No. 847,545. PATENTED MAR. 19, 1907.

B. G. BRAINE.

PUZZLE.

APPLICATION FILED MAR. 28, 1903.

4 SHEETS—SHEET 1.

Fig. 1

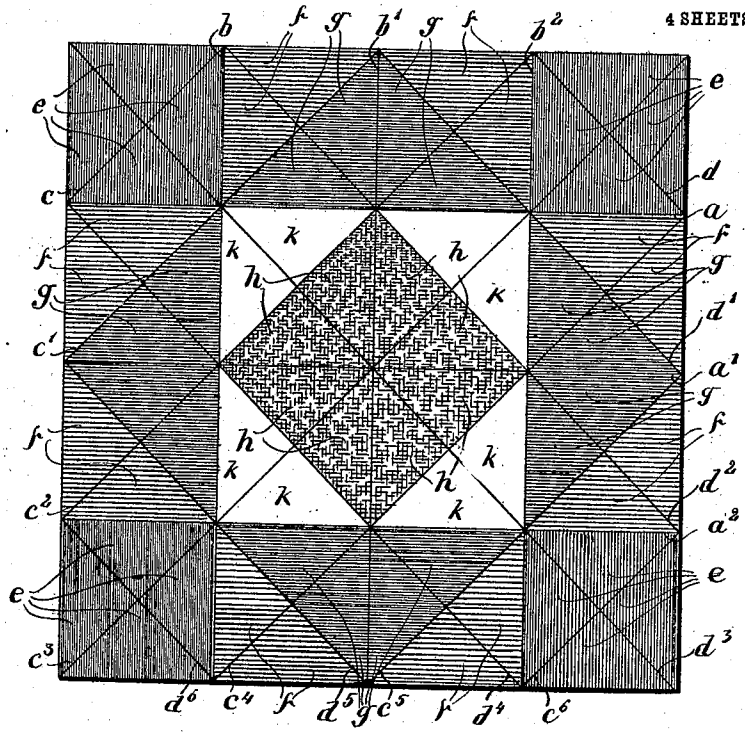
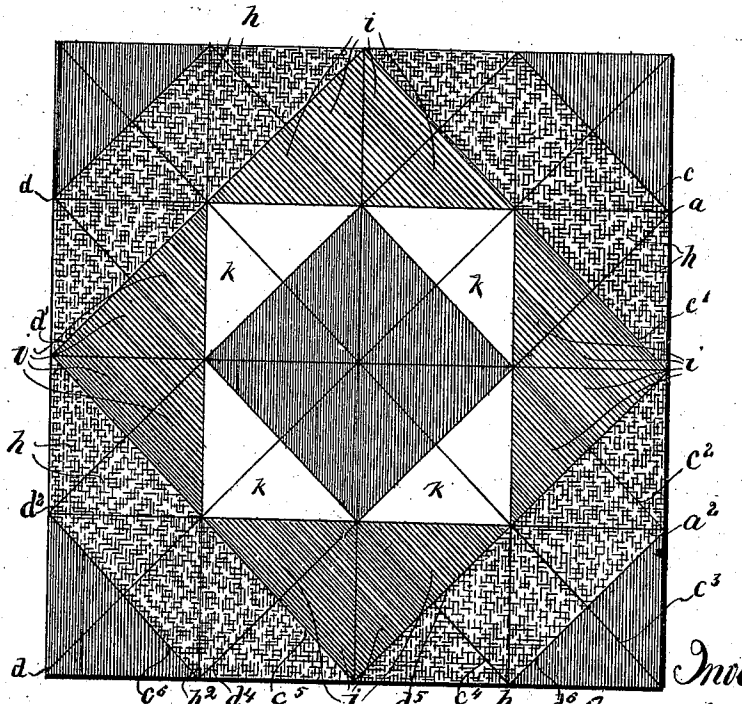


Fig. 2



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4 SHEETS—SHEET 2.

Fig: 3

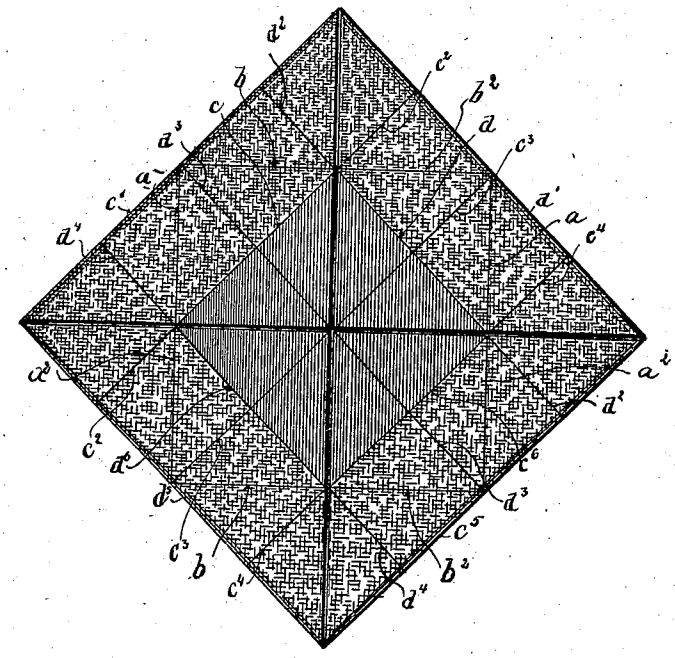
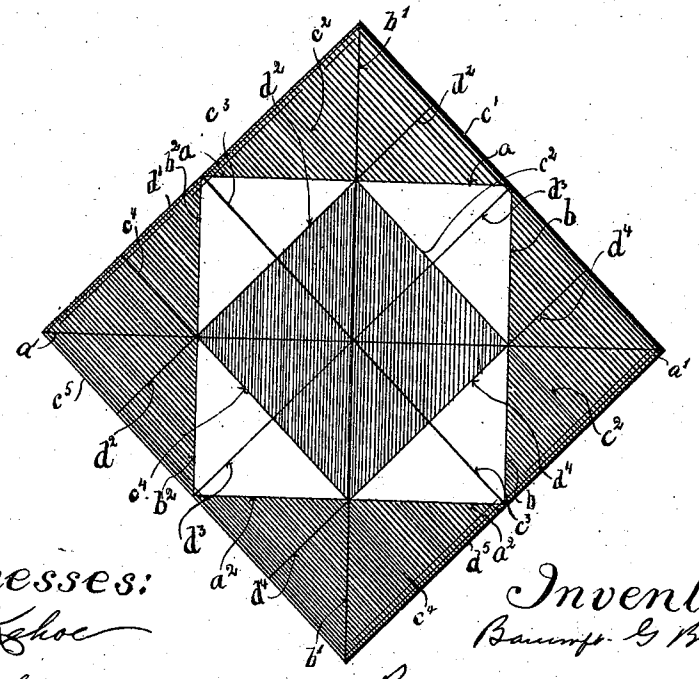


Fig: 4



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4 SHEETS—SHEET 3.

Fig: 5

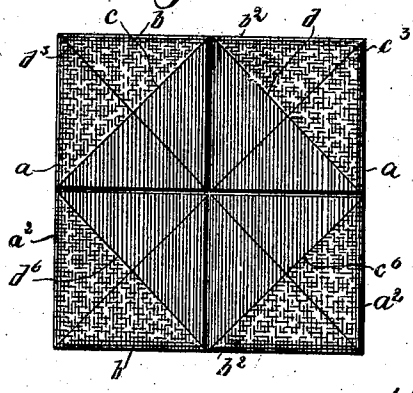


Fig: 6

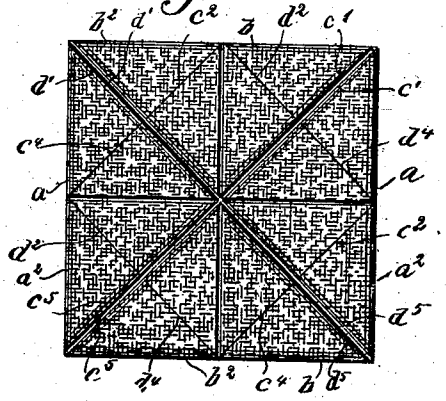


Fig: 7

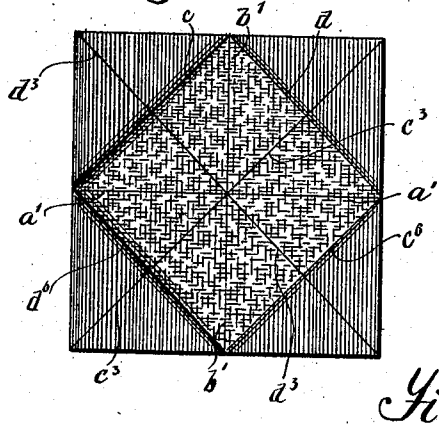


Fig: 8

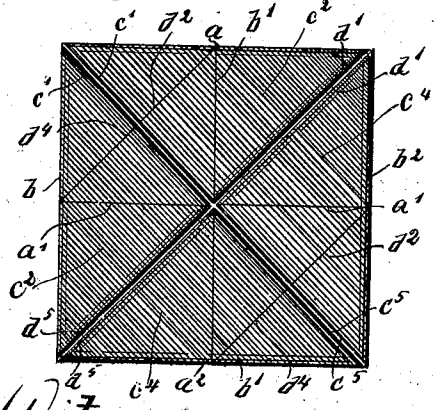
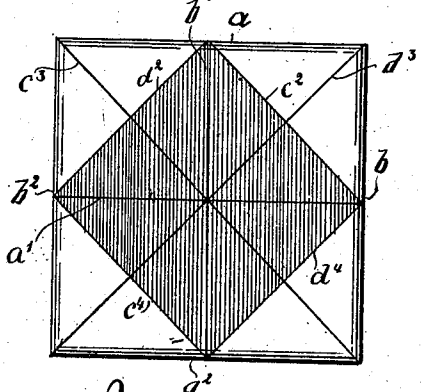


Fig: 9



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No. 847,545. PATENTED MAR. 19, 1907.

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PUZZLE.

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4 SHEETS—SHEET 4.

Fig. 10

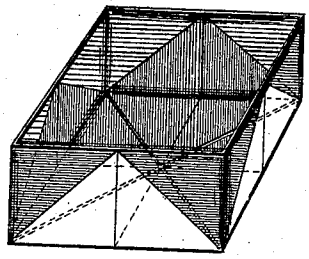


Fig. 11

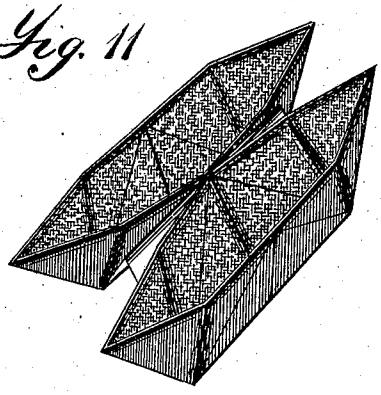
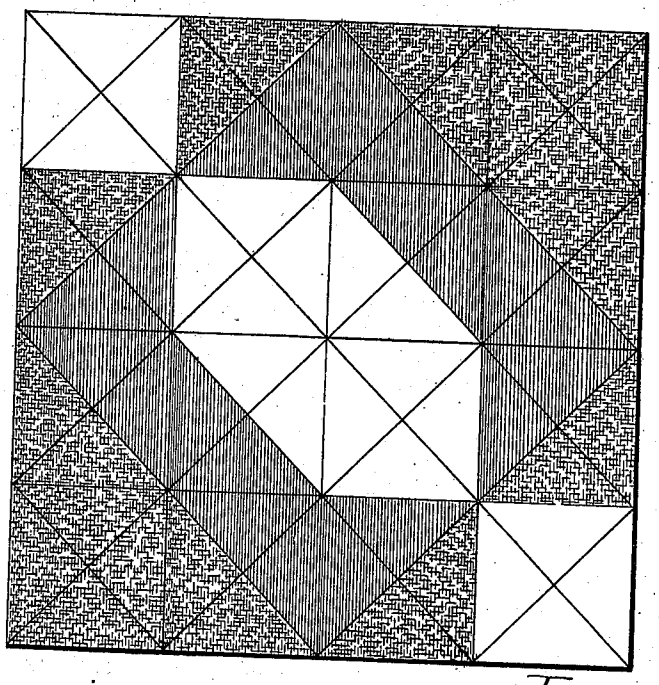


Fig. 12



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UNITED STATES PATENT OFFICE.

BANCROFT G. BRAINE, OF NEW YORK, N. Y.

PUZZLE.

No. 847,545. Specification of Letters Patent. Patented March 19, 1907.

Application filed March 28, 1903. Serial No. 149,934.

To all whom it may concern:

Be it known that I, BANCROFT G. BRAINE, a citizen of the United States, residing at New York city, county of Kings, and State of New York, have invented certain new and useful Improvements in Puzzles, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to a puzzle or folding device formed of a sheet of paper or other suitable material bearing marks so arranged thereon that by folding the sheet to a certain form the markings will be brought into a certain desired arrangement.

Preferably the sheet is of rectangular form and has fold-lines marked or otherwise indicated thereon and arranged so as to permit of the sheet being folded in various ways and into various forms to bring various suitably-marked portions thereof into desired arrangements with regard to and according to the forms into which the sheet is folded. The sheet is preferably made in the form of a square and divided by fold-lines arranged in two series extending, respectively, parallel with adjacent sides of the square and at right angles to each other and two other series extending diagonally to the lines of the first series at an angle of forty-five degrees thereto and through the points of intersection of the lines of the first series. The lines of each of the series are preferably equally spaced, so as to divide the whole surface of the sheet into a number of equal isosceles triangles, and these triangles are preferably marked by being colored, different triangles or different series of triangles being marked with different colors.

A full understanding of the invention can best be given by a detailed description of a sheet with a preferred arrangement of fold-lines and markings and some ways of folding same and of a slight modification, and such a description will now be given in connection with the accompanying drawings.

In said drawings, Figure 1 is a view of one side of a sheet with a preferred arrangement of fold-lines and markings thereon. Fig. 2 is a view of the other side of said sheet. Figs. 3 and 4 are views of the two sides of the sheet with the corner portions folded over toward the front from the position shown in Fig. 1. Figs. 5 and 6 are views of the two sides of the sheet with the corners folded over toward the back from the position shown in Fig. 3. Fig. 7 is a view similar to Fig. 5, but with the inwardly-extending corners of the sheet folded outward from the position shown in Fig. 5. Figs. 8 and 9 are views of the two sides of the sheet with the corners folded forward from the position shown in Fig. 3. Fig. 10 shows the sheet of Figs. 1 and 2 folded to form a box. Fig. 11 shows a sheet having fold-lines, as shown in Figs. 1 and 2, folded to form a catamaran. Fig. 12 shows a sheet having fold-lines as shown in Figs. 1 and 2, but with the color-markings arranged so that when folded to the form shown in Fig. 11 the outside of the figure will be all of one color and the inside of another.

Referring to the drawings, and first to Figs. 1 to 9, the sheet as shown is of the form of a square and is subdivided by two series of fold-lines $a\ a'\ a^2$ and $b\ b'\ b^2$, extending parallel to the edges of the sheet and at right angles to each other and spaced to divide the sheet into equal squares, and by two other series of diagonal fold-lines $c\ c'\ c^2\ c^3\ c^4\ c^5\ c^6$ and $d\ d'\ d^2\ d^3\ d^4\ d^5\ d^6$, extending at right angles to each other and at an angle of forty-five degrees to the lines $a\ a'\ a^2$ and $b\ b'\ b^2$ and passing through the points of intersection of said lines. The sheet is thus divided into squares and the squares divided each into four isosceles triangles. The fold-lines may be indicated in any suitable manner, as by indicating-lines, and the sheet is preferably scored on the fold-lines, so as to facilitate folding or bending the sheet on said lines. The sheet bears marks, preferably on both sides, so arranged that by folding the sheet in various ways into various forms the marks are brought into various positions relatively to each other and to the form of the folded sheet. The marking of the sheet preferably corresponds to the subdivisions of the same made by the fold-lines, and preferably the subdivisions are marked by being colored, a plurality of colors being preferably used and each of the smaller triangles which are marked being marked with a solid color. A preferred arrangement of colors is shown in Figs. 1 and 2, in which, as represented, the triangles e are colored red. Triangles f are colored light blue; triangles g, dark blue; triangles h, yellow; triangles i, green, and triangles k white. With the sheet so subdivided by fold-lines and with the arrangement of colors as indicated, if the sheet be folded by folding the corner portions over the front in Fig. 1 on the lines c', c^5, d', and d^5 it

will be brought into the form and with the arrangement of colors on the front and back thereof shown by Figs. 3 and 4, one side having a red center with a yellow border and the reverse side having a red center, green corners, and white intermediate portions. By folding the corner portions backward from the position shown in Fig. 3 on the lines $a\ a^2\ b\ b^2$ the sheet will take the form shown and show the arrangement of colors as in Figs. 5 and 6—that is, it will be in the form of a square, one side having a red center with yellow corners and the other side being solid yellow. By folding the inwardly-extending corners of the sheet when in the form shown in Fig. 5 outward on the lines $c\ c^6\ d\ d^6$ the arrangement of colors as shown in Fig. 5 is reversed, the square now showing a yellow center with red corners, as shown in Fig. 7. If instead of folding the corner portions of the form shown in Fig. 3 backward they are folded forward on the lines $a\ a^2\ b\ b^2$, the arrangement shown in Figs. 8 and 9 will result, the square then being of solid green color on one side and on the other having a red center with white corners.

The foldings of the sheet shown in Figs. 3 to 9 are given merely by way of example, and it will be understood that the sheet may be folded in various ways to secure various combinations and arrangements of colors on figures of various forms. Nor is the possible folding limited to the production of flat figures of square or other outline.

In Fig. 10 the sheet of Figs. 1 and 2 is shown as folded to form a box. The manner of folding the sheet to form such a box is well known and is given merely as an example of one of the various ways in which the sheet may be folded to form various articles. It will be noticed that the colors are arranged on the box in a symmetrical manner and so as to produce a pleasing effect.

Fig. 11 shows a sheet of the form and with fold-lines as shown in Figs. 1 and 2, folded to form a double-hulled boat or catamaran. The boat is shown, however, as having the outside of one solid color and the inside of another solid color. This result is secured by the use of a sheet having the color-markings arranged as indicated in Fig. 12. It will be understood from this example that by properly arranging the colors on the sheets sheets may be provided for producing articles having any desired arrangement of colors thereon. It will be noticed also that on the sheet shown in Fig. 12 the parts of the sheet which are not exposed when the sheet is folded to form the article are left blank, and it will be understood that the sheet may be otherwise marked with the colors arranged so that when the sheet is folded to a particular form or to form a particular article the exposed surface will be of one color or of a desired arrangement of colors. The word "color" is used herein to include black and white and intermediate shades.

What is claimed is—

1. As a new article of manufacture, a sheet of flexible material divided by fold-lines so as to be adapted to be folded on the fold-lines into various forms and bearing marks adapted to be brought into various arrangements according to the forms into which the sheet is folded, substantially as described.

2. As a new article of manufacture, a sheet of flexible material divided into squares and triangles by two series of fold-lines extending parallel to the edges of the sheet and at right angles to each other and two series of diagonal fold-lines extending at right angles to each other and at an angle of forty-five degrees to the lines of the first said two series of lines, each of the squares formed by the fold-lines of the first said two series of lines being divided into four triangles by two of the diagonal fold-lines crossing in the center of such square, said sheet being adapted to be folded on said fold-lines into various forms and bearing marks adapted to be brought into various arrangements according to the forms into which the sheet is folded, substantially as described.

3. As a new article of manufacture, a square sheet of flexible material divided into squares and triangles by two series of fold-lines extending parallel to the edges of the sheet and at right angles to each other and two series of diagonal fold-lines extending at right angles to each other and at an angle of forty-five degrees to the lines of the first said two series of lines, each of the squares formed by the fold-lines of the first said two series of lines being divided into four triangles by two of the diagonal fold-lines crossing in the center of such square, said sheet being adapted to be folded on said fold-lines into various forms and bearing on both sides thereof marks adapted to be brought into various arrangements according to the forms into which the sheet is folded, substantially as described.

4. As a new article of manufacture, a sheet of flexible material divided into squares and triangles by two series of fold-lines extending parallel to the edges of the sheet and at right angles to each other and two series of diagonal fold-lines extending at right angles to each other and at an angle of forty-five degrees to the lines of the first said two series of lines, each of the squares formed by the fold-lines of the first said two series of lines being divided into four triangles by two of the diagonal fold-lines crossing in the center of such square, the said sheet being adapted to be folded on said fold-lines into certain forms and having certain of said triangles on both sides of the sheet marked by being colored so that the colors of said triangles will be brought into various arrangements according

to the forms into which the sheet is folded and with relation to such forms, substantially as described.

5. As a new article of manufacture, a sheet of flexible material divided into squares and triangles by two series of fold-lines extending parallel to the edges of the sheet and at right angles to each other and two series of diagonal fold-lines extending at right angles to each other and at an angle of forty-five degrees to the lines of the first said two series of lines, each of the squares formed by the fold-lines of the first said two series of lines being divided into four triangles by two of the diagonal fold-lines crossing in the center of such square, said sheet being marked with a plurality of colors so arranged that by folding the sheet on said fold-lines into various forms various arrangements of the colors with relation to the form of the folded sheet may be secured, substantially as described.

6. As a new article of manufacture, a square sheet of flexible material divided by two series of equidistant fold-lines extending parallel to the edges of the sheet and at right angles to each other and two series of equidistant diagonal fold-lines extending at right angles to each other and at an angle of forty-five degrees to the lines of the first said two series of lines, the sheet being adapted to be folded on said fold-lines into various forms, the sheet being marked on both sides with a plurality of colors into triangles and squares bounded by the respective fold-lines the colors on one side being differently arranged from those on the other side.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

BANCROFT G. BRAINE.

Witnesses:
H. L. KLETT,
T. F. KEHOE.