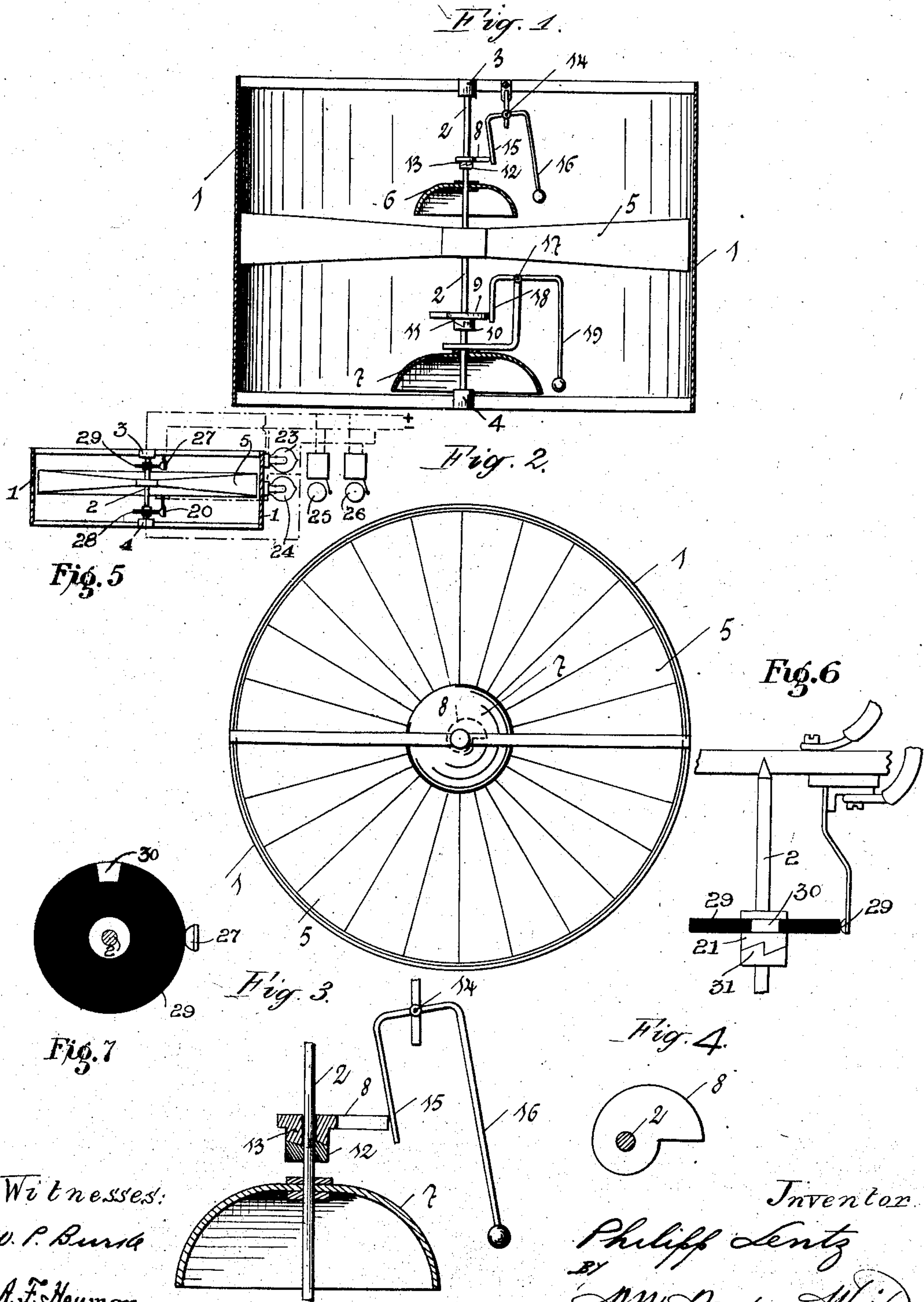


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 SIGNALING APPARATUS FOR AIRSHIPS AND THE LIKE.  
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974,103.

Patented Oct. 25, 1910.



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# UNITED STATES PATENT OFFICE.

PHILIPP LENTZ, OF GROSS-LICHTERFELDE, NEAR BERLIN, GERMANY.

SIGNALING APPARATUS FOR AIRSHIPS AND THE LIKE.

974,103.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, PHILIPP LENTZ, gentleman, a subject of the King of Prussia, Germany, and residing at 34 Sternstrasse, Gross-Lichterfelde, near Berlin, Kingdom of Prussia, Germany, have invented new and useful Improvements in Signaling Apparatus for Airships and the Like, of which the following is a specification.

The present invention refers to a signaling apparatus which has the purpose to inform the pilot of a balloon, a dirigible, a flying machine or the like at any moment by means of a bell signal whether the craft is rising, sinking or sailing in a horizontal direction; in the latter instance the apparatus will remain silent. The purpose is obtained by means of a vane wheel. Accordingly as the air ship rises or descends, the said vane wheel, turbine, fan or the like will revolve either to the right or the left on its axis respectively and thereby cause one or the other of suitably provided bells, metallic rods, springs or the like, tuned to different keys, to sound. This sounding of the signals may be effected by either mechanical or electrical means.

In the accompanying drawing the present invention is exemplified.

Figure 1 is a longitudinal sectional view of the apparatus, Fig. 2 is a plan view of the same. Fig. 3 shows the bell with the mechanism for striking it on an enlarged scale. Fig. 4 is a plan view of a cam disk. Fig. 5 is a modified form of the invention showing electric striking mechanism. Fig. 6 is a slip contact on an enlarged scale. Fig. 7 is a plan view of Fig. 6.

Within a cylinder 1, open at top and bottom a spindle 2 is supported in bearings 3, 4. On the spindle 2 is fitted a vane wheel, turbine or fan 5. Above and below said vane wheel signal bells 6 and 7 are arranged. On spindle 2 cam disks 8 and 9 are loosely mounted for the purpose of actuating the bell hammers. The spindle 2 is further provided above and below the vane wheel with oppositely disposed clutches 10 and 11 and 12 and 13, respectively. The striker member for the upper bell is provided with two arms 15 and 16, the arm 15 engaging the cam disk 8 and the arm 16, which is somewhat longer than the arm 15, is provided with a hammer adapted to engage the bell. The striker arm swivels around a fulcrum 14. The striking mem-

ber associated with the lower bell is of a similar design, being provided with arms 18 and 19 and swivels around a fulcrum 17.

In Figs. 5-7 a modified form is shown comprising an electric striking device. 20 is the lower slip contact, 27 the upper slip contact. The clutches are of the same design as above, shown in Fig. 3. The coupling members are marked 21 and 31 respectively. The apparatus is provided with differently colored glow lamps 23, 24 which are particularly useful during the night, and in case loud noises prevail. The bells are marked 25 and 26 respectively. The disks 28 and 29 carrying contacts 30 are loosely mounted on the spindle 2 and are rotated in accordance with the direction of the vertical motion of the craft. As they rotate the contacts 30 will engage with either of the slip contacts 20 and 27, depending upon which disk is rotating.

The new apparatus operates as follows: When the air ship or the like is rising or descending the resistance of the air will act on the vane wheel 5 and cause the latter to revolve in either the one or the other direction. According to the direction of rotation of said vane wheel 5 either the cam disk 8 or 9 is coupled with spindle 2 and by the thus produced rotation of said cam disk either of the hammer arms 15, 16 or 18, 19 is raised, so that on the latter falling back the signal bell will be sounded. Thus the one bell will sound when the air ship rises and the other when the air ship descends. As the bells are tuned to different keys, the pilot will immediately know whether his craft is rising or falling, and he is thus enabled to take the necessary steps, particularly with respect to the casting of ballast. His eye is not distracted as was hitherto the case with the known instruments indicating the height. Furthermore by the succession of the bell signals he will be able to tell the speed with which his craft is rising or falling as with the increasing speed of rising or falling the resistance of the air will naturally rise and cause a quicker rotation of the vane wheel and a more frequent striking of the bell.

The bell signal may also be operated by electrical means. The contacts 30 on the disks 28 29 will engage at each revolution one of the slip contacts 20 and 27 according to the direction of revolution of the vane wheel. With this form of the arrangement



it is advisable to complement the acoustic signals by means of optic signals, by providing that the rising or descending of the craft is indicated by differently colored glow lamps 23, 24 momentarily lighting up. If desirable the bell signals may in such instance be entirely cut out.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:

1. Signaling apparatus for continuously indicating whether an air ship is rising or descending, consisting of a vane wheel adapted to be rotated by the vertical movement of the air ship in either one or the other direction depending upon whether the air ship is rising or descending, signaling bells, and means for causing the rotation of the wheel to actuate said signaling bells in accordance with the rising or descending movement of the air ship, said signaling bells being tuned to different keys whereby an audible signal is given to indicate whether the air ship is rising or descending.

2. Signaling apparatus for continuously indicating whether an air ship is rising or descending, consisting of a rotatable spindle, a vane wheel secured thereto and adapted to be rotated by the vertical movement of the air ship in either one or the other direction depending upon whether the air ship is rising or descending, cam disks loosely mounted upon said spindle, oppositely disposed coupling means operatively associated with said spindles and said cams, whereby one or the other of said cams will be actuated according to the direction of rotation of said wheel, and signaling means operatively associated with said cams and adapted to be actuated thereby.

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

PHILIPP LENTZ.

Witnesses:

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