

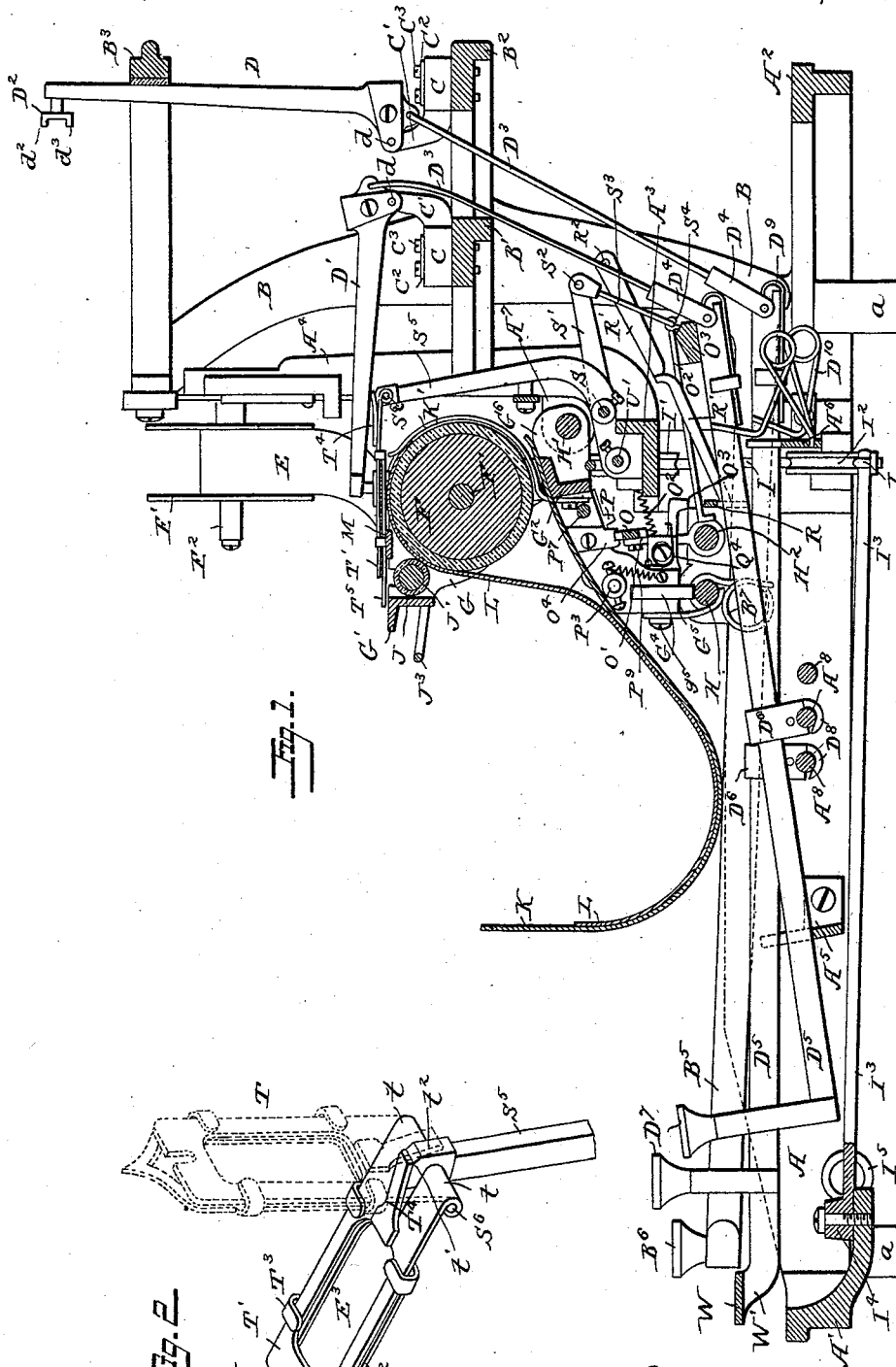
(No Model.)

6 Sheets—Sheet 1.

J. S. COPELAND.
TYPE WRITING MACHINE.

No. 492,141.

Patented Feb. 21, 1893.



Witnesses

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(No Model.)

6 Sheets—Sheet 2.

J. S. COPELAND.
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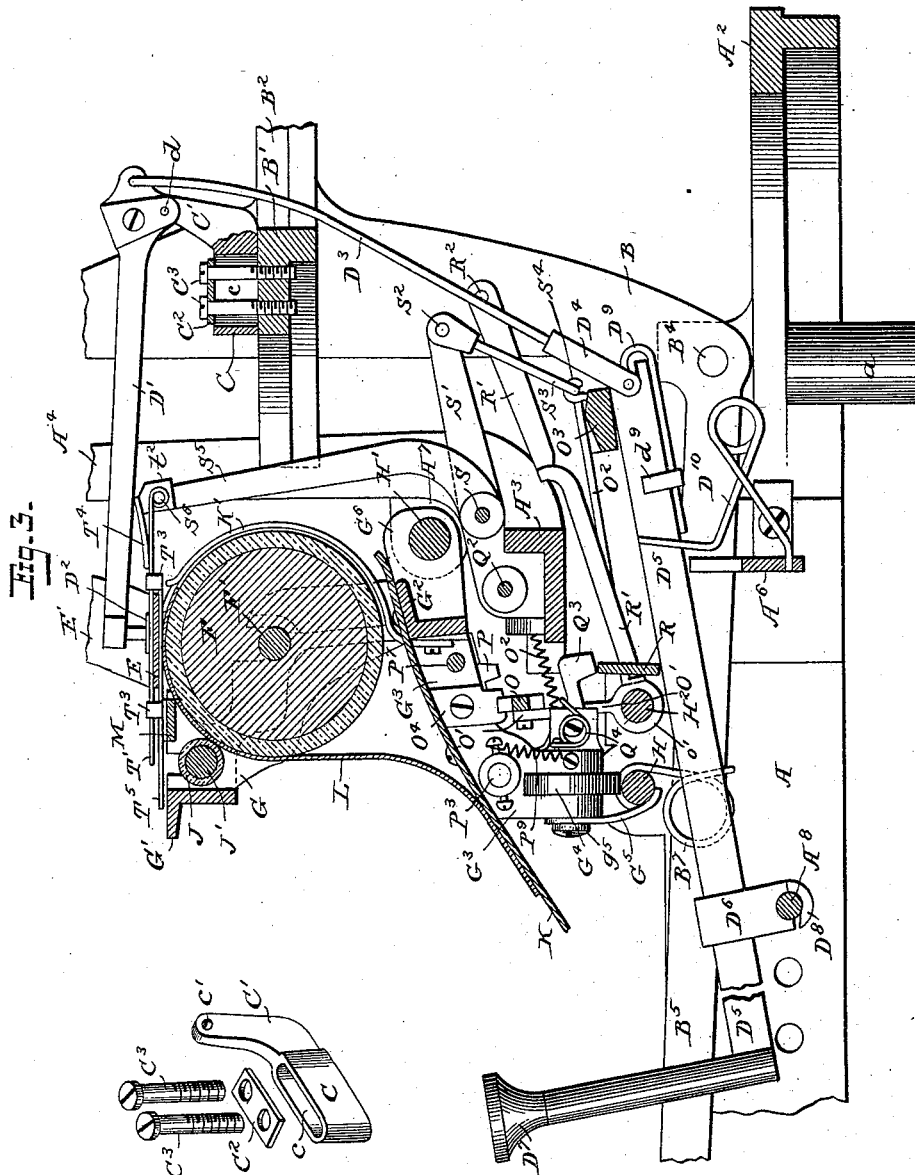


Fig. 3.

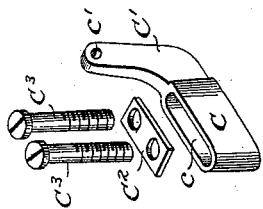


Fig. 4.

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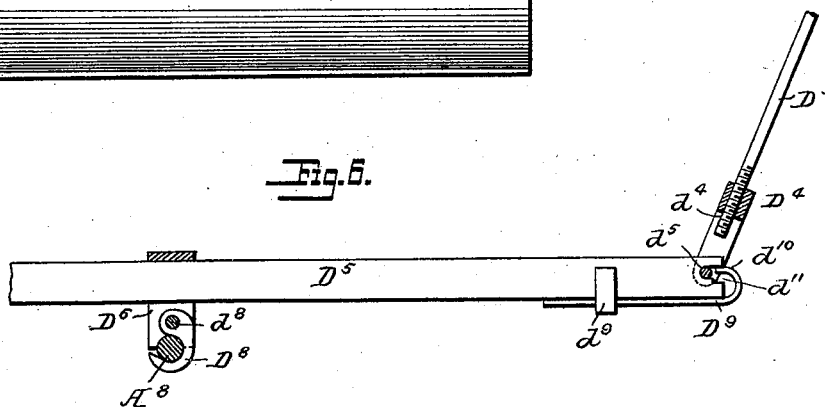
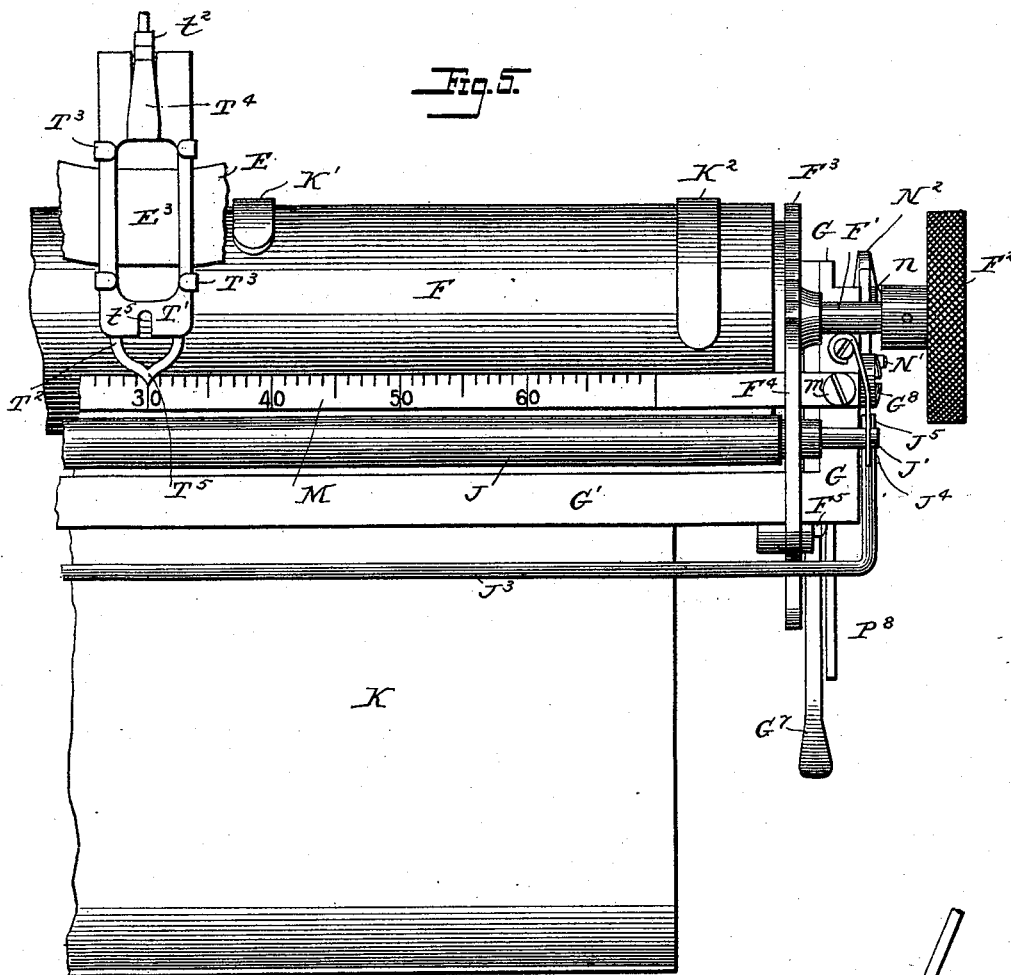
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J. S. COPELAND.
TYPE WRITING MACHINE.

6 Sheets—Sheet 3.

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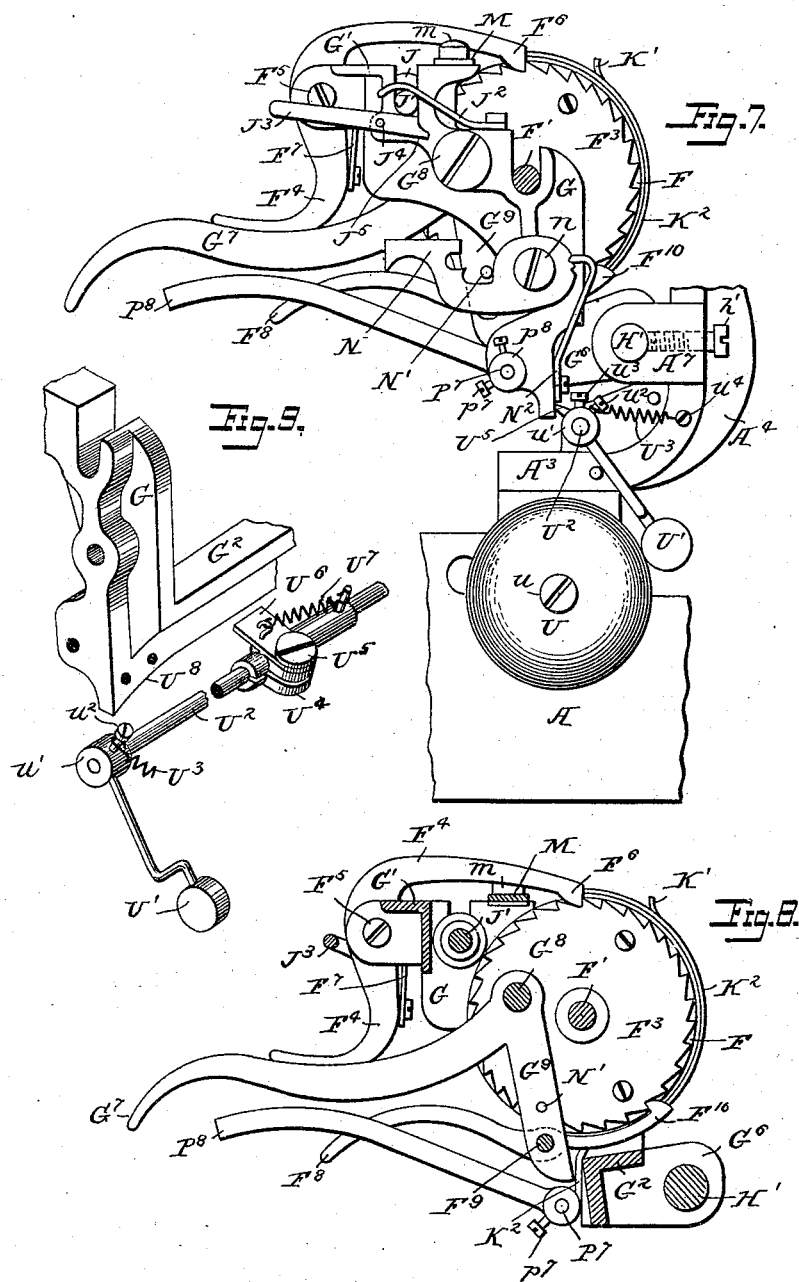
(No Model.)

J. S. COPELAND.
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6 Sheets—Sheet 4.

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J. S. COPELAND.
TYPE WRITING MACHINE.

6 Sheets—Sheet 5.

No. 492,141.

Patented Feb. 21, 1893.

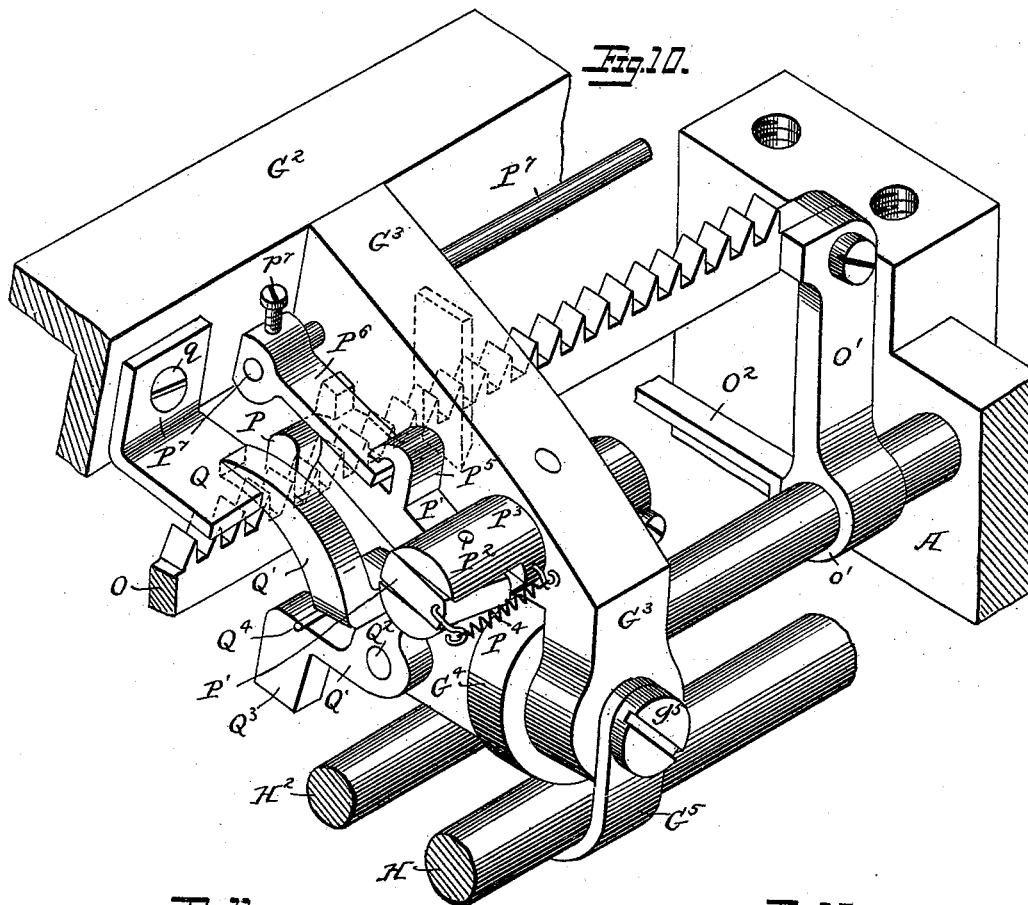


Fig. 11.

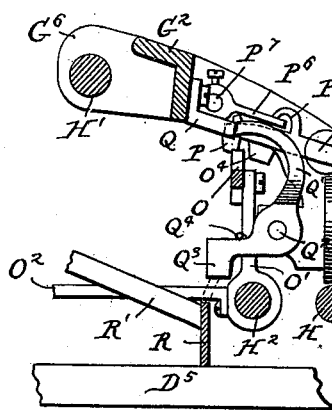
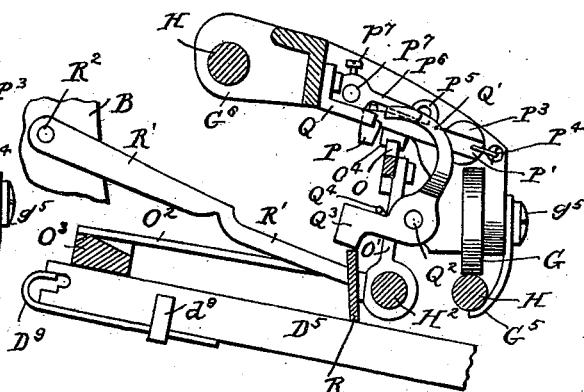


Fig. 12.



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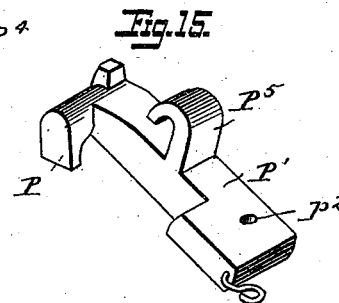
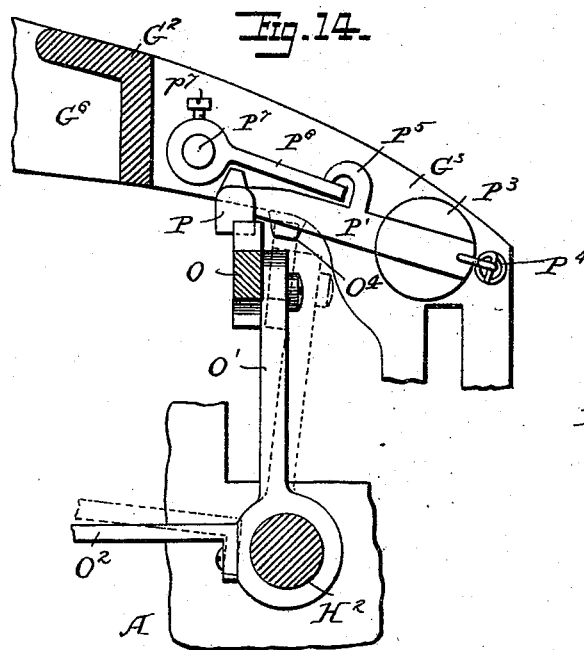
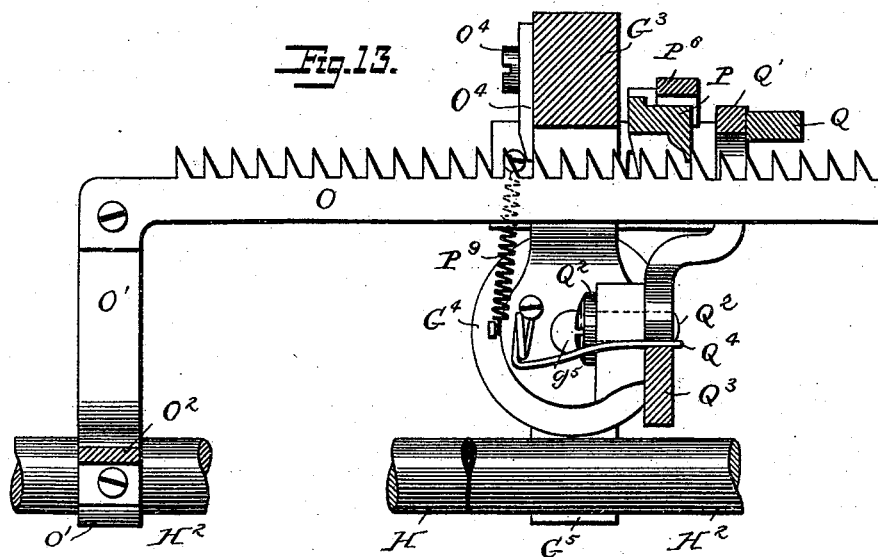
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TYPE WRITING MACHINE.

6 Sheets—Sheet 6.

No. 492,141.

Patented Feb. 21, 1893.



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UNITED STATES PATENT OFFICE.

JAMES S. COPELAND, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE POPE MANUFACTURING COMPANY, OF BOSTON, MASSACHUSETTS.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 492,141, dated February 21, 1893.

Application filed May 14, 1892. Serial No. 432,950. (No model.)

To all whom it may concern:

Be it known that I, JAMES S. COPELAND, a citizen of the United States, residing in Hartford, Hartford county, State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My present improvements relate more particularly to that class known as type bar machines of the variety in which there is a series of keys and key levers, operating type bars arranged at the back end of the machine in a nearly vertical semi-circular group and thrown forward and downward when printing to bring the types to a common printing point above the platen and in which the platen and paper carriage are located and moved transversely across the machine between the keys and the type bars; and they have for their object to simplify the machine, to mount the carriage so as to be readily detachable upon ways located below the platen, to produce a better escapement mechanism by means of a vibrating rack connected with the frame and a fixed and a movable catch connected with the carriage, to effect the escapement for letter spacing and the ribbon vibration by means of a single bar across the key levers, to provide releasable attachments for the fulcrum pieces of the key levers with the fulcrum rods and for the rear ends of the key levers with the thrust links and a more accurate and secure mounting of the type bar supports, to provide an adjustable holder for the ribbon above the printing point so as to utilize the full breadth of the ribbon, to provide a means of elevating or removing the ribbon out of the way when feeding in the paper or removing the carriage, to provide a pointer and scale conveniently combined with the vibrating ribbon holder, to provide a paper pocket traveling with the carriage and operating to hold the paper away from the key levers and other parts of the machine without impeding its transverse motion, to provide means for releasing the pressure roll so as to permit the free insertion and removal of the paper, to provide means of releasing the carriage from the rack in combination with the carriage handle so that the carriage may be readily moved transversely backward or forward to or from any desired position, to provide means of releasing the pawl and catch from the

platen ratchet and to turn the platen quickly so as to bring the paper to any desired line position or to discharge it from the platen and to improve the efficiency and rapid use of the machine in diverse other particulars by means of improved devices and combinations which I will proceed to describe in connection with the accompanying drawings which show a typewriting machine embodying my present improvements in the form in which I now prefer to use them.

The type levers and vibrating ribbon guide shown in the present case are claimed broadly in another application, Serial No. 432,951, filed of even date herewith.

Figure 1, shows my improved machine in vertical longitudinal section. Fig. 3, shows parts of the same enlarged for clearer illustration. Fig. 5, shows the right hand portion of the paper carriage platen, pocket and vibrating ribbon carrier and other parts in top plan. Fig. 6, shows in elevation and longitudinal vertical section portions of the key lever thrust link, fulcrum rod and connecting devices. Fig. 7, shows in side elevation a portion of the frame and the carriage end and platen. Fig. 8, shows some of the same parts on a vertical longitudinal section just inside the right hand carriage end. Fig. 10, shows in perspective the base beam of the carriage and a portion of the rack and its catches enlarged, Figs. 11 and 12, show the same parts in vertical longitudinal section with the secondary space bar, key lever and movable stop in different positions, as seen from the left. Fig. 13, shows in vertical transverse section just in the rear of the rack a portion of the rack and its shaft and the base beam and movable catch and stop, Fig. 14, shows parts of the same in vertical longitudinal section; and Figs. 2, 4, 9 and 15, show certain parts in perspective for clearness of detail.

A, A, are the sides, and A', A², are respectively the curved front and rear ends of an iron frame resting upon the legs a, a.

A³, is a transverse beam rigidly connected with the two sides of the frame, and A⁴, A⁴, are uprights or vertical portions of the frame rising near and in rear of the transverse beam to afford supports for the ribbon spool stops, &c.

A⁵ and A⁶, are transverse comb or guide bars, having upwardly projecting teeth between which the key levers play.

A⁷, A⁷, are way lugs attached to the uprights A⁴, A⁴, for holding the rear way rod H¹.

A⁸, A⁸, A⁸, are fulcrum rods placed transversely near the middle of the machine and supported in the sides A, A, of the frame. In this main frame is held a secondary or oscillating frame composed of the uprights B, B, one at either side of the machine near the rear end connected by the transverse curved horizontal supporting beams B¹ and B², and the curved type bar rest beam B³ above, and pivoted at the bottom at B⁴, B⁴, to the sides of the main frame. B⁵, is a lever arm (shown best in Fig. 3) connected with one of the oscillating uprights B and extending forward at the left side of the machine carrying the shifting key B⁶ (Fig. 1,) held up in part by the weight of the secondary frame and its tendency to fall backward and in part by the spring B⁷; so that the normal position of the uprights B, and their connected parts as is shown in Figs. 1 and 3, but by pressing downward upon the key B⁶, the upper portion of the uprights B, is thrown forward by their motion about the pivots B⁴, for a short distance so as to bring the second types d³, to the printing point; and this motion of the lever arm B⁵, and the uprights B, is limited by means of stops either above and below the lever B⁵, or as I prefer to make it, between the uprights B and A⁴, or in any suitable manner.

C, is a type bar bracket constructed with a vertical slot or mortise c, and a neck or arm C', perforated at c', to receive the pivot d, of a type bar. This type bar bracket C, is mounted on the supporting beam B¹ or B², of the swing frame and held adjustably toward and from the printing point by means of a clamp plate C², and two screws C³, C³, passing through the clamp plate and the slot c, into the supporting beam B¹ or B², as shown in Figs. 3 and 4.

D, D', are type bars which I prefer to make of different lengths mounted the shorter D', on the inner supporting beam B¹, and the longer D, on the outer or rear supporting beam B², by means of similar brackets C, reversed in position as shown in Fig. 1, this arrangement being for greater convenience and to enable a greater number of type bars to be located in the same space with their adjustable brackets. These type bars are fulcrumed at pivots d, on the bracket arms C', carry at their long ends type stems D², with their inner and outer types d², d³, the inner type d², coming to the printing point when the swing frame is in its normal position and the outer type d³, coming to the printing point when the key B⁶, is depressed and the swing frame is in its forward position, and the type bars D, D', have connected by free joints at their short ends the thrust links or connecting rods D³, threaded at d⁴, (Fig. 6) into the half turn buckle links D⁴, which have the other end closed by the pin d⁵. The thrust links D³, are adjustable in length by turning the

connecting links D⁴, thereon until properly adjusted. The rear ends of the key levers D⁵, are provided with notches d¹¹, and curved spring snaps D⁹, which may be held by clips d⁹, to the key levers so that the end d¹⁰, closing normally the notch in the end of the lever may be easily depressed to permit the insertion or removal of the pin d⁵, in the adjusting link D⁴. By this construction I secure an adjustment of the thrust links at once accurate and secure from disarrangement by the jar of use and great convenience in the readiness with which it may be attached to and detached from the key lever at any time. The key levers D⁵, are provided with the fulcrum pieces D⁶, which have bearings on the fulcrum rods A⁸, and in which are hinged at d⁸, the releasable catches D⁸, so that by swinging back the catch D⁸, the bar may be readily removed from the fulcrum rod, and when the parts are in position as shown in Fig. 6, the key lever is practically secure on the fulcrum rod against any displacement by use.

To the key levers D⁵, are attached by stems in any suitable manner the keys D⁷, by pressing on which the rear end of the lever is raised and the type bar thrown forward and downward to bring the type to the printing point, and when the pressure is released from the key D⁷, the spring D¹⁰, (Fig. 3) tends to bring the rear end of the lever D⁵, down to its normal position, and consequently restore the type bar to its vertical position against the raised rail B³.

E, is an inking ribbon held transversely of the machine above the platen on a spool E', at either side of the machine mounted on a stud E², projecting from the upright A⁴; and the ribbon spools are provided with ratchets and pawls and catches operated to feed the ribbon alternately one way or the other of its length by connections from the rock shaft S, in any suitable or well known manner, and as this forms no part of my invention I have not lettered or shown the devices in these drawings.

F, is a cylindrical platen on the shaft F', mounted in bearings in the ends of the paper carriage.

F², (Fig. 5) is a thumb wheel on the right hand end of the shaft F', by means of which the platen may be rotated at will when the pawl and catch are released as will be herein explained.

F³, is a ratchet wheel attached to the right hand end of the platen, and F⁴, is a holding pawl lever pivoted at F⁵, (Fig. 8) to the paper carriage, one end of which carries a pawl F⁶, engaging with the teeth of the ratchet F³, and which the spring F⁷, tends to keep in engagement with the ratchet to hold it against motion. The other end of the lever F⁴, is curved downward and forward to receive the thumb of the operator, and by pressing on it the pawl F⁶, is thrown out of engagement with the ratchet.

F⁸, is a moving pawl lever pivoted at F⁹,

(Fig. 8) to the pawl arm G^9 , and having at one end the pawl F^{10} , engaging with the teeth of the ratchet and formed at the other end to receive the finger of the operator and by an upward pressure to release the click F^{10} , from engagement with the ratchet. The weight of the free end of the lever F^8 , tends to keep the pawl F^{10} , in engagement with the ratchet without any spring as I construct it, though a spring may be used if desired.

G , G , are the end pieces, G' , the front rail and G^3 , the base beam respectively of the paper carriage which I prefer to cast all in one piece. The end pieces of this carriage are constructed to afford bearings for the platen shaft and the pressure roll shaft and the one at the right hand end to afford a bearing for the pivot of the holding pawl lever F^4 , as shown in Fig. 8, and for one end of the rock shaft P^7 , connected with the spring catch release device to be described and both of them at the upper ends to receive the ends of the scale M . The base beam G^3 , of this carriage is at right angles to the rear rail G^2 , at its middle portion and is formed at its forward lower end to receive the friction pulley or truck G^4 , journaled therein on the screw bolt g^5 .

G^6 , G^6 , are lugs on the rear rail G^2 , perforated to receive the way rod H' . The truck G^4 , rests on the lower forward way rod H , and is held from rising off from the way rod by the hook G^5 , also secured to the base beam by the screw bolt g^5 , and extending under the way rod H . The way rod H , is held at its two ends in the sides A , of the frame, and the way rod H' , is held at its two ends in the lugs A^7 , on the frame uprights A^4 (as shown in Fig. 7) one or both ends being secured releasably by a screw h' , from endwise motion. By this construction the carriage is given a free and steady position on the way rods and above them and the front side of the carriage is left free and open for the passage in and out of the sheet of paper written upon, the lugs G^6 , being free to slide upon the rod H' , and the truck G^4 , running easily upon the rail H . By releasing the screw or screws h' , the rail H' may be readily separated from the frame and the carriage, the carriage slightly drawn forward to free it from the rod H , and thus the paper carriage and platen and connected mechanism (with the exception of the cord yet to be described which is readily slipped out of the eye in which its knotted end is held) may be altogether detached from the rest of the machine and readily restored to position; this provision being necessary not only in repairing but in cleaning and keeping the machine in order and in properly adjusting the parts.

G^7 , is a carriage handle arm pivoted at G^8 , to the inner side of the right hand carriage end G , made in the form of a bell crank lever as shown in Fig. 9, with the free end extending forward in a conveniently curved form and adjacent to the holding pawl lever F^4 ,

and the pawl lever F^8 (Fig. 8) and with its other arm G^9 , extending downward adjacently to the ratchet F^3 , carries the pivot F^9 , of the pawl lever F^8 . This carriage handle lever G^7 , serves as a means first, for moving the carriage to right or to left when the carriage rack and catch are disengaged, and second, of partially rotating the platen on its shaft by moving it upward on its pivot G^8 , which brings the lower end of the pawl arm G^9 , backward with the pawl F^{10} , in engagement with the teeth, one or more teeth slipping by the pawl F^6 .

I , is a cord knotted and slipped into an open eye in the rear rail G^2 , of the carriage and passing over the guide pulley I' , in the transverse beam A^3 , of the frame downward over the friction pulley I^2 , journaled in a lug on the left side A , of the frame near the bottom and connected to the rear end of the lever I^3 , in the bottom of the machine having a long horizontal sweep, which lever I^3 , is pivoted at I^4 , to the front bar A' , of the frame or a projection therefrom and is operated by a coiled spring I^5 , in any suitable manner, so that when the carriage is drawn to the right the lever I^3 , will be drawn by means of the cord to the left of the machine and then the tension of the spring will tend to throw the carriage back toward the left as often as the action to be described of the rack and carriage catches will permit.

J , is a small pressure roll on the shaft J' , journaled in the carriage ends parallel with and adjacent to the platen F , and made to impinge throughout its length with a slight pressure upon the platen by means of the springs J^2 , (Fig. 7) operating on the ends of the shaft J' .

J^3 , is a bail extending across in front of the carriage and bent at its ends to form two levers pivoted at J^4 (Fig. 7) to the carriage ends and with their shorter ends beneath the ends of the shaft J' . By downward pressure on this bail J^3 , the pressure roll J is thrown up out of contact with the platen, and I form the ends of the side levers of the bail J^3 , with curved seats J^5 , (Fig. 7) which operate as rests to receive and hold the ends of the shaft J' , in its upward position when the bail is pressed down but from which the roll is released by a slight upward pressure on the bail.

K , is a paper pocket which I form of sheet metal attached at one end to the rear rail G^2 , and base beam G^3 , of the carriage which extends for the greater part of the length of the platen parallel with and near it and is curved downward and forward and upward as shown in Fig. 1, to contain the sheet of paper to be printed upon, to support it and keep it off from the key levers and the keys and out of contact with the other parts of the machine except the platen and the paper guides.

K' , K^2 , K^2 , are paper guides or fingers formed of narrow strips of sheet metal at-

tached to the rear rail of the carriage at their lower ends and extending upward to the platen, leaving a slight free space between them and it for the paper, K', the middle one being short enough not to interfere with the action of the type or ribbon carrier, and K², at one end being preferably movable in any usual manner to accommodate different widths of paper.

L, is the paper sheet to be printed on which is passed right side up by what is to be the upper end of the page first beneath the front rail G', and the bail J³, between the pressure roller J, and the platen F, and then is passed between the paper guides K', K², and the platen and is carried downward around the platen and back into the paper pocket.

M, is a scale formed of a thin strip of sheet metal and attached by screws m, to the ends of the paper carriage so as to be immediately above and adjacent to the platen as shown in Fig. 5.

N, (Fig. 7) is an adjustable platen revolution stop formed of sheet metal pivoted at n, to the right hand carriage end and held in one or more positions by notches and an engaging spring N², and having one or more graduated notches or openings to receive and limit the motion of the stop pin N', in the pawl arm G², so that for instance when the stop plate N, is in position as shown in Fig. 7, and the handle arm G⁷, is raised, the platen will be revolved through the space of one tooth of the ratchet, and if the stop plate N, be depressed so that the spring N², catches in the other notch the stop pin N', will be permitted to advance to a deeper notch in the plate N, and permit the platen when the handle lever G⁷, is raised to be rotated through the space of two teeth of the ratchet.

O, is a rack bar held transversely across the machine beneath the paper carriage upon arms O', O', which have free bearings on a transverse rack rod H², held in the sides A, A, of the frame. To each arm O', is attached another arm O², extending backward to and connected with the universal space escapement and ribbon moving bar O³, which lies along transversely upon the rear ends of the key levers so that whenever a key is depressed the rear end of the key lever lifts the universal bar O³, and thus through the arms O², O', rocks or vibrates the rack O.

O⁴, is a fixed catch secured to the base beam of the carriage (see Fig. 3) which when the rack O, is vibrated forward by the rising of the universal bar O³, is engaged by the teeth of the rack O, and holds the carriage from moving, but which is not in engagement with the teeth of the rack when the rack is in its normal or backward position as shown in Fig. 11, that is with the universal bar O³, down and the type bars all up.

O², (Figs. 1 and 3) is a rack spring tending to keep the rack in its backward position.

P, is a movable catch on a swing arm P', pivoted at p², in a rocking stud P³, (see Figs.

10 and 14) freely held in the base beam G³. This moving catch P, is hinged to fall near but a little in rear of the fixed catch O⁴, and to be in engagement with the teeth of the rack O, as shown in Figs. 10, 11 and 14, when the universal bar O³, is down in its normal position, but is out of engagement with the rack when any key is pressed down and the rack is thrown forward into engagement with the fixed catch O⁴. When in its normal position in engagement with the teeth of the rack this movable catch key and its swing lever P', afford a stop between a tooth of the rack and the base beam G³, of the paper carriage, as shown in Fig. 10, to prevent any further movement of the carriage; but P⁴, is a spring connected at one end with the rocking stud P³, and at the other end with the hinged arm P', tending by its force to throw the moving catch P, to the left from the base beam G³, and when the rack O, is vibrated forward into engagement with the fixed catch. As shown in Fig. 12, the catch P, is thrown to the left a short distance until its motion is arrested by the fixed stop Q, or the movable stop Q', thus permitting the carriage to move to the left when the rack is restored to its normal position in contact with the moving catch P, for a short space if the moving stop Q', be in position and for a double space if Q', be out of position since the carriage is free to throw the catch P, to that extent. These movements make the letter spaces. The stud P³, is held freely in its bearing in the base beam and by the action of the spring P³, (Figs. 3 and 13) tends to turn with the arm P', so as to keep the catch P, in contact with the rack; but on the arm P', is a hook P⁵, in which the trip arm P⁶, engages, and the trip P⁶, is secured on the end of a rock shaft P⁷ (see Fig. 10) having a bearing at one end in the base piece of the paper carriage and extending to the right hand end piece of the carriage (see Fig. 7) has secured to it the release arm P⁸, which is curved at its outer or free end and brought into convenient juxtaposition with the carriage handle arm G⁷. By means of this arrangement when the release arm P⁸, is gently pressed upward the moving catch P, is thrown upward out of contact with the rack teeth and the carriage may be moved freely toward the right or left to any desired position and immediately detained there by dropping the release arm P⁸.

Q, is a fixed stop attached to the rear rail G², of the carriage either by a screw g, or otherwise adjacent to the moving catch P, as shown most plainly in Fig. 10.

Q', is a movable stop lever pivoted at Q², to the base beam of the carriage or a projection therefrom with its free end when in normal position between the fixed stop Q, and the moving pawl P, and as I make it is the thickness of one letter space. This moving stop is detained in its normal position by the spring Q⁴; at the other end Q³, is a trip stud.

R, is a secondary space bar or stop trip bar

extending transversely of the machine across the key levers and having comb teeth on its under side with spaces between them so that this secondary space bar rests only on those key levers which are to actuate either double letter types or wide capital letter types. It is hung pivotally by the arms R' , R' , at R^2 R^2 , to the uprights B , B , of the secondary frame, so that it will be swung upward for a short distance by any of the key levers on which it rests, and when it is swung upward it strikes and lifts the trip stud Q^4 , and throws the movable stop Q' , upward from between the fixed stop and the moving pawl P , and permits the pawl P , to move so much farther to the left until it rests against the fixed stop Q . By connecting the universal bar to the shifting frame it will be shifted into engagement with the movable stop when small letters are printed and out of engagement with said stop when the capitals are printed, thus spacing extra for the capitals.

S , is a ribbon movement rock shaft having its bearings in the uprights A^4 , A^4 , of the main frame, and it is connected by an arm S' , fixed rigidly thereto at one end and pivoted at S^2 , at the other end to a link S^3 , connected at S^4 , with the universal bar O^3 , so that whenever the bar O^3 , is raised by the action of a key lever the shaft S , is rocked through a small portion of a revolution; to this rock shaft S , is also rigidly fixed an upright arm S^5 , which at each rocking of the shaft S , is vibrated at its upper forward end toward the platen as shown in Fig. 3, but when the bar O^3 , falls to its normal position the upper end of the vibrating arm S^5 , falls backward toward the back of the machine for a little distance; the upper end of the vibrating arm S^5 , is provided with the pin or pivot S^6 , and with two stop surfaces (shown in Fig. 2) t' , t^2 , substantially at right angles to each other. On the pin S^6 , is hinged a ribbon carrier T , which I prefer to construct of two leaves T' , T^2 , of sheet metal, the upper part or leaf T' , being hinged at tt , on the cross pin S^6 , the under leaf T^2 , being held by the bent clips T^3 , T^3 , T^3 , to the upper leaf, these leaves being sufficiently apart at their middle portion to permit the passage of the ribbon between them as shown in Fig. 3, and both leaves having their middle portion removed to leave a printing space E^3 , over and above the printing point in which the types may be impressed upon the ribbon and the ribbon impressed upon the paper on the platen. The upper leaf T' , has cut in it or attached to it a spring stop T^4 , which when the leaf is down in its normal position as shown in Fig. 2, rests on the horizontal stop surface t' , and thereby retains the carrier in a horizontal position; but at the will of the operator the forward end of the paper carrier may be lifted to a position shown by dotted lines in Fig. 2, so that both it and the ribbon are out of the way of the paper and the carriage, and then the spring detent T^4 , resting with its free end on the top surface t^2 , holds the carrier

and the ribbon in its out of the way position until it is restored by pressure to its normal horizontal position for use. The under leaf T^2 , is adjustable backward and forward beneath the upper leaf T' , so that it may be varied in position a sufficient amount to bring any portion of the width of the inking ribbon over the printing point, the clips T^3 , serving as guides or detainers for the edges of the ribbon and following the under leaf T^2 , in its change of position. On the under leaf T^2 , I form the pointer T^5 , and this may be further aided if desired by the notch t^5 , at the middle portion of the free end of the upper leaf T' , the pointer T^5 , and notch t^5 , being in a line with the printing point and indicating on the scale as shown in Fig. 5, the exact point of the next impression that will be made by a type.

U , is a bell held by a screw u , to the side piece A , of the frame.

U' , is a hammer on an arm fixed rigidly at the other end to the rock shaft U^2 , having its bearings in the frame of the machine. A small spring U^3 , connected at one end with a stud u^2 , in the boss u' , of the regular bell rock shaft, and at the other end as at u^4 , with the frame of the machine tends to keep the hammer U' , in contact with the bell; by means of a small adjustable clamp U^4 , and screw U^5 . A bell trip U^6 , is pivotally held so as to permit lateral movement but rigidly held vertically to the shaft U^2 ; the trip U^6 , is held to its normal position by the small spring U^7 . On the lower side, and at the right hand end of the carrier back rail G^2 , (see Fig. 9) is formed a wedge cam U^8 ; when the carriage is drawn to the right the butt end of the cam U^8 , coming against the edge of the trip U^6 , swings it against the spring U^7 , sufficiently to allow the carriage end to pass by, but on the return of the carriage toward the left the lower face of the cam U^8 , rides upon the top side of the trip U^6 , depresses it and rocks the shaft U^2 , and when the trip is released by the passing of the cam and the shaft is restored by the spring U^3 , the hammer strikes the bell. The trip U^6 , is adjustable along the shaft to give an earlier or later alarm according to the width of paper used on the platen.

W , is a spacing key (Fig. 1) on the space lever W' , fulcrumed on one of the fulcrum rods and operating at its rear end to raise the universal bar O^3 , in the same manner as a key lever D^5 , but having no connection with the type bars.

What I claim is—

1. The combination with the carriage, of a vibrating rack, a fixed catch upon the carriage; a hinge piece P^3 , journaled in the base of the carriage and carrying a movable catch pivoted to said hinge piece, a trip lever arranged to raise the movable catch, a shaft mounted in the carriage and carrying the trip lever, and a thumb lever arranged to rock the shaft, substantially as described.

2. The combination in a typewriting ma-

chine, with a shifting frame and a series of type levers carried by said frame, of a carriage, feeding devices for the carriage including a movable catch and a fixed stop therefor, a movable stop arranged to be interposed between the catch and the fixed stop and a universal bar connected to the shifting frame and movable into and out of engagement with the movable stop, substantially as described.

3. The combination in a typewriting machine, of a vibrating rack, a carriage, fixed and movable catches upon the carriage arranged to alternately engage the rack, a fixed stop upon the carriage for the movable catch, a secondary movable stop upon the carriage adapted to be interposed between the fixed stop and the movable catch, a universal bar resting upon the key levers and connected to a shifting frame whereby it may be shifted into and out of engagement with the movable stop, substantially as described.

4. In a typewriting machine the combination with the carriage having upper and lower rails G^1 , G^2 , united by end pieces G , the rail G^2 , being curved at its end to form a cam U^8 , of a bell attached to the main frame, a shaft journaled in the main frame and carrying a striker for the bell, and an adjustable spring trip U^6 , mounted upon the shaft and arranged to be engaged by the cam U^8 , upon the carriage, substantially as described.

5. The combination in a typewriting machine with the carriage and the platen mounted in the carriage, of a pressure roller journaled in the ends of the carriage, springs for pressing said roller against the platen, and a lever pivoted to each end of the carriage for raising said roller from the platen, said levers being united by a bail extending along the front of the carriage, substantially as described.

6. The combination in a typewriting machine with the carriage, the platen, the pressure roller, and springs for pressing said roller against the platen, of a bail extending along the front of the carriage and levers at each end of the carriage, said levers being united by the bail and provided with seats J^5 , at their inner ends, whereby said pressure roller may be lifted from the platen and sustained in its raised position, substantially as described.

7. The combination with the carriage and the platen mounted upon the carriage and provided with a ratchet wheel, of the holding pawl F^6 , and its thumb lever F^4 , extending in front of the carriage and the moving pawl having its thumb lever located adjacent to the thumb lever of the holding pawl, substantially as described.

8. The combination in a typewriting machine with a carriage and a revolving platen mounted in the carriage, of ribbon spools, a reciprocating ribbon guide above the platen, a rock shaft having an arm extending upward behind the platen to which the ribbon guide

is pivoted, and an index carried by said ribbon guide to indicate the printing point, substantially as described.

9. The combination in a typewriting machine with the carriage and the revolving platen, of the rock shaft beneath the platen, a universal bar resting upon the keys and connected to an arm of the rock shaft, a second arm extending up back of the platen and a reciprocating ribbon guide pivoted to said second arm and arranged to carry the ribbon to and from the printing point, substantially as described.

10. In a typewriting machine the combination with the rock shaft and its arm S^5 , having the stop surfaces t^1 , t^2 , of the ribbon guide having a spring arranged to engage said stop surfaces whereby the guide may be held in operative relation to the platen or turned up, substantially as described.

11. In a typewriting machine the combination with a vibrating arm, of a ribbon guide connected to said arm, said guide being adjustable relatively to the arm, whereby the ribbon may be carried over the printing point a greater or less proportion of its width as desired, substantially as described.

12. In a typewriting machine the combination with the rock shaft and its arm S^5 , of the ribbon guide consisting of two plates, one of said plates being pivoted to the arm and the other plate being adjustably connected to the first, whereby the relation of the ribbon to the printing point may be adjusted, substantially as described.

13. The combination with a type bar and a type bar supporting beam, of a type bar bracket C , having an arm to which the type bar is pivoted and an elongated slot, and a clamping plate and two screws for holding said bracket adjustably upon the supporting beam, substantially as described.

14. In a typewriting machine the combination with a type bar and a key lever, of the connecting rod D^3 , the swivel D^4 , and a spring detent for holding the swivel in connection with the key lever, substantially as described.

15. In a typewriter the key lever notched at its inner end and provided with the spring detent D^9 , in combination with the connecting rod and the swivel having a pin adapted to be retained in the notch of the key lever by the detent, substantially as described.

16. In a typewriting machine the combination with the main frame and a fulcrum rod, of a key lever having a fulcrum bracket adapted to rest upon the rod and a catch hinged to the bracket and arranged to embrace the rod, substantially as described.

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

JAMES S. COPELAND.

Witnesses:

ALBERT P. DAY,
C. F. SERLEY.