July 27, 1948. F. A. LANCASTER 2,445,953

SIGNAL DEVICE

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Fig. 1.

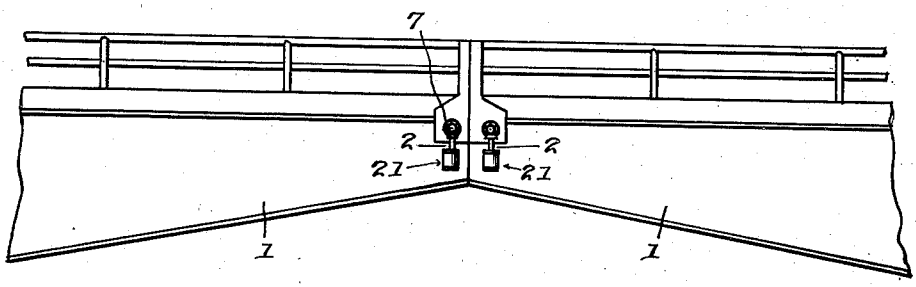
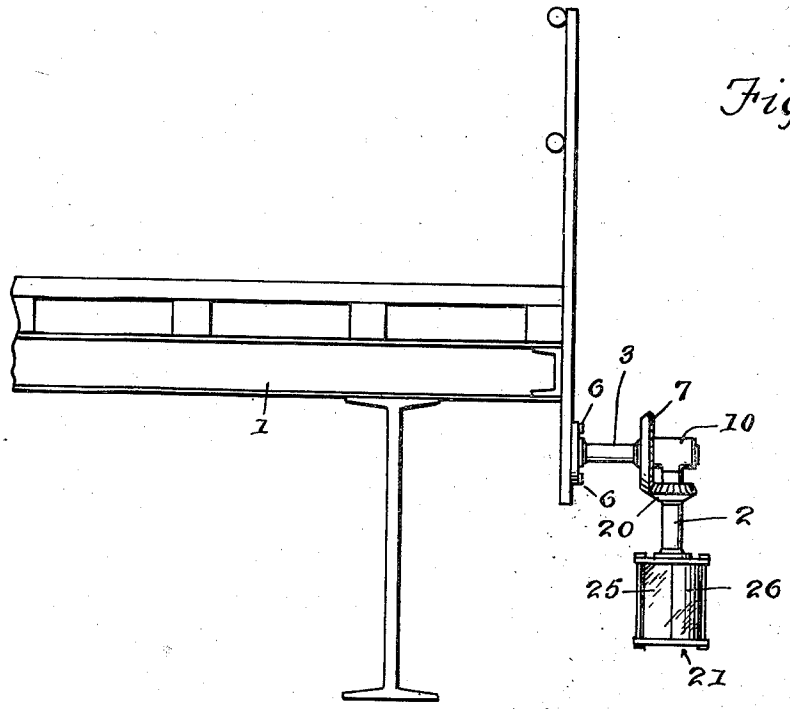


Fig. 2.



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Fig. 3.

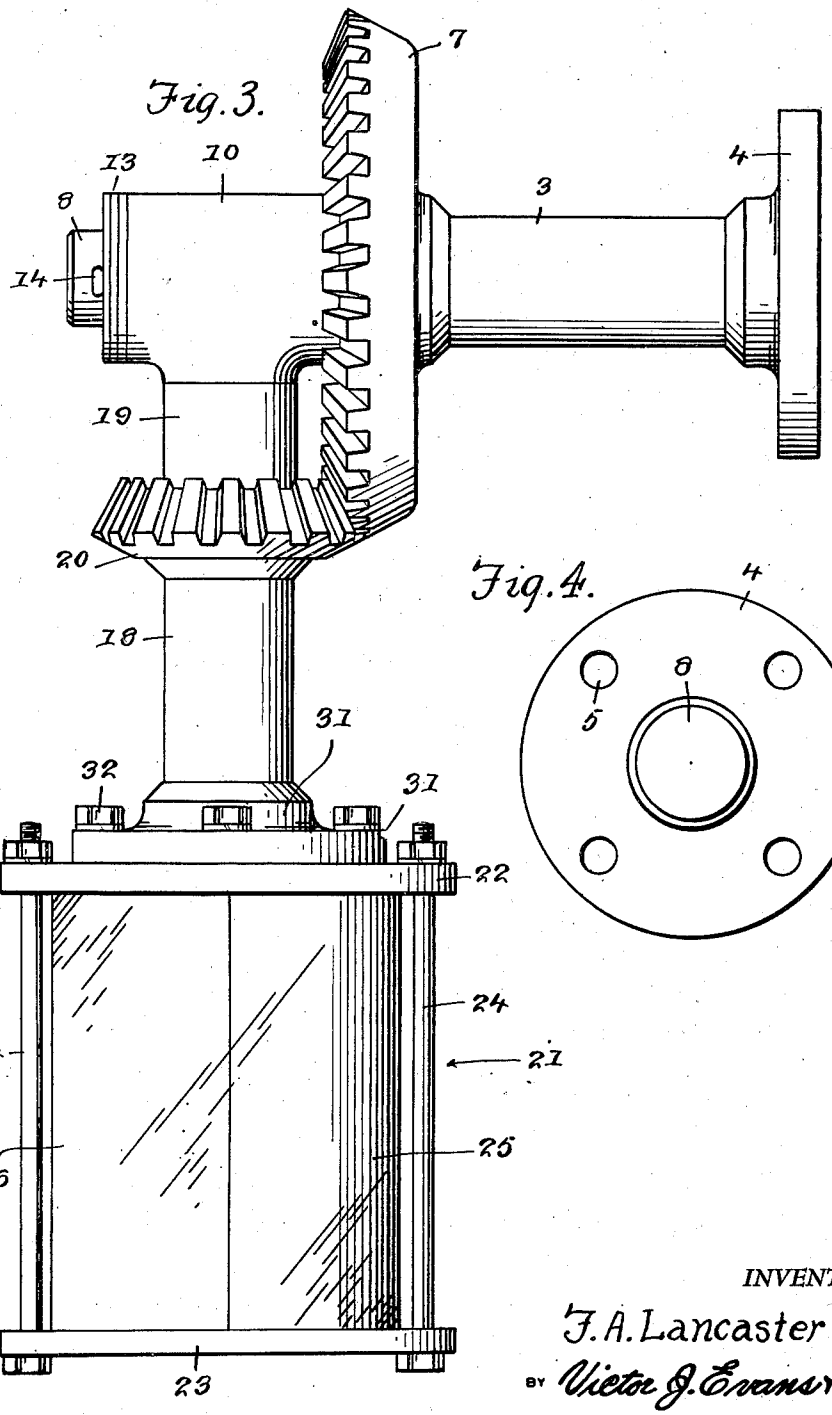


Fig. 4.

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Fig. 5.

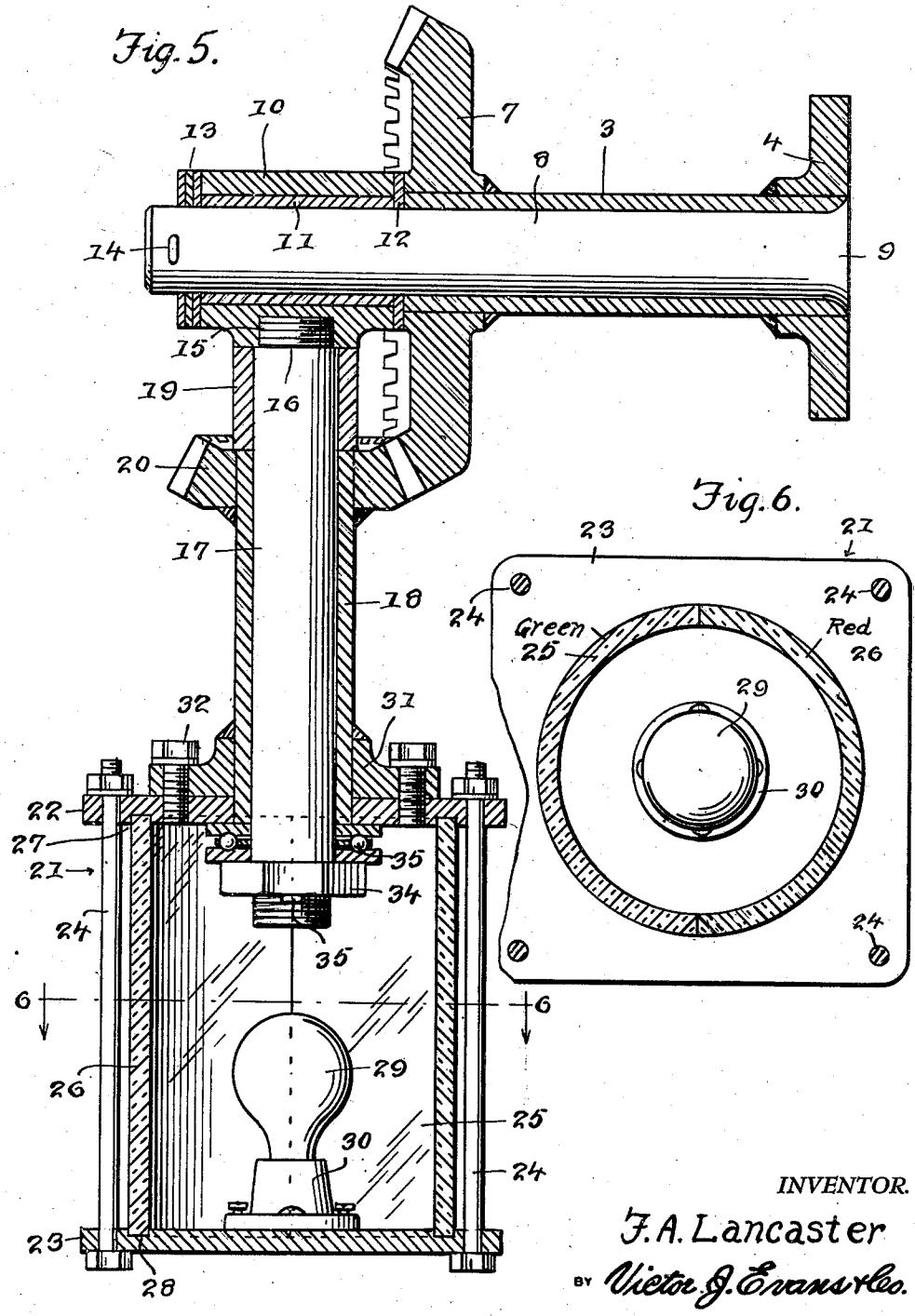


Fig. 6.

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UNITED STATES PATENT OFFICE

2,445,953

SIGNAL DEVICE

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Application September 6, 1946, Serial No. 695,308

3 Claims. (Cl. 14—49)

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This invention relates to a signal for use upon bridges, and it is one object of the invention to provide a signal adapted to be mounted at a side of a lift span of a bridge and serve as a warning to indicate whether the lift span is in a lowered or raised position.

Another object of the invention is to provide a signal which is so constructed and so mounted that when a bridge span is swung upwardly from a lowered position to a raised position, the signal will be caused to show a green light, indicating that a boat may safely pass, instead of a red light which is a danger signal indicating that the span is in the lowered position.

Another object of the invention is to provide a signal wherein the lamp is at all times suspended in a vertical position, means being provided for turning the lamp about a shaft from which it is suspended in order to show a green light or a red light, according to the position of the bridge span.

Another object of the invention is to provide a signal which is automatically adjusted to show red or green light, and which is of simple construction and not liable to be easily damaged or get out of working order.

The invention is illustrated in the accompanying drawings wherein:

Figure 1 is a side view showing lift spans of a bridge equipped with signals of the improved construction;

Figure 2 is a view of the free end of one of the lift spans showing the signal at a side thereof;

Figure 3 is a side elevation of the improved signal;

Figure 4 is a view looking at the disk by means of which the signal is secured to the lift span of the bridge;

Figure 5 is a sectional view taken vertically through the signal;

Figure 6 is a sectional view taken along line 6—6 of Figure 5.

This improved signal is for use in connection with a bridge having lift spans 1 which are mounted for vertical swinging movement in any desired manner from a lowered position to a raised or opened position, allowing boats to pass the bridge. At night time, it is often difficult to determine whether a bridge is opened or closed unless lights are provided and at the present time lights either show the same color when the spans are in either raised or lowered positions, or complicated and expensive mechanism is necessary in order to change the color.

My improved signals are of simple construction, and one is mounted upon each span at a side of

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the free end thereof. These signals, which are indicated in general by the numeral 2, may be mounted upon side rails of the span as shown, or upon outer sides of girders at opposite sides of the span. The signals move vertically with the spans from a lowered position to a raised position and in the lowered position show a red light or danger signal while in the raised position, they show a green light or safety signal and clearly indicate whether it is safe for a boat to pass through the draw of a bridge.

The signals are of duplicate construction and each has a tubular mounting shaft 3 surrounded at its inner end by a collar 4 welded to the shaft and formed with openings 5 through which bolts or screws 6 are passed to secure the same firmly against the bridge span 1. A large bevelled gear 7, which preferably has thirty-two teeth, is welded in place about the outer end of the shaft and has its hub flush with the end of the shaft. Through the tubular shaft extends a core or shaft 8, which is of greater length than the tubular shaft, and projects from the outer end thereof. This shaft 8 has its inner end flared to form a head 9 which is seated in the inner end of shaft 3 and constitutes an abutment to prevent outward movement of the shaft 8 through shaft 3 beyond the position shown in Figure 5. A T-coupling 10 lined by a bushing 11 fits snugly about the protruding end of the shaft 8 and has its inner end held in spaced relation to the gear 7 by a spacing washer 12. Washers 13, which fit snugly about the shaft, engage the outer end of the coupling and are held in place by a cotter key 14. The short depending arm of the coupling is formed with a threaded socket 15 in which is screwed the threaded upper portion 16 of a hanger shaft 17 about which are mounted a tubular shaft or sleeve 18 and a tubular spacer 19 which holds the sleeve 18 in predetermined downwardly spaced relation to the coupling 10 so that a bevelled gear 20 welded about the sleeve will mesh with the gear 7. The gear 20 is half the size of gear 7 and has sixteen teeth, so that when the bridge is swung upwardly or downwardly and the gear 20 moves about gear 7 through an arc of 90°, the gear 20 and the sleeve 18 carrying the same will make a half turn of 180°.

A lamp casing 21 is carried by the sleeve 18 at the lower end thereof and has upper and lower heads 22 and 23 formed of metal or other suitable material. The heads have been shown of rectangular shape in Figure 6, and through their corner portions are formed openings to receive rods or bolts 24 by means of which the head 23

is drawn towards head 22 and ends of the transversely arcuate sections 25 and 26 of the cylindrical wall of the lamp are held in the grooves 27 and 28 formed in the heads 22 and 23. The wall sections are formed of glass or other transparent material, so that light from the bulb 29 mounted in the socket 30 carried by the lower head 23 will show through the walls of the lamp, and the wall section 25 is colored green, while the wall section 26 is red. The upper head 22 fits about the lower end of the sleeve 18 and is secured against a disk 31 by screws 32, the disk 31 being welded to the sleeve so that when the sleeve is turned about shaft 17 the lamp will be turned to display a red light for a lowered span 1 or a green light for a raised span. The upper head rests upon a thrust bearing 33 which fits about the protruding lower end of shaft 17 and is held thereon by a nut 34 screwed upon the shaft and held in place by a cotter key 35.

When signals of the improved construction are in use, they are mounted at opposite sides of free end portions of the tiltable spans of a bridge and hang in a vertical position as shown in Figures 1 and 2, where they may be seen by the lookouts or pilots of boats approaching the bridge. When the spans are in the lowered or closed position, the light from the bulbs is seen through the red sections 26 of the lamps, and constitutes a danger signal indicating that the bridge is closed. When the spans are swung upwardly to the opened position, the weight will maintain the signals in a vertical position, and since the gear 20 of each signal moves about the gear 7, the sleeve 18 will be turned about the shaft 17 and since the lamp housing turns with the sleeve, the green section 25 will be turned to a position outwardly of the span, and the lookout or pilot of the boat will see a green light serving as a safety signal and indicating that the bridge is open. The lights will also be in a raised position and farther apart than when in the lowered position occupied when the spans are closed.

Having thus described the invention, what is claimed is:

1. A bridge span signal comprising a tubular mounting secured to a pivoted bridge span at a side of a free end portion thereof, a shaft rotatably mounted in said tube and projecting from the outer end thereof, a gear rigidly mounted about the tube, a coupling fitting about the protruding end portion of said shaft, a hanger shaft extending downwardly from said coupling in vertical position, a sleeve rotatably mounted about the hanger shaft, a gear about said sleeve meshing with the first gear and turning the sleeve during vertical swinging movement of the bridge span, a collar secured about the lower end portion of said sleeve, a housing carried by and extending downwardly from said collar and having transparent wall sections of contrasting colors moved into position to be seen by turning of the sleeve and the housing during vertical swinging movement of the span, and a lamp in the housing for displaying a light visible through the wall sections.

2. A bridge span signal comprising a shaft mounted against a side of a span having vertical swinging movement to raised and lowered positions, a coupling about the mounting shaft, a hanger shaft extending downwardly from said coupling in vertical position, a sleeve rotatable about said hanger shaft, a gear in fixed position about the mounting shaft, a gear about said sleeve meshing with the fixed gear and turning the sleeve during vertical swinging movement of the span, and an indicator carried by said sleeve and having portions of contrasting appearance moved into position to be seen by rotation of the sleeve.

3. A bridge span signal comprising a shaft mounted against a side of a span having vertical swinging movement to raised and lowered positions, a coupling about the mounting shaft, a hanger shaft extending downwardly from said coupling in vertical position, a sleeve rotatable about said hanger shaft, a lamp housing carried by said sleeve in depending relation to the lower end thereof and having an upper head secured to the sleeve, a lower head, a cylindrical wall of transparent material having upper and lower ends engaged by the heads, bolts passed through the heads and holding the same in gripping engagement with the wall, said wall having opposed positions of contrasting colors, a bulb-holding socket carried by the lower head, and means for imparting rotary movement to the sleeve during vertical movement of the span and turning the lamp housing to move a predetermined colored portion of the wall in position to be seen by a person approaching the bridge.

FRANKLIN ARTHUR LANCASTER.

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