

Oct. 14, 1941.

C. E. HARRINGTON

2,258,891

SYSTEM OF NOTATION

Filed Feb. 12, 1937

2 Sheets-Sheet 1

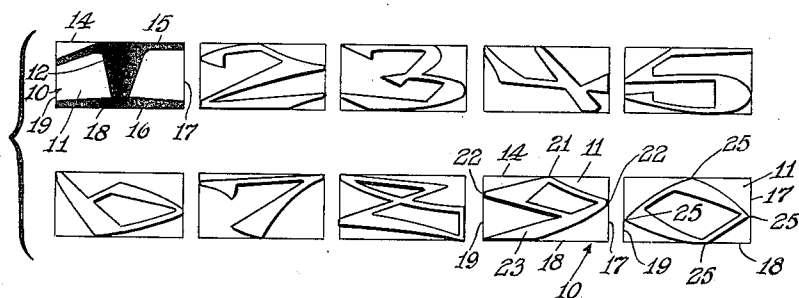


Fig. 1.

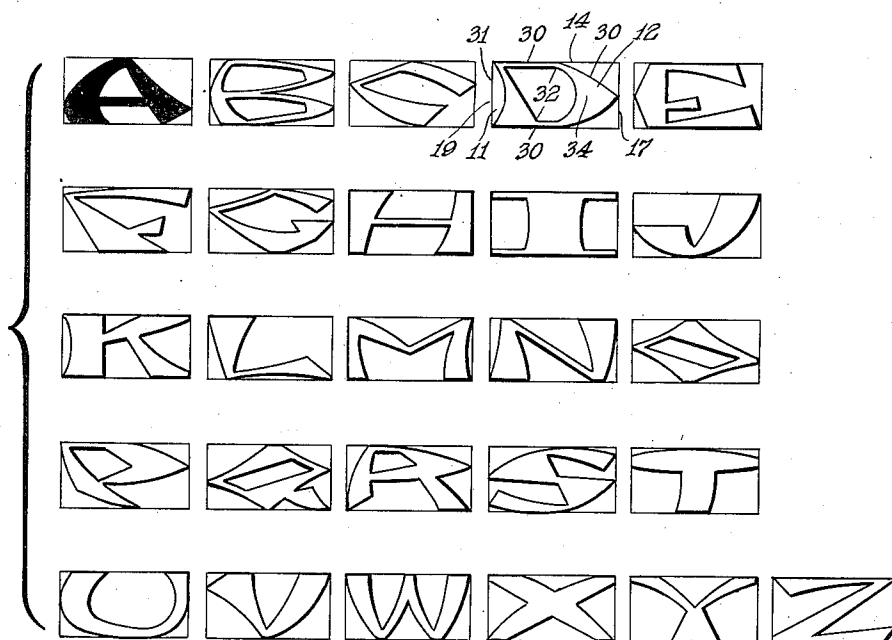


Fig. 2.

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2 Sheets-Sheet 2

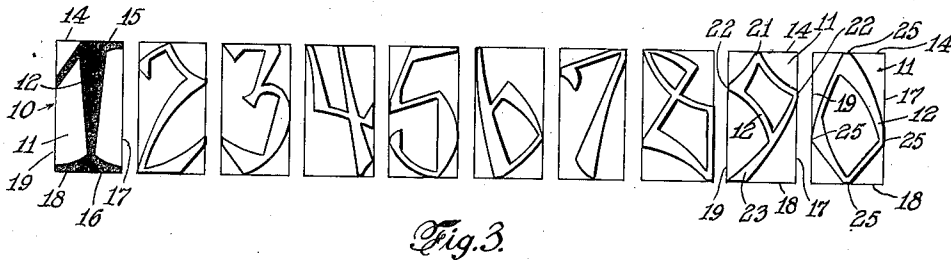


Fig. 3.

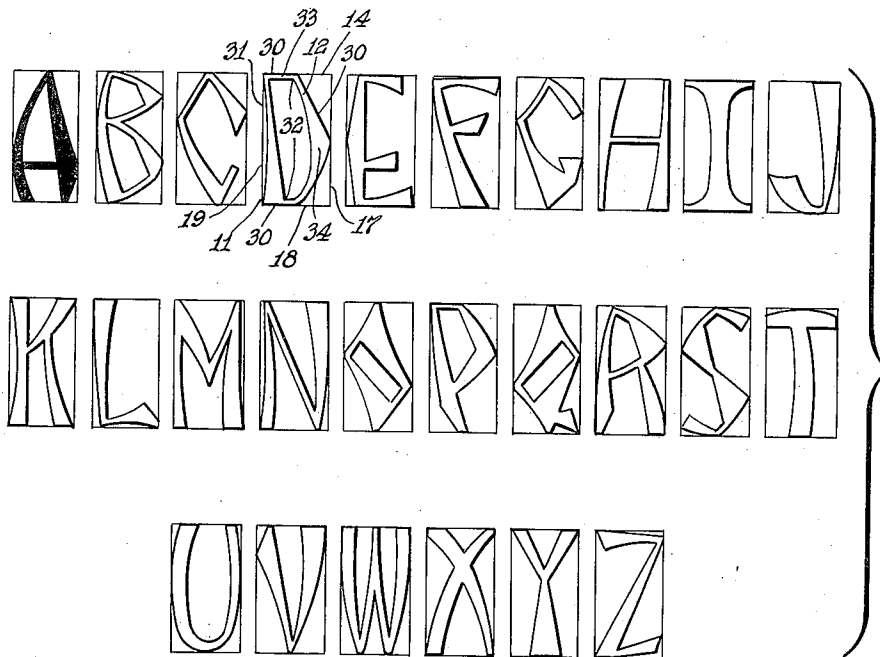


Fig. 4.

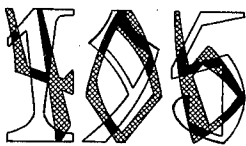


Fig. 7.

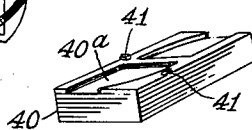


Fig. 5.



Fig. 8.



Fig. 6.

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UNITED STATES PATENT OFFICE

2,258,891

SYSTEM OF NOTATION

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Application February 12, 1937, Serial No. 125,440

4 Claims. (Cl. 283—9)

My invention relates to improvements in methods and means for identifying or distinguishing the several articles of a series, and the same has for its object to provide a simple, efficient and reliable means which will prevent or, at least, minimize or render difficult the fraudulent alteration of such identifying or distinguishing means.

Further, said invention has for its object to provide, a simple and efficient system of notation embodying numerical or alphabetical symbols or characters, which are of such form, shape and size as will render it substantially impossible to alter any unit or units of a composite number or device without revealing the fact that the original composite number has been altered or otherwise tampered with.

Further, said invention has for its object to provide a system of notation in which each unit of a complete set of symbols or characters is of uniform height and width relative to the remaining units of the set.

Further, said invention has for its object to provide a system of notation in which each individual symbol or character is contained within or circumscribable by a rectangular perimeter or outline, and in which each symbol or character has points touching every side of said perimeter or outline at points differing from those occupied by all the remaining symbols or characters of a set, and in which the angles of the several parts of each symbol or character differ with respect to said perimeter or outline from all of the remaining symbols or characters of a complete set.

Further, said invention has for its object to provide a system of notation in which the several symbols or characters are of such shape and form that when any one symbol or character is superimposed upon any one of the remaining symbols or characters of the complete set for the purposes of forgery or other unauthorized alteration it will be impossible to do so without necessitating the erasing or removal of an extensive area or portion of the original symbol or character, and the adding of an extensive area or portion to the superimposed symbol or character, and thus render it extremely difficult, if not impossible, to make any changes or alterations without readily disclosing that an alteration has been made.

Further, said invention has for its object to provide a set of dies or printing elements possessing the characteristics above set forth, and in which each symbol or character of the set has

one or more projections on its face which are located differently upon each symbol or character of the set, and which will serve to puncture or break the surface of the paper or material upon which such symbol or character is printed or otherwise marked so that a small quantity of the ink or coloring material used for the printing or marking will enter such perforation or break and thereby color the body of the paper or material below the surface thereof.

Other objects will in part be obvious and in part be pointed out hereinafter.

To the attainment of the aforesaid objects and ends my invention consists in the novel features of construction, and in the combination, connection and arrangement of parts hereinafter more fully described and then pointed out in the claims.

In the accompanying drawings—

Figure 1 is a face view illustrating one set of numerals constructed according to, and embodying my said invention;

Fig. 2 is a face view illustrating a set of letters or alphabet embodying my said invention;

Fig. 3 is a similar view illustrating a modified form of numerals;

Fig. 4 is a similar view illustrating a modified form of letters;

Fig. 5 is a detail perspective view showing a die or printing element embodying a modified form of numeral or letter;

Fig. 6 is an enlarged detail section of a piece of paper which has been acted upon by the die or printing element shown at Fig. 5, and

Figs. 7 and 8 are enlarged face views of a series of numerals made according to my invention, with other numerals of the same set superimposed thereon to show the lack of coincidence which renders difficult, if not impossible, to effect any alteration which would not be noticeable.

In the drawings, referring particularly to Figs. 1 and 3 is represented the field or head of a type element or die for printing sets of numerals, and Figs. 2 and 4 illustrate corresponding parts of type elements or dies for producing sets of alphabetical characters constructed and arranged according to my invention.

Each type element or die is formed of metal or other suitable material, and consists of a body portion 10, which is preferably formed of rectangular outline in cross-section, and has a rectangular head or field 11 of corresponding outline. Upon the heads or fields 11 are disposed the symbols or characters 12, each of which has one of its

elements or parts extending to one of the sides of the rectangular outline or contour of the head or field 11. Thus, for example, in Fig. 1, the upper end of the numeral "1" touches the upper member 14 of the outline; the right hand ends of the top and bottom portions 15, 16 of said numeral touch the right hand portion of the outline 17; the lower edge of the bottom portion of the numeral touches the lower member 18 of the outline, and the left hand ends of the inclined part of the top 15 and the bottom portions 16 touch the left-hand member 19 of the outline. The numerals "9" and "0," are somewhat similar in shape. The numeral "9" has its upper and right and left-hand ends terminating substantially in points 21, 22 which respectively touch the top and side members 14, 19 and 17 of the outline, and its lower end 23 touching the bottom and left hand edges 18, 19, respectively, of the outline. The numeral "0" has four angular corners or points each of which touches one of the adjacent or contiguous members 14, 17, 18, 19 of the outline at points substantially intermediate the ends of each member or side of the outline, which said corners 25 are wholly out of register with the corners or points of the numeral "9," so that when one of said numerals is superimposed upon the other the greater portions thereof will be out of register or coincidence.

Each letter and numeral is formed in part of straight lines 30, and in part of curved lines 31 which are united at their contiguous ends by angles 32, the radius and angles of which are not repeated in any of the remaining letters or numerals of the sets, see for example, the numeral "3" in Figs. 1 and 3, and the letter "D" in Figs. 2 and 4. The several letters and numerals have vertical and transverse dimensions extending to and touching the perimeter or contour of the field of the head 11 at all four of its sides.

The several characters are preferably each composed of thin lines or areas 33, and relatively heavy lines or shaded areas 34. It will, of course, be understood that the said thin and heavy lines or areas need not necessarily be formed of solid lines or areas but may each consist of a plurality or series of parallel lines, or of cross-hatched areas, or of other forms.

The total surface area of each of the several characters may be equal, though it will be understood that such areas may, if desired, be different.

It will be noted that the several characters shown in Figs. 1 and 2, while involving the same essential features of construction as those shown in Figs. 3 and 4, differ from those shown in said Figs. 3 and 4 in that they have the greater or longer dimension disposed horizontally, while those shown in Figs. 3 and 4 have their greater dimension disposed vertically.

Referring now to Fig. 5, 40 represents a type or die upon the head 40^a of which is formed a character, in the present instance, for the purposes of illustration, the said character consists of the letter "H" and is formed in accordance with the invention. The said letter "H" is provided upon each of its vertical members with a wedge shaped projection 41 which extends a short distance above the plane of the surface of the letter. The said projections are located at different points with respect to the vertical members of the letter, and similar projections are arranged in different positions upon the remaining letters or numerals of the set so that the projections of any two characters, when said char-

acters are superimposed or overprinted, will be definitely out of register. When an impression or imprint is made from said type or die the projections 41 of the letter will cut through the calendered surface and into the relatively softer and looser intermediate or body portion of the sheet of paper 42 and thus form an indentation or pocket 43. While the indentation or cutting does not pass entirely through the paper, it will involve a rupturing or breaking of the upper calendered surface 44 thereof, and cause the ink or marking fluid used to be carried into the body or intermediate portion 45 of the paper and be absorbed by the intermediate portion thereof surrounding the rupture.

Referring to Figs. 7 and 8, which illustrate the practical impossibility of altering any one of the characters formed in accordance with this invention to another of the characters. The said figures illustrate, for example, the erasures and additions necessary to effect the change of the number "406" into "195" (Fig. 7), and of the number "640" into "519" (Fig. 8).

The number "406" ordinarily lends itself to alteration into "195" with maximum simplicity, inasmuch as ordinarily the numeral "4" may be readily changed to "1;" the "0" to "9," and the "6" to "5." If, however, the numerals are made in accordance with this invention, as shown in Fig. 7, a very large amount of erasure and addition is required to effect the changing of "406" into "195," and the same is true in the case of alteration of the number "640" into "519," as shown in Fig. 8.

In Figs. 7 and 8 the parts which have to be erased or removed to change the number "406" into "195" are indicated by the cross-hatched areas or portions. The parts which have to be added are shown by the areas or portions in outline, while the only portions of the numerals which may be retained in altering the number are the relatively small surfaces indicated by the solid areas or portions.

It will be observed that the characters, whether letters or numerals, made in accordance with this invention are so formed and laid out as to render alteration of one character into another practically impossible, since for such alteration a dominating part of any character must be erased, and the dominating portion of any other character added to effect the desired change. The very large amount of erasure necessary to effect alteration of one character into any other makes the labor necessary to change, for example, the serial number of a bond and its numerous coupons uneconomically great and, at the same time, very materially increases the probability of detection.

The formation and lay-out of the several characters, including letters and numerals, is such that the same do not suggest the formation and lay-out of any other character of a complete set. As a result any one attempting to alter any given series of characters, such as might form the serial number of, for example, a bond and its numerous coupons, would have no indication of the formation and lay-out of any of the characters other than those appearing in the true serial number of the instrument. As a consequence, one not having available a complete set of characters and numerals would be unable to make any unauthorized change from one character to another by reference or comparison with the remaining characters or numerals of the instru-

ment, and thus further increase the difficulty of effecting an alteration.

Where the form of type or die shown in Fig. 5 is used for the formation of, for example, a serial number, the difficulty of alteration is very largely increased. Thus, if erasure be attempted in connection with the letter "H" (Fig. 6) by chemical means, the fluid used will flow into the indentation or rupture 43 of the paper 42, and cause the ink therein to become absorbed by and diffused in the intermediate or body portion 45 of the paper, and while portions of the numerals or letters on the surface 44 of the paper may be removed, the ink absorbed and diffused in the body 45 of the paper cannot be removed and will always appear as a blot or smear thus indicating at a glance that the letter H has been altered. Further, since the projections 41 formed on each of the various characters or symbols are differently positioned in each of the remaining characters of the set, when any character or symbol is altered the indentation 43 formed in the course of the printing or impressing of the original character will be out of register with respect to the indentation of the original character or numeral, and hence will readily reveal the alteration.

Where a set of letters or numerals is designed with the areas thereof the same in each letter or character, the difficulty of effecting an alteration, without rendering the same readily apparent, will be still further increased, since it is wholly unlikely that anyone not familiar with the system of the invention will realize that such areas should correspond in the several letters or numerals of a set. The want of this knowledge will result in causing such a difference in appearance between the original and the altered letter or number that the same will be recognizable at a glance by one familiar with the system.

It will, of course, be understood that my system of notation may be applied to an article by any known method, such as marking, printing, or impressing the same with dies or otherwise, and that the same may be used upon paper and similar substances, as well as upon solid substances such as metals, compositions of materials, and other solid substances or materials.

Having thus described my said invention, what I claim and desire to secure by Letters Patent is:

1. An article bearing upon the material thereof a series of identifying marks composed of one or more units of a complete set of distinctive symbols or characters of substantially equal areas circumscribable by symmetrical outlines also enclosing equal areas, said symbols or characters so differing contrastingly from one another in formation and lay-out that, when any one symbol or character is superimposed upon any one of the others, the major portions of the superimposed symbols or characters lie out of coincidence with each other to render apparent in the material any obliteration or addition in an attempt at fraudulent alteration, and that each symbol or character touches its outline at a plurality of points in predetermined positions differing from the positions of the touching points of those of the remainder of the set, said symbols or characters, when aligned presenting a symmetrical appearance and being readily distinguishable from one another by a person having knowledge of the system upon comparison of the contrasted characteristic features of the formation and lay-out of one unit with those of contiguous units so

that a fraudulent alteration resulting in a unit deviating from true formation or lay-out may be more readily detected.

2. An article bearing upon the material thereof a series of identifying marks composed of one or more units of a complete set of distinctive symbols or characters circumscribable by symmetrical outlines of uniform overall width and height, said symbols or characters corresponding with each other in area and so differing contrastingly from one another in formation and lay-out that, when any one symbol or character is superimposed upon any one of the others, the major portions of the superimposed symbols or characters lie out of coincidence with each other to render apparent in the material any obliteration or addition in an attempt at fraudulent alteration, and that each symbol or character touches its outline at a plurality of points differing from those of the remainder of the set and is incapable of suggesting the formation and lay-out of any of the others because of the variations in the shapes, angles and areas of the various parts thereof, said symbols or characters, when aligned presenting a symmetrical appearance and being readily distinguishable from one another by a person having knowledge of the system upon comparison of the contrasted characteristic features of the formation and lay-out of one unit with those of contiguous units so that a fraudulent alteration resulting in a unit deviating from true formation or lay-out may be more readily detected.

3. An article bearing upon the material thereof a group of aligned identifying marks composed of one or more units of a complete set of distinctive symbols or characters of uniform overall width and height circumscribable by symmetrical outlines of corresponding area, said symbols or characters having predetermined formations and lay-outs differing contrastingly from one another so that when any one symbol or character is superimposed upon any one of the others, the major portions of the superimposed symbols or characters lie out of coincidence with each other to render any obliteration or addition in an attempt to fraudulent alteration more easily detectable by inspection of the material upon which the alteration is made, and said aligned units within said uniform outlines having the contrasted predetermined formations thereof of corresponding area to present a symmetrical appearance, and each being laid out to touch the outlines thereof at a plurality of points in predetermined positions differing contrastingly from the positions of the touching points of all of the other unit symbols or characters, and said aligned units being readily distinguishable from one another by a person having knowledge of the system upon comparison of the contrasted characteristic features of the formation and lay-out of one unit with those of contiguous units so that a fraudulent alteration resulting in a unit deviating from true formation or lay-out may be more readily detected.

4. An article bearing upon the material thereof a series of identifying marks composed of one or more units of a complete set of distinctive symbols or characters circumscribable by symmetrical outlines enclosing equal areas, said symbols or characters so differing contrastingly from one another in formation and lay-out that, when any one symbol or character is superimposed

upon any one of the others, the major portions of the superimposed symbols or characters lie out of coincidence with each other to render apparent in the material any obliteration or addition in an attempt at fraudulent alteration, and that each symbol or character touches its outline at a plurality of points in predetermined positions differing from the positions of the touching points of those of the remainder of the set, said symbols or characters, when aligned pre-

5 senting a symmetrical appearance and being readily distinguishable from one another by a person having knowledge of the system upon comparison of the contrasted characteristic features of the formation and lay-out of one unit with those of contiguous units so that a fraudulent alteration resulting in a unit deviating from true formation or lay-out may be more readily detected.

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