

(No Model.)

2 Sheets—Sheet 1.

C. A. SCOTT.

RAILWAY SWITCH CIRCUIT CLOSER.

No. 292,687.

Patented Jan. 29, 1884.

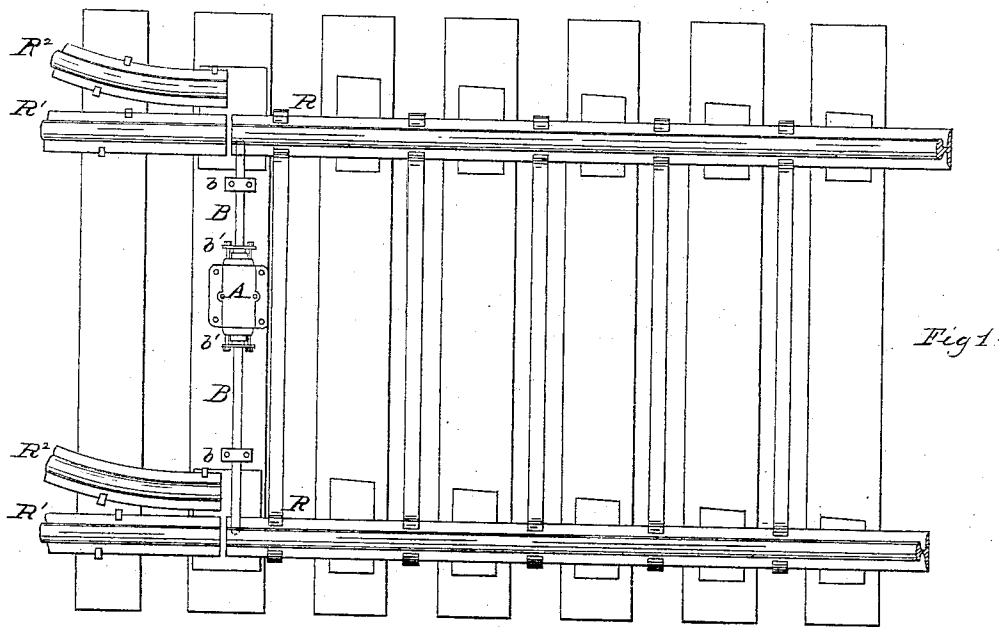


Fig. 1.

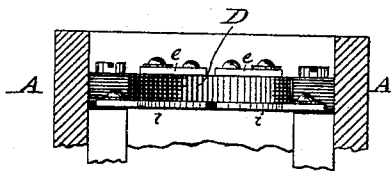


Fig. 4.

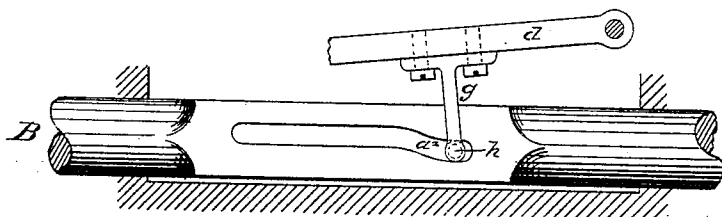


Fig. 5.

Witnesses.

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Inventor. Charles A. Scott,

By Attorney. George H. Christy

(No Model.)

2 Sheets—Sheet 2.

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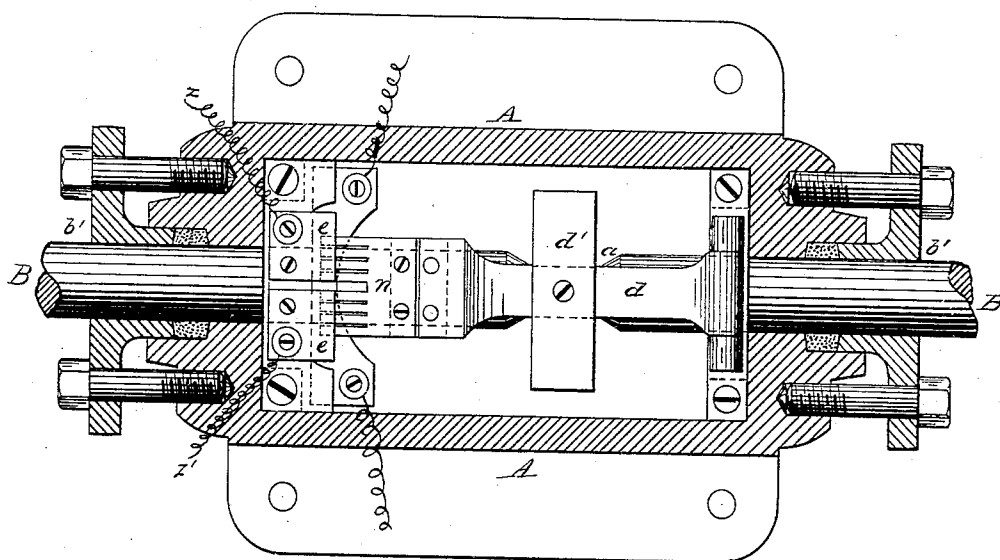


Fig. 2.

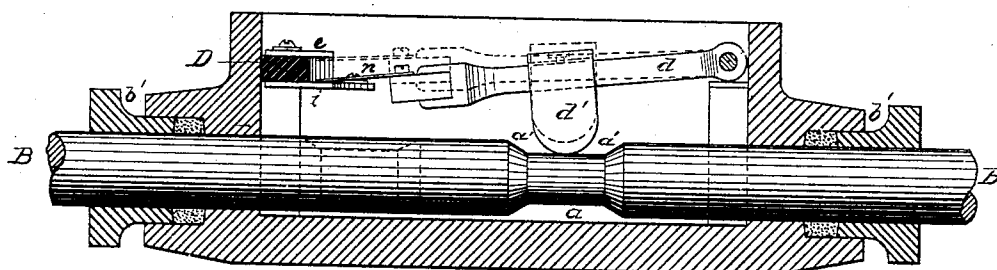


Fig. 3.

Witnesses.  
R. A. Whittlesay  
C. M. Clarke

Inventor. Charles A. Scott,  
By Attorney. George A. Christy

# UNITED STATES PATENT OFFICE.

CHARLES A. SCOTT, OF BOSTON, MASSACHUSETTS.

## RAILWAY-SWITCH CIRCUIT-CLOSER.

SPECIFICATION forming part of Letters Patent No. 292,687, dated January 19, 1884.

Application filed April 16, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. SCOTT, a citizen of the United States, residing at Boston, county of Suffolk, State of Massachusetts, have invented or discovered a new and useful Improvement in Railway-Switch Circuit-Closers; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1, Sheet 1, is a plan view of a railway-switch, illustrating the manner of applying my present improvements thereto. Fig. 2, Sheet 2, is a plan view of the circuit-changing apparatus to an enlarged scale, the cover of the box or case in which it is inclosed being removed. Fig. 3 shows in elevation a vertical longitudinal section of Fig. 2; and Figs. 4 and 5, Sheet 1, represent views presently to be explained.

In systems of railway switches and signals it is sometimes important to combine the movable switch-rails with some appliances such that the shifting of the rails shall automatically cause the setting of one or more signals by which to govern train movements or to do other work in the operation of the road—such as to ring a bell, work an annunciator, or lock some other movable device in position corresponding to the then position of the switch. This result, broadly considered, is not new. The movable rails of a switch have been caused to operate an electric circuit-changing mechanism, so that a circuit was made or broken automatically as the switch-rails were moved one way or the other. My present invention relates to an improved construction of circuit-changing or circuit make-and-break mechanism, through the agency of which, in the manner indicated, to do the work above referred to, or other like work on or along a railway-line.

In Fig. 1, R may represent the movable rails of a switch of any desired construction; R', the main-track rails leading to a siding or branch line, R<sup>2</sup>. A longitudinally-reciprocating rod or stem, B, working through suitable end guides, b, and stuffing-box or other guides, b', in the ends of the box A, is connected at

its ends with the movable switch-rails R in the manner common in switch-bridle connections or otherwise, though for operative purposes it is sufficient if it abuts at its ends against the web of the rails, as shown, so as to receive an end movement or thrust as the rails are shifted one way or the other in the normal operation of the switch. This stem passes through a box, A, which is properly secured, say, to a cross-tie, and on that part which plays in the box I make a groove or reduced neck, a. Inside the box I pivot a vibrating arm, d, and secure thereon a weight, d', in such position that its lower end may, when the rails R R are in one position, enter the groove a, as illustrated by full lines in Fig. 3, and when the rails R R are shifted to the other position and the rod A is consequently moved endwise, such weight, riding up the incline a' at the end of the groove a, will raise the vibrating arm d to the position shown in dotted lines, Fig. 3.

In the end of the box A opposite the free end of the vibrating arm d, I secure a block, D, of insulating material, and on its upper side affix two contact-plates, e e, which constitute the terminals of the wires z z' of an electric circuit, and on the under side of the block D, I secure two similar plates similarly located or arranged, and more particularly shown in Fig. 4, which represents an end view of the block D and its contact-plates, and these two lower plates, i i, constitute the terminals of another circuit in like manner as the wires z z'. Each of these circuits may lead off through a suitable battery to an electro-magnet, through the action of which, by suitable mechanism, any desired work may be done—such as the setting or shifting of signals, the working of an alarm-bell or an annunciator, or a locking device—mechanism suitable for such and other kindred purposes being already well known in the art. The contact-plates e i project forward a little beyond the front edge of the block D, as illustrated in Figs. 3 and 4, and a metallic plate, n, secured through proper insulation to the end of the vibrating arm d, is caused to play or move up and down in the space thus provided, and the parts are so proportioned and connected that when the weight d' is down in the groove a the plate n

will be in contact with the two lower terminals, *i*, and will make electrical connection from one to the other, and so close the circuit through the wires thereof, and the circuit through the wires *z z'* will be broken. But when the stem A is by the switch motion shifted so as to cause the weight *d'* to ride up out of the groove *a*, then the plate *n* will clear the lower contact-terminals, *i i*, so as to break the circuit through the wires thereof, and will make contact with the upper pair of terminals, *e e*, and thereby will close the circuit through the wires *z z'*. The plate *n* is preferably made of spring metal, and with its end in brush form, as shown, so that it may certainly make contact either way and a little in advance of the end of the movement of the arm *d*.

In the preferred organization of this apparatus in or as a part of a signaling system the movement which shifts the rails R R to the siding should break the circuit, the signal of which governs the movement of the incoming or expected train; hence that signal should go to "danger" (say as a result of breaking its circuit) as soon as the main line of track is broken, and should not be set to "safety" (as by the reclosing of its circuit) until the main-line track is restored, or substantially so. To insure this operation in the mechanism described, I make the incline *a'* of the groove *a* at such point that it will operate the circuit-changing mechanism *n* one way as soon as or immediately after the rails R R begin their movement from the main-line position, and will move such circuit-changing mechanism back again or permit it to move back only when the rails R R come back to or nearly to their main-line position. But as regards the motion of the vibrating arm *d*, the same result may be secured by the use of a rod, wrist, and slot, as illustrated in Fig. 5, where the rod *g* and wrist *h* are the mechanical equivalent of the weight, and the incline *a''* of the slot is the equivalent of the incline *a'* of the groove *a*. Other like modifications, which embrace mechanical equivalents and retain substantially the operation described, are included herein.

The use of two circuits and two pairs of terminals *e* and *i* is not essential, as one circuit and one pair may be omitted, while, on the other hand, other pairs of terminal plates may be added for additional circuits, and additional circuit-changers, similar to *n*, may be affixed to the arm *d*, so as to make and break one or more other circuits, as may be desired.

The stem A is made of cylindrical or rod form by preference, with the groove *a* extending around it, as it is easily made and may be put in without regard to which side is up; but, if preferred, a bar, flat or other desired form, may be used, with substantially such a groove on one side only, and by such a groove I mean one that will do the work referred to in substantially the manner set forth; also, the rod B may be affixed to one of said rails, so as to move therewith without necessarily extending to the other, provided it be long enough to extend into the box and operate the movable arm *d*.

I claim herein as my invention—

1. The cylindrical rod B, having a groove, *a*, extending around it, such groove terminating in inclines *a'*, in combination with a pivoted arm, *d*, a circuit make-and-break contact-piece on said arm, and one or more pairs of circuit-terminals, substantially as set forth.

2. An incline, *a'*, arranged on rod B with relation to the rails R, from which the rod B takes its motion, and with relation to the circuit make-and-break mechanism, to which its motion is transmitted, substantially as described, with reference to breaking the circuit at the beginning of the rail movement from main line to siding, and restoring such circuit only at the end of the reverse movement, in the manner set forth.

In testimony whereof I have hereunto set my hand.

CHARLES A. SCOTT.

Witnesses:

JOHN V. YOUNG,  
STEPHEN W. TROWBRIDGE.