Sept. 11, 1934. H. G. GORDON 1,973,205

SKY SIGN

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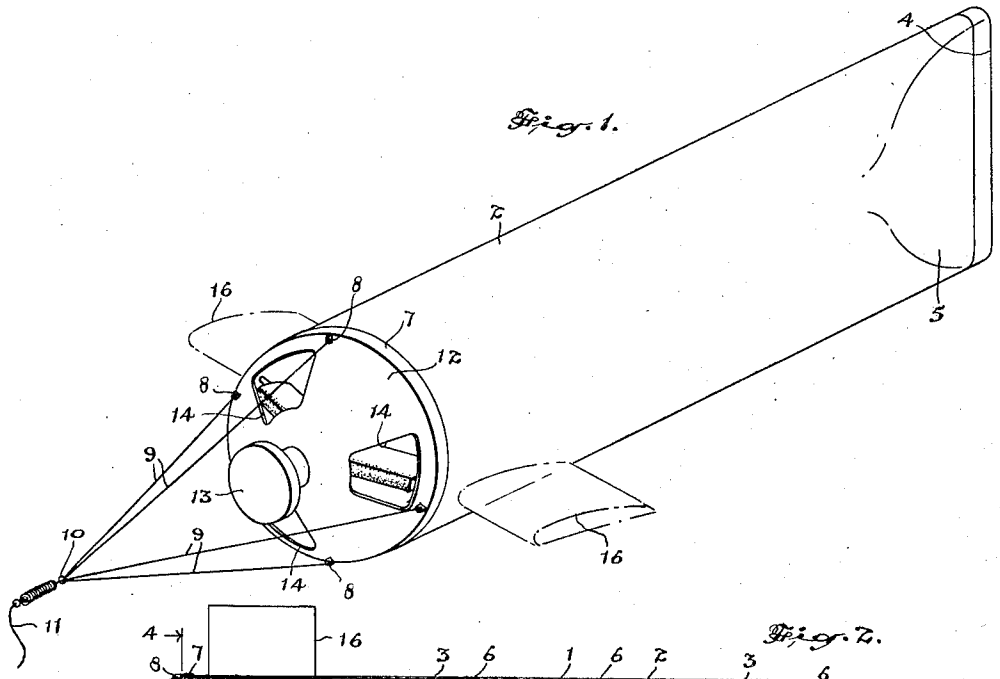


Fig. 1.

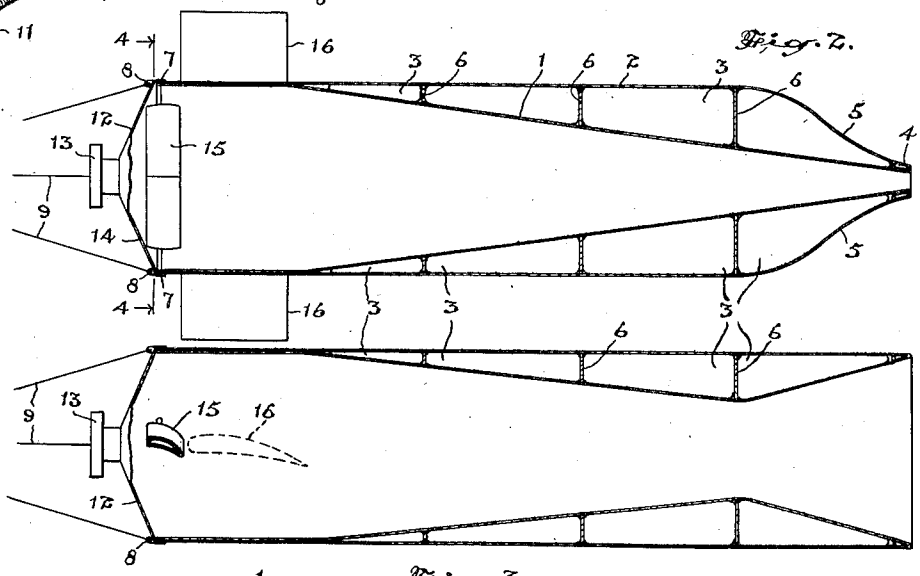


Fig. 2.

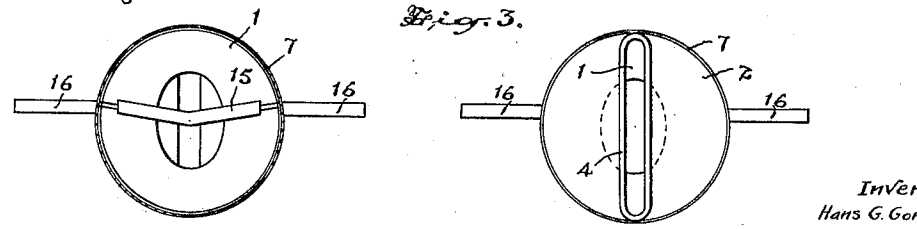


Fig. 3.

Fig. 4.

Fig. 5.

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SKY SIGN

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7 Claims. (Cl. 40—127)

The principal objects of this invention are to provide facsimiles or models of articles of commerce which will be capable of being towed through the air at a considerable altitude by an aeroplane or auto-giro or other means of aerial progression, which device will trail readily, maintaining its natural position by reason of its structural features.

A further and important object is to provide a sky sign of extensive proportions which may in emergencies be released without danger to the public.

The principal features of the invention consist in the novel construction of the facsimile of an article of merchandise whereby buoyancy of the article is attained in the use of a tapered wind tunnel extending through the device from end to end. An auxiliary buoyancy is provided in the arrangement of gas compartments external to the wind tunnel and assisting in the ultimate shaping of the article.

Further features of importance consist in the novel arrangement of dihedral angled air foils within the wind tunnel to ensure the proper positioning of the device and to assist in its floating ability, and still further, in the provision of external wings or vanes of a transparent nature which will function in guiding the device and will become invisible so as to not detract from the outline of the article.

In the accompanying drawing, Figure 1 is a perspective view of a sky sign constructed in accordance with this invention representing a collapsible tube such as used for creams of various kinds.

Figure 2 is a horizontal longitudinal mid-section through the device illustrated in Figure 1.

Figure 3 is a vertical longitudinal mid-section through the device illustrated in Figure 1.

Figure 4 is a cross section through the device taken on the line 4—4 of Figure 2.

Figure 5 is a rear end view of the device illustrated in Figure 1.

It has been determined that a tapered wind tunnel may be sustained in a horizontal position and will support a considerable load with a moderate flow of air through the tunnel. This principle is applied in the present invention.

It is found desirable to provide display devices representing certain articles of manufacture against the sky. Consequently such device requires to be of considerable proportions. Very few articles of merchandise are of an elongated frustro-conical form and when such a form of device is used with the purpose of maintaining elevation, it is desirable to disguise this form, and in accordance with the present invention as herein illustrated the frustro-conical wind tunnel 1 which may be made of very light material, either rigid, semi-rigid or flexible, is surrounded by an outer shell 2 which is shaped to the contour of the article to be represented, the shape here shown being that of a flexible or collapsible tube such as is used for dental and face creams.

Between the frustro-conical member 1 and the outer shell 2 are arranged a plurality of gas-tight balloon sections 3 which are filled with a suitable lighter-than-air gas and thus sustain the outer shell in definite relationship to the inner supporting wind tunnel. The buoyancy of these gas-filled balloons is such as to partly balance or over-balance the weight of the entire structure so that the whole may be lighter than air.

The structures shown may be supported by light framework if desired to impart longitudinal rigidity and transverse or circumferential frames may be used to sustain any desired shape, such for instance, as the flat end 4 of the tube here shown is preferably constructed of moulded rubber of a semi-rigid form which will hold the shape of the flat ellipse. In this particular form the small end of the wind tunnel flares outwardly to permit of the proper flow of air where the side walls are drawn in to form the flat sides 5 of the tube end.

Reinforcing ribs 6 of rubber material of a stiff form may be arranged between the gas-holding sections 3 if found desirable.

At the front end of the frustro-conical wind tunnel 1 is secured a ring 7 which is preferably of a light, rigid construction and to this ring are secured a plurality of swivel shackles 8 of a suitable form to which cables 9 are secured. These cables are of equal length and are connected together by a coupling 10 which is connected by a cable 11 to an aeroplane or other suitable means of propulsion. The coupling 10 is preferably provided with an elastic connection which may be a metallic spring or may be rubber.

The front end of the tubular structure has applied thereto a frustro-conical shield 12 to represent the sloping convergent surface of a paste-holding tube, and upon this is mounted a cap 13. The shield 12 is provided with openings 14 which allow a free flow of air into the wind tunnel. These may be of any suitable shape or design, but should not be such as to detract from the general appearance of the shape of the article which the sky sign is intended to represent.

Within the wind tunnel and supported by the rigid ring 7 is an air foil 15 which is preferably of a dihedral angled form and which is sloped at a suitable angle rearwardly so that the flow of air through the openings 14 will strike its dihedral angled surfaces and effect the stabilization of the device to keep it from spinning, and also to assist in supporting its weight.

It may be found desirable to add further air foils or vanes for the purpose of stabilization of the sign device, and I have indicated in the accompanying drawing an arrangement of short wings 16 which may be mounted on a light framework of any suitable design. The surface covering of such wing frames will preferably be a transparent material such as a cellulose product which will be quite strong enough to resist air pressure and form a substantial wing to assist in the support of the load of the device, but which at the altitude at which the device will be displayed will be practically invisible.

This feature of utilizing invisible sections in such a device as herein described may be carried to a considerable extent for purposes other than providing vanes or stabilizing fins and sections of the actual external structure may be made of transparent material to effect invisibility from the ground.

It is understood that hollow frustro-conical devices of the "wind sock" variety have been used as external supports for sky signs and "wind socks" have been trailed by aeroplanes and have borne certain advertising letters, but the present invention has been devised for the purpose of effecting the display as a sky sign of certain articles of manufacture, the commonest forms of which may be described as paste tubes, cigars, cigarettes and bottles, but many other forms of display structures may be utilized in this manner by constructing such forms about a supporting wind tunnel and assisting in the support by the use of gas-filled sections.

The feature of buoyancy through the use of gas-filled sections is not only important in reducing the drag upon the propelling device, but in cases of emergency where it becomes necessary to cut the sign loose, the sign being supported by its gas-compartment buoyancy, will float for a considerable period or will fall easily, and will not therefore be a menace to life or property in being precipitated to earth.

What I claim as my invention is:—

1. A sky sign comprising a tapered tubular wind tunnel, a tubular casing encircling said tunnel and spaced therefrom having an external appearance of an article of commerce, means being provided to form an inter-connecting support between said wind tunnel and casing, and means connected to one end of the wind tunnel to hold the device in aerial suspension.

2. A sky sign comprising a tubular casing formed in the shape of an article of commerce, a frustro-conical wind tunnel arranged within said casing, gas compartments arranged between said wind tunnel and casing adapted to retain a lighter-than-air gas, and means connected to the combined casings to hold them in aerial suspension.

3. A sky sign comprising a casing having an attractive exterior design, a frustro-conical wind tunnel extending longitudinally of said casing, gas-containing compartments arranged between said tunnel and casing, means connected to the forward end of the casing for holding it in aerial suspension with the larger end of the wind tunnel toward the direction of movement, and air foils arranged to stabilize the device in the air currents.

4. A sky sign comprising a casing having an attractive exterior design, a frustro-conical wind tunnel extending longitudinally of said casing, gas-containing compartments arranged between said tunnel and casing, means connected to the forward end of the casing for holding it in aerial suspension with the larger end of the wind tunnel toward the direction of movement, and an air foil having a dihedral angle arranged within the wind tunnel adapted to stabilize the device in the air currents.

5. A sky sign comprising a frustro-conical wind tunnel having a tow ring at one end, a plurality of shackles mounted on said tow ring, cables connected to said shackles, an elastic coupling connecting the ends of said cables, and a tubular casing secured to and surrounding said wind tunnel and spaced therefrom, the exterior thereof representing an article of commerce.

6. A sky sign comprising a frustro-conical wind tunnel, a tubular casing surrounding said wind tunnel and connected thereto and spaced therefrom, means connected to the larger end of the wind tunnel for towing same through the air, and air foils of transparent material secured to said casing and forming stabilizers to retain said casing in a defined position.

7. A sky sign comprising a frustro-conical wind tunnel, a casing encircling said wind tunnel and spaced therefrom, light semi-rigid annular supports reinforcing said casing at the ends and intermediate of its length, gas-containing compartments arranged between said wind tunnel and said casing containing a lighter-than-air gas adapted to support the weight of said tunnel and casing, means for stabilizing said tunnel and casing, and means for towing said device.

HANS G. GORDON.