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Barouh et al.

[11] **3,852,089**

[45] **Dec. 3, 1974**

[54] **METHOD FOR CORRECTING MISTYPED BUSINESS FORMS**

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[21] Appl. No.: **241,305**

[52] **U.S. Cl.** ..... **117/2 TC,** 117/36.4

[51] **Int. Cl.** **B41m 5/00,** B32b 35/00

[58] **Field of Search** ..... 117/2 TC, 2 R, 36.1, 36.4

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Primary Examiner—Ralph Husack

Attorney, Agent, or Firm—Kenneth S. Goldfarb

[57] **ABSTRACT**

A method of correcting a mistyped carbonless Business Form Set. The set consisting of two or more collated sheets of paper that when typed, printed or pressure applied will produce copy of the indicia applied without the use of carbon paper or other visible form of color. A set consisting of two or more sheets of such paper, the face top sheet known as the original copy generally doesn't carry any coating whatsoever. The back of this original copy has a coating that is colorless referred to as coating composition A. This top sheet is placed collated on top of a copy sheet that has a coating on both sides of the paper. The face of this copy sheet has a colorless coating B thereon different from coating A. The back of this copy sheet is coated with a coating A referred to before. By adding multiple sheets of this copy sheet there is obtained a 2-3-4 etc. part set. When the pressure of a typewriter key, printing press, pencil or like pressure is made the desired indicia is made on all copies. The method of correction is then carried on by using opaquing sheets having a bottom coat of pressure transferable pigmented coating and provided with a tacky face top coating, by suitable placing the opaquing sheet to opaque any errors and thereafter inserting an image transfer sheet having a transfer coating thereon corresponding in color to the final color attained by typed copy on the copy sheet or sheets and by the method of typing error again then typing correct indicia.

3 Claims, 11 Drawing Figures

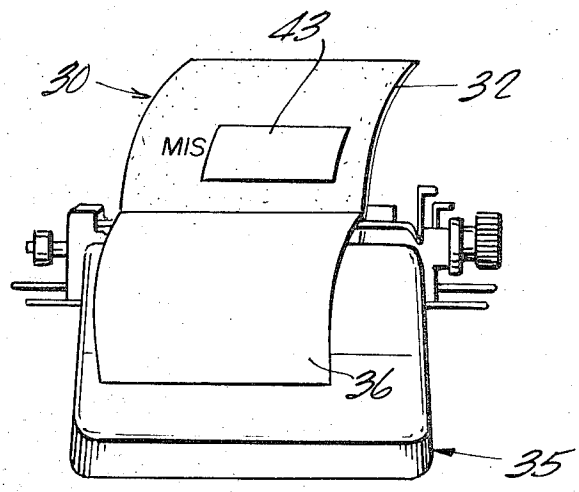
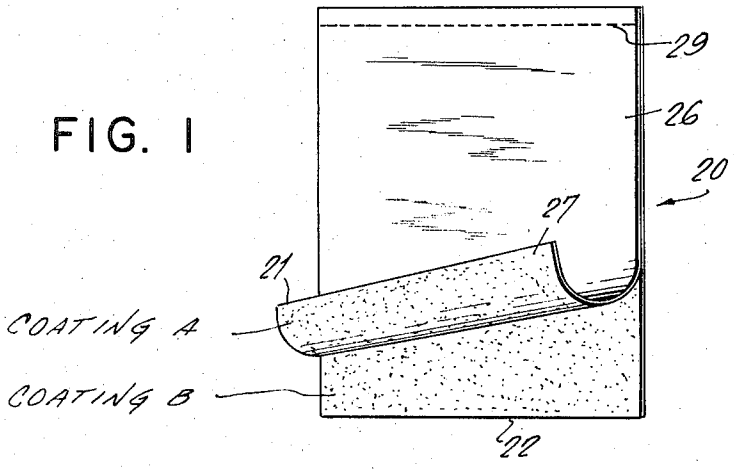


FIG. 1



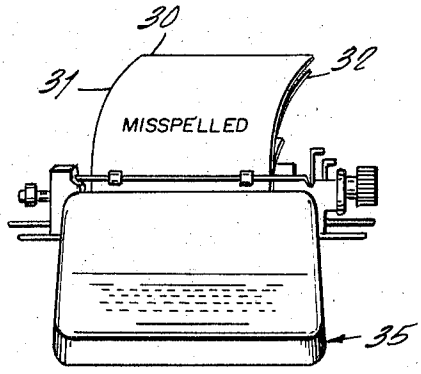


FIG. 2

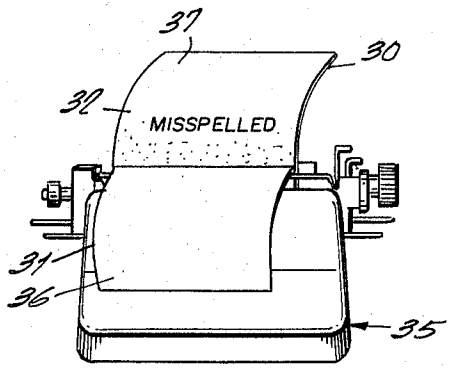


FIG. 3

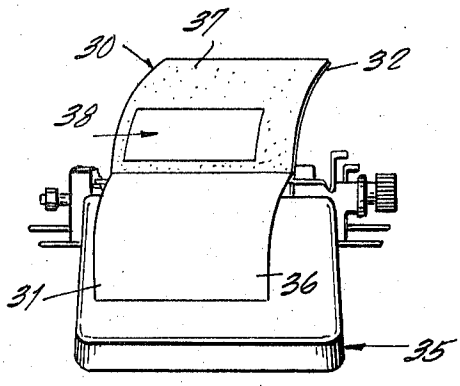


FIG. 4

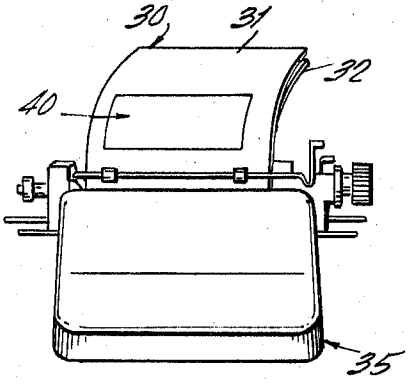


FIG. 5

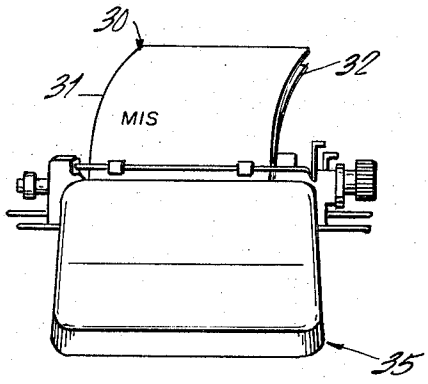


FIG. 6

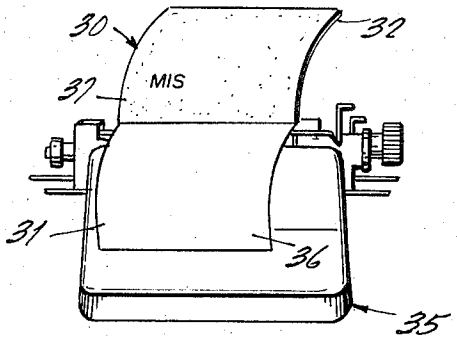


FIG. 7

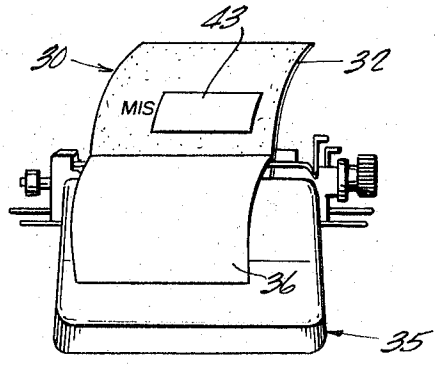


FIG. 8

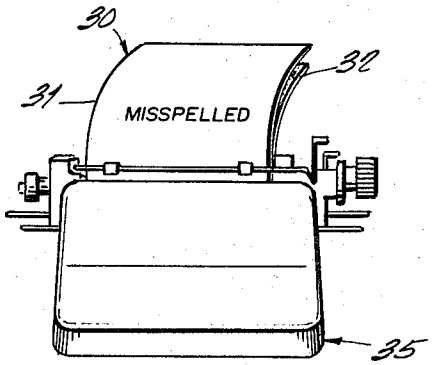


FIG. 9

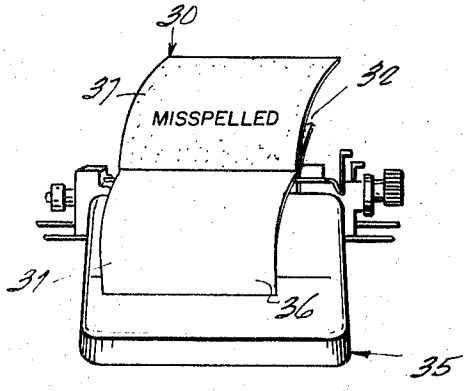


FIG. 10

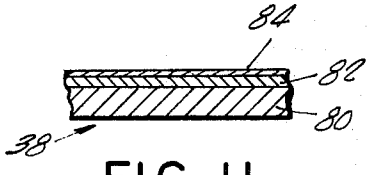


FIG. 11

METHOD FOR CORRECTING MISTYPED BUSINESS FORMS

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to business forms and articles and compositions for use therein, and to a method of correcting business forms.

2. Description of the Prior Art

Various types of carbonless business form sets, such as those manufactured by National Cash Register Company and by Minnesota Mining and Manufacturing Company are in extensive use. These business forms do not employ carbon paper, but instead provide a generally colorless chemical coating on the rear face of the original sheet referred to as composition A and a generally colorless coating on the front face of a copy sheet, referred to as composition B, and the rear face of the copy sheets carries a coating composition A. In many instances numerous copy sheets are employed so that the rear surface thereof is provided with a colorless A coating. Each A coating may be of the same composition in each set, but must be collated to face the side B composition so that when the set is used, as for example, by typing thereon, a chemical reaction of the pressure sensitive materials of the A and B coatings will provide a visual representation of the typed characters in a predetermined color. The copy sheets likewise can be of the same or different colors from that of the original sheet. Heretofore it has not been possible to correct these business forms and any error thereon has either required discarding the business form set or the striking over and crossing out of the erroneous material which not only is unsightly, but where the type characters must fit in a small outlined space, such crossouts are undesirable. Since business form sets are quite expensive, it is highly desirable to correct them. However, the coated materials do not lend to mechanical erasing, since you would erase or remove the chemical coating, and retyping of the correct character on the original sheet does not result in a correct character on the copy sheet or sheets. The use of correction material, such as disclosed in U.S. Pat. No. 3,459,127 to Barouh, U.S. Pat. No. 3,114,447 to Wolowitz, and U.S. Pat. No. 3,515,572 Dabisch, is not possible because upon retyping the desired indicia will not adhere to the opaquing material.

SUMMARY OF THE INVENTION

The present invention overcomes the problems of the prior art by providing correcting materials and a method of employing these correction materials compatibly with the chemical compositions of the A or B coatings of business form sets.

Accordingly, it is an important object of the present invention to provide methods, articles and compositions which cure the above-mentioned difficulty, afford an immediate correction of mistakes on the original and on the suitably coated copies thereof, and enable an operator to quickly, neatly and easily retype correct characters on the original and suitably coated copies of a business form set.

A further object of the invention resides in the provision of a novel correction material which can be easily introduced into a typewriter.

Still further objects of this invention reside in the provision of correction material having a novel chemical composition that is simple and inexpensive to manufacture thereby permitting wide use and distribution.

An additional object of this invention is to provide a correction material in the form of multiple coatings which has a tacky or sticky surface and a cohesive body which gives rise to effective compatible use for correcting carbonless business sheets.

These, together with the various ancillary objects and features of the invention, which will become apparent as the following description proceeds, are attained by this method and material for correcting business forms, a preferred embodiment of the method and material being shown in the accompanying drawings, by way of example only, wherein:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view illustrating a carbonless business form set for correction in accordance with the teachings of the instant invention;

FIG. **2** is a perspective view illustrating the first of successive steps in the correction of an error in a carbonless business form set in accordance with the concepts of the invention, and showing a typewritten error;

FIG. **3** is a perspective view illustrating the business form set in a typewriter with the sheets of the set separated;

FIG. **4** is a perspective view illustrating a opaquing sheet applied to the B coating of a copy sheet;

FIG. **5** is a perspective view illustrating the original sheet in facing relation to the B sheet and with a opaquing sheet applied thereon;

FIG. **6** is a perspective view illustrating the condition of the original sheet after the error has been retyped over the opaquing sheet;

FIG. **7** is a perspective view illustrating the condition of the copy sheet after the error has been retyped over the opaqued sheet;

FIG. **8** is a perspective view illustrating the application of an image transfer sheet on the copy sheet;

FIG. **9** is a perspective view illustrating the condition of the original sheet after correct typing;

FIG. **10** is a perspective view illustrating the condition of the copy sheet after correct typing; and,

FIG. **11** is a sectional detail view of a opaquing sheet made in accordance with the concepts of this invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now more particularly to the drawings, and specifically to FIG. **1** thereof, there is shown a carbonless business form set generally designated by reference numeral **20** such as are in common use and as are manufactured by National Cash Register Company and Minnesota Mining and Manufacturing Company, and includes an original sheet **21** and a copy sheet **22** in underlying facing relation with the original sheet. A number of copy sheets can be employed. The sheets **21** and **22** are detachably joined together along one set of adjacent edges by suitable means **29.**

The original sheet **21** may be of suitable paper sheet material coated on the inner surface with a chemical coating A and indicated by reference numeral **27.**

The copy sheet **22** is provided on the surface facing toward the original sheet **21** with a chemical coating B and indicated by reference numeral **21.** The coating **24** is pressure sensitive and reacts with the coating **27** upon application of pressure on the original sheet to form a representation of the typed character in a predetermined color.

In the illustrated embodiment, the unit **20** includes only two sheets, the original sheet **21** and a copy sheet **22.** However, if desired, additional copy sheets may be employed and the copy sheet would then be provided with a B coating **24** on the face and a coating **27** on the back is the original copy and the back of the copy sheet.

The assembled unit **20** is placed in a typewriter with either end being inserted first and in a position to type an original on the outer face **26** of the original sheet **21.** The pressure of typing will cause transfer and reaction of the coating **27** with the coating **24** of the copy sheet **22** to form a carbonless transfer of the character typed on the original sheet **21.**

In use of the business form set **20** as described hereinbefore, it is not uncommon that an error is typed, such as a mispelling, or the like. In the past, an error may have required discarding of the entire business form set and retyping. However, in accordance with the present invention, correction of the several components of the business form set may be readily accomplished to effect considerable savings in time and materials.

Such error correction is illustrated in FIGS. **2** through **11.** However, in the embodiment of FIGS. **2** through **11,** the business form set is there generally designated by reference numeral **30,** and includes an original sheet **31** and a copy sheet **32,** which may be respectively identical to the original and copy sheets **21** and **22** of FIG. **1.**

The unit **30** is shown inserted in a typewriter **35,** and typed material is illustrated therein as being in error. With the original and copy sheets **31** and **32** partially withdrawn from but remaining in the typewriter **35,** the sheets are separated at the location of the error, as shown in FIG. **3.** Thus, the coating **36** of the original sheet **31** can be seen. Also, exposed is the coating **37** of the copy sheet **32** with the error reproduced thereon.

An opaquing sheet **38** is shown in FIG. **4** as covering the location of error on the coating **37** of copy sheet **32.** It should be noted that a pressure-transferable coating to be hereinafter described is provided on the surface of the opaquing sheet **38** facing the copy sheet **32.**

The original sheet **31** may then be returned into facing relation with the copy sheet **32,** the opaquing sheet **38** being interposed therebetween.

Another opaquing sheet **40** is shown in FIG. **5,** similar to opaquing sheet **38,** is arranged over the front or outer surface of the original sheet **31,** covering the error typed thereon, and the several sheets, original sheets **31,** copy sheet **32,** and correction sheets **38** and **40** are together returned to the typewriter position of the error. The error may then be retyped as illustrated in FIGS. **6** and **7,** that is, the exact copy of the error is retyped, and transferable coatings from the opaquing sheets **38** and **40** are thereby transferred to the outer surfaces of the original and copy sheets **31** and **32** to cover and obscure the previously made error.

As shown in FIG. **8,** the image transfer sheet **43** is positioned overlying the opaqued error on the copy sheet **32.** The image transfer sheet **43** has a coating of colored transfer material thereon to be hereinafter described. Thus, with the image transfer sheet **43** in position, the operator may proceed to complete the corrected business form set as shown in FIGS. **9** and **10.**

As noted hereinbefore, the opaquing sheet **40** for use on the front of the original sheet **31** to correct the original thereof is coated on its surface facing the original sheet with a pressure-transferable pigmented coating.

The opaquing material illustrated in FIG. **11** and generally designated by reference numeral **38** includes a sheet of paper **80** or like material forming a substrate, a base coat **82** and a top coat **84.**

In accordance with the concept of the invention, the following is a formula used for the base coat. All parts are by weight.

Example No. 1

Function	Material	Amount
Binder	½ Sec. S.S. Nitrocellulose	3 parts
Pigment	Titanium Dioxide	23 parts
Binder	Ethyl Acetate	30 parts
Solvent	Ethyl Alcohol	20 parts
Solvent	Mineral Spirits	20 parts
Densifier	Bentonite	4 parts

The solvents are air dried.

If it is desired to obtain a coloring to the coating, slight amounts of suitable pigments of the selected color or colors may be added.

The top coat **84** is somewhat permanently tacky or sticky. The following is a formula used for the top coat. All parts are by weight.

Example No. 2

Function	Material	Amount
Solvent	Toluol	35–65 parts
Binder	Ethylcellulose plus fluorocarbon	1–5 parts
Tackifier	Aluminum Stearate	25–45 parts

In lieu of ethylcellulose, acrylics or other known binders soluble in hydrocarbon solvents may be used.

For the tackifier, in lieu of aluminum stearate, other metal stearates, palmitates, octoates, oleates, wax and wax-like material may be employed.

As a solvent, it has been found that VM and P naphtha, mineral spirits and other hydrocarbon solvents can be employed.

The top coat materials when applied to the base coat materials and allowed to air dry give unexpected results. First, some of the top coat materials work their way under the base coat materials forming a shield between the paper **80** and the base coat **82.** The solvent of the top coat breaks down the base coat materials to allow the foregoing. However, because of the interplay between the solvents of the base coat **82** and top coat **84,** the top coat unexpectedly remains tacky and sticky and will adhere to the B coating **24** and remain in tack when the image transfer sheet **43** is applied.

In other words the top coat enables the corrected indicia to adhere to the opaquing material which was heretofore impossible.

The image transfer sheet **43** is provided with an image transfer coating of which the following is an example. All parts are by weight.

Example No. 3

Pigment	20–30
Binder	15–5
Solvent	60–75
Plasticizer	25–10

Example No. 4

Function	Material	Amount
Pigment	Blue Pigment (Iron Blue)	20
Binder	Ethylcellulose	10
Plasticizer	Pthalate	10
Solvent	Ethanol	60

Other blue pigments such as Phthalocyanine blue or ultramarine blue can be used. Other pigments can be used generally in the amount indicated hereinafter.

Table I

Pigment Color	Material	Amount
Black	Carbon Black	5–10
Red	Lithol Red	20–30
	Watching Red	20–30
	Iron Oxide	20–30
Green	Phtalocyanine Green	20–30
	Chrome Greens	20–30
	Green Lakes	20–30
	Blue and Yellow Pigment	20–30
Purple	Combination of Red and Blue Pigments hereinabove	20–30
	Purple Lake	20–30

Alternatives as binders are polyvinylchloride, polyvinyl acetate, polyvinyl butyrate, cellulose acetate butyrate and others. As a plasticizer, Tricresylphosphate can be employed when ethyl cellulose is used as a binder. Other solvents can be employed such as toluol, trichlorethylene and methyl ethyl ketone or a combination of solvents may be employed.

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

What is claimed is:

1. A method of correcting a mistyped carbonless business form set, including an original sheet provided with a chemical coating on the back face thereof and a different chemical coated copy sheet having an encapsulated receptor coating on the other side thereof, comprising the steps of providing a first opaquing sheet including a substrate having a pressure-transferable pigmented coating having a tacky surface, placing said first opaquing sheet in front of said copy sheet with said coating adjacent to said copy sheet, providing a second opaquing sheet having a pressure-transferable coating, placing said second opaquing sheet over said original sheet with said coating adjacent to said original sheet, retyping the error to transfer said coating from first opaquing sheet and said coating from the second opaquing sheet to said copy sheet and said original sheet, and removing said opaquing sheets, then inserting over the opaqued error on copy sheet or sheets, an image transfer sheet having a coating of a color corresponding to the characters formed by reaction after typing of said coated and said encapsulated coated sheets, then retyping the correct indicia on said original sheet and thereafter removing said image transfer sheet, said coating of said first opaquing sheet including a base coat and a top coat, said first opaquing sheet having a shield between said base coat and said substrate, said tacky surface including aluminum stearate and ethylcellulose, said image transfer sheet comprising coating of a pigment, a binder and a plasticizer.

2. A method according to claim **1**, wherein said base coat includes 3 parts by weight ½ sec SS nitrocellulose, 23 parts by weight titanium dioxide, 30 parts by weight ethyl acetate, 20 parts by weight ethyl alcohol, 20 parts by weight mineral spirits and 4 parts by weight bentonite.

3. A method according to claim **1**, wherein said top coat comprises about 35 to 65 parts by weight toluol, about 1 to 5 parts by weight ethyl cellulose plus fluorocarbon and about 25 to 45 parts by weight aluminum stearate.

* * * * *