March 10, 1931. F. B. BARNS 1,796,233

COMBINED BUILDING ROOF AND SIGN VIEWABLE FROM AIRCRAFT

Filed Feb. 15, 1930

Fig. 1

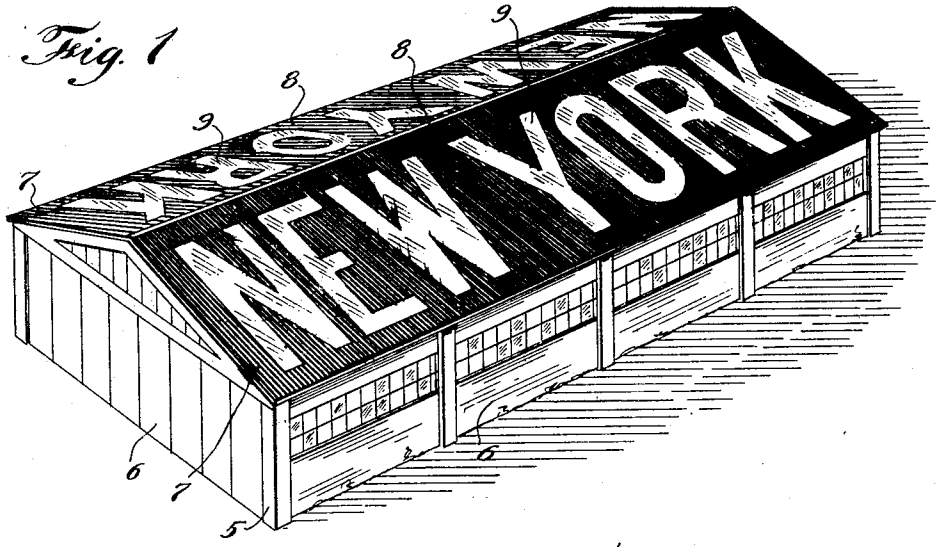


Fig. 2

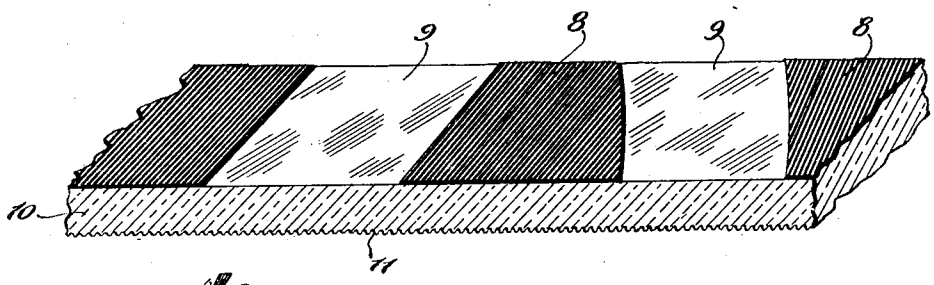


Fig. 3

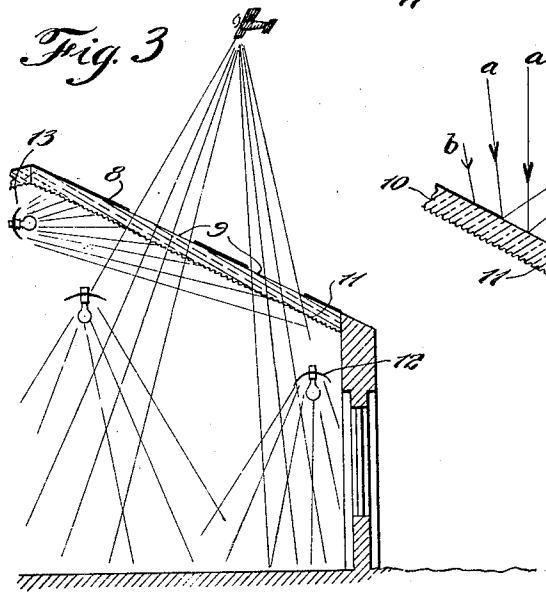
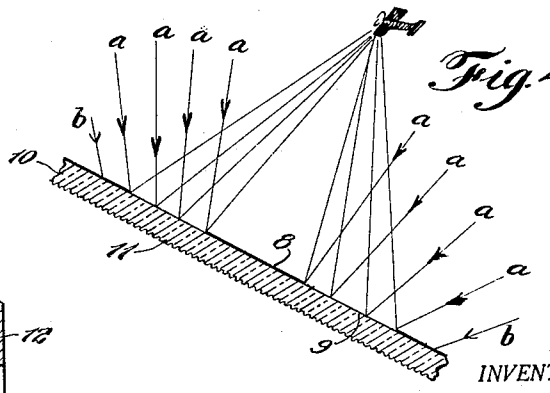


Fig. 4



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UNITED STATES PATENT OFFICE

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COMBINED BUILDING ROOF AND SIGN VIEWABLE FROM AIRCRAFT

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This invention relates to airport hangars or similar structures or buildings, typically represented by hangars as used in connection with airports or landing fields for housing aircraft, but including works or other structures.

The main object of the present invention is to make use of the airport building or structure as a means of exhibiting to approaching or passing aircraft any desired indicating number, word, symbol or other character, and which will be effectively visible from the air either by day or by night, for example for identifying the airport or locality. Other and further objects and advantages of the invention will be explained in the hereinafter following description of an illustrative embodiment thereof or will be understood to those conversant with the subject. To the attainment of such objects and advantages the present invention consists in the novel airport building or structure, and the novel features of combination, arrangement and detail herein illustrated or described.

In the accompanying drawings Fig. 1 is a perspective view of an airport hangar or similar building, such as used for housing aeroplanes, and embodying the present invention.

Fig. 2 is a combined sectional and perspective view of a fragment of the roof of the building, indicating certain details not appearing on Fig. 1.

Fig. 3 is a diagrammatic view showing the manner in which the symbol or indication is made visible to the observer in flight at night.

Fig. 4 is a similar diagram showing how the symbol or indication is made visible to the observer by day.

The novel air port hangar or similar structure of this invention may be generally described as comprising the supporting framework of the structure, and a roof thereon comprising certain portions which are substantially non-transmitting and non-reflecting to light, and other portions which are both transmitting and reflecting to light, such respective portions being so designed or arranged as to exhibit the desired number, word, or other symbol or indication to be viewed by the pilots of aircraft in flight, the structure being provided with means for interior illumination by night; this combination being such that the desired indication is readable from overhead both by day and by night, by the contrast of the respective portions of the roof.

Thus, referring to the specific structure illustratively shown on the drawings, this consists of a hangar or similar building composed generally of framework or uprights 5, lateral enclosing walls 6 and one or more roof sections 7. The structure may be 100 to 150 feet or more wide, 120 to 200 feet or more long, and 20 feet or more in height at the side walls.

The roof is preferably sloping as shown, and may comprise a plural number of sloping sections 7 all facing the sky and adapted to give reflection of the light of the sky from certain portions of the roof as will be described. The drawing shows a hangar with double sloped roof, but there might equally well be four or other number of sloping roof sections.

Each roof section is composed of different kinds of portions or areas relatively arranged to give the desired indication, for example the name or number of the airport to which the building is attached, for example the name of a city, New York, indicating the official airport or landing field of that city. The different roof portions comprise first, portions 8 which are substantially non-transmitting and non-reflecting to light and, second, portions 9 which are both transmitting and reflecting to light, these being relatively designed or constructed to exhbihit the desired name, number or other indication.

Preferably the roof is built up substantially of glass plates or panes 10, connected and supported in usual maner by frame pieces or bars extending up and down along the slant of the roof section, these being of such relatively small size as not to impair the reading of the indication, and omitted from the drawing. The glass may preferably be of the wire reenforced kind, and mounted in weather tight manner.

The non-transmitting and non-reflecting

portions 8 of each roof section are shown as consisting of portions of the sheet glass roof structure, surfaced or coated however at the upper or outer side by a paint or other coating of an opaque character, of dark color, and with a mat or non-reflecting finish. A heavy black weatherproof paint drying with a dull finish is suitable for the purpose, or any covering which will be substantially non-reflecting in use.

The remaining portions 9 of the roof consist of glass having transmitting and reflecting properties. Thus, preferably the glass which is employed is of transparent character and with a generally smooth upper side adapted to give an effective reflection of the light of the sky as would the still surface of a pond; or it might have a slight waviness of surface with effective reflection results.

For night purposes an entirely clear glass for the portions 9 would be less desirable than a glass having translucent qualities so as to insure diffusion and a more uniform illumination. While this might be effected in various ways, for example by clouding the glass during manufacture, or by grinding of the inner surface, or coating it with a translucent layer, a suitable translucent effect is adequately secured by means of a ribbed or grooved structure as indicated at 11 at the under surface of the glass as shown in Fig. 2. There is a marketed form of reenforced glass available for the described purposes, possessing a sufficiently smooth outer surface and a closely grooved or ribbed inner surface, preventing the undiffused rays of light of an interior lamp traveling directly to the observer. The ribbed formation shown in Figs. 2, 3 and 4 is greatly exaggerated for purposes of illustration, as there will preferably be a number of grooves and ribs per inch of dimension.

Instead of constructing the roof sections substantially entirely of glass, and coating certain portions to render them non-transmitting and non-reflecting, an alternative construction would be to construct only the transmitting and reflecting portions of the roof of glass, arranged between and supported by other portions composed of metal, wood, or other opaque material having a non-reflecting upper surface.

For night indications there should be adequate interior illumination and the drawings indicate a system of lamps 12 arranged to illuminate the interior walls and floor of the building, but preferably shielded against direct exit of light rays, although such shielding is not necessary where the under surface of the glass roof sections is rendered translucent as described. The interior walls and floor of the building are preferably made or tinted of a light color or white to given the maximum of light diffusion for indication purposes. In addition to the illuminating lights 12 there may be provided special or additional lights 13 in the nature of flood lights throwing high illumination upon the under surface of the glass portions of the roof so as to increase the luminosity apparent from the outside, such flood lights preferably being so placed as to throw their rays slantingly against the glass surface without themselves being directly visible from above.

Fig. 3 diagrammatically shows the optical conditions at night, with a passing aeroplane supposed to be in sight of the illuminated structure, and its pilot viewing the word or symbol. Diffused light passes through the transmitting portions 9, and the ribbed surface 11 may act as small prisms increasing the diffusion and brilliance of effect.

In Fig. 4 rays *a* are indicated travelling from the sky to the reflecting portions 9 and thence reflected to the observer, showing up strongly the symbol or word. Other rays *b* are shown, received on the non-reflecting portions 8 and there absorbed. Rays striking the portions 9 may partially traverse the glass 10 and be reflected back with diffusion by the ribs 11 acting as small mirrors, increasing the effect.

At twilight both systems may be in operation at the same time and reinforce their effects. In any case the desired indication is effectively transmitted for the purposes described. The invention is simply embodied and does not add unduly to the cost of construction. In daytime the light transmitting portions 9 admit light to the building, reducing upkeep for illumination.

It will thus be seen that there has been described an airport hangar or similar structure embodying the principles and attaining the objects of the present invention. Since many matters of construction, combination, arrangement, proportion and detail may be variously modified without departing from the principles of the invention, it is not intended to limit the invention to such matters except to the extent set forth in the appended claims.

What is claimed is:

1. An airport hangar or similar structure comprising the supporting framework, and a roof thereon comprising portions substantially non-transmitting and non-reflecting to light, and other portions both transmitting and reflecting to light, and so designed as to exhibit a number, word or other indication for aircraft in flight, with means for interior illumination by night; whereby the indication is readable from overhead aircraft both by day and night by the contrast of the respective portions of the roof.

2. A structure as in claim 1, and wherein the roof is composed mainly of glass having translucent qualities and with portions treated at the upper surface to prevent both transmission and reflection of light at such

portions in contrast to the remaining portions.

3. An airport hangar or similar structure comprising the supporting framework, and a roof thereon facing the sky at a substantial slant, such roof comprising portions substantially non-transmitting and non-reflecting to light, and other portions composed of glass both transmitting and reflecting to light, and with smooth upper surface, and so designed as to exhibit a number, word or other indication for aircraft in flight, with means for interior illumination by night; whereby the indication is readable from overhead aircraft both by day and night by the contrast of the respective portions of the roof.

4. A structure as in claim 3 and wherein both kinds of roof portions are composed of glass, the first having a dark opaque upper coating to prevent transmission and reflection, and the second having a smooth bare upper surface.

5. An airport building comprising the enclosing walls, and one or more sloping roof sections having light transmitting glass portions and substantially opaque portions designed to exhibit a number, word or other character viewable from above, with means for illumination of the interior of the building by night; the transmitting portions being translucent and having a smooth reflecting upper surface, and the opaque portions being surfaced or painted to prevent substantial reflection, whereby the character is visible both by day or night by contrast of the light transmitting and reflecting portions with the non-reflecting opaque portions.

6. An airport building comprising the enclosing walls, and a plurality of sloping roof sections facing the sky and each having light transmitting glass portions and substantially opaque portions, designed to exhibit a number, word or other character viewable from above, with means for indirect illumination of the interior of the building by night; the transmitting portions being translucent and having a smooth reflecting upper surface, and the opaque portions being covered at the upper side to prevent substantial reflection; whereby the character is visible both by day or night by contrast of the light transmitting and reflecting portions with the non-reflecting opaque portions.

In testimony whereof, this specification has been duly signed.

FREDERICK B. BARNS.