

E. B. HESS.
TYPE WRITING MACHINE.
APPLICATION FILED APR. 23, 1910.

1,009,514.

Patented Nov. 21, 1911

2 SHEETS—SHEET 1.

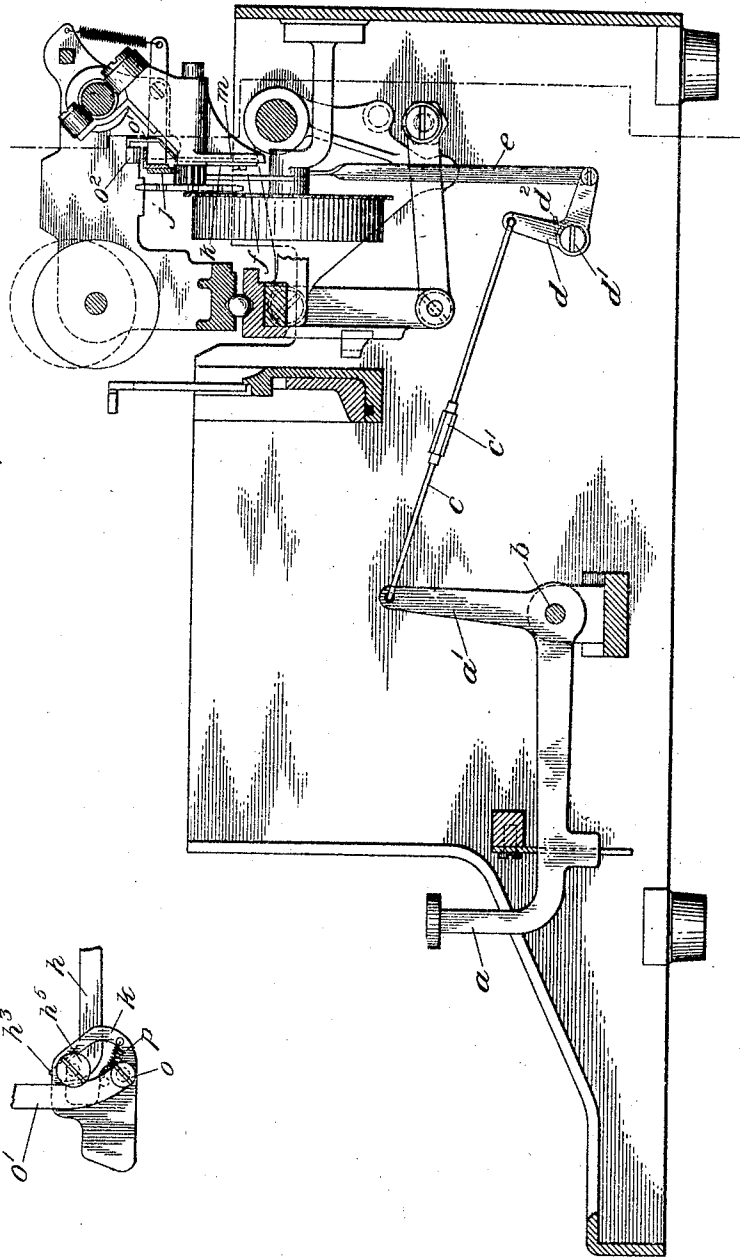
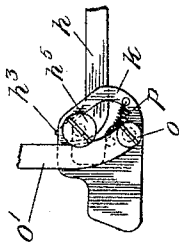


Fig. 1.

Fig. 5



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2 SHEETS—SHEET 2.

Fig. 2

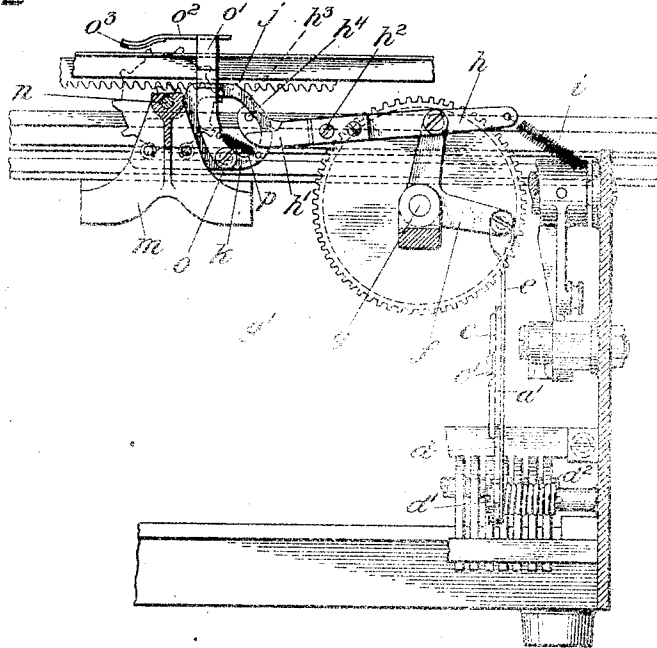


Fig. 3.

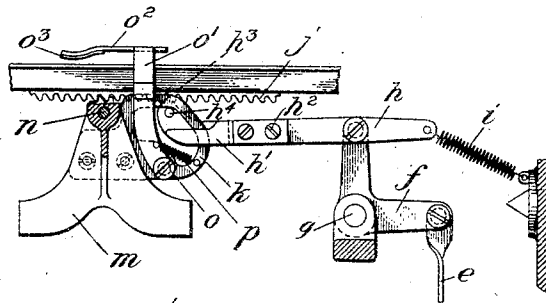
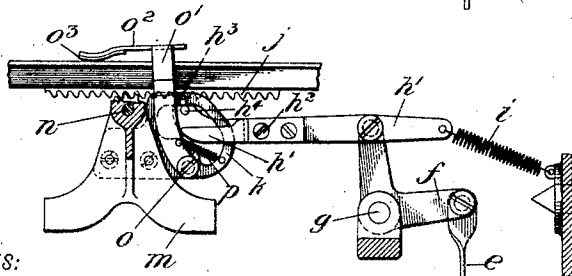


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWARD B. HESS, OF NEW YORK, N. Y., ASSIGNOR TO ROYAL TYPEWRITER COMPANY,
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TYPE-WRITING MACHINE.

1,009,514.

Specification of Letters Patent. Patented Nov. 21, 1911.

Application filed April 28, 1910. Serial No. 558,125.

To all whom it may concern:

Be it known that I, EDWARD B. HESS, a citizen of the United States of America, residing in the borough of Manhattan, city, county, and State of New York, have invented certain Improvements in Type-Writing Machines, of which the following is a specification.

This invention comprises certain improvements in back space devices operating on the depression of a key in the keyboard to set the rack back one tooth or space on each depression.

In the accompanying drawing: Figure 1 is a vertical longitudinal section; Fig. 2, a detail rear elevation showing the back space feed devices in normal inoperative position; Fig. 3, a detail elevation showing said devices moved to a position to engage the rack and ready to operate it; Fig. 4, a like view showing the same parts in the final position after the rack has been set back one tooth; and Fig. 5, a detail plan view showing a modification.

25 Adjacent the left hand side of the machine is a back space key lever *a* mounted to turn on a bearing or transverse pivot shaft *b* and having an upwardly extending arm *a'*. This arm is connected with the front end of a link *c* provided with an adjusting turn buckle *c'* and having its rear end connected to the vertical arm of a bell crank lever *d* mounted to rock about a stud bearing *d'* and having applied to it a coiled spring *d''* 30 the reaction of which tends to throw the vertical arm of the bell crank lever rearwardly and maintain the key lever *a* elevated. To the rearwardly extending arm of the bell crank lever *d* is connected the lower end of a vertically disposed link *e* whose upper end is jointed to the horizontally disposed arm of a bell crank lever *f* rocking about the shaft or support *g* of the spring drum *g'*. The vertically disposed arm of 45 the bell crank lever *f* is pivoted to a back space pawl *h* intermediate the ends of the latter. This pawl is in the form of a horizontally disposed lever, its free end adjacent the side of the machine having applied to it a coiled reaction spring *i*, that tends to throw the inner or opposite end of the lever upwardly. This latter end of the lever is forked, one of the forks being formed by an offset plate *h'* bolted to the lever at *h''*. 55 The end of the lever is formed with a tooth

or point *h''* that projects upwardly toward the rack *j*.

On the side of the lever below the teeth is a laterally projecting pin *h'* that travels in a cam way formed in a plate *k* secured to the frame or bracket *m* in which is the bearing of the escape wheel shaft *n*. This cam plate lies in a plane transverse to the machine and parallel therewith in which lies the rocking back space lever *h* and is embraced by the forked ends of the lever. In the position shown in Fig. 2, the reaction of spring *i* tends to throw upwardly the end of the back space lever *h* and maintains the pin *h'* thereon in contact with the wall of the cam plate which prevents its rising. When, however, as in Fig. 3, bell crank lever *f* is rocked by the upward thrust of link *e*, its vertically disposed arm moves toward the center of the machine,—that is toward the shaft of the escape wheel, and the pin *h'* on the back space lever rides upwardly on the wall of the cam assuming the position indicated in Fig. 3 at which time the point or tooth of the lever will have entered a space between two of the teeth of the rack. Further depression of the back space key carries the parts to the position indicated in Fig. 4 where the end thrust of the lever has set the rack back one tooth or letter space. On assuming such position, the projection *h'* has traveled along the horizontal upper wall of the cam. On release of the key lever, the parts return to normal position indicated in Fig. 2. The cam *k* effects a precision of movement that insures accurate operation.

In order to prevent, during the back spacing operation, jump of the rack that might disengage it from the escapement pinion, there is provided a lock which, as the stress of the back space lever is exerted upon the rack to set it back one tooth, is brought into engagement with the upper face of the rack to prevent its lifting. This lock, however, in normal position is sufficiently far removed from or so disengaged from it as to permit its manipulation for ordinary releasing operations. This part of the invention may be embodied in the following manner. Pivoted at *o* on the side of cam plate *k* is an upright arm *o'* offset as seen in Fig. 3 and having at its top a laterally projecting arm *o''* the free end of which is by preference curved, being bent somewhat downwardly

toward the rack and faced with a strip of leather or other appropriate material o^2 . A coiled spring p having one end attached to the arm o' and the other to the cam plate h tends to draw the arm o to the right as viewed in Figs. 2, 3 and 4 which are views from the rear of the machine. The arm is therefore held in normal position of inactivity shown in Figs. 2 and 3. When, however, the final endwise movement is imparted to the back space pawl h to bring it into the final position indicated in Fig. 4, the end of the jaw h' coming in contact with lever arm o' rocks it toward the shaft n of the escape wheel and thereby brings the part o^3 into engagement with the top of the rack as in Fig. 4 thus affording a lock or limit that prevents accidental disengagement of the rack from the escapement pinion during back spacing operations. The form of the invention which has now been described is an embodiment thereof which experience has shown to be practical and efficient. Variations thereof may be made by those skilled in the art without departing from the principles of the invention. One modification has been shown in Fig. 5. There the pin h^1 is shown as having an enlarged or flange head h^5 between the flange of which and the side of pawl h the cam plate is embraced. The flange also acts to operate the lever arm o' as already described.

I claim:

1. Back space mechanism comprising a transversely arranged back space pawl, a back space key lever in the key board, an operative connection by which the pawl is moved endwise on depression of said lever, a cam plate embraced by the end of said pawl and having an interior cam way, a projection on the side of the pawl guided by the walls of said cam way, a rack into engagement with which the end of the pawl is guided by said cam way, a lock carried by a movable arm arranged in the path of the pawl and engaged by the latter in its endwise movement to shift the rack to thereby bring the lock in position with respect to the rack to prevent its disengagement from the escapement pinion.

2. Back space mechanism comprising an endwise movable back spacing pawl, a cam-way controlling the movement of its free end, a rack into engagement with which the pawl is guided by the cam-way, a rocking

part pivoted on a fixed part of the frame, an operative connection between said rocking part and the back spacing pawl, a downwardly extending link operatively connected at its upper end to said rocking part so as to move the pawl to engage the rack a bell crank lever to one arm of which the lower end of said link is jointed, a forwardly extending link jointed to the other arm of said bell crank, a back space-key and means whereby the latter link is actuated on depression of said key.

3. Back space mechanism comprising a transversely arranged pivoted back space pawl, a back spacing lever, an operative connection by which the pawl is moved endwise on actuation of said lever, cooperating cam parts for directing the movement of the pawl, a spring whose reaction holds said cam parts in contact, the cam parts being so related that one may move away from the other when the tension of said spring is overcome, and a rack into engagement with which the end of the pawl is yieldingly guided by said cam parts.

4. Back space mechanism comprising a transversely arranged pivoted back space pawl, a back spacing lever, an operative connection by which the pawl is moved endwise on actuation of said lever, cooperating cam parts for directing the movement of the pawl, a spring whose reaction holds said cam parts in contact, the cam parts being so related that one may move away from the other when the tension of said spring is overcome, a rack into engagement with which the end of the pawl is yieldingly guided by said cam parts, a lock to prevent disengagement of the rack from the escapement pinion, an arm carrying said lock, pivoted upon a fixed axis and lying in the path of the endwise movable pawl, and a spring that normally retracts said arm and holds the lock out of operative relation to the rack, whereby when the pawl is moved endwise to engage and back space the rack the lock is brought into position to prevent the rack from disengaging its pinion.

In testimony whereof, I have hereunto subscribed my name.

EDWARD B. HESS.

Witnesses:

L. C. MYERS.

A. J. SHERIDAN.