April 25, 1933. A. NADELL 1,905,118

METHOD AND MEANS OF ERADICATING TYPEWRITTEN MATTER

Filed Jan. 8, 1927

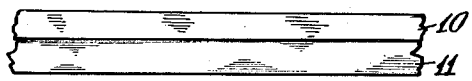


FIG. 1.

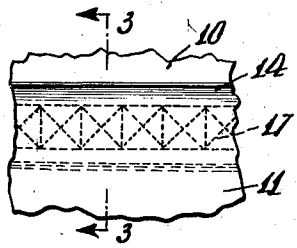


FIG. 2.

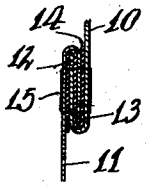


FIG. 3.

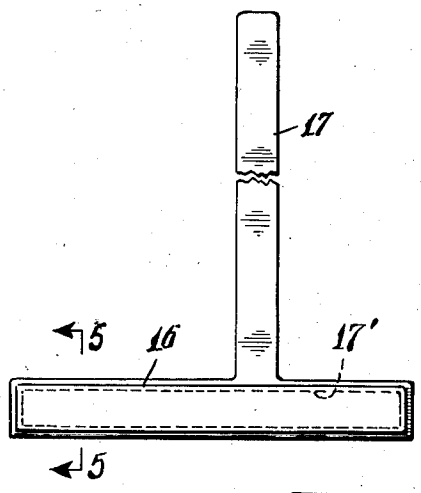


FIG. 4.

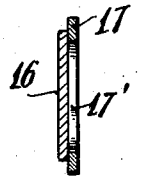


FIG. 5.

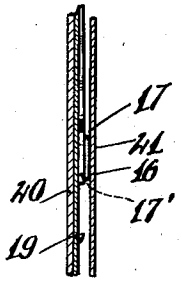


FIG. 6.

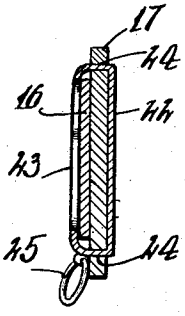


FIG. 7.

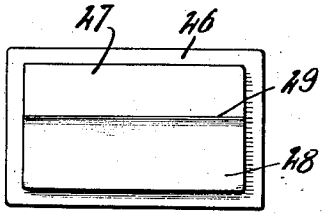


FIG. 8.

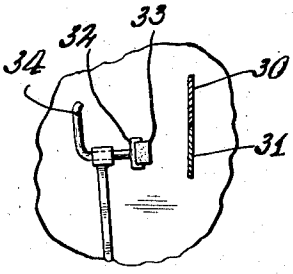


FIG. 9.

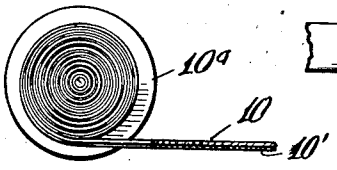


FIG. 11

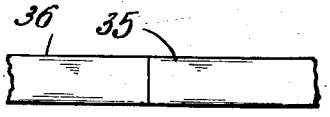


FIG. 10.

INVENTOR
Aaron Nadell
BY Zoltan Hollander
ATTORNEY

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UNITED STATES PATENT OFFICE

AARON NADELL, OF BROOKLYN, NEW YORK

METHOD AND MEANS OF ERADICATING TYPEWRITTEN MATTER

Application filed January 8, 1927. Serial No. 159,932.

This invention relates generally to the art of typewriting, and has more particular reference to novel means for applying erasing chemicals to typewriting or carbon copies of typewriting.

The invention has for an object the provision of means for applying erasing chemicals to the original typescript, and supplementary means for applying them to the carbon copies of it, while said original and carbon copies are in a typewriter in the usual manner, permitting chemical erasure of portions of the carbon copies simultaneously with erasure of the same portions of the original.

For further comprehension of the invention and of the objects and advantages thereof, reference will be had to the following description and accompanying drawing and to the appended claims, and to the various novel features of the invention as hereinafter more particularly set forth.

Referring to the drawing forming a material part of this disclosure:

Fig. 1 is a fragmentary face view of a ribbon showing the invention applied thereto.

Fig. 2 is a front view of a fragmentary portion of a typewriting ribbon constructed according to this invention.

Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a front elevational view of an erasing chemical carrier used in this invention.

Fig. 5 is a vertical sectional view taken on the line 5—5 of Fig. 4.

Fig. 6 is a fragmentary edge view of an erasing chemical carrier applied to a top sheet with a carbon sheet and a copy sheet the top sheet, the carbon sheet, and copy sheet being shown in section.

Fig. 7 is a view similar to Fig. 5, but showing a modification of the invention.

Fig. 8 is a face view of an inking pad constructed according to this invention.

Fig. 9 is a fragmentary view of a typewriting machine showing a section of the ribbon and only one special key lever.

Fig. 10 is a fragmentary face view of a typewriting ribbon constructed according to this invention.

Fig. 11 is a side view of a fragmentary portion of a typewriting ribbon wound on a spool, a portion thereof being shown sectionally.

Referring in particular to Figs. 1, 2, and 3, a typewriting ribbon is shown that is affixable to a typewriter in the usual way, and operable in the usual way. This ribbon is divided along the line of its length into two parts, one part 10 containing ink or staining substance as is usual, and the other part 11, an erasing chemical mixed with such waxy or oily or other substance, as may be necessary and desirable, either part of the ribbon being capable of use against the line being typed by operating the ribbon color shift in the usual way. The ribbon may be one piece of cloth, as usual or two separate pieces suitably attached together. The part 10 may have one edge bent upon itself as indicated by 12, and 11 is similarily formed, indicated by 13. These edges may be hooked together and a spacer 14 of S-shaped formation placed therebetween. Stitches 15 serve to hold these parts together. The spacer 14 is preferably made of rubber or any other suitable material to prevent the ink and the chemical eraser from being carried from one part of the ribbon to the other, thereby decreasing its life.

Referring in particular to Figs. 4, 5, and 6 an erasing chemical carrier is shown, consisting of a piece of tissue paper, silk, cloth, or the like, bearing impressed on the outer side an erasing chemical, mixed with such waxy or oily or other substances as may be necessary or desirable, the said paper being affixed to a cardboard holder 17 having a window 17′. The holder 17 is preferably made of cardboard about as thick and stiff as a playing card. The holder 17 facilitates the introduction of the paper 16 under the carbon paper 19 of the top sheet 20 and the copy sheet 21, and in contact with the line or portion of a line of the carbon copy to be erased. When several carbon copies are made at one time, several chemical holders may be used, each holder being shaped like an invert-

ed T, the long arm or handle springing from a slightly different place in each holder of a set, so as not to interfere with each other.

A blank key bearing no letter on its face may be built into a typewriter, and used in the same manner as the other keys for applying the erasing chemical to the top sheet, and making the impact necessary to apply the erasing chemical to the carbon copies, whenever it is not desired to apply the chemical, or make the impact, with the keys that wrote the original error. The special blank face key may also be used to efface by impact the impression, as distinct from the ink mark, of letters of punctuation signs that have been erased. The invention, however, being substantially complete and satisfactory without the use of such a special key.

The modification shown in Fig. 7, illustrates a band 22 formed with a window opening 23, and slidable and removable through apertures 24 in the holder 17 which is not formed with a window 17'. Ring 25 is secured to the band 22. In the position illustrated on the drawing, the window 23 exposes the paper 16 with erasing chemicals thereon. The ring 25 may be manually grasped to move the band 22 to slide so that the window 23 no longer exposes the paper 16, but a different portion of the band covers the member 16, serving as a protection therefor.

In Fig. 8, the numeral 26 indicates the body of a pad, having a portion 27 containing ink, another portion 28 containing erasing chemicals, and a spacer 29 between these portions. A pad of this kind, making use of the principles of this invention may be used for typewriters applying ink by pad instead of ribbon.

In manifolding devices, ribbons, strips, or pads similarly divided into ink and erasing portions, may be employed.

In Fig. 9, a ribbon having an ink portion 30 and a chemical portion 31 is illustrated. If desired, the erasing substance may be divided into two parts, one part to go on the ribbon portion 31, and the other part to be carried on a key 32, in a suitable holding means 33, which may be equipped with a supply pipe 34. The ribbon, for example may be treated with a soluble paste comprising acetic or oxalic acid and water may be supplied to the key for dissolving the acid and facilitating liberation thereof from the ribbon. The holding means 33 may be brought in contact with the ribbon portion 31 by the striking action of the key, the meeting of the two substances releasing the chemical action on the paper at the moment of striking. This process is not applicable to carbon copies, but when the ink on the carbon paper can be erased by the action of one chemical, or the reaction of one chemical with other chemical substances implanted in the ink, the carbon copies can still be erased simultaneously with the original. The typewriter may be built so that the ribbon 30, 31 may be shifted above or below the type.

Fig. 10 illustrates a ribbon having chemical portions 35, and ink carrying portions 36 perpendicular of its length, such ribbon being rolled or otherwise moved until either the ink-bearing or chemical bearing part is opposite the place where matter is to be erased or written.

Fig. 11 shows a spool 10^a having a ribbon 10 with a tissue paper or other suitable substance 10' separator wound thereon.

The invention is to be used as follows:

For erasing originals with ribbon first described, move carriage till letter to be erased, is opposite the point where the type strikes, operate the ribbon shift to cause the chemical-bearing portion to come in contact with the letter instead of the ink-bearing portion, and strike the erroneous letter or word over again, when the exact lines to be removed will receive the erasing chemical, and no other portion of the paper, or when a blank key as described is incorporated in the typewriter, striking over the erroneous letter or word with such blank key and the chemical bearing portion of the ribbon, or when the erasing chemical is divided into two parts, as described, striking the chemical-bearing portion of the ribbon with the chemical-bearing key against the letter to be erased, or using an inking pad in the corresponding manner, or by the chemical bearing key striking the paper directly.

For erasing carbon copies, introducing under the carbon paper, with chemical-bearing side toward the copy, the carbon copy eraser described, or as many such as there are carbon copies being made, one under each sheet of carbon paper, then erasing the original as described. The impact of the key, whether the key that made the error, or the flat key or the chemical-bearing key as the case may be, will bring the chemical-bearing paper into contact with the letter of the copy to be erased, while the new impression of the carbon paper will be caught harmlessly on the back of the chemical-bearing eraser paper, or cloth which back carries no erasing chemical. For erasing matter over a greater width or length of the copy than may be covered by the extent of the erasing paper, the paper will have to be shifted, using the cardboard handle. When the erasure is complete, the erasing paper or papers with the cardboard carriers to which they are pasted are removed, and anything now written on a clean space of the original will be reproduced on a clean space of the carbon copy, as usual.

It should be understood that a suitable chemical eradicator should be selected for the particular chemical of the coloring matter used in the ink portion of the ribbon. If, for example, coloring material of a composition

identical to that of writing or "fountain pen" ink is employed, acetic acid, oxalic acid, javelle water, etc., will provide a suitable active agent for the eradicator ribbon. As the coloring pigment must be mixed with substances to retain it in the typewriter ribbon, so the eradicating chemical agents must be mixed. In other words, the ink eradicating portion of the ribbon will be coated with a mixture comprising a hydroscopic agent, for example, a polyhydric alcohol such as glycerin, in which is dissolved a base or a salt of a base in which there are either or both positive and negative radicals or reducing agents making up the compound. One effective reducing agent is a compound of hydrazine and citric acid. Of course, the ink in the writing portion of the ribbon must possess a pigment with oxidizing powers, such as manganese dioxide, or serric tanate, which at the same time are easily reduced but are in turn oxidizing agents. It is conceivable that the eradicator may be an oxidizing agent and the coloring pigment the reducing agent. Also, while I have referred above to the reducing agent being dissolved in the hydroscopic agent, it is entirely practical to carry the reducing agent in suspension in a suitable carrying agent with which the eradicating portion of the ribbon would be treated.

I do not wish to be limited to the use of the specific named agents, since inks of other composition will require different eradicating chemicals and when the desired eradicating agent is conveyed on a flexible material to the place where it is to be employed and there released by impact, the basic principle of my invention is carried out.

While I have illustrated and described my invention with some degree of particularity, I realize that in practice various alterations therein may be made. I therefore reserve the right and privilege of changing the form of the details of construction or otherwise altering the relation of the correlated parts without departing from the spirit or the scope of the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. A device of the class described, comprising a key, means associated with the key for holding a certain chemical, and a ribbon having a chemical portion holding a chemical co-actable with the first mentioned chemical to erase certain matter when the key strikes the chemical portion of the ribbon.

2. An eradicating device for typewriters comprising a blank key operatively mounted on a typewriter and adapted to dispense a liquid chemical substance, a supply tube mounted on said blank key adapted to retain said liquid chemical, and a ribbon operatively mounted on said typewriter comprising an inked section and an adjacent eradicating section having a form of chemical thereon adapted to be combined with the liquid chemical of said blank key when the latter is actuated to be moved into contact with said ribbon for moistening the writing on a paper to be eradicated.

3. An eradicating device for typewriters comprising a ribbon operatively mounted on a typewriter, a blank key operatively mounted on a typewriter having a chemical substance thereon, said blank key mounted on said typewriter in position to be made to engage said ribbon comprising a means for retaining suitable chemical adapted to apply the same on said ribbon for causing the combined chemical of said ribbon and of said blank key to be applied on a paper therebelow.

4. The combination comprising a ribbon having an ink portion and a chemically treated eradicating portion and a key with a blank hitting surface operative to impress the eradicating portion of the ribbon to matter previously written with the inked portion thereof.

5. The combination comprising a strip of flexible material adapted to be placed in contact with typewritten matter, said strip being chemically treated with elements of a character to eradicate said typewritten matter and means on the typewriter for bringing the chemically treated portion in contact with the typewriting to be eradicated.

6. The combination in a typewriter of a ribbon having an inked portion and a portion containing an eradicating chemical and operativ ly mounted in the typewriter so as to occupy different positions therein in cooperation with the keys of the typewriter so that said keys may be used to produce typewritten matter and may also be used to eradicate any of the typewritten matter when the operative position of the ribbon is changed.

7. The combination in a typewriter of an inked ribbon and cooperating keys whereby typewritten matter is produced, and means for eradicating the typewritten matter, said means carrying a chemical capable of chemically acting upon the typewritten matter to remove the same, said means being applied to the typewritten matter by the use of one or more keys of the typewriter.

8. The combination in a typewriter of an inked ribbon and cooperating keys whereby typewritten matter is produced, and means for eradicating the typewritten matter, said means comprising a chemical capable of chemically acting upon the typewritten characters to remove the same, said means being applied by the use of the same keys of the typewriter that were used to print the characters.

9. The combination in a typewriter of an inked ribbon and cooperating keys whereby

typewritten matter is produced, and means carried by the typewriter for eradicating the typewritten matter, said means comprising a chemical capable of chemically coacting with the inked typewritten characters to remove the same, said being applied to the characters by the use of one or more keys of the typewriter.

In testimony whereof I have affixed my signature.

AARON NADELL.