Aug. 19, 1930. R. ROHLFS 1,773,549

FASTENING MEANS FOR NIGHT AERIAL ADVERTISING SIGNS OR THE LIKE

Filed May 14, 1928

FIG. 1.

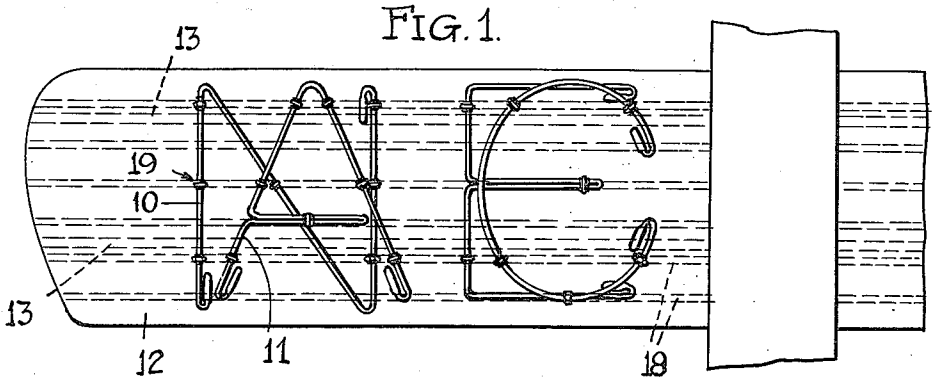


FIG. 2.

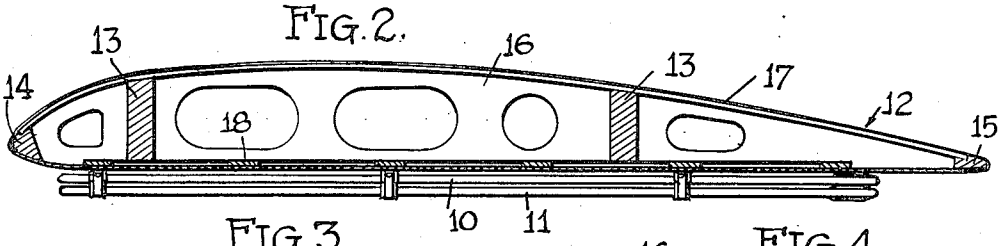


FIG. 3.

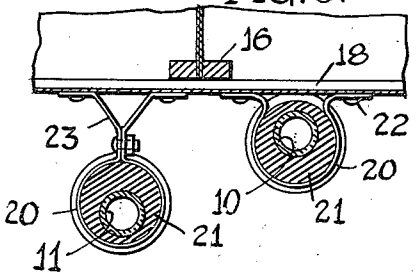


FIG. 4.

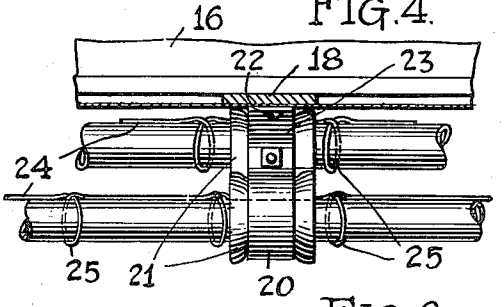
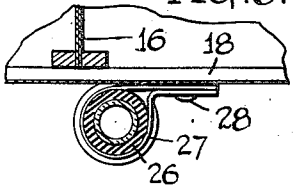


FIG. 5.



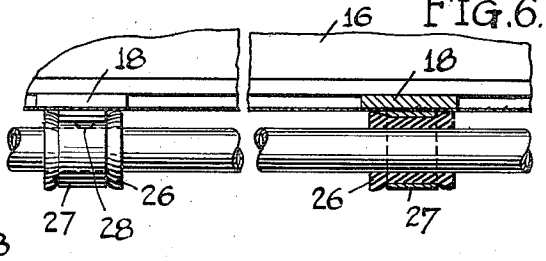
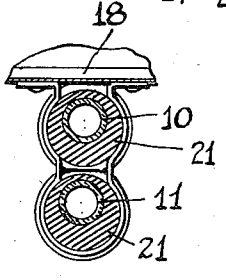


FIG. 6.

FIG. 7.



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1,773,549

UNITED STATES PATENT OFFICE

ROLAND ROHLFS, OF FOREST HILLS, NEW YORK, ASSIGNOR TO AERIAL ADVERTISING, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY

FASTENING MEANS FOR NIGHT AERIAL ADVERTISING SIGNS OR THE LIKE

Application filed May 14, 1928. Serial No. 277,596.

My invention relates to night aerial advertising and is concerned more particularly with electrical advertising signs or the like so constructed and operated as to render practical its or their use on aircraft.

In application Serial Number 48,933, filed August 8, 1925, that combination of separately old devices or elements which contribute to the successful and practical operation of a novel type of night aerial advertising sign is fully set forth. In application Serial Number 277,595, filed May 14, 1928, (a division of said first mentioned application) several means for fastening said sign to an aeroplane or other type aircraft are fully set forth. The present invention, while analogous to the inventions disclosed in said two applications, specifically relates to an improved type fastening as well as to a different embodiment of the same sign principle involving the use of superimposed tube lights for signs. The advantages of the invention herein disclosed will be more fully hereinafter set forth.

In the drawings, wherein like reference characters denote like or corresponding parts,

Fig. 1 is an inverted plan view of a portion of an aeroplane showing the superimposed sign characters mounted in place thereabeneath;

Fig. 2 is an enlarged cross-sectional view;

Fig. 3 is a transverse vertical sectional view of the means for fastening both the underneath and the outer sign characters in place;

Fig. 4 is a side elevation of the structure illustrated in Fig. 3;

Figs. 5 and 6 are detail views of a modified form of fastening, and

Fig. 7 is a sectional view of that form of fastening used where the sign characters or tube lights are directly superimposed.

In the embodiment of the invention selected for illustration superimposed sign characters are shown. Each sign character comprises (as in said original application) one or more luminous tube lights formed from a single length of transparent glass or other translucent material. These tubes or tube lights are preferably fastened to and upon the underside of the aircraft, a proper sequence being selected according to the nature of the sign. By illuminating or lighting one or the other of the superimposed sign characters an attractive and at the same time practical night aerial advertising sign is produced. As it is intended that the sign characters shall be illuminated or lighted either in groups or one sign character at a time, the sign characters or tube lights comprising said groups are in separate circuits (one circuit for each said group) or in a multiplicity of circuits (one circuit for each sign character). Since all are transparent or translucent, no matter which character or series of characters is lighted, the full outline thereof is clearly distinguishable. Any suitable switch or other type series lighting control (not shown) can be used.

As in said previously filed application the illumination of the sign is made possible by passing either a high frequency direct current or a high voltage alternating current thru the individual tubes. High frequency direct current may be obtained by passing the direct current from a generator thru a high frequency unit, while the high voltage alternating current may be obtained by passing an alternating current from a generator thru a step-up transformer. The tubes themselves, however, and the means by which they are continually illuminated, form no part of the present invention.

In Fig. 1 of the drawings the superimposed sign characters, designated as 10 and 11 respectively, are shown mounted beneath an aeroplane wing 12. Said wing 12 includes wing beams 13, a leading edge strip 14, a trailing edge strip 15, ribs 16, and an outer covering 17 of either fabric, metal or wood. Collectively, such wing parts constitute a conventional wing skeleton or frame. As a reinforcement for said frame, and also as an auxiliary frame for the attachment of the two fastening devices, said skeleton has fastened thereto, preferably on the inside of its covering 17, a plurality of longitudinally extending strips or slats 18.

At intervals of space along each tube length, suitable fastening devices 19 are provided. These fastening devices, except where

the tubes comprising the superimposed characters are directly superimposed, are preferably constructed as illustrated in Figs. 3 and 4. To the right of Fig. 3 that form of fastening used for the attachment of the underneath sign character 10 is shown. Said device comprises a metal clip 20, a rubber or other soft material spool or collar 21, and screws 22. The clip 20 is directly fastened to the outer wing covering (or to the strips 18 where said strips are externally arranged) in a manner such that the screws 22 penetrate said outer covering and enter the auxiliary frame 18. The collar 21 is held by the clip 20 and is adapted to embrace or encircle the tube 10. Being formed of rubber or other soft material, said spool or collar 21 provides a shock absorbing means for holding said tube in place. To admit of adjustment of the tube 10 toward and from the wing 12, the opening formed in the collar 21 thru which the tube passes, is formed off center whereby in effecting adjustment it is but necessary that said collar be partly turned or rotated within the embrace of said clip.

The only difference between the fastening devices used for the attachment of the underneath sign characters 10 and those used for the attachment of the outer sign characters 11 is that the latter, instead of merely embracing the spool or collar 21, have formed, between their point of attachment to the wing and said embracing portion, legs 23 of sufficient length to hold the outer tubes in the desired spaced relation beneath the wing. Throughout a portion of their length, the legs 23 diverge inwardly or toward the wing as shown. Such divergence is helpful in that a better brace against lateral movement is thereby obtained. Where the tubes of the superimposed sign characters are directly superimposed, the fastening devices are so shaped and formed (see Fig. 7) as to grip and hold both collars 21 thru which the superimposed tubes are passed.

As a safety means for preventing any substantial portion of any given tube from falling in the event of breakage, safety cords or wires 24 are extended longitudinally of the tubes. These cords or wires 24, at intervals of space along their length, have hung therefrom loops 25 which encircle the tubes as shown. At their opposite ends they are either carried thru and beyond the fastening devices 19 or they are fastened thereto and extend only from one to the other of said devices.

In the modification of Figs. 5 and 6 a fastening device of even simpler design is illustrated. In said modified type fastening the spool or collar 26 is embraced by a clip 27 which at its opposite ends is brought together at one side of the tube and there fastened as by a single screw 28.

The advantages of a night aerial advertising sign of the character set forth are obvious. By using superimposed sign characters in which the superimposed characters or series of characters are separately lighted, a greater number of characters for a given supporting area or background can be used. The fastening devices are of extreme simplicity and at the same time both adjustable and shock absorbing. But little head resistance or drag is produced even where a multiplicity of fastening devices are used. And last, but not least, the entire assembly, including the fastening devices, the shock absorbing devices and the safety means, can be procured and used with but little trouble, with practically no lift destroying results, with safety, and at a minimum of cost.

While I have described my invention in detail in its present preferred embodiment, it will be obvious to those skilled in the art after understanding my invention, that various changes and modifications may be made therein without departing from the spirit or scope thereof. I aim in the appended claims to cover all such modifications and changes.

What I claim is:

1. The combination in an aeroplane, of an aerofoil, an electrical aerial advertising sign or the like comprising two or more independent luminous indicia forming tubes mounted beneath said aerofoil in superimposed relation, an electrical circuit of which one of said tubes forms a part, a second electrical circuit of which another of said tubes forms a part, means operable from within the aeroplane to make or break either electrical circuit whereby any one of said tubes may be lighted as desired, and a fastening means hung from the undersurface of said aerofoil to hold said sign in place.

2. The combination, in aircraft, of a luminous indicia forming tube secured to the aircraft, active supports fastened to the aircraft and embracing said tube at relatively wide intervals of space for holding said tube in place, and normally inactive emergency supports embracing said tube at relatively short intervals of space between said points of active support, said emergency supports being rendered active only in the event of tube breakage.

3. The combination, in aircraft, of a luminous indicia forming tube secured to the aircraft, active supports fastened to the aircraft and embracing said tube at relatively wide intervals of space for holding said tube in place, and a normally inactive emergency support extending from one to the other of said points of active support and at relatively short intervals of space encircling said tube to provide throughout that portion of the tube length between said points of active support a multiplicity of emergency points of support.

4. The combination, in aircraft, of a lu-

minous indicia forming tube adjustably secured to the aircraft, spools of a shock absorbing material having eccentric openings formed therein thru which said tube is passed, said spools being individually rotatable to effect said tube adjustment and means for fastening said spools to the aircraft.

5. The combination, in an aeroplane, of an aerofoil including a skeleton frame and an outer covering within which said frame is enclosed, an electrical aerial advertising sign or the like comprising one or more luminous indicia forming tubes mounted beneath said aerofoil, means carried by said skeleton frame for reinforcing that portion of said outer covering beneath which said sign is mounted, and means for fastening said sign directly to that portion only of said outer covering which is properly reinforced.

6. The combination, in an aeroplane, of an aerofoil including a skeleton frame and an outer covering within which said frame is enclosed, an electrical aerial advertising sign or the like comprising one or more luminous indicia forming tubes mounted beneath said aerofoil, means carried by said skeleton frame and enclosed within said outer covering for reinforcing that portion of said outer covering beneath which said sign is mounted, and means penetrating said outer covering and engaging in said reinforcing means for fastening said sign to said aerofoil.

7. The combination, in aircraft, of a lifting surface of relatively thin material, a reinforcing element on the upper side of the material forming said lifting surface, a spool of relatively thick and comparatively soft shock absorbing material mounted beneath the aircraft close up against the under surface thereof, a luminous indicia forming tube engaging in the hollow of said spool, and means for holding said spool in place beneath said aircraft comprising a clip fastened at one end to said reinforcing element through said under surface and extending downwardly therefrom, said clip throughout the downwardly extending portion of its length being shaped to hold said spool within its embrace.

8. The combination, in aircraft, of a lifting surface made of relatively thin material, a reinforcing element on the upper side of the material forming said lifting surface, a rubber spool mounted beneath the aircraft, spaced annular flanges formed on the outer surface of said spool, a luminous indicia forming tube engaging in the hollow of said spool, and a clip fastened to said reinforcing element and extending through said lifting surface and embracing said spool between the flanges thereof to hold said spool in place.

9. The combination in an aeroplane, of an aerofoil, an electrical aerial advertising sign or the like comprising two or more independent luminous indicia forming tubes mounted beneath said aerofoil in superimposed relation, electrical circuits for the different tubes, means operable to make or break any of said electrical circuits whereby any one of said tubes may be lighted independently as desired, and a fastening means hung from the undersurface of said aerofoil to hold said sign in place.

10. The combination in an aeroplane of an aerofoil, an advertising sign or the like including two independent luminous indicia-forming and gas-containing tubes, arranged to be separately and independently energized to produce illumination, said tubes being displaced from each other and from said aerofoil in superimposed position whereby they lie in separate planes parallel to said aerofoil, and fastening means for attaching the tubes to the undersurface of said aerofoil.

In testimony whereof I hereunto affix my signature.

ROLAND ROHLFS.