

Feb. 24, 1925.

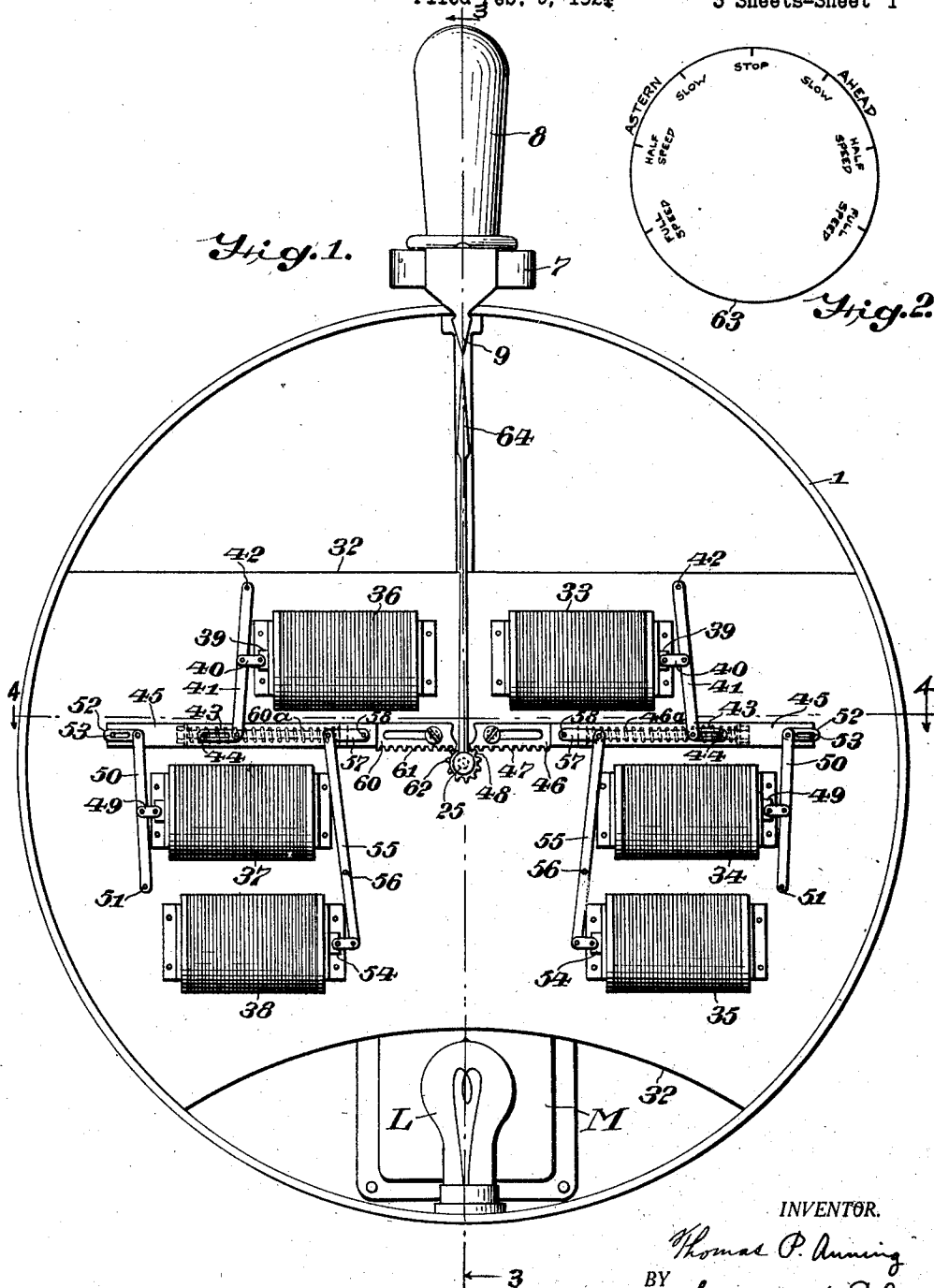
1,527,768

T. P. ANNING

SHIP'S TELEGRAPH

Filed Feb. 9, 1921

3 Sheets-Sheet 1



INVENTOR.

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Feb. 24, 1925.

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3 Sheets-Sheet 2

Fig. 4.

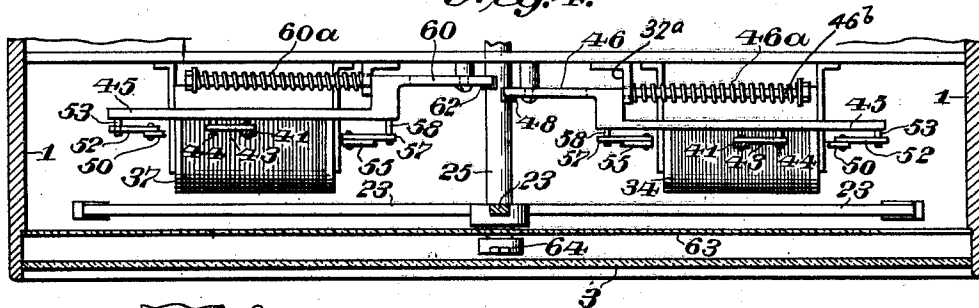


Fig. 3.

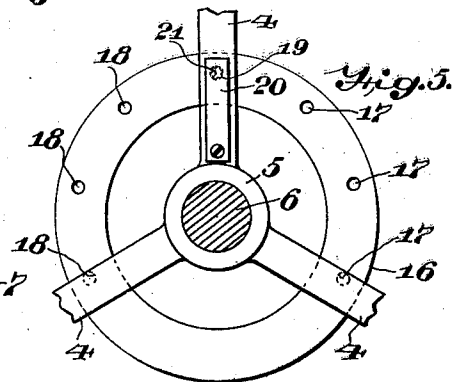
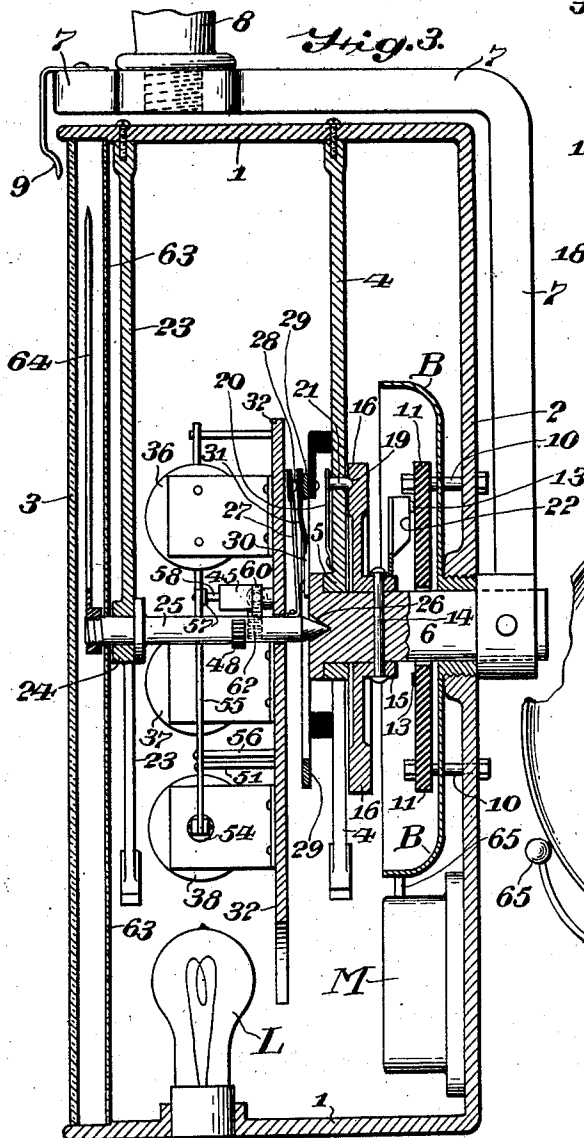
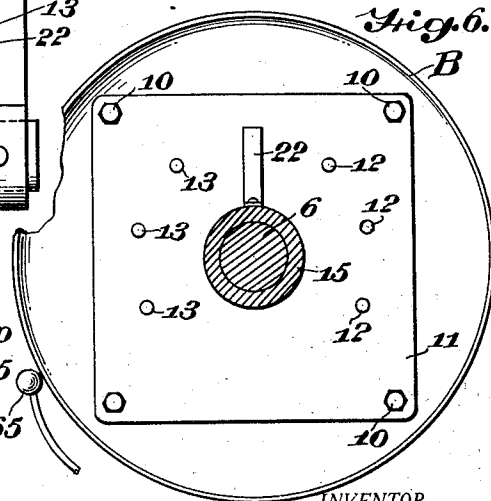


Fig. 6.



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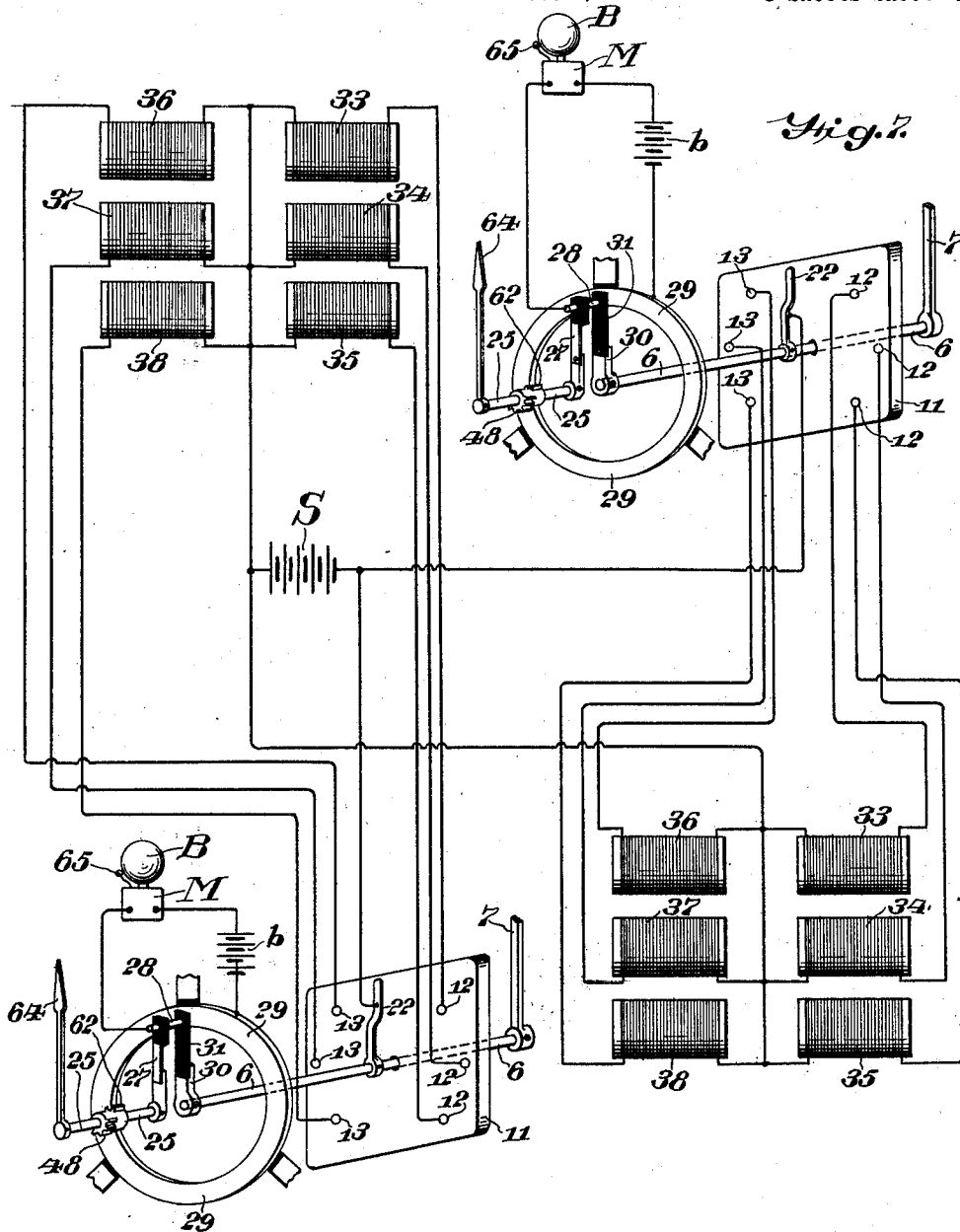
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SHIP'S TELEGRAPH

Filed Feb. 9, 1921

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

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SHIP'S TELEGRAPH.

Application filed February 9, 1921. Serial No. 443,583.

To all whom it may concern:

Be it known that I, THOMAS P. ANNING, a citizen of the United States, residing in Atco, county of Camden, State of New Jersey, have invented new and useful Improvements in Ships' Telegraphs, of which the following is a specification.

My invention relates to a signaling system for use upon ships or in other relations in which it is desired to transmit one or more signals or indications.

In accordance with my invention, a signaling element is moved by the operator to close a circuit of an electro-motive device, as a solenoid, electro-magnet or equivalent, at the receiving station, the electro-motive device then operating an indicator to position corresponding with the position to which the signaling element is moved.

Further in accordance with my invention, the apparatus at each station comprises such a signaling element and a plurality of electro-motive devices operating an indicator, each signaling element controlling the electro-motive devices at the other station.

Further in accordance with my invention, an audible, visual or other alarm is set into operation as soon as an order or signal is transmitted, and continues in operation until the order or indication is correctly repeated from the other station.

My invention resides in apparatus of the character hereinafter described and claimed.

For an illustration of one of the various forms my apparatus may take, reference is to be had to the accompanying drawings, in which:

Fig. 1 is a front elevational view of apparatus embodying my invention.

Fig. 2 is a representation of the dial of each instrument.

Fig. 3 is a vertical sectional view, some parts in elevation, of apparatus shown in Fig. 1, and taken on the line 3—3 of Fig. 1.

Fig. 4 is a horizontal sectional view, some parts in plan, of the apparatus shown in Fig. 3, and taken on the line 4—4 of Fig. 1.

Fig. 5 is a fragmentary elevational view of the locking structure.

Fig. 6 is a fragmentary elevational view of the transmitter contact structure.

Fig. 7 is a diagrammatic view of one of the circuit arrangements which may be employed.

Referring to the drawings, 1 is a casing

closed at its rear by the wall 2 and having as a front wall or closure the glass or other transparent member 3. Secured within the casing 1 are the three arms 4, having the common hub 5 forming a bearing for the transmitter shaft 6 which also has a bearing in the wall 2 and extends to the exterior thereof. Secured to the shaft 6 outside of the casing is the operator's lever 7 having the operator's handle 8 and carrying at its forward end the index 9.

Secured at its center within the casing and adjacent the rear wall 2 thereof is the bell B, hereinafter referred to. Supported by the rear wall 2 by bolts or studs 10 extending freely through holes in the bell B is the plate or member 11 of insulating material, carrying suitably spaced contacts 12 and 13, Figs. 6 and 7. Secured to the shaft 6, as by pin or bolt 14, is the hub 15 of the locking disk 16, Figs. 3 and 5, the disk 16 having the holes or depressions 17 having positions corresponding with the positions of the contacts 12; the disk 16 has also the holes or depressions 18, whose positions correspond with the positions of the aforementioned contacts 13. It also has a hole or depression 19 for the neutral or stop position. Carried by one of the arms 4 is the spring 20 carrying the pin 21 which it presses into the holes or depressions 17, 18 and 19 to hold the disk 16 and the parts attached thereto in the different positions to which it may be actuated by the operator's lever 7. Secured upon the hub 15 of the disk 16 is the brush 22 adapted to engage the aforesaid contacts 12 and 13.

Secured to the casing 1 adjacent its forward end are three arms 23 having a hub 24 through which extends the receiver shaft 25 having a conical end 26 bearing in a conical depression in the shaft 6. Secured to the shaft 25 is the spring 27 carrying at its outer end the insulated contact 28 adapted to engage and make contact with the metallic ring 29 supported on the arms 4. Carried on the adjacent end of the shaft 6 is the member 30, to which is secured the radially outwardly extending member 31 of insulating material adapted to move between the contact 28 and ring 29 to break circuit between contact 28 and ring 29.

Supported within the casing 1 is the transversely extending diaphragm plate or member 32, upon which are supported the

three solenoids 33, 34 and 35 for ahead signaling, and the three solenoids 36, 37 and 38 for astern signaling.

The core 39 of solenoid 33 is connected by 5 pivoted link 40 with the lever 41 pivoted at 42 and having pivoted to its lower end the slotted member 43 through which extends the pin 44 on the member 45 attached to the rack bar 46 having the rack teeth 47 meshing 10 with the circumferentially incomplete gear 48 secured upon the shaft 25. A compression spring 46^a that is interposed between a collar secured to an extended portion 46^b of the rack bar and a lug 32^a on the plate 15 32, serves to return the rack bar to the normal position indicated in Fig. 1 after deenergization of any of the solenoids. Similarly, the core 49 operates the lever 50 pivoted at 51 and carrying at its upper end 20 the pivoted slotted member 52, through which extends the pin 53 on the member 45. The core 54 of the solenoid 35 actuates the lever 55 pivoted at 56 and pivoted by link 57 to the pin 58 carried by the member 45. 25 The cores of the solenoids 36, 37 and 38 are similarly connected with a member 59, similar to member 45, attached to and adapted to move the rack bar 60, similar to rack bar 46, and having the rack teeth 61 30 adapted to engage with the circumferentially incomplete gear 62 secured upon the shaft 25, the teeth of the incomplete gears 48 and 62 occupying different parts of circumferences with respect to the shaft 25. A 35 spring 60^a, similar to spring 46^a, serves to return the rack bar 60 toward the left, as viewed in Fig. 1, after deenergization of any of the solenoids 36, 37 or 38.

The described structures intervening between 40 the solenoid cores and the rack bars are such that solenoids 33 and 36 can actuate their rack bars a predetermined distance only; solenoids 34 and 37 can actuate their rack bars greater distances than the 45 solenoids 33 and 36, and when so actuating their rack bars do not affect the rack bar operating structures of solenoids 33 and 36; and similarly, the solenoids 35 and 38 actuate their rack bars still greater distances 50 and without affecting the rack bar operating structures of solenoids 33, 34 and 36, 37.

Within the casing 1 and adjacent the glass 3 is the dial 63 which, as shown on 55 smaller scale in Fig. 2, carries the various ahead and astern orders and designates their positions. Secured upon the front end of the shaft 25 is the pointer or indicator 64 co-operating with the dial 63.

Within the casing 1 may be disposed the 60 electric or other lamp L for suitably illuminating the dial, which may be transparent or translucent.

Within the casing 1 and adjacent the bell 65 B is located the bell ringing mechanism M, as for example, an ordinary trembler bell

mechanism having the clapper 65 for tapping the bell B.

Referring to Fig. 7, there are shown stations interconnected and each provided with transmitting and receiving apparatus of the 70 character hereinbefore described. S is any suitable source of current, as the ship's dynamo-electric generator; or it may be a primary or storage battery, or any other suitable source. One terminal of the source S 75 connects with the brush 22 in each transmitter, and the other terminal of the source S connects with one terminal of each of the solenoids at both stations. At each station 80 is provided a battery or other source of current b, one terminal of which is connected to the ring 29 and the other terminal to one terminal of the bell ringing mechanism M whose other terminal connects with the co-acting brush 28. 85

The operation is as follows:

Suppose the transmitter at the right of Fig. 7 is upon the bridge of a ship and that the other apparatus at the left of Fig. 7 is 90 in the engine room. The operator upon the bridge wishes to signal the engineer for slow speed ahead; he rotates the lever 7 in clockwise direction, as viewed in Fig. 7, bringing the brush 22 into engagement with the 95 uppermost of the contacts 12, in which position the lever 7, shaft 6 and attached parts will be locked by the pin 21 engaging in the uppermost hole or depression 17, Fig. 5. The circuit of the solenoid 33 of the engine room receiving device is accordingly energized, and it moves the rack bar 46, Fig. 1, 100 toward the left, rotating gear 48 and thereby shaft 25 a distance which will bring the indicator 64 to the indication marked "Slow, ahead" on the dial 63 in the engine 105 room. Due to such movement of the shaft 25 at the engine room receiver, the brush 28 will engage the ring 29 and cause the bell B in the engine room to ring, the bell B on the bridge having been caused to ring immediately the lever 7 was moved from neutral position to the position described. The 110 engineer will then operate his lever 7 to bring its index 9 to the position corresponding with that taken by the pointer 64. In 115 so doing, he will rotate his shaft 6 to such extent as to bring the insulating member 31 between brush 28 and ring 29 and so cause the bell B in the engine room to stop ringing. But in so moving the lever 9, the 120 engineer has transmitted back to the receiving apparatus upon the bridge a corresponding signal or indication, energizing the solenoid 33 of the bridge receiver, causing the 125 shaft 25 of the bridge receiver to rotate in clockwise direction, bringing the indicator 64 to position corresponding with the indicator 9 of the bridge transmitter, namely, at the position corresponding with slow ahead. This will cause the brush 28 to separate 130

from the ring 29, because the insulating member 31 was moved with the shaft 6 upon transmitting the order from bridge to engine room, the brush 28 riding up upon the insulating member 31 and so breaking the circuit of the bell actuating mechanism M, and the bell B upon the bridge thereupon ceases to ring.

And so for any other of the orders or signals the shaft 6 is rotated in appropriate direction to appropriate extent, causing like actions to that above described.

Incomplete gears 48 and 62 are of such circumferential extents, and are so disposed angularly with respect to each other that when an ahead order is given the shaft 25 can be rotated only in one direction, as clockwise, while when an astern order is given the shaft 25 can be rotated only in counter-clockwise direction, the gears and their racks being so arranged and disposed that they do not interfere with each other in actuation of the shaft 25 and its attached parts.

What I claim is:

1. A signal-receiving apparatus comprising a rotatable indicating shaft, gears thereon for operating the same in opposite directions, racks driving said gears, and electromagnetic means for actuating said racks in opposite directions, said gears being circumferentially incomplete and being disposed in different angular positions with respect to said shaft, whereby the shaft may be rotated by either rack independently of the other rack.

2. A signal-receiving apparatus comprising a rotatable indicating shaft, gears thereon for operating the same in opposite directions, racks driving said gears, and a plurality of electro-motive devices for each rack, the motive devices of one group actuating their rack independently of each other through different distances.

3. A signal-receiving apparatus comprising a rotatable indicating shaft, gears thereon for operating the same in opposite directions, racks driving said gears, a plurality of electro-motive devices for each rack, the motive devices of one group actuating their rack independently of each other through different distances, and said gears being circumferentially incomplete and being disposed in different angular positions with respect to said shaft.

4. Signaling apparatus comprising transmitting and receiving apparatus at each of two stations, the receiving apparatus comprising a movable indicating structure, electro-motive means controlled by the transmitter at one station for actuating the indicating structure at the other station, an alarm circuit rendered operative upon movement of the last named structure to a new position, and means movable with the trans-

mitter at the last named station for rendering said alarm circuit inoperative when said transmitter takes position to repeat back to the first named station the indication effected by said indicating structure.

5. Signaling apparatus of the character described comprising co-axial transmitter and receiver shafts, an alarm circuit contact movable with the receiver shaft and adapted to engage a stationary contact member to control an alarm, and a member movable with the transmitter shaft for separating said contact from said contact member when said transmitter shaft takes a position corresponding with said receiver shaft.

6. Signaling apparatus of the character described comprising co-axial transmitter and receiver shafts, electro-motive-devices for moving said receiver shaft to different positions, a transmitting contact movable with said transmitter shaft for closing circuits in different positions of said transmitter shaft, said circuits controlling the electro-motive-devices in similar apparatus at another station, an alarm circuit contact movable with said receiver shaft and adapted to engage a contact member to control an alarm circuit, and a member movable with said transmitter shaft for separating said contact from said contact member when said transmitter shaft takes a position corresponding with said receiver shaft.

7. Apparatus of the character described comprising co-axial transmitter and receiver shafts, a contact rotatable with said receiver shaft, a stationary contact member with which said contact is adapted to engage in all positions of said receiver shaft, and a member movable with said transmitter shaft to separate said contact from said contact member when said transmitter shaft takes a position corresponding with said receiver shaft.

8. Signaling apparatus of the character described comprising a casing, co-axial transmitter and receiver shafts within said casing, said transmitter shaft extending to the exterior of said casing, an operator's lever and an index secured to said transmitter shaft outside of said casing, a dial within said casing, a pointer co-acting with said dial and moving with said receiver shaft, electro-motive-devices within said casing for actuating said receiver shaft to different positions, a plurality of transmitter contacts within said casing, a contact co-acting with said transmitter contacts movable with said transmitter shaft, a bell concentric with said transmitter shaft and surrounding said transmitter contacts, and mechanism for ringing said bell.

In testimony whereof I have hereunto affixed my signature this 7th day of February, 1921.

THOMAS P. ANNING.