Jan. 2, 1951 P. MAYU 2,536,301

ANTIDAZZLING DEVICE, MORE PARTICULARLY FOR HEADLIGHTS

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FIG. 1

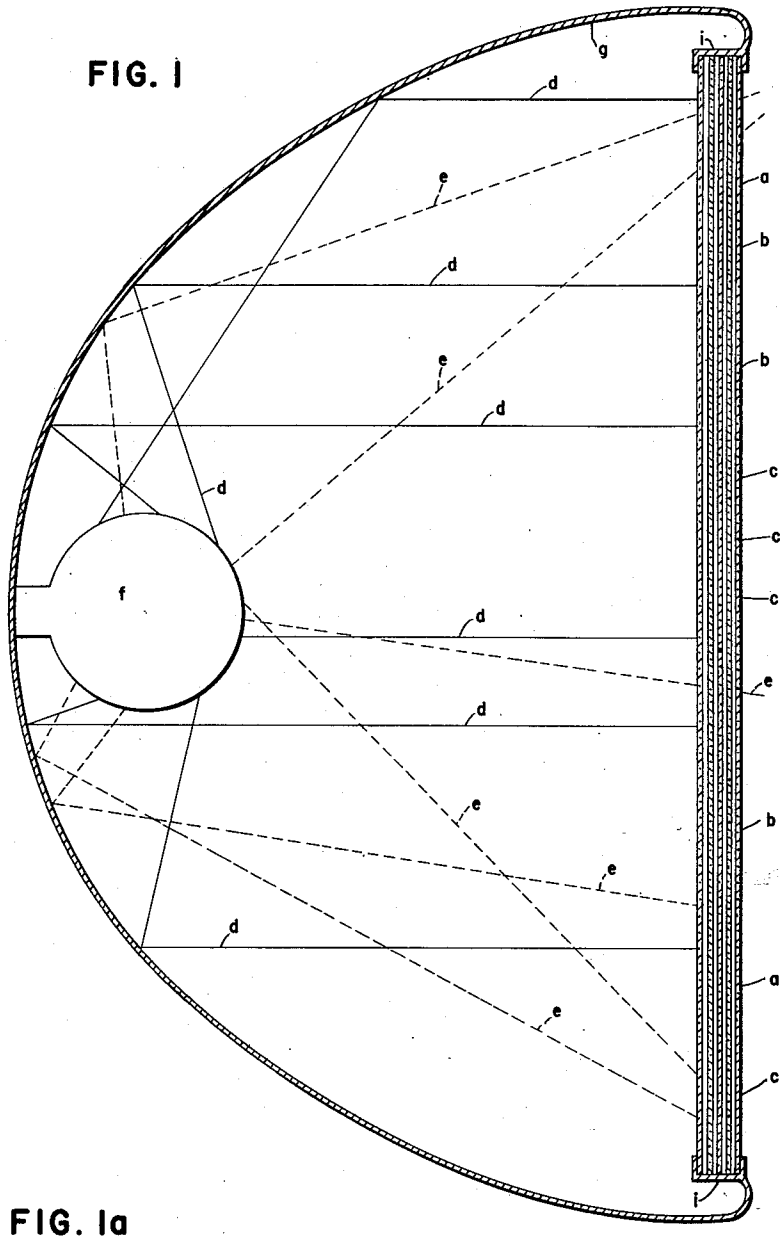
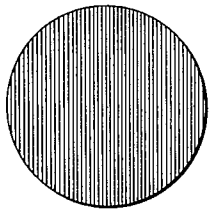


FIG. 1a



INVENTOR
PIERRE MAYU

BY Beaman & Patch
ATTORNEYS

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FIG. 2

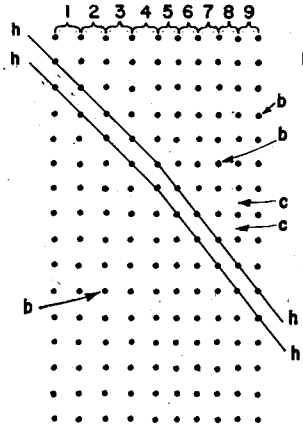


FIG. 3

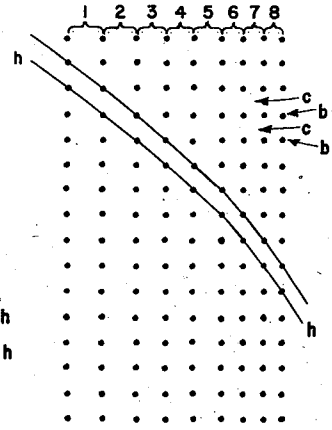


FIG. 4

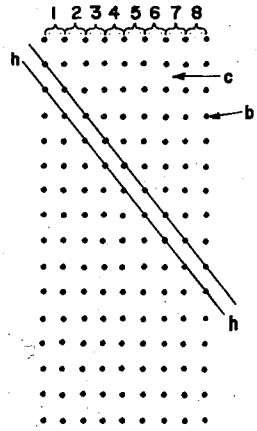


FIG. 5

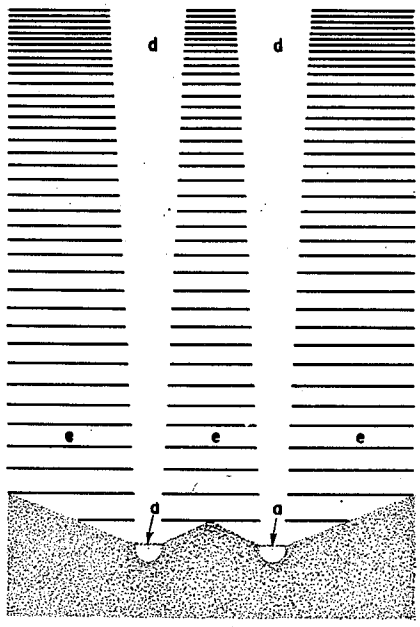
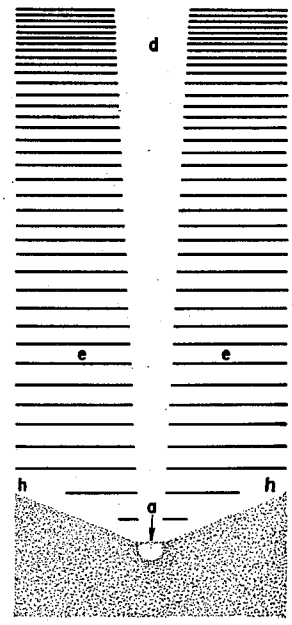


FIG. 6



INVENTOR
PIERRE MAYU

BY Beaman & Patch
ATTORNEYS

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FIG. 7

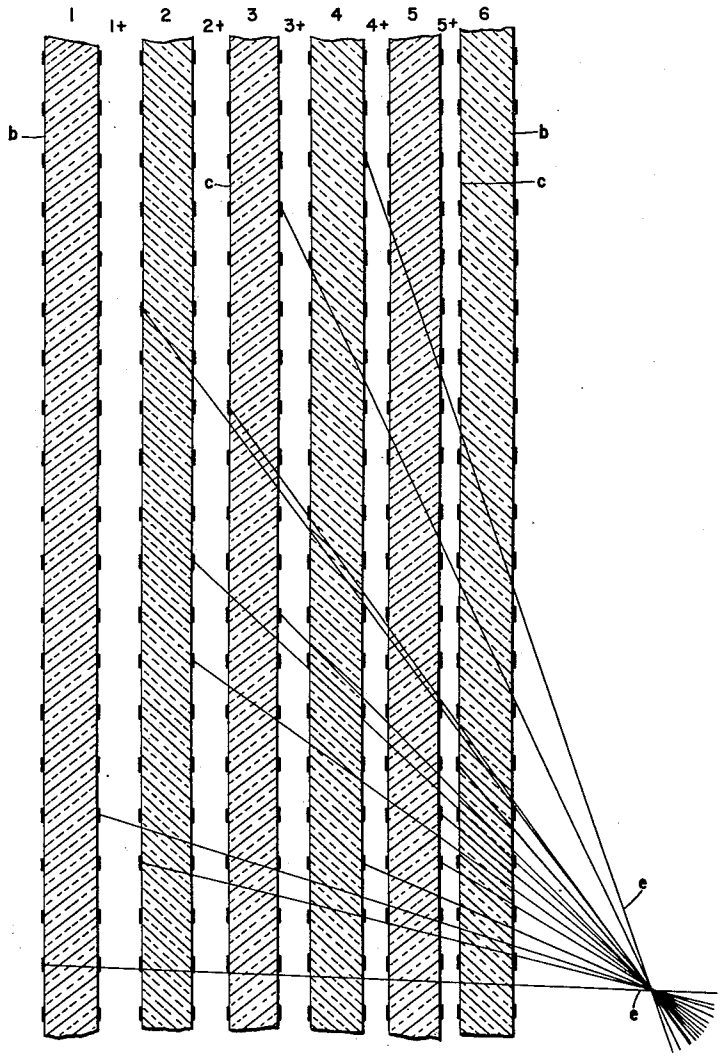
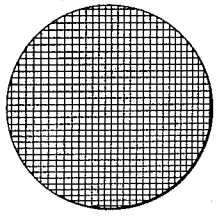


FIG. 8



INVENTOR

PIERRE MAYU

BY Beaman & Patch

ATTORNEYS

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UNITED STATES PATENT OFFICE

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ANTIDAZZLING DEVICE, MORE PARTICULARLY FOR HEADLIGHTS

Pierre Mayu, Rueil-Malmaison, France

Application April 16, 1948, Serial No. 21,365
In France December 24, 1947

13 Claims. (Cl. 240—41.4)

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This invention relates to an anti-dazzling device intended, more particularly, for head-lights.

The effect produced by the hitherto known anti-dazzling devices is based on the use of a grid formed of sheet metal bands, for example, and arranged in front of the source of light in order to absorb the oblique rays. Such devices do not entirely nor in a perfectly suitable manner solve the problems set by the traffic on roads or in the streets and, more particularly, by the traffic of motor cars; indeed, such grids formed of sheet metal bands do not render possible the illumination of the road sides.

The invention has for its object to provide an anti-dazzling device which does not offer these disadvantages.

The invention relates to an anti-dazzling device for head-lights, more particularly, characterized by parallel screens arranged behind one another and comprising aligned diffusing lines and the spacing between the screens of at least one pair of said screens being different from the spacing between a screen of said pair and another adjacent screen, thus forming a device by which beams of lights which reach it under a predetermined incidence are diffused while beams of light which reach it under another incidence are transmitted without being modified.

Thus, said device diffuses the beams of light which reach it under a predetermined incidence and transmits without modifying them other beams of light which reach it under another predetermined incidence. The transparent bands of the various screens form passages which transmit the beams of light which are parallel with the axes of the passages and which disperse the beams of light which are inclined on said axes owing to the fact that said inclined beams reach the legs of any one of the screens.

The support of each screen can be formed, more particularly, of a transparent glass plate. The diffusing bands are preferably printed, engraved or formed in any other manner on one of the faces of the glass plate or on both faces of the latter. It is advisable that the spacing of the screens is not maintained uniform in order to avoid the passage of the diagonal, i. e. the side beams. For numerous applications said diagonal beams offer no inconvenience and the device made in accordance with the invention still has advantages over the known devices. However, if it is necessary to avoid the passage of the side beams along a diagonal line the spacing is reduced progressively for the planes of the successive screens or the screens are distributed in a plurality of groups while giving the same spacing between the screens of one and the same group, but giving a different spacing from one group to another or still the spacing is caused to vary at random. Such variations of the spacing can easily be obtained by using screen supports of different thicknesses or by using supports having the same thickness and by varying the spacing of the supports.

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Various embodiments of the invention are shown in the appended drawing, in which:

Figure 1 is a horizontal sectional view of a headlight provided with a device made in accordance with the invention.

Figure 1*a* is an elevational view on a smaller scale.

Figures 2, 3 and 4 are diagrammatical views showing a unit of screens with diffusing bands arranged behind one another in three embodiments of the invention.

Figure 5 is a diagrammatical view showing the operation of a head-light seen from above and provided with an anti-dazzling device according to Figure 2 or 3.

Figure 6 is a diagrammatical view showing the operation of a head-light provided with an anti-dazzling device according to Figure 4.

Figure 7 shows another embodiment of the screen unit on a very large scale.

Figure 8 shows another embodiment of the screen.

The device shown in Figures 1 and 1*a* comprises glass plates *a* in the number of five, for example, which are arranged behind one another and carry each a lineated screen obtained by printing, engraving or by a similar method; in Figure 1 the lines *b* of said screens are indicated by points. Said lines leave between them transparent bands *c* through which the rays of light *d* can pass which come directly from the lamp *f* or are reflected through the reflector *g* and the direction of which is that of the rows of transparent bands *c*. On the contrary, the rays *e* which spread in another direction do not pass through the device without being dispersed through the lines *b* of one of the screens. The glass plates *a* are cemented on one another on their edges and maintained in a mounting *i*.

The operation of the device appears clearly from Figures 2, 3 and 4. In Figure 2 ten lineated screens are shown in a sectional view. Said screens are formed of both faces of five glass plates 1, 3, 5, 7 and 9 separated by intervals 2, 4, 6 and 8. The spaces 2 and 4 have the same thickness as the glass plates 1 and 3 and the spaces 6

and 8 have the same thickness as the glass plates 5, 7 and 9. The thickness of the glass plates 5, 7 and 9 and, consequently of the spaces 6 and 8 is smaller than the thickness of the glass plates 1 and 3 and, consequently of the spaces 2 and 4. For example, the thickness of the glass plates 1 and 3 is 1.05 millimetres and the thickness of the glass plates 5, 7 and 9 is 0.75 millimetre. The screen is made with a line spacing of 10 lines per centimetre. It is important that the lines do not absorb the light but disperse it and are thus diffusing lines as is a ground glass. The printing ink used for making the screen is formed, for example, of a transparent binding agent such as a linseed oil varnish, a siccative, mixed with diffusing elements such as glass powder, barium sulphate or the like substances. Of course, the lineated screen can also be obtained by engraving in order to form dull or mat lines which disperse the light. The lines *b* of the various screens are brought to register in order to form the rows *c* of transparent bands between them.

If, as indicated in Figure 2, the lines of the successive screens are joined through a diagonal line, curves *h* are obtained which are formed of two segments of straight lines showing a change of direction which corresponds to the variation of the value of the spacing between the planes which carry the screens. It appears, therefore, that the rays of light the direction of which is not that of the rows of transparent bands necessarily meet the lines of one of the screens and are diffused; thus, these rays are deprived of their dazzling character.

The embodiment shown in Figure 3 differs from that of Figure 2 only by the fact that the spacing between the screens 1 and 8 decreases in a continuous manner. In this case the curves *h* show a change of direction at each crossing of a new screen.

In the embodiment shown in Figure 4 the spacing between the screens is uniform; owing to this fact the device comprises between the rows of transparent bands *e* diagonal rows allowing the light to pass in the direction *h* without being modified.

The head-light shown in a sectional view in Figure 5 is provided with a device *a* according to Figure 2 or 3. This device allows only one beam of directed light *d* to pass. This narrow conical well defined beam illuminates the road intensively to a large distance. On the contrary, the beams of light *e* the light of which is dispersed by the device in accordance with the invention on both sides of beam *d* illuminate the sides of the road without dazzling. Thus the same effect is obtained in this region as if a ground glass had been placed in front of the lamp.

The driver of a vehicle coming from an opposed direction enters only the zone illuminated through the diffused light and is thus not dazzled and the driver of the vehicle provided with devices in accordance with the invention perfectly sees the road illuminated by the non-diffused beam *d*.

The conditions are slightly different if the embodiment of Figure 4 is used. In this case, beams of non-dispersed light *h* leave the head-light diagonally but experience shows that these beams do not inconvenience the driver of a vehicle coming in the opposed direction.

The embodiment shown in Figure 7 comprises six glass plates 1 to 6 having the same thickness and lineated on both their faces. The spacings 1 to 5 between the glass plates decrease from 1 to 5. The rays *e* inclined on the direction of the axis of the rows of transparent bands meet all a different line in any point of their way. For sake of clearness the translation of the rays through the glass plates is not shown, as it is obvious and does not alter the theory of operation.

Instead of using a lamp *f* of any shape it is possible to use a source of light which is as punctiform as possible such as a source having the shape of a vertical coil placed exactly in the optical focus of the parabolic mirror *g*. This advantageous feature makes it possible to increase the yield of directed vertical light, the major part of the rays of light being thus reflected in the privileged direction determined by the described system of vertical nets.

As shown in Figure 1 the device in accordance with the invention forms at the same time the front glass plate of the head-light.

The invention is not limited to the use of a lineated screen. It is also possible to use cross-ruled screens (Figure 8) which eliminate the dazzling in the direction of the height.

For the town traffic the anti-dazzling effect can be meliorated by slightly inclining the head-light to the right when the driving is on the right and by slightly inclining the head-light to the left when the driving is on the left.

In the described embodiments the ratio between the width of the diffusing lines and the width of the transparent bands is between ¼ and ⅙. However, this ratio can be larger or smaller. If the ratio is larger, ½ for example the number of screens which are necessary to avoid the dazzling is smaller and conversely.

When ten lines of 0.15 millimetre width per centimetre are used transparent bands *c* of 0.85 millimetre width are obtained. If the thickness of the whole unit of glass plates is 8.5 millimetres the length of the passage is ten times the width of the transparent bands. Thus the field of light increases by one metre each time its distance from the source of light increases by ten metres. If it is desired that the cone of light is less open screens with a smaller line spacing are to be chosen which comprise, for example, 20 lines per centimetre and/or thicker glass plates and/or a larger number of screens and/or intervals are to be left between the screen supporting glass plates. The reverse way is chosen if it is desired to obtain a beam of light which is more open.

Of course, the invention is not limited to the forms of execution which have been described and shown and numerous modifications can be considered without departing from the scope and spirit of the invention. By way of example of such a modification the diffusing lines of the net can be replaced by opaque lines which is of advantage in case it is desired to avoid the passage of the diffused light.

I claim:

1. An anti-dazzling device, more particularly for head-lights, which comprises parallel screens arranged behind one another, said screens comprising aligned diffusing lines, the spacing between several consecutive screens being constant and different from the spacing of several other consecutive screens.

2. An anti-dazzling device, more particularly for head-lights, which comprises parallel screens arranged behind one another, said screens comprising aligned diffusing lines, and

transparent plates of different thicknesses carrying said screens.

3. An anti-dazzling device, more particularly for head-lights, which comprises parallel screens arranged behind one another, said screens comprising aligned diffusing lines and being carried by transparent plates a series of which having a certain thickness and another series of which having a different thickness.

4. An anti-dazzling device, more particularly for head-lights, which comprises parallel screens arranged behind one another, said screens comprising aligned diffusing lines and being carried by transparent plates of the same thickness spaced by different distances.

5. An anti-dazzling device, more particularly for head-lights, which comprises parallel screens arranged behind one another, said screens comprising aligned diffusing lines and the spacing between the screens of at least one pair of said screens being different from the spacing between a screen of said pair and another adjacent screen.

6. An anti-dazzling device, more particularly for head-lights, which comprises parallel screens arranged behind one another, said screens comprising aligned diffusing lines, the spacing between the screens of at least one pair of said screens being different from the spacing between a screen of said pair and another adjacent screen, and transparent plates carrying said screens.

7. An anti-dazzling device, more particularly for head-lights, which comprises parallel screens arranged behind one another, said screens comprising aligned diffusing lines, several groups of transparent plates of the same thickness carrying said screens, the spacing of the plates in one of said groups being different from the spacing of the plates in at least another group.

8. An anti-dazzling device more particularly for headlights, which comprises parallel screens arranged behind one another, said screens comprising aligned horizontal diffusing lines and the spacing between the screens of at least one pair of said screens being different from the spacing between a screen of said pair and another adjacent screen.

9. An anti-dazzling device, more particularly for headlights, which comprises parallel screens arranged behind one another, said screens comprising aligned vertical diffusing lines and the spacing between the screens of at least one pair of said screens being different from the spacing between a screen of said pair and another adjacent screen.

10. An anti-dazzling device, more particularly for headlights, which comprises parallel screens arranged behind one another, said screens comprising aligned crossing diffusing lines and the spacing between the screens of at least one pair of said screens being different from the spacing between a screen of said pair and another adjacent screen.

11. An anti-dazzling device, more particularly for headlights, which comprises parallel screens arranged behind one another, said screens comprising aligned diffusing lines and the spacing between the screens of at least one pair of said screens being different from the spacing between a screen of said pair and another adjacent screen, and transparent plates, said screens being formed on both sides of said transparent plates.

12. An anti-dazzling device, more particularly for headlights, which comprises parallel screens arranged behind one another, said screens comprising aligned opaque lines and the spacing between the screens of at least one pair of said screens being different from the spacing between a screen of said pair and another adjacent screen.

13. In a headlight, the combination with a parabolic reflector and a source of light which is practically punctiform and placed in the focus of the reflector of an anti-dazzling device, more particularly for headlights, which comprises parallel screens arranged behind one another, said screens comprising aligned diffusing lines, and the spacing between the screens of at least one pair of said screens being different from the spacing between a screen of said pair and another adjacent screen.

PIERRE MAYU.

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