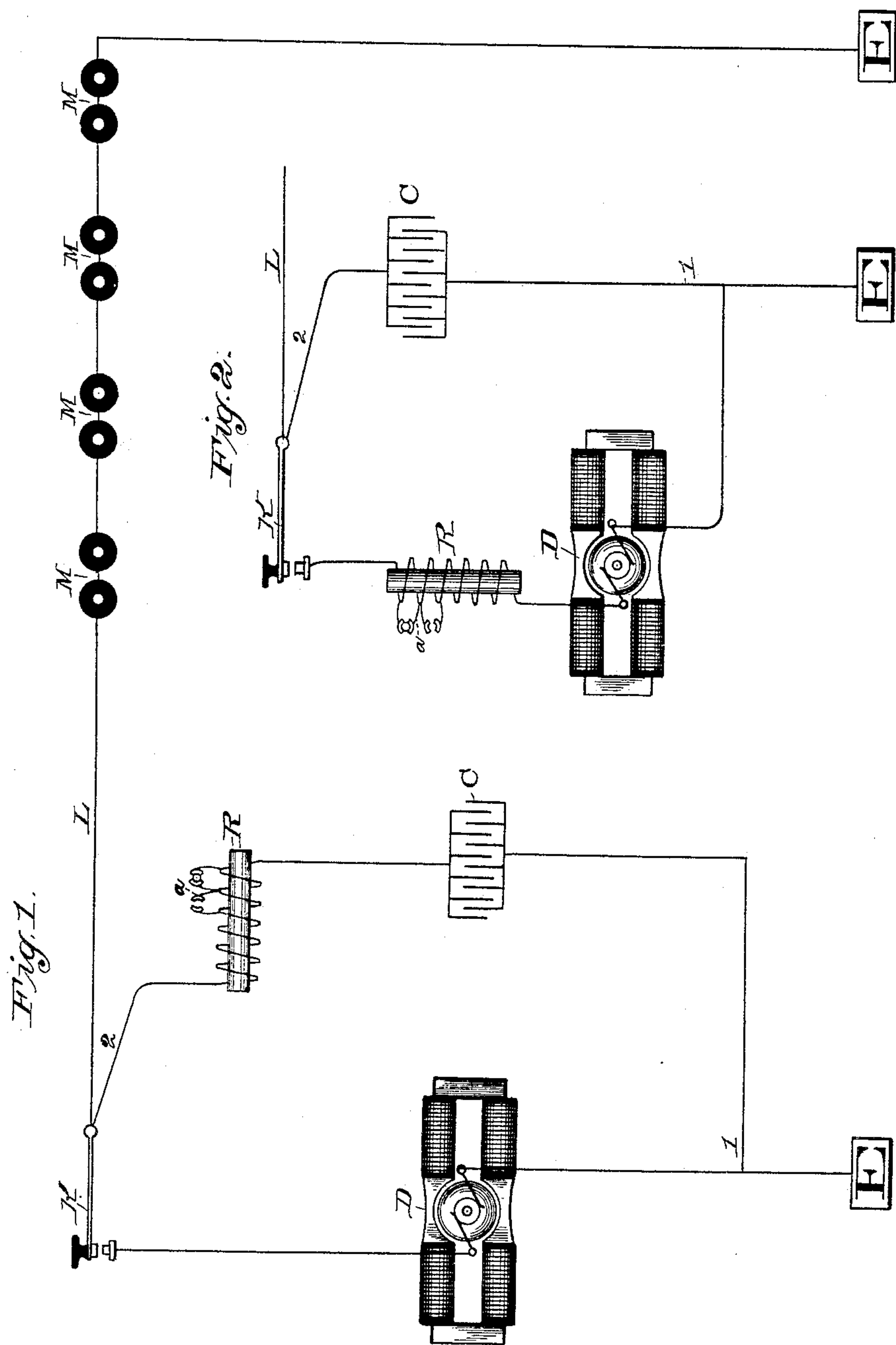


(No Model.)

S. D. FIELD.
PRINTING TELEGRAPH.

No. 338,343.

Patented Mar. 23, 1886.



ATTEST:
E. Rowland.
H. Kiddle.

INVENTOR:
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att.

UNITED STATES PATENT OFFICE.

STEPHEN D. FIELD, OF NEW YORK, N. Y., ASSIGNOR TO THE COMMERCIAL TELEGRAM COMPANY, OF SAME PLACE.

PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 338,343, dated March 23, 1886.

Application filed November 12, 1885. Serial No. 182,511. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN D. FIELD, of New York city, in the county and State of New York, have invented a certain new and useful Improvement in Printing-Telegraphs, of which the following is a specification.

In operating printing-telegraphs it is desirable to have a high electro-motive force, and at the same time to reduce the resistance to the minimum. These conditions are attained by the employment of dynamo-electric machines for supplying current to the line. The sparking at the transmitter breaking-points has, however, been an obstacle heretofore but partially and imperfectly overcome. The usual means employed has been a shunt around the transmitter breaking-points and the dynamo, this shunt including a condenser, the discharge of condenser opposing the dynamo-current when circuit is opened, and preventing the dynamo-current from following up the points and producing a destructive spark. With this arrangement, however, the breaking-points are liable to become fused. This I have ascertained is due to the large current that passes through the condenser-shunt at the instant of closing circuit. A condenser having a very low resistance at the instant of closing circuit, the high electro-motive force of dynamo causes a considerable current to momentarily traverse the condenser-shunt, and this results in fusing the breaking-points. This difficulty I overcome by including in circuit with the condenser and dynamo-electric machine an electro-magnetic current-retarder. This is an electro-magnet preferably of low resistance, (two or three ohms,) but having a sufficient body of metal in its core to give it the desired large inductive capacity. The magnet has an action reverse to that of the condenser. When the circuit is first closed, it sets up a counter electro-motive force, which momentarily retards the flow of current through the shunt. This gives the condenser time to become charged when it has a very high resistance and the danger of fusing the breaking-points is past. The location of the electro-magnet must be in the circuit of both the dynamo and condenser when the line is closed at the breaking-points. To obviate increasing the line-resistance, I prefer to put

the magnet in the shunt; but it may be located in the line.

In the accompanying drawings, forming a part hereof, Figure 1 is an illustration, principally in diagram, of my invention with magnetic current-retarder in shunt; and Fig. 2, a similar view with magnetic current-retarder in the line.

The line L, grounded at its ends, includes the magnets M of a number of receiving-instruments. The breaking-points of the transmitter are illustrated in principle by the circuit-controlling key K.

D is the dynamo-electric machine, located in the line and supplying current thereto. The key and dynamo are shunted by a circuit, 12, including the condenser C. This shunt also includes the electro-magnetic current-retarder R, Fig. 1, or this may be in the line, Fig. 2, its location in either case being in the circuit of both the dynamo and the condenser when the line is closed at the breaking-points.

The electro-magnetic current-retarder may be made adjustable in any of the well-known ways for adjusting induction apparatus, as by short-circuiting more or less coils at plugs a.

What I claim is—

1. The combination, with a telegraph-line, a source of electrical energy, and a circuit-controller, of a spark-arresting shunt around the circuit-controller and the source of electrical energy, a condenser in said shunt, and an electro-magnetic current-retarder in circuit both with the source of electrical energy and the condenser, substantially as set forth.

2. The combination, with a telegraph-line, a dynamo-electric machine supplying current thereto, and a circuit-controller, of a spark-arresting shunt around the circuit-controller and said dynamo-electric machine, a condenser in said shunt, and an electro-magnetic current-retarder in circuit both with the dynamo and the condenser, substantially as set forth.

3. The combination, with a telegraph-line, a source of electrical energy, and a circuit-controller, of a spark-arresting shunt around the circuit-controller and the source of electrical energy, a condenser in said shunt, and an electro-magnetic current-retarder, also located in said shunt, substantially as set forth.

4. The combination, with a printing-tele-
graph line, the receiving electro-magnets, the
transmitting circuit-controller, and the dy-
namo-electric machine, of a spark-arresting
5 shunt around the transmitting circuit-con-
troller and dynamo, said shunt including a
condenser and an electro-magnetic current-
retarder, substantially as set forth.

This specification signed and witnessed this
5th day of November, 1885.

STEPHEN D. FIELD.

Witnesses:

E. L. REID,

B. A. HOOPER.