(No Model.)

J. C. RICKETSON.

ELECTRIC SIGNAL FOR ENGINES.

No. 356,792. Patented Feb. 1, 1887.

Fig. 1.

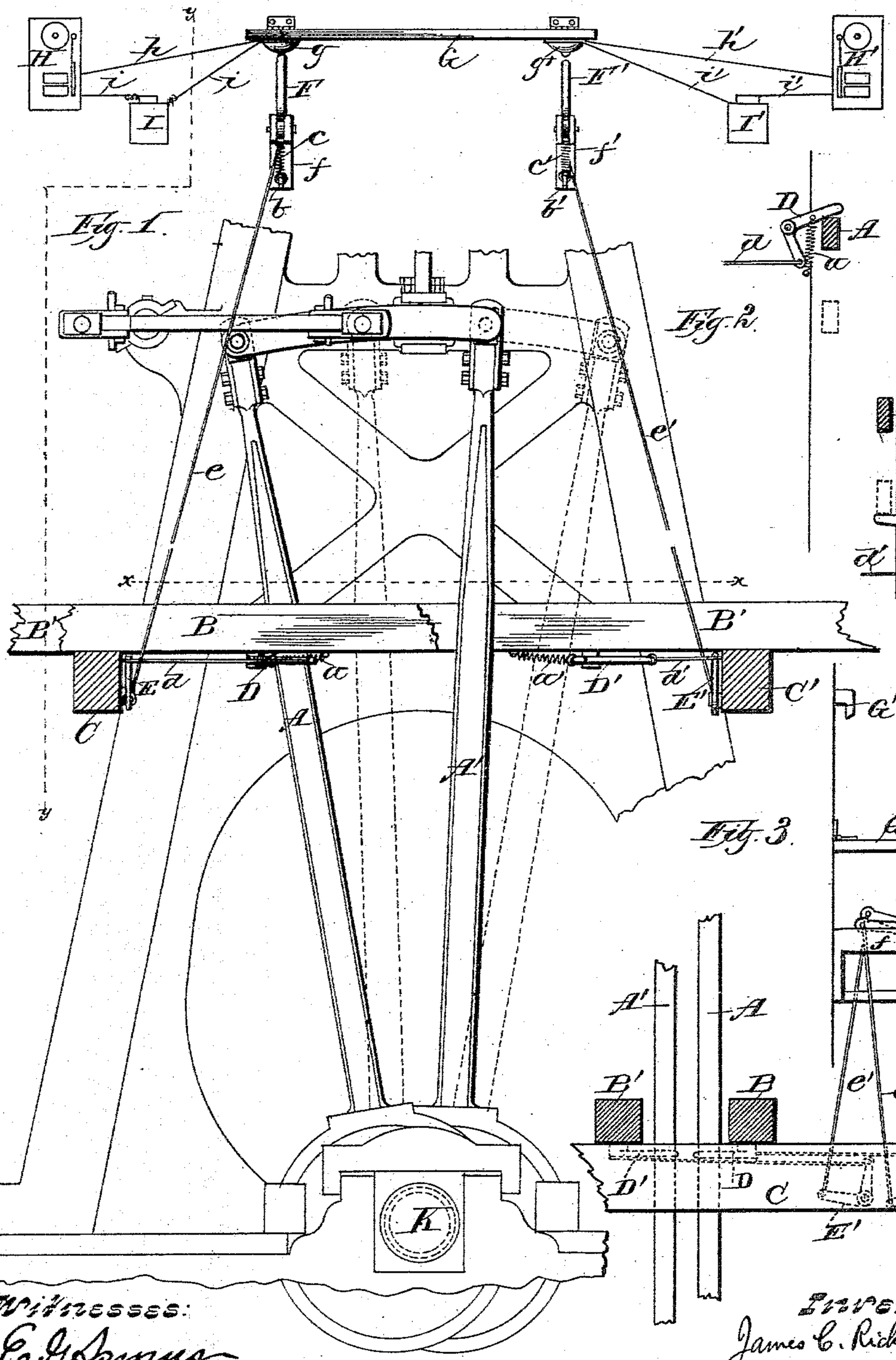

Fig. 2.

Fig. 3.

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ELECTRIC SIGNAL FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 356,792, dated February 1, 1887.

Application filed October 14, 1886. Serial No. 216,223. (No model.)

To all whom it may concern:

Be it known that I, JAMES C. RICKETSON, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Electric Signals for Engines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to electric signals for engines, and will be fully described hereinafter.

In the drawings, Figure 1 is a view of part of a marine engine with my invention applied thereto. Fig. 2 is a diagram view on the line *x x* of Fig. 1, and Fig. 3 is a detail view in side elevation on the line *y y* of Fig. 1.

My invention has reference to devices for indicating at any point distant from an engine or its shaft the direction in which the latter is revolving, and is in part an improvement on the devices set forth in my application for patent for an analogous invention, filed August 31, 1885, Serial No. 175,744.

I have illustrated my device in connection with a marine engine for use on a steamboat; but it is capable of use in connection with any reversible engine.

A A′ are the eccentric-rods of a marine engine.

B B′ represent two of the floor-beams of the engine-room, between which is an open space for the free movement of the said eccentric-rods A A′; and C C′ represent cross-beams beneath the said floor-beams.

D D′ are bell-crank levers secured to the under side of the beams B B′, so that both arms move horizontally, and so that one of said arms will be moved by one of the eccentric-rods as the latter is thrown over and rocked against it, as hereinafter explained.

E E′ are the bell-crank levers secured, in the present illustration, to the cross-beams C C′, respectively, by horizontal pivots, so as to work in vertical lines, and wires *d d′* connect the bell-crank levers D and E, and D′ and E′, respectively, as shown.

At any convenient location, either in the engine-room or elsewhere, there are arranged, as against a wall, brackets or bearings *f f′*, to which are pivoted bell-crank levers F and F′, which I call my "contact-levers," and the inner arms of these levers are connected by wires *e* and *e′*, respectively, to arms of the levers E and E′ just named. Above these levers F and F′, I have shown a hinged plate, G, which bears electric buttons *g* and *g′*, and which plate may be turned up against the wall, and secured by a turn-button, G′, if desired.

Of course there may be two of these plates G, one for each button *g g′*, if more convenient or necessary.

In order to keep the free ends of the levers F F′ normally out of contact with the buttons *g g′*, springs *c c′* extend from said arms to a convenient point beyond—as, for instance, to arms *b b′*, projecting from the brackets *f f′*. Similarly the free ends of the bell-crank levers D D′ are provided with springs *a a′*, whose other ends are secured to the under side of the beams B and B′, to draw back said levers to their normal positions after the eccentric-rods A and A′ have withdrawn from contact therewith.

H H′ represent electric bells or other annunciators, which may be at any desired point—as, for instance, in the pilot-house.

In the drawings I have shown bells; but it will be understood that I may use in place thereof, or in addition thereto, annunciators of any desired form—such as those used in hotels, telephone-exchanges, &c., which drop or change position when electrical contact is made.

I I′ are batteries connected to the bells or annunciators and to the electric buttons in the usual manner, as indicated in the drawings, by wires *h i i* and *h′ i′ i′*.

K is the shaft of the engine.

While I have carefully and minutely described the details of construction of my device as represented in the accompanying drawings, it will be understood that I do not limit myself to said details, which may be varied indefinitely without departing from the spirit of my invention. For instance, it is obviously immaterial whether my bell-crank levers move horizontally or vertically, and their individual location, whether upon beams or upon the engine-frame, is simply a matter of convenience, depending upon the shape, size, and arrangement of the engine-room or other rooms of the vessel, or other structure

wherein they may be placed in any particular case, and consequently differing, perhaps, in every instance.

The operation of my device will be apparent from the foregoing description, taken in connection with the drawings, wherein the eccentric-rod A is supposed to be making the connection in all the views, (in full lines,) and consequently the shaft is all the time revolving in one direction. In this movement of the shaft the eccentric-rod A is thrown so far to the left as to cause it to press against one of the arms of the lever D, (see Fig. 2, where the full section lines show the relative positions of the rods A and A′ at this moment, and the dotted lines their relative positions on their return movement, when the engine is reversed and the shaft is revolving in the opposite direction,) which action, of course, as the rod A rocks against said arm, serves to draw upon the other arm of the lever D and on the wire *d*, and thus the lever E will be moved and its wire *e* will draw down the inner arm of the contact-lever F and cause its free arm to be raised, (against the force of its spring *c*,) so that its upper end will strike the button *g*, and hence ring the electric bell H, (or move the annunciator at that point or both,) while, when the engine is reversed and the eccentric rods A and A′ are in the positions indicated by dotted lines in Figs. 1 and 2, then, when the rod A′ begins to rock against the adjacent arm of the lever D′, (being just ready to rock in the position shown in dotted lines in Fig. 2,) the movements just described will now take place on the other side of the engine, and the bell or annunciator H′ will be rung or actuated, showing that the shaft K is now revolving in the opposite direction, and so the pilot or captain will always know instantly and all the time in which direction the shaft is revolving, and therefore whether the engine is going ahead or backing, and it is obvious that the same information as to the direction of revolution of the shaft will be in like manner instantly conveyed in the case of any reversible engine, whether on a steamboat, or in a factory, or elsewhere.

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

1. The combination of a reversible engine with a distant signal, a push-button electrically connected to said signal, and a series of bell-crank levers connected together and adapted to be actuated by one of the eccentric-rods of the engine, whereby the movement of said rod will automatically make contact with the said push-button, and thereby actuate the signal.

2. The combination of a reversible engine with two distant signals, push-buttons electrically connected to the latter, and two series of bell-crank levers, one lever in each series being located adjacent to each of the eccentric-rods of said engine, and another of the levers in each series located adjacent to each of the said push-buttons, and all the levers in each series being connected together, whereby when either eccentric-rod strikes against its adjacent lever all the levers in that series will be moved, and the last lever of said series will come in contact with its adjacent push-button, and hence will thereby automatically actuate that signal with which the latter is in electrical connection.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

JAMES C. RICKETSON.

Witnesses:

H. G. UNDERWOOD,

N. E. OLIPHANT.