

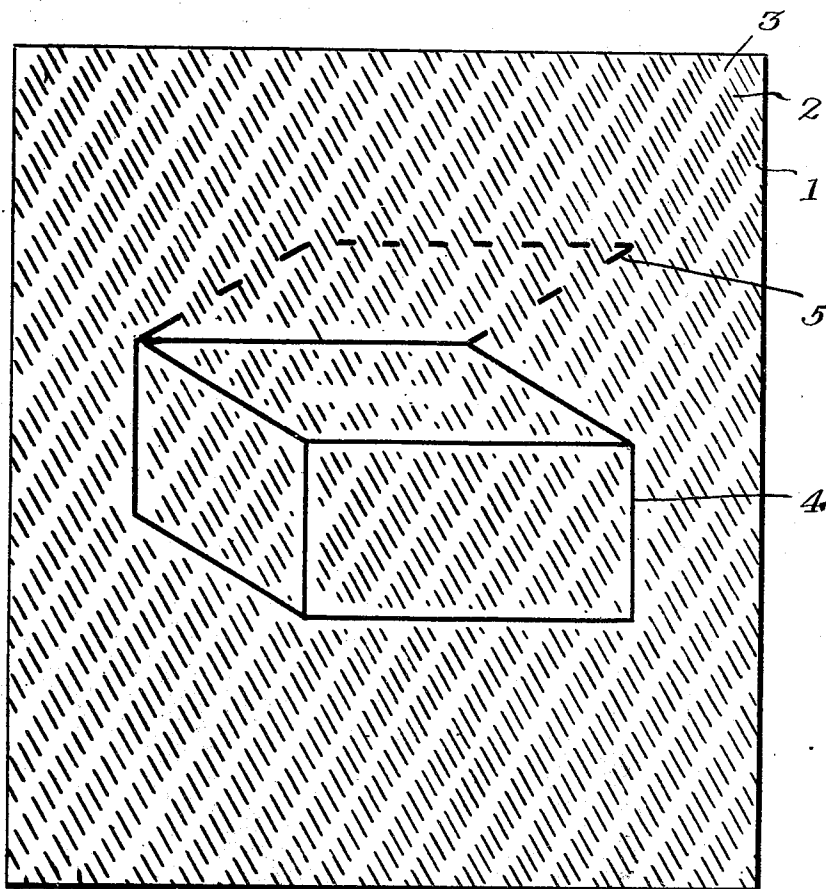
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CHANGING PICTURE

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INVENTOR

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CHANGING PICTURE.

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To all whom it may concern:

Be it known that I, HENRY M. RUSSELL, a citizen of the United States, and a resident of the city of Wheeling, the county of Ohio and the State of West Virginia (whose post-office address is 1206 Wheeling Steel Corporation Building), have invented a new and useful Improvement in Changing Pictures, of which the following is a specification, reference being had to the accompanying drawing, forming a part hereof.

One object of my invention is to produce a picture which shall appear to change, showing first one view or representation and then another different view or representation. Another object of my invention is to provide a picture which may be made to appear to change either by changing the position of the observer, or by changing the position of the picture, or by changing the position of the source of illumination.

Another object of my invention is to produce a changing picture which may be produced by the ordinary printing processes on ordinary paper.

Another object of my invention is to produce a changing picture which shall be free from moving parts, shall be cheap to produce, and simple to operate. My invention falls generally into that class of changing pictures which show one view when observed from a certain point, and show a different view when viewed from a different point, but my invention differs from this general class of pictures in that my device may be made to appear to change by changing the position of the source of light, without changing the position either of the picture or the observer.

The drawing is a view of the face of a picture embodying my invention. In the drawing, I have adopted diagonal shading at an angle of approximately 60° from the upper left-hand corner toward the lower right-hand corner, to represent glossy or shiny surface, which, in preferred forms of the invention may be such a surface as is obtained by the use of commercial gilding or silver paint or ink. I mention gilding first merely because it is more familiar, but I find

that silver ink or paint gives slightly better results. Those parts of the drawing which are not shaded with diagonal shading above-mentioned, are supposed to represent a dull or mat surface, and the black lines other than shading lines, are supposed to represent what they are, that is, a dead surface of a dark tone different from the tone of the mat surface mentioned above. The drawing represents a picture which will show, under certain conditions, a view of a square box closed, and under other conditions, a view of the same box with the lid partly open.

The picture 1 illustrated in the drawing, which represents a preferred form of the invention, will be seen to be divided up approximately uniformly into alternate wide bands 2 and narrow bands 3 extending from the upper right-hand corner toward the lower left-hand corner. The surface of the wide bands, as indicated by the shading that I have adopted as above stated, is glossy or shiny, except at those points at which the lines of the view representing the closed box 4 cross the wide bands. At these places, the dull mat surface is exposed. On the narrow bands, a view of the box with its lid 5 partly open is drawn, the view not being complete, but consisting of broken lines crossing the narrow bands, those parts of the lines which would appear on the broad shiny bands being omitted. In the picture illustrated in the drawing, the black lines are drawn in full in those places in which the lines of the two views happen to coincide. This is not essential, and does not in fact give as accurate tone values as though all the black lines were broken. It does, however, give satisfactory results and is to be preferred in many cases because it more readily lends itself to the ordinary printing processes.

It is not essential that the surface of the picture be divided into wide and narrow bands, nor that it be divided into bands at all,—it is only essential that it be divided into some sort of figures, regular or irregular, that shall be small relative to the size of the view to be shown. In the preferred form illustrated, approximately twice as much

area is bright as dull, and this ratio is found to be satisfactory for many conditions. The ratio varies, however, depending upon the character of the surface used, and upon the illumination expected.

The mat surface of the narrow bands should be as nearly as possible a match for the glossy or shiny surface, when the latter is illuminated by a source of light so located that it is reflected away from rather than toward the observer by the glossy or shiny surface. I find that for a picture using silver ink, of what is known among printers as the powdered type, a dark pearl gray is effective for the mat surface, this color being a good match for the silver ink.

The operation of the device is as follows: Suppose that the picture be laid flat upon a desk, and be illuminated by light from a window behind and to the left of the observer, that is, that the illumination be such as is desirable for reading or writing. The light which is reflected from the glossy or shiny surface will be reflected away from the observer, and the shiny surface will appear relatively dark, and will be indistinguishable from the dull or mat surface, and the entire sight of the picture will, so far as any contact between the glossy and the dull surface is concerned, have a uniform gray appearance. The observer will, therefore, plainly see all of the black lines, and will see the box with its lid partly open. While the black lines representing the lid are broken, still, if the observer is far enough away, or if the bands are narrow enough, they will appear as continuous lines. If now the picture be tilted toward the observer, and turned slightly to the left, it may be made to assume such position that the light from the window will be reflected by the glossy or bright portions of its surface, directly into the eyes of the observer. This will make the glossy and mat portions of the surface contrast sharply with each other, and the observer will see the view of the closed box. The black lines which happen to represent the body of the box, both open and closed, will still be exposed, but because of the dazzling effect of the reflected light, and the fact that in this position the contrast between the dull and bright portions of the surface is so much greater than the contrast between the dull portions and the darker dull lines, the observer will not see the broken lines representing the lid, and he will, moreover, see the small panel or name plate on the middle of the outside of the lid, which has no black line in it. Thus, the view will have changed, and the box will now appear to be closed. Inasmuch as the aspect of the picture depends upon the predominance of directly reflected light in one case, as compared with the case in which reflected light does not predominate, it is

obvious that the change may be produced as well by changing the position of the source of light, as by moving the picture itself, and it may also be produced by changing the position of the observer.

In this specification, and in the following claims, I have used the word "picture" to designate the actual physical entity composed of a supporting surface such as a piece of cardboard or a piece of canvas, or a sign board, together with all of the pigments, inks, varnishes and lacquers that are in or on it. The word "picture" as used herein does not refer especially to the representation of any object.

The word "view", as used herein, is intended to mean the pictorial representation of some object, scene, or design, or the representation thereof, and does not refer to the physical substance on which it may appear.

I claim:

1. In a changing picture, two views, one depicted in contrast between light surface and dark surface, and one depicted in contrast between dull surface and glossy surface.

2. In a changing picture, two views, one depicted in different colors, both substantially equally dull, and the other depicted in dull lines on a glossy background, said lines and the said background being of substantially the same color.

3. In a changing picture, the combination of two views, one representing an object in one phase of an evolution, and depicted in contrast between light surface and dark surface; and the other view representing the object in another phase of the evolution and depicted in dull lines upon glossy surface.

4. In a changing picture, the combination of a background composed of small sections of shiny surface, and small sections of dull surface, interspersed among each other with substantial uniformity, and two views, one drawn in dark lines on the said dull portions, and the other drawn in dull lines on the said bright portion.

5. In a changing picture, the combination of a background consisting of alternate dull and glossy stripes, the dull stripes being approximately half the width of the glossy stripes; a view depicted in dark lines on the dull stripes; and a view depicted in dull lines on the glossy stripes.

6. In a changing picture, the combination of a background consisting of alternate dull and glossy stripes, the dull stripes being approximately half the width of the glossy stripes; a view depicted in dark lines on the dull stripes; and a view depicted in dull lines on the glossy stripes, the said last-mentioned dull lines and the dull stripes being of substantially the same color, and of such a color as to match as nearly as possible the appearance of the said glossy stripes when

viewed by light that comes from such a direction as to be reflected by them away from the observer.

5 7. In a changing picture, two views, one depicted in contrast between colors.

8. In a changing picture, two views, one view depicted in contrast between hues.

10 9. In a changing picture, two views, one view depicted in difference in texture and the other by difference in color.

10. In a changing picture, two views, one depicted by contrast between dull surface

and glossy surface and the other by difference in color.

11. In a changing picture, two views, one picture depicted in contrast between light surface and dark surface and the other by difference in color. 15

12. In a changing picture, two views, one view depicted in contrast between shiny surface and non-shiny surface, and the other view depicted in contrast between surfaces differing in color. 20

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