

(No. Model.)

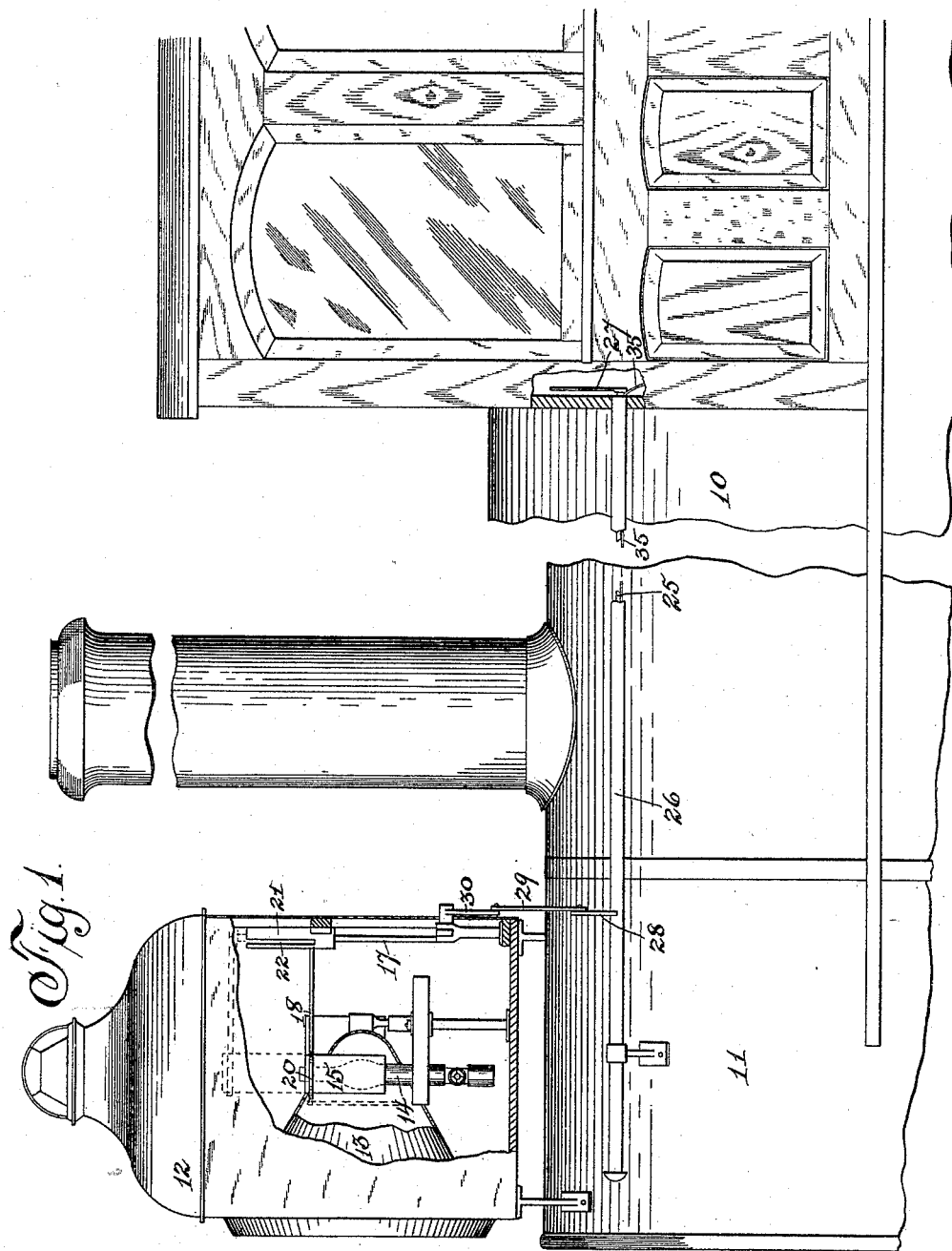
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B. H. McCAIN.

SIGNAL ATTACHMENT FOR LOCOMOTIVE HEADLIGHTS.

No. 492,334.

Patented Feb. 21, 1893.



Witnesses
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F. C. Felt.

Inventor
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his Atty.

(No Model.)

3 Sheets—Sheet 2.

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Fig. 2.

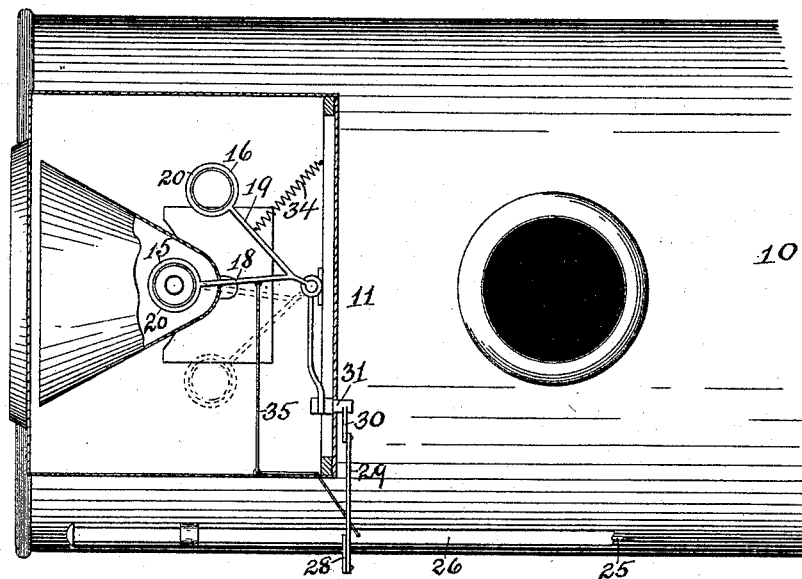


Fig. 3.

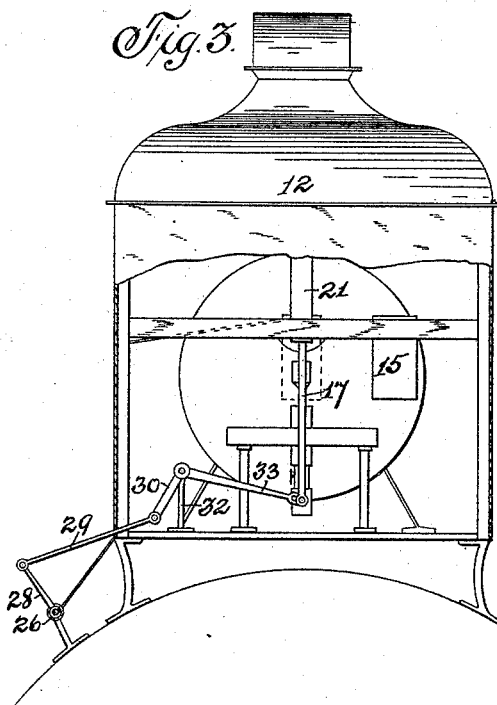
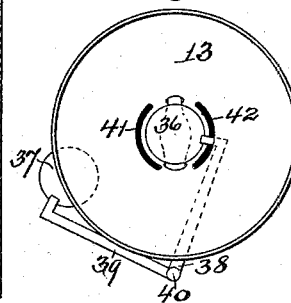


Fig. 4.



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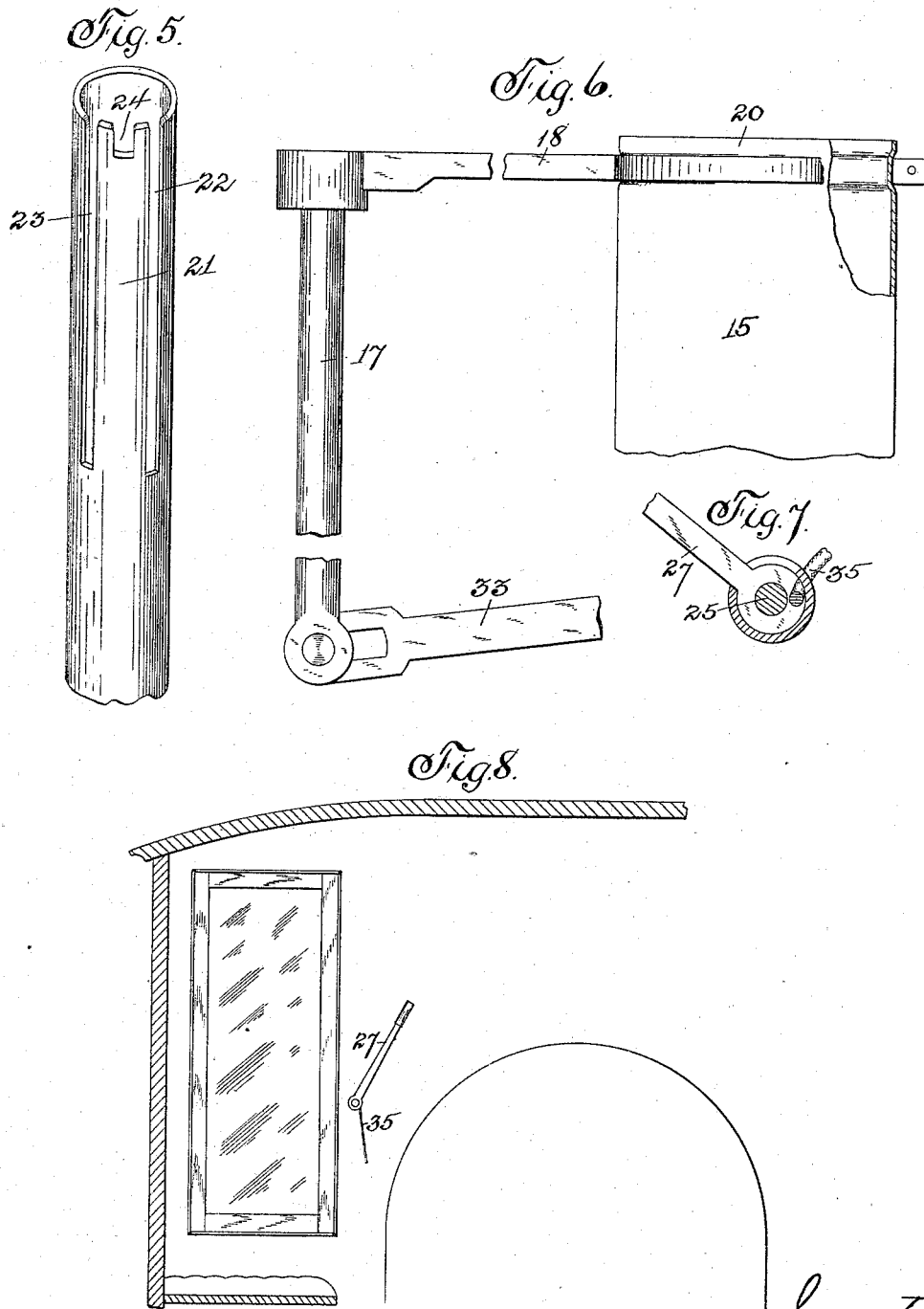
3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

BENJAMIN H. MCCAIN, OF DES MOINES, IOWA, ASSIGNOR OF TWO-THIRDS TO
JAMES M. PIERCE AND CICERO COOMER, OF SAME PLACE.

SIGNAL ATTACHMENT FOR LOCOMOTIVE HEAD-LIGHTS.

SPECIFICATION forming part of Letters Patent No. 492,334, dated February 21, 1893.

Application filed March 15, 1892. Serial No. 424,960. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN H. MCCAIN, a citizen of the United States, and a resident of Des Moines, in the county of Polk and State

of Iowa, have invented a new and useful Signal Attachment for Locomotive Head-Lights, of which the following is a specification.

In the operation of railroading, accidents, wrecks and consequent injury and loss of life and property have resulted from the absence of means within the control of the enginemen by which a signal or signals may be presented or displayed instantly from the engine.

My invention has for its object the provision of means by which the engineman of a locomotive may disclose or present, at will, varying and differing signals from a point within the cab, the mechanism and means for accomplishing this result being operated in conjunction with the headlight of the locomotive.

My invention consists in the provision of devices and mechanism for operating the same from a convenient point within the interior of the cab of the locomotive, by which the rays of light diffused from the illuminating medium at the apex of the parabolic reflector of a headlight are altered, at will, from one color to another differing therefrom, so that signals may be displayed or presented at the head end of the train, which signals may be instantly changed or altered under certain exigencies by the engineman, said signals being visible and capable of perception at great distances by reason of the expanse of light diffused by the reflector of the headlight. I will now proceed to a particular description of the apparatus shown by which this result may be accomplished, and will also point out some of the common instances in which this plan is of advantage, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of portions of a locomotive, the side of the headlight casing, the reflector and also a portion of the cab being partly broken away. Fig. 2 is a top view of the forward portion of a locomotive, the upper portion of the headlight being removed. Fig. 3 is a rear view of the headlight, the rear side of the casing being partly broken away. Fig. 4 is a front view of a headlight reflector removed from its casing and showing modi-

fied means of operating devices. Fig. 5 is an enlarged detail view of a slotted support for the mechanism by which the devices for varying the signals are held. Fig. 6 is a like view of a portion of a colored globe adapted to surround the illuminating medium of the headlight, and also the devices by which the globe is supported and the relative position thereof altered. Fig. 7 is a detail cross section through the hand rail on the side of the boiler. Fig. 8 is an interior view of the cab showing the position of the actuating lever and flexible connections by which the signal changing devices are operated by the engineman.

The numeral 10 designates the boiler of a locomotive, having the extension front 11, upon which latter is mounted in the usual manner the headlight casing 12, which as shown in Fig. 1 has one of its sides broken away to show the interior mechanism.

The parabolic reflector is designated at 13, which reflector is also broken away in Figs. 1 and 2 to show the illuminating medium which in this instance is a lamp 14.

In carrying out my invention I have shown a pair of open ended globes 15, 16, which may be respectively red and green, together with operating devices manually actuated by the engineman from the interior of the cab, by which said globes may be raised or lowered and caused to entirely surround or circumscribe the lamp 14 of the headlight, in such a manner as that the rays of light diffused from the said headlight shall be either entirely red or entirely green, as found necessary to display signals at the head of the train in accordance with a predetermined code, it being apparent that the white light normally issuing from the headlight may also be utilized for signaling purposes. The mechanism by which this result is accomplished, as shown, consists of a vertical actuating rod 17, to the upper end of which rod is secured a forked extension comprising two arms 18 and 19, (Figs. 2 and 6,) each of which arms is looped or formed into an eye 20, at its outer end for the reception of its respective globe 15, 16. A tubular support 21 fixed to the headlight casing is provided, which support is adapted to serve as a guide in raising and lowering the globes 15, 16, and also as a support for the

forked extension when it is desired that the ordinary white light should be displayed from the headlight. This tubular support 21 is provided with two slots 22, 23, and also with a notch 24, formed in the upper end of said tubular support at a point intermediate of the slots 22, 23, as shown in Fig. 5.

The mechanism by which the actuating rod 17 is reciprocated vertically from the interior of the cab for the purpose of raising and lowering the globe relatively to the lamp 15 of the headlight, comprises a rock shaft 25, which rock shaft extends through the interior of the tubular handrail 26 to a point within the interior of the cab, and having a hand lever 27 secured to that end within the cab.

The lever connections between the rock shaft 25 and the supporting rod 17 are shown more clearly in Fig. 3, and comprise an arm 28 rigidly secured to said rock shaft 25 and extended through a slot in the hand rail 26, which arm 28 is connected by the link 29 with the lower arm 30 of a bell crank lever having a rock shaft 31 journaled in the standard 32, the upper arm 33 of said bell crank lever being bossed and slotted at its end and connected to the lower end of the supporting rod 17.

In Fig. 2 is shown a coiled spring 34 secured to the arm 19 and the headlight casing, and also a cord 35 secured to the arm 18, which cord is led from the headlight to and through the handrail 26 to a point within the cab, (Fig. 7.)

The operation of the devices for accomplishing the desired results is as follows: When the headlight is displaying the usual white light, the arms 18 and 19 of the forked extension carrying the colored globes 15 and 16 are held out of action and above the lamp 14 by the engagement of said forked extension with the notch 24 of the upper end of the tubular support 21. When now it becomes desirable to display a colored signal at the head end of the train the engineman operates the hand lever 27 within the cab, causing a rotation of the rock shaft 26, which through the intermediate connections between said rock shaft and the actuating rod 17 reciprocates the latter vertically and disengages the forked extension from the notch 24, and since the globes 15, 16 are in the plane above that of the lamp 14 either one of said globes may be positioned by means of the flexible connection 35 into coincidence with the lamp 14, when the hand lever 27 may be actuated to lower the forked extension and globe, the former traveling within either one of the slots 22, or 23 and either one of the globes caused to surround the lamp 14, so that the rays diffused from the headlight are either red or green.

In Fig. 4 I have shown a modified form of device in which disks 36 and 37 are employed mounted upon arms 38 and 39 and actuated by a common shaft 40, the reflector 13 being slotted as shown at 41, 42 so that the disks of

varying colors may be brought in front of the lamp 14.

There are numerous instances in the exigencies of railroading where the method and means of instantaneously displaying varying signals are especially advantageous and desirable, a few of the most common instances of which I will specify herein.

Assume that on a single track road a long second class, or freight train, is about to leave the main and enter upon a siding, for the purpose of permitting the passage of another train to be met at this point, just prior to the entrance of the former upon the siding, or just after the entrance thereof upon the same, the engineman may readily and conveniently, from a point within the interior of the cab, cause to be displayed at the head end of the train a red signal by actuating the handle and cord and dropping the red globe over the lamp of the headlight, and maintain such red signal until the train has completely entered the siding and the tail end thereof completely cleared the main, by this means signaling to an approaching train that the train to be met has not entirely entered upon the siding. It is obvious that this method of signaling is especially advantageous where the train entering upon the siding is upon the time or nearly upon the time of the approaching train, or as against specials or "wildcats" or as against extras.

A color may be adopted to indicate to an approaching train that an extra or special is following the train upon the siding, or following the approaching train, the number of sections of which may be indicated by raising and lowering the selected signal a number of times corresponding to the number of said sections. This method of signaling may also be employed to advantage on double track roads in those cases where for any reason a train upon say, a north bound track, is required to cross over and upon a south bound track, the danger signal may be instantly displayed and presented for any required length of time, or in a case where one of the tracks of a double track road becomes obstructed necessitating the running of trains against each other, much danger, confusion and delay may be avoided by the use of these varying signals at the head end of the train entirely under the control of the engineman and adapted to be instantly displayed.

Especial advantage from the conjunctive use of the signal with the headlight of a locomotive results from the fact that the signals may be perceived at a great distance by reason of the expanse of light diffused from the reflector of the headlight. In each instance whatever the circumstances may be the engineman is provided with instrumentalities by which elements of doubt may be resolved into certainty.

It is not desired to indicate herein any character of code of signaling, or system of rules for governing the use of the apparatus,

but simply to specify certain of the more common instances or occasions in which this apparatus may be advantageously employed.

5 Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent of the United States therefor, is—

10 A signaling attachment for head lights consisting of a lamp a plurality of translucent globes differing in color, a tubular and vertical supporting post positioned in the rear of the lamp, a vertical actuating rod disposed within the tubular post, which rod is adapted to be reciprocated vertically by connected
15 mechanism leading to the engine cab, and is provided with a plurality of arms correspond-

ing in number to the number of globes and each arm bearing one of the globes and which arms are adapted to be swung laterally by connections leading to said cab to bring any 20 one of said globes vertically over the lamp, a seat formed on the upper end of the tubular post to hold the globes above the lamp and slots in said post which permit the lowering of the desired globe over the said lamp. 25

In testimony whereof I have hereunto affixed my signature this 20th day of February, 1892.

BENJAMIN H. MCCAIN.

In presence of—

C. C. BULKLEY,
G. R. GREEN.