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J. S. CURWEN

ADVERTISING DEVICE OR TOY

Filed Feb. 27, 1922

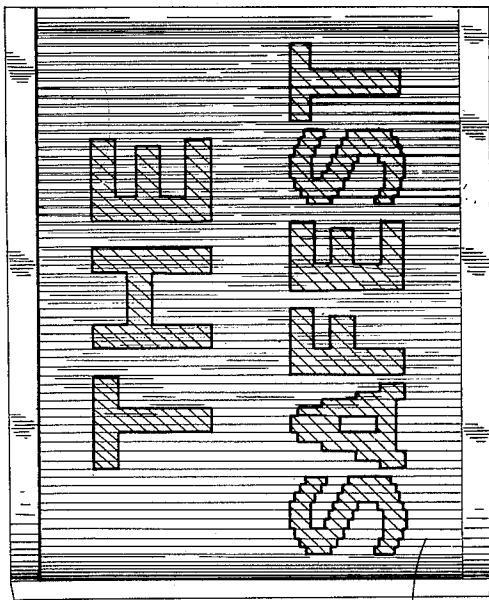


Fig. 1.

A

Fig. 2.

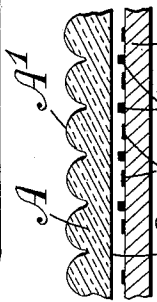


Fig. 4.



Fig. 5.



Fig. 6.



Fig. 7.



Fig. 8.



Fig. 9.



Fig. 10.



Fig. 11.



Fig. 12.



Fig. 13.



Fig. 14.



Fig. 15.



Fig. 16.



Fig. 17.



Fig. 18.



Fig. 19.



Fig. 20.



Fig. 21.



Fig. 22.



Fig. 23.



Fig. 24.



Fig. 25.



Fig. 26.



Fig. 27.



Fig. 28.



Fig. 29.



Fig. 30.



Fig. 31.



Fig. 32.



Fig. 33.



Fig. 34.



Fig. 35.



Fig. 36.



Fig. 37.



Fig. 38.



Fig. 39.



Fig. 40.



Fig. 41.



Fig. 42.



Fig. 43.



Fig. 44.



Fig. 45.



Fig. 46.



Fig. 47.



Fig. 48.



Fig. 49.



Fig. 50.



Fig. 51.



Fig. 52.



Fig. 53.



Fig. 54.



Fig. 55.



Fig. 56.



Fig. 57.



Fig. 58.



Fig. 59.



Fig. 60.



Fig. 61.



Fig. 62.



Fig. 63.



Fig. 64.



Fig. 65.



Fig. 66.



Fig. 67.



Fig. 68.



Fig. 69.



Fig. 70.



Fig. 71.



Fig. 72.



Fig. 73.



Fig. 74.



Fig. 75.



Fig. 76.



Fig. 77.



Fig. 78.



Fig. 79.



Fig. 80.



Fig. 81.



Fig. 82.



Fig. 83.



Fig. 84.



Fig. 85.



Fig. 86.



Fig. 87.



Fig. 88.



Fig. 89.



Fig. 90.



Fig. 91.



Fig. 92.



Fig. 93.



Fig. 94.



Fig. 95.



Fig. 96.



Fig. 97.



Fig. 98.



Fig. 99.



Fig. 100.



Fig. 101.



Fig. 102.



Fig. 103.



UNITED STATES PATENT OFFICE.

JOHN SPEDDING CURWEN, OF HEVERSHAM, ENGLAND.

ADVERTISING DEVICE OR TOY.

Application filed February 27, 1922. Serial No. 539,596

To all whom it may concern:

Be it known that I, JOHN SPEDDING CURWEN, a subject of the King of England, residing at Heversham, Westmoreland, England, have invented certain new and useful Improvements in Advertising Devices or Toys, of which the following is a specification.

This invention is for improvements in or relating to advertising devices or toys and has for its object to provide a simple form of apparatus wherein, by a slight movement of one of the parts or by viewing the device from a different standpoint a complete or partial change can be produced in the appearance of a figure displayed in the advertising device or toy.

According to this invention, the advertising device or toy comprises a single or compound sheet of transparent material presenting on one face a series of parallel ribs of convex cross-section with little or no spacing between them having at its back a multiple-part figure for displaying composed of plurality of sets of parallel lines one set for each part, whereof the lines of each set are spaced apart to correspond to the central longitudinal axes of the ribs, the lines of one set being interposed between the lines of another set and varying therefrom either in colour or character, or both, for the purposes described above.

The figure may be drawn on a translucent or other backing and the device provided with or without means for moving the figure or sheet or both a distance sufficient to bring the ribs from over one set of lines on to the next to produce a change of character or colour in the figure.

The series of parallel ribs on the transparent sheet may be traversed by another series of parallel ribs provided with its own multiple-part figure and means may be provided whereby the sheet or the figure, or both, may be moved in one or two directions to produce change of character or colour in the figure.

In the accompanying drawings:

Figure 1 is an elevation of the device according to one method of carrying out this invention and viewed from a point directly in front of it.

Figure 2 is an elevation in perspective viewed from a point to one side of the device.

Figure 3 illustrates a two-part figure on the backing.

Figure 4 is a section on a larger scale than Figure 3 through the transparent sheet and backing transverse to the axes of the ribs with the thickness of the lines of the multiple-part figure exaggerated for the sake of clearness.

Figure 5 is a similar section illustrating a construction wherein a three-part figure is employed.

Figure 6 is an elevation of part of a device constructed according to another method of carrying out this invention; and

Figure 7 illustrates, by way of example, a form of mechanical operating device.

Like letters indicate like parts in the various views.

Referring first to Figures 1 to 4, a glass sheet A has a series of equally spaced parallel ribs A¹ formed on one face, the opposite face having a plain surface. The ribs A¹ are of convex-cross-section and lie close together.

The said sheet A is superimposed on a stiff backing B which is opaque and provided on its inner face with a two-part figure, the plain face A² of the sheet A being next to the said figure on the backing B.

The two-part figure is composed of two sets of parallel lines, one set for each part (the thickness of the lines is exaggerated in Figure 4 for the sake of clearness). The lines of one set C, spelling "Milton" with a diamond figure, are interposed midway between the lines of the other set C¹ spelling "the safest," or the positions which such lines would occupy if the two parts overlapped at all points.

Each of the two characters in the figure is built up of its respective set of lines, the spacing of which is identical with that of the ribs A¹.

The sheet A and the backing B with the two-part figure thereon are rigidly attached and are accommodated within a suitable frame for display.

The breadth of the lines and the convexity of the ribs are so mutually propor-

tioned that from a given standpoint only one character in the figure shall appear, which character will, owing to refraction appear solid instead of as made up of a series of lines. This solid appearance is indicated conventionally by the cross-hatched portions of Figures 1 and 2.

Thus from a point of view directly in front of the device "Milton" appears, the respective set of lines C being centrally behind the ribs, and the lines C¹ of the other set being invisible through the refraction effect of the sides of ribs A¹; whereas, from a point of view to either side of the device "the safest" appears in block letters and "Milton" disappears owing to refraction.

Obviously, instead of altering the standpoint of view the same change of character may be produced by a slight movement of the sheet or figure, and the change may be repeated by alternating movement of the sheet or figure or both.

This movement may be effected by hand or by any convenient mechanism for reciprocating the movable part, such as a small motor operating through a cam or worm, or the apparatus may be arranged for mounting in a railway carriage and have the movable part reciprocated by a pendulum made to swing by the movement of the carriage: or, again, the device may be suspended from a bracket in the open in such a manner that it swings bodily on the bracket to and fro in the wind, and the parts so arranged that this motion gives the required reciprocation of one of the parts.

A simple form of operating device is illustrated in Figure 7, wherein one thread of a worm H mounted on a spindle H¹ revolving at a uniform speed, engages teeth M formed on a sliding plate N. The plate N is accommodated in guides P attached to the backing B, and is provided with a short slot L occupied by a pin or screw K which is fixed in the backing B.

The pitch of the worm H is greater than the distance through which the figure has to be moved for a distinct change of exhibit, and the length of the slot L is such that the movement of the pin K which is attached to the backing is sufficient to bring each set of lines on the figure alternately behind the ribs. The purpose of the pin and slot connection is to permit the exhibit to be stationary between the changes with continuous revolution of the worm spindle H¹.

If the standpoints of view are to be symmetrical about the advertising device, the lines of one set are interposed midway between the lines of the other set, but where mechanical means are provided the lines of one set may be otherwise than midway between the lines of the other set, in which

case a smaller movement of the figure will be necessary to produce the change of exhibit.

An arrangement embodying a three-part figure, for the display of three separate characters, is illustrated in Figure 5. The three-part figure, as the two-part figure, is composed of sets of lines, one set for each part equally spaced to correspond with the ribs A¹. The lines of one set are indicated at D and those of two other sets at E and F respectively. The lines E and F are interposed between the lines D and are disposed as near thereto as possible so that a distinct change of character may be effected with a minimum of movement.

If mechanical means are employed the lines of two sets E and F are preferably spaced each the same distance from a line D so that a simple mechanism may be used. This disposition of the sets of lines is also necessary if the respective standpoints of view are to be symmetrical about the advertising device when no mechanical means are provided.

Figure 6 illustrates an arrangement wherein a glass sheet G has formed on its outer face two series of parallel ribs G¹ and G² disposed at right-angles to each other, each series being provided with its respective two-part or three-part figure.

Enlarged sections taken through the two series of ribs each at right angles to the longitudinal direction thereof may be for example, as shown in Figures 4 and 5, wherein the one series has a two part figure and the other series a three part figure allotted to it.

As in the other arrangements hereinbefore described the various characters in the figures appear separately displayed from the respective standpoints of view, or by mechanical means whereby the sheet or figure or both may be moved in one or two directions.

The sign may comprise lettering to be displayed in different colours. For this purpose the lines of one set would be in one colour and the lines of the other sets in other colours.

The backing may be opaque or translucent. If translucent it would permit the sign to be illuminated from a source of light behind it. The same device would then serve for day and night display.

The backing may consist of a thin sheet of suitable material, and may be sandwiched, or otherwise held in place, between the ribbed sheet A and a stiff plate at the back.

With this construction if the sign is to be illuminated from a source of light behind it the stiff plate may be of translucent material.

The multiple-part figure may be drawn

directly on to the ribbed sheet in which form the device will only effect a change of exhibit as the standpoint of view is changed.

The ribbed panel or glass plate could, in some cases, be a compound one, that is it could be made up of strips having the required form or glass rods placed side by side as these would present the necessary ribs of convex cross-section, but the glass plate is the simplest form of panel as this is an article which is already available on the market.

It will be appreciated that the described device can be used as a sky sign or the like. As an observer walks past it the visible sign will change according to the angle of vision with the general plane of the device.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In an advertising device or toy of the kind described, a sheet of transparent material having on its front face a series of parallel ribs of convex cross-section each constituting a cylindrical lens, arranged close together side by side and having at its back a multiple-part figure for display composed of a plurality of sets of parallel lines, one set for each part, whereof the lines for each set are parallel with said ribs and are spaced apart to correspond to the central longitudinal axes of the ribs, the lines of one set being interposed between the lines of another set and differing therefrom in character.

2. In an advertising device or toy of the kind described, a sheet of transparent material presenting on its front face a series of parallel ribs of convex cross-section each constituting a cylindrical lens, arranged close together side by side and having at its back a multiple-part figure for display composed of a plurality of sets of parallel lines, one set for each part, whereof the lines for each set are parallel with said ribs and are spaced apart to correspond to the central longitudinal axes of the ribs, the lines of one set being interposed between the lines of another set and differing therefrom in colour.

3. The combination of a backing sheet having on its front face a multiple-part figure for display comprising a plurality of sets of parallel lines, one set for each part of the figure, and a front sheet of transparent material placed in front of said backing sheet and having on its front face a series of parallel ribs of convex cross-section each constituting a cylindrical lens, arranged close together with no spacing between them, the lines in each set being parallel with and spaced apart to correspond to the spacing of the central longitudinal axes of the ribs, and some of the lines of one set being interposed between some of the lines of another set and differing therefrom in character.

4. The combination with a backing sheet having on its front face a multiple-part figure for display comprising a plurality of

sets of parallel lines, one set for each part of the figure, of a front sheet of transparent material placed in front of said backing sheet and having on its front face a series of parallel ribs of convex cross-section each constituting a cylindrical lens, arranged close together with no spacing between them, the lines in each set being parallel with and spaced apart to correspond to the spacing of the central longitudinal axes of the ribs, and some of the lines of one set being interposed between some of the lines of another set and differing therefrom in character and in colour.

5. The combination of a backing sheet having on one face a multiple-part figure for display comprising a plurality of sets of parallel lines, one set for each part of the figure, and a compound sheet of transparent material placed in front of said backing sheet and having on its front face a series of parallel ribs of convex cross-section, the lines in each set being parallel with and spaced apart to correspond to the spacing of the central axes of the ribs, and the lines of one set being interposed between the lines of another set and differing therefrom in character.

6. The combination with a translucent backing sheet having on one face a multiple-part figure for display comprising a plurality of sets of parallel lines, one set for each part of the figure, and a front sheet of transparent material placed in front of said backing sheet and having on its front face a series of parallel ribs of convex cross-section arranged close together with no spacing between them, the lines in each set being parallel with and spaced apart to correspond to the spacing of the central axes of the ribs, and some of the lines of one set being interposed between some of the lines of another set and differing therefrom in character.

7. The combination of a backing sheet having on one face a multiple-part figure for display comprising a plurality of sets of parallel lines, one set for each part of the figure, a sheet of transparent material placed in front of said backing sheet and having on its front face a series of parallel ribs of convex cross-section, the lines in each set being parallel with and spaced apart to correspond to the spacing of the central axes of the ribs, and some of the lines of one set being interposed between some of the lines of another set and differing therefrom in character, and means for moving the said sheets one in relation to the other through a distance sufficient to bring the ribs from centrally over one set of lines to centrally over the next set, for the purpose described.

8. The combination of a backing sheet having on its face two multiple-part figures for display each comprising a plurality of

sets of parallel lines, one set for each part of the figure to which it belongs, and a sheet of transparent material placed in front of said backing sheet and having on its front face two series of parallel ribs of convex cross-section, the ribs of the one series being arranged transversely of those of the other series, the lines in the one figure being parallel with and spaced apart to correspond to the spacing of the central axes of the ribs of the one series, and the lines in the other figure being parallel with and spaced apart to correspond to the spacing of the central axes of the ribs in the other series, and some of the lines of one set in each figure being interposed between some of the lines of another set in the same figure and differing therefrom in character.

9. The combination of a backing sheet having on its face a three-part figure for display comprising three sets of parallel lines, one set for each part of the figure, and a front sheet of transparent material placed in front of said backing sheet and having on one face a series of parallel ribs of convex cross-section arranged close together with no spacing between them, the lines in each set being parallel with and spaced apart to correspond to the spacing of the central axes of the ribs, and the lines of two sets being interposed in pairs between the lines of the third set and differ-

ing therefrom and from one another in character, the two lines of each interposed pair being spaced each the same distance from the line of the third set nearest to it.

10. In an advertising device or toy of the kind described, a sheet of transparent material having on its front face a series of parallel ribs of convex cross-section, arranged close together side by side and having at its back a multi-part figure for display composed of a plurality of sets of parallel lines, one set for each part, whereof the lines for each set are parallel with said ribs and are spaced apart to correspond to the central longitudinal axes of the ribs, the lines of one set being interposed between the lines of another set and differing therefrom in character, the width of the lines composing the figure, the cross-section of the ribs and the distance of the ribbed surface of the sheet from the said figure being all so mutually proportioned that the lines are magnified to the full width of the ribs so that from a given standpoint of view a solid picture is presented to the eye.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN SPEDDING CURWEN.

Witnesses:

A. W. HAYWARD,
A. L. LEAN.