Aug. 27, 1929. R. M. CRAIG 1,725,851

DISPLAY SIGN

Original Filed June 7, 1922 3 Sheets-Sheet 1

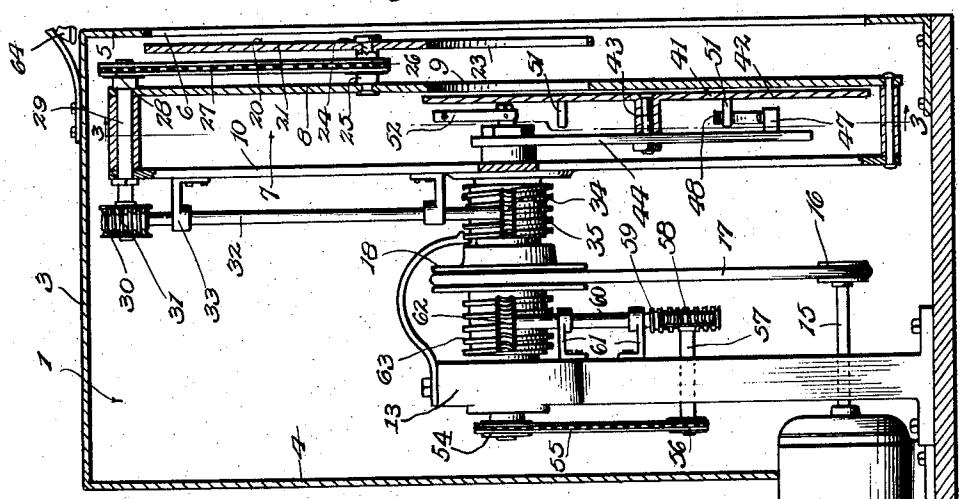


FIG. 2.

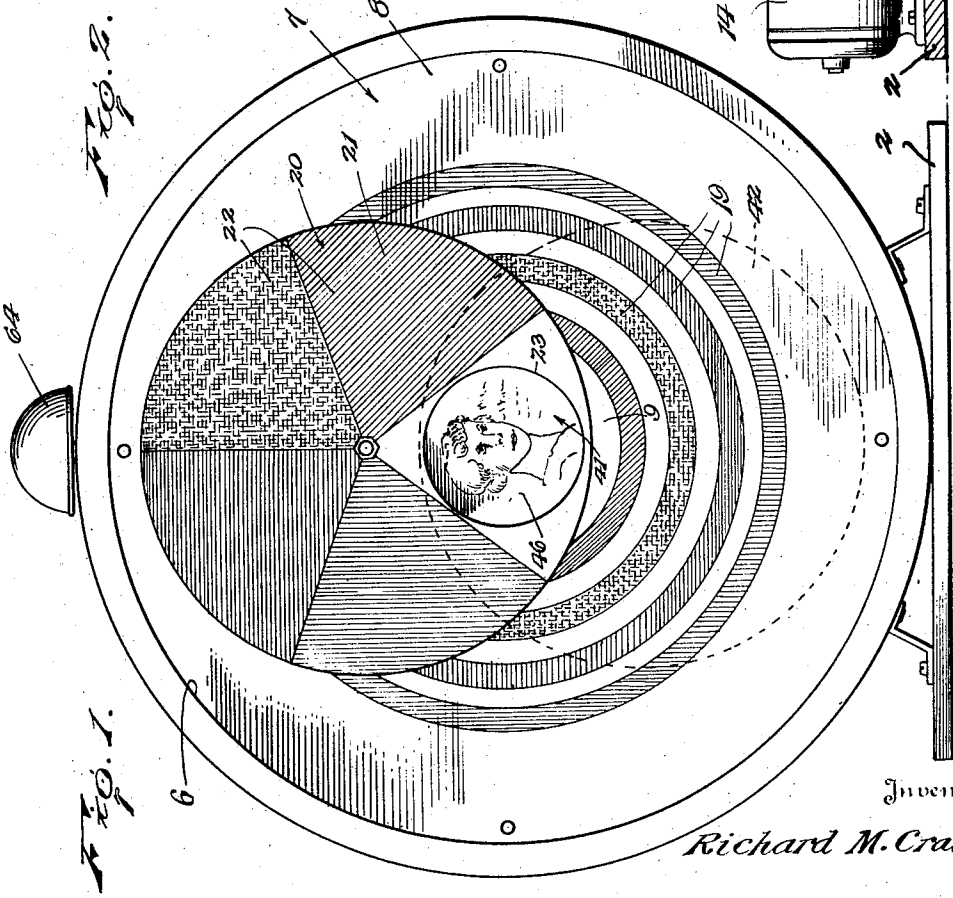


FIG. 1.

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DISPLAY SIGN

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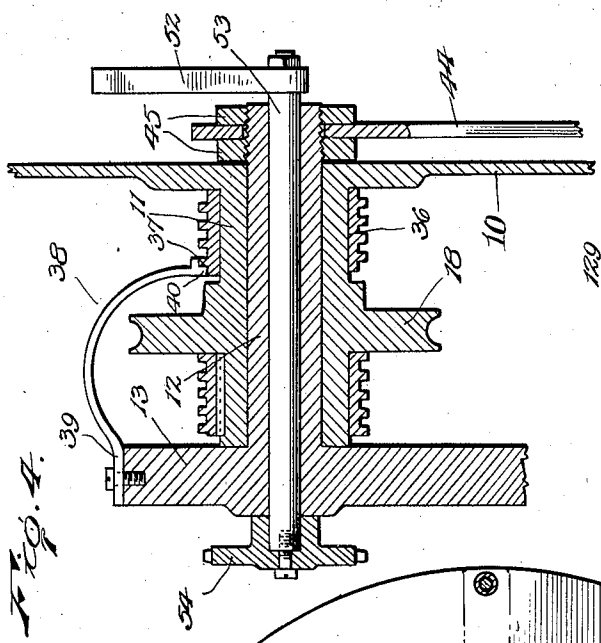


Fig. 4.

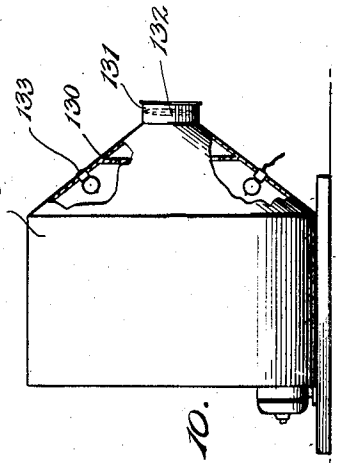


Fig. 10.

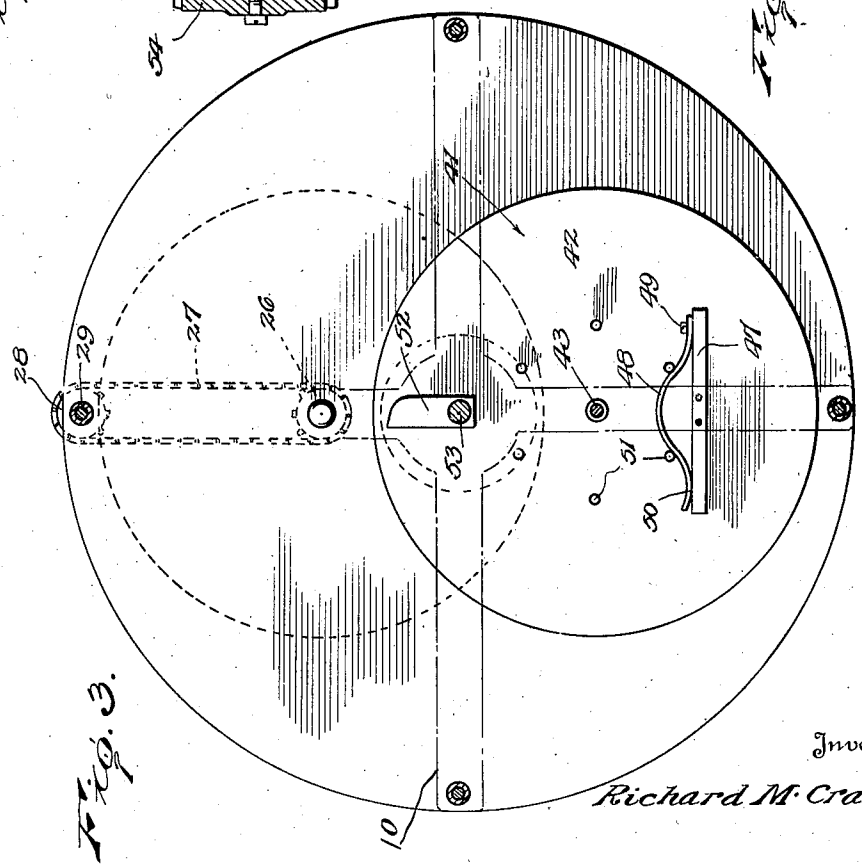


Fig. 3.

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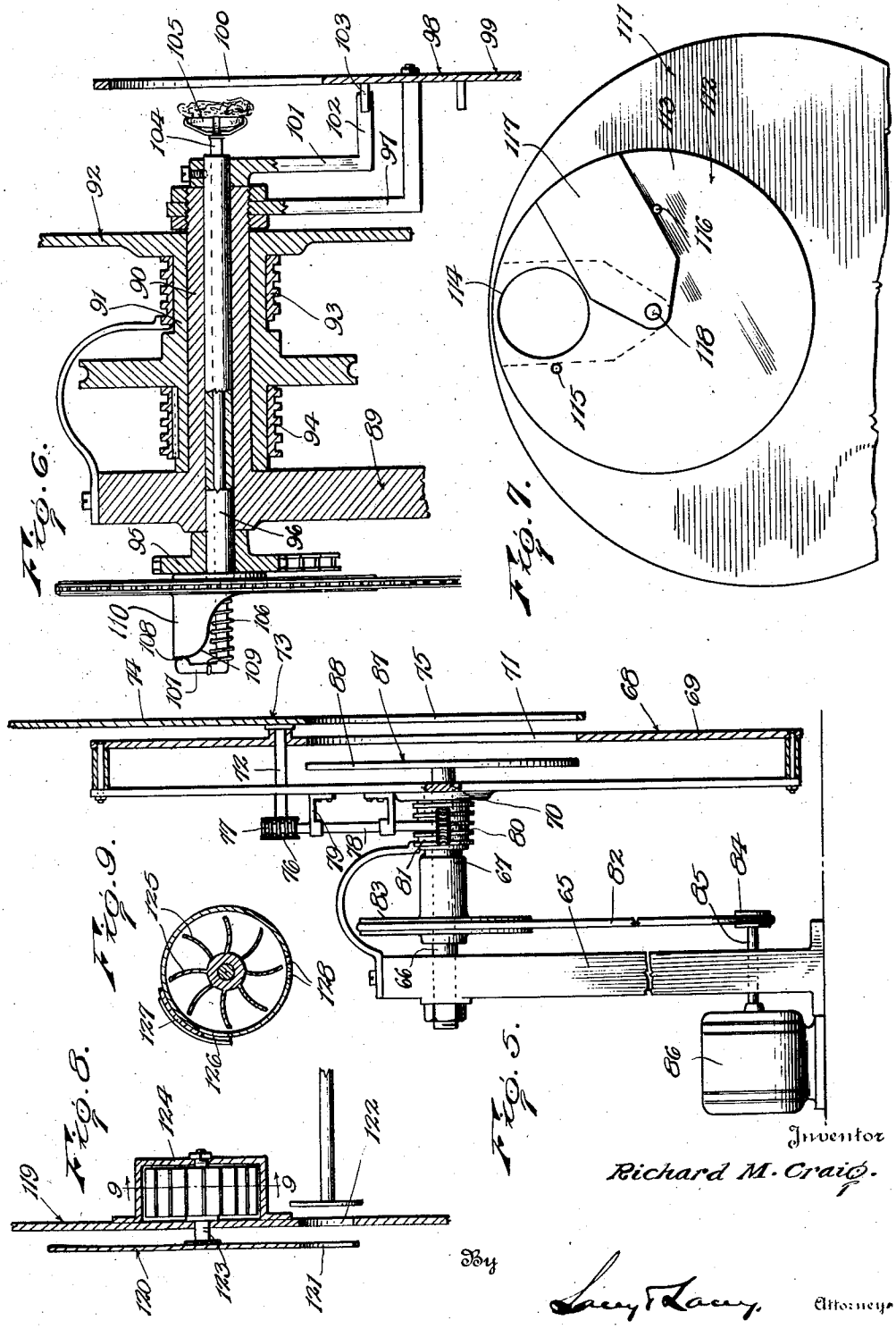
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Aug. 27, 1929. R. M. CRAIG 1,725,851

DISPLAY SIGN

Original Filed June 7, 1922 3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

RICHARD M. CRAIG, OF SAN ANTONIO, TEXAS.

DISPLAY SIGN.

Refiled for abandoned application Serial No. 566,576, filed June 7, 1922. This application filed May 22, 1928. Serial No. 279,817.

This invention relates to improvements in advertising and similar display apparatus. The present application is a substitute for an application filed by me June 7, 1922, Serial No. 566,576.

The value of any sign or display device depends primarily on its ability to attract and hold the attention of the observer and in this connection there are three factors which are of prime importance, namely, the effects of motion, color, and mystification. Each of these factors has its own value when present in a sign or display device or apparatus and where two or more of the factors are present the ability of the sign to attract and hold attention is greatly enhanced. Usually, however, signs or other display devices or apparatuses which embody two or all three of the factors enumerated are expensive to install and maintain in operation. Therefore, it is the primary object of the present invention to provide a sign or display apparatus in the operation of which the effects of motion, color, and mystification will all be present and in which sign or the like the structure will be so simple as to adapt it for general advertising and display purposes.

More specifically, the invention has as its object to provide a sign in the operation of which there will be presented to the observer the effect or sensation of an ever changing array of colors, each color originating at a central point and gradually expanding and blending, in a more or less annular form, with colors previously similarly originated, this effect being produced through the rapid rotation of certain component parts of the apparatus and the sensation of motion being in this manner produced at the same time. By an arrangement of the component elements of the rotating color devices, there is also produced the effect of a sign display surface or the like being gradually brought to clear view from a condition of indistinctness and then being caused to gradually fade from view and finally become wholly obliterated, this process of transformation producing the effect of mystification.

Another object of the invention is to provide a sign possessing the characteristics heretofore briefly pointed out and embodying a plurality of sign display surfaces which may be automatically successively brought to view at various periods in the operation of the apparatus.

Another object of the invention is to provide a sign or display apparatus which may be installed in store windows or within interiors and in large embodiments may be used in the outdoor display of advertising matter. Likewise the invention contemplates the provision of a display apparatus which may be employed as an attractive front for carnivals, shows, amusement parks, etc. Also the invention contemplates an apparatus in which the various effects produced may be displayed by projection onto a screen as, for example, a motion picture screen or a screen stretched in a shop window.

In another embodiment of the invention, means is provided for displaying a sample or an actual specimen of the article advertised, the said sample or specimen being in an undisclosed manner brought to full view of the observer and then retracted and for a time concealed from view. In a further embodiment of the invention, means is provided for suddenly displaying to view the matter to be advertised and subsequently permitting the matter to fade from view.

In the accompanying drawings:

Figure 1 is a front elevation of one form of sign embodying the invention;

Fig. 2 is a vertical front to rear sectional view through the sign shown in Fig. 1;

Fig. 3 is a vertical transverse sectional view substantially on the line 3—3 of Fig. 2 looking in the direction indicated by the arrows;

Fig. 4 is a detail axial sectional view through a portion of the apparatus;

Fig. 5 is a view, partly in side elevation and partly in front to rear section, illustrating a modification of the invention;

Fig. 6 is a front to rear sectional view illustrating the means provided for presenting to view a sample or specimen of the article to be advertised;

Fig. 7 is a view in elevation illustrating the means provided whereby the advertising or display member may be suddenly exposed to view at a period in the operation of the apparatus;

Fig. 8 is a vertical front to rear sectional view illustrating a modification of the invention;

Fig. 9 is a transverse vertical sectional view substantially on the line 9—9 of Fig. 8 looking in the direction of the arrows, and

Fig. 10 is a side elevation illustrating an arrangement providing for the projection of the sign upon a screen or the like.

The embodiment of the apparatus illustrated in Figs. 1 to 4 inclusive comprises a casing indicated in general by the numeral 1 and supported upon a suitable base 2 or in any other manner found expedient. This casing comprises a circumferential or cylindrical wall 3, a back wall 4, and a front 5 having a display opening 6 therein. The apparatus further embodies a rotatable display member indicated in general by the numeral 7 and this member preferably comprises a circular front plate 8 having a concentrically located aperture 9, the purpose of which will presently be explained. A spider 10 is arranged in rear of the face plate 8 and in spaced relation thereto and at the point of juncture of its arms is provided with a hub 11 which projects rearwardly from the plane of the spider and rotatably fits a stub shaft 12 which projects forwardly from the upper portion of a fixedly supported upright 13 located within the casing 1.

The numeral 14 indicates an electric or other suitable type of motor from which power is to be derived for operating the apparatus and upon the shaft 15 of this motor there is fixed a pulley 16 about which is trained a belt 17, the belt passing also about a pulley 18 either fixed upon or constituting an integral part of the hub 11 of the display member 7. In this manner rotary motion is imparted, preferably at a high rate of speed to the said member 7, and the member, while in rotation, may be viewed through the display opening 6, the face of the plate 8 being presented toward this opening. If desired, variously arranged color areas may be provided upon the face of the said front 8 of the member 7, as, for example, concentrically or eccentrically arranged color areas 19, as shown in Fig. 1.

In combination with the display member 7, there is provided a color imparting medium or display member which is indicated in general by the numeral 20 and this medium preferably comprises a flat circular disc 21, the face of which is divided into a number of sector-like areas 22 which may be given different colors. For example, the areas or fields 22 may be colored red, blue, yellow, and green, and one if desired may be colored white, the disc 21 being provided, preferably in this latter field, with a display opening 23 which is of substantially the same diameter as the opening 9 and in certain phases of operation of the apparatus to be presently described is adapted to be brought into substantial registration with said opening 9. The disc 21 is mounted axially upon a stub shaft 24 projecting from the forward face of the front 8 of the display member 7 and the disc 21 is provided with a hub 25 having a sprocket gear 26 fixed thereon. A sprocket chain 27 is trained about the gear 26 and about a similar gear 28 fixed upon the forward end of a shaft 29 journaled at the periphery of the member 7. A worm gear 30 is fixed upon the rear end of the shaft 29, and a worm 31 at the outer end of a shaft 32 meshes with the said worm gear. The shaft 32 is rotatably journaled in suitable bearings 33 upon one of the arms of the spider 10 and at its inner end has fixed upon it a worm gear 34 which is in mesh with a worm 35 upon the exterior of a collar 36 which is loosely fitted onto the hub 11 of the member 7 in front of the pulley 18. The collar 36 is notched at one point in its circumference in its rear end, as at 37, and a resilient locking finger or pawl 38 is fixed at one end, as at 39, upon the upper end of the upright 13 and is provided with a toothed end 40 which engages in the notch 37 and in this manner serves to hold the collar 36 against rotation with relation to the hub 11 and at the same time permitting of free rotation of this hub upon the stub shaft 12 and within the collar. At this point it will be evident that as the member 7 is rapidly rotated through rotation of its hub 11, the worm gear 34 will be carried around the worm 35 and in its travel will be given slow rotative movement which is imparted to the shaft 32. In this manner relatively slow rotative movement is imparted by the worm 31 and worm gear 30 to the shaft 29 and the motion is transmitted from this shaft to the hub of the medium 20 thus rotating the disc 21 comprising this medium. As the member 7 rapidly rotates, the member 20 is carried around with the same and the colors of the sector-shaped areas or fields 22 will be caused to blend with one another and with such color areas or fields 19 as may be present upon the face of the front 8 of the said member 7. The speed of rotation of the member 7 is in practice so rapid that the character of the member 20 is not perceptible to the eye and the presence of this member is noticeable only by reason of the blending of its several color fields. When one of the color fields, as, for example, the red field, is in position opposite the central portion of the face plate 8, the opening 9 will, of course, be closed or covered and, in the rapid rotation of the assemblage, a central red area or zone will be presented to view, and surrounding this area will be presented a number of concentric zones of various colors produced through blending of the various color areas or fields 22 and also the areas

or fields 19. As the apparatus continues to operate, the disc 21 will be slowly rotated and the next color field 22, in order, will be brought to the center, or, in other words, to a position substantially opposite the opening 9. As the previously specifically referred to zone 22, namely, the red zone, begins to change its position through rotation of the disc 21, the initially relatively small spot of red at the center of the display surface in general will be seen to expand in all directions, and likewise the blended color zones surrounding this central zone will be seen to expand and eventually disappear from view. At the same time the colors will be continuously blended in a manner to produce practically every conceivable color and tints thereof, and the composite color field thus produced will, in fact, be continuously changing its aspect, presenting a most pleasing appearance to the eye and holding the attention of the observer. As previously stated, the speed of rotation of the disc 21 is relatively low so that the blending of the color areas or fields will be more or less gradual and yet the sensation experienced will be that of extreme rapid motion. Finally in the operation of the apparatus, the color area in which the opening 23 is located will be brought gradually to position in front of the opening 9. Means is provided in back of the opening 9 and face plate 8 in which this opening is formed, bearing advertising or display areas, and as the opening 23 gradually eclipses the opening 9, the matter displayed in rear of the opening 9 will be at first dimly and indistinctly brought to view and will then be gradually more clearly defined as the opening 23 is brought more nearly into registration or alinement with the opening 9. Finally, the openings will be thus positioned and the advertising or display matter will be exposed clearly to view through these openings and the display opening 6. Continued operation of the apparatus will result in the opening 23 again eclipsing the opening 9 and in a gradual manner so as to produce the effect of a gradual fading from view of the advertising or display matter previously displayed through said openings 9 and 23. The operation is then automatically repeated in the manner just described.

The medium employed for displaying the signs or other display matter and above referred to is indicated in general by the numeral 41 and in this form of the invention preferably comprises a circular disc 42 which is rotatably mounted upon a stub shaft 43 projecting from a depending arm 44 secured preferably by coacting jamb or clamping nuts 45 upon the forward end of the stub shaft 12, the arm 44 being in this manner rigidly supported. The disc 42 is located within the bounds of the member 7 and in rear of the face plate 8 thereof and it is provided upon its forwardly presented face with a number of advertising or display areas 46 which may be of different characters and which are to be successively displayed. The fields or areas 46 are so arranged in an annular series about the center of the disc 42 that when the disc is rotated through predetermined angular distances the fields or areas will be successively brought to position opposite the opening 9 and will, of course, be presented to view when the opening 23 is opposite the said opening 9 under the conditions previously explained. In order that the disc 42 may be held in each of the positions to which it is automatically rotated by means to be presently pointed out, a cross piece 47 is fixed transversely of the supporting arm 44 and an upwardly bowed leaf spring 48 is fixed at one end, as at 49, upon the upper side of the cross piece and has its other end 50 resting freely in engagement with the upper side of the cross piece. A number of studs 51 are arranged in an annular series about the axis of the disc 42 and project from the rear face of said disc and in each position of rotative adjustment of the disc, two of these pins or studs will simultaneously engage the opposite sides of the bow or bulge in the spring 48. When rotative movement is imparted to the disc 42 to shift it from one position of adjustment to another, one of the studs or pins 51 will ride over the bow or bulge of the spring and finally when the disc comes to rest it, together with the next stud or pin in the series, will be positioned in engagement with the spring and the disc will thus be held in its new position of adjustment. In order to automatically effect rotative adjustment of the disc 42 intermittently during operation of the apparatus, a tappet finger 52 is fixed upon the forward end of a shaft 53 rotatably mounted through the bore of the hollow stub shaft 12, and upon rotary motion being imparted to this shaft the tappet finger 52 will at suitable intervals sweep into engagement with the successive pins 51, thus intermittently rotating the disc 42. In order to impart rotary motion to the shaft 53, a sprocket gear 54 is fixed upon the rear end of the shaft, and a sprocket chain 55 is trained about this gear and about a gear 56 fixed upon the rear end of a shaft 57 journaled through the upright 13. A worm gear 58 is fixed upon the forward end of the shaft 57 and meshes with a worm 59 provided upon the lower end of a shaft 60 journaled in suitable bearings 61 upon the said upright 13. A worm gear 62 is fixed upon the upper end of the shaft 60 and meshes with a worm 63 which is keyed upon the rear end of the hub 11. Thus as the member 7 is rotated, corresponding motion will be imparted to the

worm 63, and a slow rotative movement will be imparted to the shafts 60 and 57 and finally to the shaft 53.

In order that the display surface of the sign may be suitably illuminated, a light 64 may be provided at the upper side of the front of the casing 1. Of course, in the daytime the display surface will be sufficiently illuminated by natural light, and the electric light 64 need, therefore, be only employed at night.

Fig. 5 of the drawings illustrates a simplified embodiment of the invention in which an upright 65 is fixedly mounted in any suitable manner and is provided near its upper end with a forwardly projecting fixed shaft 66. Rotatably mounted upon this shaft is the hub 67 of a display medium, indicated in general by the numeral 68, and corresponding to the medium 7. The medium 68 comprises a face plate 69 and a spider 70, as in the previously described structure, and the face plate is provided centrally with an opening 71 corresponding to the opening 9. A shaft 72 is rotatably journaled in the member 68 and has fixed upon its forward end a color imparting medium 73 comprising a disc 74 which may be provided with various color fields or areas corresponding to the areas 22 of the disc 21 previously described. Like the disc 21 this disc 74 is also provided with an opening 75 which is adapted to be brought opposite or substantially in registration with the opening 71. A worm gear 76 is fixed upon the rear end of the shaft 72, and a worm 77 is provided at the outer end of a shaft 78 and meshes with this gear. The shaft 78 is mounted in suitable bearings 79 upon one arm of the spider 70, and a worm gear 80 is fixed upon the inner end of the shaft 78 and meshes with a worm 81 which is loosely fitted on to the hub 67 and is held stationary in the same manner as the worm 35. It will now be evident that as rotary motion is imparted to the member 68 at a high rate of speed, corresponding motion at a low rate of speed is imparted to the member 73 and substantially the same effects will be produced as in the previously described form.

Rotary motion is imparted to the hub 67 through the medium of a belt 82 which is trained about pulleys 83 and 84 mounted, respectively, upon the hub 67 and the shaft 85 of an electric or other suitable type of motor 86. In this form of the invention, the display or sign medium is indicated in general by the numeral 87 and comprises a preferably circular disc 88 which is fixedly mounted at the forward end of the fixed shaft 66 and in rear of the face plate 69 and opposite the opening 71.

In Fig. 6 of the drawings, there is illustrated a modified structure in which a sample or specimen of an advertised article is suddenly presented to the view of the observer and subsequently retracted and then concealed for a period of time after which it is again presented to view, and in this figure the numeral 89 indicates a standard corresponding to the standard or upright 13 and provided with a forwardly projecting tubular stub shaft 90 upon which is rotatably mounted the hub 91 of the rotatable display member 92 which corresponds to the member 7 heretofore described. The hub 91 supports a worm 93 corresponding to the worm 35 and operating in the identical manner and serving the same purpose as the previously described worm. Also there is fixed upon the hub 91 a worm 94 corresponding in function to the worm 63 and transmitting motion at a relatively low rate of speed to a sprocket gear 95 corresponding to the gear 54 and fixed upon a sleeve shaft 96 rotatably journaled in the tubular stub shaft 90. The numeral 97 indicates a bracket arm which is fixed upon the forward end of the stub shaft 90 and rotatably supports a sign displaying medium 98 corresponding to the medium 41 previously described and comprising a disc 99 bearing a substantially annular series of sign or display surfaces corresponding to the surfaces 46. However, this series is interrupted at one point by an opening 100 formed in the said disc 99, and it will be understood from what has been said with regard to the operation of the form of the invention shown in Figs. 1 to 4 that at a period in the operation of the apparatus the opening 100 will be brought opposite the opening in the face plate of the member 92 and the opening in the color imparting disc which is not shown in this view but corresponds to the disc 20. An arm 101 is fixed upon the forward end of the sleeve shaft 96 and has a forwardly directed finger 102 adapted to successively engage pins 103 projecting from the rear face of the disc 99 and corresponding to the pins 51. Thus in substantially all respects this structure, as so far described, is substantially identical with the corresponding structure shown in Figs. 1 to 4, inclusive. However, in this modified form a supporting rod 104 is slidably mounted through the sleeve shaft 96 and has its forward end so located as to be opposite the opening 100 when the opening is in the position above described. This end of the rod 104 supports the sample or specimen of the article advertised or some object pertaining thereto as, for example, a powder puff, indicated by the numeral 105, where such an article or the face powder to be applied thereby is the subject of the advertising matter. The rod 104 projects at its rear end beyond the rear end of the sleeve shaft 96 and is urged in a forward direction, yieldably, by a spring 106, the rod being provided at its said end

with an angularly directed finger 107 having a nose 108 engaging the working surface 109 of a cam 110. The cam 110 is rotated at such rate of speed that in each complete revolution of the disc 99 and at the time the opening 100 is brought opposite the forward end of the rod 104, the nose 108 of the finger 107 will ride onto the low point of the cam surface 109 and the rod 104 will be shifted forwardly under the influence of the spring 106 so as to for a short period of time project the sample or specimen 105 through the opening 100 and into plain view of the observer.

Fig. 7 of the drawings illustrates a modification of the display surface in which the advertising matter to be displayed by the member 41 heretofore described is adapted to be brought suddenly into view when the openings 9 and 23 are in position opposite each other. In this structure, the display medium, corresponding to the medium 7, is indicated in general by the numeral 111, and the color imparting medium, corresponding to the medium 20, is indicated in general by the numeral 112. This latter medium, as in the former instance, comprises a disc 113 provided with a selected arrangement of color fields or areas and formed at one point with an opening 114 corresponding to the opening 23. Stop pins 115 and 116 are arranged upon the face of the disc 113, and a shutter 117 is pivotally mounted at its end, as at 118, preferably concentrically of the said disc. In one position of its pivotal movement, the shutter is designed to rest at one lateral edge against the stop pin 115 and in such position will cover the opening 114. In the operation of the apparatus, the shutter 117 will be maintained in this position, through centrifugal force, until the disc 113 has been rotated to substantially the position where the opening 114 will be directly opposite the opening in the member 111, corresponding to the opening 9, at which time the parts will be in such position that the centrifugal force will act to swing the shutter blade 117 into engagement with the stop pin 116 and at this time the opening 114 will be uncovered. This movement of the shutter blade is practically instantaneous and, therefore, the advertising matter to be displayed will be brought suddenly into view with a more or less startling effect.

In the previously described forms of the invention, purely mechanical means are employed for imparting rotary motion to the color imparting medium but in Figs. 8 and 9 there is illustrated a means whereby this motion may be obtained without the use of gearing or other positive driving means. In this modification, the display medium which corresponds to the medium 7 is indicated in general by the numeral 119 and the color imparting medium is indicated in general by the numeral 120 and comprises, as before, a disc provided with a suitable selection of color fields and with an opening 121, corresponding to the opening 23, and designed to be brought opposite an opening 122 in the display medium 119. The disc comprising the medium 120 is fixed upon the forward end of a shaft 123 rotatably journaled through the face plate of the medium 119 and the substantially cylindrical casing 124. Fan blades 125 are fixed upon the shaft 123 within the casing 124, and the casing is provided in that side of its circumferential wall which is presented in the direction of rotation of the member 119 with an air inlet opening 126, the area of which may be regulated by means of a circumferentially adjustable slide 127 arranged and supported upon the outer side of the said circumferential wall of the casing. One or more vent or air outlet perforations 128 may be formed in an approximately opposite portion of the circumferential wall for the escape of air from the casing. In this form of the invention, as the member 119 is rapidly rotated, an inrushing current of air through the opening 126 will act upon the fan blades 125, thus imparting rotary motion to the disc 123.

Under some conditions, it may be found desirable instead of displaying the surface of the apparatus to direct view of an observer to project an image of the surface upon a screen or the like, and under these conditions an apparatus, such as illustrated in general in Fig. 10 of the drawings, may be employed. This apparatus comprises a casing 129 housing, for example, the apparatus disclosed in Figs. 1 to 4 inclusive, or any other of the described modifications thereof, and this casing is provided with a projecting front portion 130 terminating in a lens mount 131 supporting a projecting lens 132, one or more electric light bulbs, constituting a source of illumination and indicated by the numeral 133, being arranged within the front 130 of the casing. In this arrangement, the surface display is illuminated by the lights 133 and an image thereof projected by a lens 132 onto a screen or the like placed in front of the apparatus, the principles involved being the same as in the well-known radioptican.

Having thus described the invention, I claim:

1. Display apparatus comprising a display medium, means for imparting motion thereto at a relatively high rate of speed, a color imparting medium carried by and movable with relation to the display medium, and means for imparting motion to the said color imparting medium at a relatively low rate of speed.

2. Display apparatus comprising a display medium, means for imparting motion

thereto at a relatively high rate of speed, the display medium having a color area upon its display surface, a color imparting medium having a color area upon its display surface and carried by and movable with relation to the display medium, and means for imparting motion to the said color imparting medium at a relatively low rate of speed.

3. Display apparatus comprising a display medium, means for imparting motion thereto at a relatively high rate of speed, the medium having a color area upon its display surface and being provided with an opening, a color imparting medium movable with and with relation to the display medium and provided upon its display surface with a color area, the said color imparting medium having an opening in one cycle of movement of the media adapted to be brought opposite the opening in the said display medium, means for imparting motion to the said color imparting medium at a relatively low rate of speed, and a display surface for presentation to view through the said openings when opposite one another.

4. Display apparatus comprising a rotatable display medium, means for imparting rotary motion thereto at a relatively high rate of speed, a color imparting medium mounted on and rotatable with relation to the display medium, the color imparting medium having upon its display surface a plurality of color areas arranged about its axis of rotation, and means for imparting rotary motion to the said color imparting medium at a relatively low rate of speed.

5. Display apparatus comprising a rotatable display medium having a color area thereon, means for imparting rotary motion to the medium at a relatively high rate of speed, a color imparting medium mounted on and rotatable with relation to the display medium, the color imparting medium having upon its display surface a plurality of color areas arranged about its axis of rotation, and means for imparting rotary motion to the said color imparting medium at a relatively low rate of speed.

6. Display apparatus comprising a rotatable display medium, means for imparting rotary motion thereto at a relatively high rate of speed, a color imparting medium eccentrically mounted with relation to the axis of the display medium and rotatable with and with relation to the said display medium, and means for imparting rotary motion to the color imparting medium at a relatively low rate of speed.

7. Display apparatus comprising a rotatable display medium, means for imparting rotary motion thereto at a relatively high rate of speed, a color imparting medium mounted for rotation about an axis eccentric to the axis of rotation of the display medium, the color imparting medium being movable with the display medium and rotatable with relation thereto, the color imparting medium having a plurality of color areas arranged about its axis, and means for imparting rotary motion to the said color imparting medium at a relatively low rate of speed.

8. Display apparatus comprising a rotatable display medium having a substantially circular face plate provided with a color area, means for imparting rotary motion to the said medium at a relatively high rate of speed, a color imparting medium comprising a disc rotatably mounted upon the face plate of the display medium eccentric to the axis of rotation thereof and having color areas upon its display face, and means for imparting rotary motion to the color imparting medium at a relatively low rate of speed.

9. Display apparatus comprising a rotatable display medium having an opening therein located substantially axially thereof, a color imparting medium arranged for rotation about an axis eccentric to the axis of rotation of the display medium and rotatable with said display medium and with relation thereto, means for imparting rotary motion to the color imparting medium at a relatively low rate of speed, the color imparting medium having an opening in one position of rotation of the said color imparting medium adapted to be brought opposite the opening in the display medium, and an element having a display surface located behind and opposite the opening in the display medium.

10. Display apparatus comprising a rotatable display medium having an opening therein located substantially axially thereof, a color imparting medium arranged for rotation about an axis eccentric to the axis of rotation of the display medium and rotatable with said display medium and with relation thereto, means for imparting rotary motion to the color imparting medium at a relatively low rate of speed, the color imparting medium having an opening in one position of rotation of the said color imparting medium adapted to be brought opposite the opening in the display medium, and an element having a display surface located behind and opposite the opening in the display medium, the said element being movable with relation to said opening in the display medium and having a plurality of display areas to be brought opposite said opening.

11. Display apparatus comprising a rotatable display medium having an opening therein located substantially axially thereof, a color imparting medium arranged for rotation about an axis eccentric to the axis of rotation of the display medium and rotatable with said display medium and with

relation thereto, means for imparting rotary motion to the color imparting medium at a relatively low rate of speed, the color imparting medium having an opening in one position of rotation of the said color imparting medium adapted to be brought opposite the opening in the display medium, an element having a display surface located behind and opposite the opening in the display medium, the said element being movable with relation to said opening in the display medium and having a plurality of display areas to be brought opposite said opening, and means for moving the display surface with relation to the opening in the display medium and in timed relation to the opposite positioning of the openings in the said display medium and the color imparting medium.

12. Display apparatus comprising a rotatable display medium having an opening located substantially axially thereof, a color imparting medium rotatable with and with relation to the display medium and eccentrically mounted with relation thereto and having an opening positioned to be brought opposite the opening in the display medium at a period in the rotation of the said color imparting medium, and a rotatable sign display medium eccentrically mounted with relation to the first-mentioned display medium and having a series of display areas adapted to be successively brought into position opposite the opening in the said first-mentioned display medium.

13. Display apparatus comprising a rotatable display medium having an opening located substantially axially thereof, a color imparting medium rotatable with and with relation to the display medium and eccentrically mounted with relation thereto and having an opening positioned to be brought opposite the opening in the display medium at a period in the rotation of the said color imparting medium, a rotatable sign display medium eccentrically mounted with relation to the first-mentioned display medium and having a series of display areas adapted to be successively brought into position opposite the opening in the said first-mentioned display medium, and means for intermittently rotating the sign display medium in timed relation to the opposite positioning of the openings in the first-mentioned display medium and the color imparting medium.

14. Display apparatus comprising a rotatable display medium having an opening located substantially axially thereof, a member rotatable with and with relation to the said medium and having an opening positioned to be brought opposite the first-mentioned opening at a period in the rotation of the last-mentioned medium, means for rotating the display medium at a relatively high rate of speed, means for imparting rotary motion to the second-mentioned medium at a relatively low rate of speed, a sign display disc rotatably mounted eccentric to the first-mentioned medium and having upon its face a plurality of display areas to be brought successively opposite the opening in the said display medium, pins projecting from the other face of the said sign display disc, a bowed spring in the path of movement of the pins for engagement by successive ones thereof for the purpose of holding the disc in positions of rotative adjustment, and a rotatable trip coacting with the pins to impart intermittent rotary movement to the said disc.

15. Display apparatus comprising a rigidly supported shaft, a rotatable display medium having a hub rotatably fitting the shaft, a fixed worm with relation to which the hub is rotatable, a color imparting medium rotatable with and with relation to the said display medium, a shaft movable with the display medium and having a worm gear meshing with said worm, means for transmitting motion from the shaft to the color imparting medium at a relatively low rate of speed, and means for transmitting motion to the hub of the display medium at a relatively high rate of speed.

16. Display apparatus comprising a rigidly supported shaft, a rotatable display medium having a hub rotatably fitting the shaft, a fixed worm with relation to which the hub is rotatable, a color imparting medium rotatable with and with relation to the said display medium, a shaft movable with the display medium and having a worm gear meshing with said worm, means for transmitting motion from the shaft to the color imparting medium at a relatively low rate of speed, means for transmitting motion to the hub of the display medium at a relatively high rate of speed, the display medium and the color imparting medium having openings to be brought opposite each other at a period in the relative rotation of the display and color imparting mediums, a sign display medium rotatable with relation to the first-mentioned display medium and having display areas to be successively brought opposite the opening in the display medium, a shaft rotatably journaled through the first-mentioned shaft, a worm rotatable with the hub of the display medium, a relatively fixed shaft, a worm gear carried thereby and meshing with the last-mentioned worm, means establishing driving connection between the last-mentioned shaft and the third mentioned shaft, and means upon the third mentioned shaft coacting with the sign display disc for imparting intermittent rotative movement thereto.

17. Display apparatus comprising a rotatable display medium having an opening located substantially axially thereof, a sec-

ond display medium rotatable with and with relation to the first-mentioned display medium and eccentrically mounted with relation thereto and having an opening positioned to be brought opposite the opening in the first-mentioned display medium at a period in the rotation of the second-mentioned display medium, a sign display medium rotatably mounted eccentrically to the first-mentioned display medium and bearing a series of sign areas and having an opening interposed in the series, means for rotating the sign display medium intermittently and in timed relation to the rotation of the first and second-mentioned display mediums whereby the sign areas of the sign display medium will be successively brought into position opposite the openings in the first and second-mentioned display medium when said openings are opposite each other and whereby likewise the opening in the sign display medium will be brought opposite the openings in the first and second-mentioned display mediums when the latter are opposite each other, an article supporting member mounted in juxta-position to the opening in one of said mediums, and means for automatically projecting the article supporting member through said openings when all of said openings are opposite one another.

18. Display apparatus comprising a rotatable display medium having an opening located substantially axially thereof, a second display medium rotatable with and with relation to the first-mentioned display medium and eccentrically mounted with relation thereto and having an opening positioned to be brought opposite the opening in the first-mentioned display medium at a period in the rotation of the second-mentioned display medium, a sign display medium rotatably mounted eccentrically to the first-mentioned display medium and bearing a series of sign areas and having an opening interposed in the series, means for rotating the sign display medium intermittently and in timed relation to the rotation of the first and second-mentioned display mediums whereby the sign areas of the sign display medium will be successively brought into position opposite the openings in the first and second-mentioned display mediums when said openings are opposite each other and whereby likewise the opening in the sign display medium will be brought opposite the openings in the first and second-mentioned display mediums when the latter are opposite each other, an article supporting member mounted in juxta-position to the opening in one of said mediums, and means for automatically moving the article supporting means in the direction of said opening when the openings are opposite one another.

19. Display apparatus comprising a rotatable display medium having an opening therein located substantially axially thereof, a color imparting medium arranged for rotation about an axis eccentric to the axis of rotation of the display medium and rotatable with said display medium and with relation thereto, means for imparting rotary motion to the color imparting medium at a relatively low rate of speed, the color imparting medium having an opening in one position of rotation of the said color imparting medium adapted to be brought opposite the opening in the display medium, a display surface located behind and opposite the opening in the display medium, and a shutter mounted upon the color imparting medium and movable with relation to the opening in said medium and adapted in one position of rotation of the medium to assume a position covering said opening, through centrifugal force, and in another position of rotation of said color imparting medium adapted to assume, through centrifugal force exerted, a position uncovering said opening.

20. Display apparatus comprising a rotatable display medium having an opening therein located substantially axially thereof, a color imparting medium arranged for rotation about an axis eccentric to the axis of rotation of the display medium and rotatable with said display medium and with relation thereto, means for imparting rotary motion to the color imparting medium at a relatively low rate of speed, the color imparting medium having an opening in one position of rotation of the said color imparting medium adapted to be brought opposite the opening in the display medium, a display surface located behind and opposite the opening in the display medium, and a shutter blade pivoted upon the color imparting medium and operating between abutments thereon and arranged, in one position of rotation of said medium, to assume, by centrifugal force, a position resting against one of said abutments and covering said opening, and in another position of rotation of said medium to rest against the other abutment and expose said opening.

In testimony whereof I affix my signature.

RICHARD M. CRAIG. [L. S.]