

- [54] **COLOR CODED DIGIT IDENTIFYING
VALUE RIBBON FOR DOCUMENT FRAUD
PREVENTION**
- [75] Inventor: **Carmen T. Reitano**, Methuen, Mass.
- [73] Assignee: **Burroughs Corporation**, Detroit,
Mich.
- [22] Filed: **Nov. 3, 1972**
- [21] Appl. No.: **303,382**
- [52] U.S. Cl. **197/172, 197/151, 101/19,
283/8 R, 283/9 R**
- [51] Int. Cl. **B41j 31/02**
- [58] Field of Search **197/1 R, 151, 172; 101/19,
101/20, 96 R, 96 RC, 97, 336; 283/8 R, 8 A,
8 B, 9 R, 9 A**

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Primary Examiner—Ernest T. Wright, Jr.
Attorney, Agent, or Firm—Paul W. Fish; Patrick D.
Ward; Edward G. Fiorito

[57] **ABSTRACT**

The present disclosure has to do with prevention of the fraudulent alteration of negotiable instrument amounts and particularly the alteration of negotiable check amounts by the so-called "cut and paste" method wherein the digit value amount or amounts may be cut from one check and inserted into a previously provided cut out in another check so as to "raise" the amount of the latter. The invention contemplates the utilization of a multicolor ribbon in conjunction with a so-called free-floating prefix to designate the origin of this item. Each of the digits of the amount, e.g. thousands, hundreds, tens, units, and cents is coded a separate, distinguishable color. Each color is different for each digit with the code preselected by the issuing entity. A check, for example, issued by the Home Federal Savings Bank for the sum of \$1,234.56 would be coded as follows: the floating prefix Home Federal (black), the one (for 1,000) red, the two (for 200) black, the three (for thirty) orange, the four (for four dollars) blue, the "and" grey, the "56" green, and the "cts" (cents designation) brown. Alteration by cutting and pasting of the amount digits to fraudulently raise the amount is immediately, visually recognizable without the aid of machine hardware due to misplaced colors. Fraud, being thus at once apparent, payment of the amount of the item can be immediately stopped or checked.

2 Claims, 24 Drawing Figures

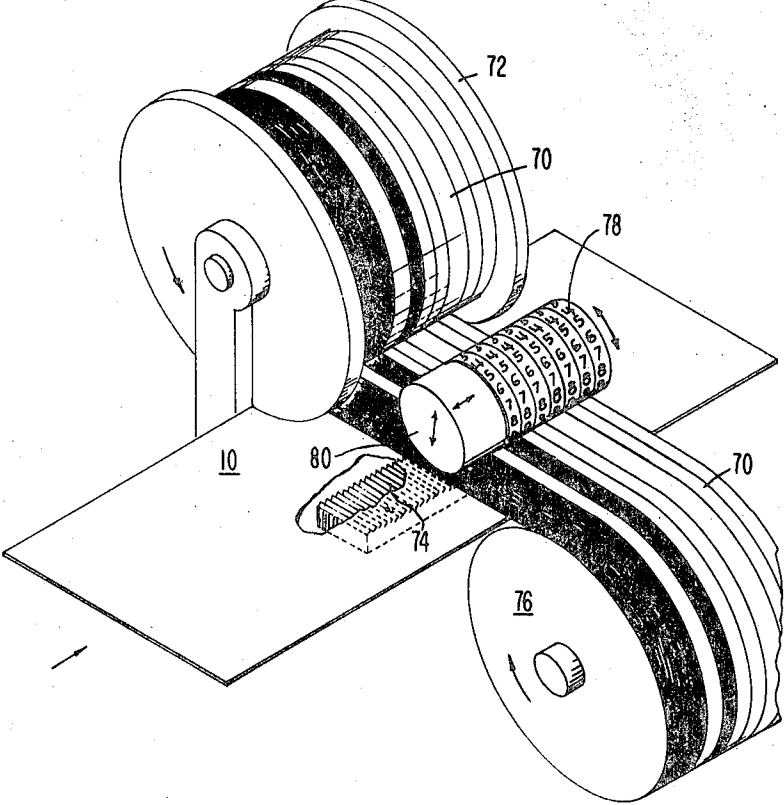


FIG. 1.

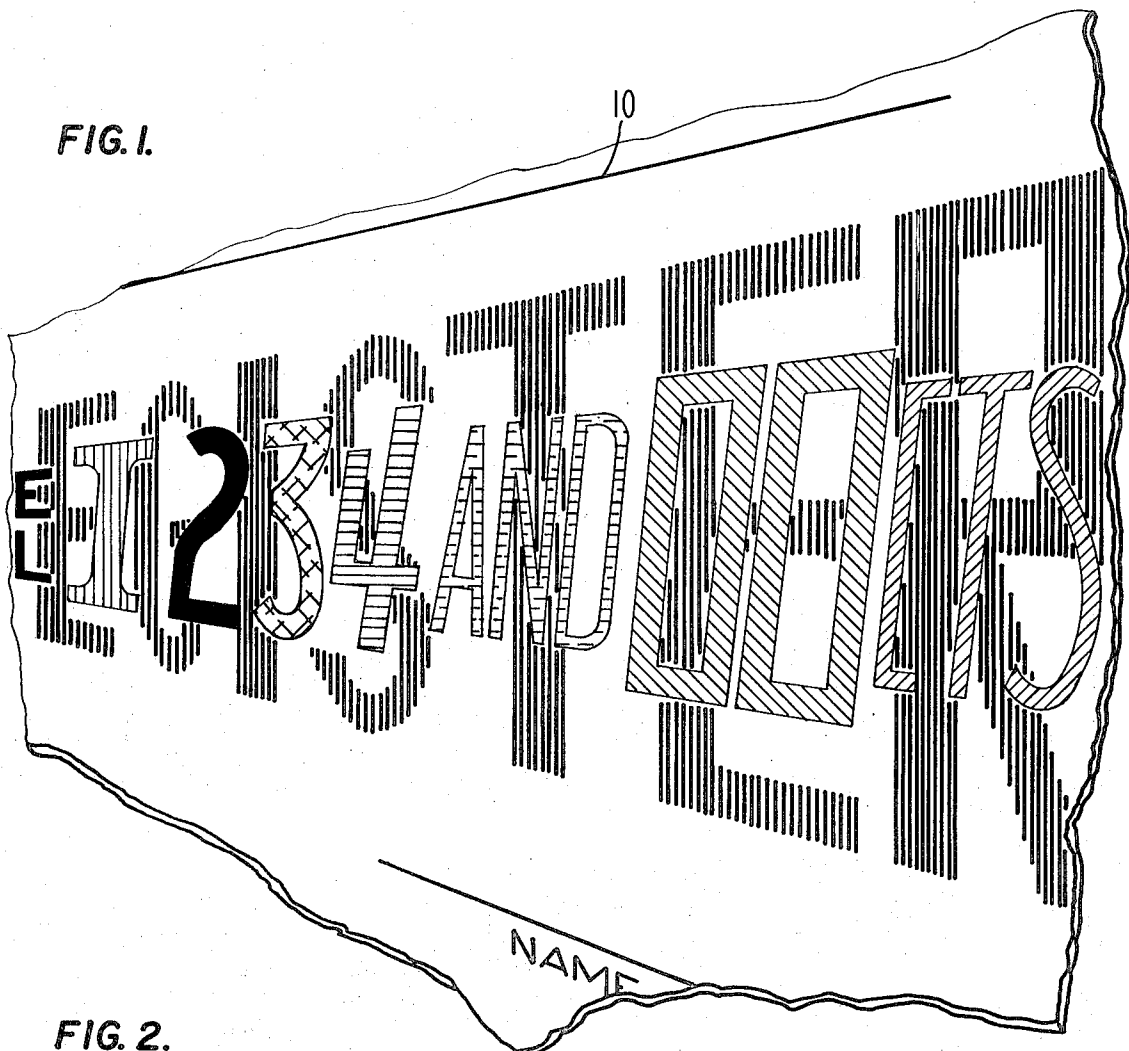


FIG. 2.

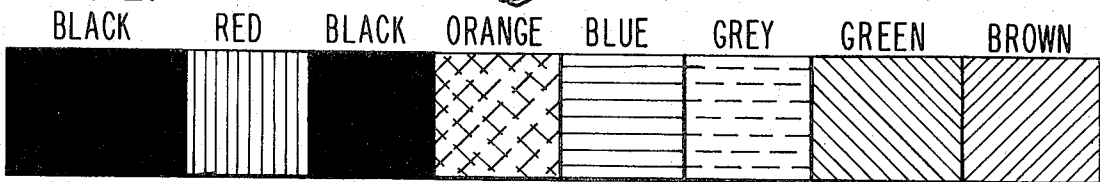
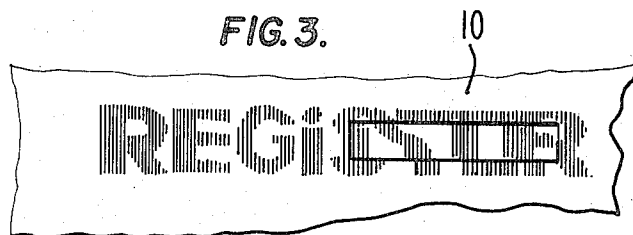
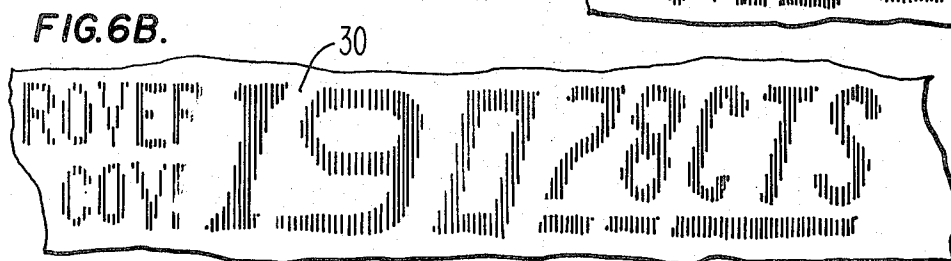
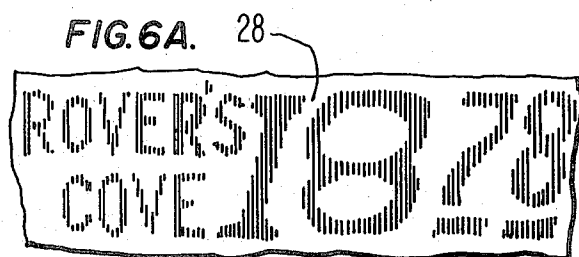
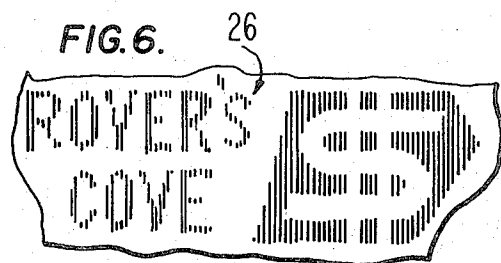
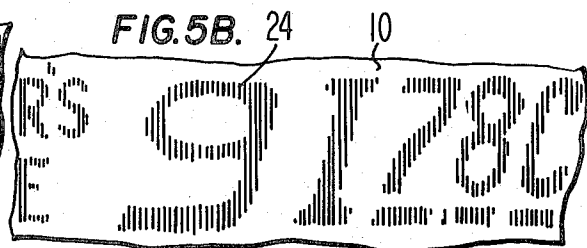
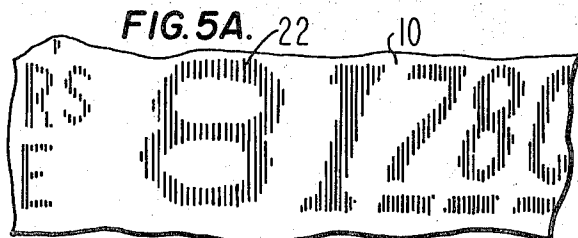
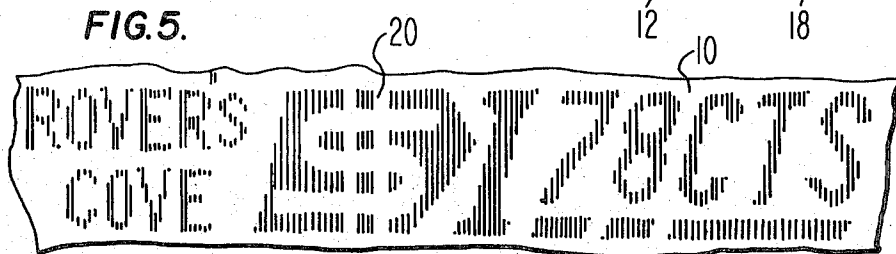
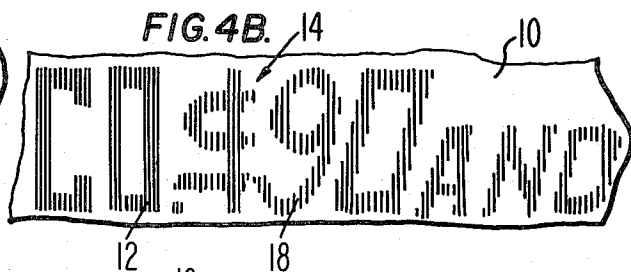
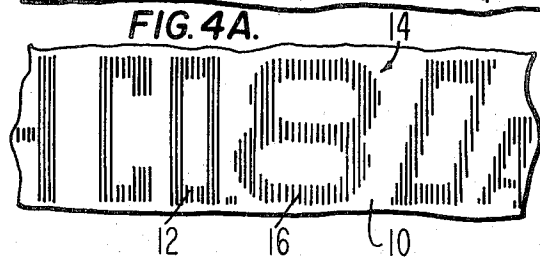
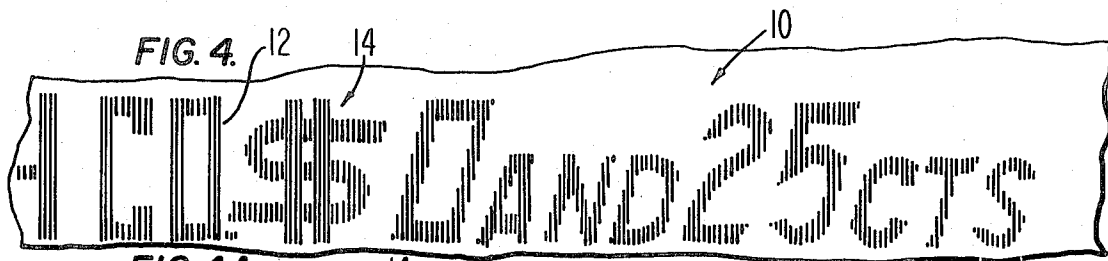


FIG. 3.





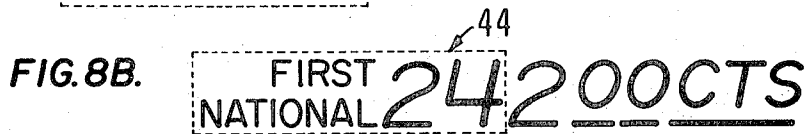
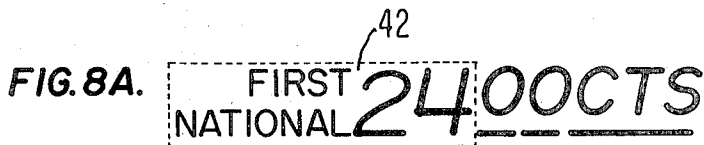
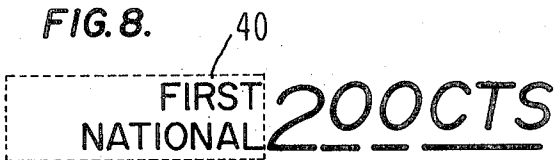
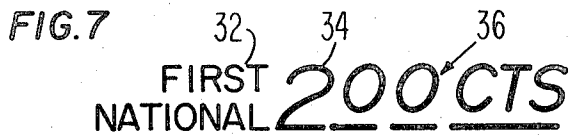


FIG. 9.

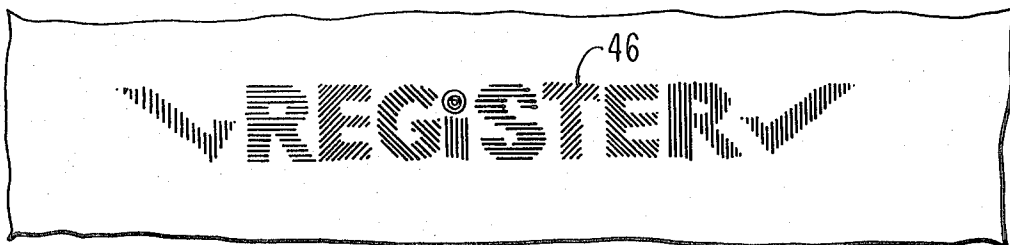
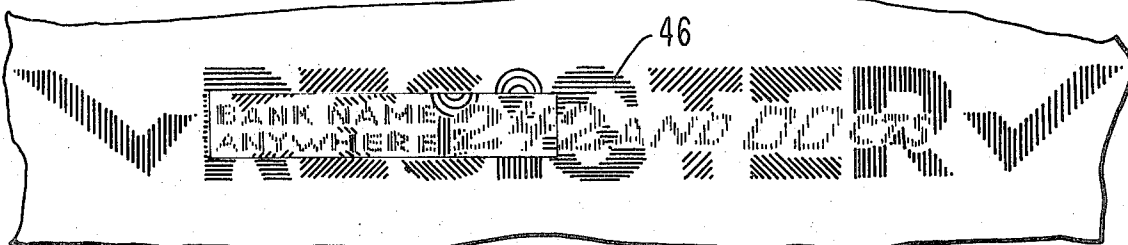


FIG. 9A.



FIG. 10.



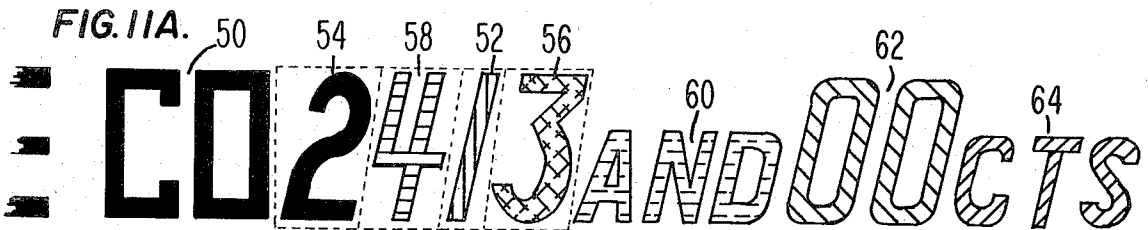
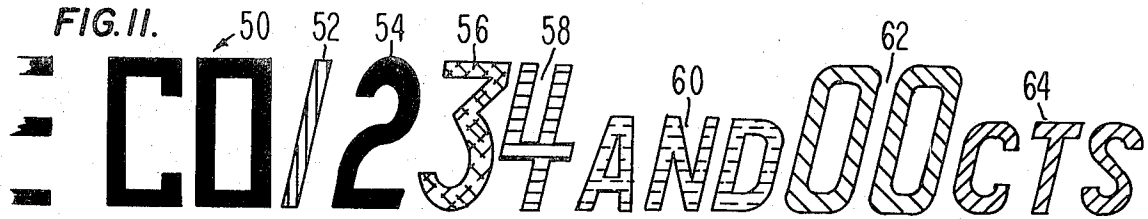


FIG. 12.

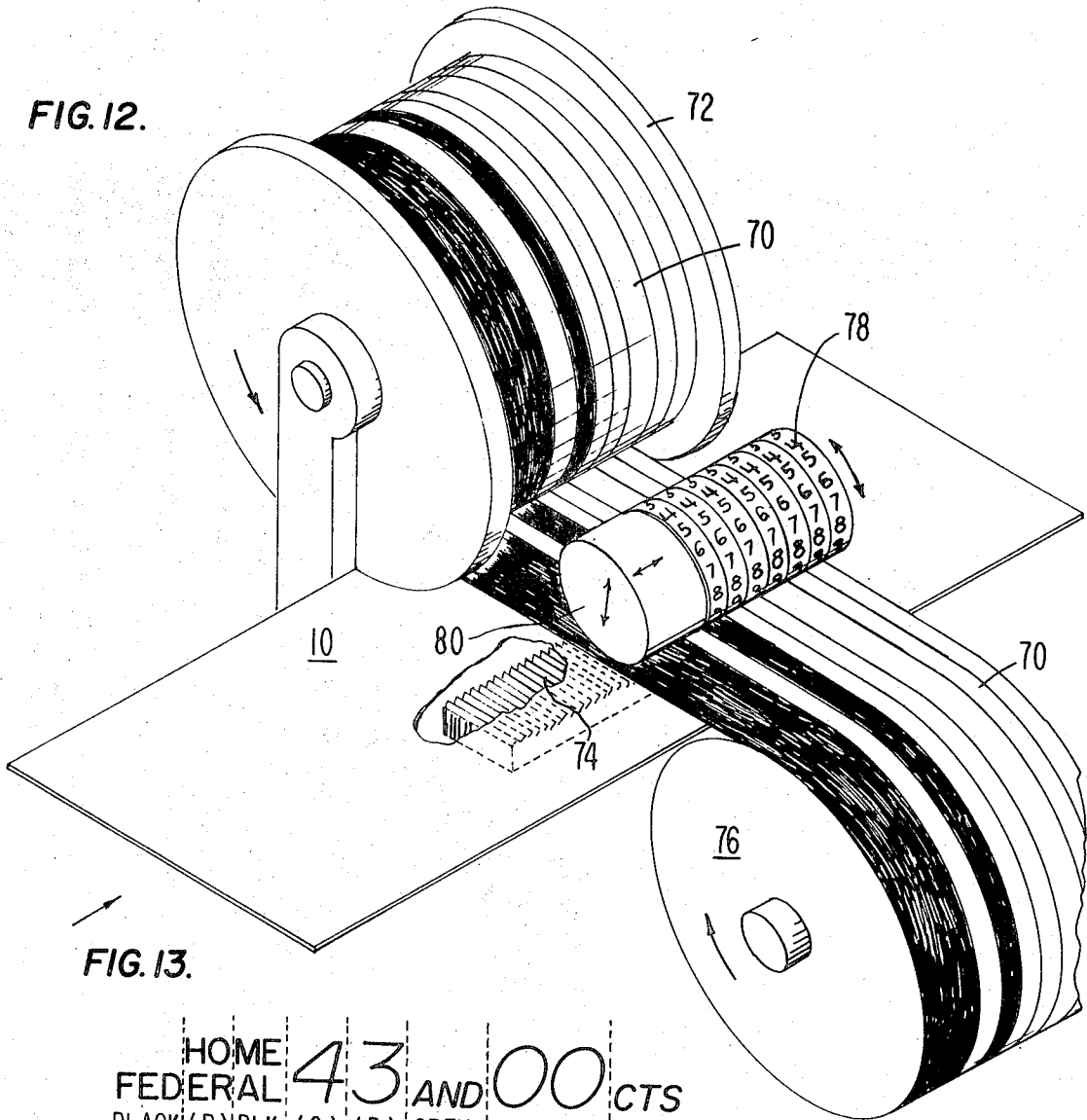


FIG. 13.

HOME	43	AND	00	CTS
BLACK (R) BLK	(O) (B)	GREY	GREEN	BROWN

COLOR CODED DIGIT IDENTIFYING VALUE RIBBON FOR DOCUMENT FRAUD PREVENTION

BACKGROUND OF THE INVENTION

A search of the prior art has developed the following patents:

U.S. 1,153,832	S. T. Thorson
U.S. 1,372,323	C. G. Tiefel
U.S. 1,909,141	A. H. Woodward et al.
U.S. 1,929,828	J. Schlitz
U.S. 2,029,646	H. C. Welter
U.S. 2,733,656	A. Gottsching
U.S. 2,826,140	H. Jagger
U.S. 3,481,446	G. Burkhardt et al.
U.S. 3,578,136	R. H. Postal
British 780	G. Ross
British 440,835	A. Gilbert

The prior art is replete with a variety of techniques and devices attempting to prevent document fraud by alteration of the amount and/or signature. Some of these patents rely on mechanical means for perforating the amount into the body of the document, others rely on watermarked amounts which vary in color, still others employ electronic or electromechanical hardware operative in conjunction with the "suspect" document to detect fraudulent alteration thereof. None of the known prior art, either singly or in combination, teach the color coded digit identifying value ribbon of the present invention. In those known instances where different colors are used, they are either black and red to distinguish between dollars and cents, for example, or they are colors watermarked into the document to identify the value of the document.

The present invention contemplates the employment of a portable, visible, legible and universally understood multicolor coding wherein a simple change of ribbons by the issuing entity can suffice to alter the code should the occasion arise.

SUMMARY OF THE INVENTION

The present invention as described herein utilizes ribbon of conventional dimensions which may be employed with a known checkwriter. The novel ribbon is provided with a prearranged color coding such that each of the digits, units, tens, hundreds, thousands, ten thousands, etc. will be printed in a different color. The ribbon is or may be employed with a type of checkwriter such as the Burroughs T8859 or T8959 which shreds the amount into the body of the document causing the ink of each color to bleed into the fibre of the paper of the item and be visible from the reverse side of the document.

The use of the color coded ribbon of the present invention enables the bank teller or other similar type personnel handling documents such as checks and negotiable bills bearing dollar amounts thereon to quickly and easily discover any alteration of amount simply by looking at the item and comparing the colors of the digits with the predesignated color sequence code.

Any alteration such, for example, as by cutting out one or more digits and either superimposing and overprinting the amount or pasting the cut digits into the "cutout" item area of a second, low value item, thereby to raise the value of that item, is quickly and efficiently detected by eye since the precoded color sequence is

now broken and the colors are out of order with respect to the color code.

It is an important object, therefore, of the present invention to provide a portable, flexible, legible and universally, visually understood color coding identifying the digit values of any negotiable document.

It is also an object of the invention to provide a multicolor ribbon, the colors of which identify a predesignated code signifying individual digits of a multidigit amount as used in a negotiable document.

A still further object of the invention is to automatically vary the color coding of a floating prefix visually identifiable and located to the left of the most significant digit in the amount on the document.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is an isometric view of the amount carrying portion of a document employing the present invention greatly enlarged for viewing ease;

FIG. 2 is a visual representation of the color coding arrangement employed in the invention;

FIG. 3 is a greatly enlarged view of an amount portion of a document illustrating the mismatch caused by fraudulent alteration;

FIGS. 4, 4A, and 4B illustrate in greatly enlarged detail a portion of an item amount area illustrating the alteration of the item amount by erasure;

FIGS. 5, 5A, and 5B illustrate in greatly enlarged detail the manner in which an additional digit may be inserted ahead of the previous most significant digit to fraudulently alter and increase the amount of an item;

FIGS. 6, 6A, and 6B illustrate in enlarged detail a different attempt to fraudulently raise the value of the item by altering the prefix as well as the dollar sign;

FIGS. 7, 7A, 8, 8A, and 8B illustrate the composite technique wherein the items of relatively low value are cut out and the parts reconfigured to make one item of higher value as illustrated in FIG. 8B;

FIGS. 9, 9A, and 10 represent the obverse and reverse portions of an item greatly enlarged illustrating a method of preventing check alteration by the composite method;

FIGS. 11 and 11A illustrate the technique of the present invention wherein the alteration of a visual color coded identifying value is made immediately, visually apparent;

FIG. 12 is an isometric view of the color coded ribbon employed in a checkwriting device to produce a coded amount on the item in accordance with the teaching of the present invention; and

FIG. 13 is an enlarged schematic view of a color coded check in accordance with the present invention.

PREFERRED EMBODIMENT OF THE INVENTION

The present invention has application generally to negotiable documents which bear on their face money amounts expressed in multiple digits such, for example, as the ordinary negotiable business or payroll check. These items are increasingly involved in fraudulent alteration. Another negotiable document to which this invention has application is the money order or draft issued by various banks. The latter is available in many, if not all, larger banks and can be "kited" with relative ease and impunity. The present invention makes such alteration practically impossible to escape detection since the color code technique requires that the color sequence must match the color coding perfectly. If

there is any mismatch, the fraudulent alteration is immediately, visibly detectable, subjecting the item to nonpayment as or when presented.

Referring to the figures, which will be discussed in sequence, it is noted that three prime areas exist with respect to check fraud detection. These include the prefix, the check paper, and the ribbon.

The mechanical structure (checkwriter) embodying the present invention is shown and described in one or more patents of Burroughs Corporation, representative of which is U.S. Pat. No. 2,092,852 to W. B. Payne, entitled, "Checkwriting Machine".

It is desirable to print a dollar sign (\$) or other monetary designation, with or without other characters or words, immediately to the left of the highest denomination figure to be printed, in order that there may be no place left in which other figures may be inserted in an attempt to raise the value of the check or draft. Since the number of digits to be printed may vary considerably, it is obvious that the matter to be printed immediately to the left of the highest digit cannot be printed from a fixed or immovable type, because it is to be printed at different times in different positions, depending on the number of denominations or digits which are to be printed. Hence the so-called prefix is printed in the present case from a movable or "floating" type which is arranged to be shifted longitudinally along the printing line to a position next to the highest denomination of digit to be printed.

The prefix character and associated mechanism are best shown in FIGS. 3, 6, 9, 18, and 19 of Pat. No. 2,092,852.

After an amount has been set up on the keys of the checkwriter and when the machine is being operated to print the amount, one of the earliest things that takes place, soon after the type disks or wheels begin to move, is that the right hand end of the prefix character comes into contact with the left hand surface of the type segment of the highest denomination which has been moved from the "blank" position to print any digit. Further rightward movement of the prefix character is stopped by this contact with the highest denomination type segment, and the end of the prefix character then presses lightly against the side of the type segment, during the remainder of the setting movement of the type segment if this segment has not already completed its setting movement before the prefix character contacts with it. In those denominations higher than the highest significant digit to be printed, the prefix character moves, of course, through open spaces or notches in front of the type segments. It is thus seen that the letters, figures, or signs which are formed on the prefix type character will be printed immediately adjacent the highest denomination digit to be printed, irrespective of the number of digits which are to be printed.

The type prefix character may carry any suitable designation or wordings, "Home Federal", "Exactly \$", etc. The right hand edge of the character, when in its normal position on the carrier, is flush with the right hand edge of the carrier, so that both the carrier and the type character come into contact with the left hand surface of the type segment at the same instant, and there is no tendency, by reason of inertia, to displace the type character along the carrier.

Since the floating prefix, so-called, is that portion of the die member which is used with the standard checkwriter to shred the name of the dispersing bank into the

fibers of the check paper, if the prefix is also printed, then the ink bleeds through the shredded area to the back of the check. Many old style checkwriters had prefix dies which included a dollar sign as part of their design. This old style dollar sign did not have a vertical bar which passed completely through the S. This made the alteration of the dollar sign to an eight or nine relatively easy.

FIG. 4 illustrates an enlarged portion of a document, e.g., check 10, with a prefix 12 and a dollar sign 14 drawn as an S with two vertical bars therethrough. FIG. 4A shows how alteration of this S dollar sign 14 by erasure permits the same to be changed to an eight (8) 16. This makes the amount originally drawn as zero dollars now \$80. FIG. 4B illustrates the alteration of the same dollar sign 14 so as to squeeze a numeral nine (9) 18 between the original dollar sign 14 and the original zero to make the amount now read \$90.

In order to avoid the problems created by this alterable dollar sign prefix 14, the prefix was changed and the new dollar sign 20 was printed in reverse fashion as seen in FIG. 5. However, as seen in FIGS. 5A and 5B, this was really no deterrent to check fraud alteration because by means of erasure the dollar sign 20 again could be altered to either an 8 22 or a 9 24, as shown respectively in FIGS. 5A and 5B.

Many of the known prefixes employ what is known as symmetrical alignment of text in the prefix, FIG. 6. Such symmetrical layouts of text 26 made it possible by means of mechanical erasure to provide space in the amount area for the insertion of a fraudulently introduced figure or digit 18 designated as 28 in FIG. 6A, or the fraudulently introduced figure or digits 19 designated as 30 in FIG. 6B; in both instances the amount is seen to be easily altered by virtue of the symmetry of the prefix arrangement.

One solution to the foregoing problem, as illustrated in FIGS. 7 and 7A, was to remove the dollar sign completely from the prefix and place the text 32 in position so that all of the letters thereof would be flush to the first numeral 34 of the amount figure 36. In addition to the foregoing, the die of the character was modified to print the notice 38 "Not Valid Over Ten Dollars" on the face of the check.

Unfortunately, the foregoing techniques, while for the most part helpful and certainly aimed in the right direction to point up fraudulent alteration of amounts on checks did not solve a very difficult and increasingly noted problem of the so-called "composite" technique. A composite, FIGS. 8, 8A, and 8B, is an altered check manufactured from two checks of lesser amounts. As an example, a person desiring to fraudulently alter the amount of a check would purchase two checks, one for \$2 and one for \$24. Using an extremely sharp surgical-like die cutting device, a section of the check stock bearing the prefix designation First National 40 is cut from the \$2 check. Then the section 42 of the second check bearing the designation First National and numerals 24 is cut from the second check. Now, by carefully placing the First National 24 cut out 42 into the opening in the check vacated by the First National cut out 40, the "check kiter" has manufactured a bogus item 44 of \$242 for an investment of \$26.

The paper problem herein above referred to upon investigation reveals that existing check safety paper, although in general effective against mechanical or chemical alteration, is apparently incapable of alerting

victims to the fact that a composite has been employed fraudulently to obtain money. A protective screen device comprised of a nonrepeating design appeared capable of offsetting this abuse or at least making the fraud immediately apparent. Such a design was developed using the word "register" 46 as seen in FIG. 9. The front side of the check is shown in FIG. 9 while FIG. 9A illustrates the word register 46a on the reverse side of the check. This technique is disclosed and claimed in copending U.S. Patent application Ser. No. 127,583, filed Mar. 24, 1971, entitled "An amount protected negotiable instrument and method for protecting the Amount" by Carmen J. Reitano and assigned to the same assignee as the present invention.

FIG. 10 illustrates how the amount protective screen 46 alerts a potential victim, i.e. merchant, bank teller, etc. to the fact that a composite has been perpetrated. The misregistration produced by the attempt at fraudulent composite alteration of the check amount as it would be viewed by the holder of the check is clearly apparent. FIG. 3 illustrates the misregistration as seen from the reverse side of the check. In each instance, the integrity of the letters comprising the word "register" have been destroyed.

As noted herein before, although many prior art techniques are known and available for preventing fraudulent alteration of document amounts, there was a general ineffectiveness on the part of any of these measures to prevent the fraud in the first instance or to make the victim aware of the fraudulent alteration of a negotiable document after the fact in a simple, unencumbered manner without recourse to complex systems and/or sophisticated hardware. The inventive technique described in the subject application provides a positive means of identifying the value of each digit as originally placed on the document simply, easily, and visually by looking at the document and comparing it to a preset standard color digit identifying code.

The two examples of FIGS. 11 and 11A illustrate quite clearly what is meant by the term color coded digit value identifying ribbon or CCDVIR. Unfortunately, the black and white of the printing does little to make a visual comparison as startling as the actual colors would be. However, the coded amount area on the check as seen in FIG. 11 with reference to the chart of FIG. 2 includes the prefix designation 50 ending in CO in black, the one digit 52 is red, the two digit 54 is black, the three digit 56 is orange, the four digit 58 is blue, the letters "and" 60 are grey, the digits "00" 62 are green, while the "cts" 64 designation is brown. Now, if it be assumed that the bank has predesignated this particular color code sequence for use by its patrons, then when the check fraud artist attempts fraudulently to raise the amount of the check which originally was passed into commerce in the amount of \$1,234.00 to the amount of \$2,413.00, it becomes quickly, easily, readily apparent from looking at the color digit "2413" in FIG. 11A that these digits are the wrong color for the digit sequence relative to the original check amount illustrated in FIG. 11.

As seen in FIG. 12, the color coded digit value identifying ribbon 70 with its multicolored sections is adapted to be used with the available checkwriters known to exist today. The ribbon 70 is passed from a supply reel 72 over the serrated platen 74 of the machine and between the platen 74 and the check 10 to a take up reel 76. The digit identifying number disks or

wheels 78 which place the actual digit values on the check 10 through the color coded ribbon 70 are arranged adjacent the floating prefix designating element or die 80 above the check 10. As described in detail in the Payne Pat. No. 2,092,852, earlier referred to herein, the floating prefix designating element or die 80 is laterally movable from side to side of the machine and thus prints out on the item in a color or colors varying with its location next to the most significant digit.

When it is desired to shred in the digit value identifying color coding, the digit wheels 78 and prefix die 80 are pressed against the ribbon 70 and against the check 10 above the serrated platen 74 therebeneath, causing the colors to be printed into the material of the check 10 so that absolute and positive control of the amounts is produced, completely thwarting and making obvious any attempt to fraudulently alter the amount of the check 10.

As seen most clearly in FIG. 13 as the value decreases in amount, the floating prefix designating element or die 80 adjusts its position adjacent the most significant digit, thus the floating prefix designating element or die 80 further enables the holder-viewer of the altered check 10 to be visually aware of the fraud by noting the color sequence mismatch.

The everchanging color of the floating prefix provides an additional and significant safeguard against illegal alteration of item amount. With the color coding as set forth hereinabove then the following would be true.

- a. A prefix ending in green could never appear on a check over \$9.99.
- b. A prefix ending in orange could never appear on a check over \$99.99.
- c. A prefix ending in brown could never appear on a check over \$999.99.

Adoption of the color coding ribbon 70 is simply effected by providing the teller's station with a color key sample check. Any variations from the sequence would signal a fraudulent change or alteration of amount.

What is claimed is:

1. Color coded digit value identifying means for making a multicolor impression on a negotiable document comprising:

- a multicolor ribbon including distinguishable separate colored areas of red, black, orange, blue, gray, green and brown extending from end to end thereof and a separate contiguous black area for receiving an impression from a prefix designating element and forming a color code digit value identifying means from the most to the least significant digit position,

means mounting said ribbon for indexible presentation to an impression receiving area,

- a plurality of digit impression producing elements,
- a prefix designating element selectively movable so as to be positioned adjacent to the digit of largest denomination,

- a take up member for said ribbon adjacent said impression receiving area, and

said ribbon mounting and indexing means and said movable prefix designating element being movable to position a selected color area of the ribbon adjacent to said prefix designating element at the impression receiving area responsive to the movement of the digit impression producing elements to the selected denominational order position to

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cause the image of the digits of the amount and said designating element to be printed and shredded into a negotiable document so that the code of the colors from least to most significant digit corresponds to the predesignated positional orientation of colors of the ribbon whereby alteration of the amount or any portion thereof is immediately visibly apparent.

2. Color coded digit value identifying means for making a multicolor impression on a negotiable document comprising:

a multicolor ribbon including distinguishable separate colored areas extending from end to end thereof and a separate contiguous area for receiving an impression from a prefix designating element, said ribbon being arranged so that each color red, black, orange, blue, gray, green and brown represents a digit of different denomination increasing in value from brown to red so that the color of the impression from said ribbon is caused to change as the amount increases in value with the prefix designating element color being likewise altered according to the change in amount, means mounting said ribbon for indexible presenta-

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tion to an impression receiving area, a plurality of digit impression producing elements, a prefix designating element selectively movable so as to be positioned adjacent to the digit of largest denomination effective to produce a color, contrasting to that of the highest value digit, a take up member for said ribbon adjacent said impression receiving area, and said ribbon mounting and indexing means and said movable prefix designating element being movable to a selected color area of the ribbon adjacent to said prefix designating element at the impression receiving area responsive to the movement of the digit impression producing elements to the selected denominational order position to shred and print the image of the digits of the amount and said designating element into a negotiable document so that the code of the colors from least to most significant digit corresponds to the predesignated positional orientation of colors of the ribbon whereby alteration of the amount or any portion thereof is immediately visibly apparent.

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