

(No Model.)

R. H. GRUSCHOW.
ELECTRIC SIGNAL.

No. 450,458.

Patented Apr. 14, 1891.

Fig. I.

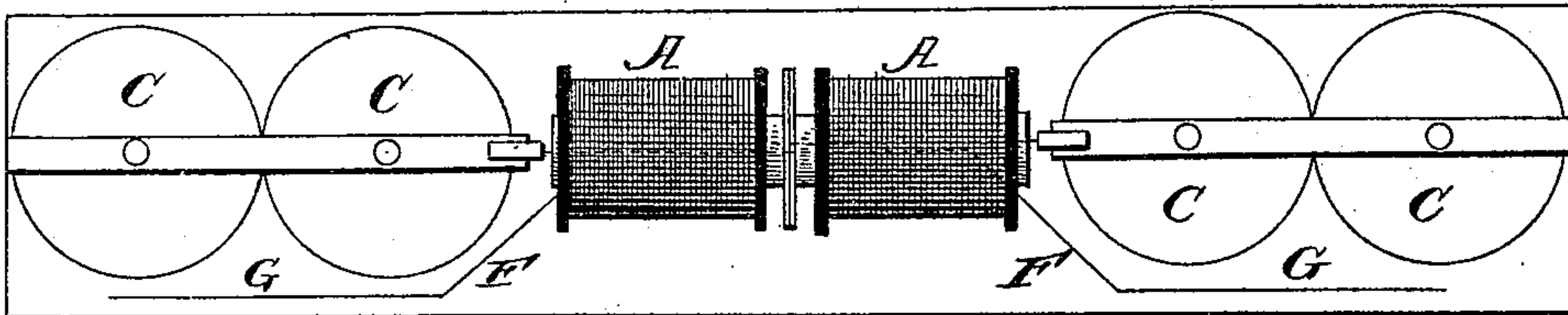


Fig. II.

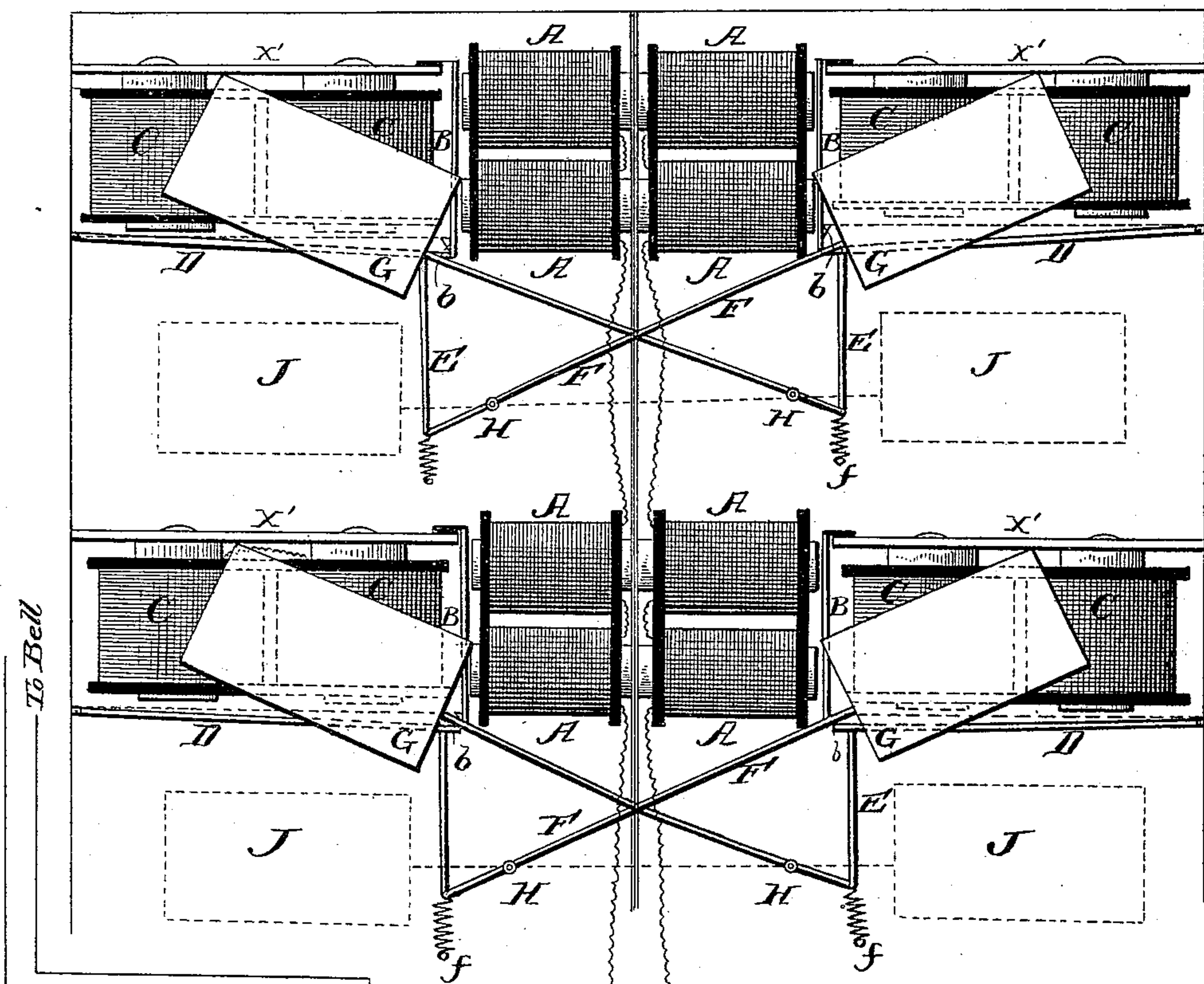


Fig. III.

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ROBERT H. GRUSCHOW, OF CHICAGO, ILLINOIS.

ELECTRIC SIGNAL.

SPECIFICATION forming part of Letters Patent No. 450,458, dated April 14, 1891.

Application filed November 21, 1890. Serial No. 372,263. (No model.)

To all whom it may concern:

Be it known that I, ROBERT H. GRUSCHOW, a citizen of the United States, residing in the city of Chicago, county of Cook, and State of Illinois, have invented a new and useful Device for Giving Electric Signals on Steamboats, of which the following is a specification.

My invention relates to devices for giving electric signals on steamboats, in which a series of signals are operated by means of electric currents passed through coils and armatures; and the object of my improvement is to construct an electric signal which shall be reliable and unfailing in its work.

In order to illustrate the practical manner of carrying out the invention, and to enable others skilled in the art to which the invention appertains to make and use the same, drawings are hereto annexed and herein described, in which similar letters refer to similar parts throughout the several views.

In my drawings above referred to, Figure I represents a horizontal cross-section of the box containing the signal. Fig. II represents a vertical section of this box; and Fig. III represents a push-button, showing the interior construction thereof.

In my drawings, a , a' , a^2 , and a^3 represent ordinary conductors or wires, which are connected with a battery. (Not shown in my drawings.)

X represents the frame of my signal-box, which box in its inside is provided with the cross-pieces X' , which serve as partitions and to which the electric coils A and C are securely fastened in any suitable manner, as illustrated in my drawings.

A A^x represent electric coils. My drawings in Fig. II show four of these—one set for each signal; but I may have any desired number of the same.

C C^x represent another set of electric coils, also fastened to partitions in the box X. I show, also, four of these in my drawings, which correspond to the four signals, which I shall describe more fully hereinafter.

B B^x represent small metallic strips, which serve as armatures to the coils A A. These strips B are fastened in one end to the partitions X' , as shown in Fig. II, and in their other ends they are provided with a small catch b , as shown.

D D^x are also flexible metallic strips fastened in one end to the box-frame X, as shown in Fig. II. These strips, four in number, as shown in my drawings, serve as armatures to the coils C C^x—one for each set of coils, respectively—as illustrated in my drawings. In their other end these strips D D are connected with the lever F by the connecting-rod E. My drawings show four levers F—one for each signal. Each lever F has its fulcrum at H, which shows that the short arm of the lever F is attached to the connecting-rod E. The longer arm of the lever F is provided at its end with the display card or signal G.

It should be understood that the mechanism herein described is inclosed in the box-frame X. This box-frame is provided with suitable openings, as illustrated by the dotted lines forming J J, which openings will display the cards G G when these cards are in front thereof.

$f f$ represent small spiral springs, fastened in one end to the box-frame X and in their other end to the extremity of the short arm of lever F.

Fig. III represents a push-button, showing the interior construction thereof.

O represents the button proper, and O' represents the case. By means of two ordinary spiral springs, which are not shown in my drawings, the button O is ordinarily held in the position as illustrated and shown in Fig. III. The button O is provided with the metallic strips or connection p , which forms a small projection on each side of the button, as shown. Just above these projections on the sides of the button are the larger projections $r r$, which are non-conductors. At the bottom the button is provided with the metallic connection G' G'. The sides of the case O' are provided with the elastic metallic strips $o o$, to which the wires a and a' are fastened, as illustrated in my drawings.

The operation of my invention is as follows: My electric signal is contemplated to be used, preferably, on steamboats, and it establishes a mode of communication between the officer in command of the boat and the engineer. The battery may be placed anywhere on the boat. The push-buttons are placed within convenient reach of the commanding officer, and the signal-boxes are placed so that they

can be conveniently observed by the engineer. The current passing from the battery through wires a and a' pass through the coils A A, as illustrated, and this circuit is closed by the connection formed by the metallic strip p in the button. If the button O is pushed down, so that the connection is formed by contact of strip p with the metallic strips $o o$, the circuit is complete and the coils A A are charged and the metallic strips B B are drawn to and held by their respective coils or electro-magnets. When in this position, all signals are released and there is no display. The circuit formed by wires a^2 and a^3 first passes to the button and from there to the coils C C, and its operation is as follows: When the button O is pushed down, so that the metallic connection $G' G'$ comes in contact with the wires a^2 and a^3 , the circuit is closed, the coils C C are charged, and the metallic strip D is drawn to the coils. It will be seen that in pushing down the button O, as above described, the circuit formed by the connection at p and o is broken, so that the metallic strips B B are released from their coils, and as the strips D D are drawn to their coils the ends of the strips D D are caught by the catch b upon strips B. As strip D is drawn up and caught by catch b , the short arm of lever F is drawn up, thus placing signal G in front of opening J J and displaying it. The display-signal G is held in this position until released again by passing a current through coils A A, by means of which strip B is released from the hold of catch b and drawn down by the pull of the spiral spring f . It should be noticed that the object of having the projections $r r$ extended beyond the projections of the strip p is to protect the strip p when the

first button returns to its position of rest, as shown in Fig. III, so that no connection is made of the circuit.

There is a push-button for each signal; but, if preferred, I may operate two or more signals by one push-button in the following manner: Instead of having a single strip o on each side of the case O', I may have a double set with a double set of strips p in button O, properly connected by wire with a battery. It will also easily be seen that instead of having a display-signal box only with the engineer I may have one or more such boxes connected with the same circuit in different parts of the boat placed where they are most desired.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an electric signal, a push-button consisting of the button O, provided with the projection r , the connecting-strip p , and the contacts $G' G'$ and the case O', provided with the flexible metallic strips $o o$, connected by wire conductors with the battery, substantially as and for the purpose herein set forth.

2. In an electric signal, a series of coils A, connected by wire conductors with a battery and a push-button, the metallic strips B, provided with catch b , the series of coils C C also connected by wire conductors with a battery, the metallic strips D, the connecting-rods E, the levers F, the display-signals G, and the spring f , substantially as and for the purpose herein set forth.

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Witnesses:

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