

(No Model.)

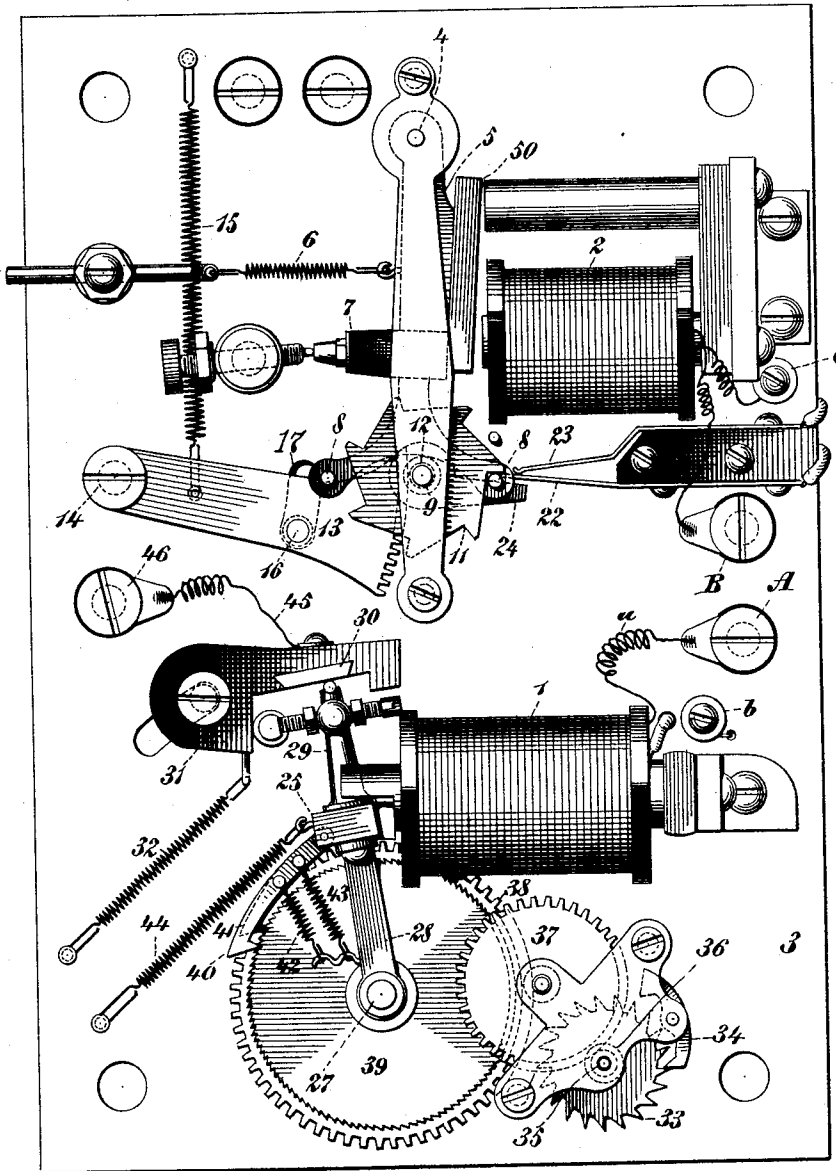
3 Sheets—Sheet 1.

W. F. BANKS.
SIGNAL RECEIVING APPARATUS.

No. 587,693.

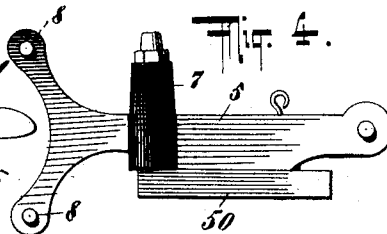
Patented Aug. 10, 1897.

Fig. 1.



WITNESSES:

Gustav Hietrich
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INVENTOR

Walter F. Banks
BY *Briesen, Knaut*
his ATTORNEYS.

(No Model.)

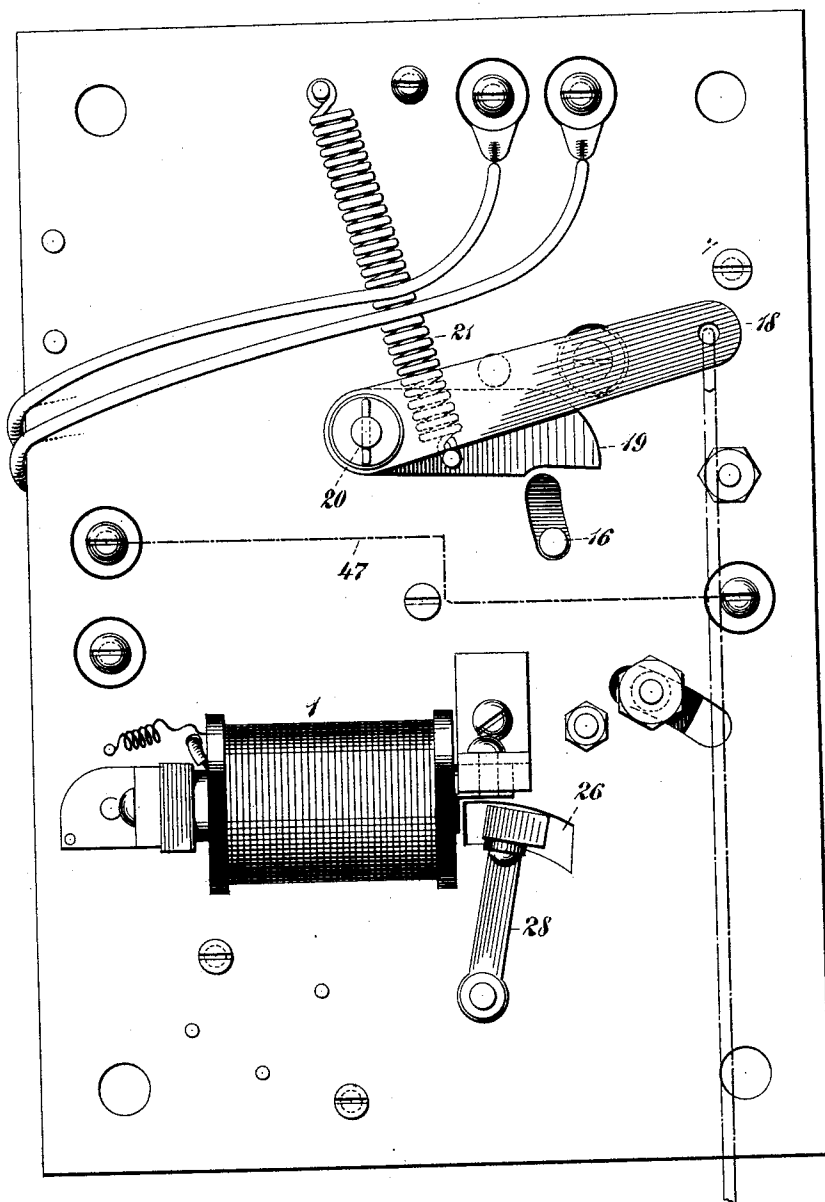
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Fig. 2.



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(No Model.)

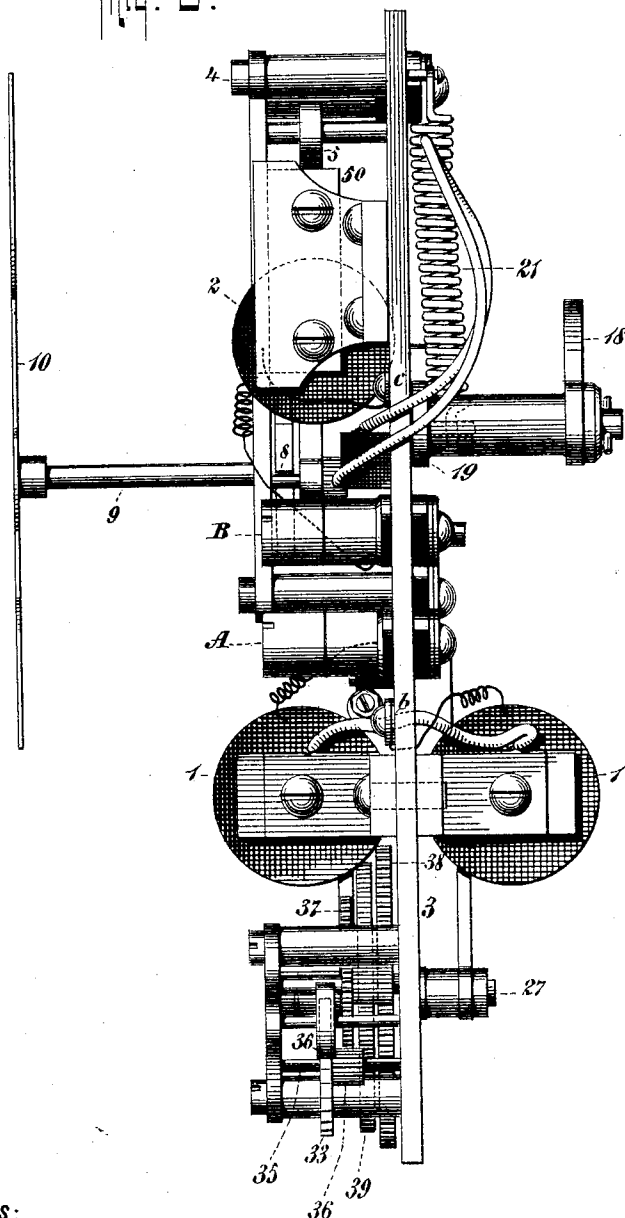
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Fig. 3.



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UNITED STATES PATENT OFFICE.

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PLACE.

SIGNAL-RECEIVING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 587,693, dated August 10, 1897.

Application filed October 1, 1896. Serial No. 607,548. (No model.)

To all whom it may concern:

Be it known that I, WALTER FREDERICK BANKS, a resident of Milford, New Haven county, State of Connecticut, have invented certain new and useful Improvements in Signal-Receiving Apparatus, of which the following is a specification.

My invention relates to signal-receiving apparatus, and has for its object to provide a receiving apparatus for different varieties or characters of signals. In the present instance I have shown an apparatus one part of which responds to all signals or impulses, the other part responding only to special signals or impulses, the first part acting as a governing or controlling device for the second part.

To this end my invention consists in the construction hereinafter set forth and claimed. My invention will be understood by referring to the accompanying drawings, in which—

Figure 1 is a front or face view of the apparatus embodying my invention. Fig. 2 is a rear view thereof. Fig. 3 is a side elevation, and Fig. 4 is a detail view of part of the apparatus hereinafter referred to.

In the drawings I have shown magnets 1 2, mounted upon a plate 3. Pivoted at the point 4 is a swinging pawl 5, provided with an armature 50 and also with a retractile spring 6 and a back-stop 7. The lower end of the pawl 5 is bifurcated and provided in the present instance with detents 8 8. The shaft 9 carries a pointer or indicator 10 and a ratchet 11, which ratchet is embraced between the ends of the bifurcated portion of the pawl 5 and acted upon by the detents 8 8, which serve to release the ratchet, forming an escapement therefor. The shaft 9 is provided with a toothed wheel 12, which meshes with a toothed segment 13, which is pivoted at 14 and raised by a spring 15, which is under tension. The toothed segment 13 is also provided with a pin 16, which projects through a slot 17 in the plate 3 and comes into the path of a restoring device consisting of an arm 18 and lever 19, which are pivoted at 20 and move together and are provided with a tension-spring 21, which restores them to their initial position, which is that shown in Fig. 2. It will be ob-

vious, therefore, that impulses sent through the magnet 2 will serve to swing the pawl 5, which thereby acts as an escapement for the ratchet 11, which, being fixed on the shaft 9, allows the shaft to be rotated by the tension-spring 15, acting thereupon through the toothed segment 13 and the toothed wheel 12. 22 23 are the controlling-contacts of a gong or other suitable device, which may be at a substation. As shown, these contacts are normally pressed together by an arm 24, carried by the shaft 9, so that when the shaft 9 commences to revolve the contact-spring 22 will be relieved of the pressure of the arm 24 and will thereupon drop away from the companion contact-spring 23, thereby allowing the apparatus at the substations to become operative. This is the closed-circuit arrangement, the contacts being normally held closed. It is obvious that the device may be slightly modified to make it work on open circuit—i. e., the contact to be held normally open.

The magnets 1 1 are provided with an armature 25, which is shown as working in a slot 26 in the plate 3 and pivoted at 27, being carried upon arms 28. The armature 25 is also provided with a contact-piece 29, which contacts with a plate 30 upon a swinging insulated piece 31. This swinging insulated piece is provided with a tension-spring 32, which holds it up to the contact-piece 29. Mounted upon the plate 3 is a train of wheels, shown in the present instance as consisting of a scape-wheel 33, which is provided with a pallet 34 and is mounted upon a shaft 35, which also carries a toothed wheel 36, which is connected by a train of gearing 37 38 with a ratchet-wheel 39, with which engage pawls 40 41, which are pivoted to the armature 25 and provided with tension-springs 42 43. The armature is also provided with a tension-spring 44. The plate 30 is in electrical connection with a wire 45, which connects with a terminal 46. The course of the current through the device under certain conditions is as follows:

The current enters terminal A and passes, by means of the wire *a*, to and through the magnets 1 and returns to the point *b*, which is in electrical connection with the plate 3. The current passes through the plate and

through the arm 28 and contact 29 to the plate 30, wire 45, terminal 46, wire 47, and out by the terminal B. Under this condition of things it will be observed that the contact 5 29 touches the plate 30 and the magnet 2 is short-circuited thereby. Under another condition, however, when the contact 29 is out of contact with the plate 30 the current will enter at terminal A, pass through the wire 10 a, magnet 1, plate 3, to the point c, thence through the magnet 2 to the terminal B.

Having described the construction, I will now describe in detail the operation of my new receiver.

15 We will suppose a series of impulses to enter the instrument through the terminal A, with the parts in the position shown in Fig. 1. If now this be a series of short impulses, the magnet 1 will be saturated and will pull 20 its armature toward it. The forward movement will be retarded by reason of the fact that as the armature moves forward the pawls engage with the toothed wheel 30, which is, as explained, connected to a retarding device consisting in this instance of a 25 train of gears and an escapement. If the current flow is only for a short period of time, the armature will not have time during the pendency of the flow to move the contact 29 off the plate 30, so that the short circuit around 30 the magnet 2 will not be broken. If, however, the signal is sufficiently long, the magnet 1 will have time to draw its armature against the action of the retarding device far enough 35 to move the contact 29 off the plate 30, when the short circuit will be broken and the signal will be indicated by the magnet 2 swinging its armature to allow in this instance a pointer to rotate one step or tooth of the star-wheel. 40 Thus it will be seen that although all signals passing through the magnet 1 will move the armature, only the signals having a character or impulse sufficiently long will be effective to move the armature far enough to break the short circuit around the magnet 2. 45 It will be therefore observed that the magnet 1 and its adjunctive mechanism constitute a controlling device for the magnet 2 and its adjunctive mechanism, so that one class or 50 character of signals will be effective to oper-

ate the magnet 2 and allow it to announce its call in any suitable manner, while another class of signals will not actuate said magnet 2.

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

1. In a signal-receiving apparatus, the combination of a signal-receiving magnet short-circuited when the apparatus is at rest, a magnet for controlling the short circuit of the said receiving-magnet, and a retarding device for 60 governing the action of the last-named magnet on the contact, whereby certain signals only will be allowed to manifest themselves in the receiving-magnet.

2. A signal-receiving device comprising the 65 following instrumentalities in operative combination, to wit: a normally short-circuited receiving-magnet, an armature for controlling the said short circuit, a magnet for controlling the armature and a retarding device for 70 governing the movement of the armature.

3. A signal-receiving device comprising the following instrumentalities in operative combination, to wit: a receiving-magnet short-circuited when the apparatus is at rest, an armature for controlling the said short circuit, 75 a magnet for controlling the armature, and a mechanical retarding device for governing the movement of the armature.

4. A signal-receiving device comprising the 80 following instrumentalities in operative combination, to wit: a normally short-circuited receiving-magnet, an armature for controlling the said short circuit, a magnet for controlling the armature, and a train of gears for 85 retarding the movement of the armature.

5. A signal-receiving device comprising a magnet short-circuited when the apparatus is at rest, a plurality of contacts controlling the said short circuit, an armature controlling the 90 contacts, a magnet controlling the armature, and a retarding device with which the armature is engaged upon its forward movement and disengaged upon its backward movement, substantially as set forth.

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Witnesses:

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