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AUTOMATIC LIGHT SIGNAL APPARATUS.

APPLICATION FILED MAY 12, 1911.

1,179,079.

Patented Apr. 11, 1916.

2 SHEETS—SHEET 1.

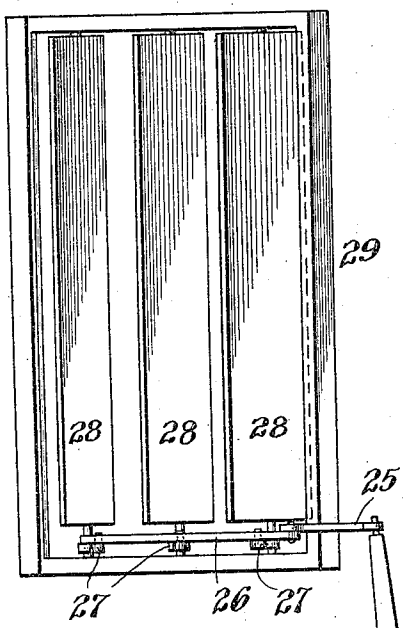


FIG. 1.

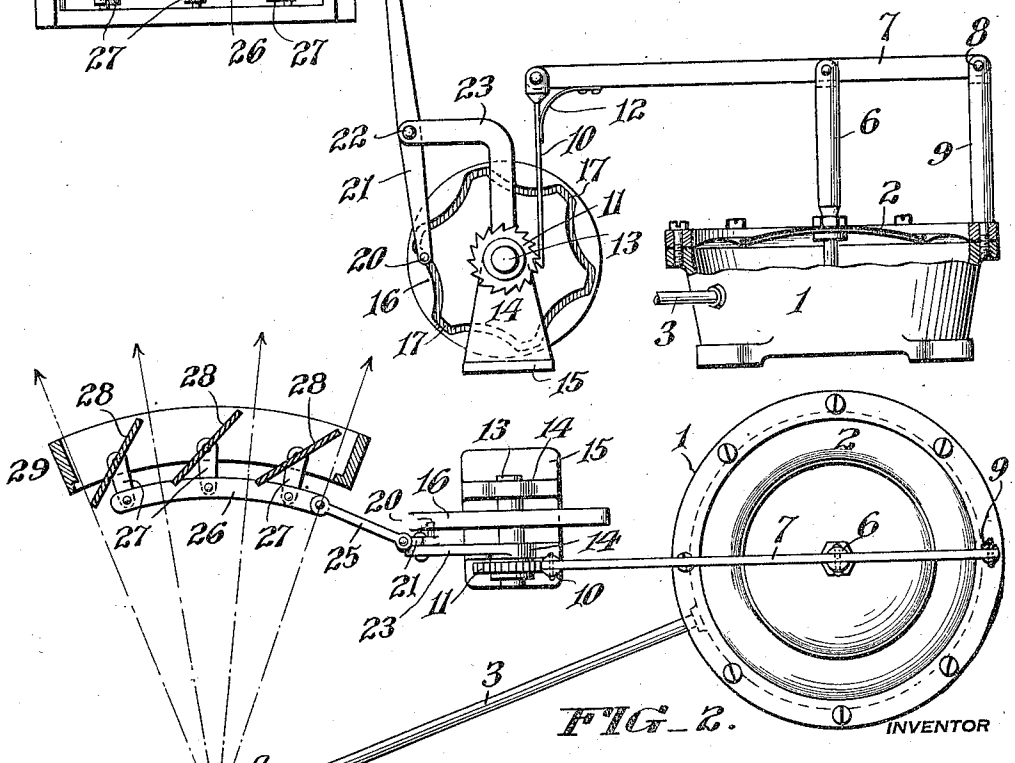


FIG. 2.

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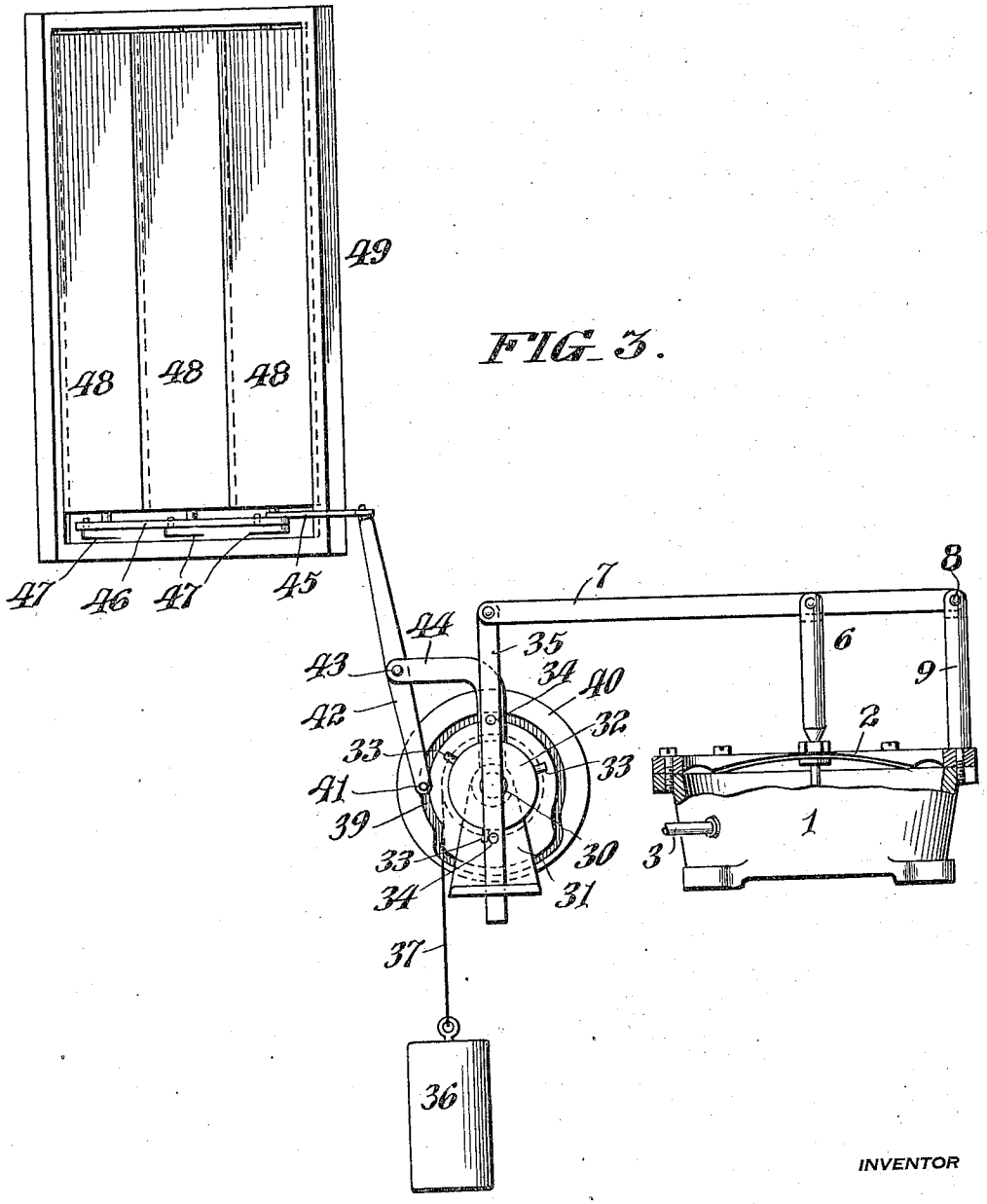


FIG. 3.

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AUTOMATIC LIGHT-SIGNAL APPARATUS.

1,179,079. Specification of Letters Patent. Patented Apr. 11, 1916.

Application filed May 12, 1911. Serial No. 626,764.

To all whom it may concern:

Be it known that I, GUSTAF DALÉN, a subject of the King of Sweden, residing in Stockholm, Sweden, have invented certain new and useful Improvements in Automatic Light-Signal Apparatus, of which the following is a specification.

My invention relates to improvements in automatic light signal apparatus of the character in which flashes of light are thrown out at repeated intervals of time and it has for its object to provide such an apparatus with means for shading and obstructing one or more flashes in series which may be thrown out by such apparatus.

In the carrying out of my invention I combine a blind apparatus of known construction, such as the von Otter type, in which the light signaling apparatus operates to open and close the blinds at predetermined intervals and for predetermined periods.

Other objects and advantages of my invention will be hereinafter more fully set forth or will be apparent from the detailed description of my invention.

Convenient forms of embodiment of my invention are illustrated in the accompanying drawings but it will be understood that changes in the details of construction within the scope of the claims may be made without departing therefrom.

In order that my invention may be fully comprehended and more readily understood, reference may be had to the accompanying drawings in which,—

Figure 1 is a side elevation of a light signal apparatus provided with my invention; Fig. 2 is a top plan view thereof with certain parts shown in section; and Fig. 3 is a side elevation of a modified construction of apparatus provided with my invention.

Referring to the drawings:—1 designates the casing of a light signal apparatus, 2 the diaphragm for closing the same, and 3 a pipe leading from the casing to the burner 4. These parts are of well known construction and therefore are not illustrated more in detail and need not be further described.

6 designates a link connected at its lower end to the diaphragm 2 and at its upper end to the lever 7 pivoted at its outer end at 8 to an upright post or standard 9 rising from the casing 1 or from any other suitable support.

Referring to Figs. 1 and 2, the inner end of the lever 7 carries a pawl 10 held in engagement with a ratchet wheel 11 by means of a spring 12. The ratchet wheel 11 is mounted upon a shaft 13 journaled in bearings 14 which rise from the bed or plate 15. It will be understood, of course, that the shaft 13 may be supported in bearings mounted or supported in any desired manner. The shaft 13 also supports or carries a cam disk 16 provided with a cam groove 17 in which a roller 20 on the lower end of the lever 21 works. The lever 21 is pivoted at 22, intermediate its ends, to a bracket 23 extended upwardly from one of the bearings 14 in which the shaft 13 is journaled. It will be understood, of course, that the lever 21 may be supported in any other manner which may be desired and found to be practicable and suitable. The upper end of the lever 21 is connected to one end of a link 25 the opposite end of which is connected to a bar or member 26 which in turn is connected by means of lever arms 27 to each of the blinds or slats 28 constituting a sector 29 of the blind apparatus. Movement of the bar or member 26 longitudinally in opposite directions causes the opening and closing of the blinds or slats 28.

In Fig. 3 I have shown a modified construction in which the shaft 30 is journaled in brackets 31 and is provided with a disk 32 having pins 33 which extend radially therefrom and which coöperate with pins 34 located above and below the said disk upon a bar 35 the upper end of which is secured to the inner end of the pivoted lever 7 and the lower end of which projects through the base upon which the brackets 31 are mounted, whereby the said bar is prevented from movement laterally. Any other means may be employed, however, for preventing lateral movement. Movement of the lever 7 about its pivot at 8 causes reciprocating movement of the bar 35 which movement carries the pins 34 alternately in position to permit the radially extending pins 33 to contact therewith. Rotation of the disk 32, the shaft 30 and other parts connected therewith, is caused by means of

a weight 36 supported upon a band or cord 37 which is coiled around and connected to the shaft. Other equivalent means may be used for causing rotation of the shaft. It will be understood that by raising and lowering the bar 35 the disk 32 is permitted to revolve with a step by step movement. 39 designates a cam groove upon the cam disk 40 in which groove the roller 41 at the lower end of the lever 42 coöperates. The lever 42 is pivoted at 43 to the upper inner end of the bracket 44 which extends upwardly from a stationary portion of the apparatus as for instance, one of the supports 31 for the shaft 30. The upper end of the lever 42 is connected to a link 45 which in turn is connected to a bar 46 connected to lever arms 47 which are connected to the blinds 48 which constitute a sector 49 of the blind apparatus.

In both forms of construction it will be understood that any desired number of sectors may be provided which sectors are located in the form of a circle and surround the burner 4 of the apparatus.

It is also to be understood that the length of the shafts 13 or 31 may be varied and that the number of cam disks 16 or 40 should be increased to correspond to the number of sectors and it will also be understood that the shape of the cam grooves upon the respective disks may be varied so as to control and vary the periods during which the blinds are held in opened or closed position. Also the cams may be designed so as to open the blinds during a dark period between the flashes of the light.

In practical operation the blinds of different sectors should be opened for different periods and consequently of course closed for different periods. These periods are controlled by the design of the cams upon the cam disks of the apparatus.

Assuming that the light of the burner is flashing continuously and at regular intervals and that there are two sectors separated a distance from each other and provided with blinds of the character above described and that there is a separate cam for the operation of the blinds of each sector, it will be understood that if the design or contour of the cams varies the operation of the blinds in the different sectors will be varied.

The cams may be designed so that the blinds in one of the sectors, will permit two flash signals to show, while in the other sector the blinds may be so operated by the cam which is connected thereto as to permit three flash signals to show. The continuous one flash signals may indicate clear water, the two flash signals which are visible between the two sectors may indicate port sheer, and the three flash signals may indicate star board sheer. By this means the navigator may direct his course with accuracy and safety.

Although as illustrated, my invention is embodied in a construction in which certain movable parts thereof are operated from the vibrating diaphragm of the light flashing apparatus, it is to be understood that my said invention is not limited to such construction and that the said parts may be operated from and by means of any other suitable movable part of the light flashing apparatus.

Having thus described my invention, I claim:—

1. In an automatic light signal apparatus, the combination of a light-flashing device for producing light flashes with means under the control of said device for determining the character of signals displayed by said light flashes.

2. In an automatic light signal apparatus, the combination of a light flashing device, a burner, blinds arranged in sectors surrounding the said burner, and means interposed between the said light flashing device and the said blinds for actuating the latter, the operation of the said means being controlled by the said light flashing device.

3. In an automatic light signal apparatus, the combination of a light flashing device having a movable diaphragm, a pivoted lever having connection with the said diaphragm, blinds adapted to be opened and closed, and means actuated by the pivotal movement of the said lever for controlling and causing the opening and closing movement of the said blinds.

4. In an automatic light signal apparatus, the combination of a light flashing device having a movable member, a lever pivoted at one end and having connection intermediate its ends with the said movable member, blinds adapted to be opened and closed at intervals, mechanism interposed between the said blinds and the said light flashing apparatus for actuating the said blinds, the said mechanism comprising a ratchet, and a pawl connected to the said lever and engaging the said ratchet for actuating the same, whereby the said mechanism is caused to actuate the said blinds.

5. In an automatic light signal apparatus, the combination of a light flashing device having a movable member and blinds adapted to be opened and closed with mechanism for actuating the said blinds, the said mechanism comprising a pivoted lever, means for connecting the said lever to the said movable member, the said lever being provided with a pawl at its inner end, a shaft, a cam disk and a ratchet wheel on the said shaft, the said ratchet wheel being engaged by the said pawl, whereby movements of the said lever caused by the said movable member cause rotation of the said shaft and cam

disk, a pivoted lever having one end in engagement with the cam on said cam disk and having its opposite end connected to the said blinds, whereby actuation of the said cam disk causes actuation of the said blinds.

6. In an automatic light signal apparatus, the combination of a light flashing device having a movable member which device is adapted to cause light flashes at intervals, blinds adapted to be opened and closed to permit the said flashes to be seen or to shut them from view, and means interposed between the said light flashing device and the said blinds and controlled by the said movable member, whereby the blinds are turned during the intervals between the flash signals.

7. In an automatic light signal apparatus, the combination of a light flashing device, a cam, means interposed between said light flashing device and said cam for actuating the latter, and means actuated by the said cam for obstructing or permitting the passage of light rays from the light flashes of said light flashing device.

8. In an automatic light signal apparatus, the combination of a light flashing device including a burner, a cam, means actuated by a movable part of the said light flashing device for causing movement of the said cam and means associated with the said burner for permitting or preventing the passage of light rays from said burner, the said means being actuated by the said cam.

9. In an automatic light signal apparatus, the combination of a light flashing device including a burner, a cam, means actuated by a movable part of the said light flashing device for controlling the movements of said cam, movable means associated with the said burner for controlling the passage of the rays of light therefrom, mechanism having connection with the said movable means and being interposed between the same and the said cam and actuated by the latter for controlling the position of the said movable means and thereby controlling the passage of the light rays from said burner.

10. In an automatic light signal apparatus, the combination of a light flashing device, including a movable member for controlling the flashing of the light, means for determining the character of signals displayed by the light flashes, and mechanism interposed between said means and said movable member whereby movements of the latter actuate the means for determining the character of the light signals.

In testimony that I claim the foregoing as my invention, I have hereunto signed my name this 22nd day of April, A. D. 1911.

GUSTAF DALÉN.

In the presence of—
WALDEMAR BOMAN,
T. EKSBOHM.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."