

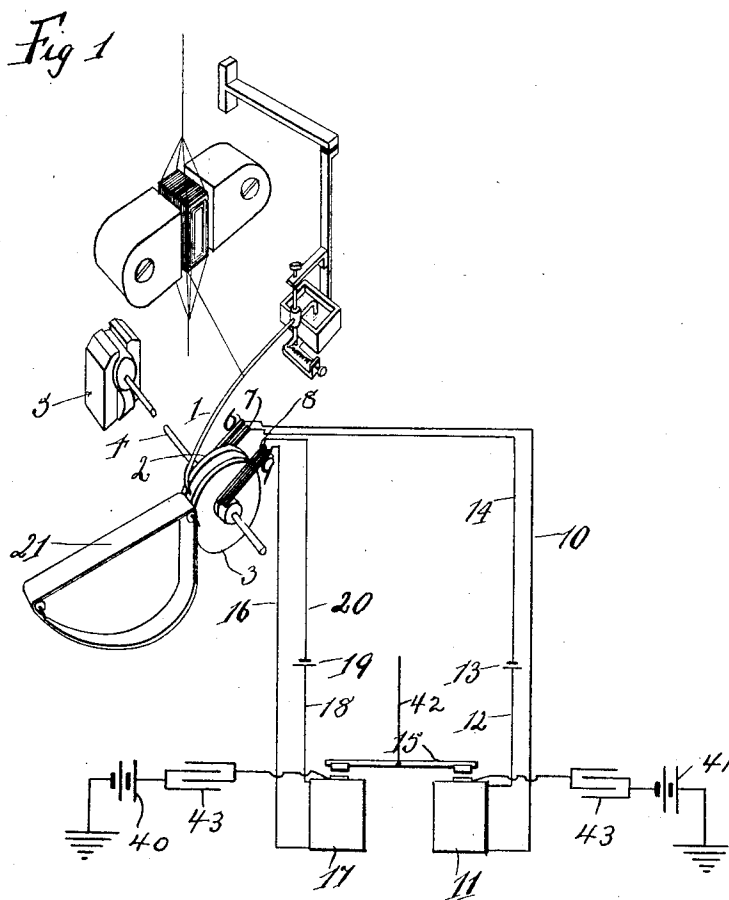
No. 859,949.

PATENTED JULY 16, 1907.

I. KITSEE.
TELEGRAPHY.

APPLICATION FILED AUG. 23, 1906.

2 SHEETS—SHEET 1.



WITNESSES:

Edith P. Stille
Mary C. Smith

INVENTOR

I. Kitsee

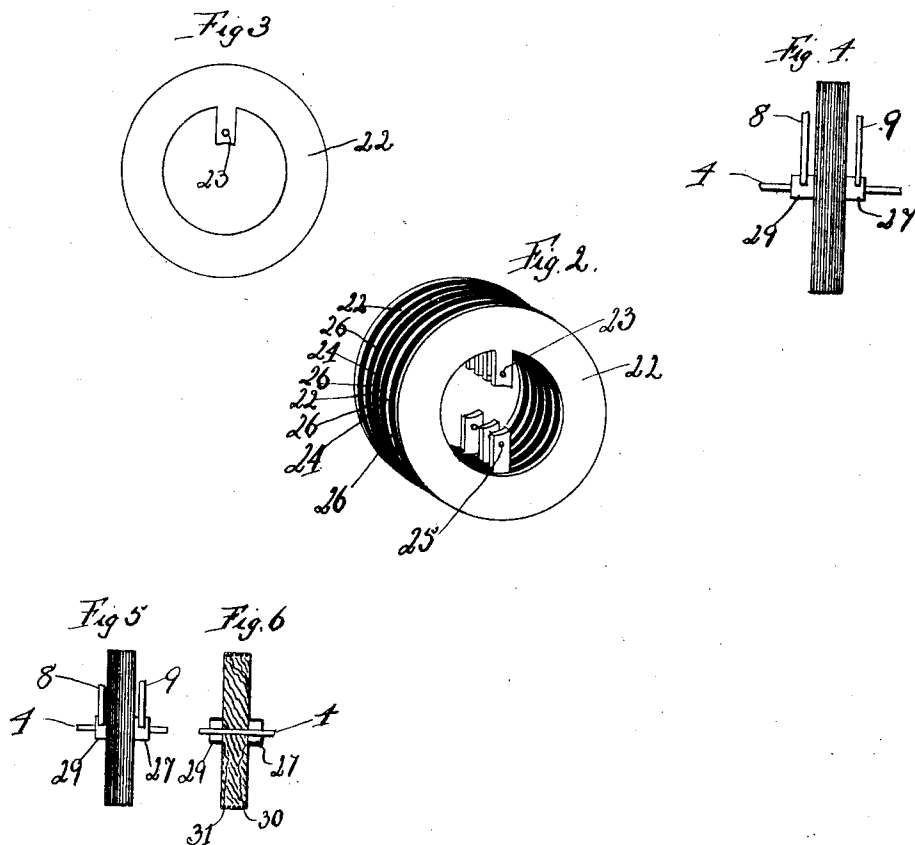
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28 SHEETS—SHEET 2.



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TELEGRAPHY.

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Patented July 16, 1907.

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To all whom it may concern:

Be it known that I, ISIDOR KITSEE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Telegraphy, of which the following is a specification.

My invention relates to an improvement in telegraphy.

It has more special reference to the receiving device of lines with great capacity, such for instance as submarine cables. On submarine cables, the ingenious device, known as Lord Kelvin's siphon recorder, is employed as receiver.

It is the aim of my invention to make use of an instrument, such as a siphon recorder, for the purpose of either receiving the transmitted impulses by sound or relaying the same to other lines.

The underlying principle of my invention is to make use of the siphon, as a means to operate a local circuit with the aid of a conducting fluid.

The preferred mode in carrying out this invention is as follows: I re-place the ink in the reservoir with a conducting fluid, such for instance as very diluted sulfuric acid or any other of the well known fluids made conducting with the aid of metallic salt. I replace the paper, on which the record is made to-day, by a series of conducting plates insulated from each other, alternating plates connected together electrically, so that the same will form,—electrically considered,—two series of plates. These plates are placed in proximity to the outlet of the siphon and are continually rotated. I make use of two sets of such plates, each set consisting of, as said before, a multitude of plates divided electrically into two series, the plates of one series intervening between the plates of the other series. The shaft on which the plates are secured is rotated by either electrical or mechanical means, such as motor or clock work. The plates themselves are placed in proximity to the outlet of the siphon, in a manner so that normally, that is, when the siphon is at its rest or at its zero position, the outlet is in alignment with the non-conducting space between the two sets of conducting plates; but when the siphon is deflected to the right or left, it moves over all or part of the plates situated to the right or left, as the case may be. As long as the siphon remains at its zero position, the conducting fluid issuing from the siphon will fall on the non-conducting material intervening between the two sets of plates and means are provided to carry this fluid to a desired point. But when through the incoming impulse, the coil and therefore the siphon is deflected either to the right or left, then the conducting fluid issuing from the point of the siphon will fall on one or the other sets of plates, and as the plates themselves are very thin and only separated from each other by a film of non-conducting

material, it is obvious that no matter how small the amount of liquid issuing from the siphon, the dropping of this liquid on the plates will result in connecting two or more adjoining plates electrically with each other; and as the plates adjoining belong,—electrically considered,—to two sets, it is obvious that if these plates are connected with a source of current and an electro-magnetic device is inserted in the circuit of the source, the same will be actuated as soon as the circuit is made through this conducting fluid. This, in broad outlines, is the arrangement of my invention, it being understood that instead of the plates, as shown in the drawing, other conducting means may be provided; it being only necessary that the siphon in its movement should be able to drop its fluid between two series of conductors and these conductors should be so arranged, that the conducting fluid should make circuit between same.

When the circuit between two plates is established and the translating or relaying device in this circuit has become operative, it is necessary to break the circuit and therefore to annul the effect of the conducting liquid. For this purpose, I have provided means to absorb the moisture from that part of the plates which has left the region of the siphon. In the local circuit operated by this arrangement may be placed any of the well known types of translating devices, such for instance as a sounder or relaying apparatus.

In employing this, my invention, in connection with such devices as siphon recorders, it has to be borne in mind, that with the system of to-day the recorder is subject to, what is known by persons versed in the art as, the moving of the zero; and a system has, therefore, to be provided whereby the moving of the zero is obviated. If the impulses transmitted over the line are alternately of opposite direction, but are always of the same duration and intensity, that is, if true reversals are transmitted over the line, it was found that the zero position of the siphon is always stable and it is, therefore, recommended that this system may be employed in conjunction with my invention.

In the drawing, Figure 1 is a perspective view of a siphon recorder having attached thereto partially in perspective and partially in diagram the, what I call, relaying device. Fig. 2 is a perspective view of the conducting plates assembled. Fig. 3 is a plan view of one of these plates. Fig. 4 is an elevation of the conducting plates assembled on a shaft and provided with brushes. Fig. 5 is an elevation of my contacting device in different construction; and Fig. 6 is a section of Fig. 5.

1 is the siphon of the instrument, known as the siphon recorder.

2 and 3 are the two sets of conducting plates or disks, each of these sets or disks comprising the disks 22 and 24 insulated from each other by the non-conducting

medium 26, the disks 22 alternating with the disks 24. The disks 22 are provided with the projections 23 and the disks 24 are provided with the projections 25. These projections are the means to connect the different disks of each series with each other, either by simply soldering together the projections or with the aid of any of the well known means. The disks are then assembled on the sleeve 27 and each of the series of disks 22 and 24 is provided with the contacting brush, here designated as 8 and 9 respectively. The sleeve is mounted on the shaft 4. A motor, such as shown at 5, may be the means to rotate the shaft and therefore the disks mounted thereon.

21 are the means to absorb the moisture from the conducting plates or disks. These means are shown here as an endless band of some absorbing material and provided with means to bring successively, successive parts of this band in contact with the conducting disk. I have provided for each of the two sets of disks a separate circuit, one of the circuits embracing the wires 16, 18 and 20 and the source of current 19. This circuit is connected to the brushes 8 and 9; the other set of conducting plates is operatively related to the circuit comprising the wires 10, 12 and 14 and the source of current 13. This circuit is connected to the brushes 6 and 7.

I have shown here one translating device, such as a sounder, comprising two sets of electro-magnets designated respectively by the numerals 11 and 17. The electro-magnets 11 are inserted in the circuit comprising the source of current 13 and therefore connected to the set of conducting plates 2, and the electro-magnets 17 related to the set of conducting plates 3. The operation of this device is as follows:

When no current is flowing over the line, the point of the siphon resting between the plates, will leave the same in their insulated or unconnected condition, but when an impulse moves the siphon, say to the right, the point from where the liquid issues will pass over the disks of the set 3, thereby providing a path for the battery 19 and actuating the electro-magnets 17; through the energizing of these electro-magnets, the armature 15 will be thrown downwards at the left hand point and it is supposed—the translating device being a sounder—that this throwing down of the armature is equal to the downstroke of the armature of the sounder as now employed. As soon as through the revolving of the plates the moist part of same comes in the region of the absorbing material 21, the plates will be wiped dry and therefore the circuit will be broken; but as the armature 15 is not provided with the spring usually employed, it is obvious that the armature will remain in its downward position. When now an impulse of opposite polarity arrives over the line, the siphon will be moved so as to come in the region of the left hand set of disks or disks 2. It will deposit on these disks the conducting liquid issuing from its mouth and the circuit including the battery 13 will be made, thereby energizing the electro-magnets 11 and forcing the right hand terminal of the armature 15 downwards, therefore forcing upwards the left hand end of said armature and this is equal to the upper stroke of the armature of the sounders as employed to-day. It is now supposed that one polarity is employed as a signaling impulse and the opposite polarity as the spacing or clearing im-

pulse. The transmitting operator will send one impulse, say a positive, and will then send either an impulse of opposite polarity after one time-unit to denote a dot or after three time-units to denote a dash, and the receiving operator will receive these two impulses in the same manner as one impulse is received to-day over land lines with the aid of the common sounder. If it is desired to relay the line, the translating device may be used as a relay and it is then provided with the sources of current 40 and 41, each grounded, and with means 42 to connect thereto the second line. It is best to provide the circuit of each of these sources with the condenser 43, as illustrated in the drawing.

In Figs. 5 and 6, the plates are re-placed by two wires wound around a drum or similar contrivance. These wires are designated as 30 and 31 respectively and are insulated from each other. These two wires fulfil the same office as the two series of plates 22 and 24. A further description of this is therefore unnecessary.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In an apparatus for translating into sound the movements of a siphon recorder, the combination with the movable member thereof adapted to discharge a conducting fluid, of a local circuit, a source of current therefor, conductors arranged in said circuit and insulated from each other, said conductors being arranged in proximity to the movable member of the recorder to receive the conducting fluid discharged therefrom and thereby close said local circuit, and an electro-magnetic device also arranged in said circuit and actuated by the closing of the latter.

2. Means to operate a local circuit with the aid of the liquid of a telegraphic receiving device, said means including the receiving device inserted in the line of transmission and provided with a movable member adapted to discharge a conducting fluid, a normally-open local circuit, means to close said circuit by the fluid discharged from the movable member of said receiving device, and a translating device included in said local circuit.

3. In telegraphy, a receiving device inserted in the line of transmission and provided with a movable member adapted to discharge a conducting fluid, a local circuit, a source of current therefor, a translating device included in said circuit, and normally separated terminals for said circuit, said circuit being adapted to be closed at said terminals by the conducting fluid discharged during the movement of the movable member of the receiving device.

4. In telegraphy, means to operate a local circuit through the movement of a siphon, said means including the siphon provided with a movable member adapted to discharge a conducting fluid, means for moving said member to either side of its zero position, normally open terminals for the local circuit arranged at either side of said zero position to receive the fluid discharged by said movable member of the siphon and thereby close the local circuit, and a translating device included in said local circuit.

5. In telegraphy, a siphon recorder provided with a shiftable member adapted to discharge a conducting fluid, a local circuit, an electro-magnetic device arranged in said circuit, and means to close said circuit by the discharge of said conducting fluid and thereby actuate said electro-magnetic device.

6. In telegraphy, means to translate the movement of a siphon recorder into sound, said means including a movable siphon proper adapted to normally discharge a conducting fluid, a series of conductors insulated from each other but adapted to be electrically connected by the fluid discharged by the siphon, a local circuit including said conductors, and a translating device in said circuit.

7. In telegraphy, a movable siphon receiving device adapted to normally discharge a conducting fluid, a series of conductors insulated from each other and arranged in proximity to the mouth of the siphon receiving device, a

local circuit in which said conductors are included, said circuit being normally open but adapted to be closed by the fluid discharged by the siphon receiving device acting upon said conductors, and a translating device also included in said local circuit.

- 5 S. In telegraphy, means to translate the movements of a siphon receiver into sound, said means including a siphon receiving device, a series of disk-shaped conductors arranged in proximity to the mouth of the siphon receiver, means to rotate said conductors, a local circuit including said conductors, said circuit being closed by the fluid discharged by the siphon receiver acting upon the conductors, a translating device also included in said local circuit, and means to clean from said conductors the fluid
10 deposited thereon from the siphon receiver.
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9. In telegraphy, the combination with a siphon receiving device adapted to discharge a conducting fluid, of a local circuit, rotating terminals for said circuit arranged in proximity to said siphon receiving device, whereby the circuit is closed through said terminals by the fluid discharged from said siphon receiving device, and electromagnetic devices arranged in said circuit. 20

In testimony whereof I affix my signature in presence of two witnesses.

ISIDOR KITSEE.

Witnesses:

EDITH R. STILLEY,
MARY C. SMITH.