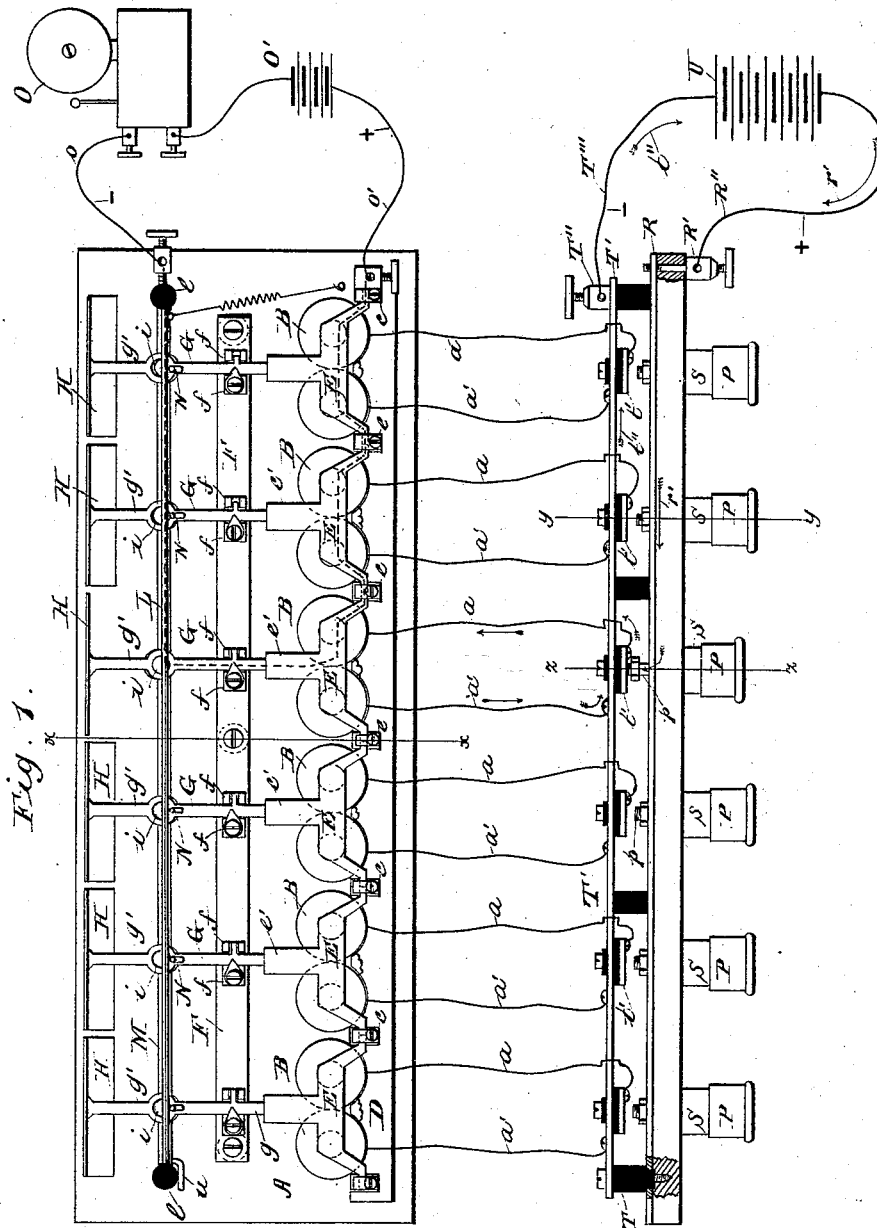


R. H. GRUSCHOW.
ELECTRIC SIGNAL FOR STEAMBOATS.

No. 524,202.

Patented Aug. 7, 1894.



Witnesses:

W. N. H. Knight,
H. E. Bunker

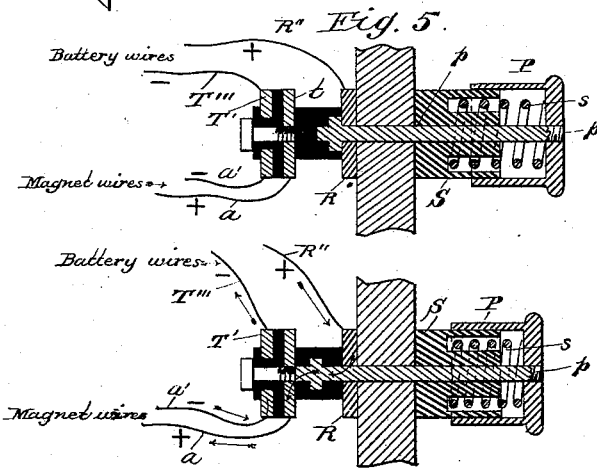
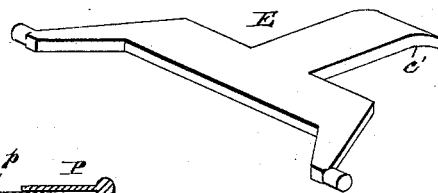
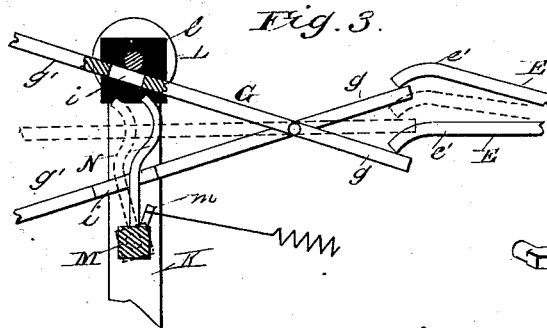
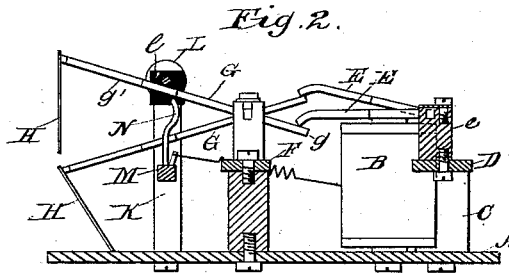
Inventor.

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Fig. 6.

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UNITED STATES PATENT OFFICE.

ROBERT H. GRUSCHOW, OF CHICAGO, ILLINOIS.

ELECTRIC SIGNAL FOR STEAMBOATS.

SPECIFICATION forming part of Letters Patent No. 524,202, dated August 7, 1894.

Application filed January 30, 1894. Serial No. 498,533. (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 Improvement in Devices for Giving Electric Signals on Steamboats, of which the following is a specification.

My invention relates to devices for electric signals on steamboats, in which a series of signals is operated by means of electric currents passed through coils and armatures; and the object of my invention is to construct an electric signal which shall be reliable and un-
failing 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 it appertains, to make and the same, drawings are hereto annexed and herein described, in which similar letters refer to similar parts throughout the several views.

In my drawings,—Figure 1 represents a top view of my invention. Fig. 2 represents a vertical cross section of the same. Fig. 3 represents a detailed view of bar M, showing lever support N. Fig. 4 shows view in detail of armature E. Figs. 5 and 6 show cross sections in detail of push buttons.

In my drawings *a, a'*, represent electric wires or conductors leading from a battery U shown in Fig. 1 of the drawings.

A designates a metallic plate, which forms the base upon which the whole of my mechanism is built.

Upon base A is fastened a number of sets of electric coils B, my drawings only show two sets, but I may have any desired number, which coils B. are in connection with wires *a*.

C, C, are uprights fastened to base A, which serve to support strip D.

E, E, represent pieces of soft iron, preferably of the shape as shown in my drawings, they serve as armatures for the coils B. as illustrated. These armatures are hinged in lugs *e, e*, which lugs are fastened upon strip D. The armatures are further provided with the tongues *e' e'*.

F represents a bridge, also fastened to base A; this bridge F is provided with the lugs *f, f*, which serve as fulcrums to levers hereinafter described.

G, G, are levers, the short lever arm is rep-

resented by *g*, the long arm by *g'*. The fulcrum of lever G is at *f*. The long lever arm *g'* is provided with the perforation *i* and also with the display signal H, fastened to said arm at an acute angle.

K, K, are uprights, firmly attached to base A, in the position as illustrated in my drawings. These uprights K, K, are provided with non conducting knobs *l, l*, which knobs are connected by the insulated bar L.

M is a bar which freely turns in holes of uprights K, K. At the point *m* a small spring is fastened to bar M by means of which the said bar is gently turned backward.

u is a stop also fastened to bar M which serves to arrest this backward motion of bar M, see Fig. 3 of my drawings.

The bar M is further provided with the lever supports N, N. These lever supports are preferably of the shape as shown in Fig. 3 of my drawings.

O represents an ordinary electric bell which is connected by wire with the insulated bar L.

P. represents a push button, and R is a metallic strip connected by wire with the battery. The button consists of a push bar *p*, the grooved base *r*, the spiral spring *s* and the thimble S.

Fig. 5 represents a vertical cross section of push button P.

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 may be conveniently observed by the engineer. The bell O. is also placed so that its sound can be heard by the party pushing the button. The current passes from the battery through the wires *a a'*, through the coil B. as illustrated and the circuit is closed by the connection formed by the metallic strip R and the button. The coils B are energized by the current from battery U, one of the conductors R'' of which is connected by the binding post R' to the plate R that sustains the series of push buttons P, the other conductor T''' being connected through the binding post T'' to the carrying plate T' which is supported

on but insulated from the plate R. This carrying plate T' is provided with a series of metallic contact plates t' which are insulated from said plate T' to which they are fixed, and these contact plates t' lie in the path of the endwise movable stems p of the series of push buttons P, whereby the rear end of the stem p of each push button, when it is pressed, is adapted to make contact with one of the plates t' and close the circuit through the conductors a, a', so that the current from the battery U passes through the plate R, the stem p, the contact plate t', the conductor a', the coils B, the other conductor a' and the plate T' back to the battery, it being noted, by reference to Fig. 1, that the conductors a, a' are in electrical connection with the plate T and the contact plate t' respectively. When the coils B are energized in the manner described, they attract the proper armature E which is depressed to bear against the heel or short arm g of the lever G, the other arm g' of which carries the visual signal H; and when this lever is turned it elevates its arm g' and the visual signal H, in order to display the latter to view, the arm g' making electrical connection with a metallic bar L which is supported above the series of levers G and is thus common to all of the levers of the visual signal devices. This bar L is insulated from the base A, and to a binding post at one end of the bar L is connected one of the conductors o of an alarm signal circuit. This signal circuit includes the audible signal mechanism, O, and a local battery O' for energizing the audible signal circuit when the latter is closed by the lever G coming in contact with the insulated bar L; the other conductor o' of this signal circuit is connected to a binding post in which is pivoted or fitted the trunnion of one of the armatures E, the bearings for the series of armatures E being in electrical connection with each other. When the connection is formed the coils B. are charged and their respective armatures E are drawn and held whereby the tongue E of the armature presses upon the short lever arm g, thus raising and displaying the display signal as it raises the long lever arm g'. As the long lever arm g' is raised the lever supports N, step out of the perforations i, and under the lever arm g', thus holding the display signal in place until released. The small spring attached to the bar M pulls the bar back so that when the lever support N steps out of the perforation it must move back. One signal is displayed and stays in its place until the next signal is given. When the next signal is to be given, and by a push from the button, the long lever arm is raised by the peculiar bend in the lever support, the bar M is revolved forward, thus admitting the first lever support again into the perforation thus dropping the first display signal. The long arm g' of the visual signal makes electrical connection with the insulated bar L and thus closes the alarm circuit through

said lever G, the armature E and the conductors o, o' to ring the bell O in the audible alarm circuit.

There is a push button for each signal, but if preferred I may operate two or more signals by one push button. It will also be seen that instead of having a display signal box only with 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. The combination with a series of magnets each included in circuit with a push button and a battery and each magnet provided with an armature, of a series of independent levers each carrying a visual signal at one end and having its other end arranged in the path of the armature of one of the magnets, a rock shaft common to the series of levers, and fingers carried by said rock shaft to sustain each lever in position when its signal is displayed, the rock shaft and its series of fingers being so organized and controlled with relation to the series of levers that an elevated lever and its signal will be lowered when another of the levers and signals of the series are elevated by the closing of its respective circuit, substantially as described, for the purposes set forth.

2. In an electric signal, the combination of a series of levers carrying the visual signals, a magnet for each lever included in circuit with a battery and circuit closer and having its armature arranged to depress the lever, and a rock shaft common to all of the levers of the series and provided with detents adapted to engage with the lever when the signal is displayed and retain the lever in its raised position.

3. In an electric signal, the combination of a series of levers each provided with an eye and carrying a visual signal, a magnet for each lever included in circuit with the battery and circuit closer and having its armature arranged to act against one end of the lever, a rock shaft M provided with the fingers N adapted to pass through the eyes of the levers, and a spring connected to the rock shaft, substantially as described.

4. In an electric signal, the combination of a series of levers each carrying a visual signal, a magnet for each of the levers, included in circuit with the battery and a circuit closer, and having its armature adapted to actuate the heel of the lever, an elevated bar L common to all of the levers and arranged in the path of the same, and an alarm circuit including a local battery and an audible signal mechanism, and having its conductors in electrical connection with the bar L and the armatures of the electro-magnets.

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