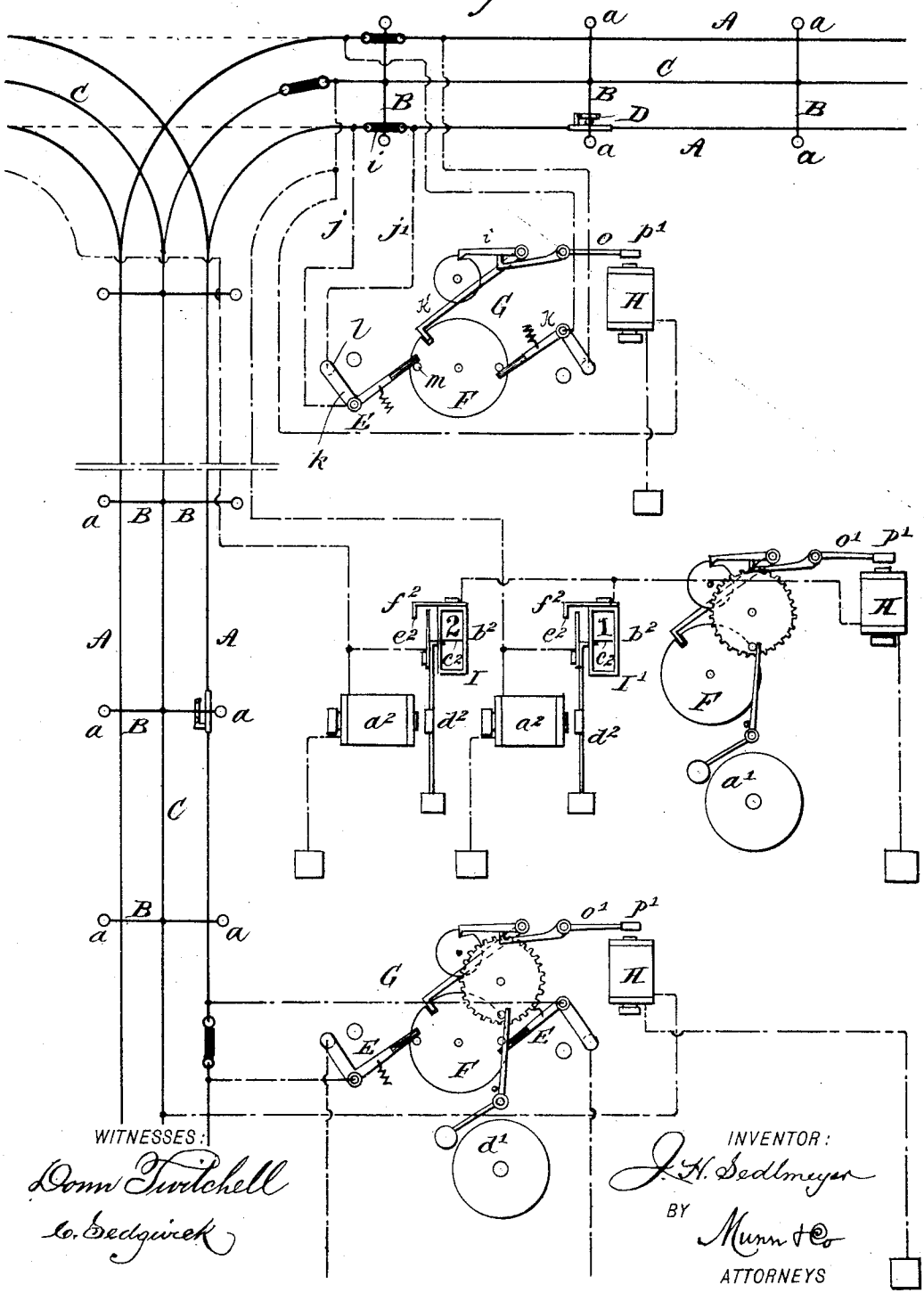
(No Model.) 2 Sheets—Sheet 1.

J. H. SEDLMEYER.

SAFETY DEVICE FOR ELECTRIC WIRES.

No. 457,374. Patented Aug. 11, 1891.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

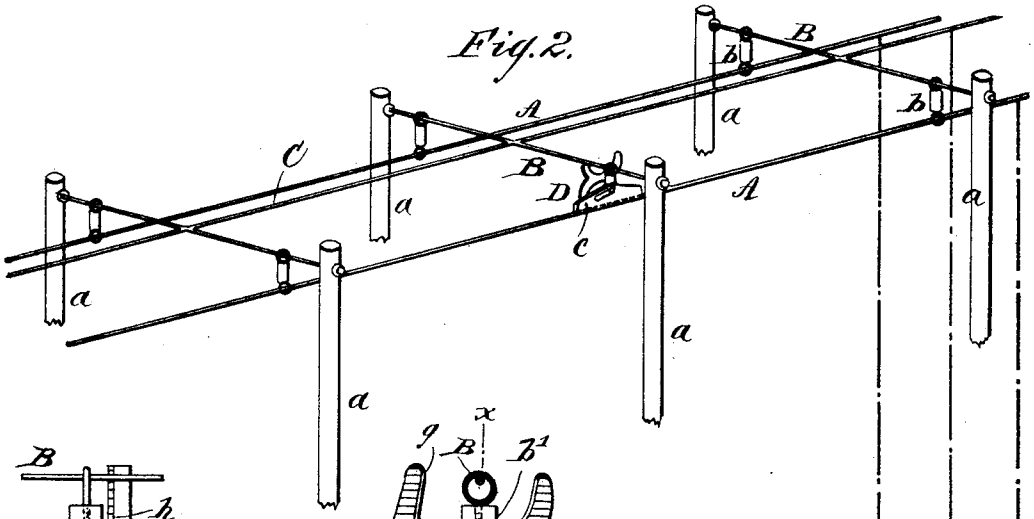


Fig. 4.

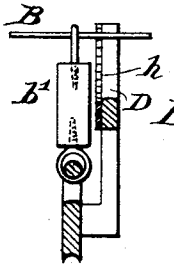
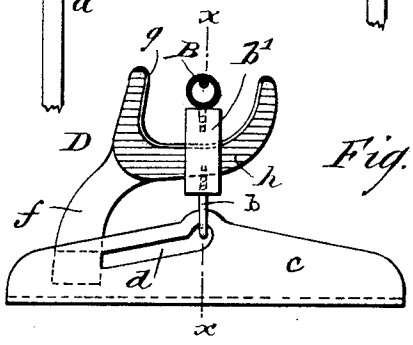
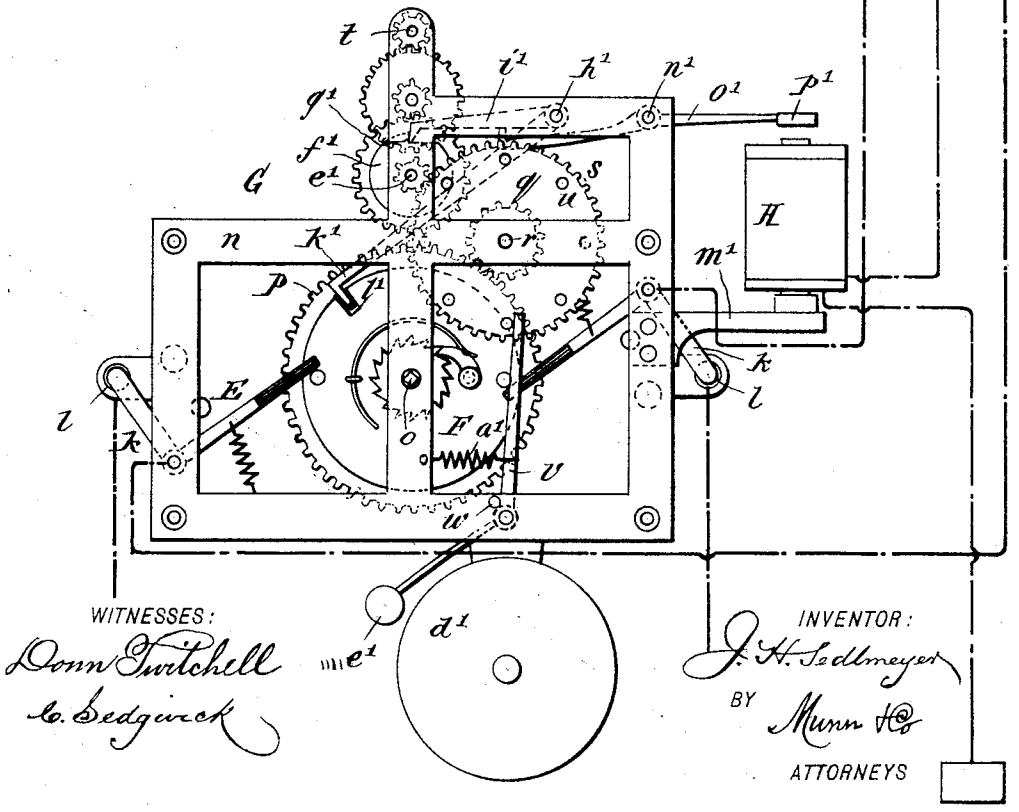


Fig. 3.





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UNITED STATES PATENT OFFICE.

JOHN H. SEDLMEYER, OF JOHNSTOWN, PENNSYLVANIA.

SAFETY DEVICE FOR ELECTRIC WIRES.

SPECIFICATION forming part of Letters Patent No. 457,374, dated August 11, 1891.

Application filed October 23, 1890. Serial No. 369,098. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. SEDLMEYER, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and Improved Safety Device for Electric Wires, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a diagrammatic view of the mechanism and circuits embodying my invention. Fig. 2 is a side elevation of the switch and the alarm mechanism, showing the line-wires and their supports in perspective. Fig. 3 is a side elevation of one of the circuit-closers; and Fig. 4 is a vertical transverse section taken on the line $x\,x$ of Fig. 3.

The object of my invention is to provide a simple and effective apparatus for giving an alarm at the power station when the line-wire is broken or is crossed by another wire falling upon it.

My invention consists in the construction and combination of parts, hereinafter fully described and claimed.

My invention is designed more particularly for application to the overhead wires of electric railways driven by the trolley system; but I do not confine myself to this application as it is equally applicable to electric-light wires.

The line-wires A are supported from the poles a by cross-wires B and the insulating-supports b. A guard-wire C extends the entire length of the line and is supported above and between the wires A, where two conductors are employed or immediately over the conductor where only a single one is employed.

Upon each conductor A below the cross-wire B is placed at suitable intervals a circuit-closer D, provided with a shoe c, which is secured upon the conductor. In the shoe is formed a slot d for receiving the loop b of insulating-support b', which is suspended from the cross-wires B. To the shoe is attached a forked arm f, having an exposed metallic surface g within the fork and furnished with an insulating-coating h upon the side adjoining the insulating-support d to prevent any electric contact of the said fork with its supports. Should the conductor A be broken upon either side of the circuit-closer D, the tilting of the closer caused by such breakage would complete an electrical connection between the fork f and the cross-wire B.

The side conductor A is divided into sections, which are insulated from each other electrically by the insulating-strips i, and with these sections of the conductor are connected wires $j\,j'$, which lead to the switch E of the power-station. The switch E is provided with a right-angled switch-lever k, the shorter arm of which is capable of making an electrical contact with the point l. The wire j communicates with the pivot of the switch-lever k, and the wire j' is connected electrically with the contact-point l. The longer arm of the switch-lever k is provided at its extremity with an insulating-covering, and is supported normally in a position to complete the electric circuit between the wires j j', as shown in Fig. 1, by a lug m, projecting from the face of the wheel F of the clock mechanism G. The clock mechanism G consists of a frame n, in which is journaled a shaft o, carrying the wheel F, the said shaft being provided with a propelling-spring or cord and weight in the usual way. Upon the shaft o is mounted a spur-wheel p, which engages a pinion q on the shaft r, journaled in the frame n. The shaft r carries a spur-wheel s, which drives the fan-wheel shaft t through intermediate gearing, as shown. Studs u, projecting from the side of the wheel s, engage the bell-hammer lever v, the said bell-hammer lever being normally against the limit-pin w by a spring a'. The lever v is provided with a hammer c', which is capable of striking the bell d'.

Upon the shaft e' of the fan-driving gearing is mounted a wheel f', provided with a notch g' in its periphery. In the frame n is journaled a rock-shaft h', which carries an arm i', adapted to drop into the notch g' of the wheel f', also an arm k', provided with an angled end capable of dropping into the notch l' in the periphery of the wheel F.

On an arm m', projecting from the frame n, is mounted an electro-magnet H, and in the frame m is journaled a rock-shaft n', to which is attached the armature-lever o, carrying at its outer end an armature p', which is within

the influence of the magnet H. The opposite end of the armature-lever *o* is bent upward and adapted to engage the arm *i'*.

The operation is as follows: When a wire falls across the guard-wire C and either of the conductors A, a circuit is completed through the guard-wire, thus closing the circuit of the magnet H of the circuit-breaking mechanism G. This results in the drawing down of the armature *p'* and the tilting of the lever *o'*, thus lifting the dog *i'* from the notch in the wheel *f'*, at the same time lifting the angled end of the arm *k'* from the notch *l'* in the disk F. The train of gearing being thus liberated, its wheels are made to rotate by its driving spring or weight, the angled switch-levers E are released from the studs *m* in the disk F, and the springs attached to the switch-arms cause the switch-arms to turn on their pivots and break the main circuit by removing the arms *k* from the contact-points *l*, thus removing all danger from the crossed wires. The main circuit remains open until the wires are returned to their normal position. Notice is given at the dynamo-station by the ringing of the bell *d'* by the further movement of the tram of gearing, and the particular section of the conductor which is disarranged is indicated by one of the annunciators I I' at the dynamo-station. Each instrument G is capable of controlling two sections of the main conductor; but one annunciator is required for each section. Each annunciator is provided with an electro-magnet a^2, one terminal of which is connected with the wire leading to the safety-wire C, the other with the ground. In a frame b^2 is arranged a drop c^2, which is held in an elevated position by the angled end of the armature-lever d^2 of the magnet a^2. The armature-lever d^2 carries a contact-piece e^2, which is capable of making electrical contact with a bent finger f^2, projecting from the frame b^2. The armature-lever d^2 is connected electrically with the wire leading to the magnet a^2, and the frame b^2 is connected electrically with the magnet H of the circuit-breaking instrument, so that as soon as the annunciator-drop is released the circuit is closed through the magnet H, thus releasing the circuit-breaking mechanism.

It is obvious that the circuit-breaking instrument G may be made without the bell-ringing mechanism and connected with the guard-wire and the main conductors by means of short electrical connections, the apparatus being located near to conductors and housed to protect from injury. The annunciators and bell-ringing mechanism will be used only at dynamo-stations. In the case of the breaking of one of the main conductors A, the dropping of the end of the conductor tilts the circuit-closing fork D, bringing into contact with the cross-wire B when the circuit-closing mechanism of the annunciator and alarm are operated in the manner before described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the main conductor or line-wire, of a normally-dead conductor parallel therewith, a clock mechanism, a spring-retracted switch-lever connected with the line-wire and held in engagement with its contact-point by said clock mechanism, a detent-lever forming part of the clock mechanism, an armature-lever engaging said detent to release it, and an electro-magnet for operating the said armature and electrically connected with the normally-dead wire, substantially as set forth.

2. In a safety appliance for electrical conductors, the combination, with the main conductor, of an auxiliary normally-dead conductor arranged parallel with the main conductor, supporting cross-wires connected electrically with the normally-dead conductor, and a tilting circuit-closer connected with the main conductor and adapted to close the circuit with the supporting cross-wire by contacting therewith when tilted in either direction, substantially as specified.

3. In a safety appliance for electrical conductors, the combination of the auxiliary conductor C, the cross-wires B, the main conductor A, the fork D, connected electrically with the main conductor, and the insulating-suspender *b'*, substantially as specified.

4. In an apparatus of the character described, the switching mechanism comprising a frame, a clock mechanism therein provided with a wheel having a pin on its face and with connected detent-levers *i' k'*, a spring-retracted switch-lever E, pivoted in said frame and having an insulated inner end in the path of said pin, a contact-point with which the opposite end of said lever is normally held in contact against the action of its spring by said pin, an armature-lever to release the detent-lever, and an electro-magnet to operate the armature-lever, substantially as set forth.

5. In an apparatus of the character described, the switching and alarm mechanism comprising a frame, a clock mechanism mounted therein and provided with laterally-projecting pins on two of its wheels, and detent-levers, two angular spring-retracted switch-levers pivoted at their angles at opposite sides of the frame and having insulated inner ends in the path of the pins of one of said wheels, contact-points normally engaged by the opposite ends of said levers, a bell having a hammer-arm projecting into the path of the pins on the other wheel, an armature-lever for raising said detent-levers, and an electro-magnet for operating the armature-lever, substantially as set forth.

6. The combination, with the main conducting-wire formed in insulated sections and a parallel guard-wire, of an angle switch-lever electrically connected at its axis with the wire at one side of its insulator, a contact-point electrically connected with said main wire at

the opposite side of its insulator and in the path of the short arm of the lever, a spring for disengaging said arm from the contact-point, a clock mechanism having a pin on one of its wheels to engage the insulated end of the long arm of the lever and hold its short arm on the contact-point, an armature-lever to release the clock mechanism, and an electro-magnet to operate the armature-lever and in electrical connection with the guard-wire, substantially as set forth.

7. The combination, with the main conductor and the guard-wire, both in insulated sections, of an annunciating and a signaling mechanism both in electrical connection with two sections of the guard-wire, an electro-magnet for releasing the alarm, a switch-mechanism having an angle switch-lever connected with one section of the main conductor, a contact-point connected with the adjacent section of the main conductor, a spring to retract the lever from the contact-point, mechanism for holding the lever in contact with said contact-point, an armature-lever for actuating said mechanism to release the switch-lever, and an electro-magnet for operating the armature-lever and connected with the guard-wire, substantially as set forth.

8. In an electric safety apparatus, a circuit-closer D, comprising the shoe *c*, the upwardly-projecting forked arm *f*, and the insulating support *b'*, loosely connected with the foot, extending upward alongside of the fork and having an eye or loop at its upper end, substantially as set forth.

9. In an electric safety apparatus, a circuit-closer D, comprising the foot *c*, having an inclined slot *d*, and an upwardly-projecting fork *f*, having an insulated side surface *h*, and a metallic surface *g* to contact with a cross-wire, and an insulating support *b'* having an eye at its lower end engaging the slot *d*, and an eye at its upper end between the arms of the fork, substantially as set forth.

JOHN H. SEDLMEYER.

Witnesses:
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MARTEIN DEINEHEARD.