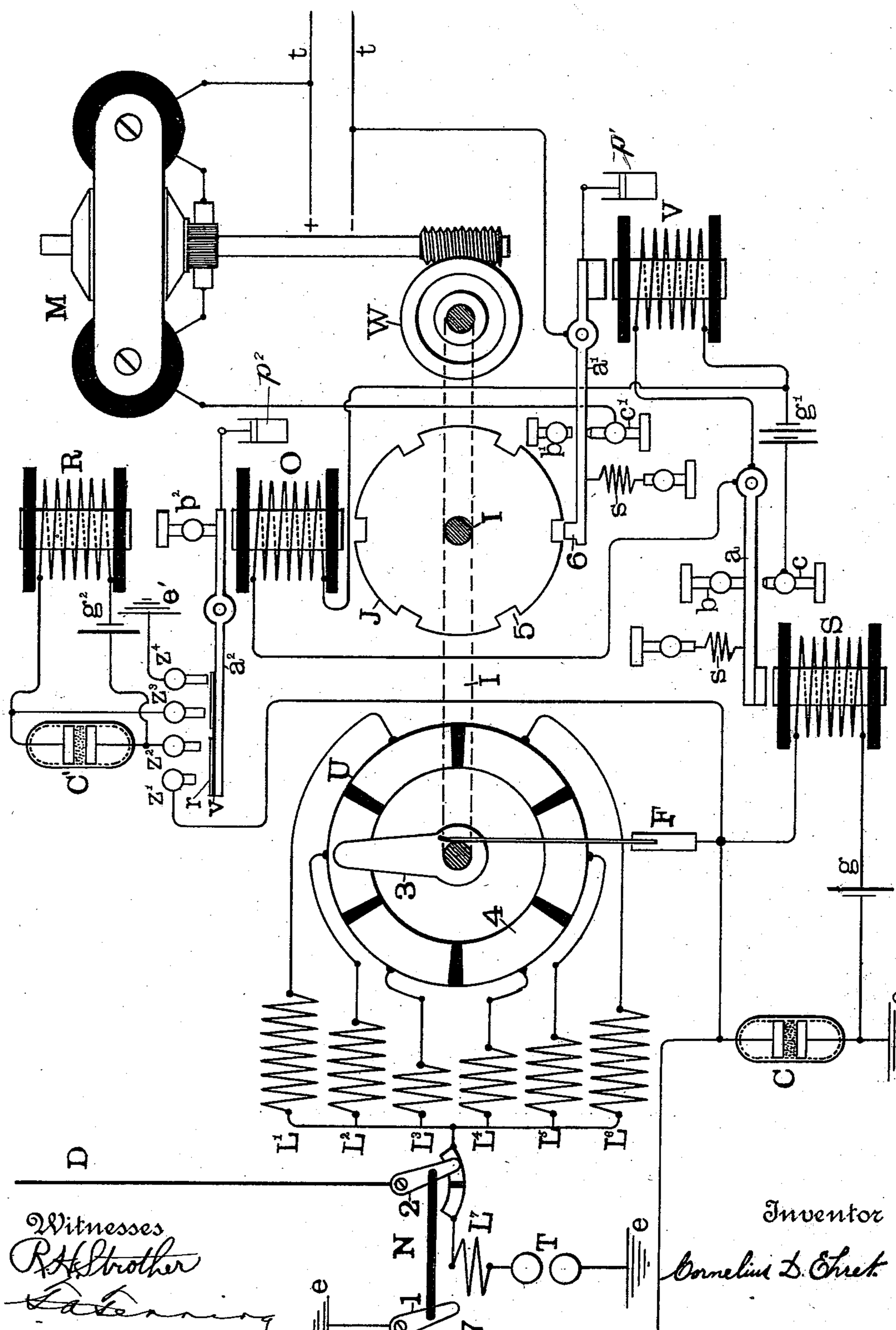
No. 707,056. Patented Aug. 12, 1902.

C. D. EHRET.

AUTOMATIC SELECTIVE SYSTEM.

(Application filed Jan. 10, 1902.)

(No Model.)



UNITED STATES PATENT OFFICE.

CORNELIUS D. EHRET, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO AMERICAN WIRELESS TELEPHONE AND TELEGRAPH COMPANY, A CORPORATION OF ARIZONA TERRITORY, AND THE CONSOLIDATED WIRELESS TELEGRAPH AND TELEPHONE COMPANY, A CORPORATION OF ARIZONA TERRITORY.

AUTOMATIC SELECTIVE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 707,056, dated August 12, 1902.

Application filed January 10, 1902. Serial No. 89,211. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS D. EHRET, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Automatic Selective System, of which the following is a specification.

My invention relates to a signaling system in which the energy controlled is transmitted through natural media, such energy being electrostatic or electromagnetic or a combination of both.

It comprises an automatic selecting device whereby one station may be put into communication with any other of a series or group, each station always transmitting messages by energy of a definite frequency or frequencies.

It comprises, further, at each station a number of receiving-conductors or combinations of conductors equal to the remaining number of stations in the series or group and each conductor or combination of conductors syntonized with the frequency or frequencies of the energy-waves radiated from some certain other station in the group.

It comprises, further, a sunflower or commutator for throwing the aforementioned syntonized conductors successively into electrical communication with wave-responsive devices.

It comprises, further, a pilot wave-responsive device which if energy of a certain frequency persists for a predetermined interval of time causes a main message-receiving wave-responsive device to be brought into the influence of the arriving energy.

It comprises, further, means for operating and controlling the commutator and an arrangement of circuits for receiving and transmitting and other features, which are hereinafter described, and pointed out in the claims.

Referring to the drawing, D is the receiving-conductor, which connects through switch-arm 2 with a segment in electrical communication with six different inductances $L' L^2 L^3 L^4 L^5 L^6$, which in turn connect, respectively, with separate segments of the sunflower U, each being represented by a conducting mass 4, and with intervening insulation between successive segments. Over these segments trails a brush or trailer 3, rigid with the shaft I, which is driven by a motor. (Shown in plan view at M.) Secured to this shaft I is a notched disk J, having as many notches 5 as there are segments in the sunflower. Into these notches is adapted to fall or be raised a lug 6 on the armature a', controlled by the relay V.

Bearing upon and in electrical contact with the shaft I is a brush secured at F. From said brush there is a connection to earth-plate e through wave-responsive device C. In shunt around said wave-responsive device is the winding of the relay S, which is energized upon a change of condition in the wave-responsive device by battery g. The armature a of the relay S is normally retracted by a spring s against stop b. When attracted, however, it contacts with screw c, causing the energization of relay-coils O and V from the battery g'.

The motor M receives its current from the supply-circuit $t\ t$, which communicates through the armature a' and contact-screw c'. Upon the energization of the relay V armature a' is attracted in opposition to the force exerted by a spring s, resulting in the movement of the armature against the stop b', when the lug 6 comes opposite a notch 5 in the disk J, and also resulting in the rupture of the motor-circuit at contact-screw c'. At the same time relay V operates relay O attracts its armature a^2 away from back-stop b^2 and causes the metallic bridges r, carried by the armature and insulated from it by material v, to bridge the contact-points $z'\ z^2$ and $z^3\ z^4$. This latter operation throws wave-responsive device C′ into communication with the brush bearing upon the shaft I and puts the other terminal of said device in connection with earth-plate e'. A change of condition in the wave-responsive device C′ due to the received energy is manifested by a change of current strength through the winding of the relay R, such current being derived from the battery g^2.

C, I term the "pilot wave-responsive" device, and C' the "main responsive" device which controls the message-recording relay R.

The electrical constants of the circuit embracing the receiving-conductor D and, for example, the inductance L^2, trailer 3, the brush, and earth connection are such that it is resonant with the transmitted energy. The receiving-conductor D, taken in conjunction with each of the remaining inductances, produces as many other circuits resonant to as many different frequencies. For example, the conductor D and the inductance L' will correspond with the frequencies of the energy transmitted from station No. 1. D, taken in conjunction with inductance L^2, will select the energy transmitted from station No. 2, and so on throughout the series.

In place of the inductances L' L^2, &c., may be used condensers of different capacities, so that, taken with the inductances of D or the combined inductance and capacity of D, circuits of different constants are obtained for the purpose of being selective to energies of different frequencies. The inductances and capacities are termed "frequency-determining elements."

The operation of the device is as follows: The trailer 3 is constantly rotating in passing over the segments of the sunflower successively. Supposing station No. 2 is calling station No. 7, (the station here shown,) when trailer 3 has come into connection with the segment with which the inductance L^2 is connected the wave-responsive device C has its condition altered with a resulting energization of the relay-coil S. This occurs the instant that trailer 3 moves onto the segment in connection with the inductance L^2. Armature *a* is attracted and contacts with screw *c*. This causes the energization of the relays O and V, as above described; but the armatures *a'* and a^2 are retarded by the means of dash-pots or equivalent devices p' p^2, respectively, and do not reach the limit of their travel unless the energy radiated from station No. 2 is persistent for a sufficiently long time. If this should be the case, lug 6 engages after a time in a notch 5, locking the disk J and preventing the trailer 3 from leaving the segment in connection with the inductance L^2. At the same time the circuit of the motor M is broken at screw *c'*. The armature of the relay O has caused the bridging of the contacts and the throwing into operation of the wave-responsive device C', as before described. The relay R then records the messages.

The angular position of disk J with respect to sunflower U is such that it is locked before the trailer leaves the segment representing the proper station.

When it is desired to transmit from station No. 7, the double pole-switch N is thrown to the left, so that blade 1, which is in communication with the earth, contacts with point 7 and blade 2 contacts with the left segment of its switch. The effect is to throw into connection with the conductor D the transmitter T. The inductance L^7 is of such magnitude that taken in connection with the conductor D the station No. 7 emits waves of frequency distinctly its own. Station No. 2, for example, has in place of inductance L^2 here shown the inductance L^7, so as to be selective to the energy radiated from this station. The remaining stations of the groups are similarly arranged. The effect of contact between blade 1 and point 7 is to short-circuit the wave-responsive device C and protect it from the energy being transmitted. This short circuit causes also the relay-coil S to attract its armature *a*, which in turn closes the circuit of the relay-coil O and throws wave-responsive device C' into a like condition of short circuit for the same purpose.

It is to be understood that in place of a single inductance to correspond with each transmitting-station a combination of inductances may be used or other variations made in the electrical constants whereby selectivity may be obtained, and other means may be used for driving the sunflower, locking it into position, &c., without departing from the spirit of my invention.

What I claim is—

1. In a signaling system, a plurality of frequency-determining elements, a sunflower, a frequency-determining element connected to each segment of the sunflower, means for rotating the trailer over the segments of said sunflower, and a wave-responsive device, in electrical communication with said trailer.

2. In a signaling system, a conductor influenced by energy transmitted through the natural media, a receiving device in communication with said conductor, and automatic means responsive to the received energy for locking the receiving device in position to receive a message from a desired station only.

3. In a signaling system the combination of a conductor for receiving the energy from the natural media, a pilot wave-responsive device and a main responsive device controlled by said pilot device.

4. In a signaling system, a conductor influenced by energy transmitted through the natural media, a plurality of elements for rendering the circuit of said receiving-conductor selective of energies of different frequencies, a receiving device controlled by the received energy, and means for locking the receiving mechanism in position to respond to energy of a desired and predetermined frequency.

5. In a signaling system, a conductor influenced by energy of a definite frequency transmitted through the natural media, a receiver controlled by such energy, and automatic means for locking said receiver in position to receive energy from a desired station only.

6. In a signaling system, a conductor influenced by energy of definite frequency transmitted through the natural media, a receiver

controlled by such energy, and automatic means for locking said receiver in position to receive energy from a desired station only after the persistence of such energy for a definite interval of time.

7. In a wireless signaling system, the combination of a receiving-conductor, a pilot wave-responsive device, and a main responsive device brought into action by the pilot device.

8. In a wireless signaling system, the combination of a receiving-conductor, a pilot wave-responsive device, and a main wave-responsive device brought into action by the pilot device after the persistence of transmitted energy for a definite interval of time.

9. In a wireless signaling system, the combination of a receiving-conductor, a pilot wave-responsive device, and a main wave-responsive device brought into action by the pilot device after the persistence for a definite interval of time of transmitted energy of a definite frequency.

10. In a signaling system, a plurality of conductors, each selective of energy of definite frequency, a receiver, and means for maintaining the receiver in communication with a conductor during the persistence of energy of a frequency of which said conductor is selective.

11. In a signaling system, a plurality of conductors, each selective of energy of a definite frequency, a receiver, and automatic means for maintaining the receiver in communication with a conductor during the persistence of energy of a definite frequency of which said conductor is selective.

12. In a signaling system, a plurality of conductors each selective of energy of a definite frequency, a receiver, and means for locking the receiver in communication with a conductor during the persistence of energy of a frequency of which said conductor is selective.

13. In a signaling system, a plurality of conductors each selective of energy of definite frequency, a receiver, and automatic means for locking the receiver in communication with a conductor during the persistence of energy of a definite frequency of which said conductor is selective.

14. In a wireless signaling system, a plurality of conductors, a receiver, and automatic means for locking the receiver in communication with a certain conductor.

15. In a wireless signaling system, a plurality of conductors selective of energies of different frequencies, a receiver, and automatic means for locking the receiver in communication with a certain conductor.

16. In a wireless signaling system, a plurality of transmitting-stations, and automatic means for putting a receiver in communication with a certain station.

17. In a wireless signaling system, a plurality of transmitting-stations, each emitting a characteristic energy, and automatic means for putting a receiver in communication with a certain station.

18. In a wireless signaling system, a plurality of transmitting-stations, and automatic means for locking a receiver in communication with a certain station.

19. In a wireless signaling system, a plurality of transmitting-stations, each emitting a characteristic energy, and automatic means for locking a receiver in communication with a certain station.

20. In a wireless signaling system, a plurality of transmitting-stations, a receiver, a wave-responsive device and means controlled thereby for putting the receiver in communication with a certain station.

21. In a wireless signaling system, a plurality of transmitting-stations each emitting characteristic energy, a receiver, a wave-responsive device and means controlled thereby for putting a receiver in communication with a certain station.

22. In a wireless signaling system, a plurality of transmitting-stations, a receiver, a pilot wave-responsive device and means controlled thereby for putting the receiver in communication with a certain station.

23. In a wireless signaling system, a plurality of transmitting-stations, each emitting characteristic energy, a receiver, a pilot wave-responsive device and means controlled thereby for putting the receiver in communication with a certain station.

24. In a wireless signaling system, a plurality of transmitting-stations, a pilot wave-responsive device, a main wave-responsive device, and means controlled by the pilot device for putting the main wave-responsive device into communication with a certain station.

25. In a wireless signaling system, a plurality of transmitting-stations each emitting characteristic energy, a pilot wave-responsive device, a main wave-responsive device, and means controlled by the pilot device for putting the main wave-responsive device into communication with a certain station.

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Witnesses:
MAE HOFMANN,
P. M. MACLAREN.