United States Patent [19]

Schneider

[11] **3,747,243**

[45] **July 24, 1973**

[54] **ADVERTISING DEVICE WITH FLICKERING LIGHT EFFECT**

[76] Inventor: **Josef Schneider,** Rheinfelder Strasse 27, Basel, Switzerland

[22] Filed: **Jan. 25, 1971**

[21] Appl. No.: **109,237**

[52] **U.S. Cl.** ..... **40/30,** 40/106.53, 40/133 A, 40/133 B

[51] **Int. Cl.** **G09f 11/06**

[58] **Field of Search** ..... 40/133 B, 132 F, 40/133 A, 106.53, 30; 240/10 R

[56] **References Cited**

UNITED STATES PATENTS

2,216,261	10/1940	Bergman	40/133 A
2,099,243	11/1937	Taaffe	40/133 A
1,528,161	3/1925	McKay	40/133 B
1,455,474	5/1923	Brown	40/133 B
1,679,167	7/1928	Nolan	40/133 A
2,322,838	6/1943	Evans	40/133 A
784,344	3/1905	Peason et al.	40/133 B
1,964,328	6/1934	Monteith	30/133 B

FOREIGN PATENTS OR APPLICATIONS

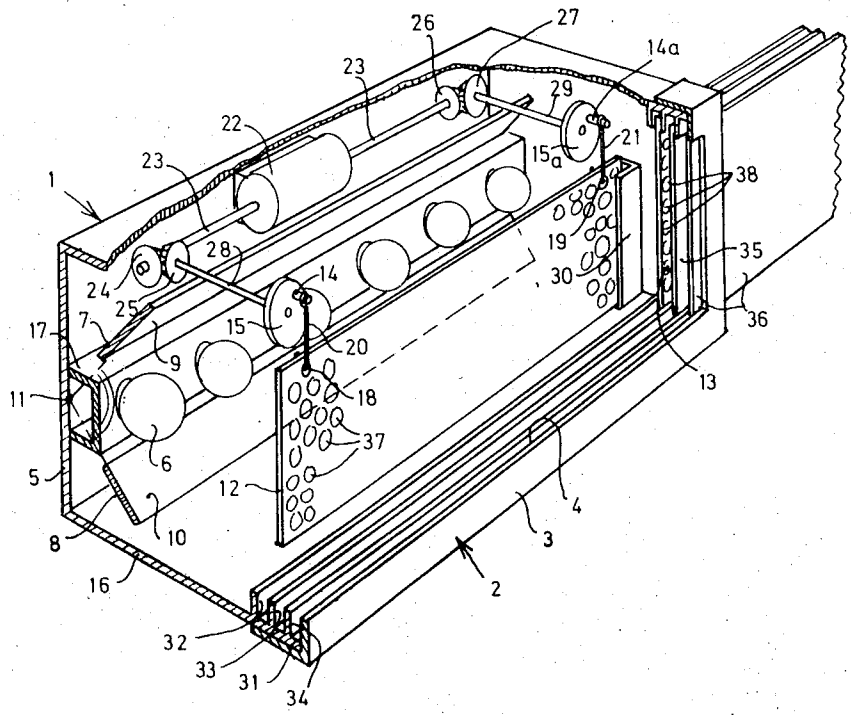
486,894	11/1929	Germany	40/133 A
786,107	6/1935	France	40/133 A

Primary Examiner—Robert W. Michell
Assistant Examiner—John F. Pitrelli
Attorney—Tab T. Thein

[57] **ABSTRACT**

Illuminated advertising device with high-intensity flickering light effect, comprising in a casing three replaceable light-transmitting sheets of which the outermost carries the advertisement, the next following sheet is an ornamental sheet carrying regular projections, and the third or innermost sheet provides the flickering effect on account of a planar movement imparted thereto and having irregular projections on its side facing those of the ornamental sheet. The flicker sheet is specially made from approx. 3 millimeter thick acrylic resin. Mirrors may be provided so as to add reflected light to the direct light of incandescent lamps. A color foil may optionally be inserted between two adjoining sheets, such as the advertising and the ornamental sheets of the device. A small motor with an eccentric arrangement actuates the flicker sheet.

11 Claims, 7 Drawing Figures



PATENTED JUL 24 1973

3,747,243

SHEET 1 OF 2

Fig. 1

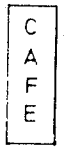


Fig. 2



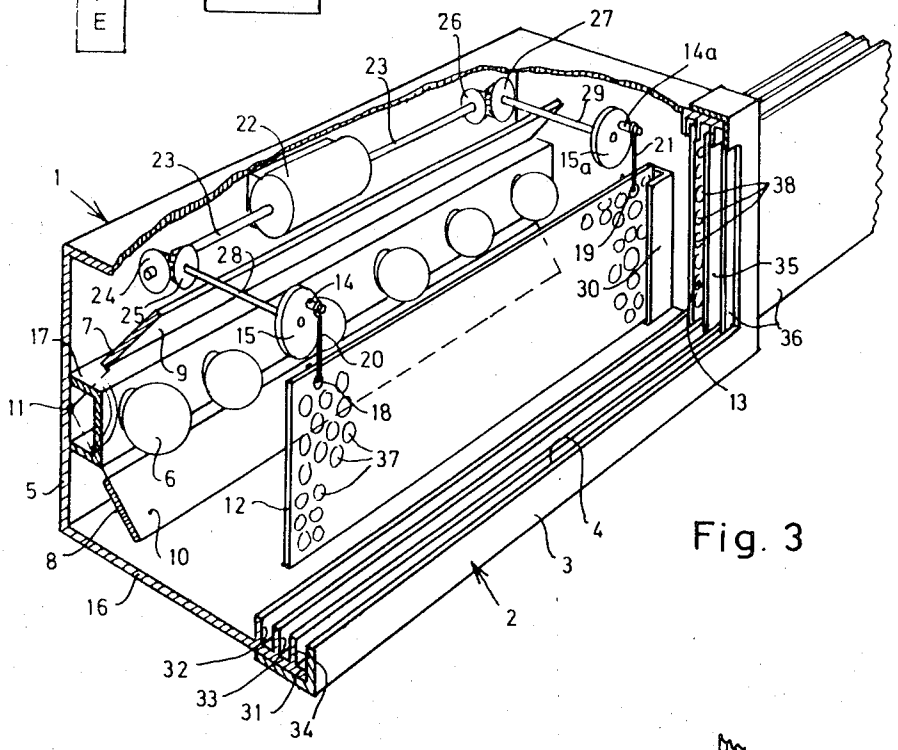


Fig. 3

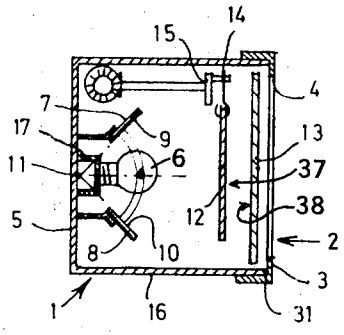


Fig. 4

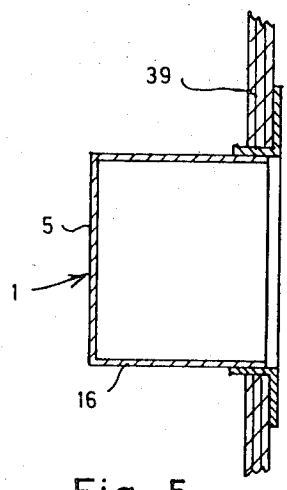


Fig. 5

INVENTOR:
Josef Schneider
BY Zale Thein.
Agent

FIG. 6

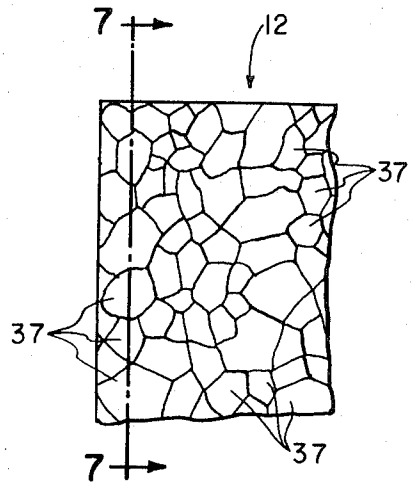
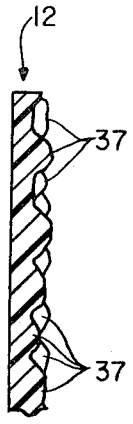


FIG. 7



ADVERTISING DEVICE WITH FLICKERING LIGHT EFFECT

The present invention relates to an advertising device which gives a flickering light effect.

Advertising devices are known in which elements are provided intended to produce flickering light in the zone of the advertising symbols or characters or in the zone surrounding them and thus to attract the observer's attention.

In such a device openings are provided in a non-transparent front sheet or plate or there are provided, additionally to these openings, small tubes extending perpendicular to the sheet with a cross-section corresponding to that of the openings. The latter and the small tubes form an advertising symbol, for example one or more letters. Behind the front sheet one or more light sources are arranged. Between the light sources and the front sheet there is a rotary flicker sheet in the form of a non-transparent sheet with round openings for the passage of the light rays. The rapid sequence of the interruption of the light passing intermittently through the openings of the flicker sheet and those of the front sheet result in a flickering of the advertising symbol or symbols.

In a further advertising device there is provided an advertising sheet and behind it a reciprocated light-reflecting sheet. Between the two sheets there is an ornamental sheet by which the movement of the reflecting sheet is made invisible. This device is without artificial lighting and thus is dependent upon daylight. The reflected light quantity for effecting the flickering is very small in this arrangement particularly if the advertising characters are transparent while the surroundings are non-transparent.

In another advertising device a front sheet is arranged behind an advertising symbol in the form of a neon tube in a narrow zone, which is transparent along the contours of the neon tube, the sheet being exposed to flickering light rays in order to obtain a shadow effect on the neon tube and thus on the advertising symbol. The light of electric lamps in this arrangement passes through openings in a conventional non-transparent flicker sheet. By the movement of the latter the light passing therethrough falls continually on other elements on the rear of the front sheet, the elements being in the form of lenses or prisms which concentrate the light and allow it to strike against and sweep along the front sheet by varying refraction at an increased speed.

In yet another advertising device the flickering effect is achieved by passing the light of an artificial source through two ornamental glass sheets arranged one behind the other, the front sheet being provided with the advertising characters and the rear sheet being kept continually in motion. The assembly is such that by the movement of the rear ornamental sheet the light passing through the front sheet continuously changes its direction of propagation whereby a flickering luminous effect is produced.

The flickering effect as an eye catcher for the advertising message is in all known advertising devices far too small since the flickering is at too low a light intensity and liveliness to be sufficiently arresting.

It is the object of the present invention to provide an advertising device for producing a flickering light effect, which operates by means of an internal artifical light source, acting through transparent or translucent

surfaces of a sheet having advertising symbols thereon, and provides a lively or lifelike flickering effect of sufficient intensity that even in daylight or sunshine the attention of persons is promptly attracted who glance in the direction of the advertising device.

The device in accordance with the invention uses continuous changes in the propagation direction of artificial light by movement of a sheet which intersects the light, the movable sheet not being one of the known ornamental sheets of glass but a special and novel synthetic sheet. As the carrier of the advertising message not the fixed ornamental sheet is used but an additional sheet which has smooth surfaces on both sides.

The illuminated advertising device for producing flickering light effects in accordance with the invention has at least one transparent or translucent advertising sheet constituting a wall of a casing in which a fixed ornamental sheet is arranged behind the advertising sheet, and in the rear one or more light sources. There is furthermore provided according to the invention, intermediate the ornamental sheet and the light sources, at least approximately parallel to the former, a sheet movable in its own plane in any direction and path, for the production of the flickering effect, on the advertising sheet, of the light passing through said movable sheet. The advertising sheet is preferably transparent or translucent in the region of the advertising symbols (characters) or therearound.

According to important features of the invention, the illuminated advertising device is characterized in that the movable or flicker sheet is made of acrylic thermoplastic synthetic resin and preferably at least one surface of the sheet has projections or bulges arranged in the manner of the ornamental sheet, in a honeycomb fashion, which break up and concentrate the light rays, the projections being all different in height and periphery, at least from the neighboring projections. A sheet of colored foil can also be provided between the advertising and the ornamental sheets of the device.

According to further features of the invention, the built-in light source emits a steady light which is transformed into a flickering light by a reciprocating mechanism which imparts a repetitive planar movement to the movable or flicker sheet such that any point thereon follows a substantially circular path. Mirrors may be used in association with the light sources to obtain both direct and reflected light rays.

The movable sheet allows about 95 percent of the steady light to pass, the invention providing means for breaking up and concentrating the light, producing continuous changes in the propagation direction of the rays, the angles of incidence of the light falling on the sheet being different from those in which the rays leave the bulged front surface of the movable sheet.

It was found that the diameter of a circular path followed by any point on the sheet is preferably of the order of 11 millimeters while the rate of repetition is of the order of approximately 40 movements per minute.

According to further, optional features of the invention means are provided for removably and adjustably supporting at least one of the stationary sheets in the device. One or more grooves may be provided to this end, and/or one or more access openings, for selectively inserting and removing the sheet or sheets.

Equally important but secondary features are constituted by preferred embodiments, such as one in which the substantially regular projections on the ornamental

sheet face the substantially irregular or random projections of the movable, innermost sheet, a distance of approximately 25 millimeters having been found particularly advantageous between these sheets.

The distance between any pair of sheets in the device is preferably adjustable, particularly between the movable and the ornamental sheets. The latter may be made of glass, with a recommended thickness of 3 to 4 millimeters.

The illumination in the device may include one or more rows of e.g., punctiform light sources disposed along a line substantially parallel to the longitudinal median line of the advertisement displayed by the device.

Other objects and many of the attendant advantages of the invention will be readily appreciated as the same becomes better understood by reference to the following detailed description, when considered with the accompanying drawing wherein

FIG. **1** is a schematic illustration for using the advertising device according to the present invention, with the word CAFE arranged in a vertical line;

FIG. **2**, similar to FIG. **1**, shows the word BAR in a horizontal line;

FIG. **3** is a partly broken away perspective illustration, with some less important parts omitted, of a preferred, exemplary embodiment of the advertising device according to the present invention, for producing a flickering light effect;

FIG. **4** is a somewhat schematic cross section through the device of FIG. **3** and showing some parts of the device in side elevation;

FIG. **5** shows additional features of the casing for the device as it can be mounted in a wall or window; and

FIG. **6** is a frontal elevation of a sheet used in the inventive device for producing the flickering effect;

FIG. **7** is a section taken through the flicker sheet along line 7 — 7 of FIG. **6**.

FIGS. **1** and **2** illustrate how an advertising symbol or work can be arranged at will in a vertical or a horizontal sense. Further reference to these schematic views will be had somewhat later in the description.

FIGS. **3** and **4** show the construction of the inventive device in a preferred, exemplary embodiment and the internal arrangement thereof. A casing **1** is closed on all sides except for the front side **2**, as will be explained in more detail as the description proceeds. A cover-like frame **3** is arranged on the front side, in which a rectangular opening **4** is left which extends over the major part of the front side **2**. The opening **4** forms an aperture in which the advertising symbols or characters are visible. The frame is preferably assembled from angle section members.

The section of the device shown in FIG. **4** has at the rear wall **5** one or more incandescent lamps **6** and mirrors **7, 8**, arranged respectively above and below them. Reflecting sides **9, 10** of the respective mirrors face the lamps, and the mirrors are so arranged that extensions of their planes intersect at the rear wall **5** in a right angle, namely in line **11**. The lamps **6** are so arranged that their longitudinal median lines extend perpendicularly from the rear wall and pass through the line **11**, as illustrated.

In the space in front of the lamps **6** and the mirrors **7, 8** a flicker sheet **12** is suspended, and between the latter and the aperture **4** of the front side **2** there is arranged an ornamental sheet **13**. The latter is fixed while the sheet **12** is continuously moved when the device is in operation. For this purpose eccentric pins **14, 14a** are attached to rotatable discs **15, 15*a***.

Although the device could be constructed in a rectangular form, with only one incandescent lamp, FIG. **3** shows the exemplary embodiment with a row of lamps **6** which lie at the same height above the base **16** of the casing **1** and are mounted on a channel section **17** secured to the rear wall **5** of the casing. The mirrors **7, 8** have their longitudinal median lines extending parallel to the rear wall **5** and to the base of the casing. It is preferable to use incandescent lamps of identical or closely similar wattage so that the center points of their filaments lie in a straight line, and this line extends parallel to the longitudinal median line of the mirrors **7, 8** and to the earlier described line **11**.

As shown in FIG. **3**, the movable sheet **12** is suspended by openings **18, 19** from wires **20, 21** of identical lengths and connected to the pins **14, 14*a*** of the respective discs **15, 15*a***. These drive discs lie parallel to the rear wall **5** of the casing and are driven, as a matter of example, by an electric motor **22** through a shaft **23**, gears **24, 25** as well as **26, 27** and respective drive shafts **28, 29**.

It will be understood that conventional bearings, brackets, etc. for the just described drive system are used which are however omitted from the drawing for the sake of clarity. The gears **24** to **27** are so arranged and constructed that the discs **15, 15*a*** rotate in synchronism and in the same sense of rotation. The flicker sheet **12** thus carries out a translatory motion so that each point of the sheet moves about an equal sized circle and at the same speed.

A vertical, U-section guide member **30** is arranged for example at the right-hand side of the casing **1** for guiding the sheet **12**; it will be understood that two such guide members may be provided, at either end or side, and an appropriate distance is allowed for the movement of the flicker sheet **12** without actually touching the guide member or members. The latter may be secured to the side walls of the casing. The member or members **30**, instead of being fixed, can be made displaceable or adjustable with respect to the rear wall **5** and the front side **2** of the casing **1**. The members **30** lie with their U-section parallel to the fixed ornamental sheet **13** so that the movable sheet **12** is kept parallel thereto.

So far the inner mechanism of the device has been described, and we are now coming to further features of the casing proper. At the front edge **31** of the base **16**, guide grooves **32, 33, 34** are disposed which extend parallel to the front side **2** of the casing, over the whole width of the front side, and serve for guiding the respective sheets **13, 35** and **36** (the latter two to be described shortly). For the sake of clarity, these details have been omitted from FIGS. **4** and **5**; they appear only in FIG. **3**.

The right-hand side of the ornamental sheet **13** also extends into the end of the guide groove **32**. This sheet can be inserted from one side or end of the casing **1** in the groove and remains in the inserted position during use of the device.

The afore-mentioned sheet **35** can be inserted from one side in the groove **33**. During operation of the device this sheet is also left inserted in a fixed position. It can not only be exchanged for another sheet but can

also be completely omitted, as will be further explained hereinafter.

The third one of the earlier mentioned grooves, **34** receives similarly from one side the afore-mentioned sheet **36** which is an advertising sheet carrying symbols, characters in words or pictorial form. This sheet can be either transparent or translucent in the surface having the letters or symbols thereon, or in the surface therearound. The remainder of the surface is preferably non-transparent, that is light cannot pass through it.

In place of the three guide grooves **32, 33, 34** a single groove could be provided (not illustrated) in which all three sheets **13, 35, 36** could be simultaneously or consecutively inserted.

In accordance with the present invention, the sheet **12** preferably consists of a thermoplastic synthetic resin of the acrylic family, about 3 millimeters thick, allowing about 95 percent light to pass. The sheet is provided on at least one surface with projections or bulges **37** different heights, which are formed at the bases of a kind of irregular quadrilaterals or circles, these being of various sizes so that for the viewer they appear on the sheet **12** as a random honeycomb design. This special synthetic-resin sheet is so arranged in the casing **1** that a smooth surface thereof is toward the lamp or lamps **6** while the side provided with the projections **37** faces the front **2** of the casing (that is the advertising sheet **36**). The flicker sheet **12** with its projections or protuberances **37** is best seen in the somewhat enlarged views of FIGS. **6** and **7**, the latter being a sectional illustration of the former. The position of sheet **12** is the same in FIG. **7** as in FIG. **3**, with the protuberances **37** facing to the right-hand side of the drawing, that is, the protuberances **38** of the intermediate sheet **13.**

A known ornamental sheet, e.g. glass, can be used for the sheet **13.** It has a thickness of from 3 to 4 mm and has at least on one surface projections **38** which are all substantially of the same size and height, and transmit to the observer the impression of a regular honeycomb pattern. The projections of the sheet **13** face those of the sheet **12** (that is, projections **38** face the rear **5** of the casing **1**).

The sheet **35** is preferably made of an acetate foil of about 0.1 mm thickness and can be of any desired color. It serves to provide color to the light for the advertising sign. If the acetate-foil sheet **35** is omitted the light will be white (subject of course to the color of the lamps **6**).

The sheet **36** can be made of synthetic resin of about 1.5 mm thickness or of glass. The desired advertising symbols, characters, letters or pictures are arranged on this sheet.

Whilst the sheets **13, 35, 36** are commercially obtainable, the invention requires a special synthetic-resin sheet **12** which must be specially made for the inventive device. The proposed acrylic resin is pressed at about 60° C with a pressure of approximately 120 metric tons in a metal mold having recesses which do not pass through it and which are formed by boring, to obtain depressions that correspond to the projections on the sheet **12.**

The flickering effect is caused on the transparent or translucent surface of the advertising sheet **36** when the sheet **12** is actuated in the above-described manner by the motor **22** and is illuminated by the lamps **6.** The artificial light passes from the lamps both directly and also by way of the mirrors **7, 8** onto the sheet **12.** The points of this sheet receive more light, by the combination of the direct and reflected rays, as would be the case without the mirrors. Since the angles of incidence of the light rays are different between a point in the plane surface of the sheet **12** as against an area of the surface provided with the projections, the light rays similarly leave in different directions and are broken up additionally and individually by the projections on the exit surface.

As a result of the continuous movement of the sheet **12** a given exit light ray passes continually through other portions of the sheet and undergoes a constant change in the exit direction from the sheet **12.** The light ray thus sweeps at random speed and with random changes in direction over the opposed projection-covered surface of the ornamental sheet **13** in which once again a breaking up or refraction of the light rays is effected. Since any entry point to the ornamental sheet is hit by the rays intermittently and from alternating directions from the special synthetic-resin sheet **12,** the rays of course are passed intermittently and rapidly, in an alternating direction, onto the advertising sheet **36.**

The multiplicity of light rays passed through the sheet **12** onto the sheet **13** in alternating directions and thence onto the advertising sheet **36** gives rise to a rapid alternation in light intensity at the individual points of the advertising sheet, which appear to change and wander thereon in alternating directions and at various speeds, and thus result in a pleasant and lively flickering effect.

It was found from experiments that the intensity of the flickering with a given synthetic-resin sheet of an acrylic compound, having projections of various sizes, and with a given ornamental sheet, is dependent upon the speed of the driven discs, of the diameter of the circle about which the points of the special sheet are moved, and of the distance between the sheets **12** and **13.**

In the exemplary embodiment of the inventive device hereinbefore described, the speed of the discs **15, 15***a* lies between 30 and 50 rpm, the diameter of the circle for the individual points is about 22 mm and the distance between the sheets **12, 13** is chosen as 25 mm, as a result of which the above-described excellent flickering effect is achieved. The distance between the sheets **13** and **36** is recommended to be in the range of 1 to 2 centimeters.

The lamps **6** in the casing **1** are spaced at about 6.5 cm from one another, and from 3 to 4 cm from the side walls of the casing. The power of the lamps is only **15** watts each. The motor has a performance of 10 to 20 watts and is preferably provided with fan blades which, in conjunction with conventional air openings in the casing walls, provide a constant temperature inside the casing, which lies only at approximately 15° to 20° C above the ambient temperature (the conventional blades, air openings, and other structural details which are known to those skilled in the art are not shown in the drawing).

Since the motor **22** may give rise to vibrations if the casing is suspended, it is preferable to avoid damage from such vibrations by supporting the moving parts in the casing by the intermediary of damping members with respect to the remainder of the parts (such conventional shock- and vibration-absorbing members have also been omitted from the illustration).

Coming back once more to the schematic illustrations of FIGS. 1 and 2, single rows of letters are shown, wherein the characters can be up to 50 cm in height, in the illustrated arrangement with the lamps according to FIG. 3 in a single line. Instead of a single row or line, the letters can of course also be arranged in several lines or rows, adjacent one another, vertically or horizontally, and the letters can of course be as small as desirable, particularly if the device is to be viewed from close range.

It will be understood by those skilled in the art that more than one row of lamps 6 can be provided, with the appropriate mirrors flanking them, while of course a single system of sheets 12, 13 and 36, as well as optionally 35, can be used together with the moving mechanism disclosed for the flicker sheet 12.

In order to construct an advertising device according to the present invention, which has flickering advertising surfaces on two opposite longitudinal sides, two complete devices of similar size can be set back-to-back, or the device can be constructed with a single casing, as a twin arrangement, in which the rear walls between the two portions are omitted while the mirrors and the channel sections or the like holding the lamps are carried by angle supports. In such a twin arrangement (not illustrated) a single motor or two separate motors can be provided as will be clear to those skilled in the art.

The hereinbefore described advertising device with flickering light effect can be disposed in a customary manner outside the front of a house or other structure, it can however also be arranged as shown in FIG. 5, built into a wall 39 and the like, or into a window frame, particularly in display windows.

In the inventive device the sheets 13, 35, 36 can be inserted into the frame 3 of the front face and are thus changeable and replaceable at any time, whether it be for a changed advertising text, time-to-time interchange of the advertising, or in certain circumstances a foil of another color can be provided. The invention also contemplates the removal and insertion of the sheets from above, instead of from the side (the casing may also have an appropriate, closable opening on top to this end).

The lamps 6 when burnt out can be replaced conveniently from the front through the opening 4 of the casing, after removal of the sheets 36, 35 (if used), 13 and 12, in this order. Instead of this, at one of the ends of the casing a small door can be provided (not shown) through which the lamps are readily accessible for exchange.

It should be understood, of course, that the foregoing disclosure relates only to a preferred embodiment of the invention, and certain detail modifications thereof, and that it is intended to cover all changes and modifications which do not constitute departures from the spirit and scope of the invention.

What I claim is:

1. An advertising device with high-intensity flickering light effect, comprising, in combination, a casing, illuminating means in said casing for emitting a steady light, at least three replaceable, at least partly light-transmitting sheets mounted in said casing, the outermost sheet being adapted to carry an advertisement and the like, the next inwardly following, intermediate sheet being an ornamental sheet provided with substantially regular protuberances on at least one face, and the innermost sheet being movable and provided with substantially irregular protuberances on at least one face, said protuberances on the innermost and the intermediate sheets facing each other, and those of the former acting as minute concentrating lenses, and means for reciprocating said innermost sheet, thereby producing the flickering effect in the light passing through said intermediate and said outermost sheets.

2. The advertising device as defined in claim 1, wherein said innermost sheet is made of an acrylic thermoplastic material of approximately 3 millimeters thickness.

3. The advertising device as defined in claim 1, wherein said innermost sheet has at least on its front surface random honeycomb-shaped protuberances of different heights and peripheries.

4. The advertising device as defined in claim 3, further comprising an additional replaceable, at least partly light-transmitting sheet interposed between two adjoining ones of said light-transmitting sheets, and means associated with said casing for removably and adjustably supporting at least one of said outermost, said intermediate and said additional light-transmitting sheets, said supporting means including at least one groove for said at least one of the light-transmitting sheets, and at least one access opening for selectively inserting and removing said at least one sheet.

5. The advertising device as defined in claim 1, further comprising means in the direct path of the light rays to break up and concentrate the light emitted by said illuminating means and passing through said light-transmitting sheets, using both direct and reflected rays, to produce continuous changes in the propagation direction of said rays, and wherein said innermost sheet allows about 95 percent light to pass, with the angles of incidence of the light falling on said innermost sheet being different from the angles in which said rays leave the front surface of said innermost sheet.

6. The advertising device as defined in claim 1, wherein said reciprocating means includes a mechanism for imparting a repetitive planar movement to said innermost sheet such that any point thereon follows a substantially circular path.

7. The advertising device as defined in claim 6, wherein said mechanism includes drive means, eccentric means operated thereby, and operatively associated with said innermost sheet to move the same in a plane substantially parallel with that of said intermediate sheet.

8. The advertising device as defined in claim 6, wherein the diameter of said circular path is of the order of 11 milliemeters while the rate of repetition is of the order of approximately 40 movements per minute.

9. The advertising device as defined in claim 1, further comrising an additional replaceable, at least partly light-transmitting sheet interposed between two adjoining ones of said at least three light-transmitting sheets.

10. The advertising device as defined in claim 9, wherein said additional sheet is made of an acetate material of approximately 0.1 millimeter thickness.

11. The advertising device as defined in claim 9, further comprising means associated with said casing for removably and adjustably supporting at least one of said outermost, said intermediate and said additional light-transmitting sheets.

* * * * *