

J. PRATT.

TYPE WRITER.

No. 267,367.

Patented Nov. 14, 1882.

Fig. 1.

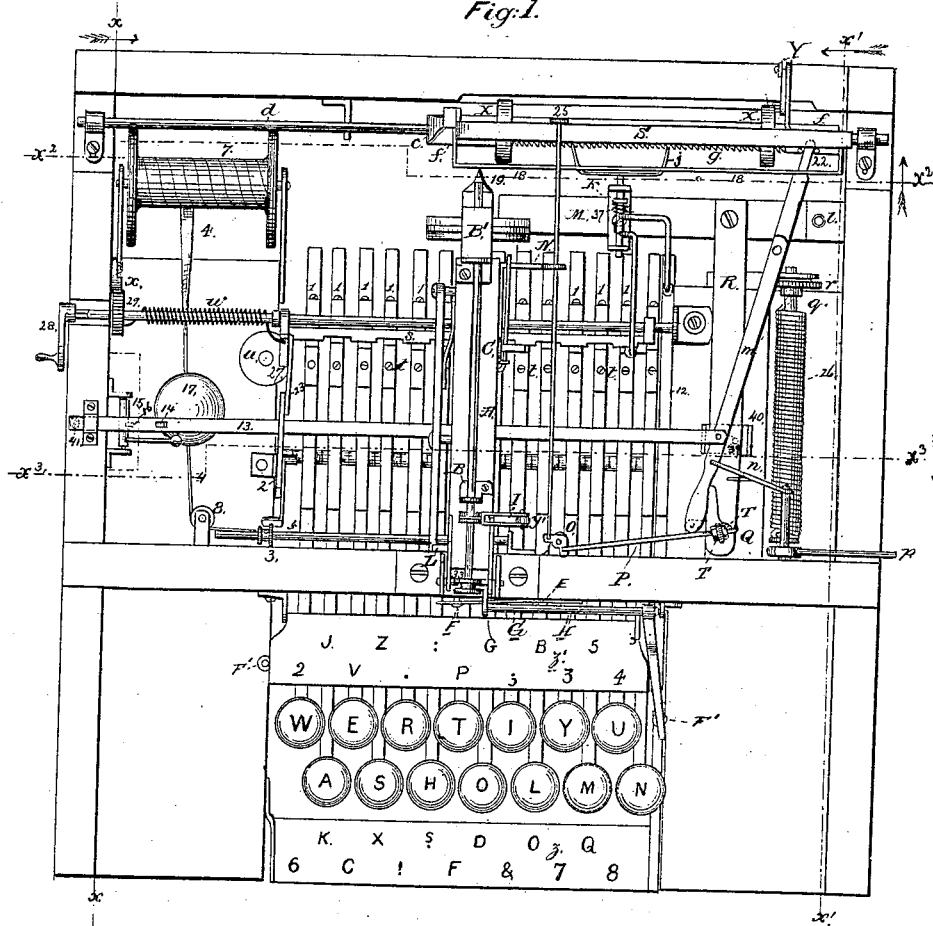
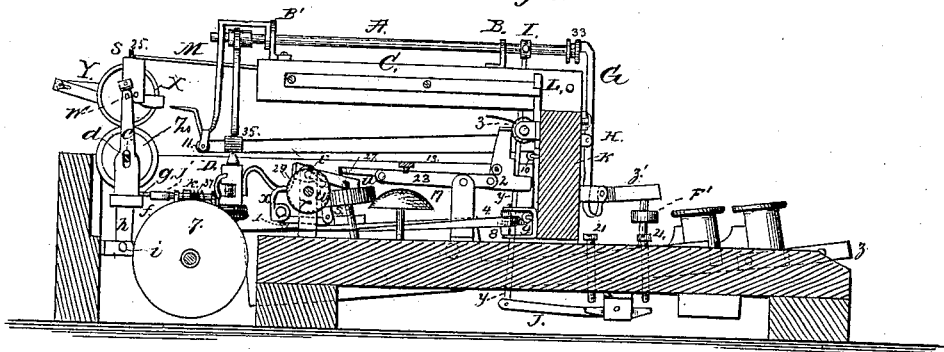


Fig. 2.



WITNESSES

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Fig. 6.

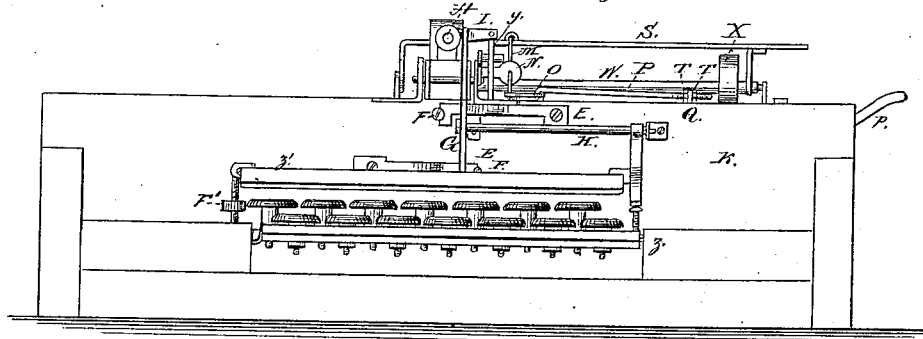


Fig. 7.

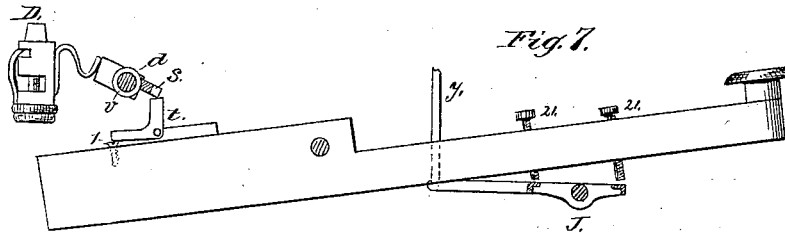


Fig. 8.

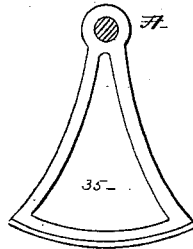


Fig. 9.

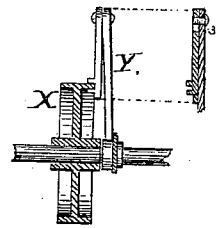
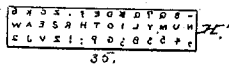
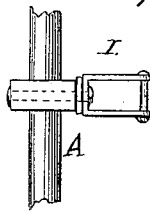


FIG. 10.



WITNESSES
John F. C. Print
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John Pratt INVENTOR

UNITED STATES PATENT OFFICE.

JOHN PRATT, OF CENTRE, ALABAMA, ASSIGNOR TO THE HAMMOND TYPE WRITER COMPANY, OF NEW YORK, N. Y.

TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 267,367, dated November 14, 1882.

Application filed February 19, 1879.

To all whom it may concern:

Be it known that I, JOHN PRATT, of the village of Centre, in the county of Cherokee and State of Alabama, have invented a new and useful Improvement in Type-Writers, of which the following is a specification.

My invention relates to that class of type-writers which employ a solid or connected body of types on a plate or carrier, moved together to one point in arbitrary succession and there receiving the impact by which an impression is made upon the paper; and my improvement relates to the mechanism for accomplishing this, to the mechanism for moving the paper so as to form lines of print, to mechanism for reversing this movement for a new line, to mechanism for making the impression, to the mechanism for moving an ink-ribbon from a spool filled and used up like the thread of a sewing-machine, to the device for giving notice of the near completion of a line, and a device for correcting any errors of printing.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a plan of the machine with top of case removed. Fig. 2 is a longitudinal section along line xx of plan. Fig. 3 is a longitudinal section along line $x'x'$ of plan. Fig. 4 is a cross-section along line x^2x^2 of plan. Fig. 5 is a cross-section along line x^3x^3 of plan. Fig. 6 is a front elevation. Fig. 7 shows a key and action. Fig. 8 shows side and bottom of segment. Fig. 9 is a detailed section of roller and clutch of carrier. Fig. 10 is a detail view of the double-jointed arm.

My machine employs a type plate or carrier of metal or hard rubber, H' , preferably the latter, secured to the periphery of a segment of a wheel, and having three or five or seven or any other uneven number of rows of types. Fig. 8 is a view of the plate and segment, and shows the arrangement of the types. The segment is fitted to the shaft A , which rocks freely in bearings B and B' , screwed to bar C . This shaft is held endwise firmly in a position such as to bring the middle row of types under the hammer D by means of check-springs E and E , which are adjusted by screws F and F , and press against the rocking lever G —the one above the other below the shaft H , on which

it rocks. A pin, 34, projecting from the upper arm of rocker-lever G takes into a grooved collar, 33, on said shaft A , and thereby imparts its own movement to said shaft and the type-plate segment, and holds it steady in its normal position. These screws determine accurately the position of the type-plate, and also serve to adjust the springs so that they do not follow each other, but act independently and equably. Shaft A is provided with arm I , jointed so as to give it a wrist movement to allow the bar C to be raised. This arm is linked to the arm of rocker J under the key-levers. The bar C projects over the top of the machine-case, and serves as a support for the segment-shaft and other parts. It is hinged to the cross-bar K and is locked in its horizontal position by latch L . A wire, M , fitted at its farther end with a disk, 25, passes through a hinged guide, N , is operated by bell-crank lever O , link P , and standard Q , fixed in bent lever R , and, through the frame S of paper-carrier, actuates the page movement—that is, by rocking said frame it brings the clutch Y , into operation, and said clutch, grasping the rim of wheel X , turns the four rollers upon each other, and thus makes the interlinear spaces. Button-screws T and T determine the position of the disk 25 back of the frame S , and thus regulate the width of the interlinear spaces.

The paper-carrier consists of frame S , rocking on rod W , which is the axle of rollers X of clutch Y , formed of a slotted lever, having a longitudinal and free bearing, 38, by which it is hinged to arm of frame of rubber rollers Z and Z , fixed on tube a , slotted bearings b and b for tube a , slotted bearings c for the rod d , and to allow a free action of spring e , which presses the two pairs of rollers together, of the wood slat f and toothed rack g , all sliding on steel rod d . Said rack and all bearings are secured to this slat, also the guide (slotted finger) h on wire i . Scapement j gears in this rack, and is formed of a shaft, pallets, and two arms, one resting on spare lever 12 and one on frame S . A friction-ring, k , regulates the tension of a spiral spring, 37, which assists in the scapement of the pallets. The mechanism of said scapement is secured to bent lever r , which is hinged at l . Driving-

lever *m* is also mounted on the front end of said bent lever, and is hinged, as shown, and connected by a link, *n*, to an arm of lever *p*. Lever *p* forms the crank of a stem *q* on which is coiled an spiral spring, 26. Ratchet-wheel *r* and pawl regulate the tension of said spring. Frame *s* is operated by jacks *t*, mounted upon key-levers. It is notched to compensate varying leverage of key-levers, and a projection therefrom rests upon an adjustable nut, *u*, so that its position may be quickly and nicely adjusted so as to just allow the jacks to fall to their places when they have slipped from the frame. The rod of said frame is fitted with a hammer, *D*, whose position relative to the segment is regulated by friction-rings *v* and *v*. Hammer *D* is formed of a shank-head and an adjusting-screw, which regulates the vertical position of the head and the plane of its striking-face. The spiral spring *w*, by pressing upon projection 27 from notched lever *s*, operates the same, and thereby the type-hammer *D*. Said spring is wound upon a stem terminating in a crank, 28, and has a notched wheel, 29. A rigid spring, *x*, lets into said notched wheel, so as to hold it fixedly in any position and yet allow the spring to be wound or unwound. By turning the crank in the proper direction the tension of the spring is lessened or increased, and the force of the hammer-impact regulated accordingly.

There are fourteen characters in each of the three rows of types, and there may be more or less, and the same number of keys and key-levers besides the space-key. Each key controls one of the types of the middle row. This is done through the intervention of adjusting screws 21, which give any desired movement to the one or the other side of the rocker *J*, one screw moving and the other stopping it, and thus swing the segment through link *y* and arm *I*, right or left, until the desired type is brought under the hammer-head. Each operative-key is furnished with two adjusting-screws, which pass through it at right angles to its length and at such a position as to impinge each on the upper face of opposite sides of the rocker *J*. Said screws are adjusted to project far enough below the keys to hold the rocker and thus the plate-segment firmly in the required position just so soon as the key is fully depressed, and not before. The rocker is always moved from its last position. The farther row of types is brought under the hammer-head by the variation-key *z'*, and the nearer row by the variation-key *z*. The variation-key *z'* is also a space-key. Both levers act through rocker-lever *G*, and their movements are regulated by adjustable nuts *F'*, on which they rest. The jacks retract the hammer from the type-plate, from which its normal position is about one-sixteenth of an inch, and at an instant, determined by the adjusting screws 1, let slip the frame *S* and allow the spring *w* to drive it against the type. At the same moment the frame *S* oscillates the arm of the pallets resting on an arm thereof,

and allows spring 26, through lever *p*, link *n*, driving-lever *m*, to move the paper-carrier the distance of a tooth. Driving-lever *m* engages the carrier through a slotted catch, 22; also, by the same movement the rock-lever 23, that carries pawl 2, resting on frame *S*, drives ratchet 3 the distance of one tooth, and an inking-ribbon, 4, of paper, is drawn a corresponding distance through rollers 5 and 5, pressed together by spring 6, and from spool 7 around pulleys 8, 9, 10, and 11. The ribbon is used up like the thread of a sewing-machine. Pulley 11 turns in a bearing which forms part of the bracket *B'* and guides the ribbon above and around the rim of the segment, presenting the uninked face of ribbon to the type-faces, and the inked side to the paper to be printed. Upper variation-key, *Z'*, resting on key-lever 12, operates the same and through it the feed-scaperment. A flat rod, 13, hinged to lever *m* rings the bell, which gives notice that a line is almost completed. A tooth, 14, hinged in a slot therein and shouldered so as to be movable to the left, but not to the right, engages a catch, 16, on stem 15, raises the clapper, passes on and lets it fall upon the bell 17, the depth of the engagement being regulated by a screw, 41, placed under rod 13 in a slot of case in which rod slides, so as to regulate the instant of the alarm. The key-levers are balanced in metal sockets.

The operation of the machine is as follows: Strike a key in combination with a variation-key nearest to said key, and the type indicated by the index-character opposite said key and ranged in the inner row marked on the variation-key will be brought under the hammer. Strike a key together with the farther variation-key—that is, across an intermediate row of keys—and the type corresponding to the index-character opposite the key struck, but ranged in the outer or farther row of index-characters on the variation-key, will be brought into play. If a key be struck singly, then the type it indicates will be brought to the hammer. At the moment that this occurs the frame *S* slips from its jack, the hammer is driven against the type, the scapement acts, the ribbon is moved, say, one three-hundredth of an inch, and the next key can be struck without waiting, as in machines having no slip movement for each key, until the preceding key returns to its place. The reverse feed movement is made by simply pressing arm *p* back to its limit. This movement first retracts the scapement-pallets from the rack to leave it free to move, and this is effected by mounting the scapement on bent lever *R*, hinged as described. As soon as lever *R* reaches the limit of its movement, driving-lever *m* brings back the carrier for a new line. Bent lever *R* works in a U-shaped bracket, 40, screwed to its place through a slotted hole, 39, so as to regulate and limit its movement. Scapement-stem and pallets are mounted in a bearing having a slotted hole, 30, to adjust its distance from the rack.

To put the paper in the carrier, raise bar *C*, first pressing the latch *L* till the friction of the

latch holds it up in an inclined position. Then present the margin of the paper to the rollers and turn the upper one toward you. Then press down the bar till the latch snaps.

5 The scale 18 and pointer 19 enable the operator to bring any letter or space directly under the hammer for correction.

The carrier is stopped at any point desired by the clutch 20, sliding on wire *d*, and clamping-wire *i* with its spring ends 31. The position and action of this stop-clutch are clearly shown in Figs. 3 and 4. The projecting wooden slat 32 of the paper-carrier strikes the arm 31 of the clutch, when the paper is retracted for
15 a new line, and causes said clutch to clamp the upper wire, *d*, on which it slides. The clutch is formed of a perforated bar of metal with two pendent arms, 31, clasping lower wire, *i*. These arms have sufficient spring to
20 prevent the clutch from being gradually shaken from its position. When it is desired to reverse the paper-carrier without making inter-linear spaces, raise hinged guide N before reversing feed movement. If the operator wishes
25 to make an interlinear space without bringing back the paper for another line, he has only to move arm *p* to the right just far enough to move bent lever R as far as the bracket will permit it to be moved.

30 I do not broadly claim the combination of a type-wheel adapted to turn on its bearings, with connections to finger-key levers, and stop mechanism set in motion by the key-levers to meet and arrest the motion of the type-wheel; nor do I claim a type wheel or segment and a
35 bar connected thereto, and moved by each key-lever independently, in combination with stops, nor a rod moved independently by any of the key-levers connected positively to the type-segment, with stops operated by the key-levers;
40 nor do I claim any of the particular matters herein shown and previously included in interference with the application of James B. Hammond.

45 Having thus described my invention and the mode of operating the same, what I claim, and desire to secure by Letters Patent, is—

1. In a type-writer, a type-carrier adapted to reciprocate circumferentially and longitudinally on a central shaft, and having a surface
50 curved about the axis of said shaft, with type on said surface in a plurality of rows, said rows being arranged across the line of the shaft, key-levers and intermediate mechanism, sub-

stantially as described, adapted to reciprocate the type-carrier longitudinally and circumferentially, the parts being combined and operating substantially as set forth. 55

2. In a type-writer, a type-carrier adapted to reciprocate circumferentially and longitudinally on a central shaft, with a plurality of rows of type upon the surface curved about said shaft as a central axis, in combination with key-levers, oscillating bars, and lever-connections between said bars and the type-carrier, whereby said carrier is reciprocated in the directions specified, substantially as described. 60

3. A double-jointed arm, I, in combination with a shaft, A, link *y*, rocker J, and hinged bar C. 65

4. Rocker-lever G, screw-nuts F', and springs E, with their adjusting-screws F, combined with shaft A and variation-keys *z z'*. 70

5. Variation-keys *z z'*, combined with shaft A and type-segment and rocker G. 75

6. Frame S, notched to compensate unequal leverage of keys, combined with jacks and key-levers.

7. Spiral spring *w*, notched wheel 29, spring *x*, and crank 28, combined with frame S and type-hammer. 80

8. Latch L, combined with hinged bar C, shaft A, and double-jointed arm I.

9. Spring 26 and stem *g*, ratchet and pawl *r*, link *n*, and arm *p*, combined with driving-lever *m* and paper-carriage. 85

10. Bent hinged lever R, in combination with driving-lever *m* and pallets.

11. Arm *p*, link *n*, driving-lever *m*, link P, adjusting-nuts T, bell-crank lever O, rod M, hinged guide N, frame S, and clutch Y, in combination with the paper-carrier. 90

12. A paper-carriage composed of clutch Y, frame S, rollers X Z, rod W, slat *f*, toothed rack *g*, slotted bearings *c* and *b*, spring *e*, and tube *a*. 95

13. Ratchet-wheel 3, lever 23, pawl 2, and rollers 5 5, with spring, combined with spools 7 8 9 10 11.

14. Stop-clutch 20 and wire *d*, combined with paper-carrier. 100

15. Slotted rod 13, constructed as shown, combined with stem 15, driving-lever *m*, and bell 17.

JOHN PRATT.

Witnesses:

D. P. COWL,
GEO. F. GRAHAM.