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PROCESS OF RENDERING OBJECTS LESS VISIBLE AGAINST BACKGROUNDS.

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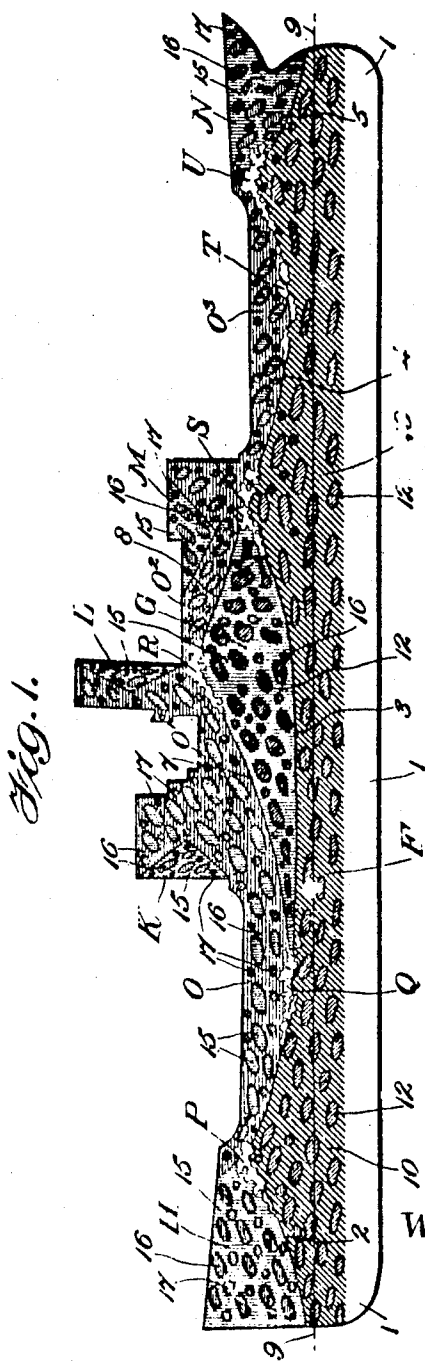


Fig. 4.

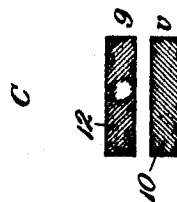


Fig. 3.

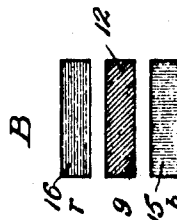
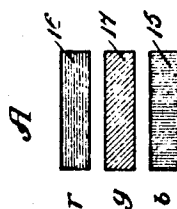


Fig. 2.



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PROCESS OF RENDERING OBJECTS LESS VISIBLE AGAINST BACKGROUNDS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM ANDREW MACKAY, a citizen of the United States, residing at Coytesville, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Processes of Rendering Objects Less Visible Against Backgrounds; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a process of rendering objects such as ships at sea, etc., less visible against backgrounds, and has for its object to provide a method which will be more efficient for the purpose in hand than those heretofore proposed.

With this and other objects in view the invention consists in the novel steps and combinations of steps constituting the process, all as will be more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification in which like numerals designate like parts in all the views:—

Figure 1 is a diagrammatic view illustrating one design in accordance with which the ship may be painted; and

Figs. 2, 3 and 4 are diagrammatic views illustrating different shades of color that are useful in painting the design illustrated in Fig. 1.

In order that the invention may be the more clearly understood it is said:—

In order to mimic the natural background against which a ship is seen it is desirable to make the exposed surface of the ship reflect as near as possible the same colors, that would be reflected into the eye, of the background if the ship were not present. That is to say, the water in the foreground of an observer is generally of a dark greenish or blue hue and it is also generally in the form of waves.

Therefore, in carrying out this invention I prefer to paint a portion of the ship to simulate as nearly as possible this said water. Again, the water in the background beyond the ship is of a lighter hue in which blue and green predominate, and is generally in the form of waves so that another

portion of the exposed area of the ship is painted to simulate as nearly as possible this last mentioned water.

In addition to the above portions of water that are to be simulated, certain portions of the ship are seen against the sky extending above the horizon and it is therefore desirable to reserve certain parts of the exposed area of the ship and to paint them with colors simulating the sky.

The sky colors, of course, are still different from the colors in the water, and in all cases it is desirable to use such colors as will simulate as nearly as possible the average hues of the sky and sea, all as will now be made clear.

Accordingly, in carrying out this invention, I provide the sets of colors A, B and C, see Figs. 2, 3 and 4. The set of colors A is composed of the hues red, green and blue, and in order to get the proper shade of red I prepare say one ounce of Venetian red and add thereto say 47.5 ounces of white lead. In order to obtain the proper shade of green I mix say 1 ounce of oxid of chromium with .5 of an ounce of yellow chrome light and add to the mixture say 7 ounces of white lead.

In order to obtain the proper shade of blue I mix $1\frac{1}{2}$ ounces of artificial ultramarine and 37 ounces of white lead.

In order to obtain the set of colors B, for the red and blue I employ the same shades of red and blue as that described in connection with the set of colors A. For the green in the set of colors B I mix one ounce of oxid of chromium with .05 of an ounce of chrome yellow light and 6.7 ounces of white lead.

For the set of colors C I employ the same green as that appearing in set of colors B, and for the violet in the set of colors C, I mix .5 of an ounce of artificial ultramarine with .05 of an ounce of Harrison red and with 3.45 of an ounce of white lead.

All the above colors are made with the well known Windsor & Newtons standard artists' oil colors.

Having prepared the three sets of colors, A, B, and C, I proceed to paint the ship in such a way as to simulate one or more waves, see the lines 2, 3, 4 and 5. The main body portion of the area F inclosed by said lines 2, 3, 4 and 5 I paint with the violet

color 10 in the set of colors C, and on this said violet color or ground 10 I paint numerous green patches 12, the green being of the same shade as the green 12 in set of colors C. These said green patches are chosen of such a size as to occupy about 30% or 40% of the violet ground 10 as indicated.

This wavelike area F extends well up the sides of the vessel, and is therefore of such dimensions as to entirely obliterate or hide the water line 9 of the vessel.

In fact, if the colors are made up as above disclosed, at a proper distance from the vessel with the light being right, it is impossible to distinguish any water line and the water of the foreground is simulated so closely as to merge or shade right into the painted portion of the vessel, and it is substantially impossible to tell where the water line 9 should be.

Above the wave lines 2, 3, 4 and 5, I select an area such as G, for example, bounded by the wave lines 7 and 8, and I apply to said area G the blue paint 15 appearing in the set of colors B. This said blue paint is of a much lighter hue than the violet paint appearing in the area F, and therefore, it simulates much more accurately the distant water extending between the ship and horizon. On this said blue color or ground 15 I provide a plurality of green splashes or spots 12 which are, or may be of the same color as the spots or color in the area F, and they may occupy also the same relative area, of about 40% of the light blue ground, G.

In between the green spots 12 I also apply red spots of color 16 which appears in the set of colors B, see Fig. 3. These said reddish spots 16 containing yellow chrome occupy say 10% or 20% of the area of the blue ground G. After the vessel has been painted over the areas F and G with the colors and the designs just disclosed, if the light is just right, and if the observer is at the proper distance from the ship, the two painted areas F and G simulate so closely the water in the foreground and the water between the ship and the horizon that they readily merge into these said portions of the sea and it is very difficult indeed to distinguish these portions of the ship from the surrounding water.

In addition to the areas F and G I select an area such as H and first paint it over with the blue color 15 found in the set of colors A, and over this said blue color I provide splashes of red color 16 found in said set of colors A. These said splashes are or may be of substantially the same total area as the splashes 12 in the area F, and they may occupy say 40% of the area H. In between the splashes of red 16 I further add smaller spots or patches of green 17 which appears in the set of colors A. These said spots 17 may occupy say 15% or 20% of the area H.

The areas K, L, M, N are similarly painted with the same colors and proportions of the colors as will be clear from the drawings. The red 16 in the areas H, K, L, M, and N contains a large proportion of white as will be clear from the composition of set of colors A, and therefore, it is well adapted to simulate the colors that are reflected from a sky above the horizon. The green in said areas contains a considerable proportion of yellow chrome light and white lead so that it is well adapted to simulate the green which goes to make up a distant sky while the blue also contains a large proportion of white, and therefore, closely simulates the average distant sky.

The result is that when the light is just right and the observer is at a proper distance from the vessel, the said areas H, K, L, M and N so fade into the surrounding sky that the contour or outline of the ship substantially disappears and it is often very difficult indeed to distinguish her outline against the sky. The illusory effect or mimicry is still further enhanced by the treatment of the area O, containing the portions O', O² and O³. These said areas are first painted with the red color 16 which is the same as the red spots in the preceding areas, and on this color field is applied the spots or splashes 15 which is the same as the blue field 15 in the preceding areas. In the field 16 the spots 15 occupy about say 40% of the total area. Between the spots 15 on the red field 16 is also painted the green spots 17 which occupy say a total area of 10% or 20% of said field 16. The spots 17 of the areas O, O', O² and O³ are of the same color as the spots 17 in the areas H, K, L, M and N.

Referring to the said areas O, O', O² and O³ it will be observed that the main field of color 16 contains a large proportion of white lead, and therefore, it reflects the red of the sky as well as the red of the distant sea. In the same way the spots 15 on said last mentioned areas contain a large proportion of white with a small proportion of blue, and therefore, they are well adapted to reflect the same light as the distant sea and sky.

Likewise the spots 17 on said areas O, O', O² and O³ contain both yellow chrome light and a white so that they are well adapted to reflect the same green colors as the distant sea and sky.

It results from this that the distant sea and sky are caused to appear to merge into each other from these said areas of the ship's side, and when the light is just right, and the distance is proper, the ship does actually disappear both as to contour, water line and all. In other words, when the conditions are favorable it is impossible, as has been proved by actual trial, to see a vessel painted according to this design when the same vessel

painted in the dull gray tones heretofore employed would be clearly and distinctly visible.

In addition to the above, it is preferred to preserve certain areas or spots such as P, Q, R, S, T, U, etc., to be painted in white. These said last named areas may be given an outline such as that shown and thus represent white caps on the sea thus increasing the illusion.

It will now be clear that by using one's judgment and selecting the proper shades or hues of red, green and blue to match a given foreground, or background, and by proportioning said hues or shades according to the principles above disclosed, a vessel may be so painted as to reflect back into the eye rays of light which closely simulates those reflected by the background itself. It will be further clear that the illusion is greatly enhanced by so shaping the areas to be painted as to simulate the outlines or contours of different parts of said background. In other words, in a sense I paint a picture of actual waves and sky on the ship and enhance the illusion by placing the red, green and blue colors side by side in patches instead of mixing them in different proportions into a single and different paint for each area such as F, G or H. It will be further observed that I am enabled to paint the entire ship with only the shades of color 12, 10, 15, 16, and 17, but that the patches of these colors occupy different relative areas on different parts of the ship's surface. It is important that these said patches be not made so large as to be distinguished by the eye as separate areas of color at the distance the ship is to be seen.

I find that if they are not larger than say 10 inches or twelve inches in one dimension, they will all blend into the eye as a single shade at a distance of say one half a mile or more.

I further find it convenient to paint what I call a pattern design of a given type of ship in order to enable the ship's painters or other persons applying the colors to simulate the foreground, the sea background and the sky background more easily and to this end I may provide a strip of sheet material such as wood, cardboard, etc., or preferably a strip of flexible material, and paint thereon outlines of the above mentioned foregrounds and backgrounds, substantially as described above. Said pattern design would with the same type give the substantial appearance of Fig. 1 of the drawings. These designs may be sold to the shipowners or to the other persons controlling the painting of the ship.

It is obvious that those skilled in the art may vary the details of the process as well as the shape of the various patterns, patches, or designs, to be painted on the ship, and

also the colors in each case without departing from the spirit of the invention, and therefore, I do not wish to be limited to the above disclosure except as may be required by the claims.

What I claim is:—

1. The process of decreasing the visibility of a ship at sea which consists in painting the outline of a body of water on said ship, and in patches of color so proportioned as to shade and area as to reflect into the eye rays of light closely simulating those reflected by said water, substantially as described.

2. The process of decreasing the visibility of a ship at sea which consists in painting the outlines of a portion of the water and sky against which said ship is seen and in different patches of color so proportioned in shade and area as to reflect rays of light closely simulating in tone those reflected from said water and sky, substantially as described.

3. The process of decreasing the visibility of a distant object seen against a background of water, and sky, which consists in painting on the lower portions of said object in predetermined colors an outline of the foreground; painting on said object above said outline of the foreground in colors an outline of the background of water; painting in colors above said background of water an outline of the background of sky; and so proportioning said colors in each area painted as to cause the reflected rays to closely simulate the rays actually reflected by the corresponding foreground and backgrounds, substantially as described.

4. The process of decreasing the visibility of an object at sea which consists in painting patches in predetermined shades of red, green, blue and violet on the surface of said object in areas representing various portions of the sea foreground, the sea background and the sky background; and so proportioning the total areas of said patches in each background and foreground as to reflect rays closely simulating those reflected from the natural foreground and backgrounds, substantially as described.

5. The herein described pattern design for aiding in the painting of a vessel to decrease its visibility at sea comprising an outline of the natural sky background and an outline of the natural sea background against which said vessel is to be seen, and having the areas in said outlines of said backgrounds painted in colors adapted to reflect rays of light closely simulating those reflected from said natural backgrounds, substantially as described.

6. The herein described pattern for painting a vessel to decrease its visibility at sea, comprising areas simulating the sky and sea portions of the natural foreground, and background in connection with which said

vessel will be seen, and having said areas painted in colors adapted to reflect rays of light closely simulating those reflected from said natural grounds, substantially as described.

7. The herein described pattern for painting a vessel to decrease its visibility at sea, comprising areas simulating the sky and sea portions of the natural foreground, and

background in connection with which said vessel will be seen, and having said areas painted in patches consisting of different colors, of the proper hues, adapted collectively to reflect rays of light closely simulating those reflected from said natural grounds, substantially as described.

In testimony whereof I affix my signature.

WILLIAM ANDREW MACKAY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."