July 5, 1932. W. I. O'NEILL 1,866,170

ADVERTISING APPARATUS

Filed April 25, 1930

Fig. 2.

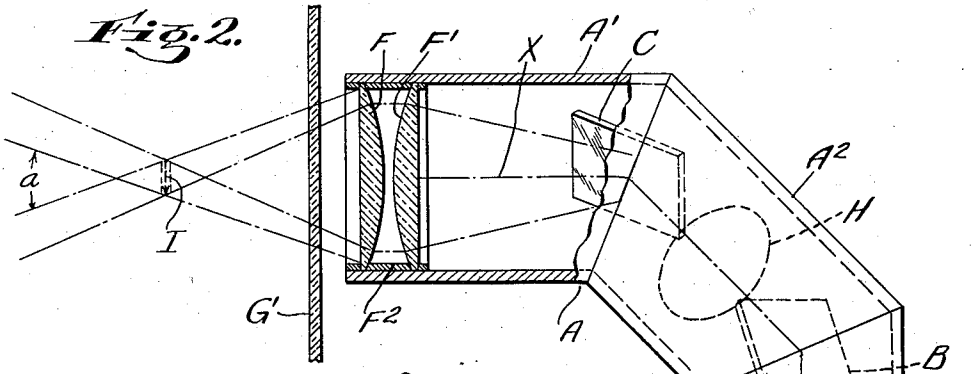


Fig. 1.

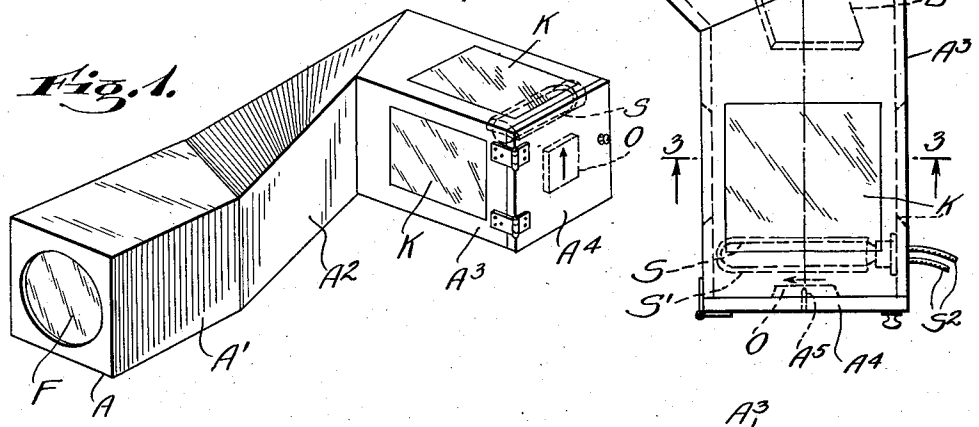
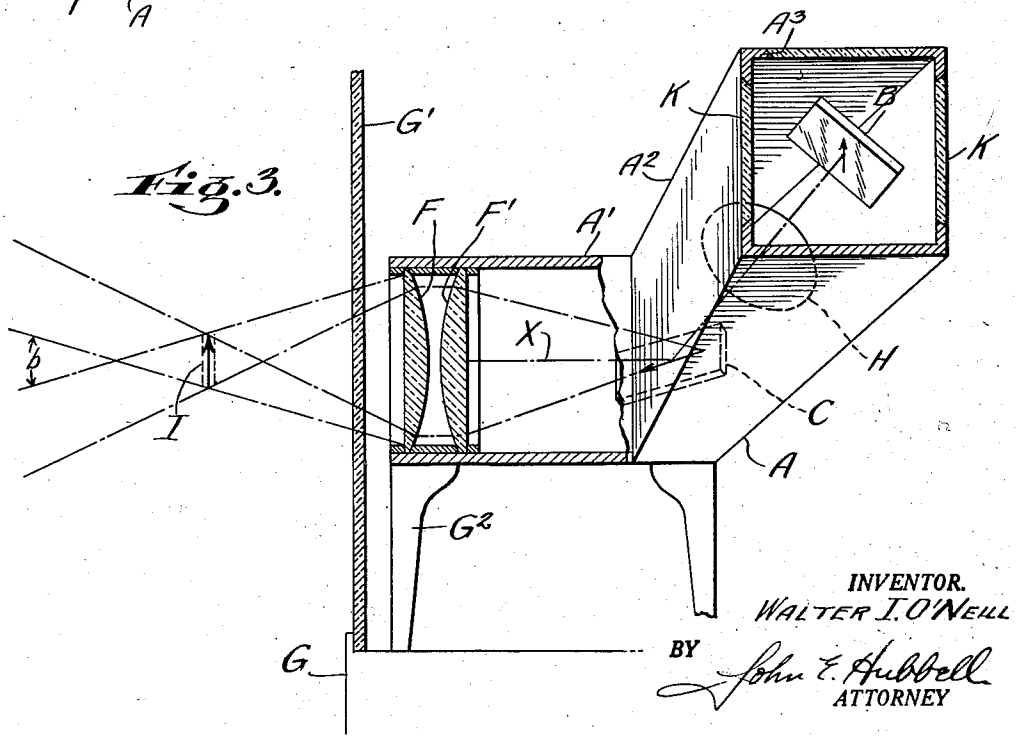


Fig. 3.



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UNITED STATES PATENT OFFICE

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ADVERTISING APPARATUS

Application filed April 25, 1930. Serial No. 447,394.

My present invention relates in general to advertising or display apparatus of the type in which a real image of the article or device to be advertised is caused to appear outside the apparatus, or outside a show window when the apparatus is positioned therein, thereby creating an optical illusion of the actual article apparently unsupported in space when viewed from within a predetermined zone in front of the apparatus.

Heretofore in advertising apparatus of this general type the optical illusion has been created by the use of a spherical mirror and special object lighting apparatus. Such apparatus requires the article to be advertised to be supported in an inverted position in the apparatus in order that the image appears upright or vice versa. This fact materially limits the use of the apparatus as it prevents the use of certain objects, such as live animals, which because of their construction or nature, cannot be held in the necessary inverted position. A further and equally important disadvantage is that a commercial article carrying reading matter would appear in the projected image with its lettering reversed, unless a special form of the article carrying the lettering in reversed form is used as the object, or unless the reading matter were eliminated with a consequent loss in the advertising effect.

The main object of my present invention is to provide an improved construction and mode of operation of advertising apparatus of this general type.

A further and more specific object is the provision of image creating advertising apparatus in which the usual commercial form of the article to be advertised can be used as the object.

Another object of my invention is the provision of image creating advertising apparatus adapted for use with an object in an erect, or upright, position.

A further object is the provision of advertising apparatus of this type with a construction and arrangement especially adapted for the successive display of various articles by a demonstrator.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, however, and the advantages possessed by it reference should be had to the accompanying drawing and descriptive matter in which I have illustrated and described a preferred embodiment of the invention.

Of the drawing:

Fig. 1 is an elevation in perspective of a preferred form of my improved advertising apparatus;

Fig. 2 is a plan view of the apparatus in use with certain parts broken away and in section to more clearly illustrate the apparatus; and

Fig. 3 is a vertical section on the line 3—3 of Fig. 2 and with other parts broken away.

In the preferred embodiment of the invention illustrated, the apparatus comprises an elongated casing A of rectangular vertical cross-section and open at its forward end. The casing illustrated is divided into a horizontal longitudinal section A', an intermediate rearwardly and laterally inclined section A^2, and a rear lateral section A^3, all of which are determined by the desired path of the optical axis X of the apparatus. The various casing sections are secured together to form a continuous structure, closed at its rear end by a hinged door A^4, as shown. The inner side of the door or adjacent portion of the casing is provided with suitable means for supporting an article O to be displayed. Such supporting means may well be a pin A^5 or stand on which the article is positioned.

The inner side of the casing walls is preferably blackened in a well known manner to absorb any light falling thereon. The article is illuminated by a suitable light source, such as an elongated incandescent lamp S, arranged in one of the walls of the rear casing section. The lamp S is shown as positioned slightly in front of and above the top of the article and the light rays from the lamp are reflected onto the article by a semi-cylindrical reflector S', causing it to stand out clear and distinct from the adjacent wall surface of the casing.

Supported adjacent the junction of the middle and rear casing sections and facing the article is a plane mirror B, arranged with its upper end inclined towards the article so that light rays therefrom will be reflected forwardly and downwardly. The mirror B as shown in Figs. 2 and 3, is also turned sufficiently to cause the optical axis of the reflected light rays to bend laterally along the longitudinal axis of the inclined casing section A^2. A second plane mirror C is positioned at the junction of the sections A′ and A^2 and arranged to face the mirror B sufficiently to intersect the optical axis of the reflected rays from that mirror. The mirror C is so angularly positioned relative to the mirror B that the optical axis of the reflected rays is brought into coincidence with the longitudinal axis of the section A′.

With the above described mirror arrangement, a perverted erect vertical image of the article can be observed on facing the mirror B from the rear end of the casing, and an unperverted inverted vertical image in the mirror C when looking from the open end of the casing.

In the otherwise open forward end of the casing A is arranged a projection lens system, which, in the embodiment illustrated, consists of a pair of plano-convex lenses F and F′ arranged as shown and slightly spaced apart in a longitudinally adjustable sleeve member F^2. In the system, the lens F′ acts substantially as a collimating lens to render the reflected rays from the mirror C parallel. Other lens combinations may be used in conjunction with, or in lieu of, the combination shown for the correction of spherical or chromatic aberration.

The advertising apparatus described is primarily intended for use in a show window G with the front end of the casing adjacent to, or inserted in a suitable opening in, the window glass G′. The apparatus is preferably mounted on suitable supporting members G^2.

With this arrangement of the parts an article in its usual commercial form may be positioned at the end of the casing as indicated and the lamp S connected to a suitable source of electrical energy by external conductors S^2. With the lenses of the projection system properly proportioned and positioned relative to the mirror C, an erect real image I of the object will appear in front of the apparatus. Varying the longitudinal position of the projection lenses in the casing correspondingly varies the position and size of the image I. The apparatus is preferably positioned within the show window in such a position that the image created appears in space over the adjoining sidewalk at a point a foot or two externally of the window.

To maintain the compactness of the apparatus while effecting the creation of a real image of the object substantially the same size as the object, a double convex magnifying lens H is arranged in the casing section A^2 between the mirrors B and C, and positioned to intercept the reflected rays from the mirror B. In the arrangement shown, the mirror B is slightly within the focal length of the lens H and the mirror C at the opposite side of the lens therefore reflects an enlarged image of the article. The mirror C is preferably positioned slightly beyond the focal distance of the projection lens combination, so that the image created appears in front of the window G′ at a point slightly beyond the focal length of the combination.

The image I will appear clear and distinct in space and with any marking or lettering thereon in the same form as on the article O, particularly when observed from within the zone indicated by the angles *a* in Fig. 2 and *b* in Fig. 3. In the drawing the solid arrows indicate the various erect or inverted positions of the object and images thereof, while the broken arrows in Fig. 2 indicate the direction of the lettering thereon. The image appears to be three-dimensional, and thus creates a very realistic illusion of the article. The various optical elements of the apparatus can be rearranged and proportioned to increase or decrease this zone of observance in accordance with local conditions. The projection lenses are necessarily of greater diameter than the distance between the eyes of the observer.

Heretofore in advertising apparatus of this general type, the optical illusion became vague and indistinct as the intensity of the light externally of the show window increased, unless the intensity of the light source S was correspondingly increased. In the present apparatus, this difficulty is substantially eliminated by constructing a substantial portion of the casing adjacent the object O with windows K of ribbed glass, through which external light rays pass directly onto the object. By this construction and arrangement the light source S can be maintained at a constant intensity and any change in intensity of the external light will be transmitted to a substantial extent to the object compartment of the apparatus.

The specific arrangement of the casing sections, and particularly the section A^3, illustrated is advantageous in that it permits a more convenient use of the apparatus by a demonstrator in the window, and also because the amount of external light received by the object is correspondingly increased as the windows K approach the window glass G′.

While in accordance with the provisions of the statutes, I have illustrated and described the best form of embodiment of my invention now known to me, it will be apparent to those skilled in the art that changes may be made

in the form of the apparatus disclosed without departing from the spirit of my invention as set forth in the appended claims and that in some cases certain features of my invention may be used to advantage without a corresponding use of other features, such as for example, the elimination of the mirrors and/or magnifying lens, and the consequent arrangement of the article in an inverted position adjacent to the projection lens system.

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

1. An advertising apparatus adapted for window display use comprising an enclosing casing, an object positioned in said casing, a light source in said casing adjacent to said object, a projection lens system in said casing in the optical axis of the reflected light rays from said object, and a magnifying lens positioned between said object and projection lens combination with said object optically within the focal length of said magnifying lens, whereby in operation an image of said object will appear in space in front of said apparatus.

2. An advertising apparatus adapted for window display use comprising an enclosing casing, an object in its usual commercial form positioned in said casing, a light source in said casing adjacent to said object, and a projection lens system in the forward portion of said casing in the optical axis of the reflected light rays from said object, whereby in operation an image of said object will appear in space in front of said apparatus.

3. An advertising apparatus comprising a casing, an object located in said casing, a light source in said casing of constant intensity and adjacent to said object, a projection lens system positioned in the forward end of said casing, a magnifying lens positioned between said object and lens system with said object within its focal length, whereby in operation an image of said object will appear in space in front of said apparatus, and means for supplementing said light source in accordance with changes in intensity of the light in front of said apparatus.

4. An advertising apparatus adapted for window display use comprising a casing, means for supporting an object in one end of said casing, a light source adjacent to said object, a projection lens system positioned in the opposite end of said casing, a magnifying lens positioned between said object and lens system with said object within its focal length, whereby in operation an image of said object will appear in space in front of said apparatus, and means for supplementing said light source in accordance with changes in intensity of the light in front of said apparatus including a plurality of windows in said casing adjacent said object.

5. An advertising apparatus comprising a casing, a commercial object in an upright position in said casing, a light source located adjacent to said object, a projection lens system arranged in said casing, a mirror located in said casing and facing said object, and a second mirror facing said first mirror, whereby in operation an erect image of said object will appear in space in front of said apparatus.

6. An advertising apparatus comprising a casing, an object in an upright position in said casing, a light source located adjacent to said object, a projection lens system arranged in said casing, a plane mirror facing said object, a second plane mirror in said casing facing both said first mirror and projection lens system, and a magnifying lens optically positioned between said mirrors, said optical parts being positioned in operation to create an erect real image of substantially the same size of said object in space in front of said apparatus.

7. An advertising apparatus comprising an elongated casing having an upper lateral extension, an object in its usual commercial form in an upright position in said extension, a light source located above said object, a projection lens system in the forward end of said casing, a plane mirror angularly arranged in said extension and facing said object, a second plane mirror facing both said first mirror and lens system, and a magnifying lens optically positioned between said mirrors, whereby in operation an erect real image of substantially the same size as said object will appear in space in front of said apparatus.

Signed at New York city, in the county of New York and State of New York, this 23rd day of April, A. D. 1930.

WALTER I. O'NEILL.