

1,390,027.

G. FABYAN,
MEANS FOR CLASSIFYING BIFORMED ALPHABET.
APPLICATION FILED MAY 10, 1917.

Patented Sept. 6, 1921.

2 SHEETS—SHEET 1.

Fig. 1



Fig. 2

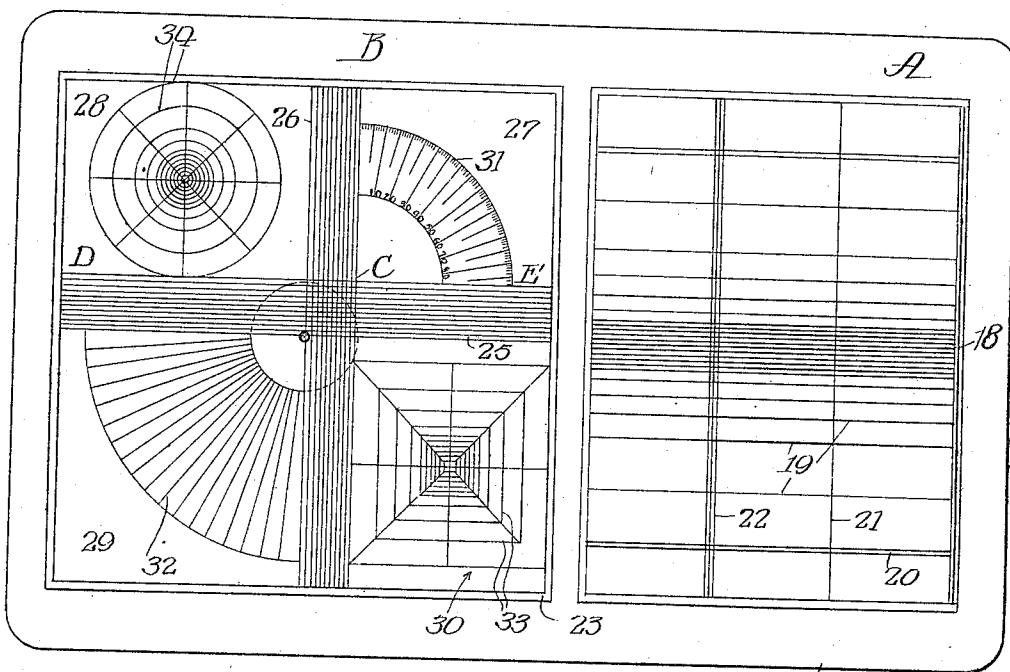
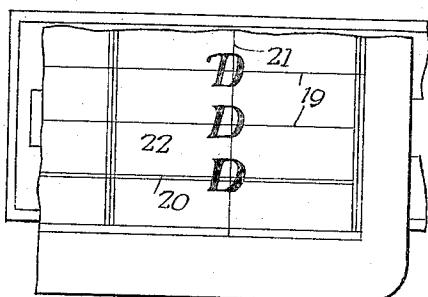


Fig. 5



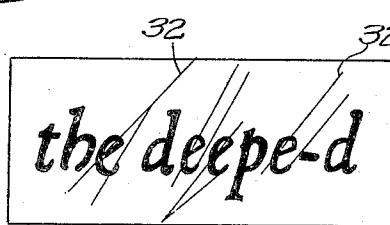
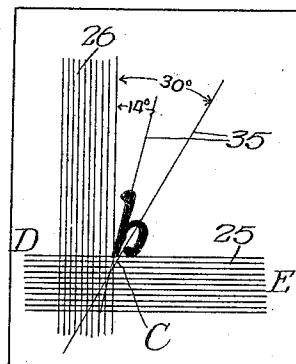
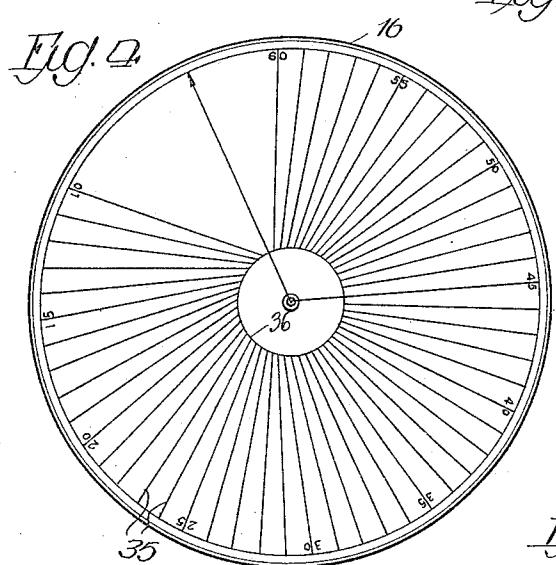
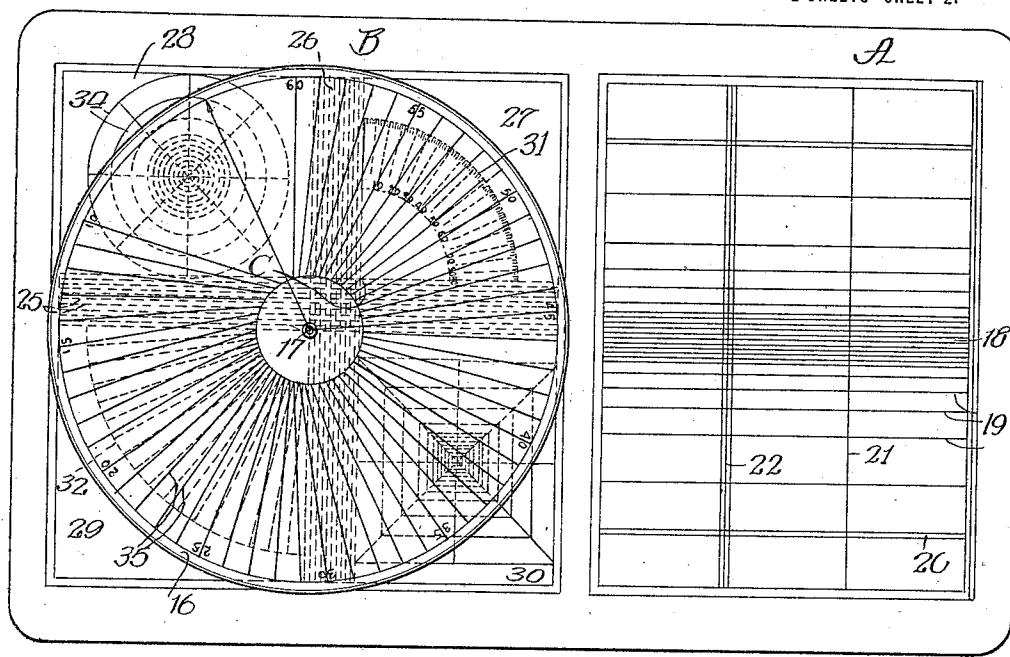
Inventor
George Fabyan
By William H. Hale
Atty.

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

GEORGE FABYAN, OF GENEVA, ILLINOIS.

MEANS FOR CLASSIFYING BIFORMED ALPHABET.

1,390,027.

Specification of Letters Patent. Patented Sept. 6, 1921.

Application filed May 10, 1917. Serial No. 167,738.

To all whom it may concern:

Be it known that I, GEORGE FABYAN, a citizen of the United States, residing at Geneva, in the county of Kane and State of Illinois, have invented certain new and useful Means for Classifying Biformed Alphabet; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to a novel device for classifying the letters of the alphabet or other characters of two or more series wherein the individual letters or characters of each series are so formed or written, or arranged at such angles as to closely follow a prescribed style which generally characterizes the individual letters or characters of one series, but which differentiate the same from the individual letters or characters of the other series. More specifically said device has been designed for classifying a biformed alphabet such as was used by many writers and printers in the seventeenth century in the composition and infolding of what is known as bi-literal ciphers—an example of such ciphers being that used by Sir Francis Bacon and described in his "De Augmentis Scientiarum."

It has been demonstrated that many writers at about the period mentioned employed a bi-formed alphabet and arranged them in such a permutative code that combinations of the two forms of letters could be used to represent the several letters of the alphabet, so that by the use of such combinations a message or narrative could be concealed in a running text which could only be deciphered by those acquainted with the cipher.

The said bi-formed alphabet is classified as a-form and b-form, all of the letters of the a-form bearing certain distinguishing characteristics which distinguish them from the b-form, this applying to both the upper case and lower case letters.

It has also been demonstrated that while individual letters of one form, in the last analysis, can with certainty be distinguished from those of the other form, yet, because of careless typographical work or, perhaps, with intent on the part of the author to render the concealed matter less easy to decipher, the characteristic contours or angles of a given form may so depart from the pre-

scribed typical or average contour or angle as to make it uncertain whether a given individual letter belongs to one form or to the other. Therefore it becomes difficult for a person by the use of the eye alone to classify the forms so as to give the letters their proper values.

It is the purpose of this invention to provide an instrument or a combination of elements by which to aid the eye in determining whether a given letter belongs to one form or to the other. This may be attained by the use of either one or both of two instrumentalities, one of which is termed a classifier, and the other a templet. For some purposes either instrument may be used alone and for other and more critical examination both instruments may be used together.

A templet embodying my invention comprises a thin flat transparent sheet, preferably made of celluloid, which bears a plurality of ruled sets of cross-lines, with the lines of each set parallel to each other and with the lines of the two sets disposed at angles to each other and at graduated distances apart designed to afford different widths of the spaces included between any two parallel lines. By placing the transparent ruled sheet over an undetermined letter and squaring the sheet with respect to the page in which the letter is printed, the ruled lines may be made to so bisect any letter, both in horizontal and vertical directions, as will also show the amount of curvature and angle of any part of the whole more clearly than is apparent to the unaided eye.

In addition to the simple form of templet briefly referred to, I may superpose on the transparent ruled sheet a disk which is centrally pivoted to one half of the sheet, as a base, to rotate thereover. The said disk is also made of transparent material, as celluloid, and has marked thereon a series of radial and tangential lines. The sheet or base beneath the disk may have marked thereon sets of cross lines and, in different parts of its area, radial lines, concentric circles and squares within squares, or other symmetrical figures so arranged that the radial and tangential lines on the disk, when the disk is rotated, will approach and cross lines beneath the same on the base at different angles, and will variously bisect the space within the circles, squares, or other symmetrical figures on the base, so as to enable

the user to minutely dissect the letter under examination or to accurately determine its slant or angle.

The use of the templet enables the user intelligently to compare the structure and angle of the letter with typical letters of both the a-form and b-form, by comparatively dissecting both forms with the templet, and thereby determine to which form the letter under examination belongs. The said templet may be used with or without the classifier, but for critical analysis of a letter, the combination of the classifier and the templet produces the most accurate results.

The classifier comprises a sheet—preferably of stiff cardboard—on which is printed in two rows the two forms of the alphabet with the respective letters of each form assembled in one row, and those of the other form in another row. Between the rows of letters representing the two forms of the alphabet is a slot cut horizontally in the sheet of a size sufficient to expose one line 25 of the printed page represented by the alphabets, and extends the length of and is parallel to the rows of letters. One of such rows of letters is printed above and the other below such slot or, with the slot cut vertically instead of horizontally one row of letters is printed on the left, and the other on the right of such slot. The letters of one row are what have been determined by careful analysis and classification to be the average or typical letters of the a-form of the alphabet, and the letters of the other row are likewise average or typical letters of the b-form of the alphabet.

When there is doubt as to which form a given letter belongs, the classifier is placed over the page on which the letter is printed and is adjusted so that the particular letter to be inspected registers in the slot of the classifier between the two like letters of the two forms. In many cases this registration of the letter with those of the classifier is sufficient to enable a person to determine to which form the particular letter belongs. However, in other cases the distinction between the letter under examination and the letter of the classifier at either side of the slot is so slight that the unaided eye can not accurately determine the classification. In such instance the templet is placed over the classifier while the latter still rests on the page and, by the use of the intersecting lines of the superposed templet, the letter under examination is further dissected with respect to contour and examined with respect to angle so that when compared to similarly dissected and inspected typical letters of the two forms, its classification may be accurately determined. In order to square the templet on the classifier, the classifier is preferably provided at its margins with sec-

tional ruling which is graduated by the same system, preferably the metric system, as are the lines of the templet.

In the drawings is shown a form of classifier and templet which has been practically used in determining the identity of a bi-formed alphabet, and in the following description specific reference will be had to the particular design therein shown. It is to be understood however that the invention is not limited to this specific design in its broader aspect.

As shown in the drawings:

Figure 1 illustrates the classifier.

Fig. 2 illustrates the base of the templet. 80

Fig. 3 illustrates the complete templet.

Fig. 4 illustrates the rotating disk of the templet.

Figs. 5, 6 and 7 are details illustrating specific uses of the templet.

As shown in said drawings 10 designates the classifier. It may be made of any suitable material, preferably opaque, and is provided with a central longitudinal slot 11, through which the undetermined letter is to be exhibited. At the sides of the slot are arranged two rows of the letters of the bi-formed alphabet, the row 12 being the a-form of alphabet and the row 13 being the b-form. The said sheet is provided at its sides 95 and end marginal areas with section lines 14 and 14', respectively, by which to square the templet thereon, as will hereinafter more fully appear. The slot 11 constitutes a window through which a line of printing may be 100 observed, and, so far as this function is concerned, the window or transparent area may be otherwise made.

Referring to Figs. 2 and 3, 15 designates the flat rectangular sheet or base of the templet and 16 designates the rotating disk superposed over one end of the base, and in the complete device is rotatively connected thereto by a pivot 17. The said disk is also made of a transparent material. The said base is ruled at its right hand end A to provide a central group of closely spaced parallel lines 18, and above and below such group with single lines 19 and double parallel lines 20; the said single lines being spaced from each other and from the central group and the double parallel lines at varying distances apart so as to thereby provide varying areas through which to exhibit the letters. These lines, 18, 19 and 20 are intersected at right angles by cross lines 21, 22, the latter arranged in groups of a plurality in each group.

The left hand end B of the base is enclosed principally by a large square 23, 125 which in turn is divided by two groups of bands 25, 26 of closely spaced parallel lines, which said groups cross each other at right angles, into four smaller unequal square areas 27, 28, 29 and 30. The area 27 is occu- 130

pied by a closely graduated quadrant 31, which is eccentric to the area inclosed by the lines 23 is to be used in conjunction with lines on the disk to mechanically determine 5 the slant of a letter or a portion of a letter. In the area 29 of the base is a second quadrant 32 which is divided into sectors of five degrees by lines radiating from the center pivot 17. The two remaining areas 28 and 10 30 of the square 23 are occupied respectively by a set of squares 33 and concentric circles 34. These figures may be of other geometric designs. The groups or bands of lines 25, 26 on the base intersect at one side of the 15 center of the axis of rotation of the disk.

On the disk 16 is a set of lines 35 so disposed, with respect to the center thereof and to the lines of the quadrants, that as the disk is rotated each line on said disk, passing 20 through the point C, will subtend on the area 27 a definite angle, beginning with one of 10 degrees and increasing regularly to one of 60 degrees; 27 a definite angle, beginning with one of ten degrees and increasing 25 regularly to one of sixty degrees, said lines 35 being principally non-radial to the center of the disk 16.

In Fig. 5 is indicated more clearly the manner of using the simple form of the 30 templet at the right hand end of the base or sheet. As therein shown the right hand end of the base may be assumed to be placed over three letters in the relation in which they would appear if an undetermined letter 35 be exhibited through the slot of the classifier and between like typical letters of the a-form and b-form. The lines which cross each other at right angles enable the student to bisect the letters both horizontally 40 and vertically and will show the direction and amount of curvature in all parts of the letters more clearly than is apparent to the unaided eye.

In Fig. 6 is illustrated the manner of employing the intersecting groups or bands of 45 lines 25 and 26 at the left hand end of the base or sheet and the lines 35 on the superposed disk to determine the slant of a letter and different parts thereof under inspection. In this use of the device the templet is 50 placed over the letter with the base of the letter at one of the angles of the intersecting group.

The determination of the slant of a letter 55 will resolve itself into a search for the one line 35 which will meet the requirement of a given test. Assuming it is desired to determine the slant of, say, the lower case italic *h*. If it be agreed that the slant of the particular form of *h* in question is determined by the angle made by a line passing through the longitudinal axis of the stem of the letter with the perpendicular erected upon the line upon which the given letter stands, 60 then the templet should be applied so that

the letter occupies the position indicated in said Fig. 6, with the line D—E coinciding with the base line of the letter under examination. The disk is then rotated until a line 35 on it will pass through the point C at 70 said base line and will at the same time pass through the longitudinal axis of the stem. Then by observing, by the aid of the graduations of the quadrant 31 on the area 27, the angle which this line makes with 75 the line 25 that passes through the point C, the degree of the slant of the letter with respect to the perpendicular will be determined. If it be desired to determine the angle which the loop or right hand part of 80 the letter makes with the stem, without moving the templet, the disk is revolved until a line 35 is found which will bisect the loop, as indicated in said Fig. 6, and, by referring to the quadrant scale, the difference between 85 the two readings will give the angle which the loop makes with respect to the stem of the letter. It has been found that this is a point of considerable importance in studying 90 letters.

The lines of the quadrant 32 are useful in studying or comparing such letters as the lower case italic *e*, as shown in Fig. 7. For instance, if a light pencil line be extended from the end of the basal upstroke of the 95 letter *e* in the direction in which it seems to be tending and the templet be applied so that one of the lines of the quadrant 32 bisects the loop of the letter in the direction of the major axis of the loop and in a manner to 100 divide the loop into two equal parts, and if the pencil line and the line thus found on the quadrant 32 intersect above or below, the letter may be classified as an a-form. If, however, the two lines are parallel then the 105 letter may be safely classified as b-form.

The squares and circles 33, 34 respectively are designed to aid in the dissection of large letters into their constituent units, as will be understood by lettering experts and 110 typographers who understand the principles upon which the construction of alphabets is based.

By applying the different methods of dissecting the letters and of determining the angles thereof, as above described, all 115 chances of error which might result by the use of the eye alone will practically be excluded.

I claim as my invention:

1. A templet for classifying bi-formed alphabet comprising a ruled transparent base and a transparent disk superposed over and rotatively mounted on said base and provided with a series of lines extending from its circumference inwardly and non-radial to the center of the disk.

2. A templet for classifying bi-formed alphabet comprising a transparent base provided with straight and curved lines and a 130

transparent disk rotatively mounted on the base and provided with lines which, by rotation of said disk, cross the lines of the base.

5. A templet for classifying bi-formed alphabet comprising a transparent base provided with an area bearing a graduated quadrant and a transparent disk rotatively mounted on said base and bearing a series of lines so arranged that, as the disk is rotated, said lines of the disk, passing through a point on the base, will make on said area a definite angle to a fixed line passing through said point, beginning with one 10 of a given degree and increasing to a higher degree.

4. A bi-formed alphabet classifying templet comprising a transparent base, and a transparent disk rotatively mounted thereon, the base beneath said disk being provided with a graduated quadrant eccentric to the axis of rotation of the disk and the disk being marked with lines which are non-radial to said axis of rotation.

20 5. A bi-formed alphabet classifying templet comprising a transparent base, and a transparent disk, said base being provided with a graduated quadrant eccentric to the axis of rotation of the disk and the disk 25 being marked with lines, some of which are radial to said axis of rotation and the others of which are non-radial to said axis of rotation.

6. A bi-formed alphabet classifying templet comprising a transparent base, and a transparent disk rotatively mounted thereon, the base beneath said disk being provided 30 with a graduating quadrant concentric to the axis of rotation of said disk and the disk 35 being marked with lines which are non-radial to said axis of rotation.

being provided with lines which are non-radial to said axis of rotation.

7. A bi-formed alphabet classifying templet comprising a transparent base, and a transparent disk rotatively mounted thereon, the base beneath said disk being provided 45 with geometric figures one within the other, and the disk bearing lines which spring from the central portion of the disk and are non-radial to said center.

8. A templet for classifying bi-formed alphabet comprising a transparent base provided with two sets of closely spaced intersecting lines and a disk mounted on said base to rotate on an axis eccentric to the point of intersection of said sets of lines and 50 bearing a set of lines which spring from the central portion of said disk and are non-radial to said center.

9. A templet for classifying bi-formed alphabet comprising a transparent base having 60 thereon two groups of closely spaced lines that cross each other on said base, with the lines in each group parallel to each other, and a transparent disk mounted to rotate on an axis on the base at one side of the area 65 on which said groups cross, and having lines thereon that cross said lines on the base.

In witness whereof I claim the foregoing as my invention. I hereto append my signature in the presence of two subscribing witnesses at Chicago, Cook county, Illinois, this 23rd day of April, 1917.

GEORGE FABYAN.

Witnesses:

E. G. ROGERS,
J. A. BARRY.