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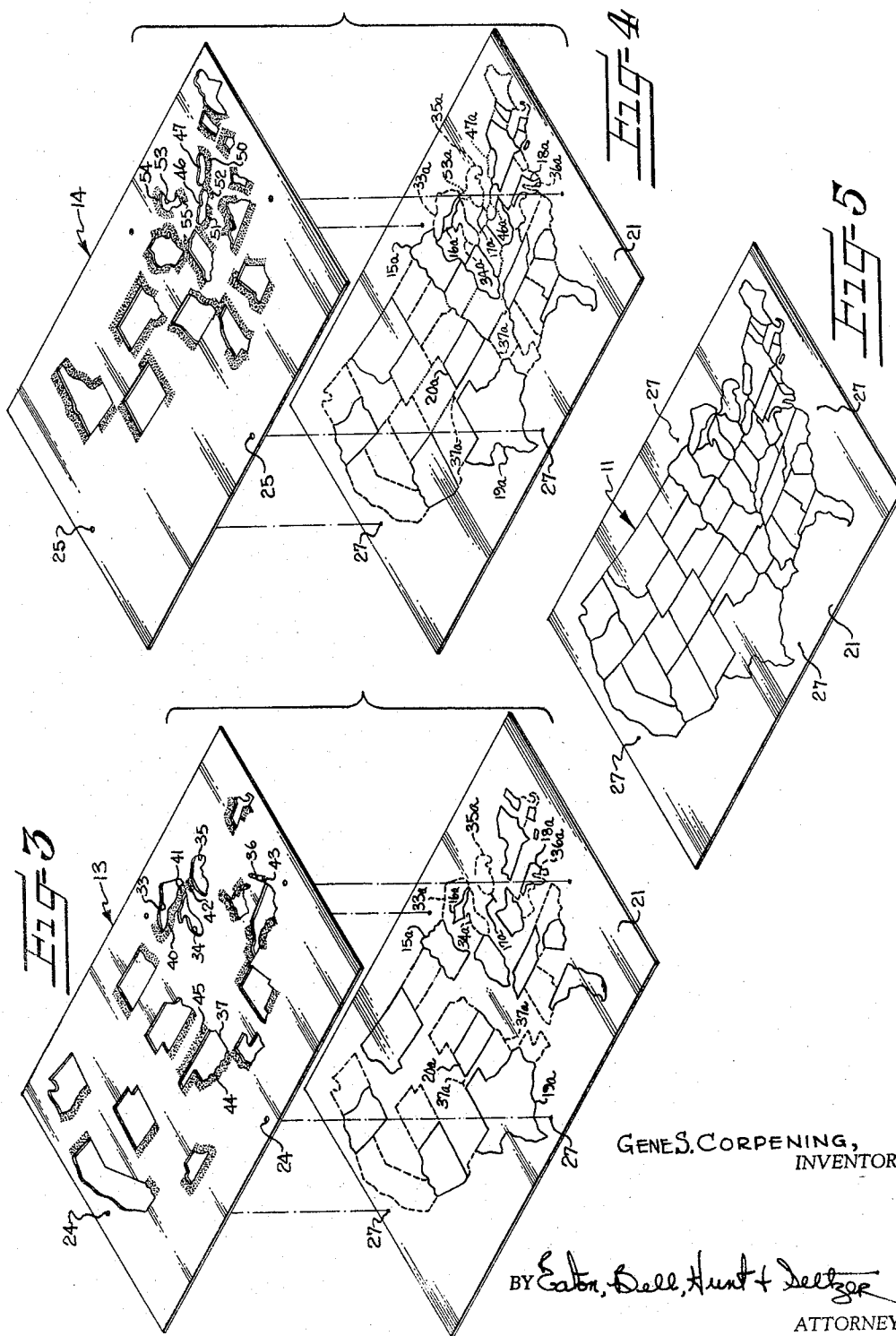
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STENCIL SET FOR PRODUCING GRAPHIC REPRESENTATIONS

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2 Sheets-Sheet 2



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## 3,158,940 STENCIL SET FOR PRODUCING GRAPHIC REPRESENTATIONS

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3 Claims. (Cl. 33—174)

This invention relates to stenciling devices and more particularly to a novel set of stencils for use in producing graphic representations.

In the reproduction of graphic representations such as pictures, drawings, designs, printed matter, and the like, a technique which is widely employed is to provide sheet material, such as cardboard or the like, having portions of specific configurations removed by cutting away or the like in accordance with the particular drawing to be reproduced. Such sheet material containing these "cutouts" is commonly referred to as a stencil. Groups of these stencils are successively placed on a work surface such as drawing paper or the like so that the edges of the cutouts in each of the stencils serve to delineate portions of a graphic representation. When these portions so delineated are reproduced by moving a pencil, for example, along the edges of the cutouts an accurate graphic representation results on the drawing paper.

When a more complex representation or drawing is desired, an unduly large number of stencils must be employed or if a lesser number of stencils are used, a number of the stencils will contain very narrow sections, projections or the like which are soon creased or bent out of the plane of the stencil and eventually torn therefrom or otherwise damaged to destroy the use of the stencil. Furthermore, attempting to use small numbers of stencils for very intricate designs results in edge portions of the cutouts in some of the stencils corresponding with edge portions of cutouts in other stencils and thus necessitates drawing the same line twice which usually results in an unduly heavy or broadened line destroying the overall appearance of the graphic representation.

With the foregoing background material in mind it is the primary object of this invention to provide a novel stencil set for producing intricate graphic representations wherein a minimum number of stencils may be employed and wherein the drawing of one line on top of another may be completely avoided and wherein each of the stencils is devoid of any narrow projections or the like which may be readily bent or torn to mutilate the stencil and destroy its effectiveness.

Another object of the invention is to provide a novel stencil set for producing graphic representations which permits the reproduction of a detailed graphic representation with considerable accuracy and faithfulness of detail without the requirement of a high degree of skill by the artist.

Still another object of the invention is to provide a novel stencil set for producing graphic representations which is inexpensive but which permits the reproduction of a highly accurate detailed drawing such as a map or the like and at the same time provides a source of amusement and education to children or the like.

Briefly, the objects of the invention and other related objects are accomplished by providing a plurality of stencils formed from sheet material each of which contain cutouts having edges which delineate a complementary part of the graphic representation. The edges of the cutouts therefore serve to guide the movement of a marking device such as a pencil or the like so that a linear reproduction of all of the complementary parts of the graphic representation as formed in the stencils may be obtained. Indexing means are associated with the stencils so that they may be positioned successively on a work

surface such as a sheet of drawing paper with the complementary part of the graphic representation drawn by means of each stencil interconnecting in properly aligned relationship. In order to obtain the proper interconnection of these complementary parts of the graphic representation without duplication of lines or the reproduction of unnecessary lines, indicia such as bands of a particular color are provided on the stencils. The indicia is associated with the edges of selected cutout and in one form indicate those lengths along the cutout edges in which the line drawn by the marking device is to be skipped or interrupted to form a space. The terminal ends of the lines defining these spaces are thus interconnected with another complementary part on one or more of the other stencils so that an accurate and detailed finished graphic representation is obtained.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings, in which—

FIGURE 1 is a plan view illustrating an intermediate stage in the use of the novel stencil set of the invention for reproducing graphic representations;

FIGURE 2 is an exploded isometric view illustrating one of the stencils of the invention and the part of the graphic representation formed therewith shown in solid lines;

FIGURE 3 is a view similar to FIGURE 2 illustrating the use of another stencil with the part of the graphic representation formed therewith shown in broken lines;

FIGURE 4 is a view similar to FIGURES 2, 3 illustrating the use of the third stencil with the final part of the graphic representation formed therewith shown in dotted lines; and

FIGURE 5 is an isometric view of the completed graphic representation formed with the stencils of FIGURES 2 through 4.

Referring now to the drawings, the graphic representation which will be discussed hereinafter in the description of the invention to follow is a map of the United States which is designated generally in FIGURE 5 by the numeral 11.

This U.S. map 11 is representative of that type of graphic representation or drawing which may be accurately and readily reproduced by a relatively unskilled individual using the stencil set of the invention but it should be understood that any type of graphic representation may be so reproduced such as complex structures, landscapes, human figures, printed matter, and the like.

The novel stencil set of the invention comprises a plurality of stencils which in the illustrated embodiment are three in number and are identified by the numerals 12 through 14 as shown in FIGURES 2 through 4. The particular number of stencils chosen will of course depend upon the complexity of or number of details in the graphic representation which is to be reproduced and with at least two stencils being required in accordance with the arrangement of the invention.

It should be understood that in accordance with the objects of the invention, a sufficient number of stencils are employed in a stencil set so that each of the stencils may be provided with cutouts which are sufficiently spaced apart and are limited in number whereby not only is an accurate reproduction of the graphic representation obtained but the stencils are not weakened by the removal of an excessive amount of material. The stencils 12 through 14 may be formed of any suitable material and in the illustrated embodiment are shown formed from stiff sheet material such as paper of the well known type or the like.

As shown in FIGURES 2 through 4, each of the stencils

contains cutouts formed of selected configurations as will be described hereinafter. The cutouts in stencil 12 are located as shown in FIGURE 2 and a number of these cutouts which will be referred to hereinafter are designated by the numerals 15 through 20.

In the practice of the invention, the stencils 12 through 14 are employed individually in any desired sequence and in the specific embodiment illustrated, the stencils are shown employed in the sequence indicated by the FIGURES 2 through 4. As the stencils are for use in the reproduction of a graphic representation such as the U.S. map 11, a work surface such as a sheet of drawing paper 21 or the like is provided as shown in FIGURE 1 which is secured in a fixed position by any suitable means to a base such as the upper surface 22 of a table or the like.

As the cutouts in each of the stencils 12 through 14 are positioned in a predetermined relationship and are arranged to form a complementary part of the graphic representation, indexing means have been provided for the stencils so that each of the stencils can be located in an aligned position on the work surface or paper 21. In the specific embodiment illustrated, this indexing means comprises perforations or pin holes adjacent the side edges of each of the stencils 12 through 14 which are designated respectively by the numerals 23, 24 and 25.

When the U.S. map 11 is to be reproduced on the paper 21 which has been mounted on the table surface 22, stencil 12 is placed in overlying relationship with the paper in a centrally arranged position. The position of the stencil 12 is marked by inserting the point of a marking device such as a pencil 26 (FIGURE 1) or the like in the pin holes 23 so as to produce an alignment point or dot 27 on the paper 21. A marking device such as the pencil 26 is then moved along the edges of the cutouts in the stencil 12 so that the movement of the pencil is guided thereby and one part of the U.S. map 11 is reproduced in line form on the paper 21, as shown in FIGURE 2. For instance, it can be seen that the cutout 19 which represents the State of Texas is clearly reproduced in outline form 19a on the paper 21. The use of the pencil 26 is shown clearly in FIGURE 1 wherein stencil 13 is illustrated in use.

In accordance with one of the novel features of the invention, indicia is provided on one or more of the stencils which indicate that the character of the line drawn by means of the edge of a cutout is to be changed. In the specific embodiment illustrated, the indicia provided is for the purpose of designating the skipping or interrupting of the line drawn along a cutout edge so as to form a space in the outline formed by means of the cutout. To this end, the indicia provided is in the form of colored bands, preferably red, which are associated with the edges of certain cutouts and extend for selected lengths therewith.

By way of example, a color band 30 is positioned adjacent the edge of the cutout 17 so as to indicate that portion of the edge which is not to be used by the pencil 26 for marking the outline of the cutout on the paper 21. Therefore, the cutout 17 is employed to reproduce only a part of its outline which is designated in FIGURE 2 as 17a.

In a similar manner, cutout 18 which represents the State of Maryland likewise contains indicia such as a color band 31 so as to designate the length of a space in the line drawn by the pencil 26 as it is moved guidably along the edges of the cutout. The outline of the cutout 18 containing the space designated by the numeral 32 is identified by the reference character 18a in FIGURE 2. The part of the U.S. map drawn on paper 21 and shown in FIGURE 2 shows clearly how the edges of the cutouts 17, 18 are not used in their entirety as determined by the bands 30, 31 whereas a complete linear outline is reproduced with such cutouts as 15, 16, 19, 20 whose outlines

are indicated by the reference characters 15a, 16a, 19a and 20a.

When all of the outlines of the cutouts on stencil 12 have been reproduced on the paper 21, stencil 12 is laid aside and stencil 13 is positioned on the paper in alignment with the part of the graphic representation previously reproduced. This alignment or indexing is accomplished by the pin holes 24 in stencil 13 which are indexed with the dots 27 previously formed on the paper 21 by the pin holes 23 in the stencil 12. As can be understood, the cutouts on stencil 13, a selected number of which are designated by the numerals 33 through 37, are so arranged as to form portions 33a to 37a of the U.S. map 11 complementary to the part produced by stencil 12.

When the stencil 13 has been properly positioned on the paper 21, the pencil 26 is again employed to line off the outlines of each of the areas delineated by the cutouts using the edges of the cutouts as a guide and skipping various portions of the outline so drawn in accordance with indicia such as color bands associated with the cutouts as previously described. FIGURE 1 shows an enlarged view of the actual marking operation using the stencil 13 wherein the broken lines indicate the outlines reproduced on the paper 21 by means of stencil 12.

Referring now to FIGURE 3, the cutouts in the stencil 13 have color bands associated therewith for indicating an interruption in the lines drawn by means of the cutout edges as described above in the use of stencil 12. In order to clearly illustrate the interconnection of the two parts of the U.S. map 11 represented by the stencils 12, 13, the part produced by means of the stencil 13 is shown in broken lines. As can be understood, the color bands on the stencil 13 indicate spaces to be provided which are defined by the terminal ends of the lines drawn by means of the cutouts in stencil 13 which are interconnected with the lines of the previously drawn part of the map 11. Thus, duplication of lines is avoided and a minimum number of cutouts is required in the stencils.

By way of example, in the Great Lakes region of the map 11 cutout 33 has a color band 40 associated therewith for indicating the length of a space in the outline drawn by means of the cutout which interconnects with the previously drawn outlines 15a, 16a. Cutout 34 has a color band 41 associated therewith and cutout 35 a color band 42 which are employed in the above described manner to further develop the water area of Lakes Superior, Michigan and Huron.

As previously described, the cutout 18 is used to form the partial outline 18a of the State of Maryland containing the space 32 corresponding to the length of the color band 31. As is well known, the Chesapeake Bay extends upwardly into the State of Maryland to form a narrow portion of water which normally would be drawn with a stencil having a narrow tongue or projection formed appropriately therein. Such a tongue, unless braced by a connection to the body of the stencil, would be readily subject to damage and eventual loss through use. Any such connection to stencil body for bracing purposes would, of course, reduce the continuity of the stencil itself.

In accordance with the novel features of the invention, cutout 36 is provided in stencil 13 and has a color band 43 associated therewith corresponding to the space 32 formed in the cutout outline 18a of FIGURE 2. The cutout 36 permits the outlining of the Chesapeake Bay as shown in broken lines in FIGURE 3, and which is identified by the reference character 36a. As a result of the space 32 in the outline 18a, this outline 36a interconnects with the terminal ends of the line defining the space 32 and a complete outline of the State of Maryland is obtained which is of accurate geographical shape.

As another example of the interconnection of the parts of the graphic representation drawn by means of stencils 12, 13, the cutout 37 in stencil 13 has color bands 44,

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45 associated therewith which designate spaces corresponding to the outlines of the States of Texas and Kansas previously drawn with stencil 12. The lines 37a (shown broken in FIGURE 3) drawn by means of cutout 37 are used together with these previously drawn lines (shown solid in FIGURE 2) to completely form the State of Oklahoma without the duplication of lines.

The stencil set of the invention contemplates the use of two or more stencils and in many cases, two stencils are sufficient. However, in complex graphic representations such as the U.S. map 11 illustrated, more than two stencils are required and in a specific embodiment illustrated three of such stencils are used as previously discussed.

As in the manner of stencil 13, stencil 14 containing indexing pin holes 25 is positioned on the work surface or paper 21 with the dots 27 on the paper visible through the pin holes. As described above, the pencil 26 is then moved along the edges of the cutouts in stencil 14 to outline the third complementary part of the map and those areas outlined accordingly have been shown in dotted lines.

By way of example, cutouts 46, 47 having bands 50, 51 and 52 associated therewith are employed in the outlining of Lake Ontario and Lake Erie with the skipped portions of the outlines 46a, 47a corresponding to the color bands permitting utilization of the previously drawn borders of the States of Ohio and New York shown in FIGURE 2.

Furthermore, cutout 53 containing bands 54, 55 is employed to form portions 53 to interconnect Lake Huron, Lake Superior, and Lake Michigan in a manner such that the neck of water interconnecting these lakes may be readily drawn in a neat accurate manner.

When the complementary part of the map 11 produced with the use of stencil 14 has been completed, a detailed and highly accurate graphic representation or map is produced with not only the exterior boundary of the map clearly designated but the interior boundaries and other descriptive lines contained therein. The finished map 11 is shown clearly in FIGURE 5 wherein all of the drawn lines are shown in solid form.

It can be seen that utilization of the novel stenciling set according to the invention permits complex and detailed graphic representations to be readily produced with a minimum of skill. The operator need only follow the edges of the cutouts in the various stencils while observing the edge portions of the cutouts which are marked with the color bands. The invention has considerable educational and amusement value and has appeal to persons of all ages while being very instructive to children in their earlier years of training so as to aid in the development of their latent creative talents. The basic concept of the invention lends itself to a wide variety of graphic representations and the U.S. map described above is for illustrative purposes only. One of the outstanding advantages of the invention is that very intricate and accurate graphic representations heretofore only obtainable by the skilled artist may readily be drawn by the unskilled person using stencil sets in accordance with the invention.

In the drawings and specifications there has been set forth a preferred embodiment of the invention and, al-

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though specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. A plurality of stencils for producing mating and complementary portions of a graphic representation, each stencil having at least one cutout therein with the edges thereof defining portions of the graphic representation, at least one edge portion of the cutout in one stencil coinciding with at least one edge portion of the cutout in the other stencil, and indicia associated with said coinciding edge portion of the cutout on at least one of the stencils for indicating a change of character in the line to be drawn along the corresponding edge of the cutout in said stencil bearing the indicia to provide accurate interconnection and reproduction free from overlapping and duplication of lines in the graphic representation when the stencils are used.

2. A plurality of stencils for producing mating and complementary portions of a graphic representation, each stencil having cutouts therein with the edges thereof defining portions of the graphic representation, certain edge portions of the cutouts in one stencil coinciding to edge portions of the cutouts in the other stencil, and indicia associated with said coinciding edge portions of the cutouts on at least one of the stencils for indicating that the drawing of lines is to be omitted along these edge portions of the cutouts in said stencil bearing the indicia to provide accurate interconnection and reproduction of the graphic representation free from duplication of lines when the stencils are used.

3. A plurality of stencils being more than two in number and cooperable for producing mating and complementary portions of a graphic representation, each stencil having cutouts therein with the edges thereof defining portions of the graphic representation, certain edge portions of the cutouts in each of said stencils coinciding to edge portions of the cutouts in at least one of the other stencils, bands of color disposed along said coinciding edge portions of the cutouts on at least one of the stencils having said coinciding edge portions for indicating that the drawing of lines is to be omitted along the edge portions of the cutouts having the bands of color disposed therealong to provide accurate interconnection and reproduction of the graphic representation free from duplication of lines when the stencils are used, and means on the stencils for indexing the stencils in a common predetermined position on a work surface.

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