

(No Model.)

2 Sheets—Sheet 1.

W. WENDELIN.
SWITCH SETTING AND LOCKING DEVICE.

No. 513,548.

Patented Jan. 30, 1894.

Fig. 3. Fig. 2.

Fig. 1.

Fig. 4.

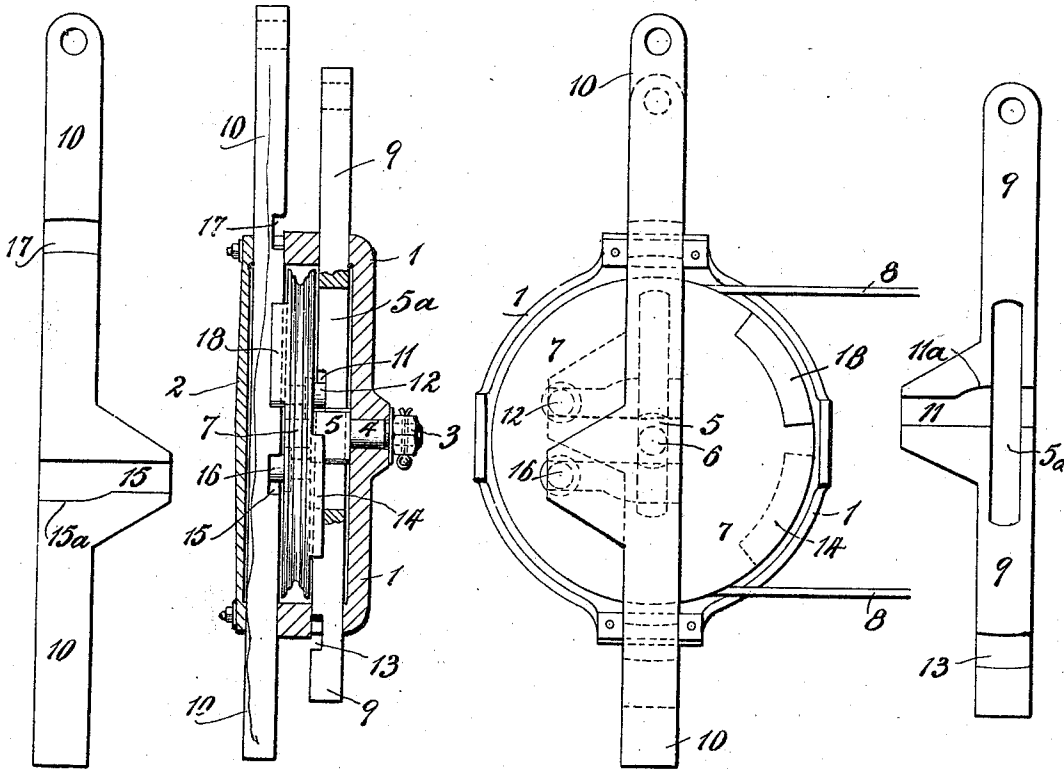
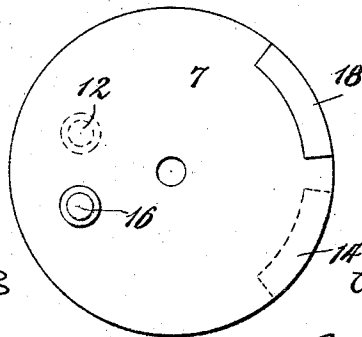


Fig. 5.



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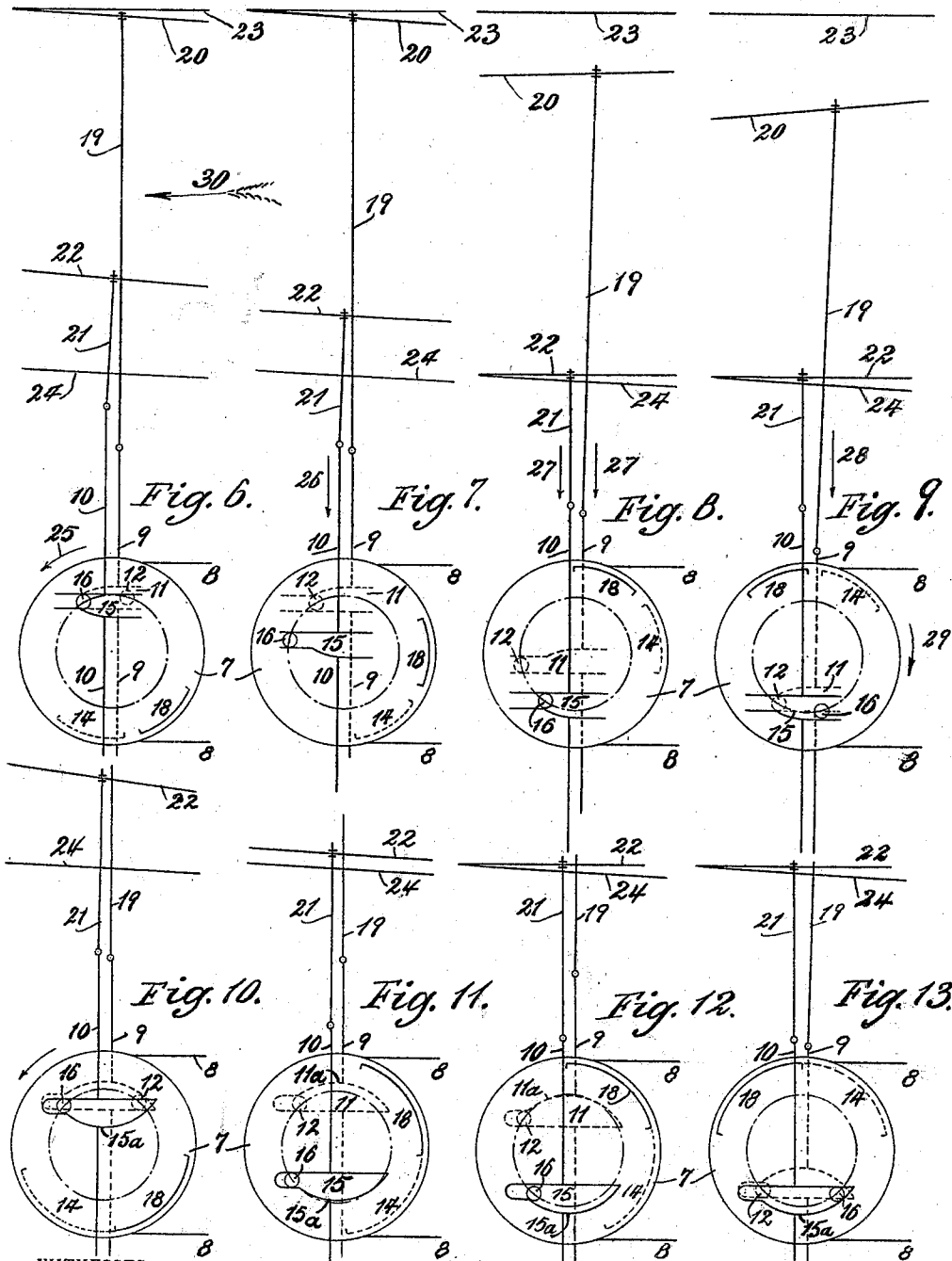
BY

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UNITED STATES PATENT OFFICE.

WOLFGANG WENDELIN, OF VIENNA, AUSTRIA-HUNGARY, ASSIGNOR TO
SIEMENS & HALSKE, OF BERLIN, GERMANY.

SWITCH SETTING AND LOCKING DEVICE.

SPECIFICATION forming part of Letters Patent No. 513,548, dated January 30, 1894.

Application filed May 12, 1893. Serial No. 474,043. (No model.) Patented in Germany December 30, 1891, No. 65,977, and in Austria-Hungary January 29, 1892, No. 46,480 and No. 76,739.

To all whom it may concern:

Be it known that I, WOLFGANG WENDELIN, a subject of the Emperor of Austria-Hungary, residing at Vienna, Austria-Hungary, have
5 invented new and useful Improvements in Switch Setting and Locking Devices, (for which I have obtained the following patents: in Germany, No. 65,977, dated December 30, 1891, and in Austria-Hungary, No. 46,480, Tom.
10 XLII, fol. 233, and No. 76,739, Tom. XXVI, fol. 136, dated January 29, 1892,) of which the following is a specification.

My invention relates to devices for setting and locking railway rail switches and has for
15 its object to provide simple, inexpensive and efficient mechanism for this purpose, which while allowing the switch to be set and locked to either one of the main line rails, will also permit the switch to be "cut open" by a pass-
20 ing train, and will also by its operation fully compensate for expansion or contraction or wear of a pull wire or chain leading from a more or less distant operating lever.

The invention will first be described and
25 then will be defined in claims hereinafter set forth.

Reference is to be had to the accompanying drawings forming part of this specification, and in which similar numerals indicate like
30 parts in the several views.

Figure 1 is a plan view of my improved switch setting and locking devices, with the casing cover removed and the parts in intermediate relative positions promoting more
35 convenient illustration. Fig. 2 is a cross-sectional view of the same. Fig. 3 is a bottom plan view of the upper draft bar. Fig. 4 is a top plan view of the lower draft bar. Fig. 5 is a top plan view of the actuating pulley.
40 Figs. 6 to 9 inclusive, are diagrams illustrating the operation of the devices shown in Figs. 1 to 5 inclusive, relatively to both switch rails and main line rails; and Figs. 10 to 13 inclusive, show relative operation with but one main
45 line and switch rail, of a modified apparatus in which the draft bars have slots of a different form from those shown in the preceding views.

A casing 1, which sustains the main oper-
50 ating parts of the mechanism and has a re-

movable cover or lid 2, is in practice held in horizontal position either between the rails of a main line track or outside of said rails, as indicated in the diagrams Figs. 6 to 13 of the drawings. At the center of the casing 1 is
55 held preferably by a nut 3 and a locking cotter pin an upright shaft 4, which has an enlarged central portion 5 flattened at opposite sides, and an upper round portion 6 which is the journal on which may turn a wheel or
60 pulley 7 over which passes the bight of a pull wire or chain 8 which leads from any approved and more or less distant pulley lever operative by a station guard or attendant for
65 drawing on the wire or chain 8, to thereby turn the pulley 7 and actuate the switch rails by means of draft bars 9, 10, which are fitted to slide in bearings of the casings 1, 2, and in a manner presently explained. The lower
70 draft bar 9 has a longitudinal slot 5^a receiving the flattened portion 5 of the shaft 4, and allowing movement of the bar thereon. At its upper face the bar, at its widened portion, has a laterally ranging slot 11 which is broadened at one end by a receding curved
75 wall 11^a. This slot receives a pin or stud 12 formed on or fixed to the under side of the pulley 7, and the bar 9 also has a transverse slightly curved notch 13 adapted at times to receive a curved marginal locking
80 lug or flange 14 on the lower face of the pulley. The draft bar 10 at the under side of its widened portion has a transverse slot 15 which is broadened at one end by a receding curved wall 15^a and receives a pin or stud 16
85 on the upper face or side of the pulley 7. This bar 10 also has a transverse notch 17 adapted at times to receive a locking lug or flange 18 on the upper face of the pulley.

Figs. 6 to 9 of the drawings show that the
90 lower draft bar 9 is coupled by a rod 19 to one switch rail or point 20, while the other bar 10 is coupled by a rod 21 to the other switch rail or point 22, said switch points being pivoted in any approved way to allow their independent lateral movement from or to the adjacent
95 corresponding main line rails 23, 24, respectively. The rods 19, 21 are coupled to the switch points 20, 22 by means of double nuts fitted on screw threads of the rods and bear-
100

ing on opposite faces of the points, thereby permitting necessary adjustments of the switch setting and locking mechanism.

I next will describe the operation of the apparatus with more special reference to Figs. 6 to 9 of the drawings as follows: With the switch points 20, 22 adjusted as in Fig. 6 and the pulley 7 turned to its extreme position in a direction the reverse of that indicated by the arrow 25, the switch point 20 will be securely locked to the main line rail 23 by the engagement of the lug 14 on the pulley 7 with the notch 13 of the bar 9, and the stud 12 on the pulley then stands at the outer end of the broadened portion of the slot 11 of said bar 9, while the pulley stud 16 has not quite left the narrower portion of the slot 15 of the draft bar 10, and this bar may now be moved endwise as it is not engaged by the locking lug 18 on the pulley. If now, the hand lever be operated by the guard at the distant station and the pulley 7 be thereby rotated by the draft cord or chain 8 in direction of the arrow 25, the draft bar 10 together with the rod 21 will immediately be moved in direction of the arrow 26 in Fig. 7, to carry the switch point 22 for a distance toward the main rail 24, but the draft bar 9 will not at once be operated or not until after the rotation of pulley 7 has carried the pulley lug 14 clear of the notch 13 of said bar 9, while the pulley stud 12 had moved along the curved wall 11^a at the broader part of the slot 11 of the bar 9, and without moving said bar endwise, but as soon as the lug 14 escapes from the notch 13, thereby unlocking the bar 9, the pulley stud 12 will enter the narrow portion of the slot 11, and at this time the parts have relative positions shown in Fig. 7 of the drawings, the switch point 20 being then unlocked but not yet removed from the main rail 23, while the other switch point is advanced by the draft bar 10 and rod 21 nearer to the other main rail 24. Further rotation of the pulley 7 will now cause its studs 12, 16, by action in the narrow portions of the respective slots 11, 15 of the bars 9, 10, to move both of said bars and consequently the rods 19, 21 and both switch points 22, 20 over together toward the main rail 24 and in direction of the arrows 27 in Fig. 8 of the drawings and until the parts have relative positions therein shown, or until the switch point 22 touches the main rail 24, and at this time the pulley stud 16 is about to enter the broader portion of the slot 15 in the draft bar 10, and the pulley lug 18 is about to enter the notch 17 of this bar. Continued rotation of the pulley 7 will enter its lug 18 into the notch 17, thereby preventing endwise movement of the draft bar 10, and locking the switch point 22 securely to the main rail 24, but allowing further endwise movement of the draft bar 9 in direction of the arrow 28 in Fig. 9, for carrying the switch point 20 still farther from the main rail 23 or to the position shown in Fig. 9 of the drawings. This final movement

of the bar 9 and rod 19 and switch point 20 is caused by the action of the pulley stud 12 in the slot 11 of bar 9, while the pulley stud 16 runs along the wall 15^a of the slot 15 of the bar 9, without effect on this bar and while the pulley stud 18 is traveling along in the notch 17 of the bar 10. It requires about one half a revolution of the pulley 7 to shift the switch points from the locked relation and positions shown in Fig. 6 to the relative positions and locked condition shown in Fig. 9 of the drawings.

The reverse action of the mechanism to reset the switch points to the condition shown in Fig. 6, will readily be understood from the above description. As the pulley 7 is rotated in direction of the arrow 29 in Fig. 9, the pulley stud 18 will be withdrawn from notch 17 of draft bar 10 as the stud 16 travels along the wall 15^a of the slot 15 of this bar; meanwhile the stud 12 moves bar 9, by action in its slot 11 to the position shown in Fig. 8, whereupon both draft bars will be moved simultaneously by the pulley studs 12, 16, until the switch point 20 strikes the main rail 23, and after the pulley lug 14 re-enters the notch 13 of bar 9 and locks the point 20 to rail 23, the switch point 22 will be carried farther over to final position by the action of the stud 16 in the slot 15 of the draft bar 10.

I specially mention the feature of construction and operation whereby after locking of either of the draft bars 9, 10 by the respective pulley lugs 14, 18, the pulley is allowed to turn still farther, while its lugs travel in the draft bar notches 13 or 17, thereby holding one of the draft bars against endwise movement after its connected switch point is locked to the adjacent main line rail, while the other draft bar is moved endwise to give final lateral movement to the other switch point. The special advantage derived from this operation is, that after either one of the pulley lugs 14 or 18 first enters the respective notches 13, 17 in the draft bars to lock said draft bars and the connected switch points, all subsequent turning of the pulley while the comparatively long lugs run in the draft bar notches may be termed an excess or surplus of movement over that actually required to lock the switch points to the main line rails, and this surplus of rotative movement is ample to fully compensate for expansion or contraction of the pull wire or chains 8, due to changes in temperature or to wear of the wires or chains by use; hence such variations in length of the pull wires or chains cannot in the least interfere with or prevent the closest possible locking of the switch points to the main line rails to assure safety of travel onto the switch or siding.

Another advantage of the construction is that, no matter to which of the two main rails 23, 24 the respective switch points 20, 22 may be locked as above described, the switch may be "cut open" without harm to the actuating

mechanism or danger of derailing the engine or cars. For instance, suppose a train on the main rails runs into the switch in direction of the arrow 30 at Fig. 6 of the drawings, the engine wheels will first force the left hand switch point 22 over toward the main rail 24, and will thereby turn the pulley 7 and carry its lug 14 around clear of the notch 13 of the draft bar 9, thereby unlocking the other switch point 20, and as the engine advances and forces the switch point 22 over farther toward the main rail 24, the pulley 7 will be turned around sufficiently to carry the extremity of the point 20 away from the other main line rail 23, before the engine wheels reach said end of the switch point 20, thus allowing the train to travel safely past the switch. Should the switch point 22 happen to be set over to the main line rail 24, the engine running in direction of the arrow 30 will first move the switch point 20 over to the right hand and then will unlock the point 22 from rail 24 and move said point away from rail 24, to allow the train to pass the switch in safety. By any such "cutting open" of the switch by a passing train, the lever at the distant station by which the pull wire or chain 8 is normally actuated will, by its movement caused by the turning of the pulley 7, be displaced or operated sufficiently to notify the switch tender or guard that the switch has been "cut open" by a train, and that he must readjust the lever to throw the switch back and lock it again to the same main line rail to permit intended safe travel to and from the side track.

In the slight modification shown in Figs. 10 to 13 of the drawings, the studs 12, 16 of the pulley 7 are farther apart and the walls 11^a and 15^a of the slots 11, 15 of the draft bars 9, 10, respectively, are larger and more deeply curved. These slots are also closed at both ends to limit semi-rotative movements of the pulley in opposite directions, and the locking lugs 14, 18 on the pulley are longer to compensate for increased length of the curved walls of the draft bar slots. The operation is substantially similar to that hereinbefore described, except that there is a greater surplus of rotative movement after its lugs 14, 18 enter the respective notches 13, 17 of the draft bars, and as will readily be understood.

Having thus described my invention, I claim—

1. In switch setting and locking devices, the combination of draft bars adapted for coupling to switch rails or points and provided with slots and notches, of a pulley having a fixed stud and lug arranged on either side thereof and adapted to enter the slots and notches in their respective draft bars, as set forth.

2. In switch setting and locking devices, the combination with draft bars adapted for coupling to switch rails or points and provided

with slots and notches, of a pulley having a fixed stud and lug on either side thereof and adapted to enter their respective slots and notches, said bar slots and pulley lugs being relatively proportioned substantially as described, whereby movement of the pulley will shift the draft bars endwise and after locking the bars will have surplus of rotative movement compensating for variations in length of the actuating wire or chain, as herein set forth.

3. In switch setting and locking devices, the combination with draft bars adapted for coupling to switch rails or points and provided with transverse slots having an outwardly curved wall and also having transverse notches, of a pulley having a fixed stud and lug arranged on either side thereof and adapted to enter the slots and notches in their respective bars, substantially as described.

4. In switch setting and locking devices, the combination with endwise movable draft bars adapted for coupling to switch rails or points and provided with transverse slots having an outwardly curved wall and also having transverse notches, of a pulley having a fixed stud and lug arranged on either side thereof and adapted to enter the slots and notches of their respective bars, said draft bar slots and pulley lugs being relatively proportioned to permit further rotation of the pulley after its lugs are locked with the draft bars, substantially as described, for the purposes set forth.

5. In switch setting and locking devices, the combination with a casing and draft bars movable endwise therein and having slots and notches, of a pulley journaled in the casing and rotating between the draft bars and provided at opposite faces with a stud and lug, said studs and lugs being adapted to the slots and notches of the draft bars, substantially as described.

6. In switch setting and locking devices, the combination with a casing and draft bars movable endwise therein and provided with transverse slots having an outwardly curved wall and also having a transverse notch, of a pulley journaled in the casing and rotating between the draft bars and provided at opposite faces with a stud and lug, said studs and lugs being adapted to the slots and notches of the draft bars, substantially as described.

7. In switch setting and locking devices, the combination with a casing and draft bars movable endwise therein and provided with transverse slots and notches, of a pulley journaled in the casing and rotating between the draft bars and provided at opposite faces with a stud and lug, said draft bar slots and pulley lugs being relatively proportional to permit further rotation of the pulley after its lugs are locked with the draft bars, substantially as described.

8. In switch setting and locking devices, the combination with a casing 1, 2, a shaft 4, 5, 130

6, therein, draft bars 9, 10 sliding in the casing and having transverse slots 11, 15 and notches 13, 17 respectively, a pulley 7 on the shaft and provided at opposite faces with
5 studs and lugs 16, 18 and 12, 14, and a draft wire or chain on the pulley 7, the whole adapted for operation relatively to switch rails or points, substantially as described.

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

WOLFGANG WENDELIN.

Witnesses:

A. SCHLESSING,
JOSEF SCHETNER.