July 3, 1928. 1,675,570

T. J. MADIGAN

ERASER

Filed Jan. 18, 1927 2 Sheets-Sheet 1

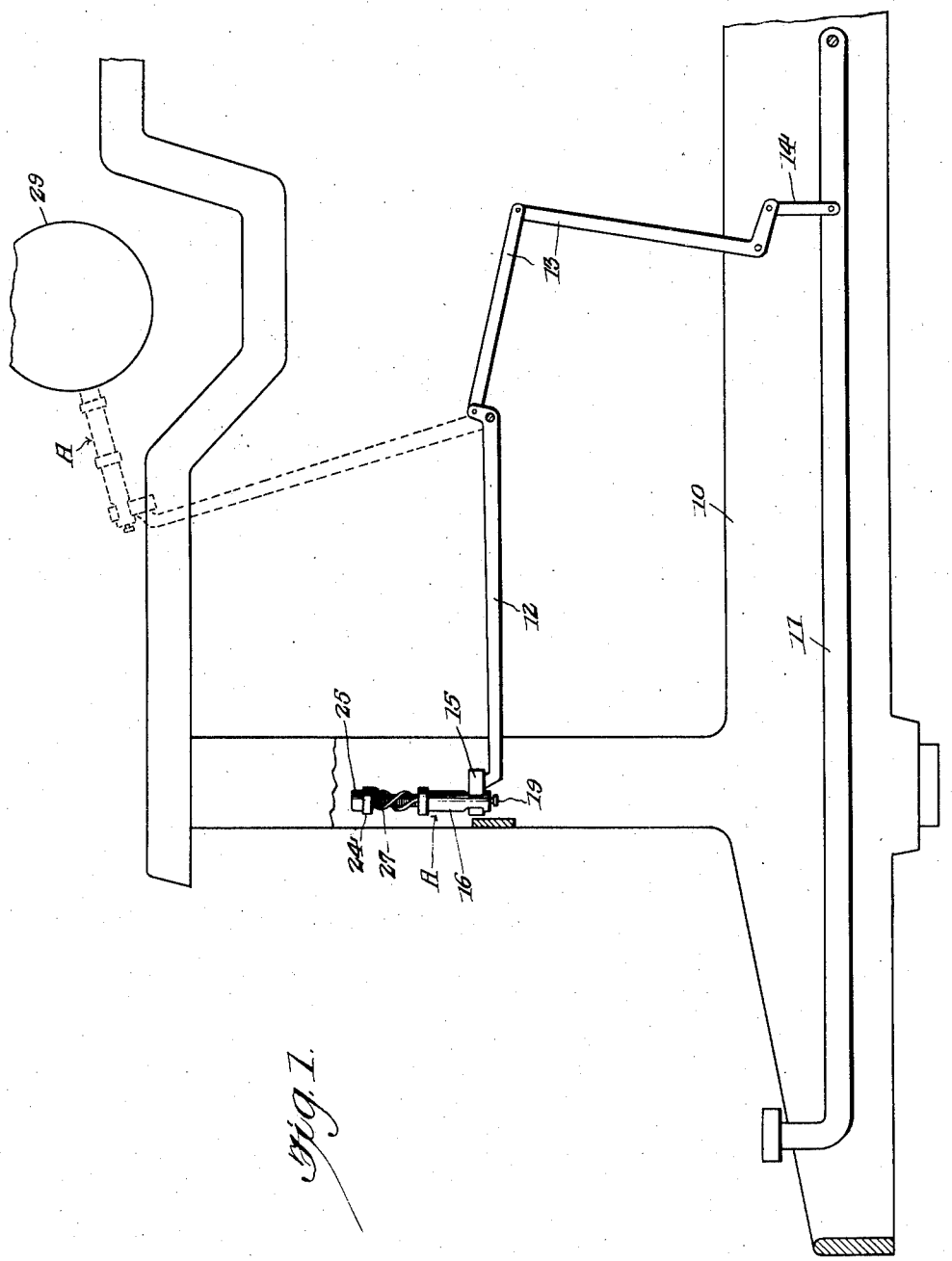


Fig. 1.

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July 3, 1928.

1,675,570

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2 Sheets-Sheet 2

Fig. 2.

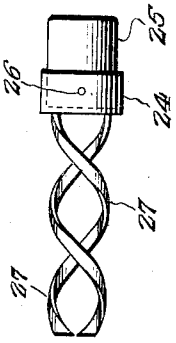


Fig. 3.



Fig. 4.

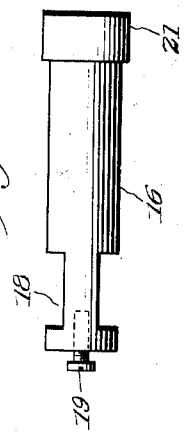


Fig. 6.

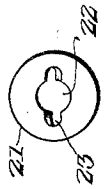


Fig. 5.

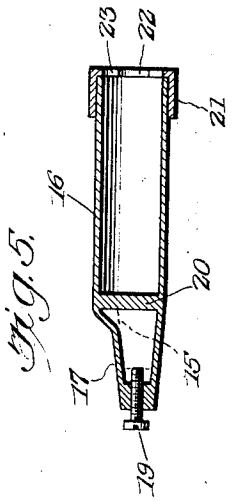


Fig. 7.

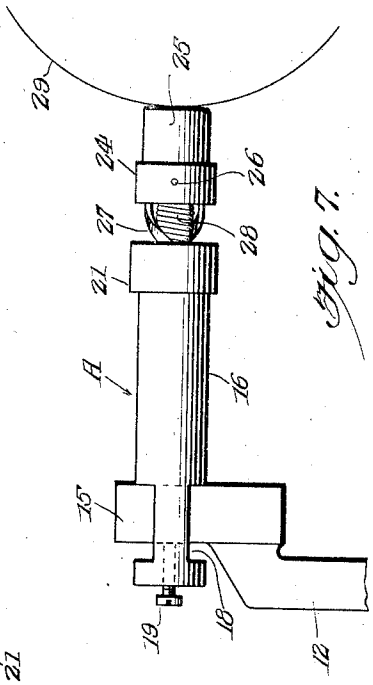


Fig. 8.



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UNITED STATES PATENT OFFICE.

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ERASER.

Application filed January 18, 1927. Serial No. 161,891.

This invention relates to an eraser, particularly as an eraser attachment for typewriting machines.

One object of the invention is to provide a device which may be readily applied to and operated by one of the key actuated type bars of the typewriting machine and carried thereby into contact with the paper at the printing line for erasure purposes.

Another object resides in the provision of an eraser for typewriting machines so constructed as to obviate the necessity of providing a separate actuating device for eraser purposes or the necessity of modifying or altering the structure of the typewriting machine.

A still further object of the invention is to provide a simple, inexpensive, durable and efficient device for ready removable attachment to one of the usual key actuated type bars of the typewriting machine and mounted thereon in such a manner as to arrest upward movement of the type bar and to prevent lifting of the ribbon and the usual step by step feeding of the carriage while the erasure is being made.

It is still further designed to provide an eraser embodying, among other characteristics, compactness, and which consists, essentially, of a barrel provided at one end with opposite interiorly arranged guide grooves inclined in opposite directions, a pair of oppositely disposed spirally curved arms mounted in the barrel and operating in said guide grooves and carrying a mounting for the eraser, with the arms embracing a coiled spring arranged between the eraser mounting and the inner end of the barrel, so that upon contact of the eraser with the printing surface the eraser is given a rotative movement in one direction to effect the erasure, and upon the pressure of the eraser against the printing surface being released the spring forces the eraster outwardly, rotating the latter in the opposite direction.

With these and other objects in view, the invention consists in the construction and novel arrangement of the parts hereinafter described, illustrated in the accompanying drawings and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

Figure 1 is a side elevation of a part of a typewriting machine illustrating my device applied thereto, and the position of the parts for making an erasure shown in dotted lines.

Fig. 2 is an enlarged detail elevation showing the eraser mounted in its supporting means.

Fig. 3 is an enlarged detail elevation of the spring which fits within the spirally arranged arms.

Fig. 4 is an enlarged elevation of the barrel which receives the spring and the spiral arms.

Fig. 5 is an enlarged longitudinal sectional view of the barrel.

Fig. 6 is a top plan view of the inner end of the barrel.

Fig. 7 is a detail elevation of the elements shown in Figs. 2, 3 and 4 assembled and mounted upon a type bar.

Fig. 8 is a transverse sectional view through the barrel.

As the present device is easily and readily applied to or removed from typewriting machines of visible type, without modification or alteration of the machine, and as the machine itself forms no part of the present invention, it will suffice to illustrate only so much of the typewriting machine as is deemed necessary to demonstrate the application of my attachment. It is well known that the successive operation of typewriter keys actuates mechanism, resulting in a spacing of the carriage step by step, and that in such typewriters as, for instance, the Underwood, the ribbon is moved upwardly in time to take the impact of the type bar for the printing operation. This spacing of the carriage and lifting of the ribbon takes place just prior to the type bars reaching printing position. My device is such as not only to effect an erasure, but is secured to the type bar so as to provide the type bar with an extension, which precedes the type head of the type bar and impacts with the paper at the printing line to make the erasure at a time to arrest the movement of the type bar to prevent spacing movement of the carriage and to prevent the upward movement of the ribbon. With these thoughts in mind, and referring more

particularly to the accompanying drawings, the reference character 10 indicates a fragmentary part of the frame of a typewriting machine, in which is pivotally mounted a key lever 11 having operative connection with the pivoted type bar 12 through the instrumentality of a plurality of link and lever connections, indicated, generally, by the reference characters 13 and 14.

My invention is indicated, generally, by the reference character A, and it is so constructed that it may be removably secured to the type head 15 of the type bar 12. Some of the type bars on typewriting machines are used more frequently than other type bars, and I secure my device preferably to a type bar less frequently used than the other type bars. By reason of mounting the device on one of the regularly employed key bars I obviate the necessity of altering the machine for the insertion of a specially constructed bar or lever for erasure purposes. There are type bars on typewriting machines which are used very seldom, and it is preferable to apply my device to such a bar, because in ordinary typewriting, it is seldom, if ever, that the device has to be disconnected in order to permit printing use of the bar to which my device is secured. No alteration of the key bar is necessary.

The device A embodies a barrel 16 which is reduced at one end, as indicated at 17, to provide for clearness, and at this reduced end are provided oppositely disposed openings 18 to receive the type head 15 to which the barrel may be secured through the instrumentality of a set screw 19, whereby to detachably secure the barrel to the head of the type bar. The openings 18 are preferably of a shape corresponding to the shape of the type bar head so as to effect a substantial mounting of my device. The barrel, above the openings 18, is provided with a partition 20, and at the inner end of the barrel, there is secured, in any suitable manner, a cap 21, provided with a central opening 22 and opposite interiorly arranged guide grooves 23, inclined in opposite directions, as shown.

The erasing element consists of a cup 24 and a rubber 25. The cup 24 is composed preferably of metal and is provided for the seating of the rubber eraser 25, which may be of any suitable material capable of effecting the erasure. This rubber element 25 is detachably secured in the cup 24 through the instrumentality of a removable pin 26, or otherwise, so that in the event of wear, incident to erasures, the rubber eraser may be renewed as required. It is quite possible that in the use of the device it may be necessary to insert new rubber erasers in the cup 24, and the detachable fastening 26 is such as to be driven from its seat to permit this renewal from time to time, but I wish it to be understood that other fastening means may be employed if desired.

The eraser receiving cup 24 is carried by a pair of oppositely disposed spirally curved arms 27 which are unconnected at their free ends. These spiral arms are made of metal or other suitable material and preferably gradually increase in width from the cup 24 to their free ends and are adapted to be inserted into the barrel through the opening 22 and the guides 23 by compressing the free ends together. These arms, being of resilient material, when relieved of the compression for insertion, expand and have such frictional contact adjacent their free ends with the guide grooves 23 as to prevent accidental disconnection of the spiral arms from the barrel 16 during use of the device. The connection made in this manner between the barrel and spiral arms permits separation by force, if desired, for cleaning or other purposes.

Prior to insertion of the spiral arms in the barrel 16, a relatively light, but sufficiently strong, helical spring 28 is inserted between the oppositely disposed spirally curved arms. Thus assembled, the spring and the arms are inserted into the barrel 16 and one end of the spring will bear against the partition 20 and the other end will bear against the bottom of the cup 24, for the purpose of normally exerting outward pressure upon the eraser receiving cup 24 to force the latter normally outwardly of the barrel, the spring being subject to compression upon impact of the eraser with the printing surface to permit an inward movement of the eraser.

The assembling of the device, in the manner just explained, is such that owing to the oppositely disposed interiorly arranged guide grooves inclined in opposite directions, there is a longitudinal and a rotative movement of the spiral arms during the inward or outward movement of the same, with the result that upon impact of the eraser 25 with the platen 29, above the machine ribbon, the eraser is given a rotative movement calculated to effect an erasure at the printing line, due to the fact that the impact of the eraser causes the spiral arms to move inwardly in the guides 23 against the tension of the spring. Immediately upon release of the key actuated lever, the type bar 12 moves downwardly, carrying the eraser away from the platen 29, when the spring expands, and causes rotative movement of the spiral arms in the opposite direction, returning the eraser to normal position for another operation.

From the foregoing, the operation of my invention will be understood and it will be seen that I provide a simple and compact

device for effecting erasures under the influence of a rotative movement given the eraser when placed against the writing to be erased, and obviously for this purpose, and under the stated operation, the device need not necessarily be applied to a typewriting machine, but may be held in one's hand or have for a mounting a device other than that herein described in detail.

What is claimed is:

1. An eraser attachment for typewriting machines comprising a member provided at one end with means for securing it to a key actuated type bar of a typewriting machine and having an erasing element at the other end adapted to be carried into contact with the paper on the platen of the machine and effect the erasure when the type bar is actuated, said attachment forming an extension of the type bar to limit the throw of the bar to prevent the feeding of the carriage or the lifting of the ribbon while the erasing element is operating upon the paper to make the erasure.

2. An eraser comprising a barrel provided at one end with opposite interiorly arranged guide grooves inclined in opposite directions, an erasing element, a pair of oppositely disposed spirally curved resilient arms secured to said erasing element and extending into the barrel and operating in said guides, and a spring within said arms cooperating with the barrel and said erasing element to force the arms outwardly through said guides, the arms moving inwardly of the barrel against the outward thrust of said spring and consequent rotation given the erasing element when pressure is placed upon the latter axially of the barrel.

3. An eraser attachment for typewriting machines comprising a barrel provided with oppositely disposed openings at one end whereby to fit the barrel on the type head of a key actuated type bar of the machine, a set screw to secure the barrel to the type head, the opposite end of the barrel having oppositely disposed guide grooves inclined in opposite directions, a pair of oppositely disposed spirally curved resilient arms operating in said guides, an erasing element carried by said arms, and a spring exerting pressure on said erasing element to force the latter and said arms normally outwardly of the barrel, the arms and erasing element acting against the thrust of said spring and the erasing element given rotative movement when the erasing element is pressed against the paper to effect the erasure.

4. An eraser attachment for typewriting machines comprising a member provided at one end with means for securing it to a key actuated type bar of a typewriting machine and having an erasing element at the other end adapted to be carried into contact with the paper on the platen of the machine and effect the erasure when the type bar is actuated, a pair of oppositely disposed spirally curved resilient arms secured to said erasing element and extending into the barrel and operating in said guides, and a spring mounted in the barrel adapted to force the arms outwardly through said guides, the arms moving inwardly of the barrel against the outward thrust of said spring when pressure is placed upon the latter axially of the barrel.

5. An eraser attachment for typewriting machines comprising a barrel contracted at its inner end and provided at its inner contracted end with oppositely disposed openings whereby to fit the inner end of the barrel on the type head of a key actuated type bar of the machine, a set screw to secure the barrel to the type head, the outer end of the barrel having oppositely disposed guide grooves, a pair of oppositely disposed spirally curved arms operating in said guides, an erasing element carried by said arms, and a spring exerting pressure on said erasing element to force the latter and said arms normally outwardly of the barrel, the arms and erasing element acting against the thrust of said spring and the erasing element given rotative movement when the erasing element is pressed against the paper to effect the erasure.

6. An eraser attachment for typewriting machines comprising a barrel provided at one end with means to secure the barrel to a key actuated type bar of the machine and having at its other end an erasing element for contact with the paper on the platen, a pair of oppositely disposed spirally curved arms rotatively mounted in the barrel and supporting said erasing element, and a spring in the barrel substantially the length of the barrel and arranged between said arms and extending beyond the outer end of the barrel and acting against the erasing element to force the latter and said arms to rotate in one direction, the erasing element and arms rotating in the opposite direction when the type bar is actuated to force the erasing element against the paper on the platen.

7. An eraser comprising a barrel, a pair of spirally curved resilient arms rotatively operable through one end of the barrel, an erasing element connected to the outer ends of said arms, the inner ends of the arms being unconnected, and a spring in the barrel arranged between the arms and against the tension of which the erasing element acts and is rotated when pressed against the paper.

8. In a typewriting machine, a key lever, a type bar operatively connected to said lever, a platen, and a device secured to the type head of said bar forming an extension of the bar to limit the throw of the bar and

including an erasing element adapted to impact against the platen at the printing point and prevent feeding of the carriage or lifting of the ribbon and effect an erasure at the printing point.

9. An eraser comprising a barrel provided at one end with an opening and guide grooves inclined in opposite directions communicating with said opening, an erasing element, a pair of oppositely disposed spirally curved resilient arms secured to and supporting said erasing element and extending into the barrel and operating in said guides whereby to give rotative movement to the erasing element upon movement of said arms in said guides, the arms being unconnected at their inner ends, and a spring bearing at one end against the barrel and at its opposite end against the erasing element to force the latter normally outwardly of the barrel, said arms gradually increasing in width toward their inner unconnected ends to permit said movement of the arms but prevent accidental movement of the arms out of the barrel, the resiliency of the arms permitting positioning of the arms in the barrel.

10. An eraser attachment for typewriting machines comprising a member provided at one end with means for detachably securing it to the type head of a key actuated type bar of a typewriting machine and having an erasing element at the outer end adapted to be carried into contact with the paper on the platen of the machine to effect an erasure when the type bar is actuated, said attachment forming an extension of the type bar to arrest movement of the type bar head short of the platen and limit the throw of the bar so as to prevent the feeding of the carriage or the lifting of the ribbon while the erasing element is operating upon the paper to make the erasure.

11. An eraser attachment for typewriting machines comprising a barrel contracted at it inner end and at its inner contracted end provided with oppositely disposed openings conforming to the type head of the key actuated type bar, whereby to secure the attachment firmly to the type head of the type bar, the barrel having a partition intermediate its ends, the outer end of the barrel being provided with a central opening and having guide grooves inclined in opposite directions, an erasing element, a pair of oppositely disposed spirally curved resilient arms secured to and supporting said erasing element and extending into the barrel through said guide grooves whereby to give rotative movement to the erasing element upon movement of said arms in said guides, the arms being unconnected at their inner ends, and a spring bearing at one end against said partition of the barrel and at its other end bearing against the erasing element so as to force the erasing element outwardly of the barrel, the spring being arranged between the arms and normally extending through said central opening in the outer end of the barrel, and the arms increasing in width toward their outer ends to prevent accidental projection of the arms from the barrel.

In testimony whereof I have hereunto set my hand.

THOMAS J. MADIGAN.