F. B. WIEGAND.

CIRCUIT CONTROLLER.

APPLICATION FILED NOV. 23, 1915.

1,233,531. Patented July 17, 1917.

FIG. 2

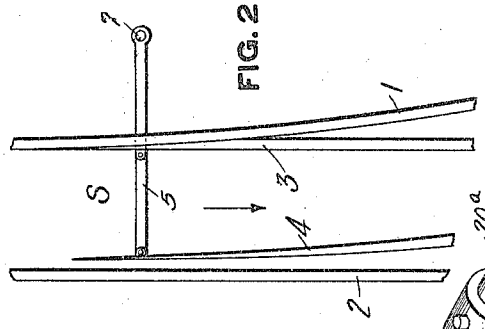
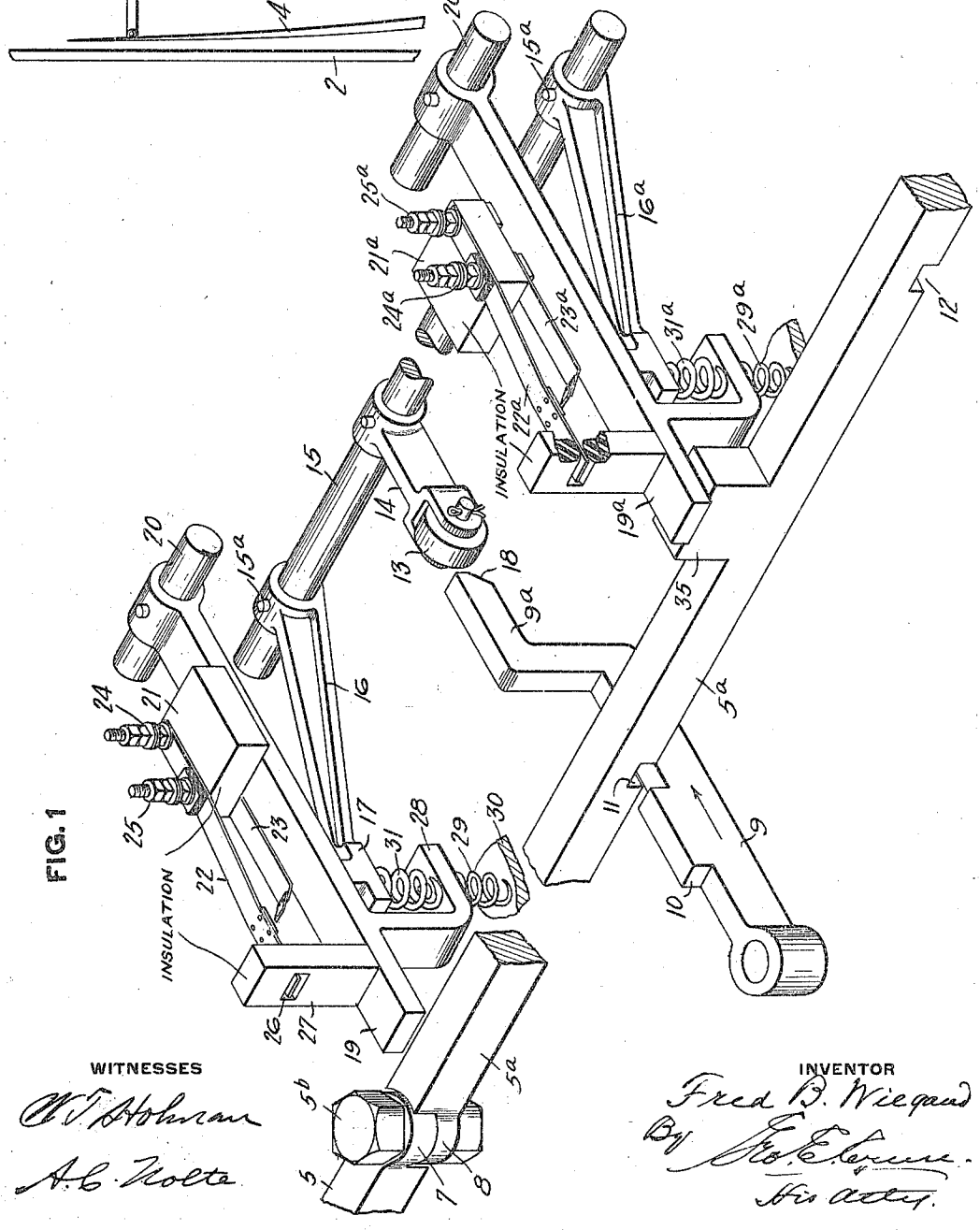


FIG. 1



WITNESSES

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FRED B. WIEGAND, OF CLEVELAND, OHIO, ASSIGNOR TO THE UNION SWITCH & SIGNAL COMPANY, OF SWISSVALE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

CIRCUIT-CONTROLLER.

1,233,531. Specification of Letters Patent. Patented July 17, 1917.

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To all whom it may concern:

Be it known that I, FRED B. WIEGAND, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Circuit-Controllers, of which the following is a specification.

My invention relates to circuit controllers; more particularly it relates to controllers of the type used for the control of the indication circuits of a switch or other railway traffic controlling device.

I shall describe one form of circuit controller embodying my invention and then point out the novel features thereof in claims.

In the accompanying drawings, Figure 1 is an isometric view, partly diagrammatic, showing one form of circuit controller embodying my invention. Fig. 2 is a diagrammatic view showing a railway switch adapted to operate the circuit controller shown in Fig. 1.

Similar reference characters refer to similar parts in both views.

Referring first to Fig. 1, I have here shown stationary terminal boards 21 and 21ª mounted in a suitable casing inclosing the entire mechanism, which casing for sake of simplicity is omitted from the drawing. Contact fingers 22 and 23 are mounted on the terminal board 21 and connected to terminal posts 24 and 25 respectively in such manner that each finger and its corresponding terminal post is insulated from the other finger and terminal post. Contact fingers 22ª and 23ª are mounted in similar manner on terminal board 21ª and connected to terminal posts 24ª and 25ª. To bring fingers 22 and 23 into contact and establish thereby electrical connection between the corresponding terminal posts, I provide a lever 19 pivoted at one end on a shaft 20 so that its other end is free to move up and down. A block 27 mounted on this lever is provided with a transverse slot 26 into which the free end of contact finger 22 is inserted. It follows from this construction that as lever 19 is moved up and down, contact finger 22 is brought out of and into engagement with finger 23. In other words, the circuit from terminal post 24 to terminal post 25 is controlled by the up and down movements of lever 19. Similarly, the circuit between terminal posts 24ª and 25ª is controlled by the up and down movements of a lever 19ª pivoted on a shaft 20ª. Although for simplicity I have shown only one pair of contact fingers mounted on each terminal board, it is understood that any desired number and arrangement of contact fingers may be used. As here shown, contact fingers 22 and 23 are biased to the open position by means of a spring 29 which is mounted on a stationary member 30 (such as the controller casing) and engages at its upper end an extension 28 on the under side of lever 19, so that the lever is normally held in its upper position. Similarly contact fingers 22ª and 23ª are normally held open, because lever 19ª is biased to its upper position by a spring 29ª. By making the contact fingers of strong resilient material, springs 29 and 29ª may be dispensed with and the contact fingers relied upon to hold these contacts normally open. To effect a downward movement of the levers I provide a shaft 15 to which crank arms 16 and 16ª are rigidly fixed by pins 15ª. Crank arm 16 is normally held in the position shown by means of a spring 31, which is mounted on extension 28 of lever 19 and at its upper end bears against the free end 17 of crank 16. Spring 31 is stronger than spring 29 and presses the end of crank 17 firmly against the lower surface of lever 19. If shaft 15, therefore, is turned counter-clockwise, crank 16 tends to compress spring 31. This spring transmits this force to spring 29, which, being weaker than spring 31 yields, so that lever 19 follows the downward movement of crank 16. In doing so, lever 19 depresses contact finger 22, causing it to engage finger 23. When the force whereby shaft 15 has been turned counter-clockwise is removed, spring 29 again expands and returns lever 19, crank arm 16 and shaft 15 to their initial position. The upward movement of lever 19 causes contact finger 22 to break contact with finger 23 and resume the position in which it is shown in the drawing.

Crank arm 16ª is similarly connected by a spring 31ª to lever 19ª, so that the same turn of shaft 15 tends to cause the same operation of contact 22ª—23ª, although in the position of the mechanism shown in the drawing this operation of the contacts is prevented by a block 35 under the free end

of lever 19. Block 35 prevents the downward movement of lever 19ª, so that crank 16ª which is constrained to follow the movement of shaft 15 because it is pinned thereto, compresses spring 31ª. Since lever 19ª remains stationary, contact 22ª—23ª is not closed in spite of the counter-clockwise turn of shaft 15. Block 35 may be moved under lever 19 as I shall describe hereinafter, so that the closure of contact 22—23 may be prevented in similar manner.

To summarize, a counter-clockwise turn of shaft 15 tends to close both contacts. It is possible, however, to prevent closure of one or the other of the contacts by obstructing, by means of block 35, the movement of the lever (19 or 19ª) which controls the respective contact.

I shall now describe one form of apparatus for governing the movements of shaft 15 and block 35, but it is understood that I do not wish to be limited to any particular form of apparatus for governing these movements.

Referring now to Fig. 2, I have here shown a railway switch S comprising stock rails 1 and 2 and movable switch points 3 and 4. By means of a switch operating mechanism, not shown on the drawing, the switch points may be moved from the normal position, in which they are shown, to the reversed position wherein switch point 4 closes against stock rail 2, so that traffic proceeding over the switch in the direction of the arrow is diverted from the straight track to the siding. Reference character 5 designates a lock rod rigidly secured to points 3 and 4, which rod may be locked, as described below, in one position or another according as the switch is in the normal or the reversed position. Rod 5ª (Fig. 1) is adapted to be connected to lock rod 5 by suitable means such as a bolt 5ᵇ through eyes 7 and 8 on rods 5 and 5ª respectively. Rod 5ª is constrained by slide bearings (not shown on the drawing) to move longitudinally with rod 5 when the switch points are operated from one position to the other.

Reference character 9 designates a locking rod or plunger which may be reciprocated at right angles to the direction of motion of lock rod 5ª in slide bearings omitted from the drawing for the sake of simplicity. I have not shown any mechanism for operating plunger 9, but it is understood that plunger 9 may be reciprocated either manually or by part of the operating mechanism of switch S. A dog 10 on the upper side of plunger 9 is adapted to enter a notch 11 or 12 in the lower face of lock rod 5ª. When rod 5ª is in its extreme right position, *i. e.* when the position of the switch is normal, notch 11 is opposite dog 10 as shown, so that plunger 9 may be moved in the direction of the arrow because dog 10 will enter notch 11. The engagement of dog 10 and notch 11 prevents longitudinal motion of rod 5ª, thus locking the switch points in the normal position. When plunger 9 is withdrawn, dog 10 leaves notch 11, so that rod 5ª is unlocked. The switch points may now be operated to the reversed position. If a complete reversal of the switch is effected, rod 5ª is drawn to the left through its entire stroke, so that notch 12 is brought into the position formerly occupied by notch 11. Consequently, when plunger 9 is reinserted, dog 10 will enter notch 12 and will lock rod 5ª and switch S in the reversed position. If the above switch movement had not been completed, the lock rod 5ª would not have been moved through its entire stroke and notch 12 would not have been brought opposite to dog 10. In that case, plunger 9 could not have been inserted to the full extent, because the movement of dog 10 would have been obstructed by the side of the lock rod.

The end of plunger 9 is shaped into a finger 9ª, which is adapted to engage a roller 13 mounted in the bifurcated end of a crank 14 which is pinned to shaft 15. When the movement of plunger 9 is unobstructed, the beveled tip 18 of finger 9ª engages roller 13 and forces it to roll to the under side of finger 9ª. In this manner roller 13 is depressed so that shaft 15 is turned in counter-clockwise direction, causing operation of the contacts as described hereinbefore.

Block 35 is so mounted on rod 5ª that, when the switch is in its normal position block 35 is under the end of lever 19ª and when the switch is in its reversed position block 35 is under lever 19. In other words, one contact is operated when the switch is being locked in one position whereas the other contact is operated when the switch is being locked in the other position. Neither contact can be operated when the switch is intermediate these positions for, as explained hereinbefore, it is then impossible to perform a complete stroke of plunger 9 because dog 10 is obstructed by the side of lock rod 5ª.

Any desirable circuits may be controlled by the contacts. For example, these contacts may be used for the control of the so-called indication circuits of the switch whereby the operator is informed whether or not the switch has been locked in one or the other position. Again, these contacts may be used for the control of the circuits for signals governing traffic over the switch. I have not shown any circuits governed by the controller because these circuits are well known in the art and do not form a part of my invention.

Although I have herein shown and described only one form of apparatus embodying my invention, it is understood that

various changes and modifications may be made therein within the scope of the appended claims without departing from the spirit and scope of my invention.

Having thus described my invention, what I claim is:

1. In combination, a railway traffic control apparatus, locking means therefor comprising a lock rod and a locking plunger, a contact, means controlled by the plunger for operating the contact, and means controlled by the lock rod for preventing the operation of said contact.

2. In combination, means for the control of railway traffic, locking means therefor comprising a lock rod and a locking plunger, a contact biased to one position, resilient means controlled by said plunger for operating said contact to another position, and means controlled by said lock rod for preventing operation of said contact.

3. In combination, means for the control of railway traffic, locking means therefor comprising a lock rod and a locking plunger, two contacts each biased to one position, resilient means controlled by said plunger for operating the contacts to another position, and means controlled by said lock rod for preventing the operation of one or the other of said contacts.

4. In combination, means for the control of railway traffic, locking means therefor comprising a lock rod and a locking plunger, two contacts each biased to one position, a member controlled by said plunger for operating said contacts to another position, yielding means interposed between said contacts and said member, and means controlled by said lock rod for preventing the operation of one or the other of said contacts.

5. In combination, means for the control of railway traffic, locking means therefor comprising a lock rod and a locking plunger, two contacts, resilient means for biasing said contacts to one position, stronger resilient means controlled by said plunger for operating said contacts to another position, and means controlled by said lock rod for preventing the operation of one or the other of said contacts.

6. In combination, a railway traffic controlling device, two contacts each biased toward one position, means for operating each contact in opposition to its bias, said means including a yielding connection with each contact, and means connected with said traffic controlling device for preventing the operation of one or the other of said contacts according as said device occupies one position or another.

7. In combination, a railway traffic controlling device, two contacts each biased toward one position, means for operating each contact in opposition to its bias, said means including a yielding connection with each contact, and means connected with said traffic controlling device for preventing the operation of one or the other of said contacts according as said device occupies one position or another and for preventing the operation of either contact by said operating means unless said traffic controlling device occupies one of said positions or the other.

8. In combination, a railway traffic controlling device, a lock rod connected therewith, a plunger coacting with said lock rod to lock said device in one position or another, two contacts each biased toward one position, means interposed between said plunger and said contacts and tending to operate each contact in opposition to its bias when said plunger is shifted to the locking position, said means including a yielding connection for each contact, and means associated with said lock rod for preventing the operation of one contact or the other according as said device occupies one of said positions or the other.

9. In combination, a railway traffic controlling device, a lock rod connected therewith, a plunger, means associated with said lock rod and with said plunger for locking said device in one position or another and for preventing movement of said plunger to its locking position unless said device occupies one of said positions or the other, two contacts each biased toward one position, means interposed between said plunger and said contacts and tending to operate each contact in opposition to its bias when said plunger is shifted to the locking position, said means including a yielding connection for each contact, and means associated with said lock rod for preventing the operation of one contact or the other according as said device occupies one of said positions or the other.

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

FRED B. WIEGAND.

Witnesses:
L. O. Biddle,
W. M. MacKay.

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