United States Patent [19]

Barouh et al.

[11] **3,776,756**

[45] **Nov. 27, 1973**

[54] **CORRECTION MATERIAL AND METHOD FOR THE MANUFACTURE THEREOF**

[76] Inventors: **Victor Barouh,** 935 Plum Tree Rd., West, Westbury; **Robert Glenn,** 70-20 108th St., Forest Hills, both of N.Y.

[22] Filed: **Feb. 1, 1972**

[21] Appl. No.: **222,538**

[52] **U.S. Cl.** ..... **117/36.4,** 117/2 TC, 117/78, 117/90, 117/92, 117/119

[51] **Int. Cl.** **B41c 1/08,** B23p 7/00

[58] **Field of Search** ..... 117/2 TC, 3.1, 36.3, 117/36.4, 78, 62, 119, 119.6, 90, 92

[56] **References Cited**

UNITED STATES PATENTS

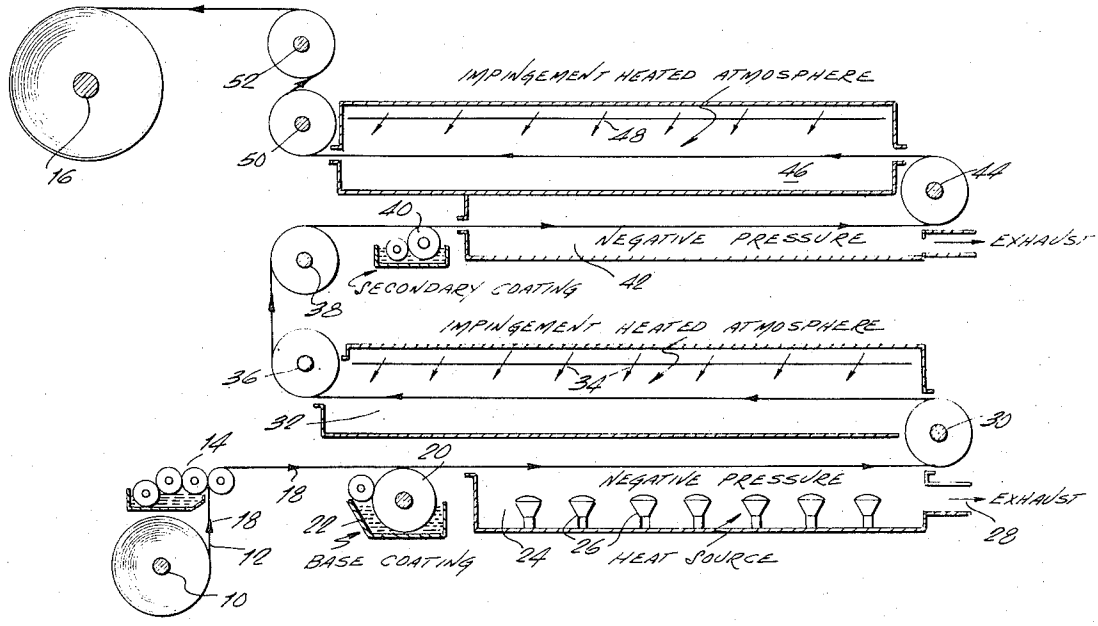
2,912,344	11/1959	Newman et al.	117/36.4
3,484,264	12/1969	Strauss et al.	117/36.4 X
3,311,489	3/1967	Barbour	117/76 X
3,552,990	1/1971	Barouh	117/2 TC
3,515,572	6/1970	Dabisch	117/2 TC
3,679,454	7/1972	Penniman	117/44

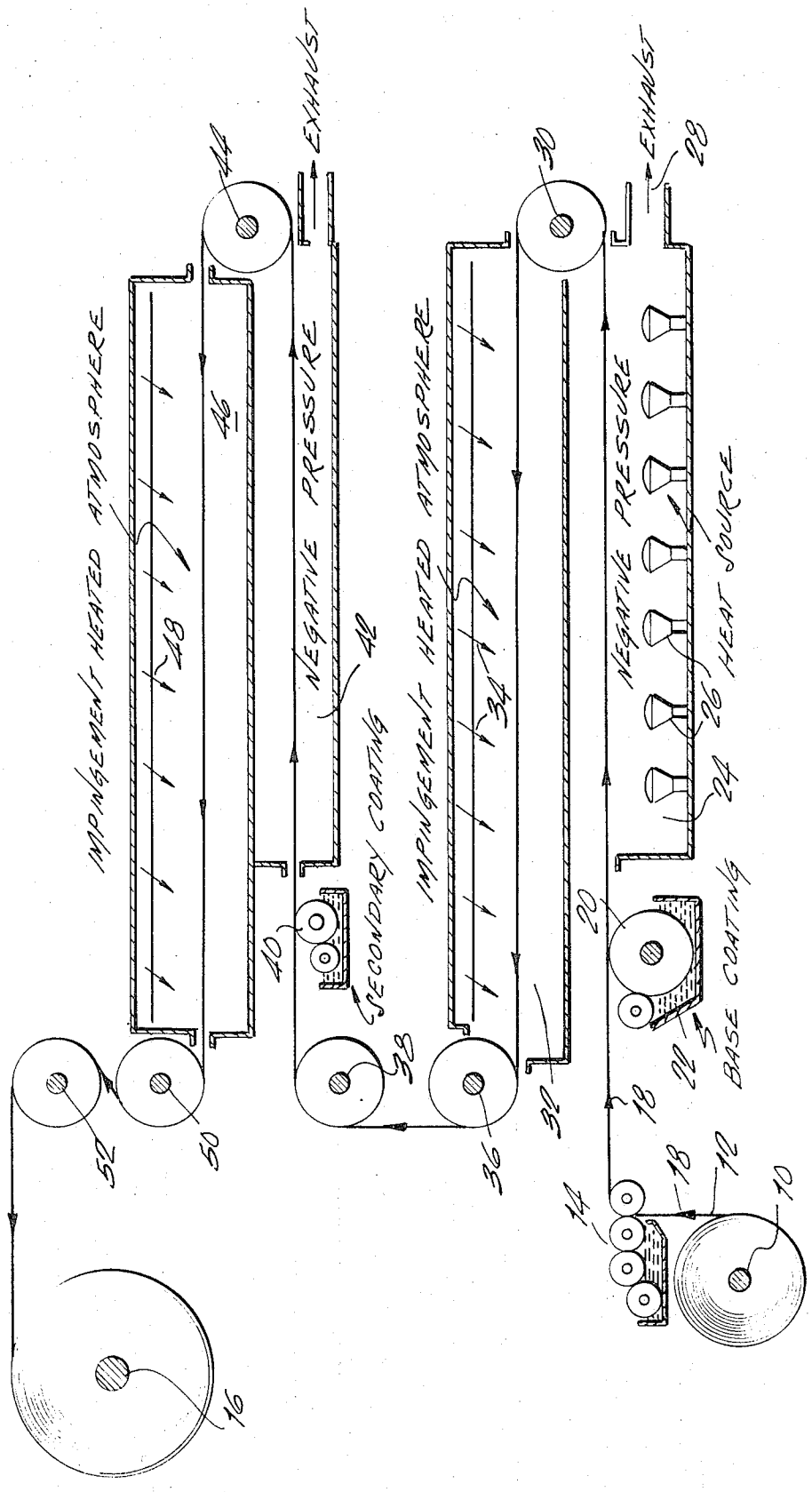
Primary Examiner—William D. Martin
Assistant Examiner—Harry J. Gwinnell
Attorney—Kenneth S. Goldfarb

[57] **ABSTRACT**

A method for manufacturing a correction material which utilizes a release layer top coating having a solvent which penetrates a transfer layer base coat to insinuate itself between the base coat and a substrate to permit for better and clearer transfer of material.

6 Claims, 1 Drawing Figure




IMPINGEMENT HEATED ATMOSPHERE
NEGATIVE PRESSURE
EXHAUST
SECONDARY COATING
IMPINGEMENT HEATED ATMOSPHERE
NEGATIVE PRESSURE
EXHAUST
HEAT SOURCE
BASE COATING
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50
52

CORRECTION MATERIAL AND METHOD FOR THE MANUFACTURE THEREOF

The present invention is adapted to produce a new correction material which corrects typewritten errors made on typewriters using silk, nylon, mylar, polyethylene, cotton or paper ribbons. In addition to correcting the original sheet this new invention will also enable devices user to correct copies made from all known carbon evices such as wax carbon paper, solvent carbon paper and solvent film.

At present there are two ways to correct typewritten errors, erasing and utilizing correction material that masks the error. Erasing may smear or tear the paper, is time consuming and generally unsatisfactory. The use of correction materials, although touted as the cleanest and quickest method, still often requires striking the typewriter key several times to satisfactorily mask the error before striking the corrected letter. The method isn't wholly satisfactory since it is often necessary to strike the corrected letter several times because the transferred correction material has not in the past been sufficiently receptive to the ink from the typewritter key. The problem then is in masking and receiving. Either the error is masked well but many strike overs are necessary or masking is poor and the correction is blurred. To these problems four variables exist which make satisfactory corrections difficult to perform. Heretofore it has not been possible to have a single correction material for all corrections because there is such a variety of manual and electric typewriters whose keys require different amounts of pressure in order to depress them, the typewriters use a variety of ribbons such as, silk, nylon, cotton, mylar, polyethylene and paper, and the variations of degrees of inking that are found in the particular ribbon. The fourth variable is the use today of different weight papers having different absorption qualities.

Some bonded letterheads are more resistant to the oils found in a heavy inked ribbon. Therefore the oils remain on the surface of the bond preventing the transferred correction material from satisfactorily masking the typed error. This problem also prevents satisfactory strike-overs of the corrected letter.

Because of the aforementioned variables it is necessary to have a variety of correction materials to correct errors on different surfaces when made from different ribbons. When an original requires a correction, the correction material to be used is determined by the typewriter ribbon used in the making of the error. When an error is made with a ribbon of film carrying a conventional carbon formula correction material other than one used for correcting other type ribbons had to be used. With a film ribbon having a solvent coating another correction material had to be used to make the correction. With the various degrees of inking found on nylon, silk and cotton ribbons different correction materials has to be used. If a correction was desired on the carbon copy a different correction material had to be used than the one used for originals. Furthermore, there is no satisfactory correction material known today that corrects errors made from the use of solvent carbons.

An object of the present invention is to provide on paper or like material a new pressure sensitive transfer coating for use as a masking agent for erroneously key struck impressions.

The same problem exists when correcting carbon copy errors. There are many different types of carbon paper in use today. Carbon papers are made with a conventional wax formula. Correction materials made specially for correcting errors on carbon copies will do only a fair job of masking the error. It is necessary to strike the correct letter twice which makes the correction noticeable and therefore undesirable.

When solvent carbon paper or solvent carbon film is used to make carbon copies, the problems become even greater. Impressions made with solvent formulas are actually a series of "plastic beads" carrying a color. These "plastic beads" resist normal pigments and binders found in the correction materials that are on the market today. The formulation of the solvent carbon is not compatible with the formulation of present correction devices. When strike-overs are attempted the chemicals resist, preventing reception of the correct type. Masking the error is a problem but receiving the new type is so great a problem that as far as is known there is no correction material that can correct errors made on all types of solvent carbons, whether film or paper.

It is another object of this invention to mask errors made on originals from any manual or electric typewriter using any type of ribbon with any degree of inking including film and mylar as well as correcting errors on carbon copies made by carbon paper or any type of solvent carbon and receiving the new impression with only one strike-over.

The color of the coated material which will be transferred to the original or copy which is to be masked will blend in with the color of the paper thereby making the opaquing unnoticeable and therefore highly desirable. Various shades of white to grey and all other colors and shades are made with the same excellent results.

These and other objects of the invention as will become apparent as the following description proceeds, are attained by this correction material, a preferred embodiment of the apparatus used in the manufacture thereof being shown in the FIGURE which is a schematic diagram of the apparatus employed.

The correction material made in accordance with the concepts of the present invention includes a base sheet of flexible material, such as a lightweight paper, having one side of any esired color and design, which may also be used for printing instructions as to the manner of using the correction material. The opposite side of the base sheet is preferably completely coated twice with a transfer layer and release layer of a composition suitable for the purpose of the present invention and to be hereinafter described.

A further object of the invention is to provide one correction device that can correct typewriter written originals and carbon copies. This one correction device corrects typewritten originals made on manual or electric typewriters, with either fabric ribbons of paper or film ribbons coated or inked with oil, wax or solvent inks. This same correction device corrects carbon copies made with correction wax formulas or solvent formulas coated on paper or film. This one single device corrects all errors on originals and carbon copies simultaneously.

The correction material is preferably manufactured in small strips so as to be especially useful for correcting minor errors, such as misspelled words, short sentences, and the like. However, it must be recognized

that such articles may also be constructed in any desired shape and size so as to be readily available for correcting entire pages, paragraphs, and the like, should such be deemed desirable and necessary.

In practicing the method of correcting errors in accordance with the present invention on a typewritten sheet having an error, such as a misspelling of a word, the carriage of the typewriter is first returned to the origin of the error and the correction material is placed directly upon the face between the typewriter ribbon and the stock in the typewriter. The key of the typewriter is then actuated to strike the same letters as the error appearing on the copy so that the type bar of the typewriter will impinge upon the back side of the article through the ribbon, to transmit sufficient coating material from the layer to completely coat such error to be corrected and mask it. The typewriter carriage is then again returned to the point of origin of the error and the correction material is removed, so that the typewriter may then be actuated to cause the correct type bar to imprint the correct letter directly upon the masked errors of the stock to produce a corrected copy sheet.

In actual use, individual sheets or sections may be placed between each carbon copy page and the respective sheet of carbon paper or solvent carbon, so as to simultaneously correct the errors on each of the original and carbon copy sheets at the same time. In correcting the original and copy sheets in this manner the same method of adjusting the carriage and obliterating the mistaken copy is followed as described above, and following which the corrected impressions are made after the correction sheets have been removed.

The novelty of this invention becomes apparent from the unexpected results occurring when the chemicals are blended and mixed in the following unique manner. First, the carrier or base sheet is given a coat of binder, at full strength, with solvent, pigment and metallic additive. This coats the paper as if it were paint preventing any form of release, especially because of the quantity of binder used. However, by recoating the same base sheet with a formulation of dye, solvent, and release coat material such as Quilon or silicon, and/or stearate, binder, wax, and fill. The solvent breaks the binder while the release coat material works its way under the pigment, binder, and metallic additive forming a shield between the carrier sheet and the pigmented binder formula. Then heat is applied at 220°F. for a time between 1 and 3 seconds. Suddenly and unexpectedly, the binder releases from the base sheet just enough to become a transfer material. In its final state and ready for use it is in a state of extra hardness allowing any typeover to be received perfectly.

In addition, a blue, purple or pink dye is added to the top coat material which cuts the white glare of the pigment so that the transferred material blends better with the stock paper thereby practically leaving no trace of the error or that a correction was made.

In the past there have been several ways of coating a carrier sheet for use as a correction device, which includes using a formula of pigment, solvent and small amount of binder. This substance will adhere to the carrier sheet and will transfer when struck by a typewriter key perfectly but will need two typeovers to make a good correction because the corrected letter is being types on the titanium pigment and therefore comes grey. The feature here is that the corrected letter is being typed on the binder which is less absorbent and results in a sharp, clear impression as would be when typing on a dry, solid sheet of paper. By using a greater amount of binder in the base formula you have a harder surface to type upon. Without the unique top coat and top coat process, according to the present invention, this harder surface would not release from the carrier sheet.

Further, there already is a process of putting release coat on first and then a solid or opaque ink formula. This is used in letter transfers or image transfers. It is not adaptable for use with typewritten errors because the break away is uneven when struck by a key. It only works when a pre-printed impression is desired to be transferred.

The present invention differs from these previous ways of coating a carrier sheet by using a base coat formula with a large percentage of binder. The carrier sheet then becomes coated with a thin non-transferable coating. When a top coat formula comprised mainly of a solvent which dissolves or breaks down the binder, and talc or clay or stearates which absorb the ink from the ribbon, and a release substance like silicon or Quilon which permits the opaquing substance to release from the carrier sheet and be transferred evenly and completely, a now usually effective transferable coating will be attained. The release coat substance works its way between the base coat and carrier sheet. However, the results are different from prior art letter transfer formulas and unexpected in that the material that is transferred is in the shape of the desired key impression. There is no flaking. Had the release coat formula been applied to the carrier sheet first and then the base coat formula which has the opaquing pigment that is the masking substance, the transfer would not have been even. For example, if the typewritten letter K was desired to be struck against the correction material to mask the erroneously typed K, there is no way of predicting that the correction material will release from the carrier sheet in the shape of K. Blotches of correction material may release or parts of the letter K may release. But by applying the top coat formula on top of the base coat formula, exact transfer is accomplished and only one typeover is needed for the correction. This way the corrected letter is not being typed on pigments as was happening in the prior correction material.

In accordance with this invention, the following are examples of the formulae used for the base coat. All parts are by weight.

EXAMPLE No. 1

Ethyl Cellulose (50 CPS) (binder)	10 parts
Titanium Dioxide	60 parts
pigments	
Magnesium Silicate	5 parts
Butyl Alcohol	15 parts
solvents	
Ethyl Alcohol	5 parts
Metallic material such as powdered aluminum as a densifier	5 parts

EXAMPLE No. 2

Nitro Cellulose	10 parts
Magnesium Silicate	10 parts
Calcium Carbonate	10 parts
Titanium Dioxide	50 parts
Toluol	10 parts
Normal Propanol	10 parts

EXAMPLE No. 3

Ethyl Cellulose	5 parts
Calcium Carbonate	5 parts
Magnesium Silicate	5 parts
Titanium Dioxide	40 parts
Ethyl Acetate	10 parts
Ethyl Alcohol	25 parts
Metallic Stearates (Either Aluminum Stearate or Magnesium Stearate)	10 parts

The following are examples of the top release coat which penetrates through the binder to the substrate in the form of an elongated strip of paper or other suitable material.

EXAMPLE No. 4

Quilon	10 parts
Normal Propanol	40 parts
Clay	50 parts

EXAMPLE No. 5

Plastic Microcryatalline Wax	5 parts
Stearate such as Aluminum Stearate	5 parts
Dye	1 part
VM & P Naphtha	84 parts
Ethyl Cellulose	5 parts

EXAMPLE No. 6

Silicon	5 parts
Toluol	30 parts
Talc	30 parts
Stearate	30 parts
Binder	5 parts

EXAMPLE No. 7

Quilon or silicon	30 parts
VM & P Naphtha	55 parts
Metallic Stearate (Selected from aluminum Stearate or Magnesium Stearate)	15 parts

The release coat materials when applied to the base coat materials in the manner described before, work their way under the base coat formulas forming a shield between the carrier paper and the opaquing coating.

The solvent, either normal propanol, toluol or VM & P Naphtha, breaks down the base coat material carrying and allowing the release coat materials to reach a position between the carrier paper and the opaquing formula.

Some of the clay, talc or metallic stearates in the top coat remain on top and blot and absorb the heavy inked erroneous impression, thereby facilitating the masking and reception process of correction employed by this invention.

With continuing reference to the FIGURE wherein there is shown schematically the apparatus for manufacture of correction material, reference numeral **10** designates a drum or roll about which elongated substrate strip material **12** is wound, the substrate material preferably being in the form of paper but may be of any other suitable material or a flexible coated material. The substrate material is passed through a series of moisturizing rolls **14** and is then passed through the balance of the apparatus and wound finally on roll **16.**

The substrate material **12** passes in direction of arrows **18** over a base coating roller **20** which revolves in a drum **22** having a solution in accordance with the formulas for the base coat. The substrate with the base coat thereon is then passed into a first drying chamber **24** which is under a negative or subatmospheric pressure. An initial drying occurs in the chamber **24** which is augmented by heat lamps or other suitable heating means **26,** the atmosphere being exhausted from the chamber **24** in the direction of arrow **28.** The substrate is then wound around roll **30** and passed into a first treatment chamber **32.** Heated air is directed into the chamber **32** in the direction of arrows **34.**

This heated air will serve to treat, harden and finish the base coating, after which it passes about a roller **36** and then about roller **38,** and over the coating roller **40** which applies the top coat. This top coat includes solvent which, as applied on the base coat, will penetrate the base coat carrying with it the other ingredients of the top coat and insinuating such between the substrate and the base coat. This is enhanced by the initial drying action in the second drying chamber **42** which is under sub-atmospheric pressure. Heat is not applied at this time so as to assure against undue evaporation of the solvent in the top coat, and to provide for adequate insinuation thereof between the base coat and the substrate, while assuring that at least some of the top coat will ry in overlying relationship on the base coat. The elongated sheet material is entrained about roller **44** and then passes into a second treatment chamber **46** in which heated air is impinged on the coated material in the direction of arrows **48** and at atmospheric pressure, and the sheet material is then entrained above rollers **50** and **52** and wound up on the drum or roll **16.** Any of the rolls or drums may be powered in any desired manner to insure continuous operation.

It is to be especially noted that the base coat formulas contain binder in such proportion that the base coat by itself would be too hard for effective transfer. However, when the top coat insinuates itself for release of the base coat, an effective transfer is realized and much better opaquing and typeover results.

A latitude of modification, change and substitution is intended in the foregoing disclosure, and in some instances some features of the invention will be employed without a corresponding use of other features.

I claim:

1. A method of manufacturing correction material comprising the steps of applying a transfer layer base coating including a binder, pigment, and solvent on a substrate of strip material, drying said base coating by evaporating said solvent, applying a release layer top coating including a binder, a solvent, and a clay, talc or metallic stearate material over said base coating, allowing said top coating to penetrate said base coating so that a portion of said top coating insinuates itself between said base coating and said substrate with at least some of said clay, talc or metallic stearate material of said top coating remaining on top of said base coating, and then drying said top coating by evaporating the solvent thereof.

2. A method according to claim **1,** wherein said base coating is dried by heat and vacuum drying, and then is subjected to treatment by heated air at atmospheric pressure.

3. A method according to claim **2,** wherein said top coating is dried by vacuum drying and then subjected to heated air at atmospheric pressure.

4. A method according to claim **1,** wherein the binder of said base coating ethyl cellulose or nitro cellulose, the pigment of said base coating is titanium dioxide, magnesium silicate, or calcium carbonate and the solvents of said base coating are butyl alcohol, ethyl alcohol, toluol, propanol, or ethyl acetate.

5. A method according to claim **1,** wherein said top coating when applied contains at least thirty percent by weight of solvent.

6. A method according to claim **5,** wherein said solvent is naphtha or toluol.

* * * * *