Oct. 19, 1943. C. KAISER, JR 2,331,983

DECORATION OF RODS

Filed Dec. 27, 1940

Fig. 1.

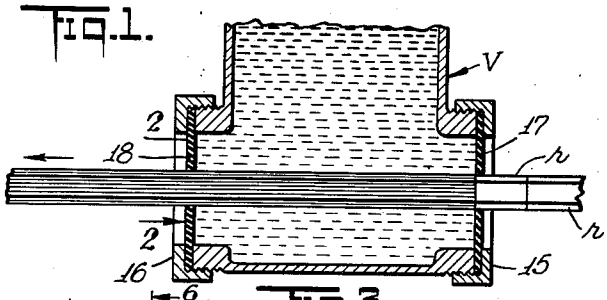


Fig. 2.

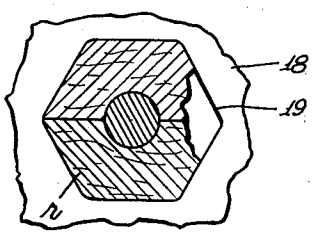


Fig. 3.

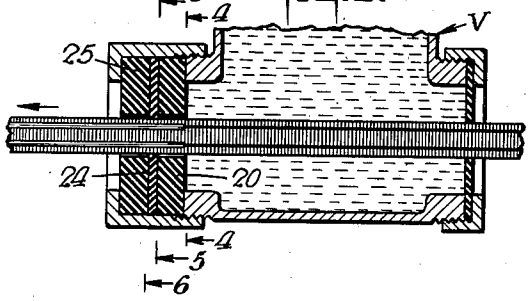


Fig. 4.

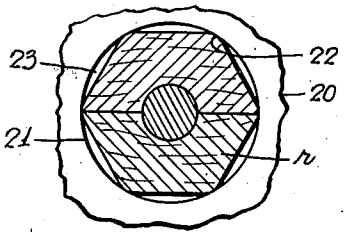


Fig. 5.

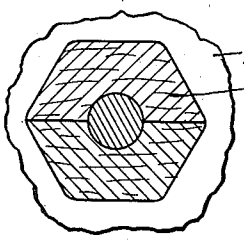


Fig. 6.

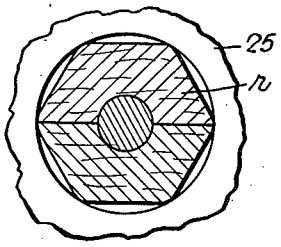


Fig. 7.

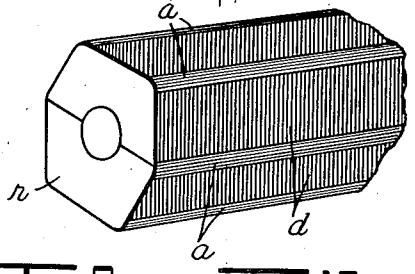


Fig. 8.

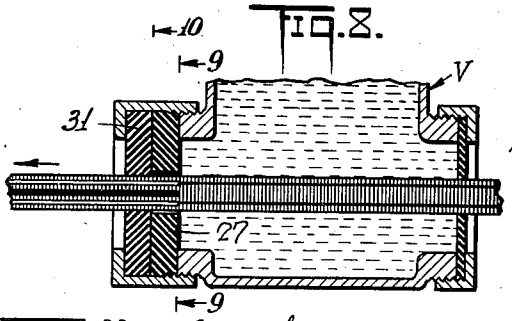


Fig. 9.

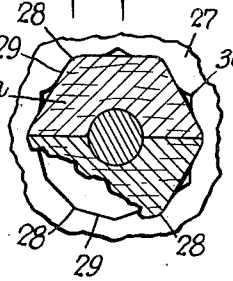


Fig. 10.

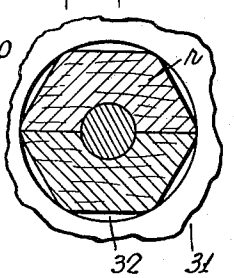
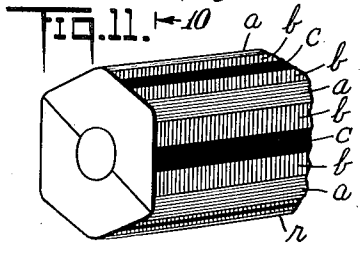


Fig. 11.



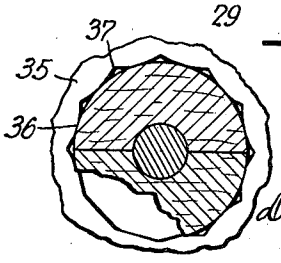


Fig. 12.

INVENTOR
Charles Kaiser Jr.
BY
Dean Fairbank & Hirsch
ATTORNEYS

Patented Oct. 19, 1943 2,331,983

UNITED STATES PATENT OFFICE

2,331,983

DECORATION OF RODS

Charles Kaiser, Jr., New York, N. Y., assignor to Eagle Pencil Company, New York, N. Y., a corporation of Delaware

Application December 27, 1940, Serial No. 371,877

2 Claims. (Cl. 41—1)

The present invention is concerned with the art of decorating rods such as lead pencils.

An object of the invention is to provide a simple, reliable and inexpensive procedure and equipment for applying longitudinal stripes of uniform small width, in uniformly spaced relation about a rod of any cross-section.

The invention is applicable to applying such stripes to rods that are of circular or polygonal cross-section. It affords an especially attractive decoration for the conventional hexagonal rods or pencils, and more especially for the application of such stripes along the middles of the respective panels thereof, and this preferably in association with a base color for the rest of the panel other than that of the areas immediately along the longitudinal edges of the rod or pencil, which desirably are of a third color.

For applying the uniformly spaced color stripes upon the circular rod or spaced from the various panel edges of the polygonal rod, the invention involves the use of a rubber or squeegee die having an aperture of regular polygonal cross-section and of original diameter so much smaller than that of the rod or pencil that when the latter is passed therethrough, clearance will exist only at narrow portions adjacent the various vertices when applied to a round rod, and in the case of the polygonal rod, the die aperture would have sides in number twice those of the rod so that alternate vertices of the die aperture snugly embrace the edges of the rod and the intervening vertices are slightly cleared therefrom. In the wiping action, accordingly, the wet color will be wiped off except at the cleared regions and the width of the stripe is determined by the size of the die aperture and, therefore, the amount of stretching to which the die is subjected while the rod or pencil passes therethrough.

In the accompanying drawing in which are shown one or more of various possible embodiments of the several features of the invention:

Fig. 1 is a view in longitudinal cross-section showing the equipment used in the first step in the decoration of a pencil or other rod,

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1, showing the die there used,

Fig. 3 is a view similar to Fig. 1 showing the equipment for the second step,

Figs. 4, 5 and 6 are views in transverse cross-section taken respectively along the lines 4—4, 5—5 and 6—6, showing the elements making up the squeegee die used at that stage,

Fig. 7 is a perspective view of a fragment of the rod showing the general appearance thereof after the second stage of decoration,

Fig. 8 is a view similar to Fig. 1 showing the equipment for performing the third step,

Figs. 9 and 10 are transverse sectional views taken respectively on the line 9—9 and 10—10 of Fig. 8 showing the elements making up the squeegee die there used,

Fig. 11 is a fragmentary perspective view showing the completely decorated rod or pencil and

Fig. 12 is a view in transverse cross-section showing the application of the invention to a rod or pencil, circular in cross-section.

In a specific embodiment for producing the pencil shown in Fig. 11, the procedure involves the drawing of the pencil or rod through successive color carrying vessels, diagrammatically indicated in Figs. 1, 3 and 8 respectively, each of which has at the outlet side thereof, a squeegee washer or die desirably made of rubber and controlling the removal of wet coloring matter from the completely covered rod, all in accordance with the design desired. The entire pencil is first covered with the color *a* appearing at the edges, which color in the form of a lacquer is in the vessel of Fig. 1. The washer thereof simply wipes off excess color and leaves the pencil solidly covered with that color. After drying of the pencil or rod, it is passed through the second color vessel of Fig. 3, which has in it color forming the body *b* of the panels. The rubber squeegee die at the outlet is so conformed as to wipe off clean the color at the corners or edges of the rod, so that the pencil or rod delivered as a result of the second operation, will have the appearance illustrated in Fig. 7. After the rod thus treated has dried, it is passed through the third color vessel shown in Fig. 8 in which is the lacquer for producing the median longitudinal stripes. The rubber or squeegee die for that purpose is so conformed as to wipe off clean all of the color applied in the vessel of Fig. 8 save only that left for the median stripes *c*.

Proceeding now to the details of the structures or steps involved, each of the color vessels of Figs. 1, 3 and 8 may have caps 15 and 16 thereon, cap 15 having a resilient washer 17 shown at the right, with an aperture snugly to fit about the pencil or rod *r* which pencils or rods are fed through in a continuous line to be completely coated with color from the vessel, the excess color being wiped off at the resilient outlet through which the rod passes from the vessel V.

Referring to Fig. 1 the outlet washer 18 is of relatively thin rubber stock, clamped periph-

erally by the cap 16 against the end of the vessel V and has an aperture 19 corresponding to that of the cross-section of the rod, illustratively hexagonal, but with sufficient clearance to leave upon the rod a coating of lacquer in the order of .001 inch thick.

After the rod has dried, it is passed through the color vessel of Fig. 3, in which the die 20 at the outlet side has a circular aperture 21 of diameter such as snugly to embrace the edges 22 of the polygonal rod and thereby to wipe off the wet color from the vessel that completely covers the rod, and thus to expose at said edges the color stripe *a* that had been applied from the first vessel.

Depending on the diameter of die aperture 21 the same will be spread to greater or lesser extent in passing the rod therethrough, which of course determines the width of the corner stripes *a*.

Were the die 20 used alone, there would of course be an excessive thickness of color at the segmental spaces 23 between the polygonal rod and the circular die hole 20. That color might spread non-uniformly and spoil the design. Therefore, a thin hexagonal rubber washer 24 similar to the washer 18 used in the first step is disposed adjacent die 20. Washer 24 wipes off the excess color left on by die 20. Immediately adjacent die 24 is a die 25 which is substantially a duplicate of the die 20 and through which the rod is also passed, effectively to wipe from the edge stripes *a* thereof any color that might have spread laterally thereto from the panel area *d*. The decoration resulting from the operation thus far described has the appearance indicated in Fig. 7.

The intermediate longitudinal stripes *c* along the respective panels of the rod are now applied. For this purpose the third color vessel of Fig. 8 is equipped with a squeegee rubber die 27 that has an aperture of regular polygonal cross-section, of twice the number of sides of that of the rod and the diameter of said aperture is smaller than that of the rod. As best shown in Fig. 9, when the rod is passed through said die, its edges automatically come into engagement with the alternate vertices 28 of the die aperture and spread the rubber at such regions, thereby causing the sides 29 of the die aperture to engage the rod at the region of said vertices, the die being spaced from the rod only at the intervening regions of the intermediate vertices 30. Thus, as best shown in Fig. 9, the sides of the rubber squeegee die engage the rod with maximum pressure at the edges of the latter and with progressively reduced pressure laterally of said edges, to complete clearance at the region of the stripes, the clearance being a maximum at the intermediate vertices 30 which determine the center lines of the stripes. From another point of view, the pressure as exerted by the die increases progressively from the median stripe outwardly to a maximum at the edges of the rod. When the rod is passed through the third color vessel i. e. that shown in Fig. 8, the die 27 wipes off all of the third application of color, except at the region of clearance 30 of the intermediate vertices, thereby leaving the intermediate stripe *c* as set forth. Depending upon the diameter of the polygonal die aperture and accordingly upon the degree of stretching to which it is subjected in passing the rod therethrough, the stripe *c* may be made wider or narrower as desired.

For clean and uniform application of the intermediate stripe, the die 27 is preferably contacted by a thick rubber plate 31 with a circular aperture 32 which snugly engages the edges only of the rod and wipes off any color from the vessel of Fig. 8, that may have passed one of the die vertices 28.

In actual practice, it will be understood that each color vessel has an associated hopper (not shown) from which the pencils or rods are fed and propelled forward in a continuous line into and out of the respective color vessels so that the rubber washers at both ends of the color vessel remain snugly gripped about the successive rods as indicated at *r* and *r'* in Fig. 1. In practice, color would be laid down in a plurality of layers when required, each layer being dried before the next is applied. The lacquer used is preferably of the fast drying type, so that each coloring step may be applied without much delay after the drying of the preceding color application.

Desirably a coat of clear lacquer is applied to coat the entire rod before it is striped by the equipment of Fig. 8. The clear lacquer film acts as a protective coat to prevent smearing by the wetting of the second or body color by the third or striping color. The protective coat of clear lacquer is applied from a vessel similar to those shown, equipped with a single flexible washer such as shown in Figs. 1 and 2. The center stripe applied at the vessel shown in Fig. 8 is desirably followed by another protective coat of clear lacquer applied in manner similar to the aforementioned clear lacquer coating.

It will be understood that according to the invention, the intermediate stripes c could be applied directly upon a rod provided with a base color, the edge stripes applied in the vessel of Fig. 3 being in that case omitted. It will also be understood that the invention lends itself for application to pencils or other rod like articles not only of the conventional hexagonal cross-section, but of square, octagonal or other cross-sections, regular or irregular.

A round rod may be provided with a series of narrow uniformly spaced longitudinal stripes by passing the same through a die with a regular polygonal aperture similar to that shown in Fig. 9 and of any desired number of sides, the inscribed diameter of which is smaller than that of the circular rod. Accordingly, as shown in Fig. 12 the die 35 becomes bowed by the rod, snugly to engage the rod at various sides 36 of its polygonal aperture and leaving clearance merely at the regions of the vertices 37 thereof and thereby applying stripes, the same in number as the number of sides of the die.

As many changes could be made in the above method and apparatus and many apparently widely different embodiments of this invention could be made without department from the scope of the claims, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. Apparatus for decorating with longitudinal color stripes, the middle portions solely of the flat panels of polygonal rods, said apparatus comprising a color vessel through which the rods are passed, the outlet wall of the color vessel having a squeegee type rubber die presenting an aperture in the form of a regular polygon of twice the

number of sides of the rod to be colored, the circumscribed circle of which is of diameter smaller than that of the rod, whereby the die will be stretched by the rod passing therethrough, snugly to engage the rod at the alternate vertices of the die and along the sides of the rod panels, save only the region immediately adjacent the intermediate vertices at which the coloring in the form of longitudinal stripes will be left on the rod.

2. Apparatus for decorating a polygonal rod, comprising a plurality of color vessels, each having a distinct lacquer color therein, each vessel having a squeegee type die at the outer wall thereof for wiping off excess color and leaving on the color at the areas desired, the die of the final vessel having an aperture in the form of a regular polygon of twice the number of sides of said rod the circumscribed circle of which is of diameter smaller than that of the rod, thereby to be distended by said rod to leave clearance only at alternate vertices thereof, which are disposed at the middles of the panels of the rod.

CHARLES KAISER, JR.