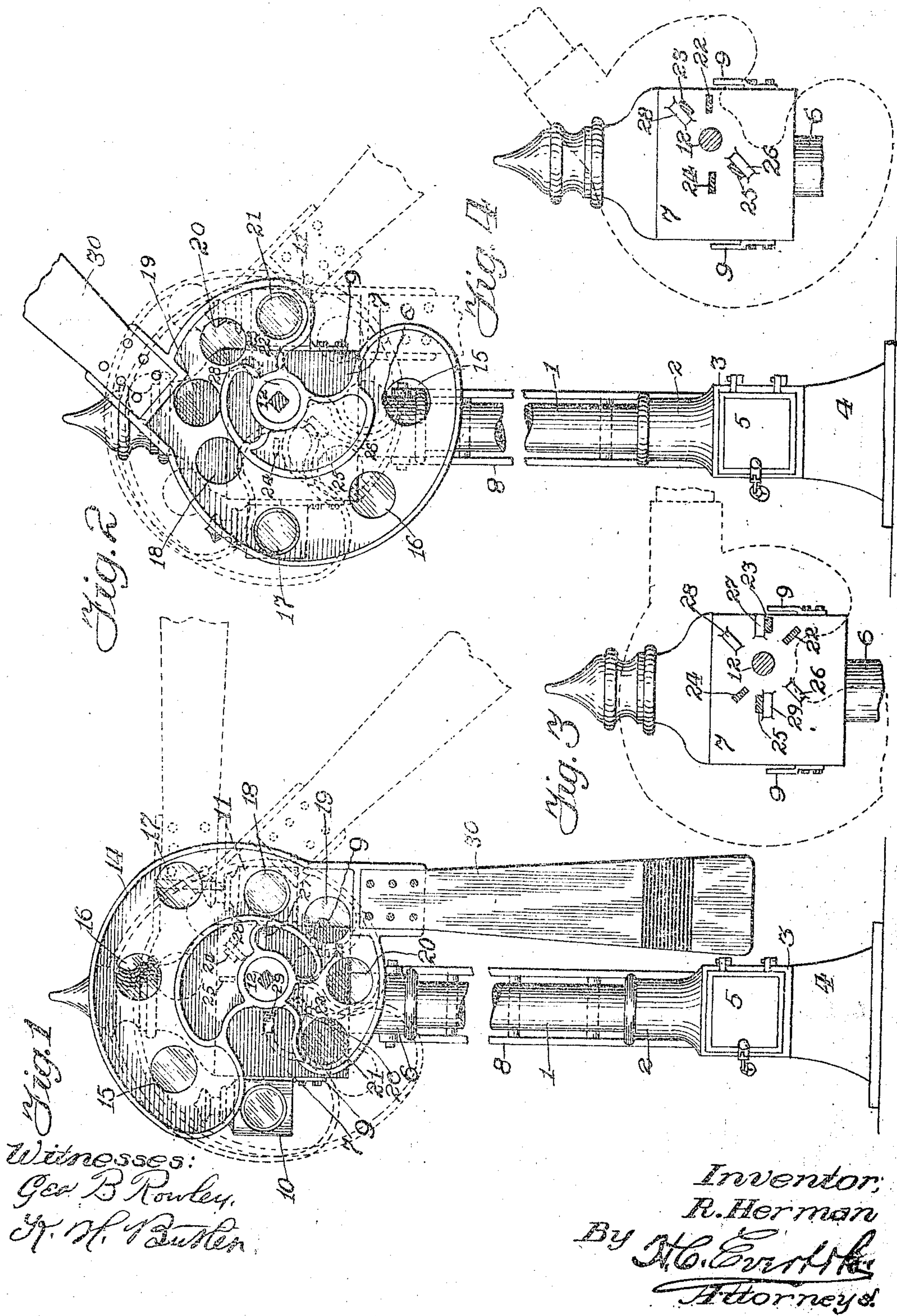


No. 876,962.

PATENTED JAN. 21, 1908.

R. HERMAN.
SEMAPHORE SIGNAL.
APPLICATION FILED NOV. 27, 1903.



UNITED STATES PATENT OFFICE.

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SEMAPHORE-SIGNAL.

No. 876,962.

Specification of Letters Patent.

Patented Jan. 21, 1908.

Application filed November 27, 1903. Serial No. 182,862.

To all whom it may concern:

Be it known that I, REINHOLD HERMAN, a citizen of the United States of America, residing at Crafton, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Semaphore-Signals, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to semaphore signals for railways, and has for its object to provide a semaphore signal of compact structure adapted to give distinctive indications by night.

It has been proposed heretofore to arrange semaphore signals to give two lights at night for some or all of the positions of the signal, in order to increase the certainty with which the engineer can pick out the signal light.

Where a single light is employed on the signal a chance light beside the track may sometimes mislead the engineer, who may mistake it for a signal light; but if two lights are employed for giving the signal indication at night the chance for such confusion is lessened.

My invention consists in providing a novel construction and arrangement of the semaphore casting whereby two lights may be obtained at night in the different positions of the signal with a compact structure. To this end my invention comprises a number of features.

In one aspect my invention consists in mounting the semaphore arm tangentially on the semaphore casting and providing two series of colored lenses each arranged to register with a lamp in different positions of the signal. The tangential support of the semaphore arm makes it possible to use a vertical position of the arm for clear position, and consequently to obtain a wide range of movement of the arm without offsetting the axis of the semaphore casting from the post. If the arm were radially supported, instead of tangentially, and if the axis of the semaphore casting were not offset from the post, the vertical position of the arm could not be used for an indication, as in that position the arm would be directly in front of the post and could not be seen. Consequently, only a smaller range of movement of the arm would be permissible, which in three

or four-position signals is a distinct disadvantage, as the different positions would be less clearly defined. On the other hand, if the axis of the semaphore were offset from the post, it would frequently be inconvenient to support two lamps on opposite sides of the axis, and in order to separate the lamps sufficiently, so that they may appear as distinct lights from a distance it is practically essential to place the lamps on opposite sides of the axis of the semaphore casting if a compact structure is desired.

In another aspect, my invention consists in arranging the series of lenses on the semaphore-arm side of the casting on a comparatively small arc and arranging the lenses on the opposite side on a somewhat larger arc in order to obtain the desired distance between lamps.

The signal forming the subject of the present invention is adapted to be employed either as an ordinary two or more position signal, or as a signal for giving a distinctive indication or position.

In electrical signaling, it is sometimes desirable to use the automatic block signals as a time or spacing signal and it is necessary therefore to distinguish this type of signal from any other. In order to distinguish this signal in the day time from any other signal, I have devised a construction which will be given hereinafter more in detail, but which in brief is distinguished as follows: In the "clear" position of the signal, the blade or semaphore arm hangs perpendicularly; in "green" or "caution" position, the blade or semaphore arm shows a forty-five degree position; while, the "red" or "danger" position shows a one hundred thirty-five degree (135°) position, or any desired degree position between the 90° position and a 180° position, instead of as ordinarily only a 90° position for the "red" or "danger" indication. The position of the signal or semaphore arm therefore distinguishes the type of signal by day, and the night signal is distinguished by the employment of the two lamps and lenses.

In the accompanying drawings, I have shown and will describe in detail a practical embodiment of my present invention, without limiting myself to the precise construction shown and described.

In the drawings, Figure 1, is a side eleva-

tion of a signal constructed in accordance with my invention, where the signal is to be used for clear, caution and 90° danger position. Fig. 2, is a like view, showing the application of the signal to a distinguishing danger position. Figs. 3 and 4 are detail views, showing the stop-lugs for danger and distinctive-danger and clear positions respectively.

In carrying out my invention, a signal operating mechanism such as shown and described in my former patent No. 778,037, dated December 20, 1904, may be employed for actuating the signal, and I have not shown and described the actuating mechanism in detail, as it is fully described and shown in the patent referred to.

In the present invention, I provide a supporting post 1, which at its lower end is mounted in a socket 2; carried on the top of a box or case 3, the latter mounted on a suitable base 4. The box or case 3 is provided for the reception of the track relay or other track instruments, obviating the necessity of providing a separate box or case for these instruments. This box or case is provided in one side with a door 5, adapted to be suitably locked. On the upper end of the supporting post 1, is rotatably mounted a socket 6, carried by the housing or casing 7, in which the signal operating mechanism is located. The upper end of the ladder 8, is connected to the socket 6, whereby as the housing or casing and signal mechanism is rotated on top of the supporting post to properly position the signal, the ladder will be carried therewith, in order that it may always be in proper position. Secured in substantially horizontal alinement, on brackets 9, bolted or otherwise secured to opposite sides of the housing or casing 7, is a pair of lamps 10, 11, and mounted direct on the drive shaft 12, of the signal operating mechanism, is a semaphore casting 14, which will now be described in detail. This casting carries the semaphore arm 30 extending tangentially from the casting and is provided with an upper and a lower set of lenses, the upper three lens openings 15, 16 and 17 respectively adapted to be brought into registry in the different positions of the signal, with the lens in lamp 10, and the lower lens openings 18, 19, 20 and 21 respectively adapted for registry with lamp 11. The openings 17, 21 are those employed for giving the distinctive night signal, and in these openings may be employed red lenses, indicating danger, or any other color of lens that may be desired for the designating of the distinctive night signal. No lens need be provided in the opening 18, as this opening registers with lamp 11 when the signal is in clear position, and when in this position, the lens of lamp 10 is uncovered by the casting. The opening

15, contains a green colored lens for indicating "caution" position, as does lens in opening 19, these lenses being in registry with the respective lamps at the same time. Openings 16 and 20, contain red colored lenses for indicating "danger" position (90° danger position), the said lenses being in registry with the lamps at the same time.

As heretofore stated, this signal may be employed for indicating the 90° "danger" position, or a distinctive "danger" position. In order to accomplish this result, I provide four stop lugs on the semaphore casting, and four stop-lugs on the box or housing inclosing the signal operating mechanism, and when it is desired to use the signal for more than a 90° "danger" position, two of the lugs provided on the housing or casing of the signal operating mechanism are removed. The lugs on the semaphore casting are indicated by reference numerals 22, 23, 24, and 25 respectively, and those on the housing or casing being indicated by reference numerals 26, 27, 28 and 29. When using the signal as a distinctive "danger" position lugs 27, 29 are removed from the housing, and as the semaphore arm 30 is moved from clear position to 135° or other distinctive "danger" position, lug 23 engages with lug 28 and lug 25 engages lug 26. If, however, the signal is being employed for the giving of a normal or 90° "danger" position, lug 23 on the casting would engage with lug 27 on the housing, and lug 25 on the casting engages with lug 29 on the box or housing. Lugs 22, 26 form a stop for the signal when it moves to "clear" position, when it is being used either for the normal "danger" position of 90°, or for the giving of a distinctive "danger" position of 135°, or any degree position between 90°, and 180°.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent is:—

1. In a railway signal, a support, a semaphore casting provided thereon, a semaphore arm extending tangentially from said casting, and a plurality of lamps carried by said support, said casting being provided with a plurality of openings adapted to register with each lamp in different positions of the signal.

2. In a railway signal, a support, a semaphore casting pivoted thereon, a semaphore arm extending tangentially from said casting, a plurality of lamps carried by said support, and a plurality of series of colored lenses carried by said casting, each series being arranged to register with one of said lamps in different positions of the signal.

3. In a railway signal, a support, a semaphore casting pivoted thereon, a semaphore arm extending tangentially from said casting, two lamps carried by said support on op-

posite sides of the axis of said casting, one of said lamps being nearer said axis than the other, and two series of colored lenses carried by said casting each arranged to register with one of said lamps in different positions of the signal.

4. In a railway signal, a support, a semaphore casting pivoted thereon, a semaphore arm extending tangentially from said casting, two series of lenses carried by said casting arranged on two arcs on opposite sides of the axis, the series on the semaphore-arm side of said casting being on an arc of smaller radius than the other series, and two lamps carried by the support arranged to register with the two series of lenses in the different positions of the signal.

5. In a railway signal, a pivoted semaphore casting having two series of openings arranged on arcs of different radii concentric with the axis of the casting, two lamps mounted to coact with said openings, and a blade carried by the casting, the openings in the casting being so disposed as to show two lights in each position of the signal.

6. In a signal, a semaphore casting having a series of openings disposed in an arc concentric to the axis of the casting, and a second series of openings also concentric to the axis of the casting and disposed in an arc of greater radius than that of the first named openings.

7. In a signal, a semaphore casting adapted to turn on an axis and having a series of openings disposed in an arc concentric to the axis of the casting and a second series of openings also concentric to said axis and disposed in an arc of greater radius than that of the first named openings, and at a greater distance apart than said first named openings.

8. In a signal, a semaphore casting arranged on an axis and formed with a gap on one side and two series of openings in its body, one opening of one series being diametrically opposite said gap.

9. In a signal, a semaphore casting adapted to revolve on an axis, a semaphore blade attached to said casting and two series of openings formed in the casting, each opening of each series being diametrically opposite an opening of the other series, forming pairs of openings, the two series of openings being concentric with the axis of the casting with one series on an arc of greater radius than the other series, two lamps adapted to register with each such pair of openings, the semaphore casting movable to bring the semaphore blade into a distinctive danger indicating position, and said blade being so disposed with relation to the openings in the casting that one pair of said openings will register with the lamps when said blade is in the distinctive danger indicating position.

10. In signals, the combination with the drive-shaft, of a semaphore casting mounted direct on said shaft and provided with a plurality of openings, arranged in two series concentric with the axis of the casting with one series in an arc of greater radius than the other series, and two lamps coacting with the openings whereby two night signals are given in each position of the casting.

11. In signals, an inclosing box or casing for signal operating mechanism, a drive shaft of the signal operating mechanism extending through one wall of the box or casing, a semaphore casting mounted on said drive shaft and provided with a plurality of openings, and two lamps suspended from the box or casing and coacting with the openings in the casting whereby two night signals are given in each position of the casting.

12. In signals, a semaphore arm, a casting to which said arm is attached, an axis on which the casting is pivoted, means for revolving the casting, a series of openings extending over an arc concentric to the axis and in excess of a quarter circle, stops arranged and adapted to limit the movement of the casting to predetermined points, and a second series of openings each of which is diametrically opposite one of the openings of the first named series.

13. In signals, a semaphore casting provided with a plurality of openings disposed in two sets in arcs concentric to the axis on which the casting turns, one of said sets of openings being on an arc of greater radius than the other set of openings, and two lamps coacting with the two sets of openings, the casting being movable to place the semaphore arm in a "distinctive" danger position and bring two of the openings in registry with the lamps.

14. In signals, a semaphore-casting heavier in one part than in another having a pivotal point and openings arranged in two series concentrically with reference to the pivotal point, with one series of the openings on an arc of greater radius than the other series.

15. The combination in a semaphore signal, of a casting having a pivotal point and seven openings arranged in two series concentrically with reference to the pivotal point and relatively unequally disposed in their arrangement, and a blade fastened to said casting and extending outwardly therefrom.

16. The combination in a semaphore signal, of a casting heavier in one part than another, having a pivotal point and seven openings arranged in two series concentrically with reference to the pivotal point and relatively unequally disposed in their arrangement, and a blade fastened to said

casting at its lighter weighted part and extending outwardly therefrom.

17. The combination in a semaphore signal of a casting heavier in one part than
5 another having a pivotal point and four openings concentrically arranged with reference to the pivotal point and relatively
equally disposed in their concentric arrangement and three openings concentrically
10 trically arranged with reference to the piv-

otal point on an arc of greater radius than the four openings, and a blade fastened to the lighter weighted part of the casting, substantially as described.

In testimony whereof I affix my signature 15
in presence of two witnesses.

REINHOLD HERMAN.

Witnesses:

H. M. WILSON,
E. E. POTTER.