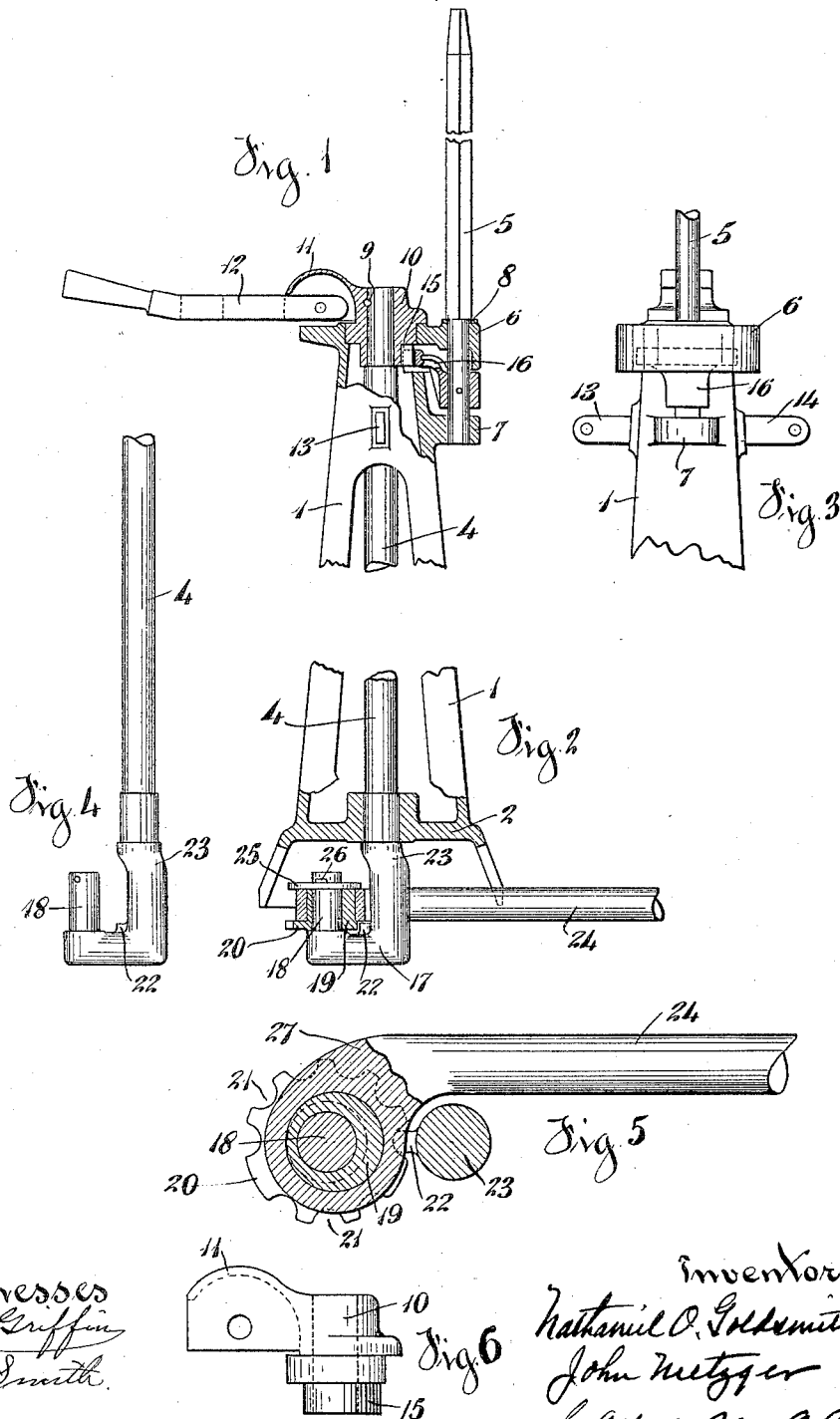


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SWITCH STAND.

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UNITED STATES PATENT OFFICE.

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SWITCH-STAND.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, NATHANIEL O. GOLDSMITH and JOHN METZGER, citizens of the United States, and residents of the city of Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Switch-Stands, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification.

Our invention relates to switch stands for railway switches provided with an eccentric sleeve or bushing of the crank shaft for adjusting the throw of the switch.

It is very desirable in switch stand constructions that the crank shaft shall have a throw of one hundred and eighty degrees, and that in both positions of the switch lever the crank shall stand on a dead center in its connection with the switch rails. Where this dead center is not obtained for both positions of the lever, the corners of the locking notches at the top of the stand frequently become so badly worn by jamming the lever into the notch that the safety of the construction is destroyed, and the stand, otherwise intact, has to be discarded and thrown into the scrap. Inasmuch as the connecting rod to the switch connections is necessarily at the lower end of the switch stand, to obtain the throw of one hundred and eighty degrees, it is usual to mount the connecting rod on a downwardly extending crank pin and to hold the parts in engagement by a nut and cotter pin, which are apt to work loose, allowing the connecting rod to drop away from the crank pin. A goose-neck crank shaft with upwardly projecting crank pin has not been found practical heretofore for this dead center construction by reason of the interference of the crank shaft with the connecting rod in one of the positions of the crank.

One of the objects of our invention is to provide a construction in which this liability of disconnection of the parts is entirely obviated, and this interference of the crank shaft is avoided, and it consists in that certain novel arrangement of parts to be hereinafter particularly pointed out and claimed, in which a goose-neck crank shaft is provided with an upwardly extending crank pin upon which the connecting rod is mounted, and offsets are arranged so as

to avoid interference for a throw of the crank in an arc of one hundred and eighty degrees from dead center to dead center, and at right angles to the track rails.

Another object of the invention is to provide a simple and effective driving gear construction for the target rod in which the gear shall be concealed and not exposed to the accumulation of ice or dirt, or the liability of injuring the hands of the switchmen.

In the drawings, Figure 1 is a side elevation of the upper portion of our improved switch stand construction, partly in section, with the switch lever in the middle of its throw. Fig. 2 is a similar view of the lower portion of the switch stand, with the crank shaft in one of its terminal positions. Fig. 3 is a front elevation of the upper end of the stand. Fig. 4 is an elevation of the lower end of the crank shaft. Fig. 5 is a transverse section of the crank shaft and connecting rod in one terminal position showing the eccentric adjusting device. Fig. 6 is a side elevation of the fulcrum head for the crank shaft.

The column or standard for the switch stand is indicated by 1, and is provided with an arch 2 at the base, to form with feet (not shown) a suitable support for the stand.

The usual vertical crank shaft is indicated by 4, and 5 is the vertical target rod, which is mounted in lugs 6, 7, projecting from the upper end of the standard, supported by a shoulder on the target rod and the washer 8. On the upper end of the crank shaft, secured by pin 9, is the fulcrum head 10 provided with the lateral arched cover plate 11, under which the switch lever 12 is pivoted to the fulcrum head. The switch lever is preferably slotted midway of its length to engage over one end of the laterally projecting arms 13, 14, on the switch stand, through which a padlock is passed to lock the switch lever in either of its positions. The under surface of the fulcrum head 10 is provided with teeth 15, to form a segment gear to engage the segment gear 16, secured to the target rod, by means of which connection the target rod is rotated in the usual way. This gear is a two-to-one construction, so that while the crank shaft is turned through an arc of one hundred and eighty degrees, the target rod will be given only a quarter turn.

By forming the crank shaft gear on the under surface of the fulcrum head 10, with the lug 6 provided with a depending flange to cover the target gear, these operating
 5 gears are entirely covered and concealed, and there is no liability of injury to the hands of the operator, or of the gearing becoming clogged with ice or dirt. The lower end of the crank shaft has its bearing in the
 10 arch 2 of the base and projects below the bearing. The lower end of the crank shaft is formed into a goose-neck 17, with an upwardly extending crank pin 18. Adjustably mounted on this pin is an eccentric
 15 sleeve or bushing 19, provided with a lateral flange 20 at the bottom, having a series of notches 21 in the periphery of the flange. 22 is a lug integral with the crank shaft to engage one of these notches to lock
 20 the eccentric in any desired position.

Inasmuch as the throw of the crank connections depends on the horizontal distance between the axis of the crank shaft in its bearing and the axis of the crank pin, and
 25 this distance for normal conditions cannot be changed, it was found that for crank shafts and pins of the required diameter for strength and durability there was not sufficient room for all adjustments of the eccentric. To obtain the necessary room without
 30 weakening the crank shaft or varying the required length of crank, the lower end of the crank shaft is provided with an offset or slight lateral bend at 23, so as to increase
 35 the distance between the vertical axis of the lower end of the crank shaft and the crank pin axis, and thus allowing the necessary space for adjusting the eccentric, without altering the relations of the parts.

24 is the connecting rod to the switch rails which is mounted on the eccentric sleeve and held in place by a washer 25 and cotter pin 26. By turning the eccentric before the
 40 parts are connected, so that any desired notch in its periphery will engage the locking lug 22, the throw of the connecting rod may be adjusted as desired, as will be readily understood. In order that the connecting
 45 rod in its movement shall not contact with the crank shaft, the connecting rod is bent at 27 to form an offset to allow the connecting rod to pass the crank shaft without
 50 interference.

It will be evident from the foregoing construction that, inasmuch as the crank pin of the crank shaft projects upwardly, the eccentric and the end of the connecting rod will at all times be supported by the crank shaft,
 55 and there will be no liability of the parts becoming disconnected. The locking lug for the eccentric can also be formed integral with the crank shaft, so that there is no liability of this locking part ever becoming displaced. It will also be evident that by reason of the
 60 offsets for the connecting rod and the crank

shaft, that the connecting rod may be disposed at right angles to the track structure, and that in each of the terminal positions of the switch lever, which is swung in an arc of one hundred and eighty degrees, the crank
 70 will be on a dead center, thus removing all strain when locking the lever in its notch.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. In a switch stand, a crank shaft formed with a goose-neck at its lower end, and an upwardly extending crank pin, an eccentric bushing mounted thereon, notches in the periphery of the bushing, and a lug integral
 75 with the crank shaft and extending laterally therefrom to engage the desired notch to lock the eccentric in position, with connecting rod journaled upon the bushing and supported by the crank shaft.
 80

2. In a switch stand, a crank shaft formed with a goose-neck at its lower end, and an upwardly extending crank pin, an eccentric bushing mounted thereon, with means for adjusting and locking said bushing in any
 90 desired position, said goose-neck being formed with an offset opposite the crank pin to afford space for rotary adjustment of the eccentric and a connecting rod journaled upon the eccentric and supported by the
 95 crank shaft.

3. In a switch stand, a crank shaft formed with a goose-neck at its lower end, and an upwardly extending crank pin, an eccentric bushing mounted thereon, notches in the periphery of the bushing, and a lug integral
 100 with the crank shaft to engage the desired notch to lock the eccentric in position, said goose-neck being formed with an offset opposite the crank pin to afford space for
 105 rotary adjustment of the eccentric and a connecting rod journaled upon the eccentric and supported by the crank shaft.

4. In a switch stand, a crank shaft formed with a goose-neck at its lower end, having
 110 an upwardly extending crank pin, a switch lever with locking devices therefor disposed on opposite sides of the stand to provide a throw of one hundred and eighty degrees for the lever between locking positions, with the
 115 goose-neck crank disposed at right angles to the track in each of the locking positions of the switch lever, and a connecting rod to the switch rails coupled on said crank, with the connecting rod and crank shaft formed to
 120 permit a dead center for each locking position of the switch lever.

5. In a switch stand, a crank shaft formed with a goose-neck at its lower end, having
 125 an upwardly extending crank pin, an eccentric bushing mounted thereon, with means for adjusting and locking said bushing in any desired position; a switch lever with locking devices therefor disposed on opposite sides of the stand to provide a
 130

throw of one hundred and eighty degrees for the lever between locking positions, with the goose-neck crank disposed at right angles to the track in each of the locking positions of the switch lever, and a connecting rod to the switch rails journaled on said bushing, with the connecting rod and crank shaft formed to permit a dead center for each locking position of the switch lever.

- 10 6. In a switch stand, a crank shaft formed with a goose-neck at its lower end, having an upwardly extending crank pin, an eccentric bushing mounted thereon, with means for adjusting and locking said bushing in any desired position, said goose-neck
15 being formed with an offset opposite the crank pin to afford space for rotary adjust-

ment of the eccentric, a switch lever with locking devices therefor disposed on opposite sides of the stand to provide a throw of 20 one hundred and eighty degrees for the lever between locking positions, with the goose-neck crank disposed at right angles to the track in each of the locking positions of the switch lever, and a connecting rod to the 25 switch rails journaled on said eccentric, and provided with an offset whereby a dead center is obtained for each locking position of the switch lever.

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Attest:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."