

June 14, 1932.

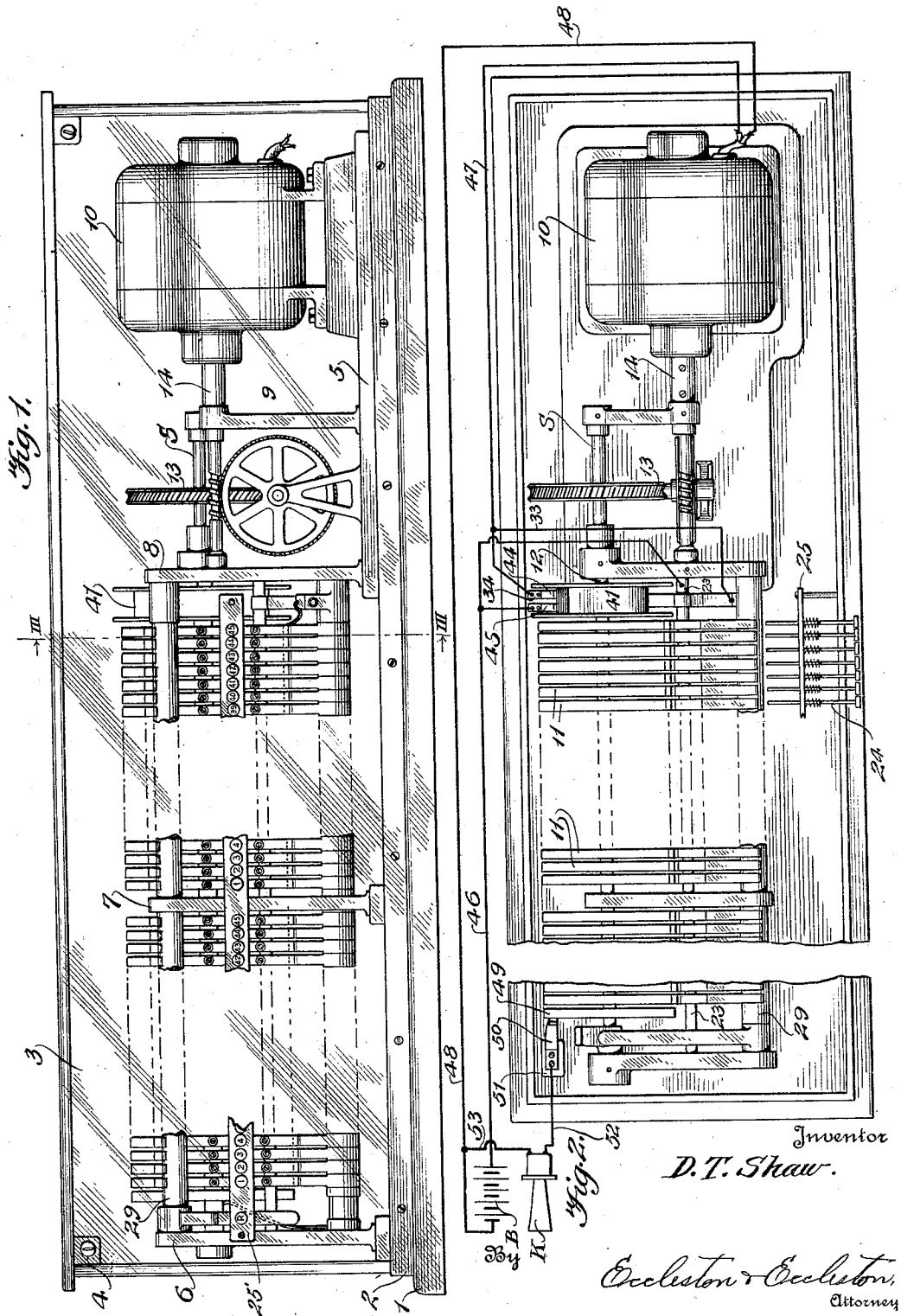
D. T. SHAW

1,863,285

SIGNAL TRANSMITTER

Filed Aug. 18. 1928

2 Sheets-Sheet 1



June 14, 1932.

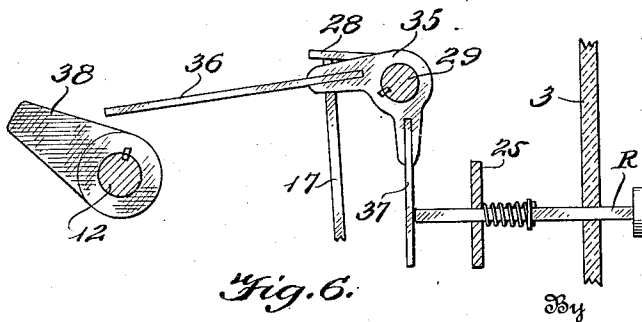
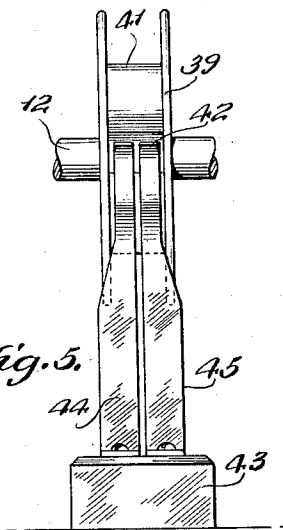
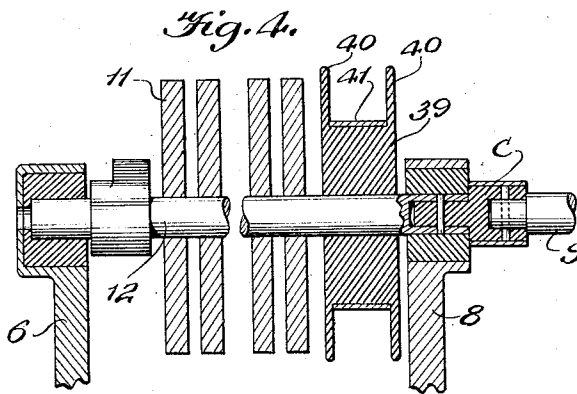
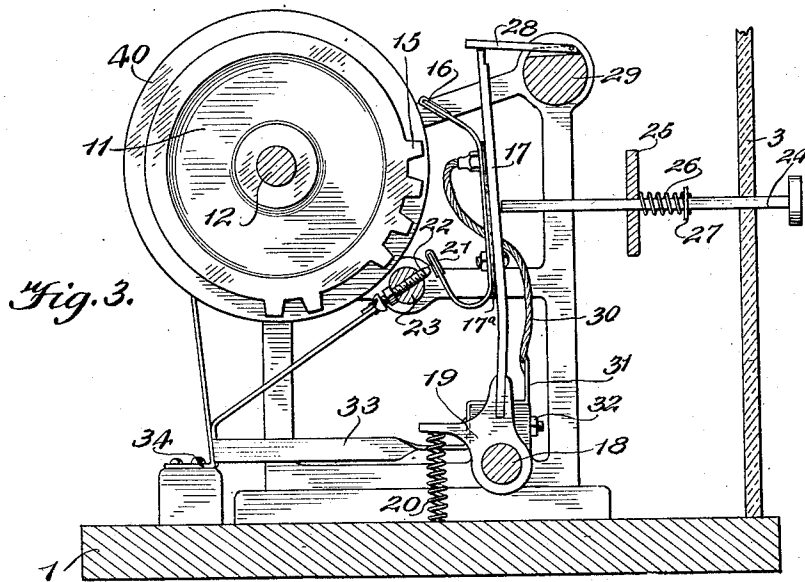
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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SIGNAL TRANSMITTER

Application filed August 18, 1928. Serial No. 300,535.

My invention relates to signal transmitters which are adapted to selectively transmit warning signals to various points remote from a central control station. This device is more particularly useful for transmitting fire alarms to various sections of a scattered community or of a city, and when so used may well be located at a central telephone station.

The main object of my invention is the provision of a simple and reliable apparatus which may be operated by inexperienced persons, and may be installed without undue complication.

Other objects will appear from the following description when taken in connection with the accompanying drawings.

In these drawings:

Figure 1 is a side elevation of one form of transmitter embodying my invention.

Figure 2 is a partial top view of the transmitter with the operating circuits shown connected to a conventional alarm.

Figure 3 is a partial sectional view taken on the line III—III of Figure 1.

Figure 4 is a fragmentary sectional view of the main operating shaft and associated mechanism.

Figure 5 is an elevational view of a circuit controlling drum which is associated with the main shaft of the transmitter.

Figure 6 is a detail view of a portion of the resetting mechanism employed in the transmitter.

In the drawings the reference character 1 designates an insulating base provided near its outer edge with a continuous upstanding flange arranged to support a transparent enclosing case 3, made up of sections suitably secured together by metal clips 4. The base 1 carries signal transmitting mechanism supported on a base plate 5 and on upright metal brackets 6 and 7. The base plate 5 also carries supporting brackets 8 and 9, and an electric motor 10. Mounted in insulated bearings in the brackets 6, 7 and 8, is a shaft 12 carrying a plurality of signaling discs 11 of conducting material. The shaft 12 together with the discs, is driven by motor 10 through reduction gearing 13. This gearing is

mounted between the brackets 8 and 9 and is directly connected to the shaft 14 of the motor while the shaft 12 is connected to the shaft S through an insulated coupling C (see Fig. 4). Shaft 12 also carries a plain conducting disc 49, having a cooperating conducting brush 50 secured to an insulating block 51 on base 1. The function of this disc and brush is to complete an electrical circuit over shaft 12 as will appear later on in the description.

The discs 11 are preferably of metal and carry series of spaced integral teeth 15 arranged in various combinations according to the signals which are to be transmitted. By reference to Figure 3 it will be seen that the disc 11 has a series of four teeth separated by short intervals, and a second series of two teeth widely spaced from the first series.

Cooperating with each of the discs 11 is a spring contact 16 carried on a vertical arm 17. The arms 17 are pivoted about a stationary longitudinal shaft 18 mounted in brackets 6, 7 and 8. Each arm 17 is supported by a holder 19 pivoted about the shaft 18 and biased in a clockwise direction (as seen in Figure 3) by a coiled spring 20. These arms also carry electrical contacts 21 for cooperation with adjustable contacts 22, secured to an electrically conducting rod 23 supported in brackets 6, 7 and 8. Contacts 16 and 21 are insulated from arms 17 by strips of insulation 17^a, but are connected to a common conducting strip 31 by flexible conducting leads 30. The strip 31 is carried by an insulating block 32, and is connected by a conductor 33 to a binding post 34. Arms 17 normally occupy the position shown in Figure 3 in which contacts 21—22 are open and contacts 16 are swung to the right far enough to miss the teeth 15 on the associated discs 11.

For the purpose of actuating the arms 17 to close contacts 21—22 and to bring a contact 16 into cooperation with its associated disc, a plurality of manually operable keys 24 are arranged on a panel 25. This panel is secured to the case 3 and both the panel and the case are suitably apertured to receive the keys. A coiled spring 26 reacting between panel 25 and a pin 27 in key 24,

serves to bias the key to the position shown in Figure 3. By pressing a key inward against spring 26, the arm 17 is swung to the left against spring 20, contact 21—22 is closed and contact 16 placed in a position to engage teeth 15 on disc 11.

As so far described the arms 17 would only be held in contact-closing position as long as the actuating key was held in. In order to insure that a proper sequence of signals is transmitted, I provide stops 28 pivotally mounted in sockets cut in the top of a supporting rod 29 and extending between brackets 6 and 8. When an arm 17 is moved inward by a key 24 the associated stop 28 drops behind the arm and holds it in contact-closing position until it is released by means to be subsequently described.

Each of the discs 11 gives a distinctive signal and may be brought into operation by actuating one of the keys 24, these keys being marked with suitable designating characters. The size of discs 11 may be so chosen as to repeat a signal several times during one revolution of the shaft 12. It is desirable, however, to have the motor 10 stop after one revolution of shaft 12 and to open the alarm circuit. In order to bring this about I mount a block 35 on rod 29. This block carries two arms 36 and 37 approximately at right angles to each other and is keyed to rod 29. Shaft 12 carries an insulating dog 38 keyed to its left hand end, as seen in Figure 1. When shaft 12 is rotated the dog 38 is turned in a counter-clockwise direction as seen in Figure 6, and after making nearly a complete revolution strikes arm 36 and rotates rod 29 to lift the stops 28. When dog 38 has made a complete revolution the arm 36 is released and the parts are restored to the position shown in Figure 6. If it is desired to discontinue the operation of the signal at any time after it has been set in motion a reset key R is provided. This key when pressed inward strikes arm 37 and rotates rod 29 to release any one of the contact arms 17 that may have been actuated, so that such arm is restored to normal position by its spring 20.

For proper operation of the transmitter it is necessary that the discs 11 always be restored to the same position after operation. For insuring this an insulating drum 39 is fixedly mounted on shaft 12. This drum has upstanding annular flanges 40 and between them carries a conducting strip 41 interrupted by a cut-away portion 42. Mounted on the base 1 is an insulating block 43 carrying two brushes 44 and 45 spaced from each other and contacting with conducting strip 41. These brushes are connected in the circuit of motor 10 so that when their ends reach the gap 42 in strip 41 the motor circuit is broken and the shaft 12 stops with the brushes in this position.

The electrical circuits of the transmitter are as follows:

When a key 24 is pressed, current from battery B flows in the main motor circuit over wire 46 to rod 23, over contact 22—21 which is connected to rod 23, lead 30, conducting strip 31, strip 33, wire 47, windings of motor 10 and wire 48 back to battery B. Motor 10 also has a branch circuit controlled by brushes 44 and 45. This circuit is from battery B over wire 46, brush 45, strip 41, brush 44, binding post 34, wire 47, motor 10, and wire 48 back to battery B, and is closed only when shaft 12 has rotated from its normal rest position thereby bringing brushes 44 and 45 into contact with conducting strip 41 on drum 39. Current also flows intermittently through the signaling circuit when a key 24 has been pressed. This circuit is from battery B over wire 46, rod 23, contact 21—22, contact 16, teeth 15, disc 11, shaft 12, disc 49, brush 50, wire 52, signal K and wires 53 and 48 back to battery B. This circuit is closed only when a key 24 is pressed inwardly to cause a contact 16 to engage teeth 15 of one of the discs 11.

The operation of the mechanism is as follows:

When motor 10 is at rest its circuit is open both at the point where brushes 44 and 45 register with cut-out portion 42 of drum 39, and at the discs 11 because arms 17 are all held retracted by springs 20.

When it is desired to transmit a signal, one of the keys 24 is pressed, we will assume that the key illustrated in Fig. 3 is chosen, contact 21—22 is thereby closed and held so by stop 28 to complete the main motor circuit and start the motor. Shaft 12 and disc 11 are set in motion and as soon as the first tooth 15 on disc 11 strikes contact 16, the signaling circuit is closed and the signal K operated. The signaling circuit is again opened when brush 16 rides off from the first tooth 15 so as to interrupt the signaling circuit for an instant. As shown in Figure 3, the mechanism would, therefore, give four short blasts separated by short intervals and after a long interval would give two more short blasts. By adding teeth to the disc the same signal can be repeated several times during a revolution of shaft 12.

As soon as shaft 12 has rotated through nearly a complete revolution, lug 38 strikes arm 36 and rotates shaft 29 to lift stop 28 and release the arm 17, open contact 21—22 and move contact 16 thereby opening both the main motor circuit and the signaling circuit. During the beginning of the rotation of drum 39, the branch motor circuit was open at gap 42 in strip 41 but was subsequently closed by strip 41 engaging brushes 44 and 45. This circuit remained closed after the main motor circuit was opened so that motor 10 still drove shaft 12 and continued to do so

until drum 39 was restored to its initial position and the circuit opened by the brushes reaching the gap 42. It will thus be seen that the discs 11 will always be restored to their proper position after operation of the transmitter. If through error, the wrong key 24 should be pressed, the signaling and main motor circuits can be broken at any time by means of resetting key R. Motor 10 will, however, rotate shaft 12 through a complete revolution if the branch motor circuit has been closed by brushes 44 and 45. When the parts are again in normal position the proper key may be actuated to give the proper signal.

It will be clear from the foregoing that I have produced a signal transmitter which is capable of varied uses, and one that can be operated readily by inexperienced persons with a minimum liability of error.

Although I have herein shown and described but one form of signal transmitter embodying my invention, it will be obvious that various changes may be made in the details within the scope of the claim without departing from the spirit and scope of my invention.

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

A signal transmitter comprising an insulating base, upright brackets on said base, a shaft mounted in said brackets and carrying a plurality of toothed discs, a motor for rotating said shaft and discs, a pivoted upright arm associated with each disc, spring contacts on said arms, a longitudinal rod in parallel relation to said shaft and carrying contacts for cooperation with the contacts on said arms, said contacts being mounted in sockets in said rod keys for moving said arms into contact-closing position, spring means for restoring said keys after actuation of said arms, gravity operated stops, one for each arm, for holding said arms in contact-closing position, and automatic means for releasing said arms after a predetermined rotation of said shaft and discs.

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