May 12, 1942. J. BRUNO 2,282,305

AERIAL ADVERTISING APPARATUS

Filed March 29, 1939

Fig. 1.

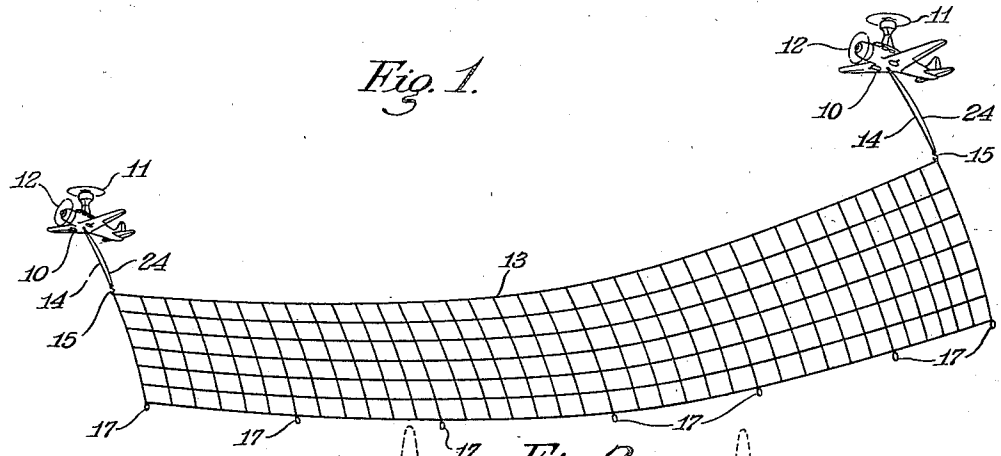


Fig. 2.

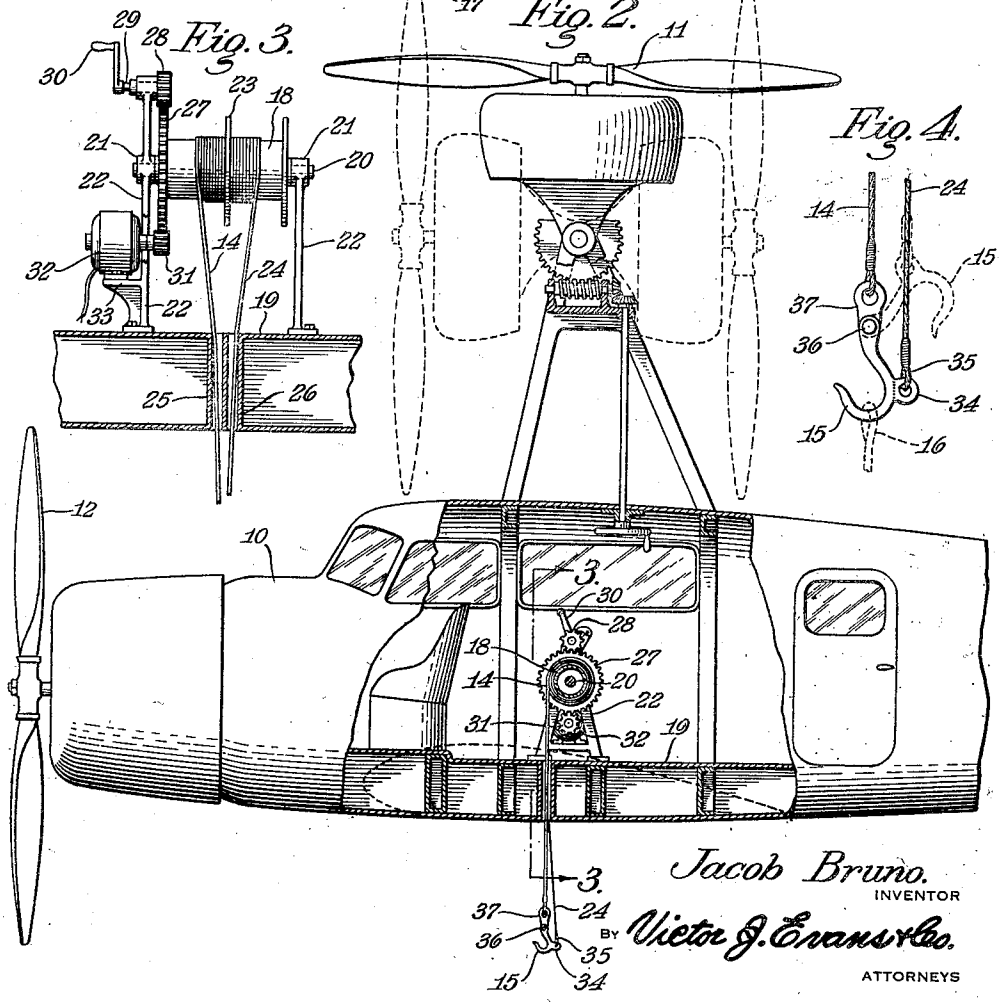


Fig. 3.

Fig. 4.

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AERIAL ADVERTISING APPARATUS

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1 Claim. (Cl. 254—186)

This invention relates to aerial advertising apparatus and has for an object to provide means for safely supporting display banners, nets and the like from two aeroplanes traveling at the same speed a predetermined distance apart.

A further object is to provide apparatus of this character comprising a windlass for the weight supporting cable and the release cable, the windlass being adapted to be manually driven or power driven to wind up or pay off the cables.

A further object is to provide in apparatus of this type a net or similar device adapted to be suspended below moving aeroplanes and provided with weights at the bottom to partly counteract the tendency of the net to trail in a horizontal position back of the airplanes so that the net will remain nearly upright and below and slightly in rear of the airplanes.

A further object is to provide apparatus of this type which will be formed of a few strong simple and durable parts, which will be inexpensive to manufacture and which will not easily get out of order.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawing forming part of this specification,

Figure 1 is a perspective view of aerial advertising apparatus, constructed in accordance with the invention.

Figure 2 is an enlarged side elevation, with parts broken away, showing an airplane equipped with a vertical left propeller and showing the windlass and cables, in accordance with the invention, mounted in the fuselage.

Figure 3 is a front elevation of the windlass and cables.

Figure 4 is a side elevation of the supporting hook and the cable thereof as well as the release cable.

Referring now to the drawing in which like characters of reference designate similar parts in the various views, 10 designates a pair of airplanes traveling abreast of each other at the same speed and in such formation as to be a predetermined distance apart at the same altitude. Preferably each airplane is provided with a vertical lift propeller 11 as well as a conventional propeller 12 to facilitate maneuvering.

A net 13, banner or the like for advertising purposes and for other purposes, is suspended at the upper corners from the airplanes through the medium of cables 14 each of which is provided with a hook 15, best shown in Figure 4, engaged through an eye 16 in a respective upper corner of the net. The net is equipped with weights 17 spaced a predetermined distance apart on the bottom of the net to resist tendency of the net to float out horizontally and hold the net 30 in vertical position broadside to the direction of travel of the airplanes.

For winding up and paying out the supporting cables 14 a windlass 18 is mounted in the fuselage 19 of each airplane, the windlass being equipped with a driving shaft 20 which is journaled in bearings 21 carried by suitable standards 22 which are bolted to the floor of the fuselage, or otherwise secured thereto. The windlass is provided centrally between its ends with a flange 23. The supporting cable 14 is wound upon the windlass at one side of the flange and a release cable 24 is wound upon the windlass at the other side of the flange so that both cables are simultaneously paid out or wound up according to the direction of rotation of the windlass. The cables pass through respective guide tubes 25 and 26 formed in the floor of the fuselage.

The windlass is equipped at one end with a driving gear 27 which meshes on one side with a pinion 28 which is secured to a shaft 29 carried by one of the standards 22 and is equipped with a crank handle 30 through the medium of which the pinion may be rotated to drive the windlass. The driving gear 27 also meshes with a pinion 31 which is secured to the shaft of an electric motor 32 which is mounted on a bracket 33 carried by the said standard. Thus when desirable or necessary the windlass may be power driven.

A dog 5 is pivoted on the upper end of the standard adjacent the pinion 28 and engages the pinion, as best shown in Figure 2. The dog prevents unreeling of the supporting cables and release cables from the windlass due to the weight of the net 13. When the dog is manually released, the crank handle 30 may be turned to permit the weight of the net unreeling the cables until the net is spaced a predetermined distance below the airplanes. During unreeling of the cables in this manner, the operator's grasp upon the crank handle offers resistance to the paying off of the cables so that they will not be paid off too quickly. Also, when the dog is engaged, the cables may be reeled upon the windlass by rotating the crank handle so that the cables may

be shortened to suspend the net nearer to the airplanes or may be lengthened to suspend the net further from the airplanes, as desired.

Each hook **15** is provided with an eye **34**, best shown in Figure 4, through which a terminal eye **35** on the release cable **24** is engaged. When it is desired to release the net it is simply necessary to manually shorten the release cable **24** by a pull thereupon which results in the hook **15** being rocked rearwardly on a pivot **36** carried by an eye **37** which secures the hook to the weight supporting cable **14**, as best shown in Figure 4.

From the above description it is thought that the construction and operation of the invention will be fully understood without further explanation.

What is claimed is:

In apparatus in which an article is to be suspended from an airplane in motion, a cable for supporting the article, a cable for releasing the article, a windlass upon which the cables are wound at respective ends, a pair of supporting standards for the windlass, a driving shaft disposed axially in the windlass journalled in bearings on the standards, a driving gear on one end of the driving shaft, a stub shaft journalled in a bearing at the upper end of one of the standards, a pinion on one end of the stub shaft meshing with the upper side of the driving gear, a crank handle on the other end of the stub shaft, a bracket carried by the last named standard below the windlass, an electric motor on the bracket, a pinion on the shaft of the motor meshing with the underside of the driving gear, and a dog carried by the last named standard engaging the driving pinion of the stub shaft, release of the dog permitting the crank handle to be turned to permit the weight of the article unreeling the cables until the article is suspended at a predetermined distance, the operator's grasp upon the crank handle offering resistance to the paying off of the cables so that they will not be payed off too quickly, the dog when in operative position holding the windlass stationary and permitting the cables to be reeled upon the windlass by rotating the crank handle to shorten the cables and adjust the position of the article and permitting the cables to be quickly reeled upon the windlass by the motor when desired.

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