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ERASING SHIELD FOR TYPE WRITING MACHINES.

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1,152,938. Patented Sept. 7, 1915.

Fig. 1.

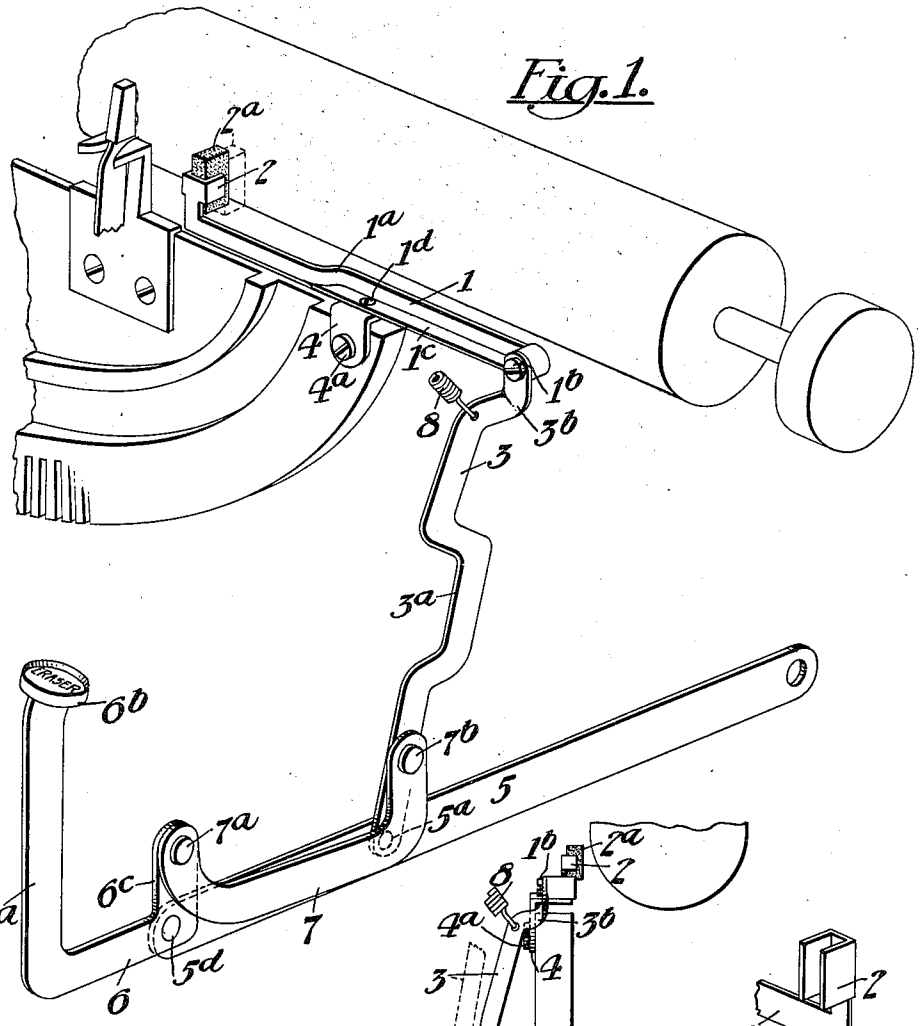


Fig. 3.

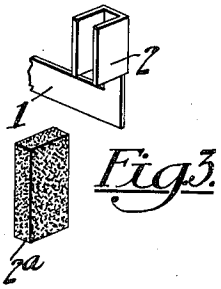
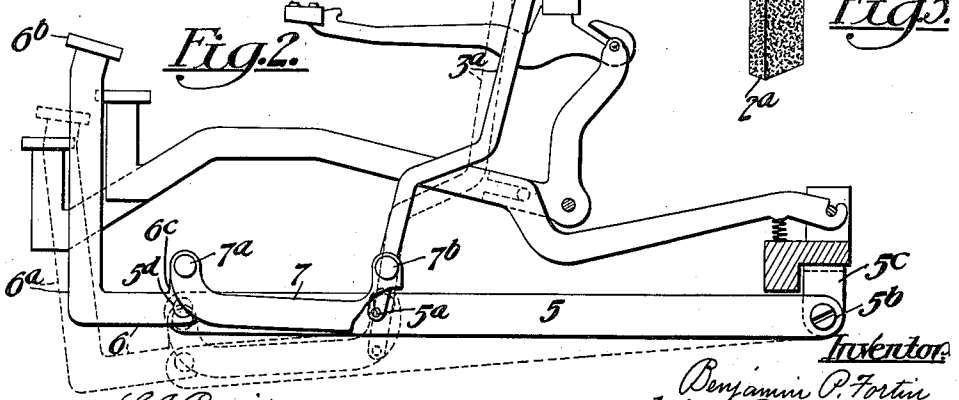


Fig. 2.



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UNITED STATES PATENT OFFICE.

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ERASING-SHIELD FOR TYPE-WRITING MACHINES.

1,152,938. Specification of Letters Patent. Patented Sept. 7, 1915.

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To all whom it may concern:

Be it known that I, BENJAMIN P. FORTIN, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Erasing-Shields for Type-Writing Machines, of which the following is a specification.

This invention relates to a key-operated eraser for typewriting machines and consists of an eraser support pivoted in a manner to approach the platen and to be vibrated vertically across the printing zone of the platen. The eraser carrier which is thus supported is connected by a link with a key lever having joints of such character that upon depression of said lever, as by the pressure of the operator's finger, the connecting link is first caused to rock the eraser carrier to bring the eraser against the platen, and in its continued movement, to vibrate or rock the said carrier vertically to produce the rubbing effect of the eraser against the work surface on the platen. It is, of course, understood that the vertical rocking motion of the eraser carrier in one direction is effected by the depression of the finger key, while the return movement is communicated by a tensional return device.

It is an important feature of my invention that while the vibrating action is provided and the eraser held against the platen for erasing purposes, the necessary pressure to render said action effective for erasing purposes is supplied in the construction and arrangement of the supporting and actuating mechanisms between the finger key and eraser, whereby the only operation required of the operator is to vibrate the finger key, whereupon the matter requiring erasure is speedily and efficiently removed.

Other objects and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a perspective elevation illustrating a portion on an Underwood typewriting machine including the mount for the type bars, the platen, and the parts comprising my eraser support and its operative connections. Fig. 2 is a side elevation of the same. Fig. 3 is a detail of the eraser holder, also showing the eraser removed from said holder.

In carrying out my invention, I provide a holder for a rectangular piece of rubber or other erasing material, said holder comprising an arm 1, having at one end a pair of gripping fingers 2 separated to hold between them a piece of rubber or other eraser of rectangular form, said eraser being held by compression of its substance between said fingers. The arm 1 is shown as consisting of a bar of sheet metal placed in substantial parallelism with the platen, and as having an intermediate bend at 1^a, whereby the rear portion of said arm, by which it is pivoted, as at 1^b, to a link 3, may lie nearer to the platen than the forward portion of said arm, which latter may be distanced from the platen to provide room for its fingers 2 and the eraser 2^a carried thereby. Said arm 1, at its rear portion aforesaid, has a right-angular flange 1^c, and vertically through said flange is pivoted, as at 1^d, to one arm of an angle bracket 4, whose other arm, which extends vertically over the front surface of the usual mount for the type bars, and is pivoted to said mount as by pivot 4^a. Thus the arm 1 is enabled, by reason of its pivotal engagement with the link 3, to be rocked vertically on the fulcrum formed by pivot 4^a, and by reason of its pivotal engagement at 1^d with bracket 4, it is enabled to be rocked horizontally into operative contact against the work surface. The pivots 4^a and 1^d form what is substantially a universal joint. The connections at 1^b and elsewhere are loose enough to provide the very slight play needed.

The link 3 aforesaid, extends down to a horizontal key lever 5, with which it has pivotal engagement, as at 5^a, said link having a bend 3^a to allow it to pass the shaft of the ribbon-winding ratchet, (not shown). Said lever 5 is fulcrumed at its rear end as at 5^b to a lug 5^c extending below the rear portion of the frame, and said lever extends forwardly to a point near the key board, where it is pivoted at 5^d to an extension arm 6 which has a vertically extending support 6^a for a finger-key 6^b, which latter may be

marked with the word "Eraser"; and said extension 6 having another vertical extension 6^c forming an elbow with said extension in the vicinity of pivot 5^d. A U-shaped link 7, whose intermediate portion or bar lies in substantial parallelism with the lever 5, is pivoted at one end to the upper extremity of vertical extension 6^c as at 7^a, and at its other extremity is pivoted to the link 3, as at 7^b. The link 3 is connected by a spring 8 to an advanced portion of the machine frame, said spring extending forwardly and upwardly to its anchorage with the frame from its point of connection with said link, thereby exerting tension to support the lever 5 as rocked upwardly upon the pivot 5^d to tensionally hold the eraser end of bar 1 in its lower position. In the operation of the device it will therefore be seen that upon a depression of the finger-key, the eraser holding arm 1 is rocked upon pivot 4^a to move upwardly the free end of said frame which carries the eraser, because the link 3 moves downwardly under the depressed movement that is thus communicated to lever 5. But at the genesis of the aforesaid depressed movement of the finger key, a forward pull is imparted from the pivot 7^a to the pivot 7^b through the U-shaped link 7, this forward pull being slight in extent, but nevertheless positive, serving to rock the arm 1 upon pivot 1^d to move the eraser holder on said arm toward the platen. This forward pull is accounted for by the fact that when depressing the finger key extension 6^a, the pivot 7^b must follow the forward arc described by pivot 7^a in turning about the main lever fulcrum 5^b, and therefore, necessarily, the pivot 7^b, being located in a portion of the U-shaped link 7, rigid with the other U-shaped portion carrying pivot 7^a, and said link 3 being mounted on the pivot 7^b with its fulcrum at 5^a in lever 5, must therefore be moved forwardly to satisfy the displacement thus created. In that movement the vertical extension 6^c and a portion of the U-shaped member carrying pivot 7^a, break away with a kind of toggle action, the connecting bar of the U-shaped member 7 swinging back slightly, while its bar pivoted at 7^b swings slightly forward to follow the displacing movement of its portion pivoted at 7^a. After releasing the finger pressure from the key, the spring 8 operates to return lever 5 to its normal position, in which act the several connecting parts are also returned and the eraser performs its return stroke. But in this return stroke, there is no pressure upon the eraser since the forwardly directed pressure against the eraser has been relieved. The operation of erasing is therefore performed by a series of spring returned downward strokes upon the finger-key, under whose influence the eraser is first pressed closely against the work surface and in the continuance of each downward stroke is rubbed across the particular point on the work sheet on the printing line where erasure is desired.

While I have shown the various parts of the apparatus including the key lever, links, and eraser arm as formed out of sheet metal, it is perfectly obvious that I am not limited to such construction of these parts and that they may be otherwise suitably designed.

It will be noted in the drawing that the link 3 has a right-angle turn where its point of connection is indicated at 3^b with pivot 1^b, this being for the obvious purpose of allowing link material for the pivotal connection to be made, while leaving the greater width of the material of said link lying in the direction of its movement, for the sake of rigidity.

As will be perfectly evident from the foregoing description of my mechanically-operated eraser device, this invention is not limited to use with typewriting or other printing machines. I therefore, desire in this application to claim the mechanically-operated eraser wherever it can be practically employed.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a typewriting machine, the combination with a key lever pivoted therein, of an eraser holder pivotally supported on a universal joint adjacent to the platen, and means between said lever and holder to operate the latter by the former.

2. In a typewriting machine, the combination of an eraser holder mounted on the machine frame and supporting the eraser in operative position relative to the platen, a universal-jointed horizontal arm supporting said holder, and finger-actuated mechanism for operating said holder.

3. In a typewriting machine, the combination of an eraser holder consisting of an arm pivotally supported in parallelism with the platen in manner to vibrate vertically, said holder carrying an eraser, a horizontally pivoted bracket supporting said arm, a finger-key, and connections between said holder and finger-key to operate the latter by the former.

4. In a typewriting machine, the combination of an eraser holder consisting of an arm bent into two portions extending substantially parallel and pivotally supported in parallelism with the platen in manner to vibrate vertically, said holder carrying an eraser, means also permitting said holder to vibrate horizontally, a finger-key, and connections between said finger-key and holder to operate the latter by the former.

5. In a typewriting machine, the combination of a platen, an eraser holder mounted to vibrate at one end across and against the printing zone on said platen, a universal-jointed arm carrying said holder, a key lever, and a link pivotally connecting said holder and lever.

6. In a typewriting machine, the combination of a platen, an eraser holder mounted to vibrate at one end across and against the printing zone on said platen, a key lever fulcrumed at the rear of the machine, and having a forward pivotal piece for finger actuation, a link connecting said holder and lever, to operate the former by the latter, and a U-shaped link pivotally connecting said forward pivotal piece and link.

7. In a typewriting machine, the combination of an eraser holder consisting of an arm pivotally supported in parallelism with the platen, a horizontal-pivoted bracket supporting said arm, said holder carrying an eraser, a finger-key, and tensionally held connections between said holder and finger-key to operate the latter by the former.

8. In a typewriting machine, the combination of an eraser holder consisting of an arm pivotally supported in parallelism with the platen in manner to vibrate vertically, said holder carrying an eraser, means also permitting said holder to vibrate horizontally, a finger-key, and tensionally held connections between said finger-key and holder to operate the latter by the former.

9. In a typewriting machine, in combination, a platen, an eraser holder comprising an arm carrying an eraser at one end, said arm lying in parallelism with said platen, an angle bracket pivotally carrying said arm for horizontal vibration, and said bracket being pivotally supported for vertical vibration with said arm, a finger-key, and connections between said finger-key and holder to operate the latter by the former.

10. In a typewriting machine, in combination, a platen, an eraser holder comprising an arm carrying an eraser at one end, said arm lying in parallelism with said platen, an angle bracket pivotally carrying said arm for horizontal vibration, and said bracket being pivotally supported for vertical vibration with said arm, a finger-key, and tensionally held connections between said finger-key and holder to operate the latter by the former.

11. A mechanical eraser comprising an eraser holder, a universal-jointed arm upon which said holder is mounted to vibrate over an impression surface, and means actuating said holder.

12. A mechanical eraser comprising an eraser holder, a universal-jointed arm upon which said holder is mounted to vibrate over an impression surface, a finger-key, and means between said holder and finger-key to actuate the former by the latter.

13. A mechanical eraser comprising an eraser holder, a universal-jointed arm upon which said holder is mounted to vibrate across an impression surface, means to press said holder toward the impression surface, a finger-key, and means between said holder and finger-key to actuate the former by the latter.

14. A mechanical eraser comprising an eraser holder carrying an eraser, a universal-jointed arm upon which said holder is mounted with relation to an impression surface in manner to communicate a rubbing action of said eraser upon said impression surface, a finger-key, and means between said holder and finger-key to actuate the former by the latter.

15. A mechanical eraser comprising an eraser holder consisting of an arm pivoted to vibrate on angularly disposed axes and carrying an eraser, said arm pivotally mounted to vibrate said eraser across an impression surface, a finger-key, and tensionally held connections between said holder and finger-key to operate the former by the latter.

16. A mechanical eraser comprising an eraser holder consisting of an arm pivoted to vibrate on angularly disposed axes and carrying an eraser, said arm pivotally mounted to vibrate said eraser both to and from and across an impression surface, a finger-key, and tensionally held connections between said holder and finger-key, to operate the former by the latter.

17. A mechanical eraser comprising an eraser holder consisting of an arm carrying an eraser, a support for said arm fulcrumed to afford a vibrating action to said eraser across an impression surface, and a pivotal connection between said arm and support to permit vibratory action of the eraser in the direction of the impression surface, a finger-key, and connections between said arm and finger-key to operate the former by the latter.

18. In a machine to create impressions, the combination of an eraser holder consisting of an arm pivotally supported in parallelism with the impression surface in manner to vibrate across said impression surface, said holder carrying an eraser, means also permitting said holder to vibrate in the direction of said impression surface, a finger-key, and tensionally held connections between said finger-key and holder to operate the latter by the former.

19. In a typewriting machine in combination, a platen, an eraser adapted to contact with paper on the platen, an eraser holder, an arm on which said holder is mounted, said arm being pivoted near its middle for

horizontal oscillation, a bracket having a flat horizontal and a flat vertical member, said arm being pivoted on the horizontal member of said bracket, a pivot passing through the vertical member of said bracket into the frame of the machine, a link pivoted to the far end of said arm, a key lever to which said link is also pivoted, an extension arm pivoted to said key lever, and a link connecting said extension arm and first named link.

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Witnesses:
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