(No Model.)

J. C. LUDWIG.

RHEOTROPE OR CURRENT REVERSING KEY.

No. 315,426. Patented Apr. 7, 1885.

Fig. 1.

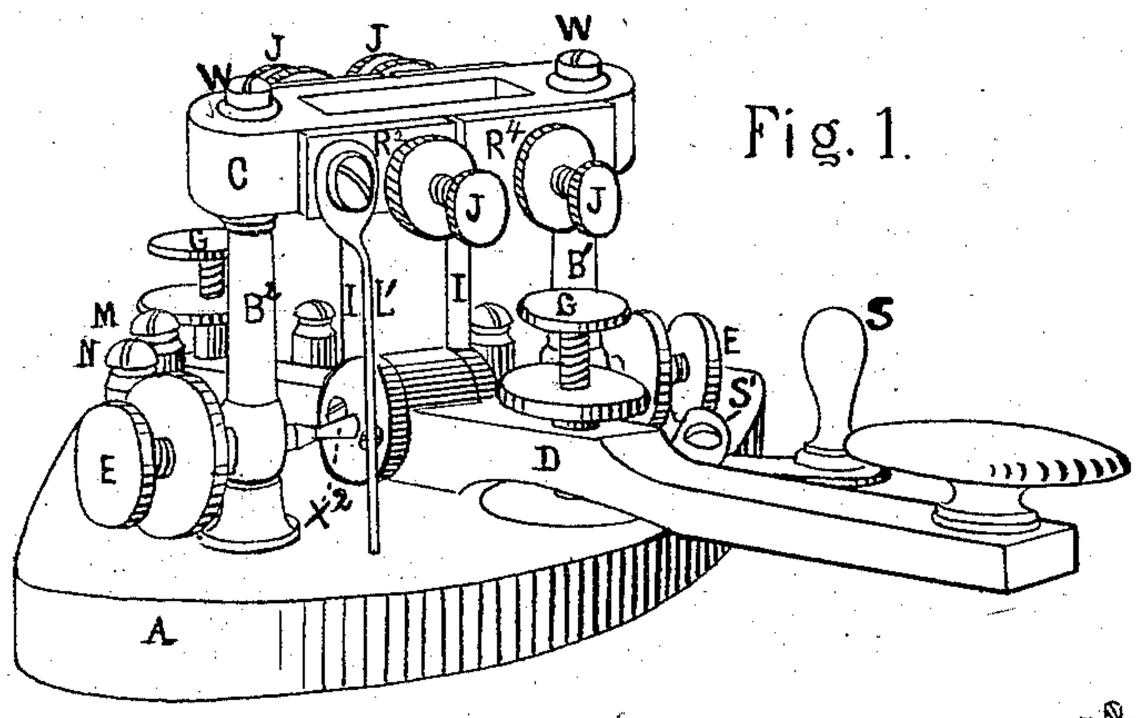


Fig. 2.

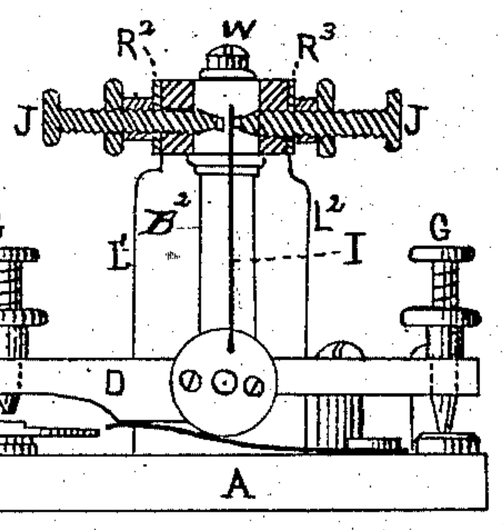


Fig. 3.

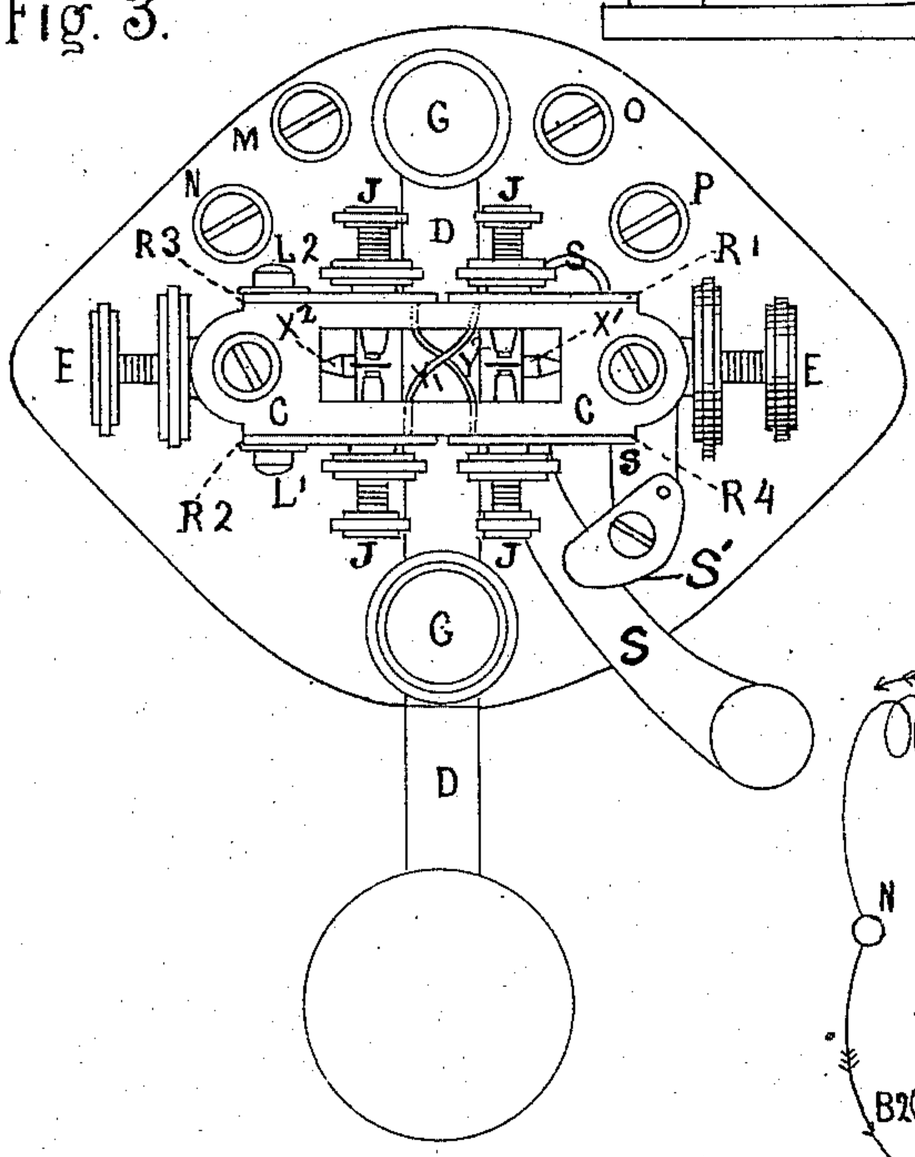


Fig. 4.

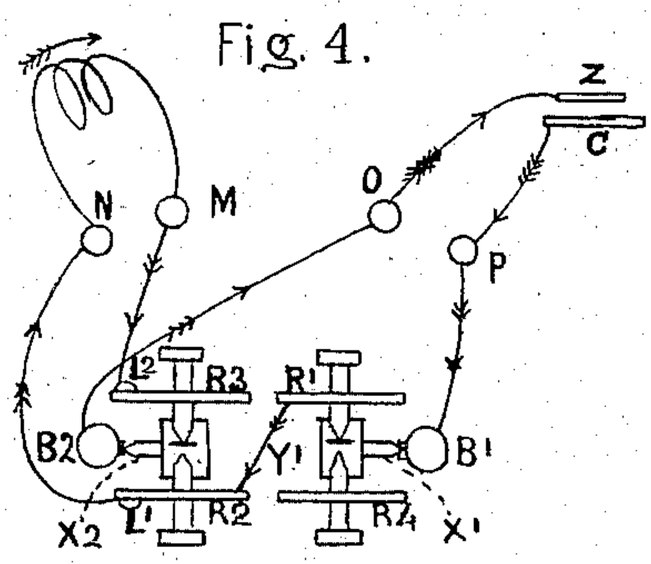
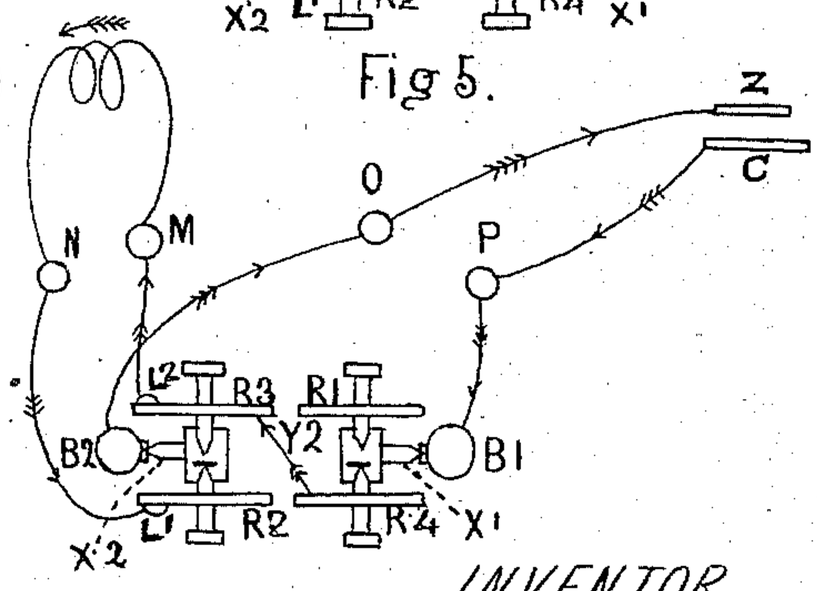


Fig 5.



WITNESSES.

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RHEOTROPE OR CURRENT-REVERSING KEY.

SPECIFICATION forming part of Letters Patent No. 315,426, dated April 7, 1885.

Application filed November 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. LUDWIG, a citizen of the United States, residing at the city and county of San Francisco, and State of California, have invented a new and useful Rheotrope or Electric-Current-Reversing Key for Telegraphic Purposes, of which the following is a specification.

The object of my invention is to provide a key for changing or reversing a current of electricity of any certain polarity, so as to give positive and negative currents of equal volume and intensity, and which is fully set forth in the following specification, reference being had to the accompanying drawings, in which the same letters refer to the same parts.

Figure 1 is a perspective view of the key. Fig. 2 is a sectional side view showing the movement of the key-lever and method of making and breaking the contacts. Fig. 3 is a top view of the key. Figs. 4 and 5 show the course of the electrical currents when the key-lever is either depressed or raised.

A is the base.

B′ B^2 are metallic columns supporting the cross-head C, and secured to it with nuts W W, and secured to the base by screws from beneath.

D is the key-lever.

A, C, and D are made of hard rubber or other non-conducting material.

X′ X^2 are the trunnions supporting the key-lever and fastened upon each side of it by screws, thus insulating them from each other.

E E are set-screws passing through the columns B′ B^2, and which hold the lever D in place by the trunnions X′ X^2.

G G are adjusting-screws for regulating the motion of the key-lever.

I I are two vertical metallic arms inserted into the trunnions X′ and X^2, respectively, as shown particularly in Fig. 2.

R′ R^2 R^3 R^4 are four metallic plates fastened to the rubber cross-head C by screws or rivets in such a manner that they are insulated from each other.

J J J J are adjustable contact-screws in the plates R′ R^2 R^3 R^4, for making or breaking contact with the vertical arms I I when the key-lever is raised or depressed.

L′ L^2 are metallic connections uniting metallic plates R^2 R^3 with the binding-posts M and N beneath the base A.

O and P are binding-posts connected beneath the base with the columns B′ and B^2, the connection from binding-post P to column B′ being shown in Figs. 1 and 3 as made through switch S and its contact S′, which is connected to the column by a metallic plate *s*, and through the trunnions to the vertical arms, where the contact is made with J J J J.

Y′ and Y^2 are wire connections between the plates R′ and R^2, and between the plates R^3 and R^4.

To explain the operation of this device, Figs. 4 and 5 are referred to. When the key-lever is in the position of rest as held by the spring, and as seen in Fig. 2, the vertical arms I I will be in contact with the screws of plates R′ R^3, and, referring to Fig. 4, it will be seen that the electric current passes from C in the battery to the binding-post P, and to the column B′, and through the trunnion X′ to the arm I and plate R′, and thence through the wire *y′* to the plate R^2, and by means of the metallic connection L′ to the binding-post N, and will proceed in the direction of the arrow through any metallic working-circuit to M, thence through the metallic connection L^2 to the plate R^3, and through the contact-screws and X^2 to the column B^2, and thence to the binding-post O, and complete the circuit to the battery in the direction shown by the arrow. When the key-lever is pressed down, the arms I I will be in contact with plates R^2 and R^4. It will be seen by reference to Fig. 5 that the current from C in the battery passes in the same direction until the contact is made with plate R^4, from which it passes through the wire Y^2 to plate R^3, and thence by metal connection L^2 to the binding-post M, and returns, through the metallic medium, in the direction shown by the arrow to the post N. The current then proceeds through the metallic connection L′ to R^2, and through I and trunnion X^2 to B^2; thence to binding-post O, and

completes the circuit to the battery, as shown by the arrow.

It will be seen from the above that the current of electricity is broken and reversed upon every motion of the key.

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

1. In a current-reversing telegraph-key, the combination, with a pivoted key-lever, of two metallic arms projecting therefrom at angles to its axis and insulated from each other, each of said arms being arranged to vibrate between a separate pair of contacts, and the contact on each side of each arm being electrically connected with an opposite contact of the other arm, substantially as described.

2. In a current-reversing telegraph-key, the combination, with a pivoted key-lever, of two metallic arms projecting therefrom at angles to its axis and insulated from each other, two metallic contacts for each of said arms and on opposite sides of the same, respectively, each contact of each arm being electrically connected with an opposite contact of the other arm, means for connecting said arms, respectively, to opposite poles of a battery, and for connecting both contacts of either arm, respectively, with the terminals of a working-circuit, substantially as described.

3. In a current-reversing telegraph-key, the combination, with a pivoted key-lever having metallic trunnions which are insulated from each other and metallic bearings supporting said trunnions, of two metallic arms projecting radially from said trunnions, respectively, a pair of opposite metallic contacts for each of said arms, the contact on each side of each arm being electrically connected with the contact on the opposite side of the other arm, suitable means for connecting the trunnion-bearings with opposite poles of a battery, and means for connecting both contacts of either of the metallic arms with the respective terminals of a working-circuit, substantially as described.

4. A pivoted telegraph-key lever formed of non-conducting material and having metallic trunnions insulated from each other, substantially as described.

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