C. DAVIS.

MEANS FOR USE WITH BALLOONS AND OTHER AIR VESSELS FOR INDICATING AIR CURRENTS.

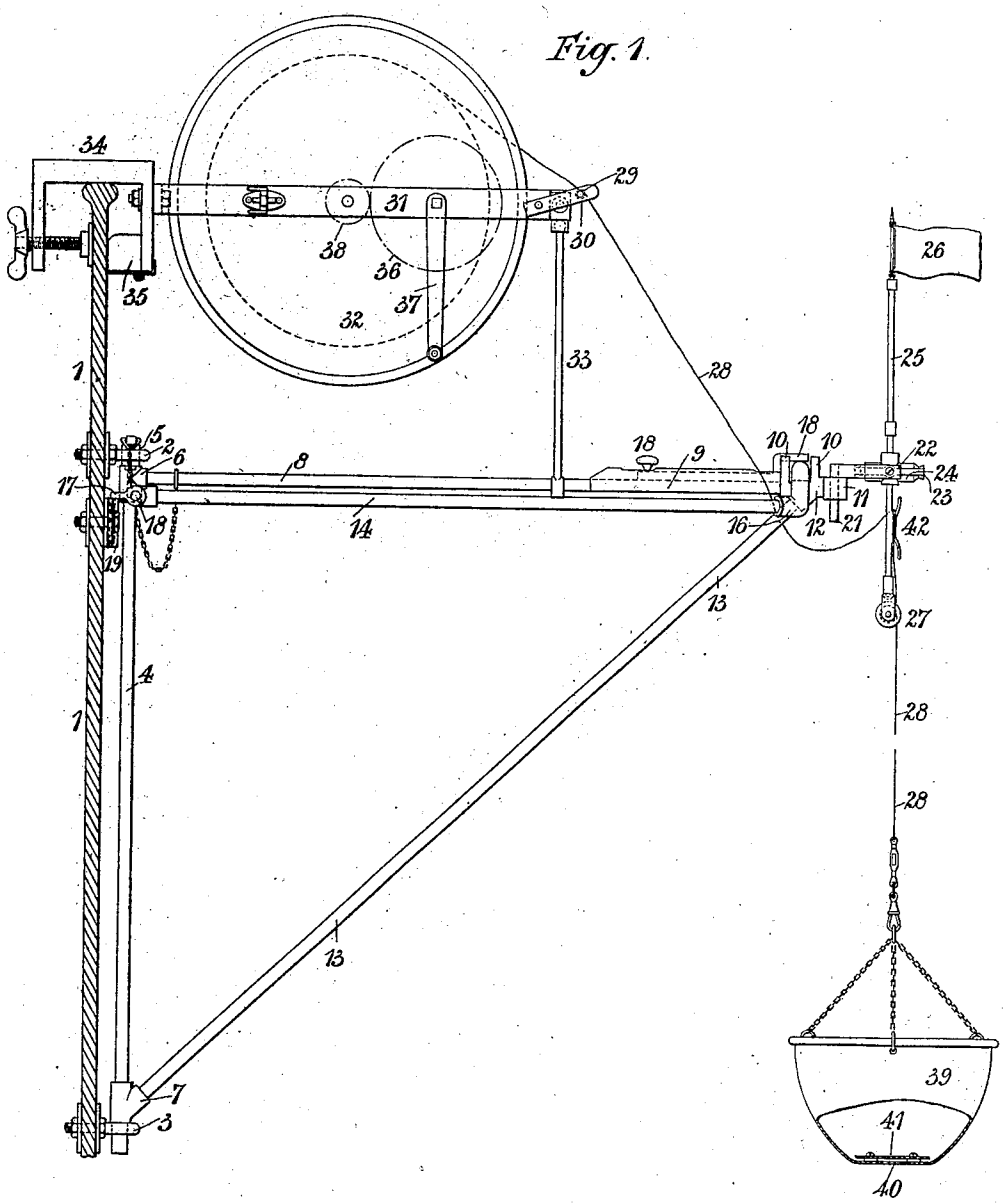
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921,515.

Patented May 11, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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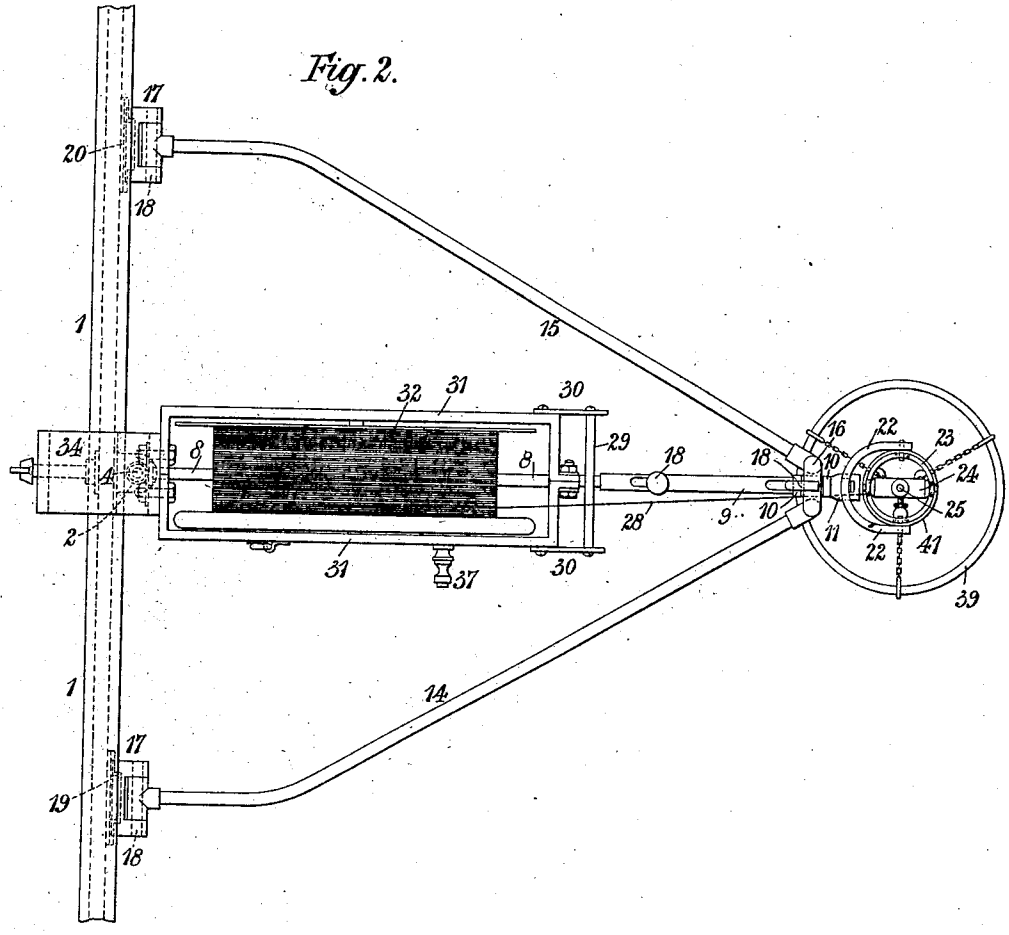
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2 SHEETS—SHEET 2.

Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES DAVIS, OF LONDON, ENGLAND.

MEANS FOR USE WITH BALLOONS AND OTHER AIR VESSELS FOR INDICATING AIR-CURRENTS.

No. 921,515. Specification of Letters Patent. Patented May 11, 1909.

Application filed August 29, 1908. Serial No. 450,834.

To all whom it may concern:

Be it known that I, CHARLES DAVIS, a subject of the King of Great Britain and Ireland, of 147 New Bond street, in the county of London, England, art expert, have invented new and useful Improvements in Means for Use with Balloons and other Air Vessels for Indicating Air-Currents, of which the following is a specification.

Hitherto, when it has been desired to bring balloons, or other air vessels, into different air currents, it has been necessary to lower, or raise, the balloon, or other air vessel, or to throw some light object therefrom and to note its behavior.

The first mentioned plan is of course very troublesome and necessitates great waste of gas and ballast, and shortens the life of an inflated balloon, while the second mentioned plan is not reliable, and, in some cases, is difficult of attainment, and is, of course, useless at night-time, or in cloudy, or misty, weather.

According to my invention I provide a support (which may be foldable) projecting from the car of the balloon, and to this support I secure a device capable of deflecting, or tilting, preferably in all directions, for example by being carried by gimbal rings, or by ball bearings, or a universal joint, and I provide a device capable of being lowered, or of rising, from the said deflecting, or tilting, device, and carried by a cord passing over suitable guides, or pulleys, so that it can be paid out, or drawn in, from, and to, the car.

At the end of this cord is a device which will be acted upon by air currents, this device being for example a small weight for descending into the air beneath the balloon, or a small container which is filled with a gas and which is so light that it will ascend above the balloon, when the cord is paid out. When the said weight, or container, arrives in a current of air which is moving at a different rate, or in a different direction, from that in which the balloon is situated, or moving, the said weight, or container, will be moved by the said current and the cord to which the weight, or container, is attached will cause the aforesaid device capable of deflecting, or tilting, to be deflected, or tilted, and the inclination of this device will indicate the direction of the current of air in which the small weight, or container, is situated, and the length of cord paid out will indicate the distance below, or above, the balloon, in which the current is moving.

In the accompanying drawings I have illustrated an instrument constructed in accordance with my invention, in which a small weight is used for descending into the air beneath a balloon.

Figure 1 is an elevation and Fig. 2 is a plan.

To the side 1 of the car of the balloon are secured eyes 2 and 3 for carrying a support, the vertical member 4 of which has its lower end engaged in the eye 3, and its upper end provided with a removable pin 5, engaging in the eye 2, and preferably secured to the support by a chain as shown to prevent its being lost. Junction pieces 6 and 7 are fixed to the said vertical member 4, near to its upper and lower ends, the lower junction piece 7 forming a bearing for the said vertical member on the eye 3. The pin 5 is removable to allow of the upright being readily dismounted from the eyes 2 and 3. In the junction piece 6 is fixed one end of the horizontal member 8 of the support, the other end of the said horizontal member being received in a piece 9 formed with horns 10 and an eye 11, and with a part 12 to receive one end of a diagonal strut-bar 13, the other end of which strut-bar is fixed in the junction piece 7. Horizontal inclined strut-bars 14 and 15 are fixed at one end in the junction piece 16, which is made with an inverted U-shaped part for resting between the horns 10. The said piece 9 is formed with a part in which slides a bolt 18, which can be slid over the U-shaped part of the junction piece 16 to hold it, and the strut-bars 14 and 15, in place. The other ends of the strut-bars 14 and 15 are each provided with end-pieces hinged by a pin 18 to an angular piece 17, the turned down part of which can be slipped into eyes 19 and 20 secured to the side of the car. The eye 11 receives the stem 21 of a fork-piece 22, carrying a gimbal ring 23, in which is swiveled a support 24 for a rod 25 which may have, at its upper end, a flag 26, and at it slower end is a guide roller 27, for a cord 28, passing also over a roller 29, carried by projections 30, from a frame 31, carrying a drum 32, around which the cord 28 is wound, the frame 31 being supported at one end by an upright 33 from the bar 8, and being fixed at its other end to a screw-clamp 34, fixed to the edge of the car and preferably provided with a hinged bearing-block 35.

The frame 31 carries a toothed wheel 36 provided with a handle 37 for turning it, so that it drives the toothed wheel 38 fixed to the axle of the drum 32 and pays out, or winds in, the cord 28.

The end of the cord 28 carries the necessary small weight, which may be of any suitable description. It is shown as being a cup-shaped vessel 39 having in it an opening 40 for the escape of rain water, this opening being covered inside by a disk 41, secured at a short distance above the said opening and with a sufficient space between the edge of the disk and the inside of the vessel 39 for the passage of water, but not to form an objectionably large passage-way for air. The weight can be regulated by putting additional weights into the vessel 39. On the rod 25 is a cleat 42, around which the cord 28 can be wound when it has been paid out to a sufficient extent.

It will be seen that the apparatus constructed as described can be readily put in position for use, or taken apart and folded when out of use.

If it be desired to provide means for taking observations in strata of air above the balloon, a similar cord can be used passing upward over a guide pulley on the rod 25 and carrying a small container which will rise when the cord is paid out. When such device is used, the rod can be reversed in any convenient way so that the flag is below, and the guide roller above, the gimbal ring.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In a device for indicating remote air currents, the combination with a bracket adapted to be fastened to the side of the basket of a balloon, a gimbal ring mounted on said bracket, an indicating device supported in said ring, a captive device adapted to be influenced by air currents and a cord therefrom engaging said indicating device whereby the latter discloses the direction of the air currents influencing said captive device together with means whereby said captive device may be let out or drawn in, substantially as described.

2. In a device for indicating remote air currents, a frame and an indicating member carried thereby capable of tilting in any direction, in combination with a captive device adapted to be influenced by air currents and means in connection therewith for actuating said indicating member together with means whereby said captive device may be let out or drawn in, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses.

CHARLES DAVIS.

Witnesses:

GEORGE ALEXANDER HOWE,

WILLIAM GERALD REYNOLDS.