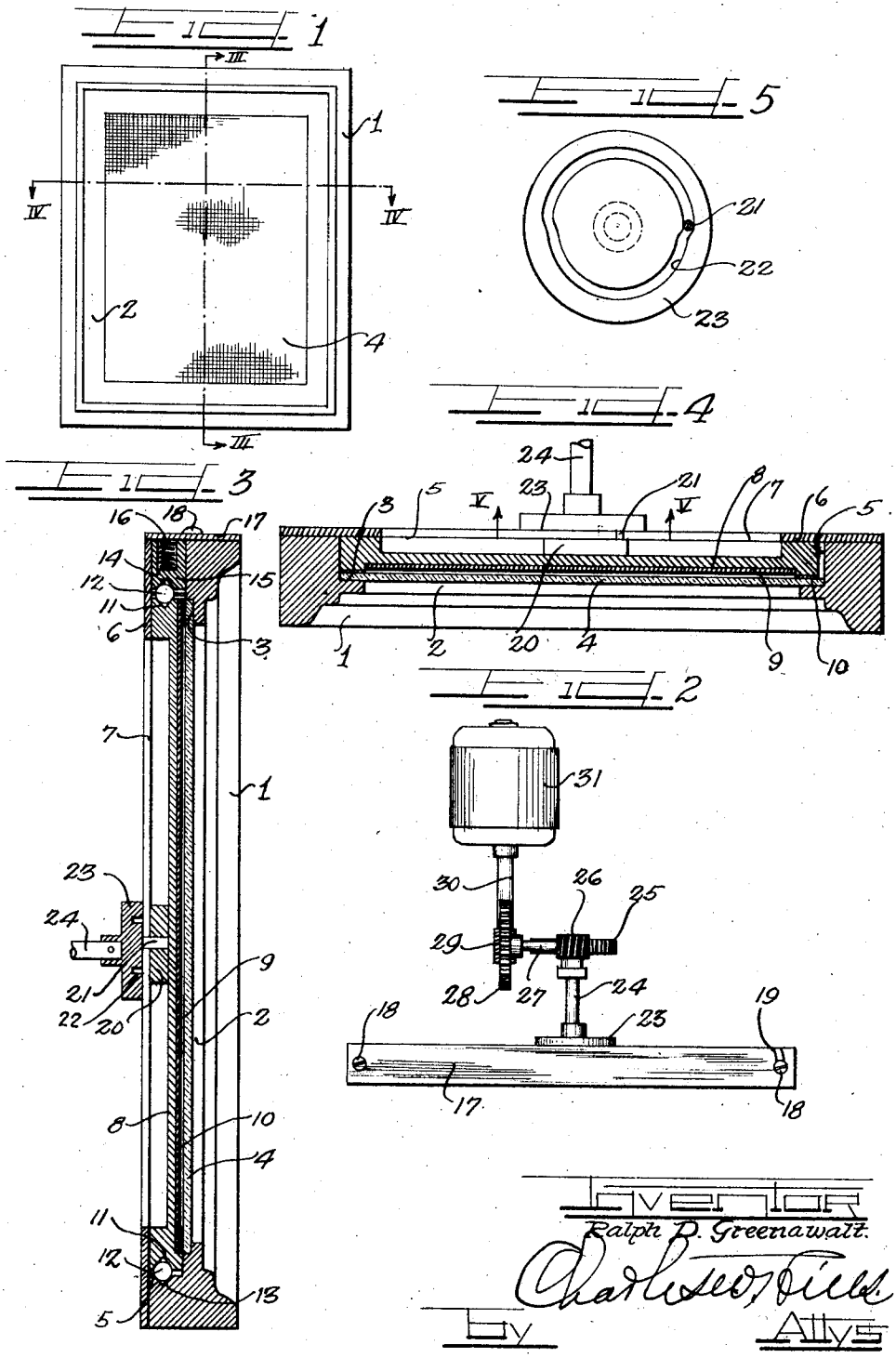
July 19, 1927. 1,636,415

R. D. GREENAWALT

ANIMATED DISPLAY DEVICE

Filed July 6, 1925 3 Sheets-Sheet 1



July 19, 1927. 1,636,415

R. D. GREENAWALT

ANIMATED DISPLAY DEVICE

Filed July 6, 1925 3 Sheets-Sheet 2

FIG. 8

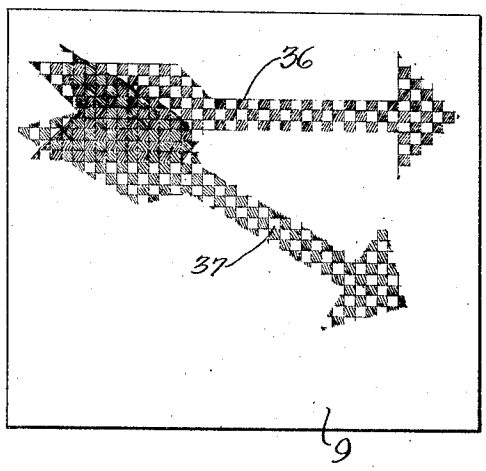


FIG. 6

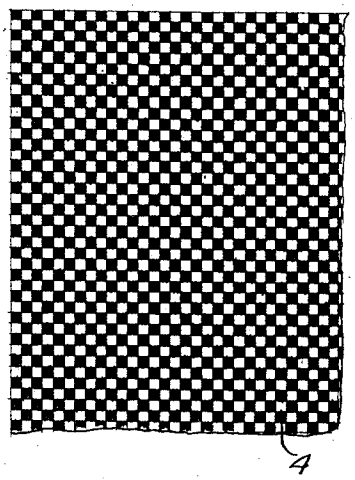


FIG. 7

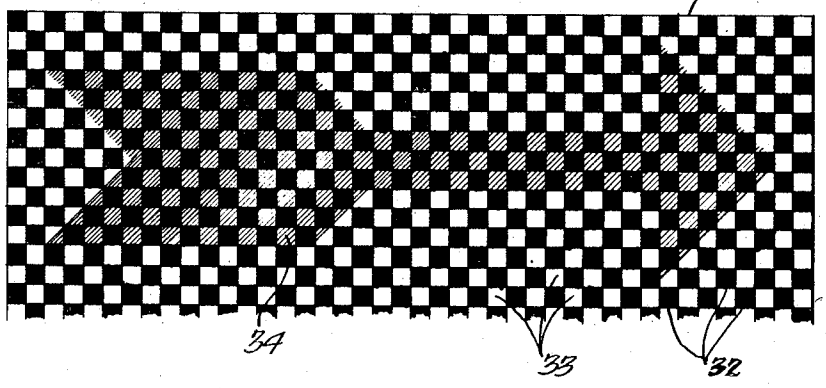


FIG. 9

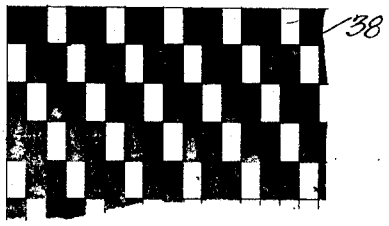
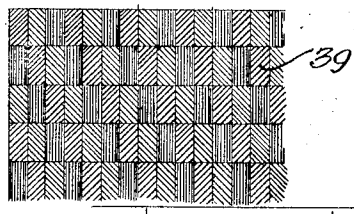


FIG. 10



INVENTOR

Ralph D. Greenawalt

BY

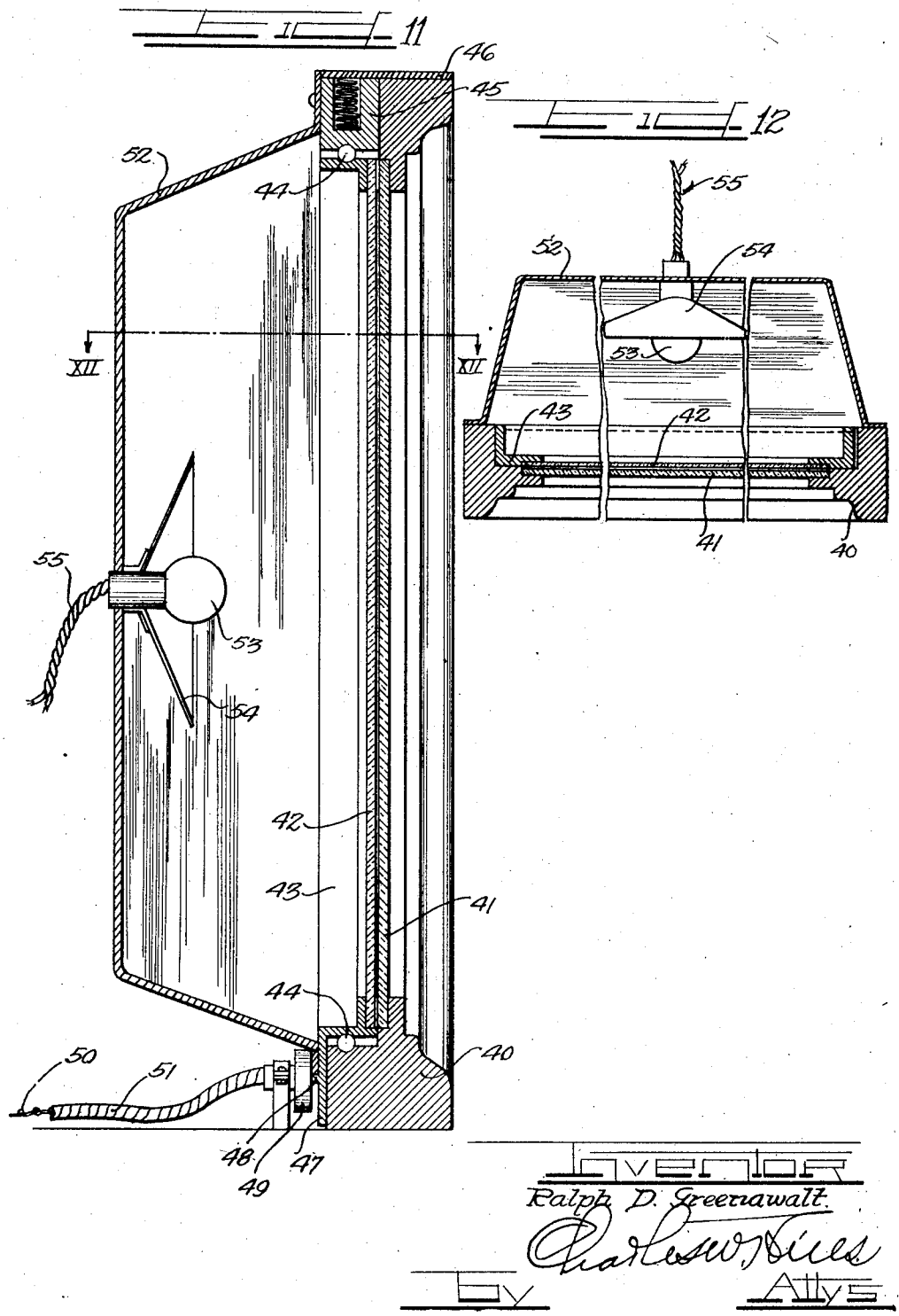
ATTYS

July 19, 1927. 1,636,415

R. D. GREENAWALT

ANIMATED DISPLAY DEVICE

Filed July 6, 1925 3 Sheets-Sheet 3



Inventor

Ralph D. Greenawalt

Charles W. Hills

By Attys

Patented July 19, 1927. 1,636,415

UNITED STATES PATENT OFFICE.

RALPH DANIEL GREENAWALT, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO WILLIAM T. JANE, OF CHICAGO, ILLINOIS.

ANIMATED DISPLAY DEVICE.

Application filed July 6, 1925. Serial No. 41,727.

This invention relates more particularly to an improved advertising device embodying animated pictures and the method of producing the same whereby the particular object to be displayed may be given an animated appearance in the day time without the use of illuminating means, as well as in the dark by the use of an illuminating medium.

It is an object of this invention to provide a simple and improved animated sign.

It is also an object of this invention to provide an improved method for the production of illustrations and the proper display thereof.

It is a further object of this invention to provide a display device or sign wherein a checkered glass screen is employed for coaction with a composite illustration produced through the medium of a screen similar in construction to the display screen.

It is further more an object of this invention to provide a display sign wherein a checkered display screen is used in combination with a movable illustration to produce an animated effect.

Another object of this invention is to provide a method of producing an animated advertising device by taking a plurality of photographs of an object through a screen by shifting the illustration with respect to the screen for each view and finally displaying the composite illustration behind a stationary screen with respect to which the composite illustration is adapted to be reciprocated.

It is an important object of this invention to provide an improved and simplified animated display sign wherein a composite illustration produced by means of photography through a checkered negative plate is movably associated with a framed checkered plate or screen to give an animated appearance to the photographed object without requiring change in the position of a person viewing the sign.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

The invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 illustrates a front elevation of an improved display device embodying the principles of this invention.

Figure 2 is an enlarged top plan view of the device including the operating mechanisms.

Figure 3 is an enlarged vertical section on the line III—III of Figure 1.

Figure 4 is an enlarged transverse section of the device taken on the line IV—IV of Figure 1.

Figure 5 is an enlarged front elevation of the operating cam taken on the line V—V of Figure 4.

Figure 6 illustrates a fragmentary portion of the checkered display screen forming part of the invention.

Figure 7 is a fragmentary portion of a checkered negative plate through which the object to be photographed can be seen.

Figure 8 is a view of the composite photograph.

Figure 9 is a fragmentary portion of a modified form of negative plate permitting three views of the object to be taken.

Figure 10 is a fragmentary portion of a composite photograph embracing three different views as represented by the rectangular portions.

Figure 11 is an enlarged vertical section of a modified form of the display device.

Figure 12 is a fragmentary transverse section taken on line XII—XII of Figure 11.

As shown on the drawings:

The reference numeral 1 indicates a display casing or frame provided with an inner peripheral flange or bead 2 affording a recess or groove 3 within which a checkered display screen 4 is adapted to be seated. The display screen 4 is preferably constructed of glass to afford a plurality of black or opaque squares alternating with rows of white or

transparent squares, as clearly illustrated in Figure 6.

The display frame 1 has the rear portion thereof constructed to afford a pocket 5 open at the upper portion of the frame. The pocket 5 is partially formed by means of a back plate or mat 6 which is secured to the back of the frame 1 by screws or other suitable retaining means. The back plate 6 is provided with a large central opening 7. Movably seated within the pocket 5 is a shiftable carrier plate 8, the front face of which is recessed to permit a composite photograph 9 to be seated therein. A liner or spacing mat 10 is positioned between the inner face of the display screen 4 and the marginal front face of the shiftable carrier plate 8. The top and bottom faces of the carrier plate 8 are provided with grooves or ball races 11 within which bearing balls 12 are adapted to run. The lower set of bearing balls 12 is also adapted to run in a ball race or groove 13 provided in the lower rear portion of the frame 1. The upper bearing balls 12 are adapted to project into a ball race or groove 14 provided in the lower face of a retaining bar 15 adapted to seat in the upper portion of the frame recess 5 between the frame 1 and the rear plate 6. The bar 15 is provided with a plurality of pockets or recesses for holding springs 16 which act to resiliently hold the bar in contact with the upper bearing balls 12 thereby also resiliently holding the carrier plate 8 in position. A retaining plate 17 is removably secured in place upon the upper face of the frame 1 by means of retaining screws 18 or other suitable means. One end of the retaining plate 17 is provided with a curved slot 19 to permit the retaining plate to be swung into and out of closed position when the retaining screws are released.

Secured on the back of the carrier plate 8 is a block 20 which supports a pin 21. The pin 21 projects into a cam groove 22 provided within a cam member 23 supported on a shaft 24 positioned at the rear of the frame 1 and supported in place by any suitable means. Mounted on the outer end of the shaft 24 is a worm gear 25 which is in mesh with a worm 26 carried on one end of an intermediate shaft 27. A worm gear 28 is mounted on the other end of the intermediate shaft 27 and is in mesh with a worm 29 mounted on the projecting end of a motor shaft 30 driven by a motor 31. The worm gears 25 and 28 together with the worms 26 and 29 afford a speed reduction mechanism between the driving motor 31 and the control cam 23. It will, of course, be understood that any other suitable driving mechanism may be used for operating the control cam 23.

Figure 7 illustrates a fragmentary portion of an intermediate plate 35 preferably constructed of glass and being provided with a plurality of crossed rows of staggered opaque or black squares 32 separated by transparent or white squares 33. The article 34 having the configuration of an arrow is visible through the transparent squares 33 of the intermediate plate 35 and represents the article which is to be photographed for display purposes in the frame 1, as hereinafter more fully described.

The intermediate plate 35 is adapted to be positioned between a camera and the object 34 to be photographed to permit the production of the view 36 of the object on the photograph 9 as shown in Figure 8. After one photograph of the object has been taken, the checkered intermediate plate 35 is shifted or moved a distance corresponding to the width of one of its squares, after which the object 34 is moved into another position and a second photograph is taken, resulting in the view 37 on the photograph 9. It will thus be noted that a composite photograph 9 is produced with the views of said photograph taken after the intermediate plate has been shifted one square from the position it was in when the first view of the object was taken. In a similar manner a photograph of a person may be taken with said person having for example, a smiling expression in one view, and a second photograph taken on the same plate with said person having a sad or scowling expression.

Figure 9 illustrates a fragmentary portion of an intermediate plate 38 wherein the dark portions are twice the width of the transparent or white portions. The intermediate plate 38 so constructed permits the composite photograph 39 to be produced as illustrated in Figure 10 with said composite photograph having three different photographic views of an object to be displayed with said various views being illustrated by the different sectioned rectangular portions. It will of course, be understood that when an intermediate plate 38 as illustrated in Figure 9 is used in the production of the composite photograph that a corresponding display plate or screen must be used in the display frame 1 in place of the display screen 4. It will thus be seen that a display or advertising device may be produced wherein the composite photograph 9 may have two or more photographs thereon covering the particular object which is to be displayed with an animated effect in the frame 1.

Figures 11 and 12 illustrate a modified form of the display device embracing a display frame 40 adapted to hold a checkered display plate or screen 41 in front of a movable composite photograph 42 carried in a shiftable frame 43 supported on bearing balls 44. A spring impelled bar 45 is posi-

tioned within the frame 1 and is held in place by means of a retaining plate 46. A flange 47 is integrally formed on the shiftable frame 43 and carries a pin 48 adapted to project into a control cam 49. The control cam 49 is adapted to be operated by means of a remote control or driving mechanism through a flexible driving chain or conductor 50 positioned within a conduit 51. Secured on the back of the shiftable frame 43 is a hood or housing 52 within which is mounted an electric light 53 and a reflector 54. A cord 55 connects the light 53 with a suitable source of electrical energy.

The operation is as follows:

This invention covers an improved method of producing an animated display device as well as the apparatus for displaying the advertising medium in such a manner that the composite photograph of the advertising medium will have an animated appearance when viewed by a person through the display plate or screen of the device.

The improved method consists of disposing a checkered intermediate plate between a camera and an object to be photographed to permit one view of the object to be taken on a negative in the camera after which the intermediate plate 35 is shifted one square before a second photograph of the object is taken with said object being in a different position from that in which it was first photographed. The negative plate within the camera will thus have two different views of the object, namely the views 36 and 37 as illustrated in Figure 8 after which the negative plate is developed in the regular manner, and a positive photograph 9 made of the same thereby producing a composite photograph or one covering a plurality of checkered views of the object. After the composite photograph 9 has been prepared, the photograph is mounted in the shiftable frame 8, which is then placed within the display frame 1 behind a checkered display plate or screen 4 constructed with rows of staggered squares similar to the construction of the intermediate plate 35. The spring controlled retaining bar 15 and the retaining plate 17 are then put into position as illustrated in Figure 3 and the pin 21 is engaged in the cam groove 22 of the cam 23.

The device is now ready to be operated to afford an animated advertising or display device which when operated by the motor 31 causes the cam to coact with the pin 21 to impart a reciprocating motion to the shiftable carrier plate 8 which holds the composite photograph 9. The shiftable carrier plate is shifted back and forth a distance corresponding to the width of one of the squares of the display plate or screen 4 so that first one view of the article on the photograph 9 is visible through the transparent squares of the display screen 4 and then the second view of the object, so that the resultant effect produced by a person looking at the display sign is that of an animated or moving object. A moving picture is thus adapted to be displayed in the frame 1 through the display screen 4 to a person standing in front of the advertising device without making it necessary for the person to change his position with respect to the advertising sign to receive the desired moving effect of the article or object which is being displayed.

It will thus be seen that an advertising device is produced wherein a checkered composite photograph is first made after which the checkered composite photograph is mounted within a display frame behind a stationary checkered display screen with respect to which the checkered composite photograph is adapted to have relative movement, causing the object which has been photographed to have an animated effect when viewed by a person through the display screen. The animated effect of the object is clearly discernible in the day time without the use of illuminating means but if desired may be used in the dark in its modified form as illustrated in Figures 11 and 12, wherein an illuminating means is employed behind the composite photograph for the purpose of illuminating the composite photograph which is to be displayed.

It will, of course, be understood that any number of photographs of a person or object may be covered by a composite photograph produced by the improved method of this device and said composite photograph used in coacting relation with a checkered display plate or screen having the opaque and transparent squares arranged in a manner illustrated in Figure 9 to permit a consecutive display of the various views of the object to take place through the group of transparent squares of the display screen so that the desired animated effect or moving picture may be viewed by a person looking at the display sign.

It will also be understood that the composite photograph 9 may be tinted or colored to produce a colored motion picture display sign if so desired. While the particular construction of the display device describes and illustrates a carrier plate for holding a composite photograph in a position to be moved with respect to a display screen, it will, of course, be understood that if desired the composite photograph may be held stationary and the checkered display screen moved with respect to the photograph to produce the desired results.

I am aware that many changes may be made, and numerous details of construction

may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted hereon, otherwise than necessitated by the prior art.

I claim as my invention:

1. An animated picture display device comprising a frame, a display plate mounted therein having staggered rows of opaque and transparent squares, a carrier plate mounted in said frame, a composite checkered photograph supported on said carrier plate behind said display plate, ball bearing supports for said carrier plate, spring controlled means for resiliently holding said carrier plate in position within said frame, and driving means connected with said carrier plate for moving the same relative to said display plate to give the object on said composite photograph an animated appearance when viewed through the transparent squares of said display plate.

2. A display device comprising a frame, a glass display plate carried in said frame having a plurality of staggered rows of black squares thereon leaving a plurality of rows of staggered transparent squares, a carrier plate in said frame, bearing means for supporting the same, means for resiliently holding said carrier plate in engagement with said bearing means, a checkered photograph supported in said carrier plate, and comprising a plurality of superimposed views of an article taken in different positions, and driving means connected with said carrier plate adapted to transmit a reciprocating movement to said carrier plate and said photograph to give the article photographed an animated appearance when viewed by a person standing in front of the device and looking through the transparent squares of said display plate.

3. A display device comprising a frame, a glass screen supported therein and having a plurality of opaque staggered squares arranged thereon, a carrier plate mounted in said frame, resilient means for holding the same in position, a checkered photograph supported in said carrier plate, and comprising a photograph embracing a plurality of superimposed different views of an article to be displayed, said views all being taken through a screen similar in construction to the display screen, cam means connected with said carrier plate, and driving means for operating said cam means to impart a reciprocating movement to said carrier plate, and photograph, to give the article on said photograph an animated appearance when viewed through said display screen.

4. A display device comprising a frame, a checkered screen supported therein, a carrier plate movably mounted in said frame, bearing means for supporting the same, a spring impelled bar for resiliently holding said carrier plate in position, a checkered composite photograph mounted in said carrier plate, and movable therewith relative to said display screen, driving means connected with said carrier plate to impart a movement thereto, a hood mounted on said frame, and illuminating means in said hood for illuminating the composite photograph to give the article on said photograph an animated appearance when viewed through said display screen when the carrier plate is in operation.

In testimony whereof I have hereunto subscribed my name.

RALPH DANIEL GREENAWALT.