No. 634,935. Patented Oct. 17, 1899.

F. C. ANDERSON.

SWITCH OPERATING MECHANISM.

(Application filed Nov. 16, 1898.)

(No Model.)

Fig. 1.

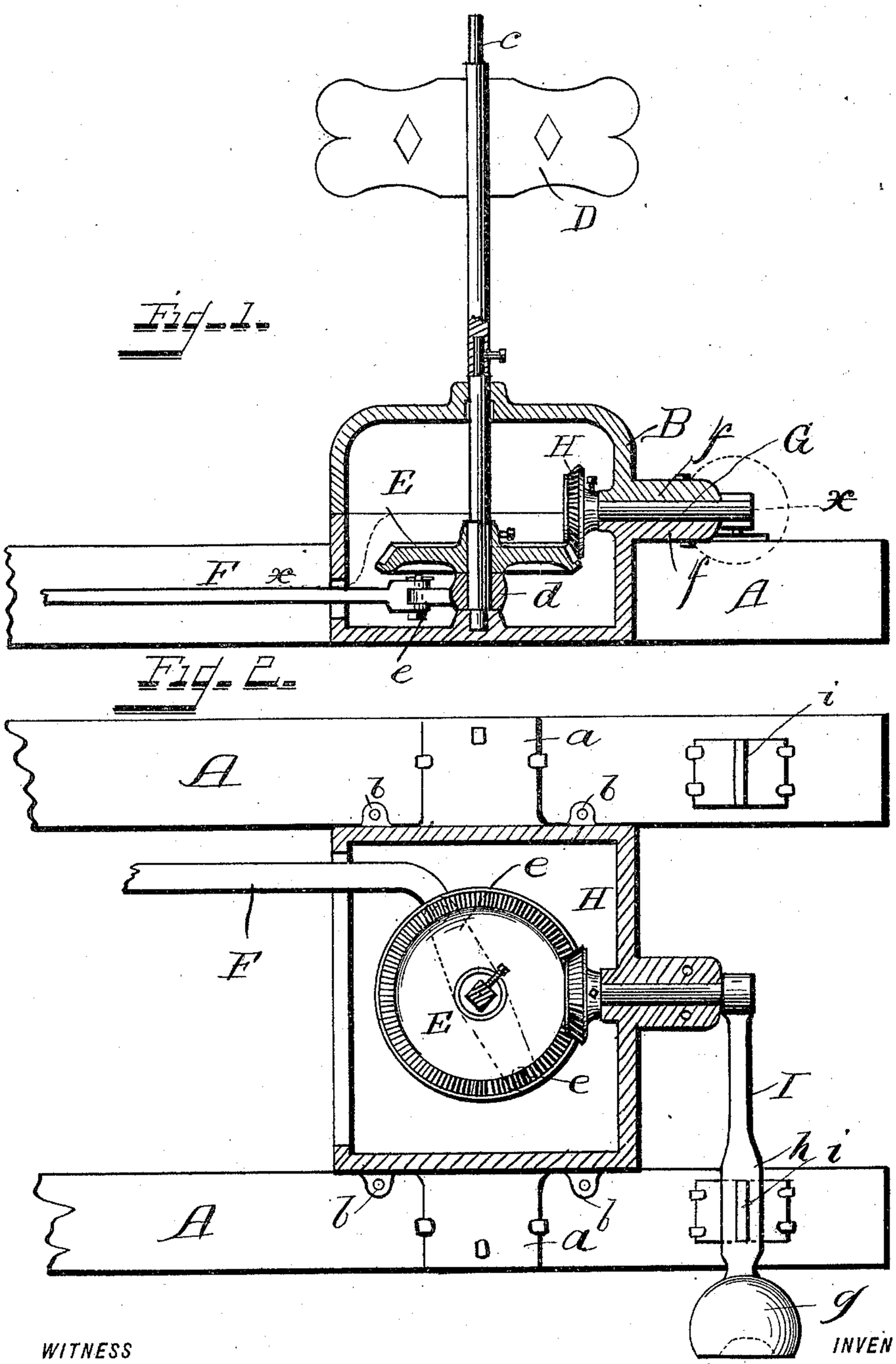

Fig. 2.

WITNESS

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SWITCH-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 634,935, dated October 17, 1899.

Application filed November 16, 1898. Serial No. 696,643. (No model.)

To all whom it may concern:

Be it known that I, FRANK C. ANDERSON, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Switch-Operating Mechanism, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that class of mechanism for operating single switches of railways whereon a target-shaft is provided to carry visible targets for day use and a lantern for night use; and it has for its object the provision of simple and efficient means whereby the life of such operating mechanism is greatly prolonged over those now in general use.

The novelty of my invention will be hereinafter set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a central sectional side elevation of a switch-operating mechanism embodying my invention. Fig. 2 is a sectional plan view of the same on the dotted line *x x* of Fig. 1.

The same letters of reference are used to indicate identical parts in both the figures.

A A represent lateral extensions of two of the cross-ties on which the track containing the switch (not shown) is laid. Between these ties and supported by them is the two-part box B, divisible on the dotted line *x x* and secured to the ties A by lugs *a* and to each other by lugs *b*. Journaled centrally in the top and bottom of the box is a vertical signal-post C, carrying the daytime signal or target D and having at its upper end a shank *c* for the attachment of a varicolored lantern at night, as is customary in this class of switches. Secured upon the shaft C within the box B is a beveled gear E, provided on its lower side with a hub *d*, from which extend two diametrically set arms *e*, to the outer perforated end of one of which is pivoted the switch-actuating rod F. Journaled in a two-part box or housing *f*, carried by the two parts of the box B, is a stub-shaft G, on the inner end of which, within the box B, is made fast a bevel-pinion H, meshing with the pinion E and having fast upon its outer projecting end a lever I, with a weighted outer end *g* and a flattened slotted portion *h*, the slot of which as the lever is thrown either to one position or the other engages a perforated lug *i*, secured upon the extensions A of the ties. By thus throwing the lever from one side to the other the switch is opened or closed in the usual manner and is locked in either of its adjusted positions by a lock of the usual or any suitable construction. (Not shown.) This swinging of the lever I partially rotates the spindle G and through the medium of the intermeshing pinions H E vibrates the arms *e* and actuates the rod F to shift the switch from one position to another.

As is well known, in winter-time, the switch-points may become clogged with ice, or in heavy rains may be filled up with mud, gravel, or cinders, so that in the sudden throwing of the lever I one or more teeth might be broken out of the gear E, which under the former construction of the switch-operating mechanisms would necessitate the taking out the gear E at once and throwing it away. By my construction, however, where the gear E is a complete gear and not a part gear as formerly used, and if an accident of the above-described nature should happen, it would only be necessary to disconnect the upper part of the box B from the lower part, lift out the spindle G with its connected parts, disconnect the pinion E from the shaft C, and turn the former half around and reconnect it with the shaft C and then replace the parts. Of course the rod F would have to be uncoupled from its arm *e*, and in restoring the parts the rod F would be recoupled to the perforated end of the opposite arm *e*, and thereby an unbroken part of the gear E would be brought into mesh with the pinion H, it of course being understood that the pinion E would be shifted halfway around, thereby carrying the arms *e* with it and bringing the unused one of them into the position of the formerly-used one without disturbing the position of the rod F. In this simple manner the life of the operating mechanism is doubled without increasing the cost of the structure, and if the hub *d*, carrying the arms *e*, were separable from and adjustable on the pinion E more than two adjust-

ments of the latter could be made after breakage of its teeth without the necessity of its replacement, as will be readily understood.

Having thus fully described my invention, I claim—

1. In switch-operating mechanism, the combination of a vertical target-rod, a complete horizontal gear-wheel adjustably mounted thereon and made fast thereto, an arm carried by said target-rod and movable with said gear-wheel, the switch-rod pivoted to said arm, a pinion fast on the shaft of the switch-throwing lever and meshing with the first-mentioned gear-wheel, and a box inclosing the gears, whereby in case of breakage of the teeth of the first-mentioned gear it may be shifted upon the target-rod to bring unbroken teeth into mesh with the pinion of the switch-lever, substantially as described.

2. The herein-described switch-operating mechanism, consisting of the two-part box B, the vertical target-rod C, journaled therein, the complete beveled gear E, adjustable on the rod C, the arms *e* carried by the rod C, the switch-rod F pivoted to one of said arms, the pinion H meshing with the gear E and fast on the shaft G journaled in the box B and the swinging lever I fast to the shaft G outside of the box, all substantially in the manner and for the purpose specified.

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Witnesses:
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