

Jan. 8, 1924.

1,480,486

A. S. ALLEN

COLOR MODEL

Filed Jan. 18, 1921

2 Sheets-Sheet 1

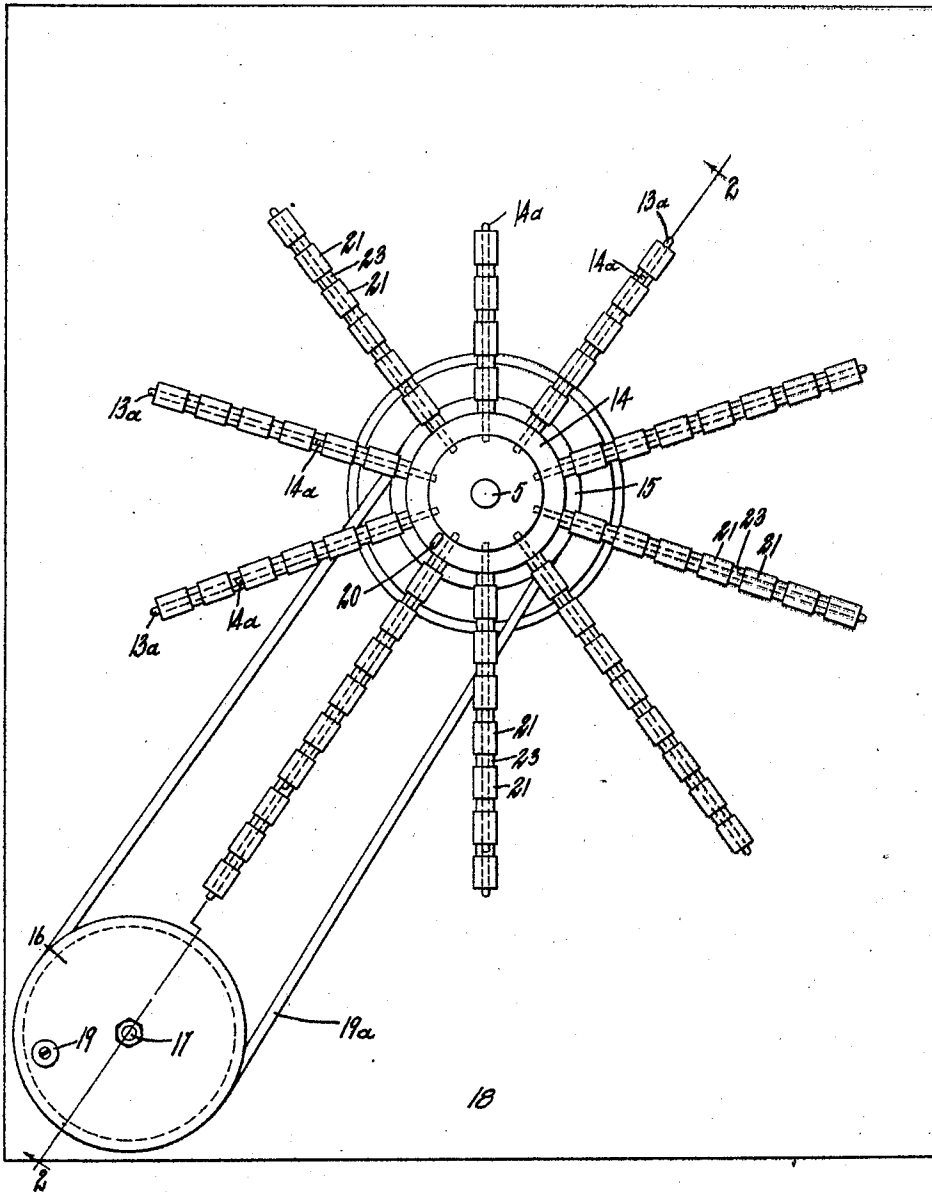


Fig. 1.

Inventor:
Arthur S. Allen
by Chas. V. Perkins Atty

Jan. 8, 1924.

1,450,486

A. S. ALLEN

COLOR MODEL

Filed Jan. 18, 1921

2 Sheets-Sheet 2

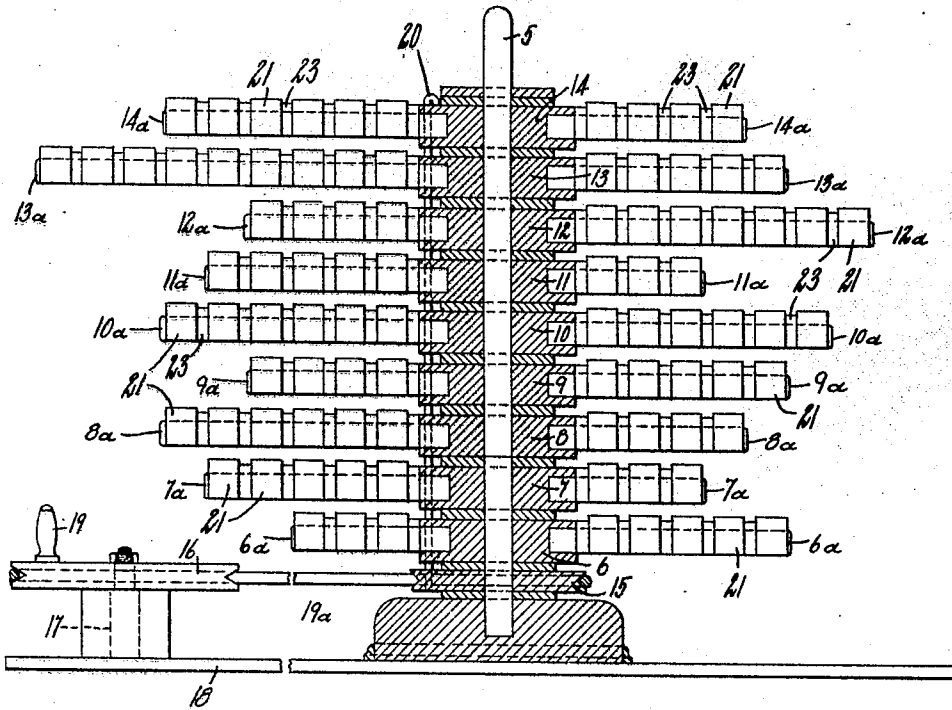


Fig. 2.

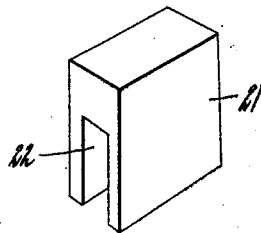


Fig. 3.

Inventor:

Arthur S. Allen
by Chas. T. Linnis Atty.

UNITED STATES PATENT OFFICE.

ARTHUR S. ALLEN, OF NORTH TARRYTOWN, NEW YORK, ASSIGNOR TO MUNSELL COLOR COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

COLOR MODEL.

Application filed January 18, 1921. Serial No. 438,106.

To all whom it may concern:

Be it known that I, ARTHUR S. ALLEN, a citizen of the United States, residing at North Tarrytown, in the county of Westchester and State of New York, have invented new and useful Improvements in Color Models, of which the following is a specification.

My invention relates to devices for teaching and practising the color system invented by Albert H. Munsell, and described in Letters Patent of the United States issued to him for color chart or scale, dated June 26, 1906, and numbered 824,374.

The main object of my invention is to provide a convenient device for displaying and comparing colors arranged in accordance with the said color system, and for this purpose I have employed demountable blocks supported upon horizontal arms extending radially from independent rotatable collars upon a central standard, and also to provide means for locking the collars together and for rotating them simultaneously.

In the accompanying drawing illustrating my invention Fig. 1 is a plan view, and Fig. 2 a vertical sectional view of the standard and portions of the device; Fig. 3 is a perspective view of one of the demountable blocks.

Referring to the drawing, 5 is a vertical cylindrical post or standard on which is supported a plurality of rotatable collars numbering from 6 to 14 both inclusive, to each of which are secured ten radial arms. The arms 6^a are secured to the collar 6, the arms 7^a are secured to the collar 7, and the other series of arms in like manner bear the same numeral as the collar to which they are secured plus the exponent letter "a."

I do not limit my invention to the number of collars and radial arms shown, as the user may employ more or less series of arms or a greater or less number of arms in each series, according to the fineness of color gradations that he may desire to display or employ, but the number shown have been found in practice to meet the usual requirements.

Any suitable material may be employed for the various parts; but I find wood to be preferable on account of lightness and cheapness. 15 is a loose collar or pulley mounted on the post 5; 16 is a pulley mounted on a stud 17 in the base 18. The pulley

16 is driven with a crank 19 by means of which and the driving belt 19^a the pulleys 15 and 16 are driven. Through each of the collars 6 to 14 and the pulley 15 is a vertical hole. When the collars are set so that the holes register, the collars may be locked together by the pin or rod 20 inserted through the holes, as shown in Fig. 2.

I do not limit my invention to the particular means shown of locking the collars together, or to the means shown of rotating the same. Any means for rotating the collars simultaneously may be employed as within my invention. Slidably mounted on each arm are slotted blocks 21. They may be supported in any suitable manner so as to be readily removable. The arms 10^a are colored a neutral gray of middle value between black and white; the arms 11^a to 14^a are colored neutral gray of lighter value than that of the arms 10^a—the arms 11^a being lighter in value than the arms 10^a, and the arms 12^a lighter in value than the arms 11^a and so on. The purpose is to provide an arrangement that will permit the use of an indefinite number of collars with radial arms attached, and to arrange them so that the middle collar and its arms will be neutral gray midway between white and black, and the collars and their arms above the middle collar will be of lighter value progressing upwardly by uniform degrees towards white; likewise the collars and their respective arms below the middle collar will be a neutral gray of darker value than that of the collar 10 and its arms, progressing downwardly by uniform degrees towards black.

I am using the term value to express the quality or dimension of luminosity. It is important in a color system to establish a strictly neutral color effect as a central standard of comparison,—that is, the neutral effect produced upon the eye by pigments available in commerce. While colors of the spectrum when combined in light form white, which is the theoretical or ideal neutral effect, it is well known that such result is not attainable in pigments, and that when the colors of the spectrum embodied in pigments are combined the result is gray and not white. It is desirable in constructing a value scale to produce not only a neutral gray, that is, one that has an absence of color, but one that produces the sensation to the human eye of a point midway be-

tween black and white. I have therefore adopted the logical arrangement of placing the collar of middle neutral gray midway of the post or standard 5, and given the collars below darker values of gray descending progressively to black, and the upper ones lighter values of gray ascending progressively to white.

The blocks 21 are provided with slots 22 to fit upon their respective arms and slide freely thereon. These blocks are colored in any suitable way so as to present the various hues of the spectrum, namely, red, yellow-red, yellow, green-yellow, green, blue-green, blue, purple-blue, purple and red-purple.

In the arrangement of the blocks 21 I have adopted the classification of colors of the Munsell system as set forth in said Letters Patent, and as applied in practice, which divides color into 5 principal hues, namely, red, yellow, green, blue and purple. I have also employed one intermediate hue between each two successive hues, that is to say, between red and yellow I place yellow red which to the eye presents a color effect midway between red and yellow and of the same value as each. A similar course is pursued as to the intermediate colors between the other hues. It is not essential to my invention that the intermediate between red and yellow be designated specifically as yellow-red. I have adopted this term for convenience. Any other designation would accomplish the object.

The blocks on each of the arms are of a common hue. There are ten arms in each series and the sequence of hues in each series corresponds to the order and classification above given, and provides also for an arrangement of complementary colors on arms opposite to each other,—that is to say for illustration, the arm bearing blocks colored red is opposite to the arm bearing blocks colored blue-green. The blocks 21 on the arms 10^a bear these hues in a common value, being the middle value between black and white,—that is of the same value as the neutral gray of the arms upon which they are mounted. The blocks on the arms located above the arms 10^a bear hues of lighter value, being of the same value as that of the neutral gray of the arms upon which they are mounted respectively, and the blocks on the arms below the arms 10^a bear hues of darker value, being of the same value as the neutral gray of the arms carrying the blocks respectively. Adjacent blocks are separated by a slight space in which are interposed smaller blocks 23 bearing neutral gray of the same value as the arms on which they rest. This arrangement brings the hue of a given block in direct contrast with a neutral gray of the same value as the hue. This is a matter of

great importance for comparison and determination of the degree of chroma of the particular hue. The distinction between the strength (chroma) of a color and its value is apparent in the illustration that a middle neutral gray may have more or less strength of color such as red, green or other hue imparted to it without increasing or diminishing its luminosity, and thereby still preserve its same value,—that is to say a middle neutral gray may have a hue imparted to it of the same middle value that is equidistant between black and white, thereby changing its chroma while still maintaining the same value that it had before the hue was imparted to it. The blocks 21 on each arm while bearing the same hue and the same degree of value, differ in the degree of chroma,—the block next to the collar on each arm being of the weakest chroma, and that at the extremity of the arm being the strongest chroma, while those between are uniformly progressive in chroma from the weakest to the strongest. In teaching the Munsell system it is of great advantage to bring into close contrast a given hue in any degree of chroma with a neutral gray of the same value as the hue. The eye becomes trained to perceive the contrast and to measure the degree of chroma.

My device enables the operator to present a great variety of combinations of color. The collars on the standard may be turned separately at the pleasure of the user so as to bring into close proximity hues of different values and of complementary colors. The hues are always adjacent to the neutral gray arms showing in sharp contrast the degree of chroma of given blocks. The blocks are demountable so that any selection of hue, chroma and value may be grouped together to present different color schemes, and the whole device may be spun and thereby the colors blended into a harmonious whole presenting the primary colors in continuous bands of various values from black to white. The demountability of the blocks of color from the arms affords an opportunity for the close comparison and contrast of colors otherwise remote from each other if allowed to remain fixed as on a chart.

What I claim and desire to secure by Letters Patent is:

1. In a color display device, the combination of a standard, collars mounted thereon having radially extending arms, colored blocks detachably supported upon the arms, the colors of the blocks on the same arm having the same light value and each arm bearing a neutral gray color corresponding to the value of the colors of the blocks mounted thereon.

2. In a color display device, the combination of a standard, a plurality of collars

bearing neutral gray colors mounted on said standard of different values progressing uniformly from black to white, radial arms secured to each of said collars and bearing a neutral gray color of the same value as the collar to which they are secured.

3. In a color display device, the combination of a standard, a plurality of collars bearing neutral gray colors mounted on said standard of different values progressing uniformly from black to white, radial arms secured to each of said collars and bearing a neutral gray color of the same value as the collar to which they are secured, demountable blocks suspended on said arms and bearing colors of the spectrum, said colors on each arm being of the same degree of value as the neutral gray of said arm but of various degrees of chroma progressing uniformly in strength from the standard towards the extremity of the arm.

4. In a device for displaying colors, a standard having a plurality of independently rotatable collars mounted thereon, a

series of radially extending arms secured to each collar and bearing demountable blocks carrying the colors of the spectrum, combined with means for locking the blocks together and rotating them simultaneously.

5. In a device for displaying colors, a standard having a plurality of independently rotatable collars mounted thereon, a series of radially extending arms secured to each collar and bearing demountable blocks carrying the colors of the spectrum, combined with means for locking the blocks together, consisting of perforations in the collars in alignment with each other, and a pin inserted therethrough, and means for rotating said collars simultaneously.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses, this seventh day of December, 1920.

ARTHUR S. ALLEN.

Witnesses:

SAMUEL H. GOLDEY,
HENRY WM. BAUER.