

*A. Foucault.*  
*Marine Telegraph.*

Nº 71476

Patented Nov. 26, 1867

Fig. 2.

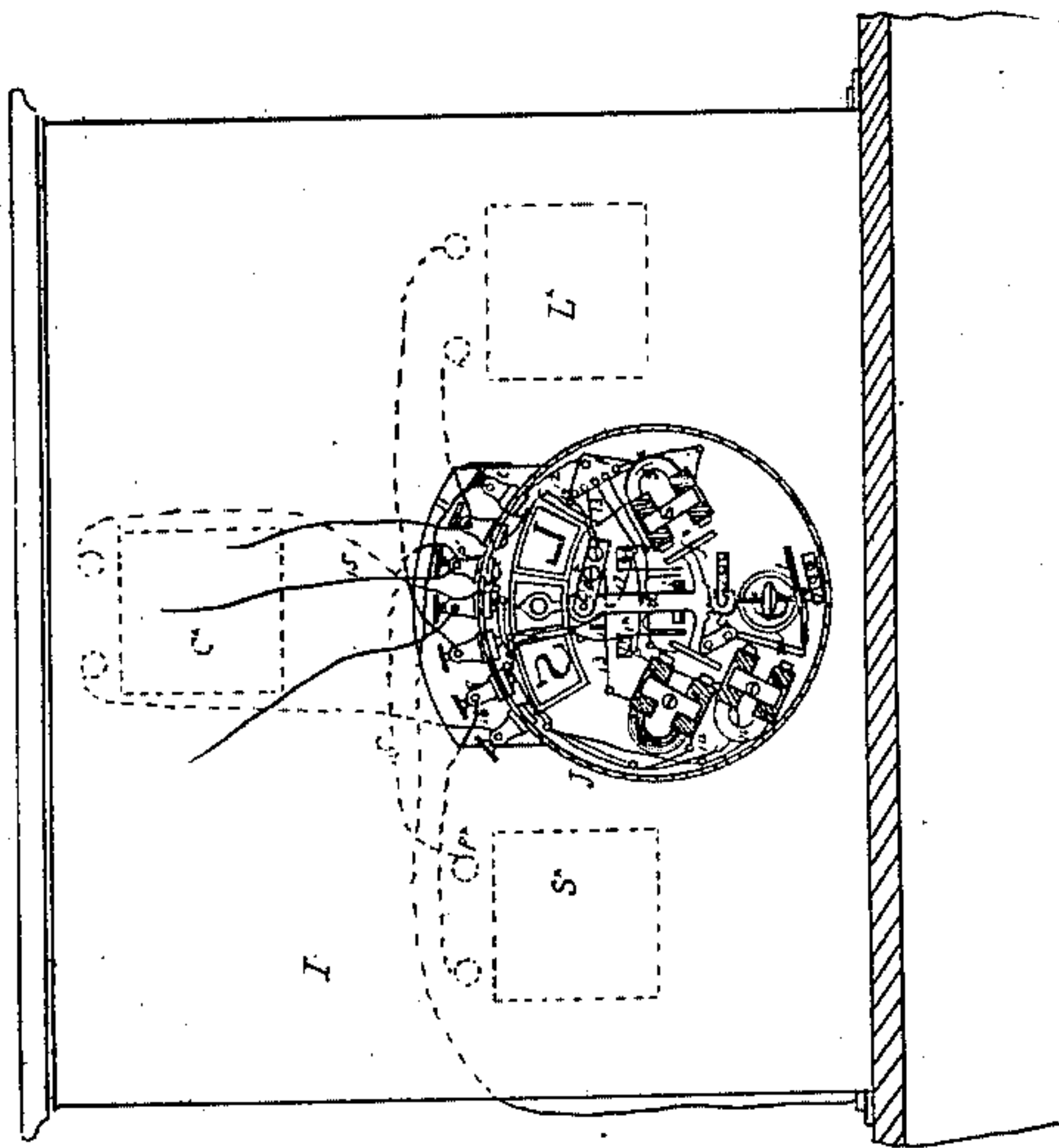
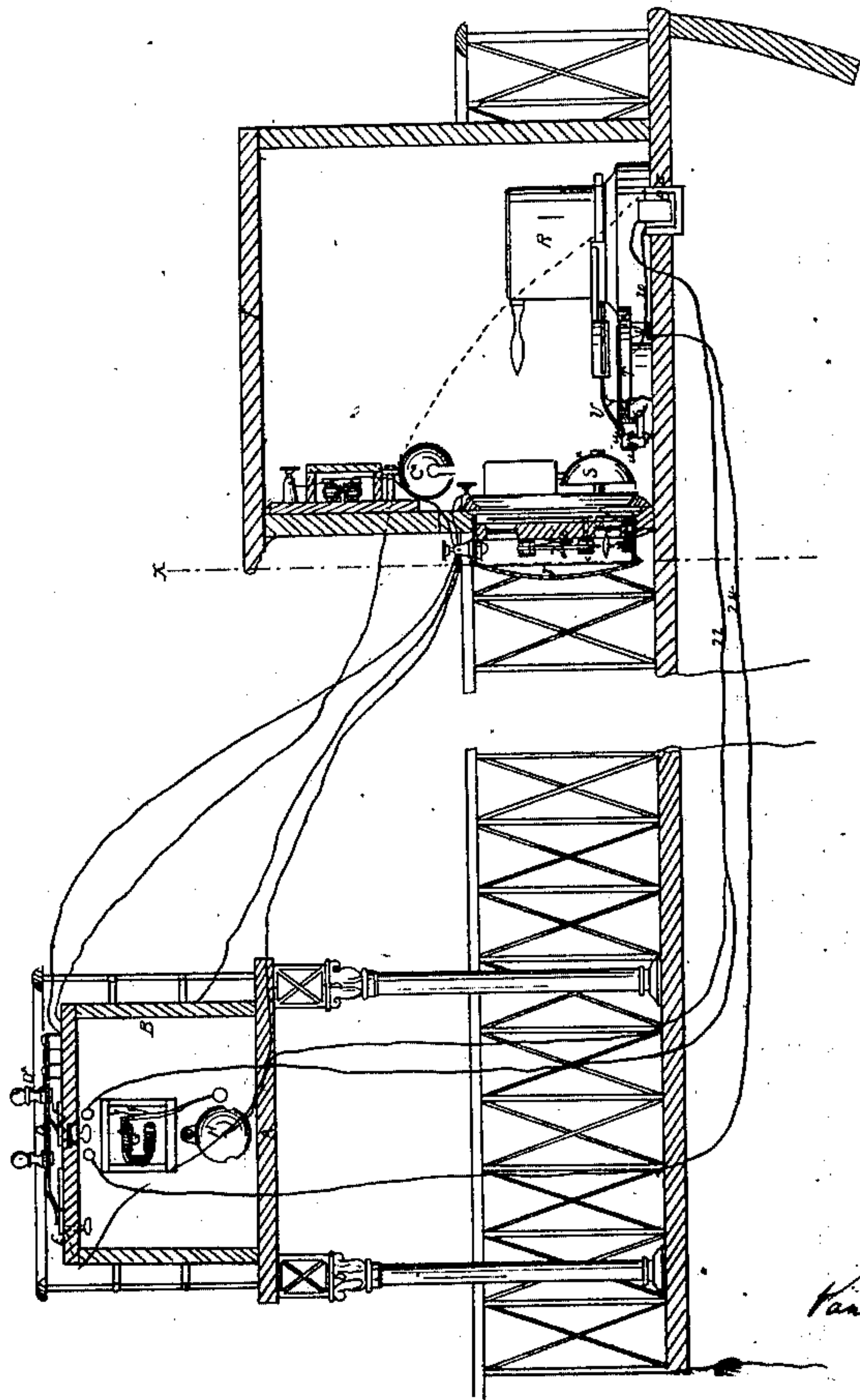


Fig. 1.



*Witnesses*

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Fig. 4

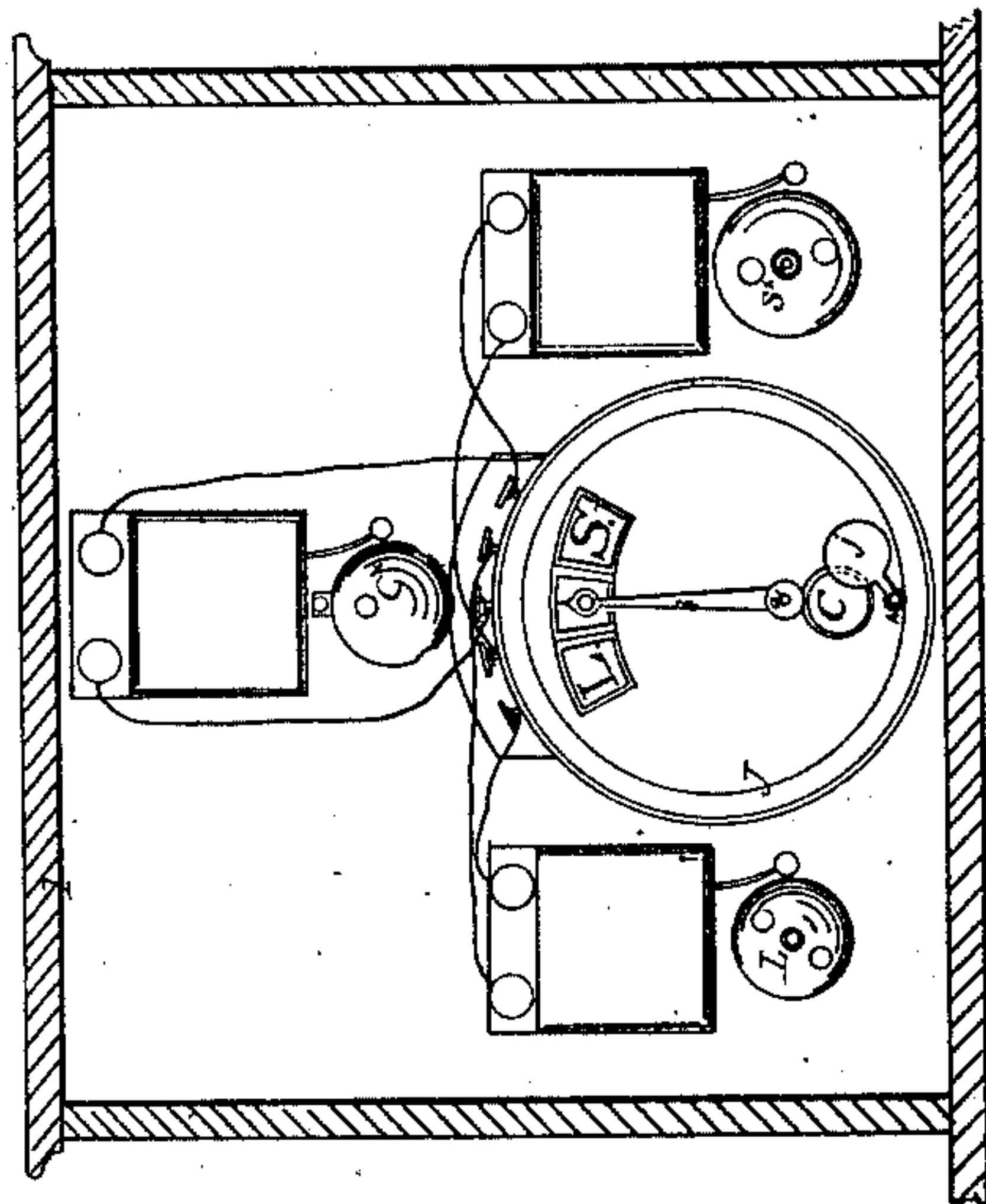


Fig. 3

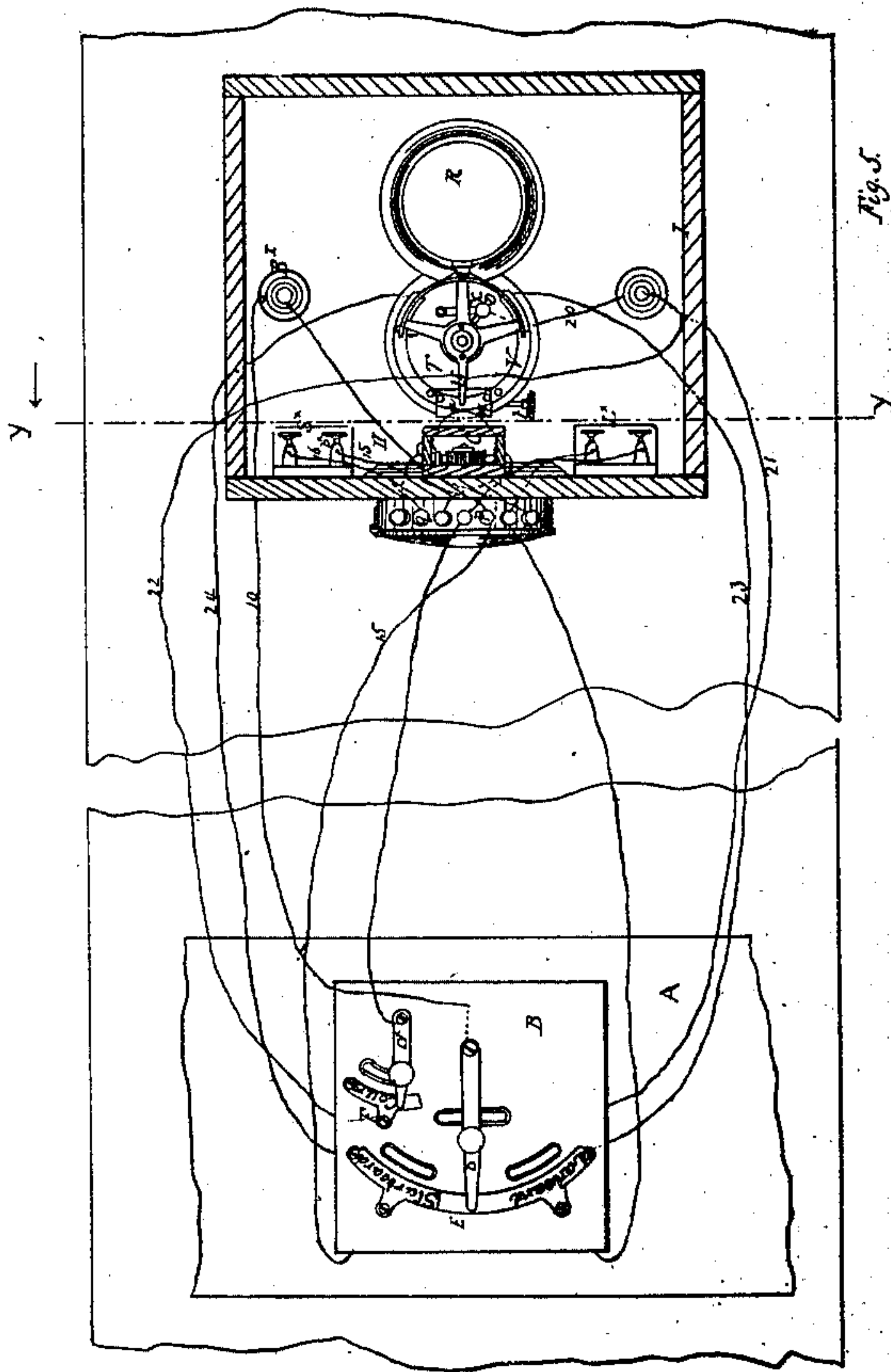
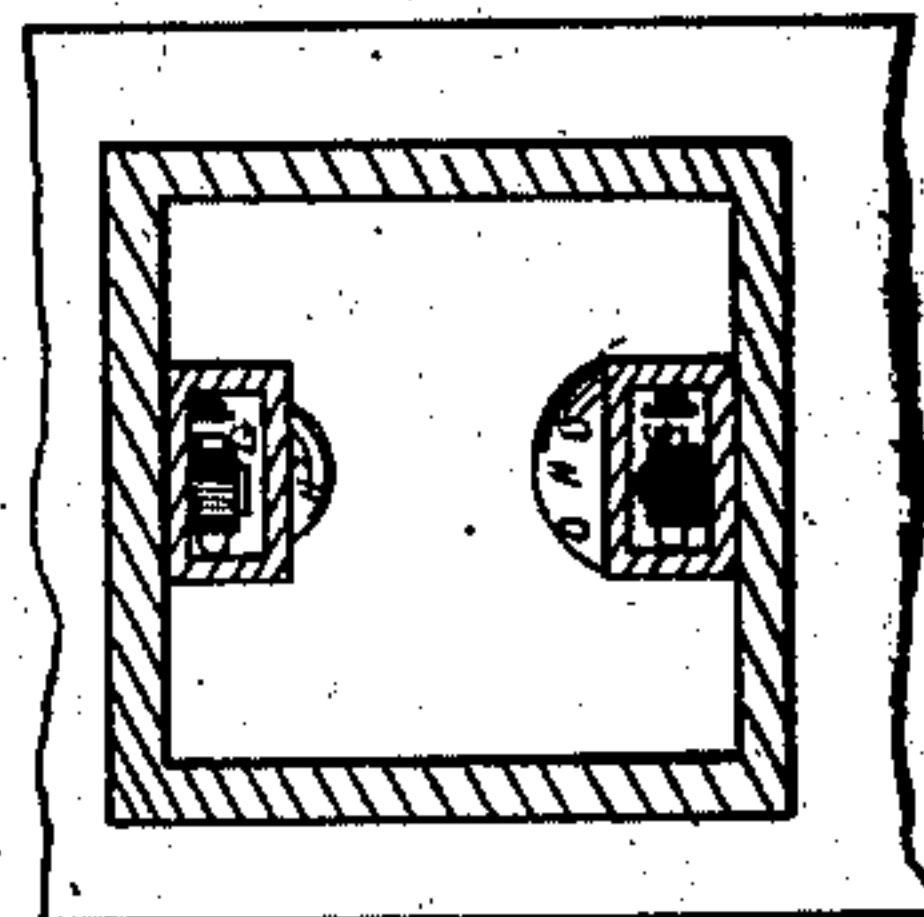


Fig. 5



Witness:

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Geo. B. Southard

Inventor  
A. Foucault  
per  
Geo. B. Southard  
Att<sup>y</sup>



# United States Patent Office.

ALFRED FOUCAUT, OF NEW YORK, N. Y.

Letters Patent No. 71,476, dated November 26, 1867.

## IMPROVEMENT IN MARINE TELEGRAPHS.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:—

Be it known that I, ALFRED FOUCAUT, M. D., of the city of New York, in the county and State of New York, have invented a new and useful Improvement in Speaking-Telegraphs; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 represents a longitudinal vertical section of this invention.

Figure 2 is a transverse section of the same, the plane of section being indicated by the line  $x x$ , fig. 1, and looking in the direction of the arrow marked opposite to that line.

Figure 3 is a sectional plan or top view of said invention.

Figure 4 is a transverse section thereof, the plane of section being taken in the line  $y y$ , fig. 3, and looking in the direction of the arrow opposite to that line.

Figure 5 is a horizontal section of the box on the commander's bridge.

Similar letters indicate corresponding parts.

This invention relates to a speaking-telegraph, which is intended particularly to enable the commander of a vessel to direct and control the helmsman by the simple motion of one or more keys or switches, and by the sound of bells of different pitch.

A represents the commander's bridge, on which is placed a box, B, of wood, or any other suitable material or materials. To the top of this box is secured the transmitting-mechanism, which consists chiefly of two switches,  $D D^*$ , which sweep over segments  $E F$ , best seen in fig. 3. One of these segments is composed of two metallic end sections, with intervening sections of wood, India rubber, or other good non-conductor of electricity, and the other of one metallic and one non-conducting section. The metallic sections of the segment E are marked "starboard" and "larboard," and the metallic section of the segment F is marked "course." In the interior of the box B is secured the receiving-mechanism for controlling the helmsman, which consists chiefly of two electro-magnets,  $G G^*$ , and two bells,  $H H^*$ , (one of each being shown in fig. 1, and both in fig. 5,) and these bells are of different pitch, so that their sounds can be readily distinguished. I is the house which encloses the steering-wheel or other mechanism to control the position of the rudder. In the front of said wheel-house is secured the receiving-mechanism, which consists chiefly of a metallic box, J, provided with a bottom of wood, or other good non-conductor of electricity. Into this bottom are inserted three segmental panes of glass, one of which is marked L, (larboard,) one S, (starboard,) while the middle is left blank, and at another place of said bottom a circular pane, marked C, (course,) is inserted, as shown particularly in fig. 4. Through the bottom extends an arbor,  $a$ , on one end of which is mounted an index-hand,  $b$ , the point of which traverses over the segmental panes, while the other end of said arbor leaves a pinion,  $c$ , (see fig. 2,) which gears in a toothed segment,  $d$ . This segment is suspended from a pivot,  $e$ , and it carries on its ends two iron or steel plates,  $f f^*$ , which form the armatures for the electro-magnets  $g g^*$ , which are situated on opposite sides of said segment, so that if the electro-magnet  $g$  attracts its armature, the index-hand  $b$  is caused to move to the starboard pane S, and if the electro-magnet  $g^*$  attracts its armature, the index-hand moves to the larboard pane L. If neither of the electro-magnets attracts its armature, the segment is returned to a central position by the action of a spring,  $h$ , (see fig. 1,) which is secured to its back, and bears on the edge of a saddle,  $i$ , that is secured to the bottom of the box J. Said edge is provided with two inclines extending from the ends of the saddle towards its centre, and by the action of the spring  $h$  on these inclines, the segment is returned to its central position. When it reaches this position the spring drops into a shallow notch, in the centre of the saddle, and by these means the segment, together with the index-hand  $b$ , is retained in a central position, even if the vessel rolls. The circular pane C, in the lower part of the box J, is provided with a lid,  $j$ , which is secured to an arbor,  $k$ , to which a rocking motion is imparted by the combined action of a spring,  $l$ , and of an armature,  $m$ , acting in conjunction with an electro-magnet,  $n$ , fig. 2. If said armature is attracted by its electro-magnet, the lid swings back, and the pane C is exposed to the view of the helmsman.

To the inner wall of the wheel-house are secured three electro-magnetic alarm-bells,  $C^* L^* S^*$ , the electro-magnets of which are connected with the switch-plates or segments  $E F$  in such a manner that they cause their bells to sound whenever the appropriate switch comes in contact with the metallic portion of its switch-plate. The pitch of the alarm-bells  $C^* L^* S^*$  is different, so that the helmsman is enabled to distinguish, by the sound, which bell has sounded. The connection of this portion of my apparatus with the battery is as follows:

From one, say the positive pole of the battery  $D'$ , extends a wire, 10, to the pivot of the switch D, and from the negative pole of said battery extends a wire, 11, to a stud,  $o$ , which is secured in the box J. This stud connects by a wire, 12, with a plate,  $p$ , fig. 2, from which a wire, 13, extends to one end of the helix of the electro-



magnet *g*. The other end of this helix connects by a wire, 14, with a stud, *p'*, from which a wire, 15, extends to the starboard section of the switch-plate *E*, and also to a stud, *p\**, which connects with one end of the helix of the starboard alarm-bell *S\**. The other end of this helix connects by a wire, 16, with a stud, *q*, on the box *J*, and from this stud extends a wire, 18, to a spring-stud, *r\**, situated in the interior of the box *J*. The spring extending from this stud is in such a position that when the armature *f* is attracted by its electro-magnet *g*, said stud will be in metallic contact with the segment *d*. From the bracket *d\**, which forms the bearing for the segment, a wire, 19, extends to the plate *p*. It will thus be seen that when the switch *D* is in contact with the starboard section of the switch-plate *E*, the circuit through the wires 11, 12, 13, 14, and 15 is closed, and the armature *f* is attracted, thus throwing the index-hand *b* over to the starboard pane *S*. At the same time the circuit closes through the wire 15, the helix of the starboard alarm-bell *S\**, wires 16 and 18, spring-stud *r\**, segment *d*, bracket *d\**, wire 19, plate *p*, and wires 12 and 11, and the starboard alarm-bell sounds as long as the switch *D* is in metallic contact with the starboard section of the switch-plate *E*.

From this explanation the connection of the larboard magnet *g\** and larboard alarm-bell *L\**, and also the connection of the "course" magnet *n* and "course" alarm-bell *C\**, will be readily understood, and requires no further explanation, all the connections being plainly shown in the drawing.

By changing more or less rapidly the switch from the metallic part of the switch-plate to its non-conducting part, the commander is enabled to indicate the rapidity with which he requires his orders to be executed. When the vessel has reached the desired course, the switches are turned over the non-conducting parts of the switch-plates, and thereby the index-hand *b* returns to its central position, and the lid *j* is thrown back, leaving the "course," pane *C*, open. In this position all the alarm-bells remain silent.

I will now complete the description of the apparatus which enables the commander to control the helmsman, and a portion of which is enclosed in the interior of the box *B*, on the commander's bridge, and has been already described.

In the wheel-house, or close to the rudder-head *R*, is a circular table, *T*, from the centre of which rises a stud, *s*, that forms the fulcrum of a switch, *U*. This switch connects by cog-wheels, belts, or other means, with the rudder-head, in such a manner that the oscillations of the rudder are transmitted to the switch. The point of the switch *U* sweeps over a metallic segment, *V*, which is let into the table *T*, and a portion of this segment and of the table is cut away, to admit the prismatic regulator *W*. This regulator can be revolved by means of a button, *t*, and to its surfaces are secured segments *u*, which fill up the gap in the segment *V*. The segments *u* are made in three sections, viz, two metallic end sections and an intervening non-conducting section, the non-conducting sections on the various sides of the regulator being made of different lengths, to correspond to five, ten, fifteen, and twenty degrees, or to any number of degrees which may be desirable.

The connection of the table *T* with the battery *B* and with the bells *H H\** in the box *B* is as follows:

From one pole of said battery extends a wire, 20, to a switch, *X*, which serves to open or close the connection between the battery and the central stud *s*, on which the switch *U* turns. From the opposite pole of the battery extend two wires, 21 and 22, one of which connects with one end of the helix of the alarm-bell *H*, and the other with one end of the helix of the alarm-bell *H\**. From the opposite ends of the helices extend wires 23 and 24, to the opposite ends of the segment *V* in the table *T*. If the switch *U* is in contact with the non-conducting section of the segment *u* of the regulator, the circuit is open; but if the rudder is allowed to oscillate far enough to bring the switch in contact with the metallic sections of the segment *u* on the regulator, the circuit through the helix of one of the alarm-bells is closed, and the commander's attention is called to the fact that the helmsman neglects his duty. By turning the regulator, the commander is enabled to keep the oscillations of the rudder within any desired limit, and by having two alarm-bells in his box *B*, he is enabled to tell which way the helmsman allows the rudder to oscillate beyond the allotted number of degrees.

If desired, my apparatus can also be used for transmitting signals or orders to the engine-room or to other parts of a vessel or building.

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

1. The hinged segment *d*, provided with two armatures, *f f\**, in combination with the index-hand *b* and panes *L S*, constructed and operating substantially as and for the purpose set forth
2. The saddle *i*, in combination with the spring *h*, hinged segment *D*, and index-hand *b*, substantially as and for the purpose described.
3. The spring-studs *q r\**, in combination with the segment *d*, electro-magnets *g g\**, and electro-magnetic alarm-bells *S\* L\**, constructed and operating substantially as and for the purpose set forth.
4. The lid *j* and "course" pane *C*, in combination with the electro-magnet *n*, armature *m*, and switch *D\**, constructed and operating substantially as and for the purpose described.
5. The alarm-bell *C\**, in combination with the lid *j*, pane *C*, electro-magnet *n*, and switch *D\**, constructed and operating substantially as and for the purpose set forth.
6. The switch *U*, in combination with the rudder-head *R* and electro-magnetic alarm-bells *H H\**, in the commander's box *B*, substantially as and for the purpose described.
7. The regulator *W*, carrying non-conducting segments of different length, in combination with the switch *U* and rudder-head *R*, constructed and operating substantially as and for the purpose described.

This specification signed by me, this 29th August, 1867.

DR. FOUCAUT.

Witnesses:

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