April 29, 1941. K. RICHARDSON 2,240,053

COLOR SCALE

Filed April 5, 1939

Fig. 1.

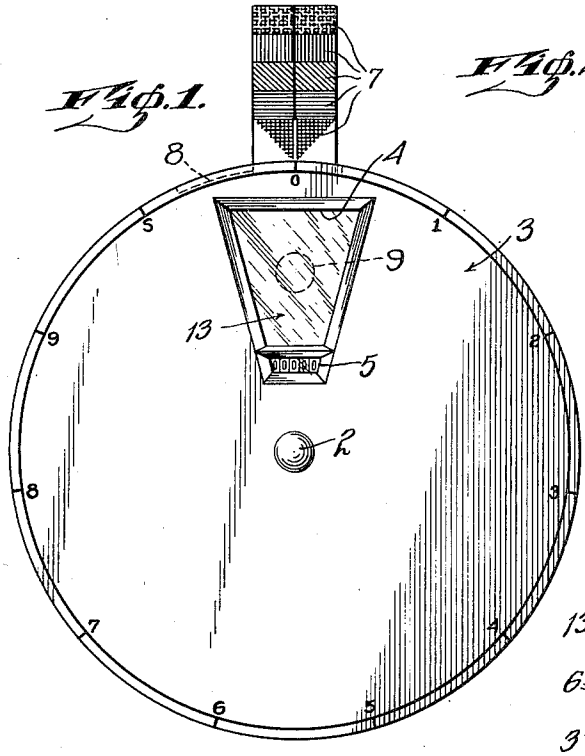


Fig. 2.

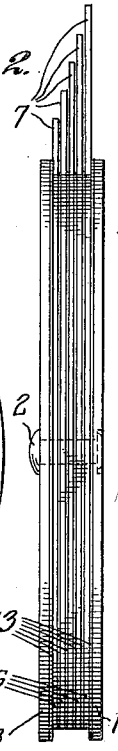


Fig. 3.

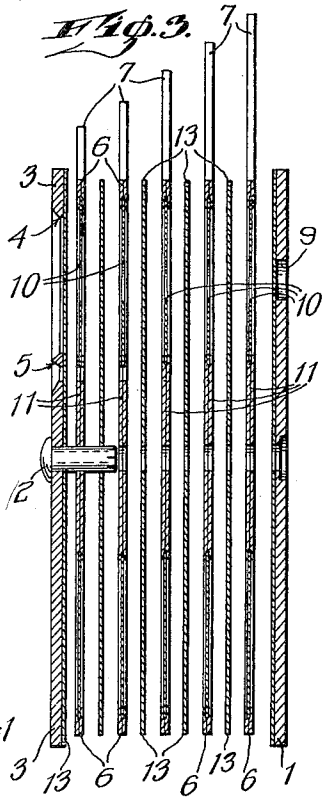


Fig. 4.

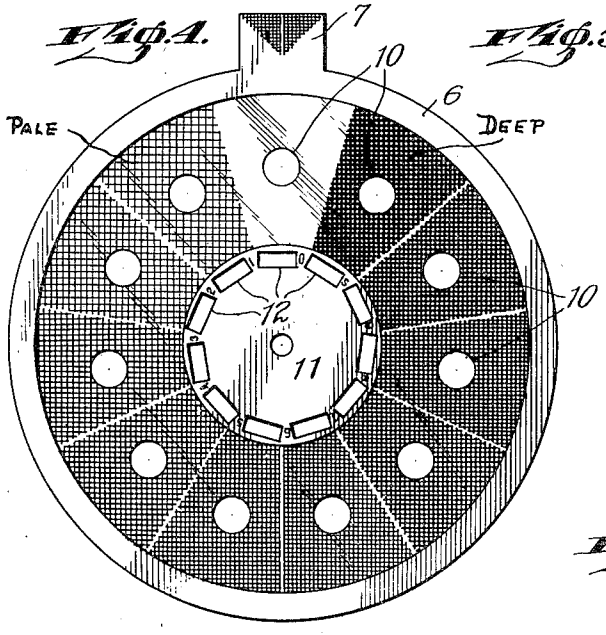
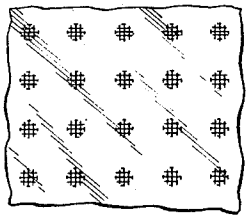


Fig. 5.



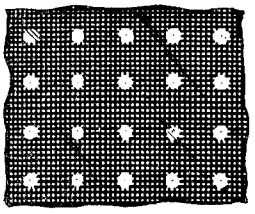


Fig. 6.

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Patented Apr. 29, 1941

2,240,053

UNITED STATES PATENT OFFICE

2,240,053

COLOR SCALE

King Richardson, Beverly Hills, Calif.

Application April 5, 1939, Serial No. 266,065

4 Claims. (Cl. 88—14)

The invention is an improved color matching or finding device, the purpose being to provide a compact instrument by the manipulation of which various shades and hues or colors can be produced and by means of which a selected color can be classified, as by an index, and reproduced at will by reference to such index, and so that another person, informed of the index designation, can also reproduce the same color by the setting of a similar instrument to the same designation. The invention thus lends itself particularly to use in identifying the colors of fabrics and the like, whereby, for example, customers can order goods of any desired shade or color by the use of the index designation rather than by sample or name or otherwise, as generally heretofore the custom, thus affording a substantial convenience to various industries.

The invention comprises the use of several transparent surfaces, each provided with different colors and adapted to be superposed to give the composite effect of all of them, such effect being under control by the proper selection of the surfaces used in superposition. This principle can be embodied in different forms and there is no limitation herein to any particular form, except as pointed out in the appended claims.

The drawing shows but one embodiment which may be taken as preferred.

Fig. 1 shows the face of the instrument and Fig. 2 its edge view, both in perspective.

Fig. 3 is a vertical section, shown of exaggerated thickness and with the members separated for clearness sake.

Fig. 4 shows one of the color discs, of which there may be as many as desired according to the refinement of color gradation to which the instrument is built, and

Figs. 5 and 6 are greatly magnified portions of the colored area of the sections of a disc.

The instrument shown is constructed on a stiff base or backing 1, which may be of cardboard and which is provided with a central pivot 2 and a top or front plate 3, which latter has a window 4 to show the color and a smaller window 5 to show the index. These windows are juxtaposed and may be regarded as one window, if desired. A series of thin transparent sheets or discs 6 is mounted on the pivot 2 and each is provided with an operating handle or tab 7, projecting beyond the cover plate, so that each disc can be rotated independently of all the others.

The front and back plates which are herein individually and collectively regarded as the frame of the instrument, are held together in fixed relation either by a cross strap connection indicated at 8 in Fig. 1, or by means of the pivot construction as preferred, or both, and the periphery of the front plate is scaled with index markings reading from 1 to 9, S and O. Each tab has a pointer mark on it by which its disc is to be brought into registry with the various scale markings on the front plate.

The back plate has a hole 9 in its registering with the center of the window 4 and all the discs have holes in them marked 10 which register with the hole in the back plate and with each other when the tabs are set against any one of the scale markings. The purpose of these registering holes is for convenience in matching colors, for which reason they may be termed matching holes. The instrument is laid against the colored surface to be matched so that its color shows through the maching holes 9 and 10. Then the discs are rotated until the field shown in the color window 4, surrounding the hole, assumes the same color. At that point the hole will substantially disappear, indicating that the discs have been so turned and set as to produce the same color as the underlying surface. Instead of holes the discs could be made clear or transparent over an area equivalent to the hole and this variation is included in the term matching hole.

The discs represent or carry the transparent surfaces above referred to which should be of some membranous material, very thin and as transparent as possible, such as the clearest Cellophane or like plastic. It is provided with a reenforced rim to which its tab is attached or on which it is formed and with a reenforcing hub marked 11 of thicker and preferably opaque material, and presently referred to. The transparent part of the disc is divided, in the present case, into eleven sections or sectors, of which the one immediately adjacent the tab is clear, that is, without any color, while the others bear color applied to them each in a successively increasing intensity around the disc from left to right, as viewed in Fig. 4. Thus in Fig. 4 the sector designated "Pale" will be understood to bear the least intensity of color, the next below it to carry more, and so on around the disc to the final section of the series which is marked "Deep," each intermediate section or sector being equally graded with reference to its neighbors. Although Fig. 4 shows only one of the discs, it will be understood that all of the others are constructed on the same principle, but with different colors. Thus the disc shown may be blue, the one behind it red, the one behind that blue-green, etc., conforming to

the three or four primaries, although there is no necessary limitation to the particular colors assigned to the discs or to the sections, as will presently become apparent.

The coloring of the sectors is preferably done according to the common multi-color printing process, i. e., by printing, each with a dot-screen pattern of color, the dots of which, for the palest sectors are extremely small and rather far apart, as suggested by the magnified view, Fig. 5, and for the deeper colored sections are so much larger and closer together that the transparent spaces between them become the dots, as suggested by magnified view, Fig. 6. Thus when two sectors thus colored are brought together at the window, the dots or colored areas of the lower sector show through the transparent parts of the upper sector and by this method of addition a particular shade or hue of color is produced. With more than two sectors, the same principle applies so that with three or four discs of appropriate size practically any color sensation can be made. Within this invention, there is no limit to the number of either the sectors or the discs, except, of course, the limit inevitably imposed by the absorption of light by the transparent medium used. By preference, the color used is a transparent pigment, so that some of the composite effect produced at the window may be the result of subtraction rather than addition. This also is not material to the broadest aspects of the invention so long as a sufficient range of colors is producible at the window.

By preference also the deepest hued sector for each color-bearing disc is a solid color with no dots in it and the front face of the back plate 1 is pure white to act as a reflector. More than one or all of the discs could be solid colors, if desired, so long as the backing is white or serves as the light source necessary for subtractive effects. In the case in hand, one of the discs, and preferably the one behind the front plate, is printed in all its sections with a dot-screen pattern but in black pigment.

The margins of the hubs 11 are intended to show through the index window 5 when any disc tab has been brought into registry with a cover scale mark, i. e., when any particular sector has been brought into registry with the color window, and for this purpose the hub is marked with a corresponding index marking or number so that the position of the disc may also be read at the window. Thus whenever any color effect has been produced in the window, the numbers appearing therein will indicate the particular settings of the discs which produced it. It follows that whenever two of these instruments have been set to show the same index number in the window, they will both show the same color effect in the window and therefore may be used as a means of accurate reference for identification of that particular shade or hue of color. Colored goods may thus be ordered by wire or phone without risk of misunderstanding.

For the purpose of exposing the numbers of the disks, those hubs in front of the rearmost hub require to be fenestrated as indicated at 12 in Fig. 4, and progressively with wider openings, but any way of assembling the setting numbers of the discs so that they will read in a fixed sequence at one place or window will of course be satisfactory; the purpose of this arrangement being to avoid mistake in reading the disc-setting when the proper settings have been found. It will be understood that for each color produced at the window, the particular sequence of numbers will be read in the index window, which sequence corresponds to that color and to that color only.

It remains only to state that since the color discs require to be quite thin, their thickness is greatly exaggerated in the drawing, their specific construction may be such as thought to be most durable for the material employed, and that they may be separated in such manner as thought best by the manufacturer, or to permit the movement of each to be independent of the other. In Fig. 3, intervening layers of transparent sheets, indicated at 13, are used for protecting the colored faces of the discs from abrasion.

I claim:

1. A color-matching instrument comprising a white-faced or light-reflecting back-plate having a matching hole, a front plate having a color window overlying said hole and an associated index window, a plurality of superposed relatively transparent sheets respectively movable over the white-faced back-plate and behind said color window, each sheet being differently colored and divided into sections of graded color intensities adapted to occupy said color window and each section having a matching hole to register with that of the back-plate and a digit adapted to show through said index window.

2. A color-matching instrument comprising a light-reflecting back-plate having a matching hole, a front plate having a color window overlying said hole and an associated index window, a plurality of superposed relatively transparent sheets respectively movable over the back-plate and behind said color window, each sheet being differently colored and divided into sections of graded color intensities adapted to occupy said color window and each section having a matching hole to register with that of the back-plate and a digit adapted to show through said index window, when the matching holes are registered, the digits on the successive sheets being relatively located thereon to be readable in horizontal sequence when exposed through said window.

3. A color-matching instrument comprising a back-plate, a circular front plate having a color window and an associated index window and provided with a sequence of digits around its circumference, a plurality of superposed relatively transparent discs individually rotatable behind said color window, each disc being differently colored and divided into sections of graded color intensities adapted to register with said color window, each section having a digit adapted to show through said index window and each said disc having a pointer fixed thereon in position to register with the digit on the front plate corresponding to the one exposed through said index window.

4. A color-matching instrument comprising a lgiht-reflecting back-plate having a matching hole, a front plate having a color window overlying the hole and an associated index window, a plurality of superposed relatively transparent sheets respectively movable over the reflecting back-plate and behind said color window, each sheet being differently colored with a dot-pattern and divided into sections of graded sizes of dots adapted to occupy said color window and each section having a matching hole to register with that of the back-plate and a digit adapted to show through said index window and collectively form an identifying number.

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