E. V. HARTFORD.

IMPULSE SENDER.

APPLICATION FILED JAN. 22, 1914.

1,316,574. Patented Sept. 23, 1919.

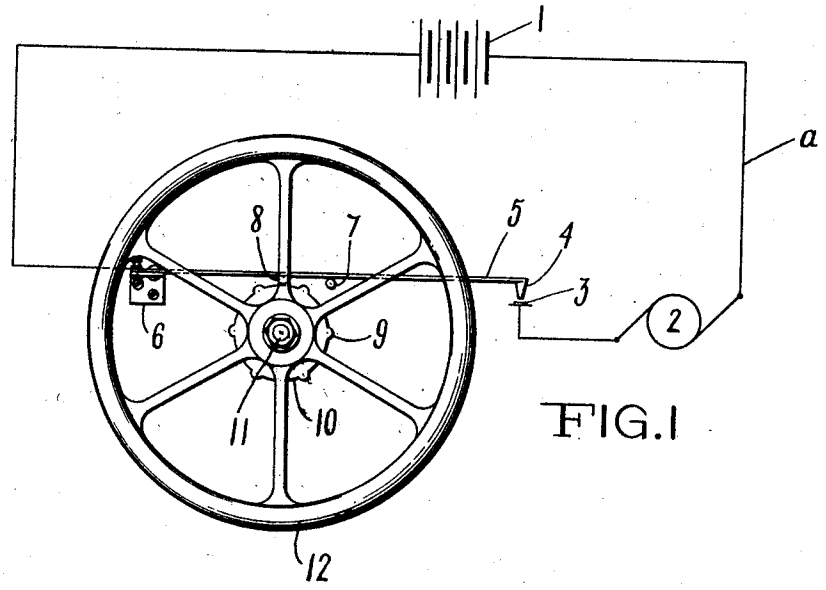
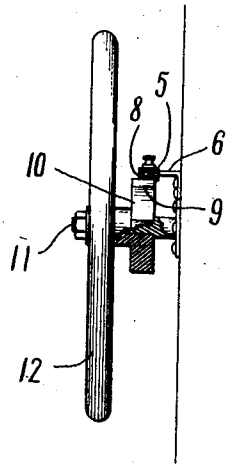


FIG. 1

FIG. 2



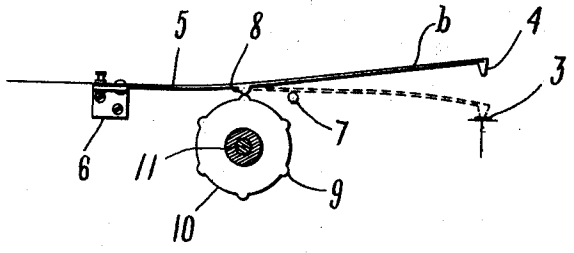


FIG. 3

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IMPULSE-SENDER.

1,316,574. Specification of Letters Patent. Patented Sept. 23, 1919.

Application filed January 22, 1914. Serial No. 813,702.

To all whom it may concern:

Be it known that I, EDWARD V. HARTFORD, a citizen of the United States, residing at Deal, in the county of Monmouth and State of New Jersey, have invented certain new and useful Improvements in Impulse-Senders, of which the following, taken in connection with the accompanying sheet of drawings, is a full, clear, and concise description.

My present invention relates particularly to new and improved means for controlling electrical energy and one of the principal objects of my invention is to provide a mechanism which may be operated to automatically make and break an electric circuit, so that the flow of energy will be in the form of impulses.

Another object of my invention is the provision of an impulse sending mechanism that readily admits of the sending of impulses which may be of comparatively long or short duration without requiring any previous adjustment upon the part of an operator.

In accordance with my invention there is provided a resilient member having one of its ends fixed and carrying at its other end a contact positioned to coöperate with a fixed contact but normally separated therefrom. Means are provided for producing a flexure in said resilient member, whereby the contacts engage upon the reflex movement of said member. The flexure of the resilient member may be rapid or slow, depending upon the speed of operation of the means for producing the same. This sending mechanism may be associated with a source of current adapted to operate any sort of a translating device.

Several useful applications of my invention in the electrical art might be mentioned, such for instance, as its adaptation to control the movement of electrically operated elevators, cars or vehicles. When so applied my invention may conveniently be associated with the brake applying mechanisms thereof. Other equally useful applications might readily be resorted to by those skilled in the art.

In the accompanying drawings I have by way of example only, illustrated my impulse sender associated with a source of energy, such as a storage battery, and an electric motor with a convenient wiring circuit and contacts, the operation of the latter controlling the flow of current from the storage battery to the motor. When my invention is applied to the control of vehicle brakes, the application or release of said brakes may be effected by any well-known means coöperatively associated with the electric motor.

In the drawings:

Figure 1 represents in plan an automatic electrical make and break device interposed in a circuit connecting a source of electrical energy with an electric motor.

Fig. 2 is a view in side elevation of the mechanical make and break device partly broken away.

Fig. 3 is a view in side elevation of the contact carrying drum coöperating with the flexible automatic make and break device.

In detail 1 indicates a source of electrical energy such as a storage battery, 2 an electric motor, 3 a stationary contact, 4 a coöperating movable contact, the latter being mounted upon a flexible arm 5, one end of which is fast to a stationary support 6. These are joined or connected by a suitable wiring circuit *a*. 7 indicates a stop or rest pin upon which the flexible contact carrying arm normally rests and when in this position the latter is supported in such a way that the contacts 3 and 4 are free of each other and consequently no circuit is established. In order to flex the arm 5, to impart to it the necessary movement to effect contact between the contact terminals 3 and 4 I provide on the underside of said flexible arm the projection 8 which is arranged to coöperate with and be engaged by a like projection or a plurality of like projections 9 arranged on the periphery of a rotary drum 10. This drum is mounted upon a shaft 11, which carries a hand wheel or operating member 12. It will be apparent that upon the movement of the wheel 12 the drum 10 will rotate and bring a projection 9 into engagement with the projection 8 of the flexible arm 5, causing the latter, as these projections pass one another to flex into full position *b* (shown in Fig. 3). As soon as the contact 9 is rotated past and out of engagement with the contact 8, the inherent spring tension of the flexible arm 5 will cause the contact carrying end thereof to rapidly move or snap downwardly thus bringing or causing the contacts 3 and 4 to engage each other as shown in dotted line position Fig. 3. When brought into this position the electric circuit is established

and the current from the battery 1 flows to and energizes the electric motor 2. This contact is momentary, for as soon as the force, which caused it to be flexed, dissipates it will come to rest in its normal inoperative position. Repetition of this action by the engagement of other of the projections 9 upon the drum 10 with the abutment 8 will repeat this closing of the circuit and automatic opening thereof, so that impulse after impulse of the electric energy may flow to the motor to enable it to wind up or release the brake chains or cables of vehicles or the like in a step-by-step fashion. Of course, by rotating the wheel 12 fast these impulses may be so rapid as to cause almost a continuous flow of energy and a consequent continuous energization of the motor, thus the impulse may be controlled by the operator through manipulation. A rapid rotation of the wheel 12 shortens the interval of time between the impulses while a slow rotation of the wheel 12 lengthens the time interval between impulses.

Having thus described my invention what I claim as new herein and desire to secure by Letters Patent is:

1. An impulse sender, comprising in combination a fixed contact, a resilient member, a movable contact carried by said member, a support for said second member, a member carrying projections adapted intermittently to engage the resilient member and move the movable contact away from the fixed contact, a stop pin intermediate the fixed contact and the support and engaging said resilient member when disengaged from the projections on the second member whereby upon movement of the second member the resilient member will be flexed in a direction to carry its contact away from the fixed contact, and will then automatically be moved in the opposite direction due to its reflex action into engagement with the said stop pin about which it will be flexed to cause the movable contact to engage the fixed contact.

2. An impulse sender, comprising in combination a fixed contact, a resilient member, a projection on said member, a movable contact carried by said member, a support for said member, a second member carrying projections adapted intermittently to engage the projection on said resilient member and move the movable contact away from the fixed contact, a stop pin intermediate the fixed contact and the support and engaging said resilient member when disengaged from the projections on the second member whereby, upon movement of the second member, the resilient member will be flexed in a direction to carry its contact away from the fixed contact and will then automatically be moved in the opposite direction due to its reflex action into engagement with the stop pin about which it will be flexed to cause the movable contact to engage the fixed contact.

3. An impulse sender, comprising in combination a fixed contact, a resilient member fixed on one end, a contact carried at the opposite end of said member, a member carrying projections adapted intermittently to engage the resilient member and move the movable contact away from the fixed contact, a stop pin intermediate the fixed contact and the support and engaging said resilient member when disengaged from the projections on the second member, whereby upon movement of said second member, the resilient member will be flexed in a direction to carry its contact away from the fixed contact, and will then be moved in the opposite direction due to its reflex action into engagement with the said stop pin about which it will be flexed to cause the movable contact to engage the fixed contact.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses this 16th day of January, 1914.

EDWARD V. HARTFORD.

Witnesses:
WM. C. DUNN,
P. F. SONNEK.

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