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ERASURE TAPE MECHANISM FOR TYPEWRITERS

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Fig. 1.

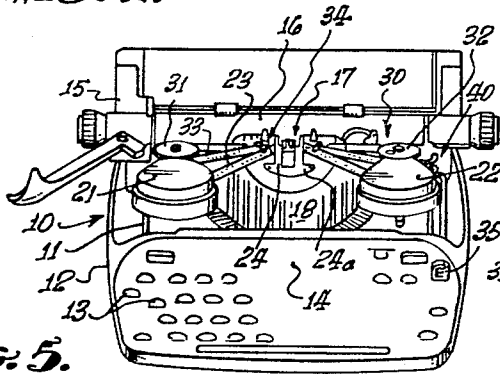


Fig. 3.

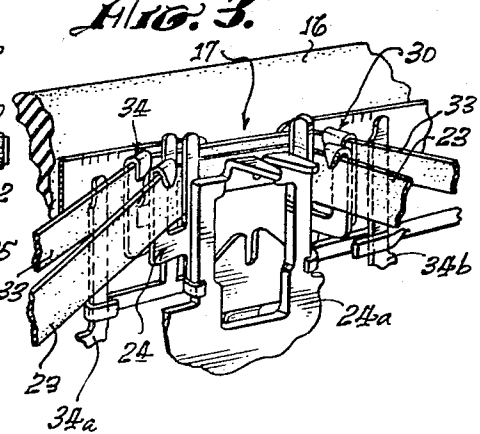


Fig. 5.

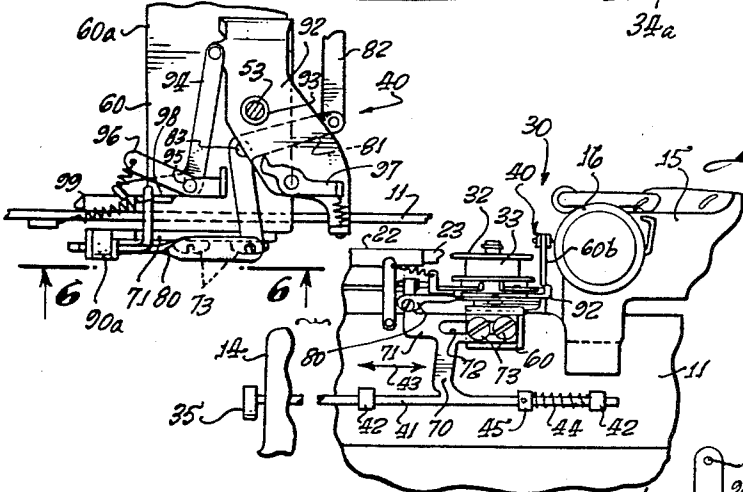


Fig. 2.

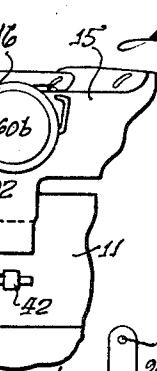


Fig. 6.

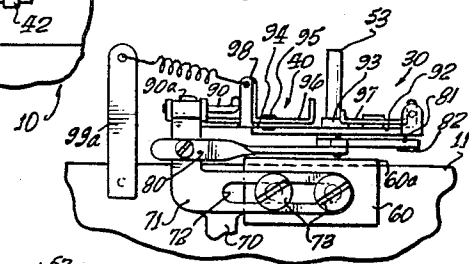
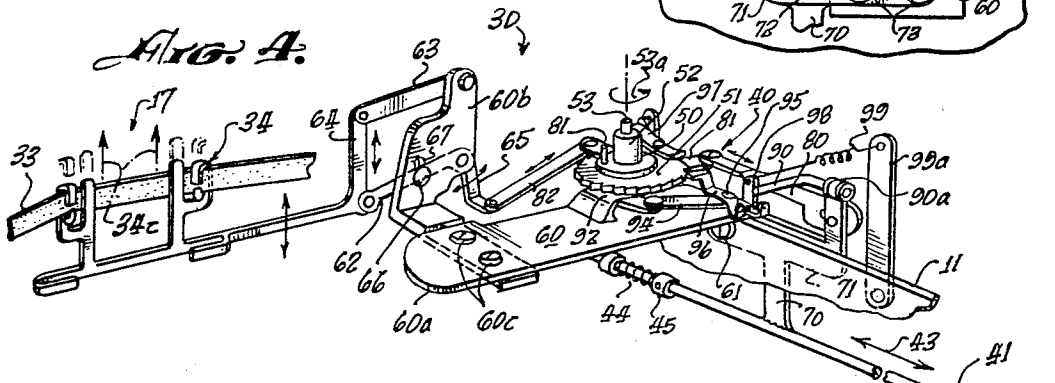



Fig. 4.



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**ERASURE TAPE MECHANISM FOR
TYPEWRITERS**

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ABSTRACT OF THE DISCLOSURE

An erasure tape attachment for installing in an already manufactured typewriter without any alteration in the operation of said typewriter, the attachment comprising erasure tape reels, a tape feed ratchet, a tape lifter for raising and holding said tape between the printing ribbon and paper during typewriter operation, and a specially installed erasure key which operates said tape feed ratchet and said tape lifter independently of the operation of the pre-existing typewriter.

This invention relates generally to erasing attachments for typewriters, and more particularly, to an erasing attachment which feeds an erasure tape into erasing position whenever the typist operates an eraser key on the front of the typewriter.

In recent years, various erasing papers or tissues have been manufactured and sold to typists in substantial quantities. Typically, the eraser tissue is provided in the form of a booklet or envelope of several sheets. Each sheet may be used for a substantial number of erasures, provided a different area of the sheet is employed each time. The typist, having typed an incorrect letter, back spaces the carriage to return the letter to typing position, then inserts the tissue against the paper, and strikes the same key. The strikeover produces an apparent erasure.

Actually, "erasure" is not what these tissues really do, as they are presently known. Most of them have a coating of powdered chalk or the like, loosely adhering to the surface of paper tissue. When the incorrect letter, freshly typed, is struck over with the tissue in place, the powdered chalk sticks to the wet ink, and the incorrect letter becomes invisible on the surface of a white paper, particularly after the correct letter is superimposed upon it.

The present invention will use the term "erasure tape" to comprehend any paper, plastic, or other tissue-like means suitable for erasure or its substantial equivalent, for example, concealment under a layer of chalk powder as presently commonly used on erasure tissue sheets. The point of novelty of the present invention does not reside in the precise means for removing or covering the incorrect letter, but relates rather to the means for applying a tissue-type correction means to the desired location on the paper, without removing it from the typewriter.

The erasure tissue has many very substantial advantages over ordinary erasers or erasing machines. While erasers and erasing machines deposit intolerable amounts of eraser rubber particles within the typewriter mechanism eventually clogging it, no such difficulty is encountered with erasure tissue; the quantity of lost chalk particles is too minute to produce any interference with the typewriter mechanism.

Erasing without the use of erasure tissue generally produces a major scar on the face of the paper, as a result of paper removal, and it has been common practice for typists simply to scrap the entire typed page; obviously the cost of retyping the smudged page is very high in comparison with the time required for erasure by strikeover, while employing an erasure tissue.

Nevertheless, the erasure tissue has several serious dis-

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advantages, which have substantially impeded it from achieving general use.

Most erasure tissues are discarded without ever making use of 95% or more of the available surface. The typist discards each slightly used tissue in order to avoid reusing the same area, and thus failing to accomplish satisfactory erasure. Naturally, this practice greatly increases the cost of erasing by erasure tissue, over what it would be if the tissue were more efficiently used.

A much larger element of wasted cost is in the time lost by the typist in interrupting her use of the typewriter keyboard to locate her erasure tissue, manually place it in position, back spacing it and striking over, returning the erasure tissue to its place of safekeeping, and resuming keyboard position for the resumption of typing. The present invention does not eliminate back spacing and striking over, but it practically eliminates all the rest of the lost motion.

When the erasing tissue is used, there is a slight delay, while removing the tissue after erasure, before the typist can see whether or not the erasure operation needs to be repeated.

Furthermore, the use of erasure tissue requires the typist to bring her hands very close to the inking ribbon and to the surface of the paper. The typist is likely to transfer some ink to her fingers, and then to the surface of the paper upon which she is typing, particularly if she attempts to execute the erasure quickly.

Obviously, it would be very desirable to have some type of erasure device built directly into the typewriter. Up to the present, no such mechanism is known to be incorporated in any generally marketed typewriter, either as original equipment, or as an added accessory. Typewriters are complex mechanisms, assembled in rather cramped space within a typewriter housing. Consequently, most erasure devices would have to be designed into the typewriter from the beginning and installed at the factory. So far as is generally known at the present time in the typewriter art, there is no erasing means which, with simple and minor modification, can be installed in a variety of typewriter makes. Indeed, it is believed that no erasure mechanism is presently marketed for the installation on any typewriter, even of a single make.

It is a major object of the present invention to provide an erasure mechanism which the typist can employ without removing her hands from the keyboard.

It is another major object of the present invention to provide an erasing device which the average typewriter serviceman can quickly install on almost any make of typewriter, even though said typewriter was not specially designed to accommodate the erasing mechanism.

It is another major object of the invention to provide means for using tissue-type of erasure means without the large wastage which their use presently entails. Incidental to such saving, the invention will make practical the use of much better and more expensive erasure tissue means.

The foregoing and other objects and advantages of the invention are accomplished by an accessory device for typewriters in which an important element is erasure tissue in the form of tape. However, the tape alone is not the invention, but the combination of the tape and the associated and co-operating parts which make possible and practical, for the first time, the use of an erasure tape in a typewriter.

The invention, in one preferred embodiment, is illustrated in the accompanying drawing, and described in the following paragraphs.

In the drawing:

FIGURE 1 is a front perspective view of a typewriter (with the front cover housing removed) in which the device of the invention has been installed, as viewed from a point in front of and substantially above the typewriter;

FIGURE 2 is a fragmentary right side view of the erasure tape operating mechanism mounted on the side of the typewriter frame;

FIGURE 3 is a perspective view of an enlarged fragmentary detail of the lifting mechanisms for both inking ribbon and erasure tape, as viewed from a left, front position;

FIGURE 4 is a perspective view showing the erasure key plunger, together with its associated tape advancing and tape lifting mechanism, in rest position;

FIGURE 5 is a plan view of the tape advance mechanism and the tape lifter operating linkage; and

FIGURE 6 is a right side view of the elements seen in plan FIGURE 5, as viewed in the direction of the arrows 6—6 in FIGURE 5.

In FIGURE 1, an ordinary typewriter is indicated by the numeral 10. It will be understood that typewriter 10 may be manual or electric, office size or portable, may be of any make, and may be designed for use with either carbon or fabric ribbon. As will be seen from the following description, variations in make or design of typewriter may require some variation in erasure tape spool size and location, but for the most part, the same construction of the invention may be employed on any typewriter.

Also, it will be appreciated that a front cover housing member is ordinarily in place on the front of a modern typewriter, thus concealing the various internal parts exposed in FIGURE 1. This front cover housing has been removed for purposes of illustration.

Most of the internal mechanism is mounted on frame 11, but this is concealed within a protective housing 12. The keys 13 are seen in a descending keyboard arrangement in front of front panel 14.

A transversely slidable carriage 15 carries a roller platen 16 past central printing location 17. The usual type basket 18, comprised of upswinging type-bearing arms, actuated by the keys 13 provides a sequential printing means as well known in the typewriter art.

Feed and take-up reels 21 and 22 for inking ribbon 23 operate in the usual manner, rising with each typing stroke, and also advancing one letter width. Inking ribbon 23 is shown as it is transported past the typing location 17 through a ribbon lifter 24. In rest position, the ribbon lifter 24 is downwardly retracted so that the typist may view the line he is typing.

The erasure tape device of the invention may be designated generally by the numeral 30. The principal components are the tape feed and take-up reels 31 and 32, the erasure tape 33, an erasure tape lifting mechanism 34, an erasure key 35 exposed at the front of the housing, and an operating mechanism indicated generally by the numeral 40 but mostly not visible in FIGURE 1.

The fragmentary right side view of FIGURE 2 reveals that key 35 is mounted in front of front panel 14 on the end of a push rod 41, which is horizontally reciprocable in bushings 42 mounted on the side of the typewriter frame 11, as indicated by the double-headed arrows 43. A pressure spring 44, conveniently a helical spring encircling push rod 41, and held by stop 45, resiliently urges the push rod 41 to the left, as viewed in FIGURE 2, to a rest position.

When a typist desires to carry out the erasing operation, she must back space the carriage 15 to bring the incorrect letter into the typing position 17, then, while pressing on erasure key 35, and overcoming the pressure of spring 44 to displace push rod 41 to the right (as viewed in FIGURE 2) into an erasure position, she may then strike over the incorrect letter to accomplish erasure. Obviously, operation of the typing key will cause the inking ribbon 23 to rise into typing position, and the incorrect letter will be printed on the back of erasure tape 33, which is simultaneously in printing position as will be hereinafter explained, but this has no undesirable consequences.

The principal of the invention requires that the opera-

tion of the erasure key 35 achieve two results: (1) Erasure tape 33 must be raised into printing position at 17, and, (2) the erasure tape 33 must be advanced the space of one letter in order to present fresh and unused erasure tissue.

FIGURE 3, and part of the perspective of FIGURE 4 show how the first of these requirements is accomplished in the preferred specific embodiment illustrated in the drawings. In the usual typewriter construction, the ribbon lifter 24 is vertically reciprocable on some type of stationary lifter track 24a, which is mounted, directly or indirectly, on some part of frame 11. The tape lifter 34 is likewise vertically reciprocable on some type of vertical track means such as vertical track bars 34a and 34b, to be raised into erasure position by sliding thereon in a manner to be described hereinafter. It will be noted that the ribbon lifter 24 operates exactly the same as it does in typewriters not provided with the invention. The erasure tape device 30 may be installed on most existing typewriters, without altering or interfering with the operation of the ribbon lifter 24. However, since the erasure tape 33 and its associated lifter 34 must be disposed just behind the ribbon 23 and ribbon lifter 24, it is usually necessary to remount the ribbon lifter track 24a in a vertical plane spaced a fraction of an inch forward of its original location, in order to provide a space for the installation of tape lifter 34, and tape lifter tracks 34a and 34b. Such remounting is not difficult, and has no effect on the operation of ribbon lifter 24.

In FIGURE 4, at the left, the vertical movement of the tape lifter 34 between a lower rest position and a raised erasure position is indicated by the arrows 34c.

Turing now to the second requirement for the operation of the invention, the indexing advancement of the erasure tape 33, the reader will find in FIGURE 4 a perspective view of mechanism 40, generally, with nothing of the typewriter remaining excepting a fragment of frame 11. The take-up reel 32 has been removed, exposing a reel carrier 50, which incorporates a toothed ratchet wheel 51 and is rotatably mounted on a vertical shaft 52. As will be explained hereinafter the take-up reel 32 is rotated one step of advancement in the direction of the arrow 53a by one operation of the erasure key 35.

Most of the operating mechanism 40 is mounted on a bracket 60, which is bolted to the frame 11 at 61 and may conveniently be comprised of two relatively adjustable components, a ratchet base 60a and a lifter linkage mount 60b, bolted to each other by means of bolts 60c.

It will be seen from FIGURE 4 that the lifter linkage mount 60b carries a pair of pivotally mounted links 62 and 63, which are parallel and pivotally mounted to a vertical arm 64 integral with the erasure tape lifter 34, all forming a parallelogram linkage operable by reciprocation of the crank arm 65 which is part of the link 62. Precise operation of the linkage is insured by the sliding movement of guide pin 66 in slot 67. It will be noted that the vertical plane in which the lifter linkage mount 60b is disposed is aligned with and supports the proper movement of tape lifter 34.

It will be observed in FIGURE 2 and FIGURE 4 that the push rod 41 carries an integral, upwardly extending arm 70, which transports a slider 71, which is reciprocable in unison with push rod 41 by sliding on the vertical surface of the right side of frame 11, by virtue of slot 72 and guide bolts 73. Guide bolts 73 and attachment bolts 61 may be one and the same, if desired.

In the enlarged fragment details of FIGURES 5 and 6, plan and right side view, respectively, extraneous details have been eliminated, and the rotatable reel carrier 50 has been disassembled from vertical shaft 53, in order to reveal elements of operating mechanism 40 which would otherwise be concealed. FIGURES 5 and 6 reveal that the slider 71 carries both a lifter operating link 80 and a ratchet reciprocating member 90.

The lifter operating link 80 indirectly operates the crank 65 through an intervening bell crank 81 and lifter

link 82. It will be noted that the linkage comprised of 80, 81, and 82 operate essentially in a horizontal plane at the elevation of the ratchet base 60a, to which the bell crank 81 is pivotally mounted at 83.

In order to avoid interference between bell crank 83 and the operation of ratchet wheel 51, the ratchet mounting base 60a incorporates an integral elevated ratchet support platform 92, upon which is mounted the shaft 53 together with a spacer 93.

The platform 92 carries a conventional ratchet mechanism operated by the ratchet engaging means 90, and comprised of a lever 94 pivotally mounted on platform 92, and carrying a spring-urged driving pawl 96 at 95, and a spring-actuated reverse-preventing pawl 97.

Lever 94 carries an upstanding ear 98 which is engaged by the ratchet drive arm 90, when the latter is reciprocated to the rear of the typewriter by operation of the erasure key 35. A return spring 99 anchored on upstanding arm 99a is connected to the upstanding member 98.

It will be noted that the entire mechanism can be made adjustable in many ways by elongating various bolt and screw holes into slots. Also, for example, the ratchet actuating arm 90 is held in an adjustable holder 90a.

It will be seen from the foregoing that I have provided a unique and practical erasure mechanism, comprised in part of an erasure tape and tape reels, which may be built as an originally manufactured part of a typewriter, or as an accessory to be adjustably and modifiably attached to existing typewriters.

It will be understood that my invention is not limited to the details of the foregoing specific embodiment but extends to any modification or improvement comprehended within the scope of the following claim.

What is claimed is:

1. In a typewriter which includes a printing mechanism for printing at a printing location, a platen for supporting paper at said printing location, and means for placing an inking ribbon, at each typing stroke, in a printing position between said printing mechanism and said platen, an erasure tape attachment which includes:

an erasure tape assembly comprising erasure tape, and supply and take-up reels rotatably mounted in said typewriter to feed said erasure tape past said printing location;

an erasure tape lifter means mounted in said typewriter to be movable between a retracted rest position and

an erasure position between said printing position of said inking ribbon and said platen;

a push rod manually operable from the front of said typewriter and longitudinally displaceable from a rest position to an erasure position;

spring means for resiliently urging said push rod to said rest position;

an erasure tape ratchet on said take-up reel for advancing said erasure tape in a letter width increment for each operation of said ratchet;

a ratchet operating linkage between said push rod and said ratchet, said linkage consisting of a lever pivotally mounted in said typewriter, a spring-urged drive pawl mounted on said lever, a ratchet-operating member integral with said push rod and engaging said lever upon operation of said push rod to bring said drive pawl into driving engagement with said ratchet, and return spring means for urging said lever away from said ratchet engaging position; and linkage means between said push rod and said erasure tape lifter for raising said lifter when said push rod is displaced to erasure position, said linkage means comprising a first crank means rotatably mounted in said typewriter on a horizontal axis, and pivotally connected to a part of said lifter to lift it upon rotation of said first crank means, and a second crank means rotatably mounted in said typewriter on a vertical axis and pivotally connected at one end to said push rod and the other end to said first crank means to impart lifting movement to said tape lifter upon displacement of said push rod to its erasure position.

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