(No Model.) 2 Sheets—Sheet 1.

M. H. WILSON.

AUTOGRAPHIC TELEGRAPH.

No. 305,259. Patented Sept. 16, 1884.

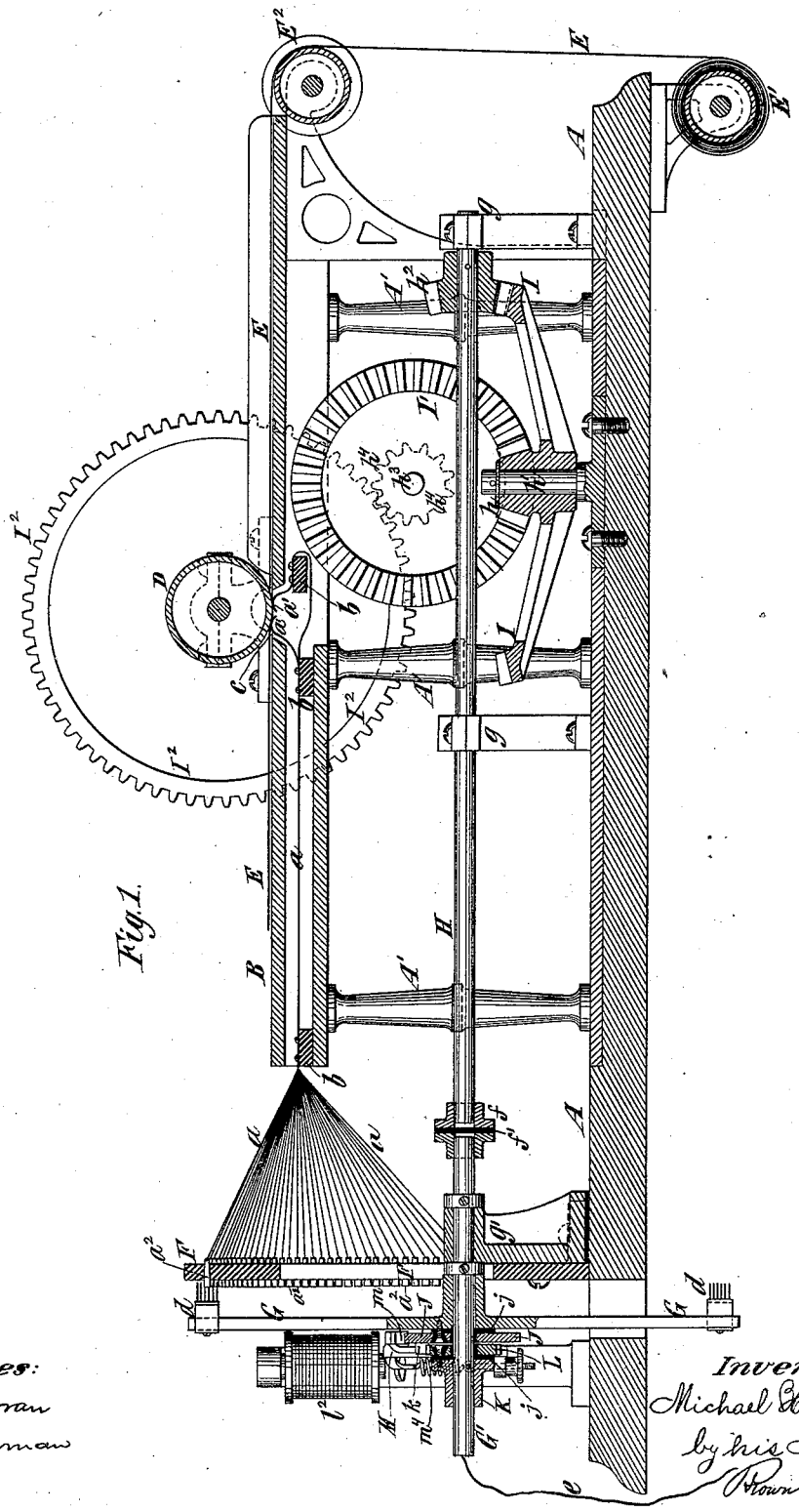

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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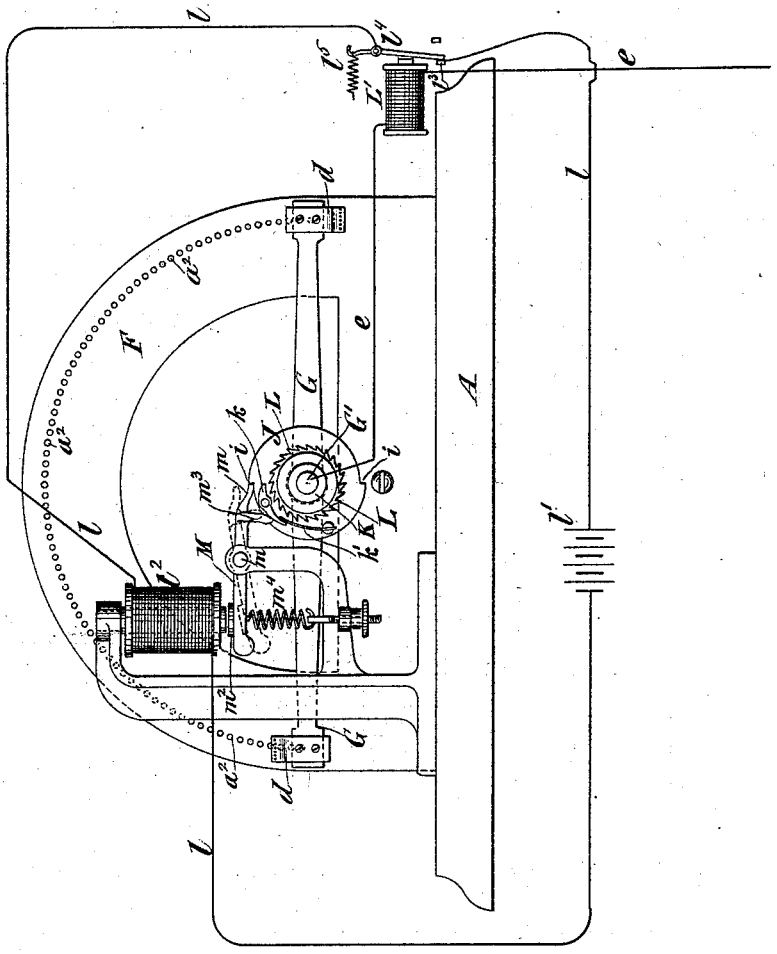
Fig. 2.



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UNITED STATES PATENT OFFICE.

M. HOFFMAN WILSON, OF BROOKLYN, ASSIGNOR OF THREE-TWENTIETHS TO HENRY McCOBB, OF NEW YORK, N. Y.

AUTOGRAPHIC TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 305,259, dated September 16, 1884.

Application filed November 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL HOFFMAN WILSON, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Autographic Telegraphs, of which the following is a specification.

My invention relates to the improved system of autographic telegraphs which is shown and described in my application for United States Letters Patent filed June 11, 1883, and of which the serial number is 97,653. According to that system a single line-wire is connected with a number of branch wires, which have their terminals arranged side by side in the path traversed by the form, and in said application the branch wires are divided or interrupted, and a rotating commutator, which is external to the main circuit, is arranged to move between and in contact with the interrupted ends of the branch wires, and thereby to close the circuit through said branch wires and to the main-line wire successively.

According to my present invention I employ branch wires which are continuous from end to end, and a commutator adapted to make contact with the ends of the branch wires successively, and arranged in the main circuit, the main-line wire being connected with the commutator-hub or its shaft.

In autographic telegraphs of the kind described it is of great importance that the commutators of the two or more instruments in the line rotate synchronously; and my invention further consists in a novel combination of parts in a unison apparatus, whereby the closing and breaking of the main circuit by the non-conducting or insulating ink on the form passing into and out of contact with the terminals of the branch wires will automatically and synchronously effect the starting and stopping of the commutators of all the instruments on the line. Such unison apparatus is also applicable to the machine shown in my aforesaid application.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of an instrument embodying my invention, and Fig. 2 is an end elevation of such parts of the machine as are necessary to illustrate the unison apparatus.

Similar letters of reference designate corresponding parts in both figures.

A designates the base-piece or bed of the instrument, and B designates the table supported thereon by pillars A′.

Below the table B are arranged the branch wires or conductors *a*, which are placed side by side, as in my aforesaid application, and are secured to bars *b* of insulating material. The terminals *a′* of these branch wires project upward through an aperture, *c*, in the table B, and are arranged in two rows across the table, the terminals in each row being opposite the spaces between the terminals of the other row. The branch wires or conductors *a* may be of any suitable character.

Immediately over the aperture *c* in the table is arranged the cylinder D, which may be of copper, and is located in the electric circuit.

The form on which is delineated the writing or other matter to be reproduced may be of paper or other suitable material, and the writing or other matter may be delineated in a non-conducting ink.

In the transmitting-instrument the paper on which messages are written may be in sheets, or in the form of a strip, E; but in the receiving-instrument the reproduction may be obtained on a continuous strip of paper, E, which may be wound upon a drum or reel, E′, being drawn thereto over a guide-roller, E^2.

The cylinder D is rotated to transmit messages, and wheels or rollers may be made to rotate by frictional contact with the cylinder, as shown and described in my aforesaid application, so as to feed the paper along. These wheels or rollers are not here shown, as they form no part of this invention. The form E being carried over the terminals *a′*, the circuit from the cylinder to the branch wires *a* is broken repeatedly by the characters in non-conducting ink. The branch wires *a* diverge at the end of the table B, and are secured at a proper distance apart in a semicircular or arc-shaped support or frame, F, which should be of insulating material.

G designates a commutator mounted loosely upon a rotary shaft, G′, but in electric communication with said shaft. The commutator carries brushes *d*, which make contact suc-

cessively with the terminals a^2 of the branch wires a, and to the shaft G′ is attached the line-wire e. Thus it will be seen that when a conducting part of the form E is in contact with the terminals a' and the commutator is rotated the circuit is closed from the cylinder D through the branch wires a, the commutator G, shaft G′, and line-wire e. It will therefore be seen that in my present instrument the commutator is in the main circuit, while in my former application, above referred to, the branch wires were interrupted or divided, and the commutator was rotated between the interrupted ends of the branch wires, so as to close the circuit through them successively, and was not itself in the electric circuit.

The cylinder D and the commutator-shaft G′ may be rotated by any suitable mechanism. As here shown, the commutator-shaft G′ is connected by a coupling, f, to a longitudinal shaft, H, which is in line with it, and which is supported in bearings g.

The two parts of the coupling f are represented as separated by insulation f', and the shaft G′ is mounted in a bearing, g', which is insulated from the base-piece or bed A.

I designates a large bevel-wheel, and h a bevel-pinion, which are formed integral or rigidly connected, and which rotate on a fixed stud, h'. The wheel I gears with a pinion, h^2, on the shaft H, and the pinion h gears into a large wheel, I′, mounted on a shaft, h^3. The shaft h^3 carries a pinion, h^4, which gears into a large wheel, I², on the shaft of the cylinder D.

The mechanism described, while transmitting a slow rotation to the cylinder D, will rotate the commutator-shaft very rapidly. The cylinder D and shaft H G′ are intended to be constantly rotated by clock-work or any other suitable motor. (Not here shown.) I will now describe the unison apparatus, which is best shown in Fig. 2, but also in Fig. 1. As before stated, the commutator G is loose upon its shaft G′, although it is in electric communication therewith, and to the outer side of the commutator is secured a disk, J, in the edge of which are two notches, i.

K designates a collar fixed on the shaft, and connected with it a ratchet-wheel, L. The disk J and wheel L are represented as insulated from the commutator G and collar K, rubber or other insulation, j, being between them, and said disk and wheel, by said insulation, are out of electric communication with the shaft G′.

To the disk J is pivoted a pawl, k, which, by a spring, k', is held in engagement with the ratchet-wheel L when not otherwise actuated.

In the line-wire e, which connects with the commutator-shaft G′, is a magnet, L′, which is energized whenever the main circuit is closed if the instrument is intended for working on a closed circuit.

At each instrument is a local circuit, l, which includes a battery, l', and a magnet, l^2, and one end of which is connected with a contact-piece, l^3, while the other end is connected with the lever l^4 of a circuit-breaker, which is acted on by a spring, l^5.

M designates a stop-lever or dog fulcrumed at m, and one end of which serves as a stop-pawl or dog, m', for engaging with the notches i in the disk J, while the other end carries an armature, m^2, which answers for the local magnet l^2. The lever M also carries a toe or projection, m^3, for acting on the pawl k, to disengage it from the ratchet-wheel L. When the action of the local magnet l^2 ceases, the lever M is pulled down by a spring, m^4.

From the foregoing description it will be understood that as long as the pawl k is held out of engagement with the ratchet-wheel L the shaft H G′ will rotate independently of the commutator G, the commutator being held against turning by the stop-pawl m engaging with one of the notches or stops i in the disk J. This condition is maintained until the form is introduced between the rotary cylinder D and the terminals a', and the writing, in insulating or non-conducting ink, comes into contact with said terminals. As soon as this occurs, the circuit through the main line e and magnet L′ is broken, the armature-lever l^4 is released, and at once moved by the spring l^5 away from the contact l^3. The local circuit l being thus broken, the spring m^4 draws down the lever M, thereby moving the stop-pawl m away from the disk J and the toe m^3 away from the pawl k, whereupon the spring k' throws the pawl k into engagement with the ratchet-wheel L, and through said pawl the said wheel L rotates the disk J and commutator G. As soon as the insulating or non-conducting ink on the form passes the terminals a', the circuit through the main line e and magnet L′ is closed, and the magnet L′ is energized and attracts the lever l^4, to cause it to make contact with l^3, and thus close the local circuit l. By the current through the local circuit the magnet l^2 is energized and attracts the lever M, thereby causing the toe m^3 to disengage the pawl k from the ratchet-wheel L and bringing the stop-pawl m into one of the notches i on the disk J. The commutator is thus released from its operating mechanism and brought to rest, where it remains until the insulating-ink of the form again reaches the terminals a'. Thus it will be seen that the commutators of the instruments in the main line e are all brought to a common starting-point and are simultaneously released when each line of writing on the form comes in contact with the terminals a'.

The instruments are arranged and connected for operation as shown and described in my aforesaid application, one instrument being at each end of the line, and each instrument serving both for receiving and transmitting.

The ratchet-wheel L and the pawl and disk k J constitute a clutch-connection between the commutator and its shaft, and the lever M, with the stop-pawl m, forms a stop mechanism operated by the closing of the local circuit.

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

1. In an autographic telegraph, the combination, with a number of branch wires having their terminals arranged in line across the path traversed by the form, of a commutator in the main circuit, a single line-wire in electric communication with the commutator, whereby the commutator in its movement is made to close the circuit between the line-wire and the branch wires in succession, and means for producing the travel of the form in contact with the terminals of said branch wires, substantially as herein described.

2. In an autographic telegraph, the combination, with a number of branch wires having their terminals arranged in line across the path traversed by the form, of a semicircular or arc-shaped support provided with contacts a^2, forming the opposite ends of said branch wires, a rotary commutator, a single line-wire in electric communication with the commutator, whereby the commutator in its rotation is made to close the circuit between said line-wire and said contacts in succession, and means for producing the travel of the form in contact with the terminals of said branch wires, substantially as herein described.

3. The combination, with means for producing the travel of the form, of a single line-wire and a number of branch wires having their terminals arranged in the path traversed by the form, a commutator serving to close the circuit through the line-wire and the branch wires in succession, operating mechanism for the commutator, a clutch-connection between the commutator and its operating mechanism, and stop mechanism, whereby the commutator will be arrested when released from its operating mechanism, substantially as and for the purpose described.

4. The combination, with means for producing the travel of the form, of a single line-wire and a number of branch wires having their terminals arranged in the path traversed by the form, a commutator arranged in the electric circuit, and serving to close the circuit between said line-wire and the branch wires in succession, operating mechanism for the commutator, a clutch-connection between the commutator and its operating mechanism, and stop mechanism, whereby the commutator will be arrested when released from its operating mechanism, substantially as herein described.

5. The combination, with means for producing the travel of the form, of a single line-wire and a number of branch wires having their terminals arranged in the path traversed by the form, a rotary commutator arranged in the electric circuit, and serving to close the circuit through the line-wire and the several branch wires in succession, a rotary shaft and a clutch-connection, whereby the commutator is operated by said shaft, stop mechanism for arresting the commutator when it is freed from its operating-shaft, a local circuit containing a magnet, whereby the clutch-connection and stop mechanism are controlled, and a magnet in the main circuit controlling a circuit-breaker, whereby the local circuit is broken and closed, substantially as herein described.

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Witnesses:
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ED. L. MORAN.