(No Model.)

2 Sheets—Sheet 1.

S. A. CHASE.

TELEGRAPHIC RELAY.

No. 342,576. Patented May 25, 1886.

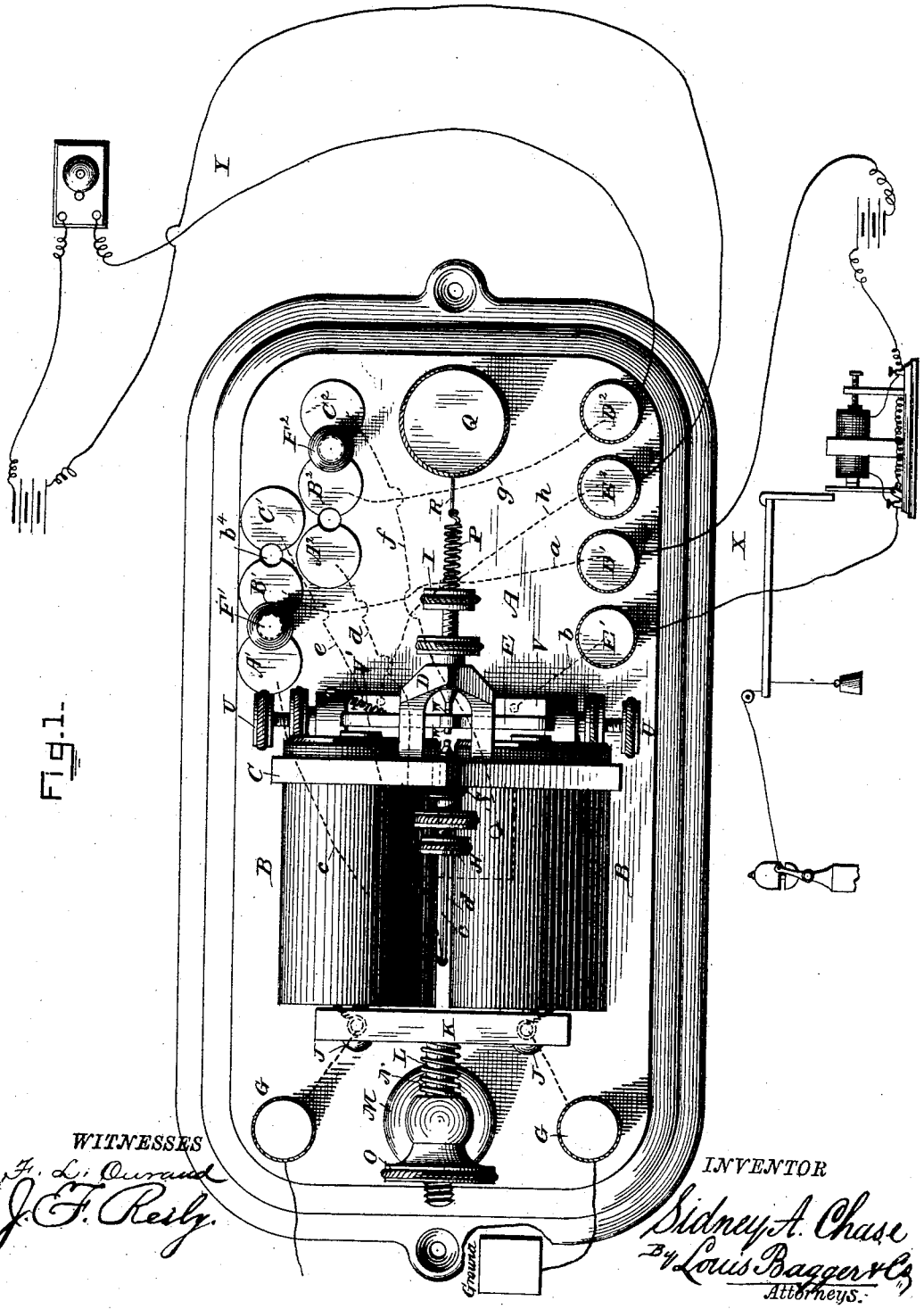


Fig. 1.

WITNESSES

F. L. Durand

J. F. Reily.

INVENTOR

Sidney A. Chase

by Louis Bagger & Co.

Attorneys.

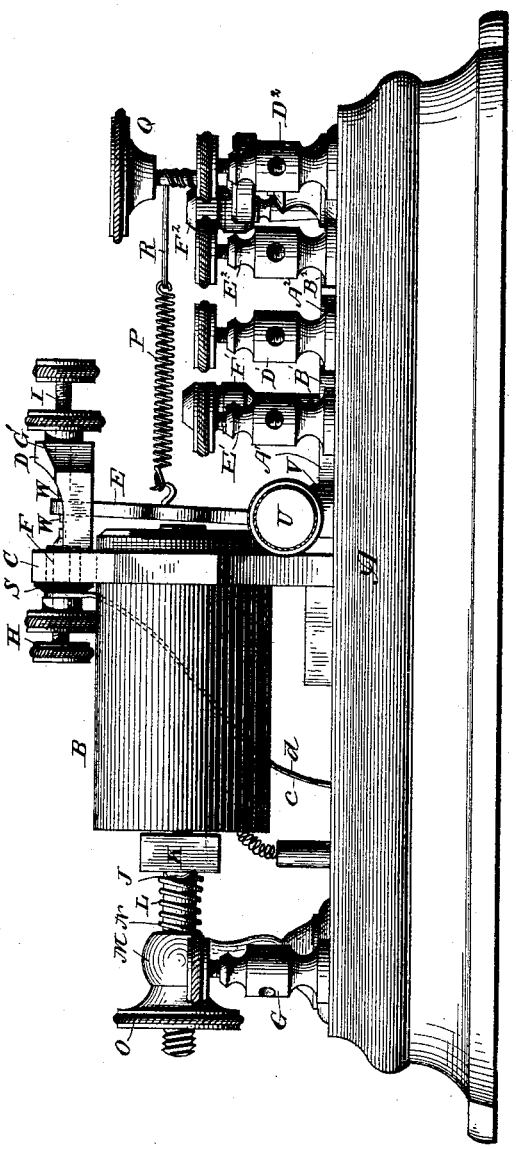
(No Model.) 2 Sheets—Sheet 2.

S. A. CHASE.

TELEGRAPHIC RELAY.

No. 342,576. Patented May 25, 1886.

Fig. 2.



WITNESSES
F. L. Ourand
J. F. Reily.

INVENTOR
Sidney A. Chase,
By Louis Bagger & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

SIDNEY A. CHASE, OF EVART, MICHIGAN, ASSIGNOR OF ONE-HALF TO WILLIAM R. MAPES, OF SAME PLACE.

TELEGRAPHIC RELAY.

SPECIFICATION forming part of Letters Patent No. 342,576, dated May 25, 1886.

Application filed January 8, 1886. Serial No. 187,962. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY A. CHASE, a citizen of the United States, and a resident of Evart, in the county of Osceola and State of Michigan, have invented certain new and useful Improvements in Telegraphic Relays; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to that class of telegraphic relays which are frequently used in fire-alarm and district-telegraph systems where several stations are in circuit with a central station lying in a main-line circuit, and in which two local circuits are worked and controlled by the said relay; and my invention consists in the improved construction, arrangement, and combination of parts of a telegraphic relay of this class which is adapted to work and control two local circuits, and which is provided with means for reversing the normal condition of the said two local circuits from closed to open and open to closed, respectively, as will be hereinafter fully described, my invention consisting in improvements on the relay which I described in my application filed March 14, 1885, Serial No. 158,836.

Referring to the annexed drawings, Figure 1 is a diagram showing my improved telegraphic relay in connection with the main-line circuit and the two local circuits which it controls; and Fig. 2 is a side elevation of the relay.

The same letters of reference indicate corresponding parts in both the figures.

Referring to the several parts by letter, A represents the wooden stand which supports the several parts of the relay in their operative positions.

B B indicate the electro-magnets of the relay, the coils of which receive the main-line current through the binding-posts G G, as shown. The forward ends of the electro-magnets are supported by the relay-yoke C, their rear ends being secured by means of screws J J to a cross-bar, K, which has at its middle a rearwardly-projecting rod, L, which slides in a bearing in the upper end of an upright post, M, and which has a spiral spring, N, encircling it between the cross-bar K and the upper end of the post M, the outer end of the rod L being screw-threaded, and being provided at that point with a nut, O, having its periphery milled to add to the convenience in turning it; and it will be seen that by means of this nut the rod L, cross-bar K, and magnets B B may be adjusted relative to the armature E, so as to bring the poles of the magnets nearer to or farther from the said armature.

E represents the armature-lever, which has pivotal bearings at its lower end in two hollow-pointed screws, U U, of a bed-plate, V, the armature having connection, by means of the wire coil V′, with the bed-plate V, and having its upper end extending up through the U-shaped extension D of the yoke C, and provided with two contact-points, W W, arranged to come in contact with either of two contact-screws, H and I. One of these contact-screws, I, extends through a threaded perforation, G′, in the yoke-extension D, and is in direct contact therewith, while the other contact-screw, H, which passes through the perforation F of the yoke C, and with which the armature is in contact when attracted by the electro-magnets, is insulated by a bushing, S, of suitable material, through which it passes. The contact-screws are both tipped with platinum or other similar metal.

A coiled spring, P, is connected to the armature-lever, as shown, and is connected by means of a silk cord, R, to an adjusting-screw, Q, by means of which the tension of the said spring may be regulated according to the strength of the current passing through the electro-magnets from the main-line battery, the said spring serving the usual purpose of drawing the armature away from the magnets when the main-line circuit is broken, so as to bring the armature into contact with the uninsulated contact-screw I of the yoke.

A′ B′ C′ and A^2 B^2 C^2 represent metallic disks, which are arranged upon the wooden stand of the relay, three in a row, a suitable aperture, b^4, being formed between the disks

A′ and B′ and between B′ and C′, adapted to receive a metallic plug, F′, which plug serves to connect the metallic disks between which it is placed, similar apertures being formed between the disks A^2 and B^2 and between B^2 and C^2 for the reception of a similar metallic plug, F^2, which closes the circuit between the said disks.

The insulated contact-screw H is connected by two wires, *c d*, with the two foremost disks of the series just described, the wire *c* extending to the disk A′, while the wire *d* extends to the disk A^2. The contact-screw I, as previously described, is in direct contact with the yoke C, and two wires, *e* and *f*, connect the yoke with the disks C′ and C^2, the wire *e* extending to the disk C′, while the wire *f* extends to the disk C^2. The bed-plate V of the armature-lever, with which the armature-lever has wire contact, is connected by means of two wires, *h b*, to two binding-posts, E′ E^2, which, with two similar posts, D′ D^2, are secured upon the wooden stand of the relay, as shown, the wire *b* leading to the post E′, while the wire *h* leads to the post E^2. The disk B′ is connected by a wire, *a*, to the binding-post D′, and the disk B^2 is connected by a wire, *g*, with the binding-post D^2. In the binding-post E′ and D′ are secured the wires of a local circuit, X, while in the binding-posts E^2 and D^2 are secured the wires of another local circuit, Y.

It will now be seen that while the main-line circuit remains closed the armature E will be attracted to the electro-magnets of the relay, bringing its contact-point in contact with the insulated contact-screw H, and the metal plug F′ having been placed between the disks A′ and B′, as shown in Fig. 1 of the drawings, the local circuit X will remain closed, the said closed local circuit being formed by the insulated contact-screw H, the wire *c*, the disk A′, the plug F′, the disk B′, the wire *a*, the binding-post D′, the wires and battery of the local circuit X, the binding-post E′, the wire *b*, and the armature resting in contact with the insulated contact-screw H. It will be seen that when the main-line circuit is broken the magnets will release the armature, which is drawn from contact with the insulated contact-screw H by the spring P, which throws the armature into contact with the uninsulated contact-screw I, which is in direct contact with the yoke C, thereby opening the normally-closed local circuit X, which may now be closed by removing the plug from between the disks A′ and B′ and placing it between the disks B′ and C′, thereby closing the circuit through the contact-screw I, the yoke-extension and yoke proper, the wire *e*, the disk C′, the plug F′, the disk B′, the wire *a*, the binding-post D′, the wires of the local circuit, the binding-post E′, the wire *b*, the bed-plate V, and the armature, thus closing the said circuit and leaving it in condition to be opened again by the armature when the latter is attracted by the electro-magnets on the closing of the main-line circuit.

While the armature is attracted by the magnets of the relay, the normally-open local circuit Y is formed by the contact-screw I, the yoke-extension and yoke, the wire *f*, the disk C^2, the plug F^2, the disk B^2, the wire *g*, the binding-post D^2, the wires and battery of the local circuit Y, the binding-post E^2, the wire *h*, and the bed-plate and armature. It will be seen that this normally-open circuit will be closed by the armature when the latter is drawn back by the spring P on the breaking of the main-line circuit against the uninsulated contact-screw I. To open this circuit while the main line circuit remains open it is only necessary to remove the plug F^2 from between the disks B^2 and C^2, and the plug is then placed between the disks A^2 and B^2, which places this circuit in condition to be closed by the closing of the main-line circuit, which brings the armature in contact with the insulated contact-screw H, and closes this circuit through the contact-screw H, the wire *d*, the disk A^2, the plug F^2, the disk B^2, the wire *g*, the binding-post D^2, the wires of the local circuit Y, the binding-post E^2, the wire *h*, and the bed-plate and armature.

I have described the two local circuits respectively as closed and open; but it is obvious that the normal position of the plugs may be changed to reverse the normal condition of the local circuits, or the connections of one local circuit may be dispensed with, forming a relay with one local circuit, the condition of which may be reversed as desired.

From the foregoing description, taken in connection with the accompanying drawings, the operation of my improved relay will be readily understood without requiring further explanation.

I am aware that telegraphic relays have been constructed wherein both stops for the armature control local circuits, and do not, therefore, claim this feature, broadly; but

What I claim is—

As an improvement in telegraphic relays, the combination of the electro-magnets having the usual metallic yoke formed with the U-shaped extension, the two contact-screws, one of which is in direct contact with the metallic yoke, while the other passes through an insulated aperture in the yoke, the armature arranged to come in contact with the insulated contact-screw when attracted by the magnets, two series of three disks each having intervening apertures between the disks of each series, and a disk at one end of each series having a wire leading to the said insulated contact-screw, wires leading from the opposite end disks of the series to the metallic yoke, wires leading from the central disks to two binding-posts, one of which posts receives the wire of a local circuit while the other post receives the wire of another local circuit, wires leading from the armature to two

binding-posts, one of which receives the remaining wire of one local circuit while the other receives the remaining wire of the other local circuit, and the metallic plug adapted to fit and close the circuit between the said disks, as described, all constructed and arranged to operate in the manner and for the purpose herein shown and described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

SIDNEY A. CHASE.

Witnesses:
JOSEPH SAYLES,
C. O. TRUMBULL.