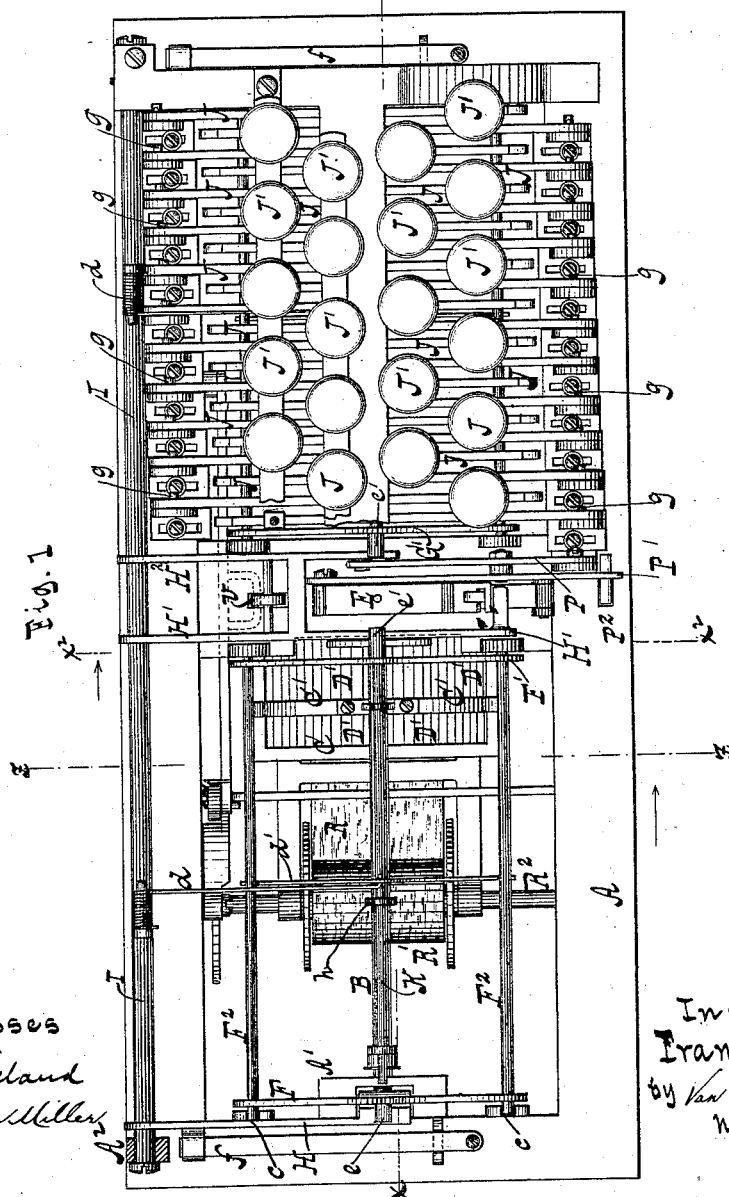
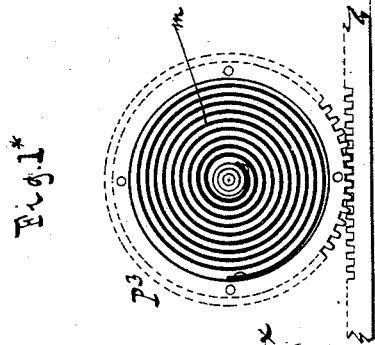
(No Model.)

6 Sheets—Sheet 1.

F. X. WAGNER.
TYPE WRITING MACHINE.

No. 302,178.

Patented July 15, 1884.



Witnesses
Otto Hupeland
William Miller

Inventor
F. X. Wagner
by Van Santvoord & Hauck
his attys.

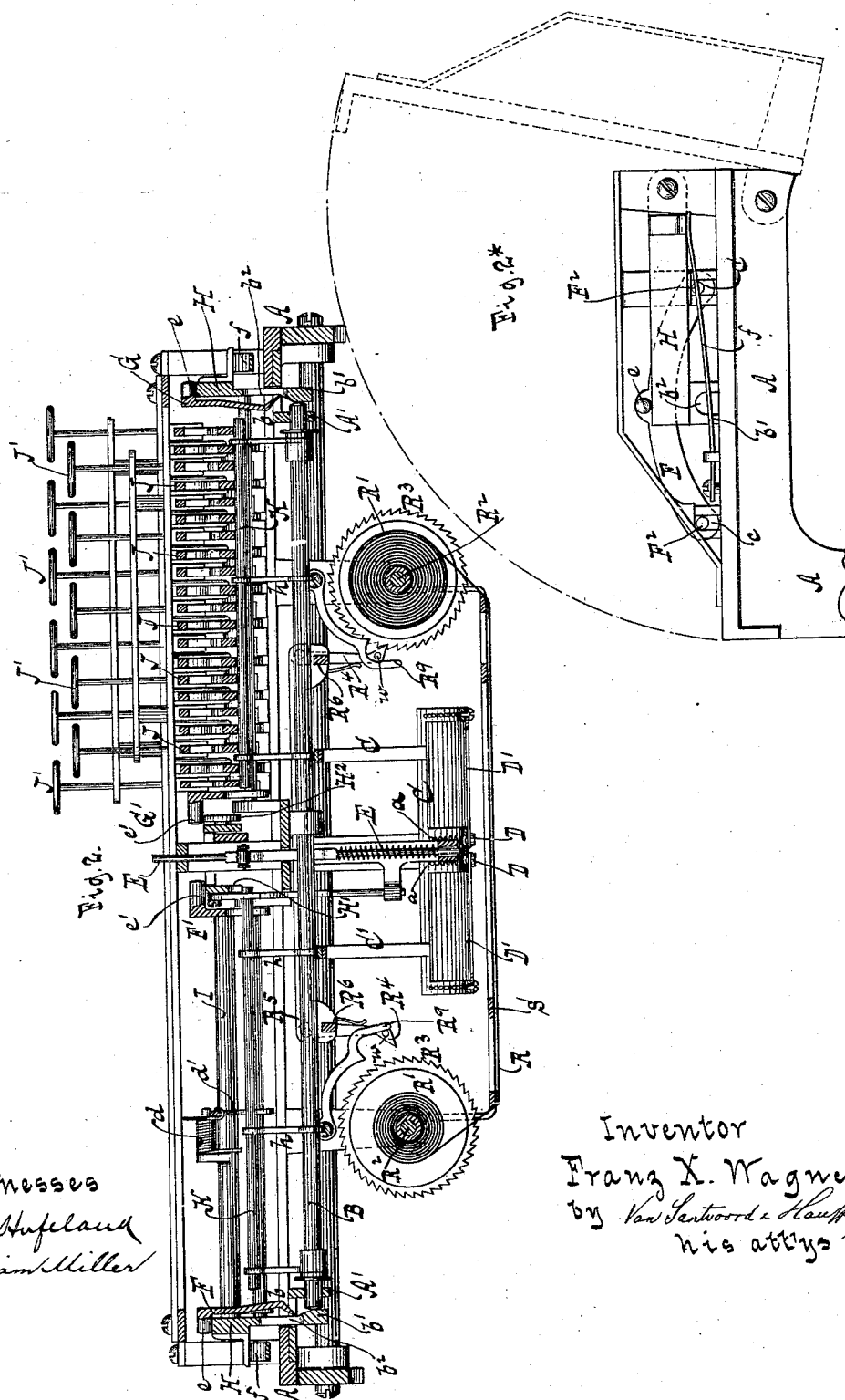
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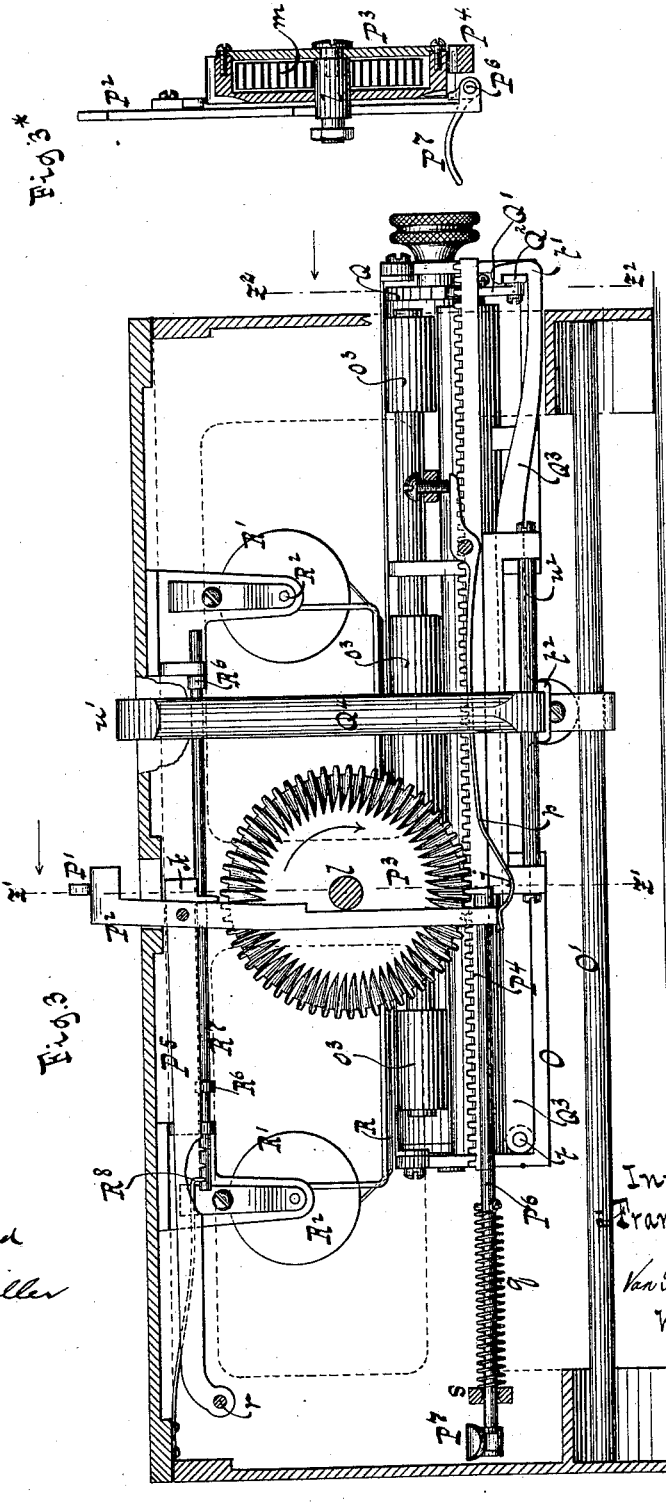
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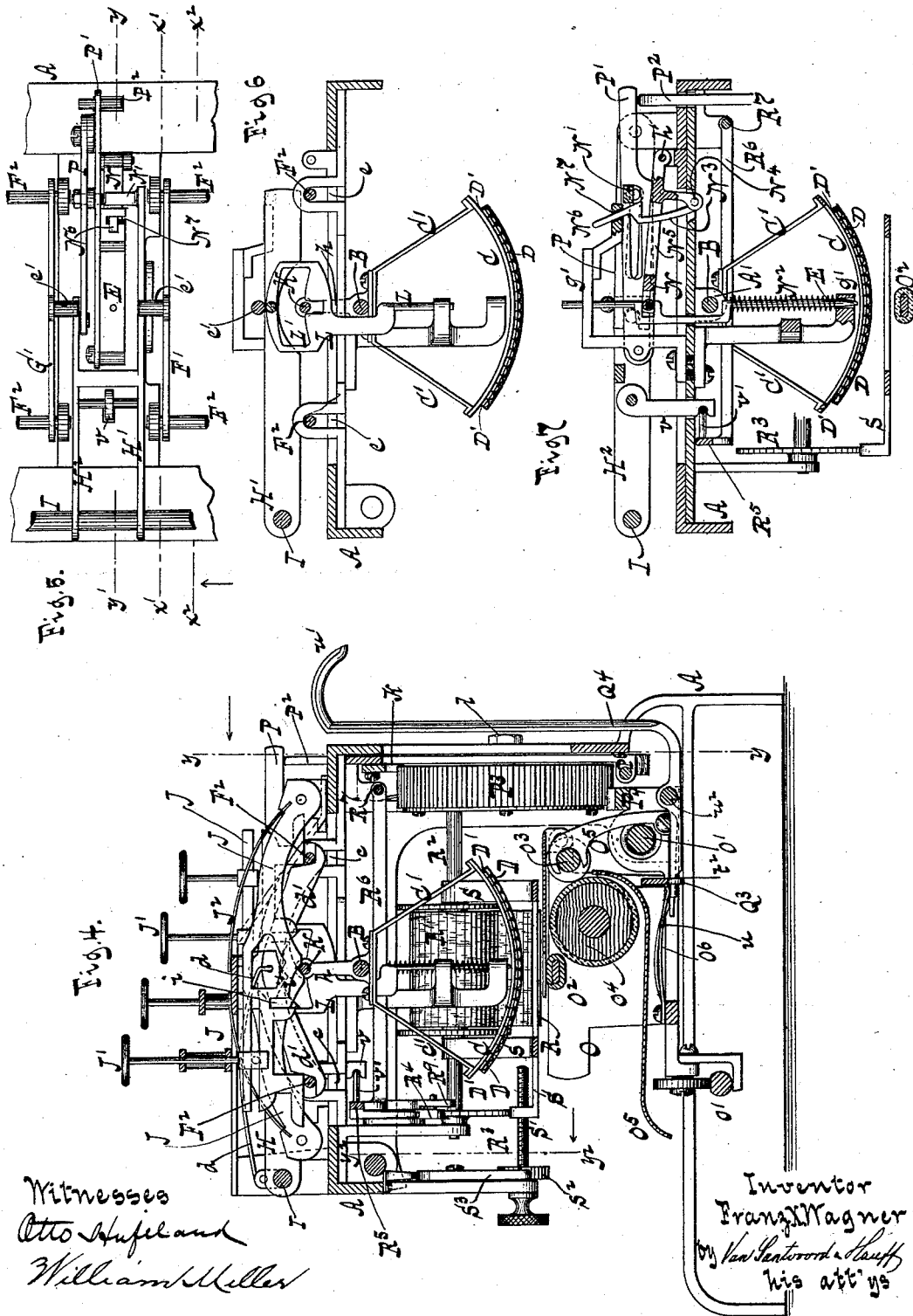
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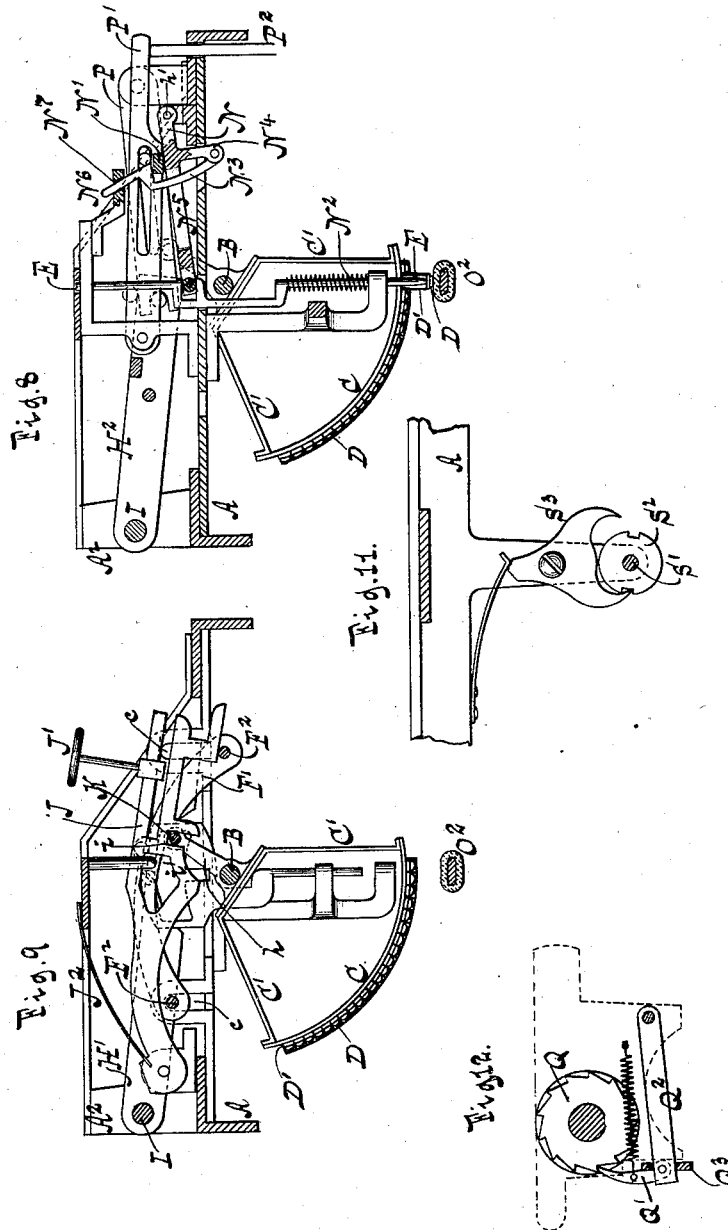
(No Model.)

6 Sheets—Sheet 5.

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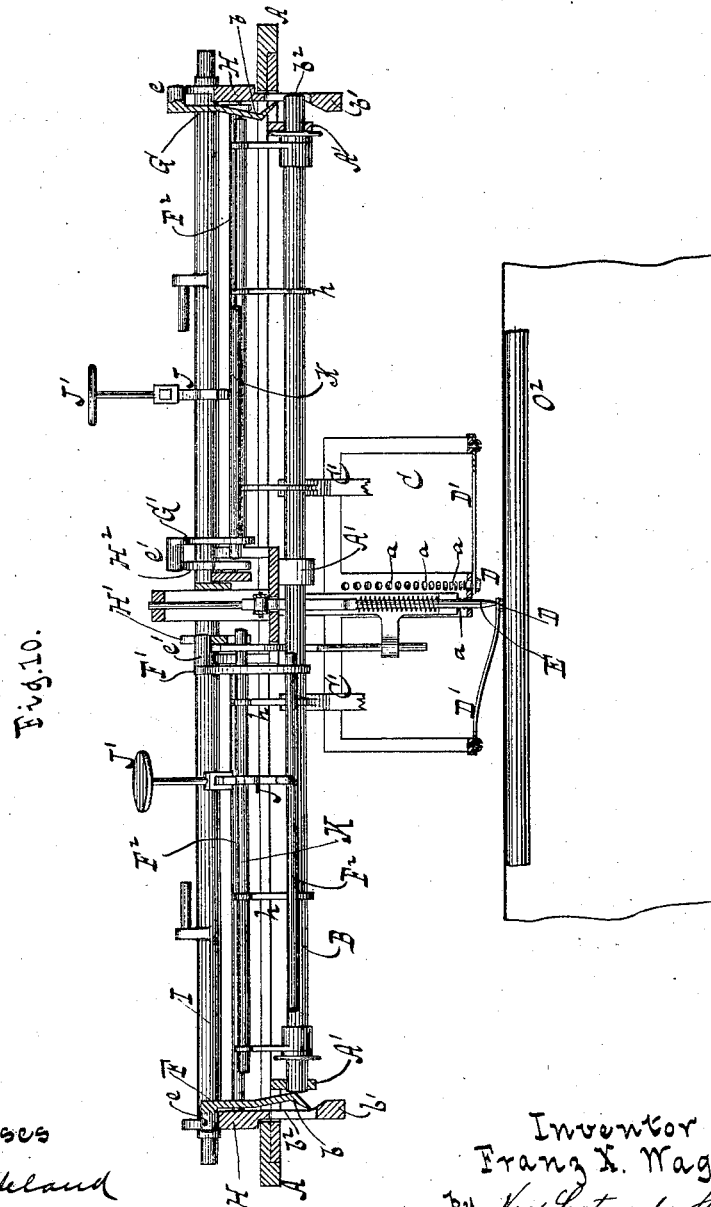
6 Sheets—Sheet 6.

F. X. WAGNER.

TYPE WRITING MACHINE.

No. 302,178.

Patented July 15, 1884.



Witnesses

Otto Hufeland

William Miller

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UNITED STATES PATENT OFFICE.

FRANZ X. WAGNER, OF NEW YORK, N. Y., ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO WILLIAM F. MILLER, OF SAME PLACE, AND LOUIS C. FULLER AND EDWARD P. HAMILTON, BOTH OF ORANGE, NEW JERSEY.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 302,178, dated July 15, 1884.

Application filed June 14, 1883. (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-Writers, of which the following is a specification.

This invention relates to certain new and useful improvements in type-writers; and it consists in the construction, arrangement, and combination of parts hereinafter fully described, and particularly pointed out in the claims.

This invention is illustrated in the accompanying drawings, in which Figure 1 represents a plan or top view, partly in section. Fig. 1* is a detail view of a feed-wheel acting on the paper-carriage. Fig. 2 is a detail longitudinal section on the line xx , Fig. 1, showing the parts in a normal position. Fig. 2* is a detail end view. Fig. 3 is a longitudinal section on the line yy , Fig. 4. Fig. 3* is a cross-section of the feed-wheel and its connections on the line $z'z'$, Fig. 3. Fig. 4 is a cross-section on the line zz , Fig. 1. Fig. 5 is a detail plan view of the mechanism for actuating the paper-carriage and hammer. Fig. 6 is a cross-section on the line $x'x'$, Fig. 5. Fig. 7 is a similar section on the line $y'y'$, Fig. 5, showing the hammer in its upper position. Fig. 8 is a similar section corresponding to Fig. 7 when the hammer is in its depressed position. Fig. 9 is a similar section on the line $x''x''$, Fig. 1, showing one of the segment-adjusting levers depressed. Fig. 10 is a detail longitudinal section on the line xx , Fig. 1, also when said adjusting-lever is depressed. Fig. 11 is a detail longitudinal section on the line $y''y''$, Fig. 4. Fig. 12 is a detail cross-section on the line $z''z''$, Fig. 3.

Similar letters indicate similar parts.

The letter A designates the machine-frame, having bearings A' for a horizontal shaft, B, to which is fixed the type-segment C, as by means of braces C'. This segment is substantially rectangular in outline, as shown in Figs. 2 and 10, and is provided with two longitudinal rows of holes, a , in the center thereof, op-

posite to which holes in a lower direction are situated the types D, the latter thus being in two sets, one to each row of holes. Each of said types is mounted face downward on one end of a flat spring, D', which thus forms a movable elastic support therefor, and the two sets of springs—concomitant to the sets of types—extend in opposite directions toward the sides of the segment C, where they are fastened—namely, on the lower surface of the segment. Under normal conditions the type-springs D' lie flat against the lower surface of the segment C, as shown in Fig. 2, and in this manner the types are brought directly beneath the holes a , so that they may be readily depressed by a plunger or hammer, E, passing through the holes, for making the required impression. In the normal position of the type-segment C the hammer E is located at a point intermediate of the two sets of types, as shown in Fig. 2, and hence in order to bring any desired type of either set opposite to the hammer it is necessary to move the type-segment laterally in one or the other direction, as well as to rock the same on its axis, said lateral motion determining the set and said rocking motion the character of the type which is brought into alignment. For this purpose the shaft B, supporting the type-segment, is arranged to move longitudinally in its bearings and to receive a compound longitudinal and rocking motion by the following mechanism:

Adjacent to the ends of the shaft B are situated sliding cams b , (see Figs. 2 and 10,) which project downwardly from bolsters F G, extending transversely to said shaft, and each connecting with a corresponding bolster, F' or G', inward on the machine, by means of end rods, F². Said end or connecting rods, F², project beyond the bolsters F F' G G' at the ends, where they enter vertical slots c , formed in fixed portions of the machine-frame, Fig. 2*, and under normal conditions the rods are held at the upper ends of said slots through the medium of springs d , which are arranged to act as supports for yokes d' , engaging with the rods at the opposite ends. One spring and yoke is used to each pair of rods F², and

through the rods said springs practically support the bolsters F F' G G'. The bolsters F G, which are the outer members of the two pairs, are each provided at about the mid-length with a laterally-projecting stud, *e*, which 5 bears on the upper edge of a lever, H, while the inner bolsters, F' G', are each provided with a corresponding stud, *e'*, bearing on the upper edge of a lever, H' or H², one constituting a hammer-operating lever and the other 10 a feed-operating lever, as hereinafter explained. Said levers H H' H² are adjacent to the bolsters F F' G G' outward and inward on the machine, respectively, and are fixed to 15 a rock-shaft, I, to move in unison with each other, this shaft being mounted in bearings A² on the machine-frame, and being also utilized to carry the supporting-springs *d* of the bolsters. From each of the outer levers, H H, 20 projects downwardly a sliding cam, *b'*, which is opposite to the proper cam, *b*, of the bolsters, but under conditions is below it, and which is provided with a vertical slot, *b*². Said outer or cam levers, H H, moreover, are 25 subjected to the action of return-springs *f*—one to each lever—having a tendency to raise the same, and thence to raise the levers H' H² and the bolsters F F' G G', with their connections.

Intermediate of each pair of bolsters F F' G G' is located a set of levers, J, which are hung 30 to the sides of the machine-frame by pivots *g*, and alternately extend in opposite directions. These levers J rest at the free end on one or the other of the connecting-rods F² F² of the respective pair of bolsters, and each is provided 35 with a finger-key, J', which is marked with a letter or other character corresponding to one of the types of the type-segment, the number of levers in each set corresponding to the number of types in either set thereof. Said keys J' are arranged in rows—one above the other—as shown, and each key-lever J is provided 40 with a return-spring, J², which is connected to a suitable part of the frame.

To the shaft B of the type-segment are secured, by radial arms *h*, rocking bars K K—one to each set of key-levers J—which are 45 parallel to said shaft and at equal distances therefrom, but independent of each other, and which are adapted to enter gage-notches *i* in the lower edges of the key-levers. These notches *i* are located at different points in the key-levers J relatively to the segment-rocking bars K K, and one edge of each of the 50 notches is beveled or inclined, as at *i'*. When the machine is at rest, the beveled edge *i'* of said gage-notches of all the key-levers J is in the vertical plane of the rocking bars K K; and hence when either of the key-levers is depressed said edge of its notch comes in contact 60 with either bar according to the set to which the depressed key-lever belongs, whereby the bar is guided into the notch of the lever and the type-segment is swung longitudinally 65 to the proper position for bringing the desired

type into alignment. Simultaneous with said longitudinal adjustment of the type-segment, the end of the depressed key-lever J acts on 70 one of the connecting-rods F² of either pair of bolsters to depress said rod, together with one end of the bolster, whereby the proper cam *b* of the bolster is brought in contact with one end of the shaft B of the type-segment, 75 and this shaft is moved longitudinally, so as to adjust the segment laterally for bringing the desired set of types opposite to the hammer. When either pair of bolsters, F F' or G G', is depressed at one end, as stated, they swing on the connecting-rod which is at the other end 80 thereof, and by the action of the proper studs *e e'* of the bolsters both cam-levers H H are depressed simultaneous therewith, due to the connection of said levers with each other and with the levers H' H² through the rock-shaft, 85 and the following condition is produced: In the longitudinal motion of the segment-shaft B the advancing end thereof enters the slot *b*² in the cam *b'* of either cam-lever, according to the direction of such motion, as shown in Fig. 90 10, while, when the parts are released and allowed to follow the action of the return-springs *f*, the proper cam-lever acts on said shaft through its cam *b'* to return the shaft to a normal position, the shaft being at the same time 95 released by the acting cam *b* of the bolsters. The type-segment C is returned to a normal position by its inherent gravity, and is held in that position by a locking-slide, L, Fig. 6, which is connected to the hammer-operating lever H', and provided with a slot, L', of 100 substantially T-shape, whereby it engages one of the rocking bars K K of the segment. The type-hammer E is arranged in guides *g'* of the machine-frame, and receives a reciprocating motion at the proper intervals relatively to the adjustment of the type-segment C by the following mechanism: To the shank of said hammer E is connected the free end of 105 a supporting-lever, N, (best seen in Figs. 7 and 8,) which has its fulcrum on a pivot, N', and is located in the path of a tappet, N', projecting laterally from the hammer-operating lever H', so that when this lever is depressed by the action of one of the key-levers J of 115 either set said tappet comes in contact with the hammer-supporting lever and depresses the same, together with the hammer, as shown in Fig. 8. A spring, N², coiled on the shank of the hammer N, serves to raise the hammer 120 when the parts are released; but in order to insure its upward movement a lifting-hook, N³, is pivoted to a lug, N⁴, on the lower edge of the hammer-supporting lever N, said hook thence extending through a slot, N⁵, in said 125 lever, and having its upper or free end provided with a sliding cam, N⁶, which works in a slot, N⁷, of the machine-frame, so that when the parts are depressed said hook catches over the tappet N', as shown in Fig. 8, due to the 130 action of the cam N⁶, while, when the parts ascend, said tappet carries with it the hook,

together with the hammer-lever and hammer, said hook, however, gradually receding from the tappet as the cam ascends in its slot until the hook entirely clears the tappet, as shown in Fig. 7. In this manner the hammer N is exposed to the action of the springs *f* of the cam-levers, in addition to its own spring.

At a suitable point below the type-segment C is arranged the paper-carriage O, which is guided on parallel rails O', and receives the usual intermittent motion by the following mechanism: To the free end of the feed-operating lever H² is connected the corresponding end of a lever, P, which has its fulcrum on a pivot, *i*, and serves to connect with said operating-lever the free end of a lever; P', the latter extending in a like direction to said operating-lever, but in an opposite direction to the intermediate lever. Said lever P' bears at the free end on the upper end of a vertical reciprocating slide, P², (best seen in Fig. 3,) to which are connected escape-pawls *j* *k* in proper relation to a toothed feed-wheel, P³, to alternately engage said wheel. The feed-wheel P³ is mounted on a fixed shaft, *l*, and contains a coiled spring, *m*, Figs. 1* and 3, it being hollow, one end of which spring is fixed to the shaft and the other end to the wheel in such a manner that the wheel has a tendency to turn in the direction of the arrow shown in Fig. 3. With the feed-wheel P³ engages a rack, P⁴, on the paper-carriage, and when the wheel is released it acts on said carriage through its spring *m* to move the carriage in a forward direction. The vertical slide P² is subjected to the action of a spring, *p*, tending to force it upward, and under normal conditions the lower pawl, *j*, is thereby held in engagement with the feed-wheel P³, as shown in Fig. 3, while, when by the depression of either key-lever J the slide is forced downward, said lower pawl is thrown out of gear, and the upper pawl, *k*, engages the wheel. As the lower pawl, *j*, recedes from the feed-wheel, it is thrown back or in an opposite direction to the movement of the paper-carriage to the extent of one tooth of said wheel by the action of a spring, *q*, and hence when the slide P² is released and permitted to follow the action of its spring *p* said lower pawl engages a succeeding tooth of the feed-wheel, while the upper pawl disengages the wheel, thus allowing the latter to advance one tooth. The upper pawl, *k*, forms part of a lever, P⁵, having its fulcrum on a pivot, *r*, while the lower pawl, *j*, is on one end of a spindle, P⁶, resting at or near the other end in a loop or eye, *s*, which allows it to swing, and thereby accommodate itself to the movement of the vertical slide P², as well as to rotate. To the spindle P⁶ is fixed a thumb-piece, P⁷, which, when depressed, serves to turn the spindle in the proper direction for throwing the lower pawl, *j*, laterally out of gear, as when it is desired to move back the paper-carriage to the starting-point. The spring *q* is coiled on the spindle P⁶, and fast-

ened thereto at one end in the proper manner to return the spindle to a normal position when its thumb-piece P⁷ is released, besides serving to move the spindle lengthwise for throwing back the lower pawl, *j*, as before stated, both the rotary and longitudinal motion of the spindle being regulated by a slot of the machine-frame, through which the thumb-piece projects. The teeth of the feed-wheel P³ are beveled in corresponding directions on one side of the wheel, where the lower pawl, *j*, engages or disengages said wheel in the rocking motion of the spindle P⁶, and by this means the entrance of said pawl between the teeth is facilitated and insured, since if the pawl strikes either of the teeth it is guided to its place. The paper-carriage O is provided with a bed, O², (best seen in Fig. 4,) opposite to the type-hammer, and also with feed-rollers O³ O⁴, for advancing the sheet of paper on the bed, said sheet entering between the rollers from a lower direction and over a shield, O⁵, on the carriage. The roller O⁴ is arranged in fixed bearings on the paper-carriage, while the roller O³ has its bearings in levers O⁶, each subjected to the action of a spring, O⁶, whereby said roller O³ is pressed against the roller O⁴.

For the purpose of advancing the sheet of paper, motion is imparted to the roller O⁴ by the following mechanism: To the shaft of said roller is fixed a ratchet-wheel, Q, (see Figs. 3 and 12,) engaging with a spring-pawl, Q¹, which is hung to a swinging arm, Q², connecting with a supporting-lever, Q³, which in turn connects with a hand-lever, Q⁴. (Also seen in Fig. 4.) The supporting-lever Q³ of the pawl-arm has its fulcrum on a pivot, *t*, and engages the pawl-arm Q² by means of a hook, *t'*, Fig. 3, while it has a loop, *u*, for its connection with the hand-lever Q⁴. Said hand-lever Q⁴ extends through said loop of the supporting-lever Q³ at one end, where it is subjected to the action of a spring, *u*, having a tendency to retract the same, and it is provided on the other end with a handle, *u'*, it having its fulcrum on a shaft, *u''*, intermediate of the ends. When the hand-lever Q⁴ is actuated in opposition to its spring, the lever Q³ shares its motion, and the pawl-arm Q² is moved in the proper direction for turning the ratchet-wheel Q to the extent of one of its teeth by means of the pawl Q¹, whereby the roller O⁴ is properly advanced. The hand-lever Q⁴ extends transversely to the paper-carriage O, and is bent at the outer or handle end, so that it can be conveniently taken hold of not only for turning the proper feed-roller, but also for moving the paper-carriage back to the starting-point.

Between the type-hammer and the bed O² of the paper-carriage is interposed the usual inking-ribbon, R, which is connected to reels R' R', Figs. 2, 3, and 4, which alternately receive the proper rotary motion for advancing the ribbon by the following mechanism: To the shaft R² of each reel is fixed a ratchet-wheel,

R^3 , Figs. 2 and 4, which is adapted to engage with a pawl, R^4 , hung to a perch, R^5 , which is secured to two levers, R^6 , both having their fulcrum on a slide-rod, R^7 , Fig. 3, to which they are fixed, so that by moving this slide-rod longitudinally in one or the other direction said levers and perch share its motion, and either pawl is thrown in gear with its ratchet-wheel, while the other pawl is thrown out of gear.

10 A spring-catch, R^8 , Fig. 3, serves to retain the slide-rod R^7 in the desired positions by dropping into suitable notches therein. The perch R^5 is connected to one of the levers $H^1 H^2$, or both, by a pivoted link, v , Figs. 1 and 7, which engages a loop, v' , of the perch, so that when the proper lever is depressed the perch shares its motion, and either pawl is caused to act on the proper ratchet-wheel to turn one of the reels. Each of the ratchet-wheels R^3 is provided with

20 a detent, R^9 , which is hung to a fixed part of the frame and rests on a spur, w , of the proper pawl, so that when the pawl is thrown out of gear said detent takes a corresponding position. The reels R^1 are keyed to their shafts R^2 to move longitudinally thereon, and they are enclosed within a sliding frame, S , which is arranged on said shafts, and to which is connected a thumb-screw, S' , Fig. 4, in such a manner that the frame, together with the reels,

30 may thereby be moved longitudinally on the shafts for shifting the inking-ribbon laterally, so that the whole area of the ribbon may be utilized, it being simply shifted from time to time as a fresh portion thereof is required.

35 Said screw S' turns on a suitable part of the machine-frame, and carries a notched wheel, S^2 , Figs. 4 and 11, engaging with a reversible spring-latch, S^3 , which, when properly set, allows the screw to turn only in one direction, so that when the ribbon has been adjusted in either direction for bringing a fresh portion thereof into alignment it cannot be moved in the opposite direction without first resetting the latch. Said latch S^3 , however, may be

45 omitted, and other means than the screw may be used for adjusting the sliding frame S laterally to the ribbon.

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

50 1. The combination, in a type-writer, of a type-segment having two sets of movable types arranged longitudinally thereon, with two sets of key-levers and a mechanism, such substantially as specified, for imparting a compound

55 lateral and rocking motion to the type-segment from any key of either set of key-levers, essentially as and for the purpose described.

2. The combination, in a type-writer, of a type-segment having two parallel series of

60 holes extending longitudinally thereof, two sets of springs arranged on the lower surface of the type-segment to project under said holes at the free ends, two sets of types mounted on said ends of the springs, two sets of key-levers,

65 and a mechanism, such substantially as specified, for imparting a compound lateral and

rocking motion to the type-segment from either set of key-levers, essentially as and for the purpose described.

3. In a type-writer, the combination, with a type-segment carrying two sets of movable types, of the shaft supporting the type-segment, the two pairs of bolsters $F F' G G'$, one of each pair having a downwardly-projecting cam, b , the end rods, F^2 , connecting each pair of bolsters, the springs supporting the bolsters, the levers $H H$, engaging with the bolsters, and each having a downwardly-projecting slotted cam, b' , the return-springs acting on said cam-levers, the two sets of key-levers resting on said end or connecting rods of the bolsters at the free ends, and means, such substantially as specified, for rocking the type-segment from either set of key-levers, essentially as and for the purpose described.

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4. In a type-writer, the combination, with a type-segment carrying two sets of movable types, of the shaft supporting the type-segment, the rocking bars $K K$ of the type-segment, the two sets of key-levers, each having its lower edge provided with a beveled gage-notch to receive either of said bars, and a means, such substantially as specified, for reciprocating said segment-shaft longitudinally from either set of key-levers, essentially as and for the purpose described.

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5. In a type-writer, the combination, with a type-segment carrying two sets of movable types, of the shaft supporting the type-segment, the two pairs of bolsters $F F' G G'$, one of each pair having a downwardly-projecting cam, b , the end rods, F^2 , connecting each pair of bolsters, the springs supporting the bolsters, the levers $H H$, engaging with the bolsters, and each having a downwardly-projecting slotted cam, b' , the return-springs acting on said cam-levers, the rocking bars $K K$ of the type-segment, and the two sets of key-levers resting on said end or connecting rods of the bolsters, and each having its lower edge provided with a beveled gage-notch to receive either of said rocking bars, substantially as and for the purpose described.

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6. In a type-writer, the combination, with a type-segment carrying two sets of movable types, of the rocking bars $K K$ of the segment, the locking-slide L , having a T-shaped slot to engage one of said rocking bars, a supporting-lever for said locking-slide, two sets of key-levers, each having its lower edge provided with a beveled gage-notch to receive either of said rocking bars, and a means, such substantially as specified, for reciprocating said segment-shaft longitudinally from either set of key-levers, essentially as and for the purpose described.

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7. In a type-writer, the combination, with a type-segment carrying two sets of movable types, two sets of key-levers, and a type-segment-adjusting mechanism comprising the rock-shaft I , of the reciprocating type-hammer, the hammer operating lever H' on said rock-

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shaft, having the tappet N', the hammer-supporting lever N, arranged in the path of said tappet of the operating-lever, and the hammer-spring, substantially as and for the purpose described.

8. In a type-writer, the combination of the reciprocating type-hammer, the hammer-operating lever H', having the tappet N', the hammer-supporting lever N, arranged in the path of said tappet of the operating-lever, and the lifting-hook N', pivoted to the supporting-lever to engage said tappet of the operating-lever, and provided with the sliding cam N', working in a slot of the machine-frame, substantially as and for the purpose described.

9. In a type-writer, the combination of a paper-carriage having the rack P', the feed-wheel engaging said rack, the impelling-spring arranged in said wheel to act thereon, the vertical reciprocating slide P', and the escape-pawls j k, connected to said slide for engaging the feed-wheel alternately, substantially as and for the purpose described.

10. In a type-writer, the combination, with a type-segment carrying two sets of movable types, two sets of key-levers, and a type-segment-adjusting mechanism comprising the rock-shaft I, of the feed-operating lever H', fixed to said shaft, the vertical reciprocating slide P', the slide-actuating lever P', the intermediate lever, P, connecting said actuating-lever with the operating-lever, the spring-impelled feed-wheel P', the escape-pawls j k, connected to the vertical slide for engaging said wheel alternately, and the paper-carriage having the rack P', engaging with the feed-wheel, substantially as and for the purpose described.

11. In a type-writer, the combination of a paper-carriage having the rack P', the spring-impelled feed-wheel P', engaging said rack, the vertical reciprocating slide P', the escape-pawls j k, connected to said slide for engaging the feed-wheel alternately, the spindle P', carrying one of said pawls, the thumb-piece of said spindle, and the return-spring q, coiled on the spindle, substantially as and for the purpose described.

12. In a type-writer, the combination of a paper-carriage having the rack P', the spring-impelled feed-wheel engaging said rack, and having its teeth beveled on one side thereof,

the reciprocating slide P', and the escape-pawls j k, connected to said slide for engaging the feed-wheel alternately, substantially as and for the purpose described.

13. The combination, with the paper-carriage O, the feed-roller O', and the shaft l, carrying the latter, of the ratchet-wheel Q, fixed to the said shaft, the pivoted pawl-arm Q', the pawl Q', pivoted to the free end of the pawl-arm, the pawl-arm supporting lever Q', hung on a pivot, l, at one end and engaging the pawl-arm at its other end, the pivoted hand-lever Q', connected with the said supporting-lever intermediate the pivoted end of the latter and its connection with the pawl-arm, and a spring for retracting the hand-lever, substantially as described.

14. In a type-writer, the combination of the ribbon-reels, the ratchet-wheels fixed to the shafts of said reels, the pawls for engaging the ratchet-wheels, the pawl-actuating lever H' or H', the perch R', carrying the pawls and connecting with said actuating-lever, the levers R', supporting the perch, the slide-rod R', forming the fulera of said supporting-levers, the spring-catch R, engaging the slide-rod, and the detents engaging with the pawls, substantially as and for the purpose described.

15. The combination of the horizontal shafts R', the reels R', mounted thereon, the frame S, suspended from the reel-shafts at opposite ends of the reels and bearing against the ends of the latter, and devices, such substantially as described, connected with the suspended frame for moving it in a longitudinal plane along the reel-shafts to laterally adjust the reels and the inking-ribbon, as set forth.

16. In a type-writer, the combination, with the inking-ribbon and the ribbon-reels keyed to their shafts, of the sliding frame S, arranged on said shafts to act on the ribbon-reels, the thumb-screw S', connected to said frame, the notched wheel S' of said screw, and the reversible spring-latch S', engaging said wheel, substantially as and for the purpose described.

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

FRANZ X. WAGNER. [L. s.]

Witnesses:

W. HAUFF,

CHAS. WAHLERS.