C. B. WITHROW.

AUTOMATIC SIGNAL.

APPLICATION FILED MAY 16, 1911.

1,032,460.

Patented July 16, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

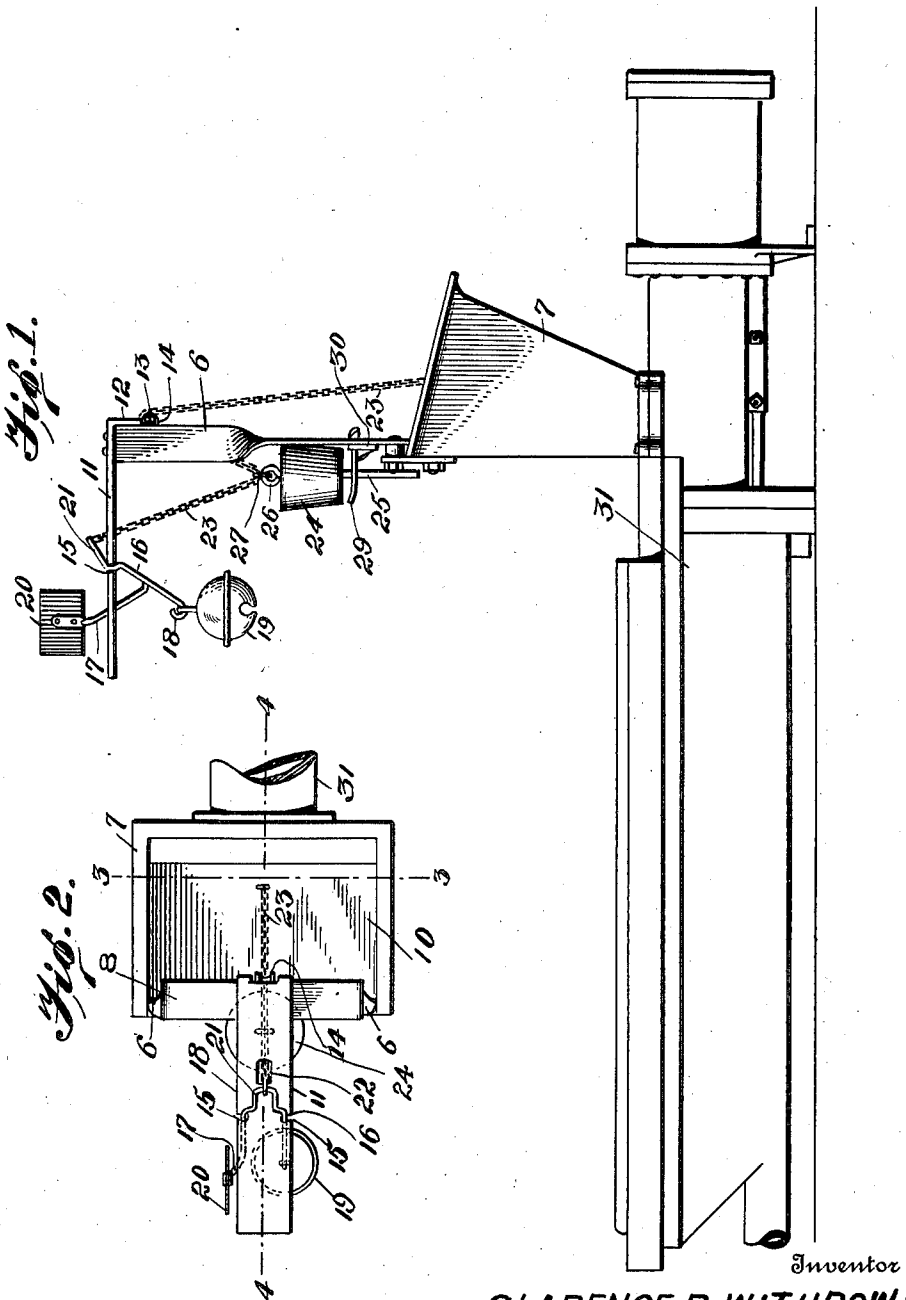

Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 3.

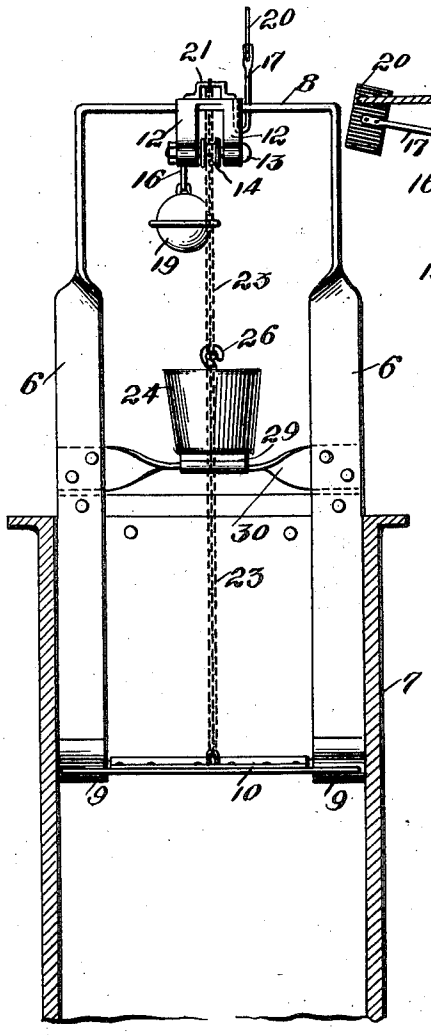


Fig. 4.

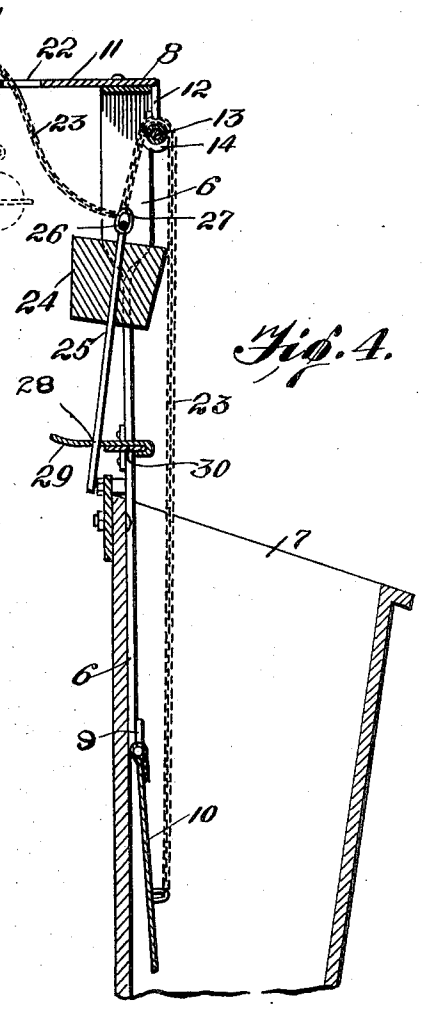
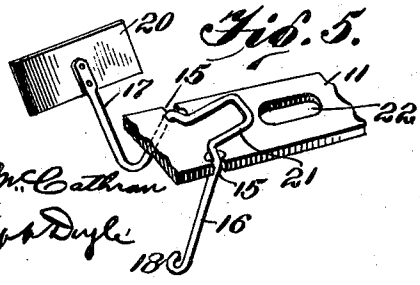


Fig. 5.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC SIGNAL.

1,032,460. Specification of Letters Patent. Patented July 16, 1912.

Application filed May 16, 1911. Serial No. 627,387.

To all whom it may concern:

Be it known that I, CLARENCE B. WITHROW, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Automatic Signals, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to the subject of feed hoppers and the principal object of the same is to provide simple means for visibly and audibly indicating the fact that the hopper is empty.

The invention is of particular value in connection with the feed hoppers of stokers wherein the hoppers are filled with coal that gravitates to the stoker, and the invention provides signaling means which are held inactive by the coal in the hopper, but when the hopper is empty, said signaling means are rendered active and caused to display a signal and also sound an alarm so that the attendant will be promptly notified.

A preferred and practical embodiment of the invention is shown in the accompanying drawings wherein:—

Figure 1 is a view in side elevation of a hopper equipped with the improved signal, the hopper being shown in connection with an underfeed stoker. Fig. 2 is a top plan view. Fig. 3 is a vertical sectional view taken on the line 3—3, Fig. 2, the signaling means being active. Fig. 4 is a similar view taken on the line 4—4, Fig. 2, the signaling means being inactive. Fig. 5 is a fragmentary detail perspective view of the signal-operating rod, visible signal, and the support for said rod.

The improved hopper signaling apparatus comprises a pair of vertically arranged spaced parallel standards 6 that are fastened to the inner surface of one of the walls of a hopper 7 and project well above said hopper. A horizontal member 8 connects the upper ends of said standards. The lower ends of the standards 6 are provided with ears 9 to which a plate 10 is hinged, said plate being adapted to project upward when said hopper is empty and to be held in a downwardly projecting position, by the coal when the hopper is filled.

A centrally located supporting arm 11 projects laterally from member 8, and at its junction with said member 8, hanger bearings 12 depend therefrom and have a shaft 13 journaled thereon. A pulley 14 is mounted on shaft 13 between the hanger bearings 12. Arm 11 has oppositely disposed pivot notches 15 formed transversely in its longitudinal sides in which the alarm supporting rod 16 and the visible signal supporting rod 17 are pivotally mounted. Rod 16 depends and terminates in an eye 18 to which a bell 19 or other audible signal is swiveled. Rod 17 is angularly bent and carries a visible signal 20. Rods 16 and 17 are connected by a loop-shaped crank 21 that projects above the upper surface of arm 11. Adjacent the free end of crank 21, arm 11 is provided with a guide slot 22.

A chain or other type of flexible cable 23 has one end fastened to the plate 10. Cable 23 passes over pulley 14, through slot 22, and is fastened to crank 21. A weight 24 has a rod 25 extending therethrough the upper end of which is provided with a hook 26 that engages a ring 27 carried by cable 23, said ring being disposed on said cable between the pulley 14 and the slot 22. The projecting lower portion of rod 25 is slidable through a guide opening 28 in an arm 29 that projects laterally from the center of a brace 30 that connects standards 6.

When the hopper 7 empties the weight 24 causes cable 23 to swing plate 10 upward and to rock rods 16 and 17 so that the signal 20 will be displayed and the alarm 19 sounded. When the hopper 7 is filled the weight of the fuel holds the plate 10 in a downwardly projecting position and causes cable 23 to elevate weight 24. When the weight 24 is elevated, the upper portion of cable 23 is slack, and signal 20 drops, as is shown in Fig. 4. As will be clear, the rod 25 and the opening 28 of the arm 29 confines the weight to vertical movements.

It will be understood from the foregoing that while this invention has been shown in connection with an underfeed stoker, such as is conventionally shown in the accompanying drawings and designated by the numeral 30, it is not limited to such use for the invention is capable of use in connection with all types of feeders.

What I claim is:—

1. A signaling apparatus for feeders comprising a pair of standards, a connecting member carried thereby, a supporting arm carried by said member, hanger bearings carried by said member, a shaft jour-

naled in said bearings, a pulley thereon, a pair of rods pivotally connected to opposite sides of said arm, a crank connecting said rods, a plate hinged to the lower portions of said standards, a cable connection between said crank and said plate, said cable passing over said pulley, a weight carried by said cable and disposed between said pulley and said crank, an alarm carried by one of said rods, and a visible signal carried by the other rod.

2. A signaling apparatus for feeders comprising a pair of rods, a support to which said rods are pivotally connected, a crank connection for said rods, an alarm carried by one of said rods, a visible signal carried by the other rod, a feeder, a plate pivotally mounted in the feeder, a flexible connection between said plate and crank, and a weight carried by said flexible connection adjacent said crank.

3. A signaling apparatus comprising a pair of standards, a connecting member for the upper end thereof, an arm projecting laterally from said member, a brace connecting said standards, an arm projecting laterally from said brace and provided with a guide opening, a pulley carried by said connecting member, signal operating rods pivotally connected to opposite sides of the upper arm, an alarm carried by one rod, a visible signal carried by the other rod, a crank connection between said rods, a cable connection between said crank and plate, said cable passing over said pulley, a rod slidable through said guide opening and engaging said cable adjacent said crank, and a weight carried by said rod.

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

CLARENCE B. WITHROW.

Witnesses:

J. GRATTAN O'BRYAN,

E. D. SMITH.