N 1687 A.D. 1898

*Date of Application, 21st Jan., 1898*

*Complete Specification Left, 20th Oct., 1898—Accepted, 26th Nov., 1898*

## PROVISIONAL SPECIFICATION.

### Improvements in Electric Signalling Apparatus.

SILVANUS PHILLIPS THOMPSON, Morland, Chislett Road, West Hampstead, Doctor of Science, do hereby declare the nature of this invention to be as follows:—

My improvements relate to the apparatus known as coherers used for receiving electric waves in space-telegraphy. Instead of using a solitary point-contact, or an incoherent mass of filings or metal particles as heretofore, I employ a number of discrete conducting wires arranged in series, or in parallel, or in series and parallel, in light contact, with means for regulating the contact pressures. I have found clean wires of nickel, brass, or tinned copper, so arranged, to work excellently. Or the contacts may be between different metals, or between metal and carbon. In some cases I mount the coherer upon a vibrating sound board, or upon a mechanical or electric tapper, such as a clock, or an electric trembler. In some cases I cause the contacts to be made between stationary and revolving surfaces.

Dated this 20th day of January 1898.

SILVANUS P. THOMPSON.

## FINAL SPECIFICATION.

### Improvements in Electric Signalling Apparatus.

I, SILVANUS PHILLIPS THOMPSON, F.R.S., of "Morland," Chislett Road, West Hampstead, in the County of Middlesex, Doctor of Science, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My improvements relate to apparatus of the kind known as coherers used for receiving electric waves in telegraphy across space, and for the translation of signals conveyed by such waves into ordinary electric current signals.

The first part of my invention relates to the grouping of contacts in coherers. Instead of using a solitary point-contact, or the miscellaneous contacts produced with a loose mass of metal filings or particles as heretofore in use as coherers, I employ a number of discrete contacts arranged between conducting wires which are grouped or arranged in series or in parallel or in some combination of series and parallel grouping, forming thus groups of light or delicate contacts. The second part of my invention relates to means for regulating the contact pressures at the said points of contact. The third part of my invention relates

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to means for renewal or changing of the actual contact surfaces in coherers by mechanical motion, so as to bring about decoherence, after a signal, in a manner more effectual than has hitherto been usual.

An example of the first part of my said invention is given in the apparatus now to be described and which is illustrated in Figures 1 and 2 of the accompanying drawings.

Figure 1 represents a simple combination of wires or metal hooks $V^1$, $V^2$ *etc.*, hanging in light contact with fixed wires $H^1$ $H^2$ *etc.*, so that there may be more than one such contact in series in the electric circuit of the receiving apparatus; and the group which is represented has two such sets of contacts in parallel with one another. In this way the coherence or decoherence of the apparatus is no longer dependent upon the coherence or decoherence of a single contact, thereby rendering the action of the apparatus less conspicuous than a single contact would be. The wires $V^1$ $V^2$ *etc.* hang nearly vertically and press lightly against the fixed wires $H^1$ $H^2$ *etc.* The adjusting screw S and the tension spring T serve to regulate the degree of pressure at the contacts by varying the inclination of the system. The horizontal wires are held in an insulating support J, which may be made of wood or ebonite, pivoted suitably or otherwise adjustably held upon a frame or holder. Arrangements are made for the leading in and leading out wires W of the circuit to be joined to the extremities of the group.

Figure 3 shews another grouping of vertical and horizontal wires. Figure 4 shews another grouping having three contacts in parallel with one another in series with a second set of three contacts in parallel. Many varieties of such grouping are obviously possible, and the contacts may be procured in many ways that are obviously mechanically equivalent to the hanging wires here described. I have found clean wires of such metals as nickel, brass, and tinned copper to answer for this purpose. Or the contacts may be made between different metals or between metal and carbon surfaces.

The second part of my invention is sufficiently described and illustrated by reference to the adjusting screw of Figures 1 & 2, though I do not confine myself to this particular form of adjustment.

The third part of my invention is illustrated in Figures 5 and 6. In Figure 5 is shewn a method of procuring a continual renewal of the contact surface by causing one of the horizontal wires H to revolve slowly, as, for example, by attaching it to a clock movement, or other convenient revolving mechanism, or by means of a pulley P. In Figure 6 is shewn an ordinary coherer C of the well-known Lodge kind hitherto in use, consisting of a small tube containing a quantity of loose metallic filings or particles, to which in like manner a slow movement of rotation is given either by means of a pulley P, by a clock, or otherwise.

In conclusion I would say that I am aware of the prior use of the ticking of a clock, and of other means to procure the mechanical vibration of a sounding board or support on which a coherer is placed. I am also aware of arrangements of a number of spiral springs lying in miscellaneous contact one upon another, with a degree of pressure regulated by a screw and I do not consider either of these arrangements to be within the scope of my invention.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:—

1. As a coherer for the reception of electric waves apparatus such as is hereinbefore described, and consisting of groups of discrete contacts arranged so as to have at least two such contacts in series with one another, and at least two such contacts in parallel with one another.

2. In apparatus for the reception of electric waves the combination of discrete groups of contacts substantially as hereinabove described, with means for adjusting the degree of pressure at the contacts of the same.

3. In apparatus for the reception of electric waves, the combination of coherers with a means of renewing or changing their contact surfaces, so as to produce decoherence after a signal by means of a mechanically revolving mechanism, substantially as described.

Dated this 20th day of October 1898.

W. P. THOMPSON & Co.,
322, High Holborn London, W.C., Patent Agents for the Applicant.

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[This Drawing is a reproduction of the Original on a reduced scale]

(2 SHEETS) SHEET 2

Fig: 6.

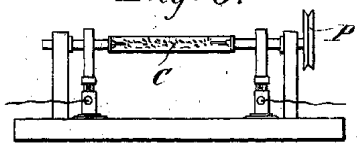



Fig: 5.

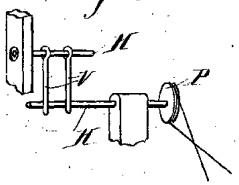



Fig: 3.

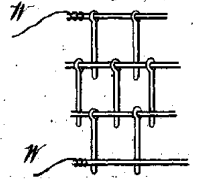
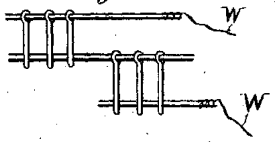



Fig: 4




SHEET 1.

Fig: 1.

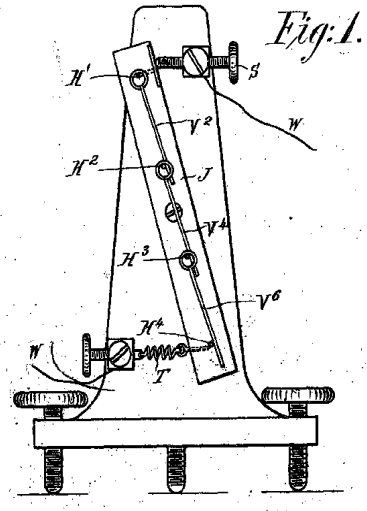
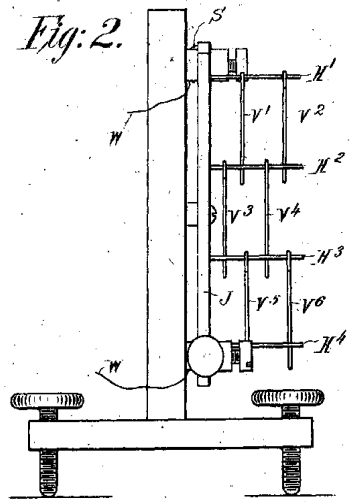



Fig: 2.




A.D. 1898. JAN. 21. N°. 1667.
THOMPSON'S COMPLETE SPECIFICATION.

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THOMPSON'S Complete Specification.

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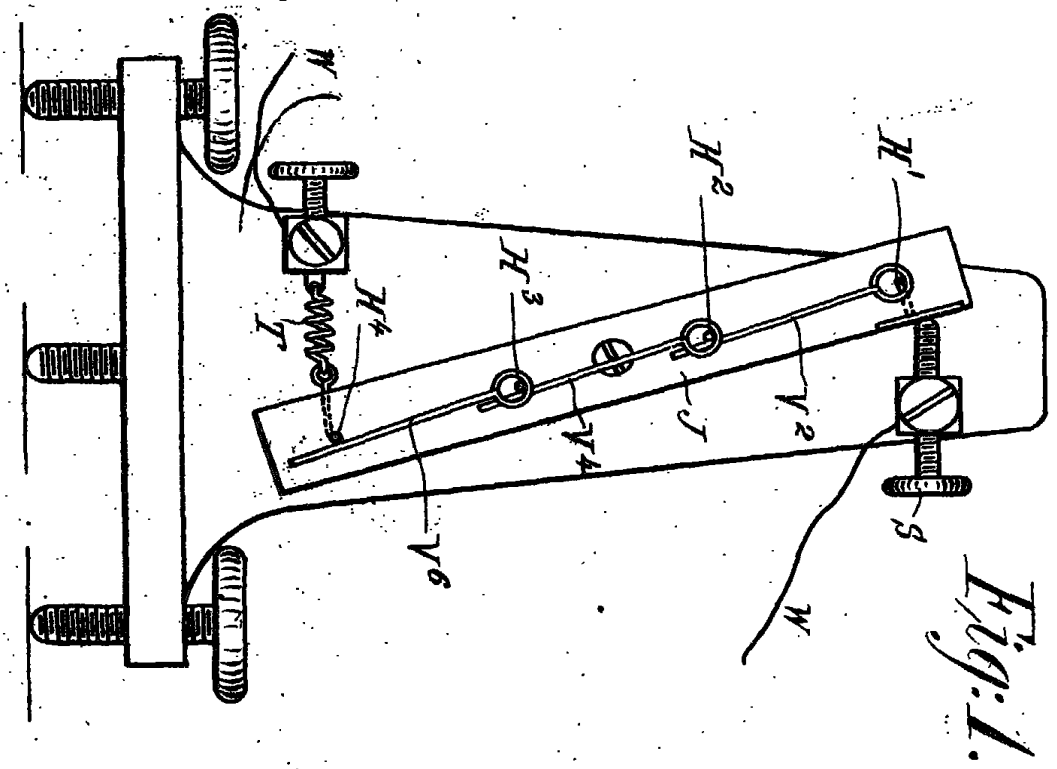



Fig. 1.

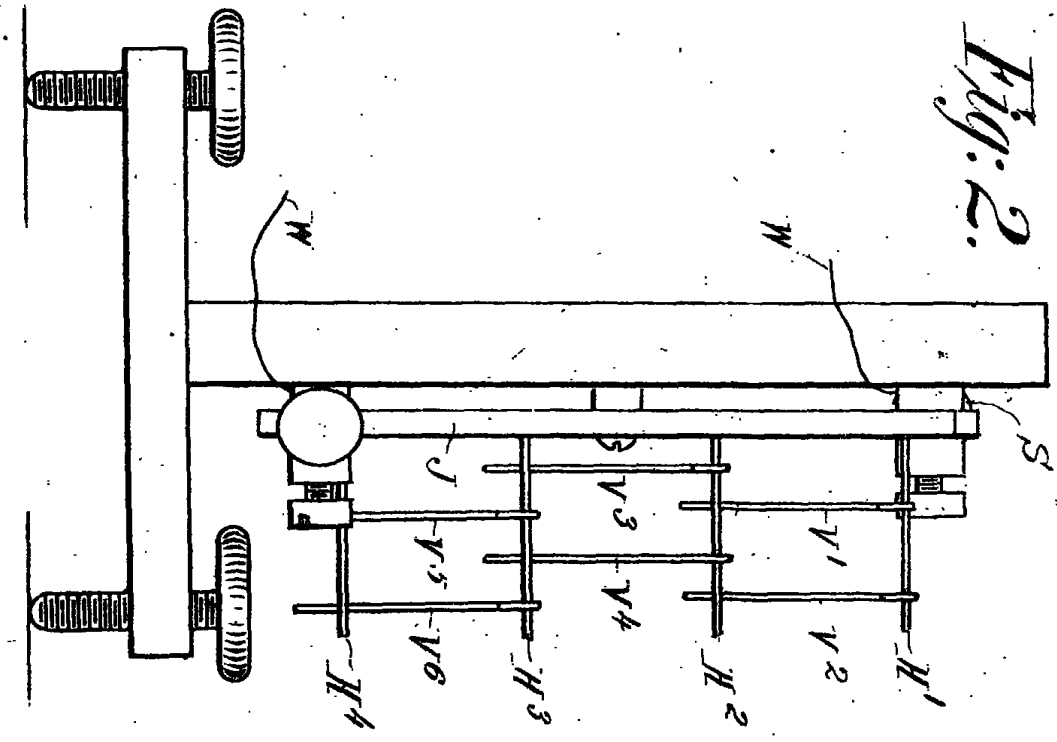



Fig. 2.

[This Drawing is a reproduction of the Original on a reduced scale]

(2 SHEETS)
SHEET 2.

Fig: 6.

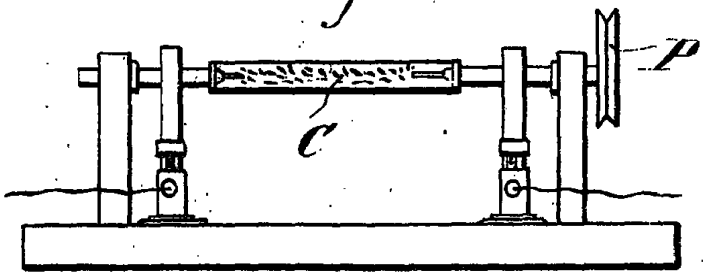



Fig: 5.

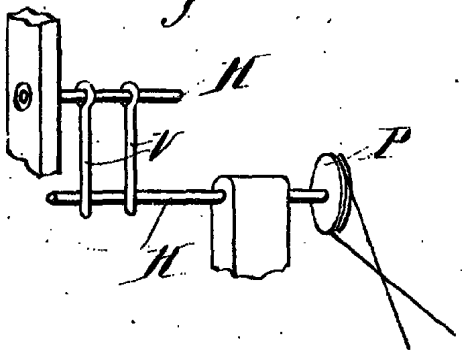



Fig: 3.

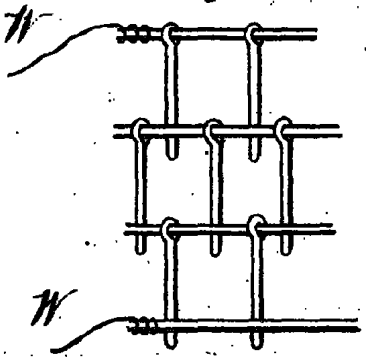
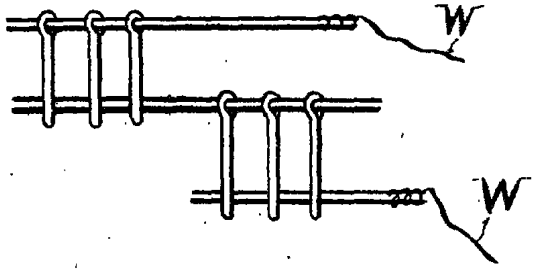



Fig: 4

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