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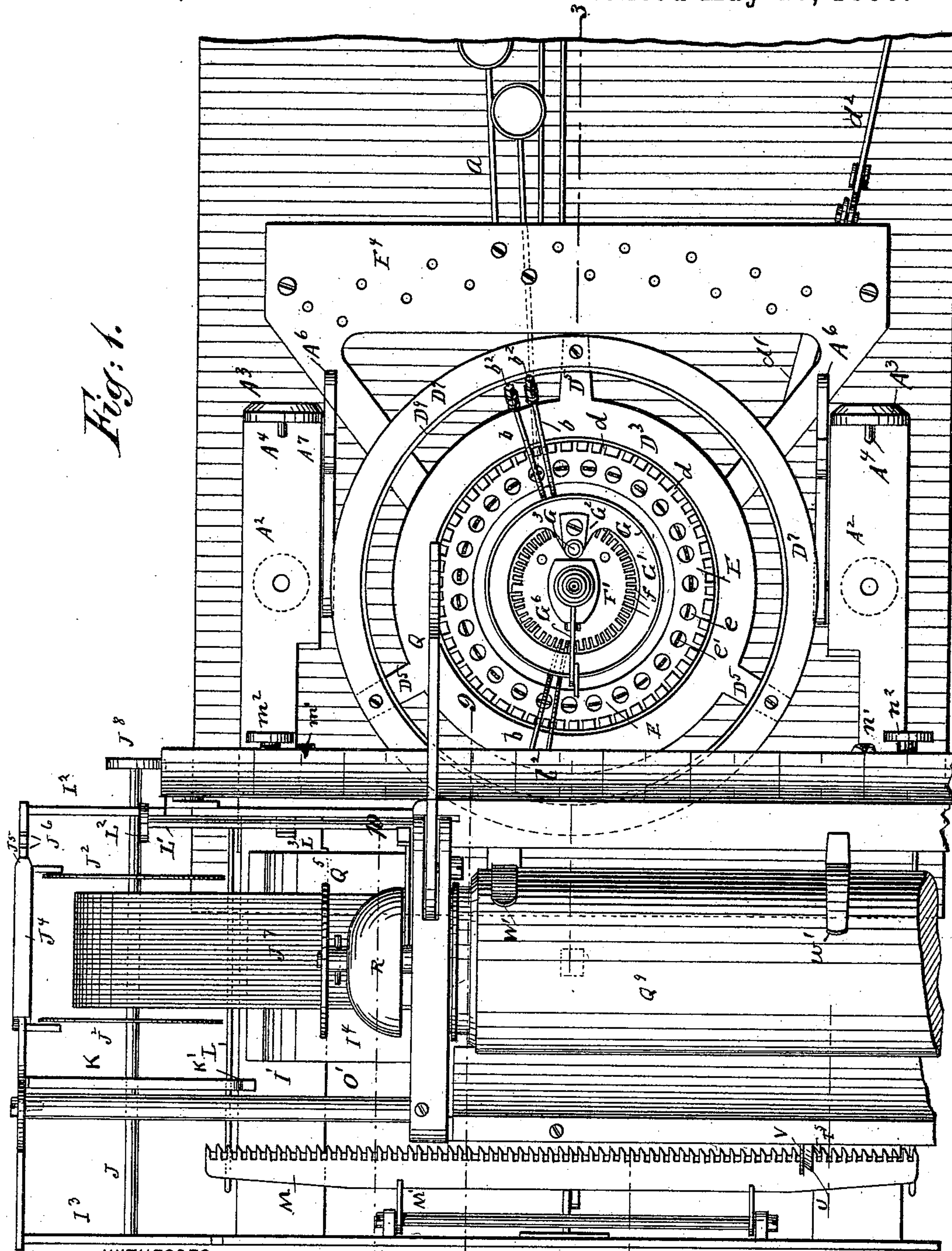
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H. L. WAGNER.
TYPE WRITING MACHINE.

No. 497,560.

Patented May 16, 1893.

Fig: 1.



WITNESSES:

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William Duchon

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H. L. Wagner

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Georgel Baeguer

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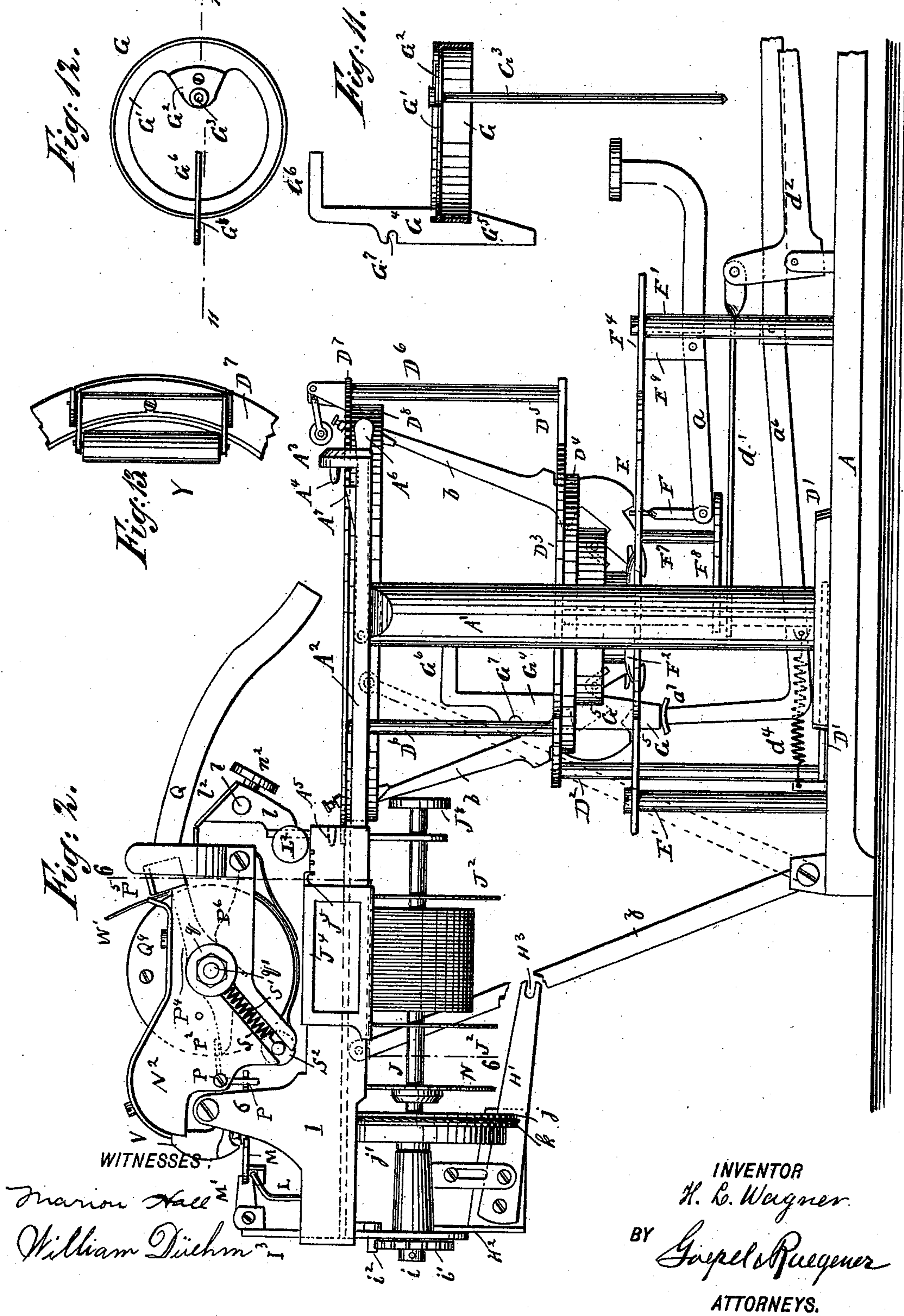
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H. L. WAGNER.
TYPE WRITING MACHINE.

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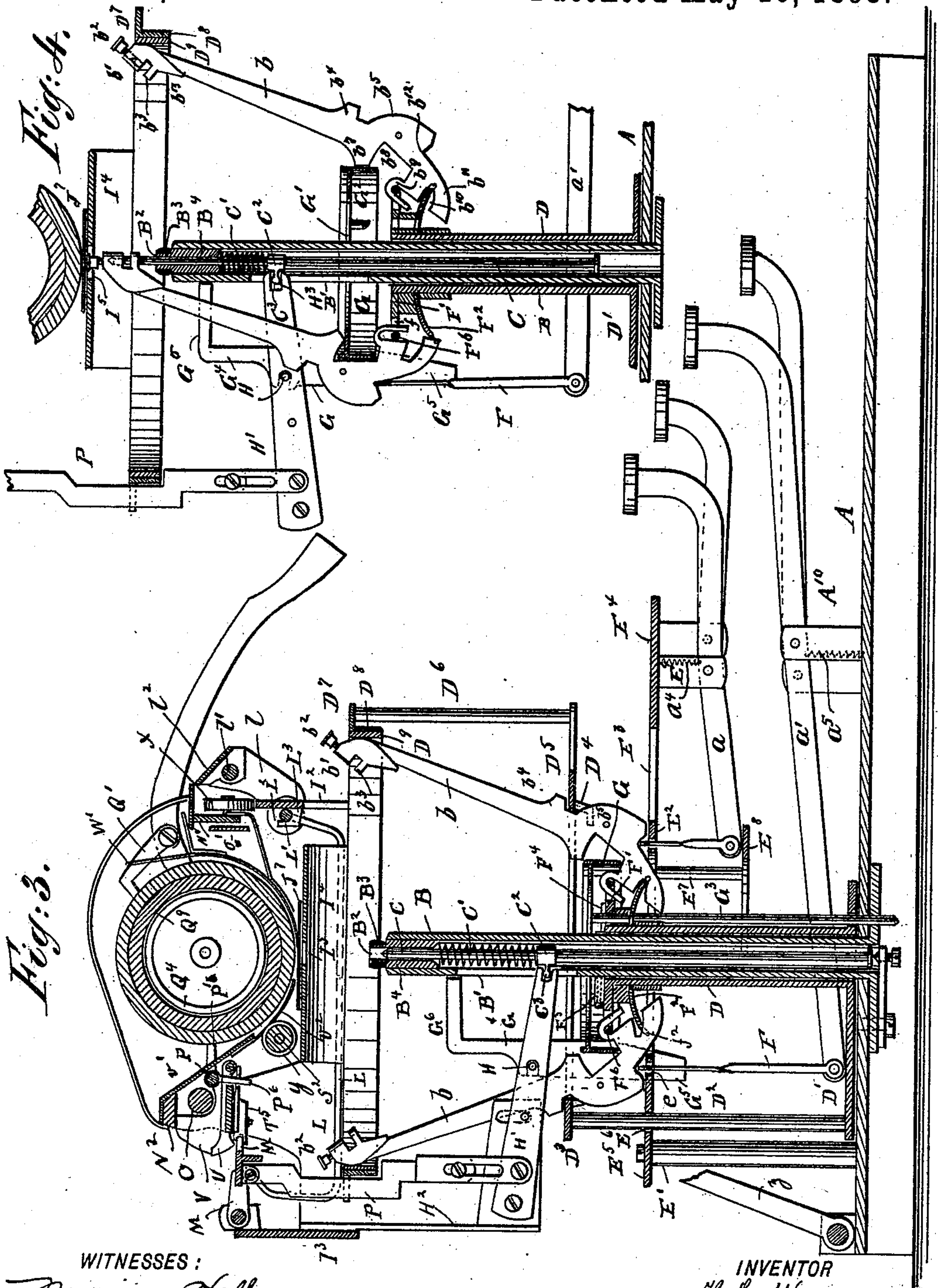
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H. L. WAGNER.
TYPE WRITING MACHINE.

No. 497,560.

Patented May 16, 1893.



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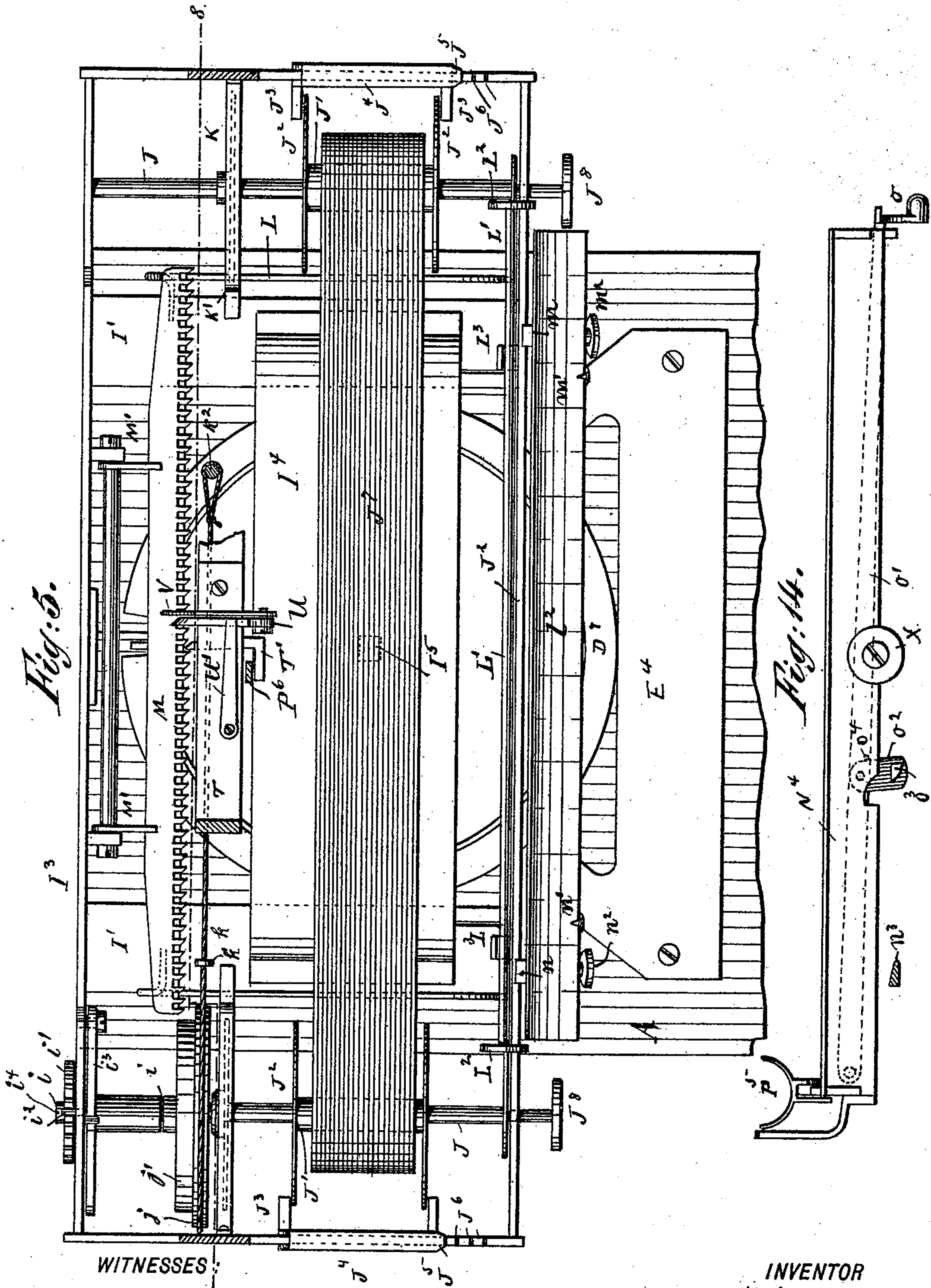
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H. L. WAGNER.
TYPE WRITING MACHINE.

No. 497,560.

Patented May 16, 1893.



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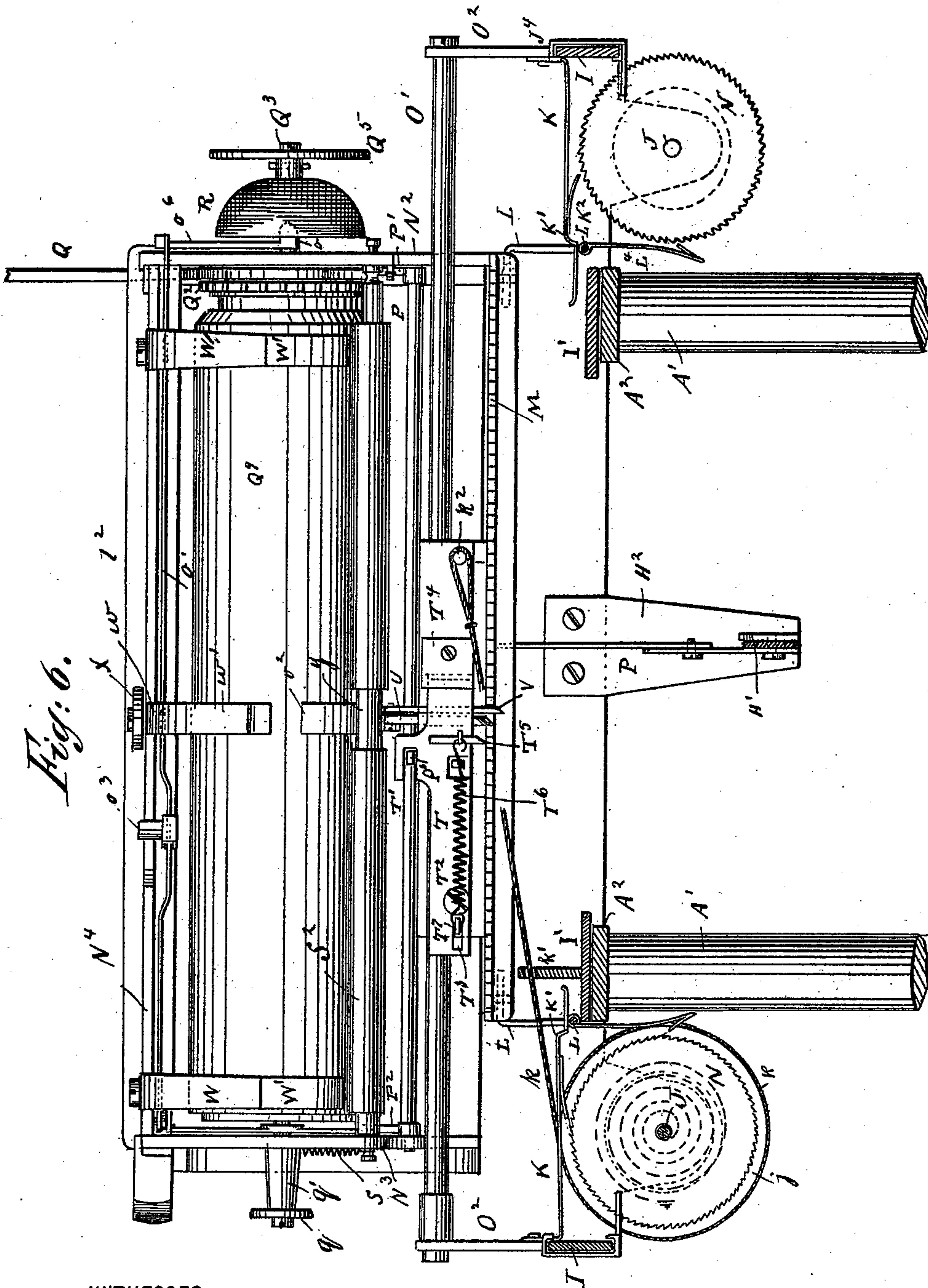
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H. L. WAGNER.
TYPE WRITING MACHINE.

No. 497,560.

Patented May 16, 1893.



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(No Model.)

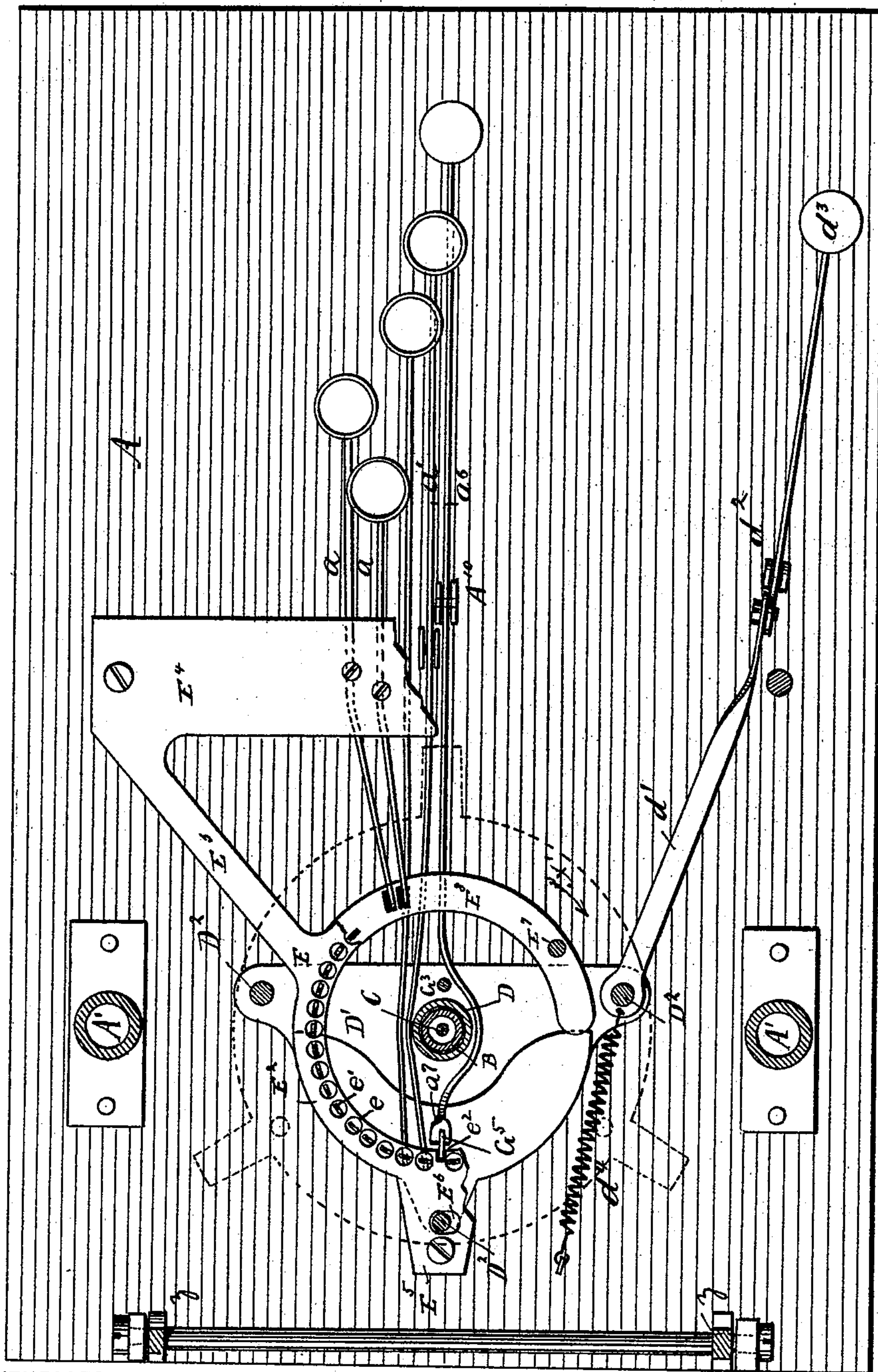
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H. L. WAGNER.
TYPE WRITING MACHINE.

No. 497,560.

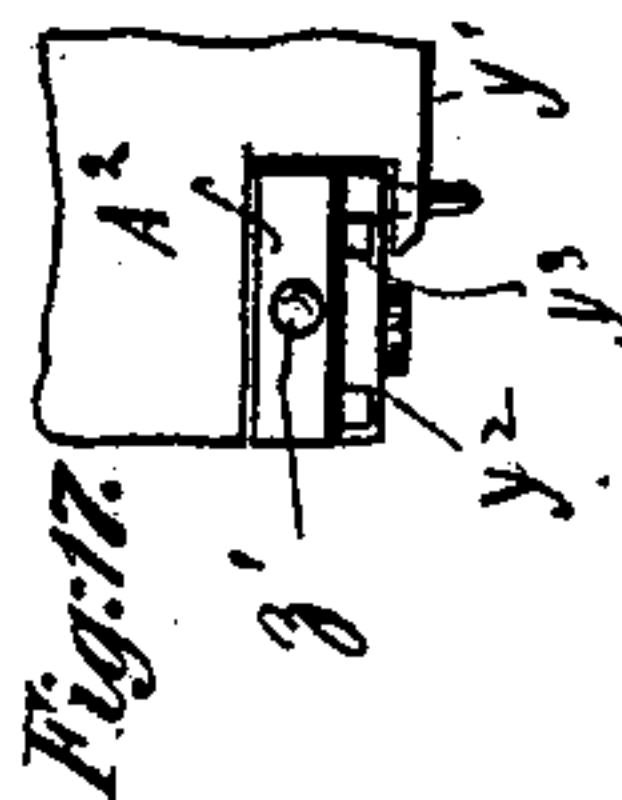
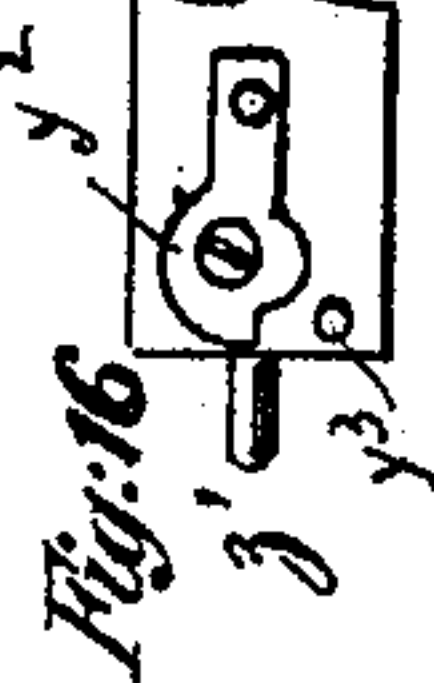
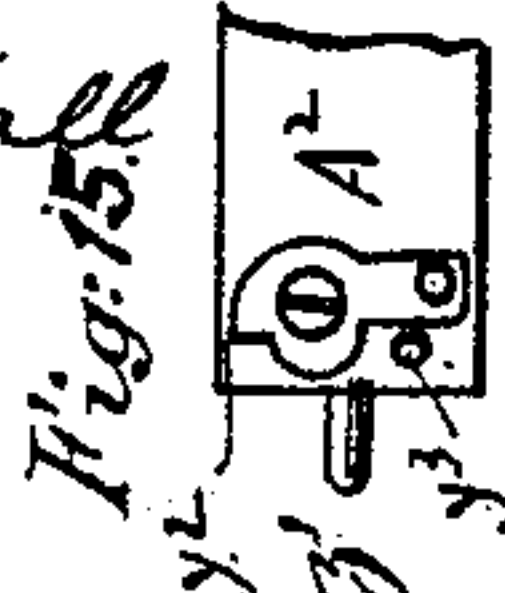
Patented May 16, 1893.

Fig. 7.



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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. 497,560, dated May 16, 1893.

Application filed June 27, 1892. Serial No. 438,189. (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 certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to improvements in typewriting machines; and the object of my invention is to provide a new and improved typewriting machine in which the alignment is positive and perfect and remains so, even after the machine has been used for any length of time; to provide means for interchanging the type cylinder or platen; to provide means for removing the carriage and carriage-support from the top of the type-well to permit of examining the type and alignment devices; and to provide various other improvements whereby the construction of the machine is simplified, rendered more strong and durable and which permit of greater speed and less liability of making errors.

The invention consists in a typewriting machine constructed with a carriage support mounted to slide on suitable track-rails supported on columns of the base-plate, which permits of sliding the carriage support backward to expose the type-well, and also to remove said support and the carriage entirely.

The invention further consists in the combination with the central support, of a universal bar mounted to slide on the same, type-bars arranged in a circle around the universal bar and a rotative tube having disks on which the lower ends of the type-bars are mounted pivotally.

The invention also consists in the construction and combination of parts and details, which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan-view of my improved typewriting machine, parts being broken out and the carriage and its support being pushed back. Fig. 2 is a side-view of the machine, the parts having the position shown in Fig. 1 and others being broken out. Fig. 3 is a vertical transverse sectional view of the machine, on the line 3 3, Fig. 1, the carriage support being above the type-well. Fig. 4 is a similar

view of the type-bars, aligning device and universal bar, in different positions. Fig. 5 is a plan-view of the machine, parts being broken out and others in section, and the paper carriage being removed. Fig. 6 is a longitudinal sectional view, on the line 6 6, Fig. 2, of the paper carriage and its support, the paper carriage being in raised position. Fig. 7 is a sectional plan-view, parts being omitted and others being broken out. Fig. 8 is a longitudinal sectional view, on the line 8 8, of Fig. 5. Fig. 9 is a vertical transverse sectional view, on the line 9 9, Fig. 1. Fig. 10 is a transverse sectional view, on the line 10 10, Fig. 1. Fig. 11 is a vertical longitudinal sectional view of the universal bar, on the line 11 11, Fig. 12. Fig. 12 is a plan-view of the universal bar. Fig. 13 is a plan-view of an inking roller. Fig. 14 is a detail face-view of the front of the carriage. Figs. 15 and 16 are plan-views of the under side of the rear end, parts of the track-bar being shown on latches in different positions, and Fig. 17 is an end-view of the same.

Similar letters of reference indicate corresponding parts.

The machine is constructed with the base-plate A having two standards A' A', to the tops of which the track-bars A² are fastened, on which the paper carriage support can slide from front to rear. The track-bars A² are each provided at the front end with an upwardly-projecting lug A³, from the inner surface of which a pin A⁴ projects, said pins being adapted to pass into apertures A⁵ in the front cross-bar of the paper carriage support. To the inner edge of each track-bar A² a spring latch A⁶ is pivoted, which is provided with a beveled spur A⁷ on its upper edge, said spur being adapted to engage the front cross-bar of the paper carriage support. The front ends of the latches A⁶ project beyond the front ends of the track-bars to permit of depressing them.

On the base-plate A a tubular standard B is erected, which forms the center of the type-well and is provided at the rear with the longitudinal slot B', for a purpose that will be set forth hereinafter. Said tubular standard B is provided at its upper end with a neck B² surrounded by an annular elastic cushion B³.

A rod C is mounted to move vertically in said tubular standard B and is pressed downward by a helical spring C' surrounding it and bearing at its upper end against a sleeve B⁴ in said tubular standard and at its lower end on a collar C² fixed on the rod C and provided with a lug C³. Said tubular standard B is surrounded loosely by a tube D provided with a bottom plate D', from which three standards D² project upward, and to the upper ends of said standards D² a ring D³ is secured, which is provided along its inner edge with an annular rabbet D⁴, into which a series of radial notches *d* is cut. The ring D³ is provided with three arms D⁵, from which rods D⁶ extend upward, and to the upper ends of said rods a ring D⁷ is secured, which is provided on its inner edge with the downwardly-projecting flange D⁸ having a lining D⁹ of felt or other cushioning material. Said base D', the standards D², the ring D³, the rods D⁶ and the top ring D⁷ can all turn with the tube D around the fixed central tubular standard B of the machine, for the purpose of shifting the type-bars to print types of the upper or lower case as may be desired. For the purpose of shifting the above mentioned parts, one of the standards D² is connected by a rod *d'* with one end of an elbow-lever *d*² pivoted on suitable lugs of the base-plate and provided at its front end with a finger-plate *d*³. A spring *d*⁴ has one end fixed to the base-plate A and the other end to one of said standards D² and serves to turn the tube D and its base D' in the direction of the arrow *x'*, Fig. 7.

On three standards E' fixed on the base-plate A a frame E is fastened, which is composed of a ring E², two horizontal arms E³ inclined toward the front corners of the base-plate, a front cross-bar E⁴ and a rear lug E⁵, which lug is provided with a slot E⁶, through which the rear standard D² of the base D' of the tube D can pass. By means of rods E⁷ projecting downward from the ring E² a semicircular plate E⁸ is supported, and forms a rest for the inner ends of the shorter key-levers *a*, which are pivoted to lugs E⁹ projecting downward from the under side of the cross-bar E⁴. The longer key-levers *a'* are pivoted on lugs or short standards A¹⁰ projecting upward from the base-plate A, and the inner ends of the said longer type-levers rest on the base D' of the tube D. Springs *a*⁴ *a*⁵ acting on the key-levers *a* and *a'* respectively hold the outer ends of the same raised.

To the inner end of each type-lever a pusher-rod F is pivoted, the upper end of each pusher-rod being provided with a notch *e'* guided in an aperture *e* of the ring E², which apertures are arranged in a circle, and there are as many apertures *e* as there are type-levers *a* and *a'*. When a type-lever is at rest the notched upper end of the corresponding pusher-rod F projects slightly above the upper surface of the ring E².

To the upper end of the tube D a central-

ly-apertured disk F' is fastened, which is provided in its rim with as many notches *f* as there are type-bars *b*, and said disk is surrounded at its outer edge by a ring-shaped wire F⁶ forming a fulcrum for the several type-bars. A short distance below the disk F' a dished or convex disk F² is fastened to the tube D and is provided in its rim with as many notches *f*² as there are type-bars. A collar F³ is fastened by a screw on the tubular standard B directly above the disk F' and is provided with an apertured lug F⁴ projecting to the front.

The universal bar G is made ring-shaped, and is provided a short distance below its upper edge with an inwardly-projecting annular flange G', which is provided with a lug G² from which a guide-pin G³ projects downward, said guide-pin passing through the lug F⁴ and through slots in the disks F' F², the lower end of said guide-pin G³ also passing through a slot in the base D' of the tube D and through an opening in the base-plate of the machine. As said guide-pin G³ passes through the aperture in the lug F⁴ of the collar F³, it is evident that said universal bar cannot turn axially when the tube D and the parts connected therewith are turned by operating the shifting lever *d*².

The universal bar G is provided with a vertical arm G⁴, provided at its lower end with a downwardly-projecting extension G⁵ that is guided in a notch *e*² in the inner edge of the ring E², and at its upper end with a lateral extension G⁶, the free end of which rests against the outer surface of the tubular standard B and is guided thereon. Said vertical arm G⁴ is also provided with a notch G⁷ for receiving a pin H projecting laterally from a lever H' pivoted at its rear end to a downward extension H² of the paper carriage support. The front end of the lever H' is provided with a notch H³ and passes through the slot B' of the tubular standard B, and said notch serves to receive the lug C³ projecting from the collar C² on the pin C that works up and down vertically in the tubular standard B.

Each type-lever *b* is made of sheet-metal and is provided at its upper end with a lug *b'* for receiving the type *b*² and a short distance below said lug *b'* with an eye *b*³ for receiving the upper end of the pin C, and the lug *b'* is provided in its under side with a recess for receiving the tapered point of said pin C, as shown in dotted lines in Fig. 4.

At the outer edge each type-bar is provided near the lower end with an outwardly-projecting lug *b*⁴ that rests on the top of the ring D³, as shown in Fig. 3. Below the lug *b*⁴ the type-bar is provided with a convex outer edge *b*⁵, and on the inner edge it is provided a short distance below the lug *b*⁴ with a lug *b*⁷, which when the universal bar is raised can strike against the outer surface of the said bar, and when the universal bar is lowered can pass over the top edge of the same. Below said

lug b^7 a recess b^8 is formed in the inner edge of the type-bar, and at the bottom of the bar a hook b^9 is formed, which is adapted to pass over the fulcrum wire F^6 that surrounds the outer edge of the notched disk F' . Below said hook a notch b^{10} is formed in the inner edge of the type-bar to receive the edge of the dished or convex disk F^2 . When a type-bar is in the normal position of rest, as shown in Fig. 3, the convex outer edge b^5 is in one of the notches d of the ring D^3 . The shank of the hook b^9 rests in one of the notches f of the disk F' , and part of the curved bottom shank b^{11} of the type-bar is in one of the notches f^2 of the disk F^2 . If a corresponding key-lever is depressed at its outer end the pusher-rod F at the inner end is raised and engages the type-bar at the notch b^{12} and swings the bar upward, the same turning on the ring-shaped wire F^6 .

As shown in Fig. 3, the bottom edge of the universal bar G rests in the bottom corners of the notches b^8 of the several type-bars, and as soon as a type-bar begins to swing from the position shown on the right-hand side of Fig. 4 into the position shown on the left-hand side of Fig. 4, it raises the universal bar. The type-bar swings inward until the side edge of the recess or notch b^8 rests against the outer surface of the universal bar, as shown on the left-hand side of Fig. 4, and by this time the eye b^3 and the aperture in the bottom of the lug b^7 are centrally over the top of the pin C in the tubular standard B . The swinging movements of the type-bars now cease and a continued pressure on the key-lever only causes a vertical movement of the type-bar and universal bar, the type-bar being guided at three different points, namely, by the convex edge b^5 , which slides in one of the notches d of the ring D^3 , by the shank of the hook b^9 , which slides in one of the notches f of the disk F' , and by the inner edge of the bottom shank b^{11} , which slides in one of the notches f^2 of the convex disk F^2 . These three guides absolutely prevent the type-lever from being drawn out of its proper place. By the upward movement of the universal bar G its vertical arm G^3 is also moved upward, and by means of the pin H of the lever H' , which pin projects into the notch G^7 of the vertical arm G^3 , the free end of said lever H' is moved upward, and as it engages the fixed collar on the aligning rod C , said rod C is pushed upward and passes through the eye b^3 and into the recess of the bottom of the lug b^2 of the type-bar, thus forming a guide for the type-bar and compelling it to move upward on said pin and prevent any lateral or swinging movement of the type-end of said bar. As each type-bar is guided in the same way by the pin C , an absolutely true and reliable alignment is obtained. As soon as the key-lever is released the universal bar or rod G and the type-bar descend, the latter moving back into its original position.

Fig. 4 shows on the left-hand side a type-

bar that is raised for making an impression and the right-hand type-bar is lowered. If the key-lever of the type-bar shown in the right-hand side of Fig. 4 is depressed, as long as any other type-bar is in raised position; said right-hand type-bar cannot be manipulated, as its lug b^7 rests against the side of the raised universal bar, which absolutely prevents any movement of the said right-hand type-bar. Clashing of type-bars is thus absolutely prevented, as only one type-bar can be operated at a time and all others are checked by the lugs b^7 , which strike against the universal bar. For each type-lever two type-bars are provided, one for the upper and the other for the lower case. The spring d^4 ordinarily holds the tube D , its base and the other parts connected therewith in such a position that whenever a key-lever is operated its pusher-rod F strikes one of the type-bars of the lower case; but as soon as the lever d^2 is depressed the base D' and the bars connected therewith are turned in the inverse direction of the arrow α' , Fig. 7, a distance equal to the distance between the lower ends of two type-bars, so that if now any key-lever is depressed its pusher-rod F will not strike the key-bar corresponding to the lower case, but the type-bar corresponding to the upper case. As the type bars are swung toward the top of the central standard B , their flattened parts b^{13} below the eye b^3 strike against the cushion-ring B^3 on the upper end of the tubular standard B , thereby preventing the clattering of the machine. As none of the type-bars are fastened by means of pivots, they can easily be removed to be straightened in case they are bent or for providing them with new type or for repairing them in any way, and type-bars damaged to such an extent that they are no longer of use can easily be removed and replaced by others.

The support for the paper carriage is constructed with the two end-bars I I , placed edgewise, the two cross-bars I' I' , which rest flat upon the track-bars A^2 , and the front bar I^2 and the rear bar I^3 . A plate I^4 connects the cross-bars I' and is provided with an aperture I^5 directly above the top standard B , and through said aperture the types pass to make the impressions. In lugs I^4 at each end of the front and rear bars a transverse shaft J is mounted, and said shafts each carry a ribbon spool J' , the shafts being each provided with a spline, which permits the ribbon spools to slide on and to turn with the shafts. The end-plates J^2 of the spools J' are arranged between the lugs J^3 of slides J^4 on the end-bars I of the said support, said slides being provided at their front ends with hook-lugs J^5 that can pass into notches J^6 in the upper edges of said end-bars I . By raising the front ends of the slides J^4 so as to disengage their hook-ends J^5 from the notches J^6 , the slides J^4 can be moved toward the front or rear and move the ribbon spools J' along with them, as the lugs J^3 of the slides can engage the end-plates of the spools and thus permit of shift-

ing the ribbon J^7 toward the front or rear. As the spools can be shifted an equal number of notches, the ribbon can at all times be so adjusted that it moves in a straight line across the machine, thus permitting of using all parts of the ribbon from one edge to the other.

The shafts J are provided at their front ends with the knobs or buttons J^8 for turning them to wind the ribbon on one spool or the other.

From the inner surface of each end-bar I a spring-strip K projects, which is provided with a rounded shoulder K' a short distance from its free end, and from the under side of said spring-strip a spring K^2 projects that acts as a check-pawl for a ratchet-wheel that will be described hereinafter. The free ends of the spring-strips K rest on cross-rods L , the rear ends of which are pivotally mounted to slide in the rack M pivoted at M' , and their front ends are attached to a rod L' provided at its ends with buttons L^2 , which rod is mounted in hook-lugs L^3 on the inner surface of the front plate I^2 of the support in such a manner that the rod can slide in the direction of its length and can also rock slightly in its support.

From each cross-rod L a spring hook-pawl L^4 projects downward and engages a ratchet-wheel N fixed on a shaft J , the ratchet-wheels on the two shafts having their teeth inclined in opposite directions. The cross-rods L are so spaced from each other that when the hook-pawl L^4 on one cross-rod L is engaged with its corresponding ratchet-wheel N the other one is disengaged. By shifting the rod L' to the right, for example, to engage the right-hand hook-pawl L^4 with the right-hand cog-wheel N , the right-hand cross-rod L passes beyond the shoulder K' of the corresponding spring-strip K , permitting the free end of said spring-strip to snap downward, so as to engage the right-hand check-pawl K^2 with the right-hand wheel N , at the same time that the left-hand hook-pawl L^4 is disengaged from the left-hand ratchet-wheel, and likewise when the rod L' is moved to the left-hand the right-hand cross-rod L acts on the shoulder K' of the right-hand spring-strip K and forces said spring-strip upward, so as to disengage the check-pawl K^2 from the ratchet-wheel N at the same time that the right-hand hook-pawl is disengaged from said ratchet-wheel. At the same time, however, the left-hand hook-pawl L^4 is engaged with the left-hand ratchet-wheel and the left-hand cross-rod L slides under the shoulder K' of the left-hand spring-strip K , permitting said spring-strip to snap downward, so as to engage the check-pawl K^2 on the left-hand spring-strip K with the left-hand ratchet-wheel. Every time that an impression is made the rack M is rocked in a manner that will be set forth hereinafter, and as said rack rocks the cross-rods L also rock and the hook-pawls L^4 are moved up and down, and consequently that ratchet-wheel N with

which the corresponding hook-pawl L^4 is in engagement is rotated the distance of one tooth for each time an impression is made, and thus the ribbon is wound from one spool upon the other and drawn over the plate I^4 .

In a neck projecting toward the front from the rear bar I^3 of the paper carriage support a short shaft i is mounted to turn and is provided on its outer end adjacent to the rear bar I^3 with a ratchet-wheel i' that is engaged by a check-pin i^2 projecting from a spring-pressed lever i^3 pivoted to the inner side of said rear bar, said pin i^2 passing through an aperture in said rear bar I^3 , Fig. 2. A pulley j made integral with a spring-drum j' is mounted loosely on said shaft i , said drum containing a spiral spring, one end of which is fixed to the rim of the spring-drum j' and the other end to the axle i . A cord k is secured to the rim of the pulley at one end and passes through a guide k' on one of the cross-bars I' of the carriage support, and its other end is attached to a pin k^2 on the paper-holding carriage.

The shaft i is provided on its outer end with a slitted head i^4 , to permit of turning said shaft by means of a screw-driver for the purpose of winding the spiral spring upon said shaft until the desired tension is obtained necessary for operating the carriage.

To the front bar I^2 of the carriage support brackets l (Fig. 10) are fastened, and in the same the ends of a rod l' are held, and to the top edges of said brackets the scale-bar l^2 is fastened. On said rod l' the adjustable stop-block m is mounted to slide and is provided with the pointer m' and with a screw m^2 for locking it in place. The bell-tripping block n is also mounted to slide on said rod l' and is provided with a pointer n' projecting over the scale-plate and with a screw n^2 for locking it in place, and at its inner projecting end with a beveled lug n^3 that can act on the beveled lug o^3 projecting from the dog o^2 that is pivoted to the bell-hammer lever o' , which bell-hammer lever is pivoted at one end to the front bar of the carriage, the other end o^6 of said lever o' carrying the bell-hammer o that strikes against the bell on the end of the cylinder. A pin o^4 on the bell-hammer lever o' prevents the pawl o^2 from swinging to the right farther than the vertical position, but permits it to swing to the left when shifting the carriage. By means of an adjustable rod P the lever H' that is pivoted to the downward extension H^2 of the rear bar I^3 of the carriage support is connected with the swinging rack M . This rod P is made adjustable to permit of taking up lost motion, &c., and the means for adjusting it consist of two sections of said rod, of which one has a slot and the other a screw, one section also having two clamps that embrace the other section.

The paper carriage is composed of the front bar N^4 , the rear bar N' and the end-plates N^2 , N^3 . On the under side of the rear bar N' the frame O is formed, and the ends of the same

are provided with apertures, through which the shaft O' passes, that is held at its ends in standards O^2 of the end bars I of the carriage support. The carriage is thus adapted to slide longitudinally and to swing on said shaft O' . From the frame O the previously described pin k^2 to which the cord k is fastened projects. In the end-pieces N^2 N^3 of the carriage the rocking-shaft P is mounted, which is provided at its ends with the arms P' P^2 . A helical spring P^3 is connected with the arm P' and draws the same downward.

A lever P^4 (shown in dotted lines in Fig. 2) is pivoted to the inner surface of the end piece N^2 of the carriage and is provided at the front end with a curved finger-plate P^5 , and its inner edge rests against the under side of the arm P^2 of the rocking-shaft P . A spring P^6 (shown in dotted lines in Fig. 2) is fastened to the lever P^4 , and one end bears against a suitable fixed part of the end-plate N^2 , which spring presses the outer end of the lever P^4 upward, keeping the inner end—that is, the end under the arm P^2 of the rocking-shaft P —in lowered position.

The shifting lever Q is mounted to rock on the cylinder shaft, and its inner end is below the arm P' of the rocking-shaft P . Said shifting lever Q is provided with a pawl Q' that engages a toothed wheel Q^2 fixed on the inner end of a short shaft Q^3 mounted to turn in the right-hand end-plate N^3 of the carriage. Said cog-wheel is provided on its inner surface with an annular ridge Q^4 adapted to pass into the open end of a detachable cylinder Q^5 , said wheel also having an aperture Q^8 for receiving a pin on the end of the cylinder. The other end of the cylinder is held by a screw q , which passes through an internally-threaded neck q' projecting from the outer surface of the left-hand end-plate N^2 of the carriage. The shaft Q^3 is provided at its outer end with a suitable hand-wheel Q^5 for turning it, and said shaft Q^3 carries the bell R . A spring check-pawl R' engages the toothed wheel Q^2 .

The end-plate N^3 of the carriage is provided with an opening R^2 , into which a lug R^3 passes that projects laterally from a switch-lever R^4 pivoted to the inner side of said end-plate, which lever is held in raised or lowered position by a spring R^5 having an offset, as shown in dotted lines in Fig. 9. When the piece R^3 is in raised position, as shown in Fig. 10, the pin R^6 projecting laterally from the pawl Q' on the shifting lever Q strikes against the curved lower edge of said piece R^3 and thus checks said pawl and prevents it from turning the toothed wheel Q^2 more than the distance of one tooth. When a double space is to be made, the piece R^3 is brought into lowered position, so that the pin R^6 can travel over the top edge of the same and turn the wheel Q^2 the distance of two teeth. The bell-hammer o normally rests a short distance above the bottom of the bell and within the same, and when the lever o' is moved by the lug o^3 of its pawl o^2 encountering the projec-

tion n^3 of the stop n , the hammer is raised and then instantly released, causing the hammer to strike the bell.

Each end-piece of the carriage is provided with a slot S inclined downward and to the rear and containing a helical spring S' , the upper ends of which are fastened to the end-plates and the lower ends to a rubber covered roller S^2 , which is pressed by said springs against the surface of the main cylinder Q^9 . The pivots of said rollers work in slots S^3 of the end-plates.

The rocking-shaft P , previously mentioned and described, is provided at or near the center of its length with a downwardly-projecting arm P^6 , which engages a hook T' formed on the rear edge of a pawl-bar T that is mounted on the under side of the frame O in such a manner that it can slide in the direction of its length and swing laterally on a screw T^2 passing through a longitudinal slot T^3 in said pawl-bar. The free end of said pawl-bar is held against the under side of the frame O by a keeper T^4 . Said pawl-bar is provided with a pawl-tooth T^5 projecting from that edge opposite the one provided with the hook T' and facing the teeth of the rack M , and said pawl-tooth T^5 is connected by a spring T^6 with a stud T^7 projecting through the slot T^3 from the under side of the frame O .

The bottom piece of the frame O is provided with an arm projecting to the front and to said arm a pawl U is pivoted, which extends over the bottom part of the frame and projects from the rear edge of the same and is pressed down upon the upper surface of the said bottom part of the frame O by a spring U' . Adjacent to said pawl U a curved plate V projects from the rear edge of the bottom piece of the frame O over the rack M , and is so located that when the carriage is in the normal position it does not engage the teeth of the rack. Every time the universal bar is moved upward the rack is swung upward, and thereby is disengaged from the pawl-tooth T^5 on the sliding pawl-plate T and is engaged with the yielding pawl-tooth U , which holds the rack, and as soon as the rack is swung upward to engage the pawl-tooth U the pawl-tooth T^5 is released and the spring T^6 draws the pawl-plate T in the direction of its length until the tooth T^5 is opposite the next tooth of the rack. As soon as the rack descends and is disengaged from the spring pawl-tooth U it is immediately held by the pawl-tooth T^5 again, and so on, so that for each time the universal bar is operated the paper carriage is released and permitted to move the distance of one tooth under the action of its motor spring. Whenever the carriage is to be moved to the right or left a greater number of teeth, the outer ends of either the lever Q or P^4 are depressed, whereby the shaft P is turned in such a manner as to swing the pawl-plate T in the direction from the teeth of the rack M , whereby said pawl-tooth T^5 is disengaged from the rack, permitting the carriage to move freely.

When the carriage is swung up to examine the writing, the curved tooth V engages the teeth of the rack and holds the rack in the desired position.

5 To the front bar N^4 of the carriage a bracket-spring W is fastened at each end of said bar, and to each bracket-spring W a semicircular spring W' is fastened, which extends from the roller S^2 to near the top of the cylinder Q^9
 10 and serves to hold the paper snugly against the cylinder. At the center of the front bar N^4 a bracket-spring w is fastened, and to the same a curved spring w' is fastened, which extends from a point a short distance in front
 15 of the center of the roller at the bottom upward.

To the plate v' secured to the top of the rear bar N' of the carriage a curved spring-strip v^2 is fastened, the lower end of which is
 20 a short distance from the lower end of the spring w' , so as to leave that free space between the ends of said springs for the imprint that is to be made by the type at that part of the paper that is held by the said springs.

25 The roller S^2 has part of its covering removed, as at y , Fig. 6, to permit the spring v^2 to pass.

If desired, the inking ribbon can be dispensed with and in place of the same a series
 30 of inking rollers Y mounted in suitable frames can be fastened on the top of the ring D^7 , so that the faces of the type can come in contact with said rollers. The front bar N^4 of the carriage is provided with a small wheel or
 35 roller X, which runs on the upper edge of the front bar I^2 of the carriage support.

The spacing lever a^6 is pivoted in the usual manner and is provided at its rear end with a plate a^7 , which bears against the lower end
 40 of the downwardly-projecting extension G^5 on the arm G^4 on the universal bar G.

To the rear of the base-plate A two bars z are hinged, and the upper ends of said bars are hinged to the inner sides of the end-bars
 45 I of the carriage support and serve to hold the carriage support when the same is swung back, as shown in Fig. 2. During the backward and forward movements of the carriage support it rises slightly at the point where it
 50 is pivoted to the upper ends of the bars z , but swings downward to its proper position at the beginning and the end of the stroke.

Each track rail A^2 is provided at its rear end with a pin z' , which can pass into a suitable aperture in the rear plate I^3 of the sliding support. Each of said bars I of the sliding support is provided on its bottom with a flange y' extending below the track bar A^2 , and is adapted to strike against the latch y^2
 60 on the under side of the track rail when the same is set transversely, as shown in Fig. 13, said latch resting against a pin y^3 . This prevents pulling the sliding carriage support entirely off the track rails. When the carriage
 65 support and the carriage thereon are to be removed entirely, the upper ends of the bars z are disengaged from the end-plates of the car-

riage-support, and the latches y^2 , which are swung on the pivots to the under sides of the track-rails A^2 , are swung in the position shown
 70 in Fig. 14 in line with the length of the said track-rails, so as to permit the flanges y' on the lower edges of the end-bars I of the support to pass them, thereby permitting of withdrawing the carriage support entirely.
 75

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A typewriting-machine, constructed with track-bars supported on columns on a base, a
 80 sliding carriage-support on said track-bars, and latches for locking the carriage-support in place, all combined, substantially as set forth.

2. A typewriting-machine constructed with
 85 track-bars supported by columns on a base, a paper carriage-support sliding on said track-bars and rods pivoted to the base and to the said sliding carriage-support, all combined, substantially as set forth.
 90

3. A typewriting-machine constructed with track-bars supported by columns on a base, a carriage-support sliding on said bars and latches on the rear ends of the track-bars to prevent withdrawing the sliding support en-
 95 tirely from the track-bars, all combined, substantially as set forth.

4. A typewriting-machine constructed with track-bars supported on columns on a base, a sliding carriage-support on said track-bars,
 100 the end-pieces of said carriage-support having flanges extending under the track-bars and adjustable latches on the ends of the track-bars, all combined, substantially as set forth.
 105

5. A typewriting-machine constructed with track-bars supported on columns on a base, a sliding carriage-support on said track-bars, the ends of the carriage-support having flanges extending under the track-bars, rods
 110 pivoted to the base and to the sliding carriage-support and latches on the under-side of the track-bars at the rear ends of the same, all combined, substantially as set forth.

6. A typewriting-machine constructed with
 115 track-bars supported on columns on a base, a sliding carriage-support on the track-bars and latches pivoted to the sides of the track-bars at the front ends for locking said carriage-support in place, all combined, substantially
 120 as set forth.

7. In a type-writing-machine, the combination, with a standard on a base, of swinging type-bars surrounding said standard, a universal bar mounted to slide on said standard
 125 and operated from the type-bars and an aligning pin in said standard and operated from the universal bar, substantially as set forth.

8. In a typewriting-machine, the combination, with a central standard, of an aligning-
 130 device in the same, and means for operating the same from the type-bars, substantially as set forth.

9. In a typewriting-machine, the combination, with a central standard, of swinging type-bars surrounding the same, a vertically sliding pin in said central standard and means for operating said pin from the type-bars, substantially as set forth.

10. In a typewriting-machine, the combination, with a central standard, of a sliding pin in the same, type-bars surrounding the central standard, a universal bar operated from the type-bars, and means for operating the sliding-pin from said universal bar, substantially as set forth.

11. In a typewriting-machine, the combination, with a standard, of a sliding-pin in said standard, a lever engaging the pin, a universal bar actuating said lever, and a series of type-bars surrounding the standard and adapted to actuate the universal bar, substantially as set forth.

12. In a typewriting-machine, the combination, with a standard, of a sliding-pin in the same, a pivoted lever engaging said pin, a universal bar actuating said lever, type-bars surrounding the universal bar and adapted to actuate the same, a swinging rack and a connecting-rod connecting the swinging rack with the lever connected with the sliding pin in the central standard, substantially as set forth.

13. In a typewriting-machine, the combination, with a central standard, of a tube surrounding the same, and adapted to turn on said standard, a series of swinging type-bars mounted pivotally on said tube and a vertically movable circular universal bar surrounding the standard above the pivotal supports of the type-bars, substantially as set forth.

14. In a typewriting-machine, the combination, with a central standard, of a tube surrounding the same loosely, a series of type-bars mounted on said tube, means for turning the tube axially and a circular universal bar surrounding the standard above the pivotal support of the type-bars, substantially as set forth.

15. In a typewriting-machine, the combination, with a central standard, of a tube surrounding the same loosely, a finger-lever for turning said tube axially, a spring connected with said tube and the base of the machine, a series of type-levers mounted pivotally on said tube and a circular universal bar surrounding the standard above the pivotal supports, of the type-bars, substantially as set forth.

16. In a typewriting-machine, the combination, with a standard, of a tube surrounding the same loosely, a disk on the upper end of the tube provided with as many notches as there are type-bars, a wire surrounding the rim of the notched disk, type-bars mounted pivotally on said wire, and key-levers for actuating the type-bars, substantially as set forth.

17. In a typewriting-machine, the combination, with a standard, of a tube surrounding the same loosely, a notched disk on the upper end of the tube, a second notched disk on

said tube a short distance below the first notched disk, a wire surrounding the rim of the upper notched disk, a series of type-bars mounted pivotally on said wire and having hooks and lugs working in the notches of the two disks and type-levers for operating said type-bars, substantially as set forth.

18. In a type-writing-machine, the combination, with a standard, of a tube surrounding the same, a pivotal support for the type-bars formed on said tube, a vertically movable circular universal bar arranged above the pivotal support for the type-bars and having an inwardly projecting flange a short distance from its upper rim and key-levers for actuating said type-bars, substantially as set forth.

19. In a typewriting-machine, the combination, with a standard, of a tube surrounding the same, a pivotal support for the type-bars at the upper end of said tube, a circular universal bar arranged above the pivotal support of the type-bars, a flange projecting inward from said circular universal bar a short distance from the upper edge, a guide-pin projecting downward from the universal bar to prevent the same from turning axially, and key levers for actuating the type-bars, substantially as set forth.

20. In a typewriting-machine, the combination, with a tubular support, of a sliding pin in the same, a spring for pressing the pin downward, a circular universal bar, means for moving said pin upward from the universal bar, a series of type-bars surrounding the universal bar, and key-levers for operating said type-bars, substantially as set forth.

21. In a typewriting-machine, the combination, with a standard, of a series of pivoted type-bars surrounding the same, a circular, vertically movable universal bar surrounding said standard, a vertical arm on said universal bar, a space-lever, the inner end of which can act on the lower end of the arm, a lever actuated from said arm, a swinging-rack, and a rod connecting the swinging-rack with the lever that is actuated by the arm of the universal bar, substantially as set forth.

22. In a typewriting-machine, the combination, with a standard, of a tube surrounding the same, a series of swinging type-bars mounted pivotally at the upper end of said tube and having notches at the lower parts, a series of key-levers and a series of pusher-rods pivoted to the key-levers, the upper ends of said pusher-rods engaging the notched lower parts of said type-bars, substantially as set forth.

23. In a typewriting-machine, a flat sheet-metal type-bar, provided in its inner edge with a notch at the lower end, a hook above said notch, a recess above the hook, and a lug above said recess, substantially as set forth.

24. In a typewriting-machine, the combination, with a standard, of a circular vertically movable universal bar; provided with an inwardly projecting flange a short distance below its upper edge, and a series of swinging

type-bars mounted pivotally below the universal bar, each type-bar being provided with a hook, a recess above the hook and a lug above the recess, substantially as set forth.

25. In a typewriting-machine, the combination, with a standard, of a series of swinging type-bars arranged in a circle around said standard, a ring against which the upper ends of the type-bars can rest when not in operation, and a lower ring provided with notches for receiving the outer edges of the lower parts of the type-bars, substantially as set forth.

26. In a typewriting machine, the combination with a base, of a central standard, a ring surrounding said central standard and provided with apertures, a series of pivoted key-levers, pusher-rods pivoted to the key-levers and guided in the apertures of said ring and swinging notched type-levers mounted on the annular projections of the central standard to swing toward and from the upper end of said standard, which type-levers are adapted to be acted upon by the upper ends of said pusher-rods, substantially as set forth.

27. In a typewriting-machine, the combination, with a base-plate, of a central standard, a ring provided with a circle of apertures, pivoted key-levers, pusher rods pivoted to the key-levers, a series of pivotally mounted type-bars, and a ring arranged above the apertured ring and provided in its inner edge with a series of notches for receiving the outer edges of the lower parts of the type-bars, substantially as set forth.

28. In a typewriting-machine, the combination, with a central standard, of a tube mounted to turn axially on the same, a series of type-bars mounted pivotally at the upper end of said tube, a ring supported from the base of said tube forming a rest for the outer edges of the type-bars near the lower ends of the same, a series of key-levers, a pusher-rod on each key-lever and a fixed ring provided with a series of apertures for guiding the upper ends of the pusher-rods, substantially as set forth.

29. The combination, with a standard, of a tube surrounding the same and mounted to turn axially on the same, a series of type-bars mounted pivotally at the upper end of said tube, a notched ring supported on the base of said tube and forming a rest for the outer edges of the lower parts of the type-bars, a ring supported by rods from said notched ring and forming a support for the upper ends of the type-bars when at rest, a series of pivoted key-levers, pusher-rods pivoted to the inner ends of the key-levers for actuating the type-bars, and a fixed ring provided with a series of apertures for guiding the upper ends of the pusher-rods, substantially as set forth.

30. The combination, with a base-plate, of a standard on the same, a tube surrounding said standard and mounted to turn axially on the same, a series of swinging type-bars mounted on the upper end of said tube, pusher-rods for

actuating the type-bars, a ring fixed on standards projecting upward from the base, which ring is provided with apertures for guiding the upper ends of the pusher-rods, and key-levers partly pivoted on lugs of the base and partly on lugs on the under side of an extension of the ring provided with apertures for guiding the pusher-rods which key-levers are pivotally connected with the pusher-rods, substantially as set forth.

31. The combination, with a base-plate, of a standard on the same, a tube surrounding the standard and mounted to turn axially on the same, a series of swinging type-bars mounted pivotally on said tube, a ring fixed on the standards on the base and provided with a series of apertures, pusher-rods guided in said apertures, pivoted key-levers to which said pusher-rods are pivoted and a plate suspended below the apertured ring and forming a rest for the inner ends of some of the key-levers, substantially as set forth.

32. A typewriting-machine constructed with key-levers pivoted on lugs projecting from plates and springs within said lugs acting on the key-levers, substantially as set forth.

33. In a typewriting-machine, the combination, with a carriage-support having notches in the upper edges of the end-plates, of slides on said end-plates, which slides are provided with hooks adapted to engage said notches, and with inwardly-projecting lugs, sliding ribbon-spools mounted on shafts, the lugs of the slides engaging the end-plates of the spools to shift said spools when the slides are shifted, substantially as set forth.

34. In a typewriting-machine, the combination, with a carriage supporting frame, of a swinging rack, transverse rods connected with said rack, springs secured to the ends of the frame, and resting upon the transverse rods, which springs have shoulders, pawl-springs on said springs, ratchet-wheels connected with the spool shafts and engaged with the said pawl springs and hook-pawls projecting from the transverse rods connected with the rocking-shaft, substantially as set forth.

35. In a typewriting-machine, the combination, with a carriage-supporting frame, of a swinging rack, transverse rods connected with said rack, a longitudinal rod connecting the front ends of the transverse rods for shifting said rods in the direction of the length of the rack, springs projecting from the end-pieces of the said carriage supporting frame and having shoulders, which springs rest on said transverse rods, pawl-springs projecting from said springs, hook-pawls projecting from said transverse rods and ratchet-wheels on the ribbon-spool shafts, which ratchet-wheels are engaged by said hook-pawls and spring-pawls, substantially as set forth.

36. In a typewriting-machine, the combination, with a swinging rack, of transverse rods having their rear ends supported to slide in said rack, a longitudinal rod with which the

front ends of said transverse rods are connected, bracket-supports on the front plate of the carriage support, in which said longitudinal rod can slide, springs projecting from the end-plates of the carriage support and having shoulders, which springs rest on the transverse rods, pawl-springs secured to said springs, hook-pawls projecting downward from the transverse rods and ratchet-wheels fixed on the ribbon-spool shafts, with which ratchet-wheels the said pawls are engaged, substantially as set forth.

37. In a typewriting-machine, the combination, with a paper-holding carriage, of a cylinder on the same, a bell fixed on the shaft of the cylinder outside of one end-piece of the carriage and a hand-wheel on said shaft outside of the bell, substantially as set forth.

38. In a typewriting-machine, the combination, with a carriage frame, cylinder and ratchet-wheel, of a rocking lever, a pawl on the same for engaging the ratchet-wheel, an extension on said rocking lever, a rocking shaft, an arm on each end of said rocking shaft, of which arms one arm rests on an extension of the rocking lever, a rocking lever at the opposite end of the cylinder on which the other arm of the rocking shaft rests, an arm projecting downward from the center of said rocking-shaft, a pawl engaged by said arm and a rack on the carriage support engaged by said pawl, substantially as set forth.

39. In a typewriting-machine, the combination, with a carriage and its support, of a rack on the carriage-support, a sliding and swinging pawl plate on part of the carriage, a spring acting on said pawl plate and a pawl operated from said plate and engaging the rack, substantially as set forth.

40. In a typewriting-machine, the combination, with a carriage and its support, of a swinging rack on the carriage support, a sliding and swinging pawl-plate on part of the carriage, a spring acting on said pawl-plate, a fixed pawl projecting from the pawl-plate, and a hinged pawl projecting from the pawl-plate, substantially as set forth.

41. In a typewriting-machine, the combination, with a carriage and its support, of a swinging rack on the carriage support, and sliding and swinging-pawl-plate on part of the

carriage, and pawls on the pawl-plate and a curved plate projecting from said carriage over the rack and adapted to engage the rack when the carriage is raised, substantially as set forth.

42. In a typewriting-machine, the combination, with a carriage-support and carriage, of a plate on the carriage-support, over which plate the ribbon passes, and which plate is provided with an aperture, and a curved paper-holdingspring projecting along the curvature of the cylinder from the front to the bottom and toward said aperture, substantially as set forth.

43. In a typewriting-machine, the combination, with a carriage, of a cylinder, a bell on the end of the cylinder-shaft, a bell hammer pivoted to the end of the front part of the carriage opposite the one at which the bell is located and a hammer at the opposite end of the lever and within the bell and an adjustable tripping device for said bell lever, substantially as set forth.

44. In a typewriting-machine, the combination, with a carriage, of a cylinder, a bell on one end of the cylinder shaft, a bell-hammer lever pivoted to the front of the carriage at that end of the same opposite the one at which the bell is located, a hammer on the opposite end of said lever and within the bell, a dog pivoted to the bell-hammer and an adjustable tripping-device for the hammer-lever, substantially as set forth.

45. In a typewriting-machine, the combination, with a carriage-support, of a swinging rack, means for swinging said rack from the universal bar of the machine, a carriage on said support, a swinging and sliding pawl-plate on said carriage, a rocking-shaft having a downwardly-projecting arm engaging said swinging pawl-plate and levers on the end of the carriage for rocking said shaft to swing the pawl-plate in the direction from the rack, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HERMAN L. WAGNER.

Witnesses:

OSCAR F. GUNZ,

CHARLES SHROEDER.