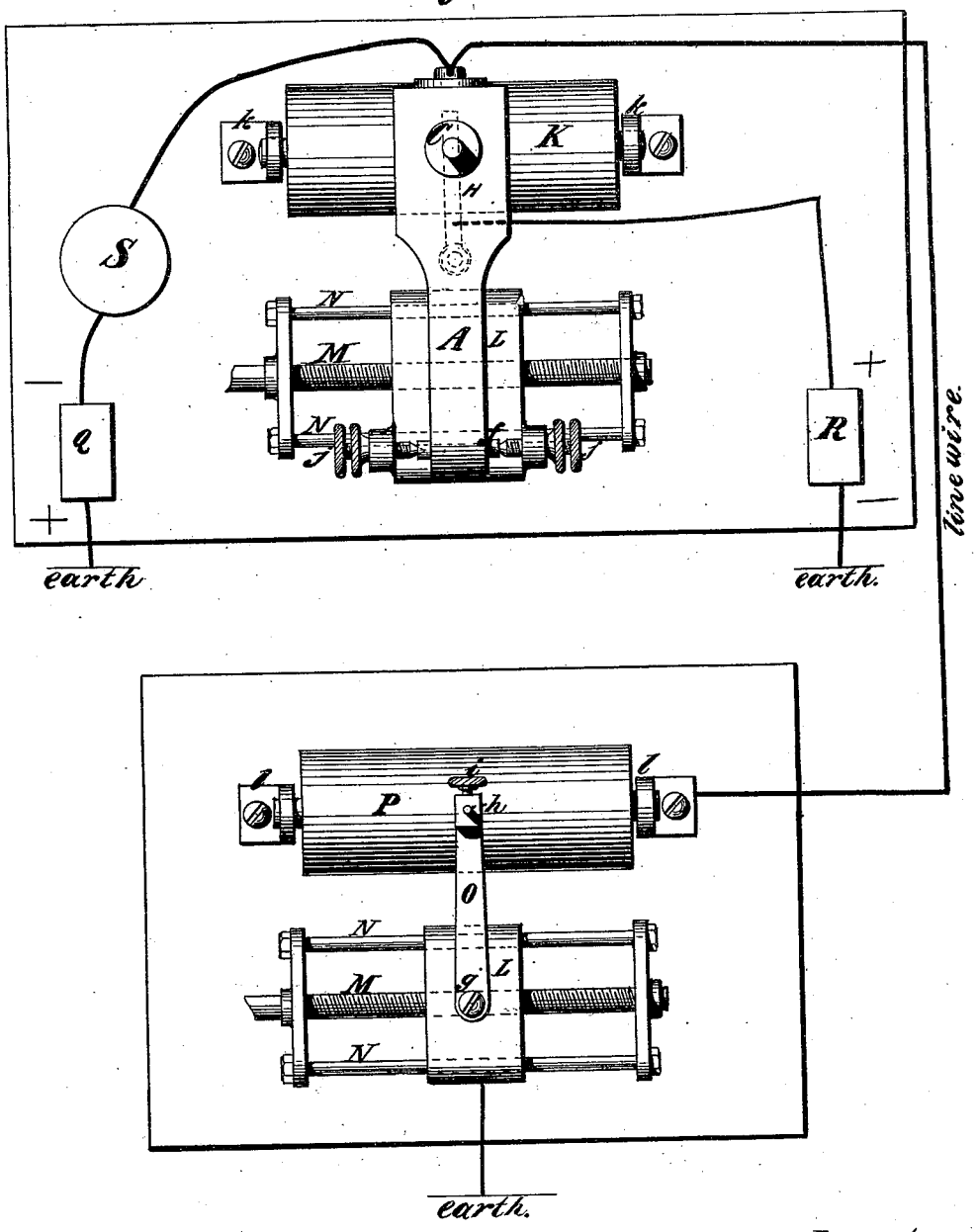
2 Sheets—Sheet 1.

# W. E. SAWYER.

## AUTOGRAPHIC TELEGRAPH TRANSMITTERS.

No. 195,236. Patented Sept. 18, 1877.

*Fig 1.*

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2 Sheets—Sheet 2.

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Fig 2

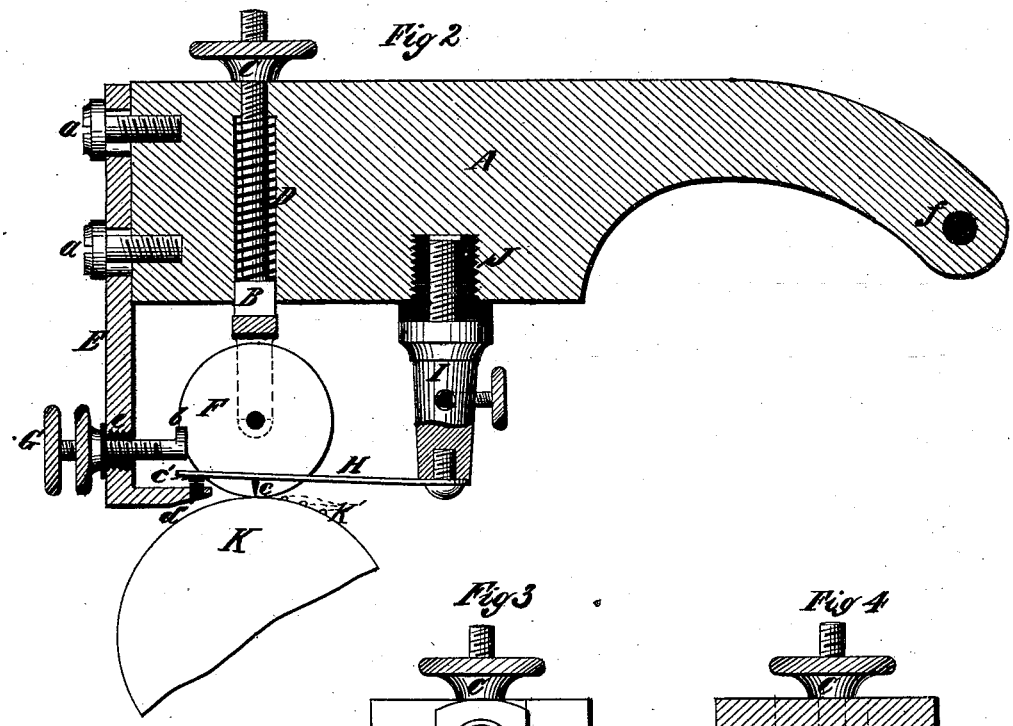



Fig 3

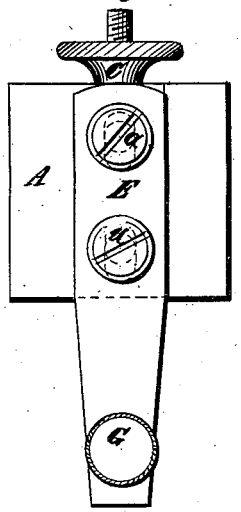
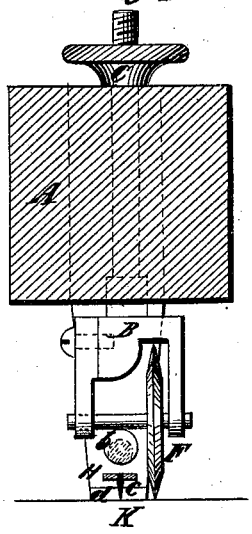



Fig 4




Witnesses.
Chandler Hall.
Jas. G. Smith.

Inventor.
William Edward Sawyer.

# UNITED STATES PATENT OFFICE.

WILLIAM E. SAWYER, OF NEW YORK, N. Y.

## IMPROVEMENT IN AUTOGRAPHIC TELEGRAPH-TRANSMITTERS.

Specification forming part of Letters Patent No. **195,236**, dated September 18, 1877; application filed July 9, 1877.

*To all whom it may concern:*

Be it known that I, WILLIAM EDWARD SAWYER, of the city, county, and State of New York, have invented certain new and useful Improvements in Autographic Telegraph-Transmitters, of which the following is a full, clear, and exact description.

In most autographic telegraphs the transmission of a message is in part effected by means of insulating-lines of writing upon a conducting-surface. The usual manner of securing this condition is by writing with an insulating-ink upon metalized paper.

In Letters Patent heretofore granted to me the message is written upon ordinary paper in a special ink, and thence transferred by pressure to a metallic sheet.

The object of my present invention is to render it possible to transmit a message written with an ordinary pencil upon ordinary paper directly from the paper upon which the message is written, without having recourse to transferring or other preparatory processes.

This I accomplish in the following manner: Under the message-blank to be written upon is placed a sheet of blotting-paper or other yielding substance. Writing with ordinary firmness with a pencil or any hard point, the lines of writing appear in relief upon the reverse side of the blank. In this condition the blank is placed around the transmitting-cylinder, the reverse or embossed side outermost, and a style attached to a car moving longitudinally alongside the cylinder is caused, by coming in contact with the raised lines of writing, to close or break the circuit.

I am aware that it is old to use fillets of paper embossed in Morse telegraphic characters to make or break a connection; but the apparatus employed for such purpose is inapplicable to an autographic telegraph, wherein the conditions are different.

In the drawings accompanying and forming a part of this specification, Figure 1 is a plan view, showing the connections at the transmitting and receiving stations; and Figs. 2, 3, and 4 are detail views of the transmitter.

The cylinders K in standards *k k* and P in standards *l l* are revolved in synchronism by any suitable mechanism. The cars L L, moved along upon the railways N N N N by the screw-shafts M M, in common with most autographic telegraph instruments, cause the styles to draw fine imaginary spiral lines around the cylinders. The spring O, fastened to the receiving-car L by screw *g*, carries the recording point or style *h*, which is held in place by screw *i*. The cylinder is connected to the line-wire and the style to earth.

The transmitting-style is held by the weighted arm A, having its bearing *f* on screws *j j*. The beveled wheel or roller F in forked rod B has two functions—first, to keep the arm A the required distance from the cylinder without unnecessary friction; and, second, to cut through the embossed lines of writing without flattening them down. This rod slides in a slot in arm A, being drawn up by nut C and pressed down by spiral spring D. The style *c* upon flat spring H is held in position by binding-post I, set in and insulated by J from arm A. At its free end the spring is provided with a contact-point, *c'*, which normally touches contact-point *d* of bent arm E, which is itself adjustable up and down by means of slots cut into it and screws *a a* setting into arm A. The screw G, in insulation *e* and provided with cam *b*, is for the purpose of regulating the upward movement of spring H.

The operation of the transmitter is as follows: The rod B is lowered by nut C until the point *c* is just prevented from touching the blank or level portion of the message by reason of the contact-points *c'* and *d* coming together. Whatever irregularity there may be in the surface of the message or the cylinder is compensated by the roller F, which always preserves the height of the style *c*, the weighted arm A being free to rise and fall in its trunnion-bearings. As the cylinder in revolving brings a line of writing, *k'*, beneath point *c*, the spring H rises, and connection between *c'* and *d* is broken, and an impulse of electricity is transmitted over the line. As soon as the embossed edge has passed the point *c* the connection between *c'* and *d* is restored. As the point *c* ultimately traces over the entire surface of the message, and as at every break between *c'* and *d* the receiving-style makes a mark, it is obvious that as both transmitting and receiving cylinders rotate in unison, the original message is reproduced in fac-simile at

the distant receiving-station. When the record is made by the receiving-style, the original embossed lines of writing being in reverse, the two cylinders run in opposite directions. When the record is made by the receiving-cylinder upon the under side of the chemical receiving-paper, the cylinders rotate in the same direction. In both cases the styles move in the same direction.

The circuit at the transmitting-station is from the line-wire to the arm A, and thence to a resistance, S, and negative pole of battery *q* to earth. The spring H is connected to the positive pole of battery R and thence to earth. When contact is broken between the points *c'* and *d* battery *q* is put to the line, and the receiving-style *h* makes a mark. When contact is restored between *c'* and *d* battery *q* is short-circuited from the line, and battery R, thrown into the line by resistance S, clears the same of tailings.

It is obvious that I may employ my transmitter in repeating messages from point to point, the messages to be repeated being embossed in the receiving-instrument by a style worked by an electro-magnet.

It is further obvious that instead of breaking connection between points *c'* and *d*, the spring H may make connection with the cam *b*, or it may both break and make connection for line-clearing or other purposes.

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

1. In a telegraph-transmitter operated by embossed lines, the combination, with a style actuated by such embossed lines, of apparatus bearing upon the message, by means of which the proper distance of the style from the unembossed portions of the message is maintained.

2. In a telegraph-transmitter operating by embossed lines, the combination of a message-holding surface, a gage bearing thereon or on the message, and a style actuated by such embossed lines.

WILLIAM EDWARD SAWYER.

Witnesses:
JAS. G. SMITH,
S. D. SCHUYLER.