

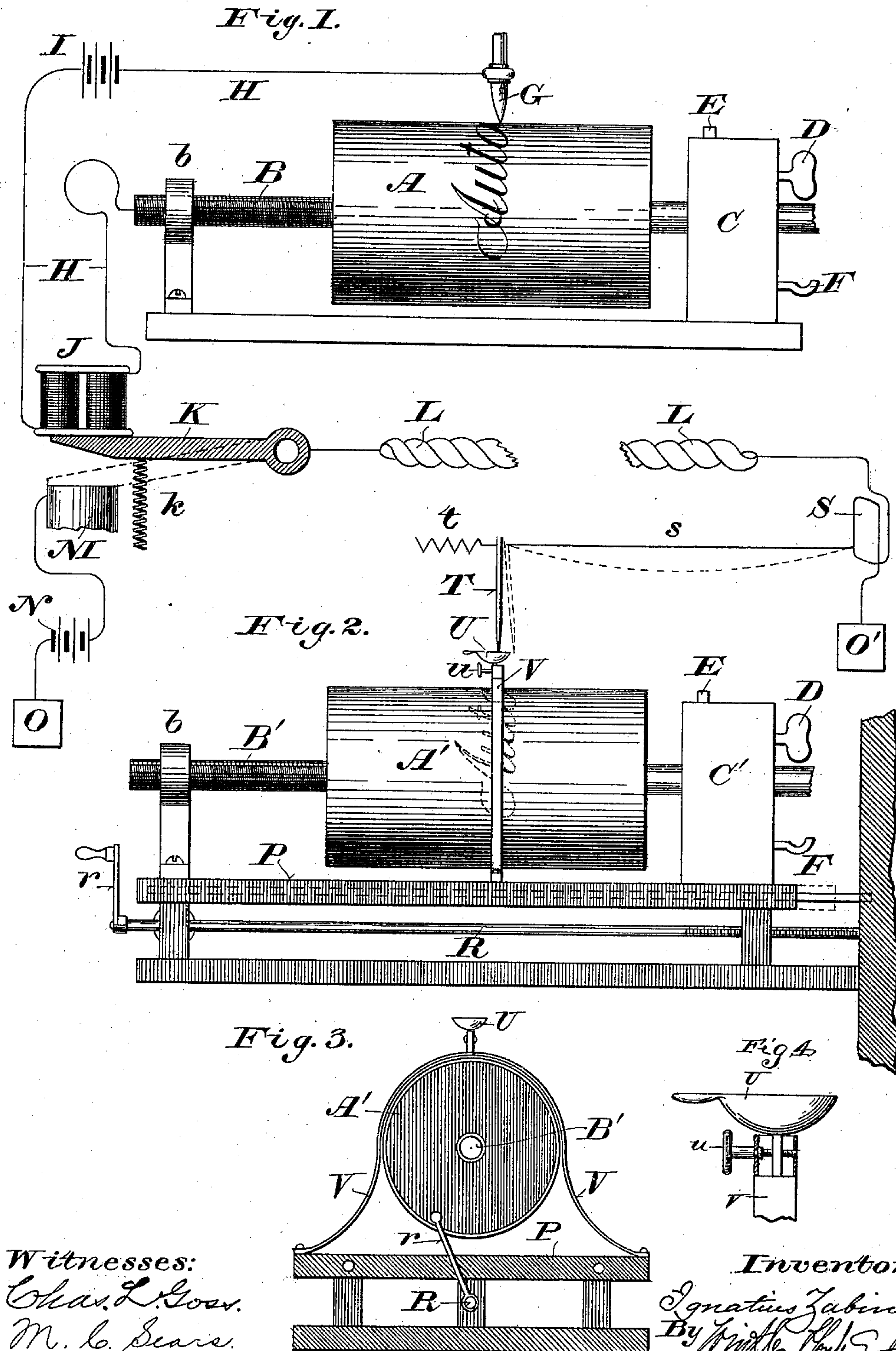
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Patented Feb. 19, 1901.

I. ZABINSKI.
AUTOMATIC COPYING TELEGRAPH.

(Application filed Dec. 18, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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AUTOMATIC COPYING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 668,248, dated February 19, 1901.

Application filed December 18, 1899. Serial No. 740,693. (No model.)

To all whom it may concern:

Be it known that I, IGNATIUS ZABINSKI, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Automatic Copying Telegraphs, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates particularly to cable or submarine telegraphy.

The main object of the invention is to automatically produce at a distance facsimile copies of autograph messages, pictures, diagrams, &c.

It consists of certain novel features of construction and combinations of parts, as hereinafter particularly described, and pointed out in the appended claims.

In the accompanying drawings like letters designate the same parts in the several figures.

Figure 1 is an elevation and diagram of the transmitting mechanism and its electrical connections. Fig. 2 is a similar view of the receiving mechanism. Fig. 3 is an end elevation of a portion of the receiving mechanism viewed from the left with reference to Fig. 2; and Fig. 4 is a detail view, on an enlarged scale, of the ink-cup, showing means for adjusting it.

Referring to Fig. 1, A designates a metallic cylinder mounted upon a screw-threaded rod or shaft B. C designates a motor arranged to rotate said cylinder and by means of the screw-thread on its shaft to simultaneously move it endwise. The shaft B is shown as engaging with a nut or threaded bearing *b* and as passing through the case of the motor C, the details of which are not shown, since they are not essential to a clear understanding of the improvements constituting my invention. Any suitable kind of motor may be employed to impart the required movements to the cylinder A, and its connections with said cylinder for producing the rotary and longitudinal movements thereof may be made in various ways. The motor C is intended to represent one in which a spring or weight imparts movement through a train of gears or clockwork to the cylinder. D designates a winding-key. E is a push-button or lever for starting the motor, and F is a le-

ver or detent for stopping the motor. G is a metallic tracing-stile, the point of which is held in contact or close proximity with the periphery of the cylinder A. H is a local electric circuit, including a battery I or other source of current, an electromagnet J, and also the cylinder A and the tracing-stile G. K is a circuit-controlling key or lever, the free end of which is in the field of the magnet J. It is connected electrically with one end of the main line or cable L and is normally held by a spring *k*, acting in opposition to the magnet J, against a back-stop and electric contact M, which is connected in turn with one pole of the main battery N, the other pole of said battery being connected with the ground at O in the usual way.

Referring to Figs. 2 and 3, A' is a cylinder similar to that of the transmitting mechanism shown in Fig. 1, although it is not necessarily made of metal or a conductor of electricity. It is mounted in like manner upon a screw-threaded shaft B' and is rotated and moved longitudinally by means of a suitable motor C', like or similar to that of the transmitter. Like the motor C the motor C' is intended to represent a spring or weight motor having a winding-key D, a starting button or lever E, and a stopping lever or detent F. The cylinder A' and its motor are shown as mounted upon a horizontally-movable slide P, which is engaged and adjusted, as hereinafter explained, by a screw-threaded shaft R, provided with a crank *r*. S designates the oscillatory coil or bobbin, and T the tube or spurter, of a siphon-recorder such as is used in cable or submarine telegraphy. One terminal of the bobbin S is connected with the ground at O' in the usual way. The tube or spurter T is connected by a fine thread or silk cord *s* with the bobbin S and is held in its normal or neutral position by a light spring *t*, which acts in opposition to said bobbin. U is a cup supported underneath the tip of the tube T, when it is in its neutral position, by an arch V, attached to the slide P and extending over the cylinder A'. This cup is made adjustable lengthwise of said cylinder by means of a screw *u*, as shown in Fig. 4, for a purpose hereinafter explained.

The apparatus above described operates as follows: The copy, which is written or made with a non-conductive ink or substance upon

tin-foil or conductive paper, is wrapped around and fastened upon the cylinder A, and the cylinder A' is covered with paper. It will be understood that each end of the cable or main line is supplied with both transmitting and receiving instruments like or similar to those shown and above described, in addition to manually-operated transmitting keys or devices and receiving instruments for transmitting and receiving messages in the ordinary way. When it is desired to produce a facsimile copy of writing, a picture, or other design, the operator at the transmitting end of the line so informs the operator at the receiving end by means of any predetermined signal transmitted with the usual instruments. The receiving operator thereupon adjusts the receiving instrument by means of the screw-shaft R, so as to take the slack out of the connection s between the siphon-tube T and the bobbin S, and starts the motor C'. At the same time the operator at the other end of the line starts the motor C. The motors of the transmitting and receiving instruments are constructed and adjusted to produce synchronistic movements of the cylinders A and A'. The point of the tracing-stile G being in contact with the copy to be transmitted describes a helical path corresponding with the screw-thread of shaft B, and while it is in engagement with blank portions of the tin-foil or conducting-paper of the copy the local circuit H will be closed, thus energizing the magnet J and holding the transmitting key or lever K against the tension of the spring k away from the contact M. The connection between the main battery N and the main line or cable L is thus broken. When, however, the stile G passes over a part of the writing, picture, or other design, the local circuit H will be broken by the non-conductive ink or substance and the transmitting key or lever K thus released by the magnet J will be drawn by the spring k against the contact M. The main line or cable L will thus be charged with electricity from the battery N and the current passing through the bobbin or coil S of the siphon-recorder at the other end of the cable swings the tip of the tube T against the tension of spring t away from the cup U into position to make a mark on the paper wrapped around the receiving-cylinder A'. The movement of this cylinder corresponding with that of the transmitting-cylinder A, the writing, picture, or other design wrapped around the cylinder A will be reproduced or copied upon the paper wrapped around the cylinder A' in a series of fine parallel lines corresponding in spacing with the thread of the screw B'. The cup U is adjusted by the screw u, so that when the tube T is in its normal or neutral position its point will be just inside of the rim of the cup and the ink discharged from the tube will be caught and thus prevented from marking the paper.

The various details of the apparatus may be modified in many ways without materially affecting its mode of operation or departing from the principle and intended scope of the invention.

I claim—

1. In an automatic copying-telegraph the combination with the main circuit or line and transmitting mechanism, of receiving mechanism comprising the tube or spurter of a siphon-recorder having an actuating connection with the bobbin of the recorder, a longitudinally-movable rotary cylinder, a motor for actuating said cylinder and an intercepting device arranged to catch the ink from said tube or spurter when it occupies its neutral position, substantially as and for the purposes set forth.

2. In an automatic copying-telegraph the combination with a main circuit or line, including a source of current, and a circuit-controlling key or lever, of transmitting mechanism consisting of a longitudinally-movable rotary cylinder, a motor for actuating said cylinder, a tracing-stile adapted to traverse the copy which is wrapped upon said cylinder, and a local circuit including said stile and cylinder, and a source of current and adapted to operate said circuit-controlling key or lever; and receiving mechanism comprising the tube or spurter of a siphon-recorder, a longitudinally-movable rotary cylinder, a motor adapted to impart movement to said cylinder synchronous with that of the transmitting-cylinder, and an intercepting device adapted to catch the ink from said tube or spurter when it is in its neutral position, substantially as and for the purposes set forth.

3. In an automatic copying-telegraph, the combination with a main line or cable, a source of electricity therefor and transmitting mechanism constructed and arranged to send electrical impulses through the main line or cable corresponding with the copy to be reproduced, of receiving mechanism comprising the coil or bobbin and the tube or spurter of a siphon-recorder, said tube having a slender flexible actuating connection with said bobbin, a longitudinally-movable and rotary cylinder having its periphery in proximity with the end of said tube, and a motor arranged to impart a rotary and simultaneous longitudinal movement to said cylinder, said tube or spurter being adjustable with reference to said bobbin so as to render its connection therewith operative or inoperative as desired, substantially as and for the purposes set forth.

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

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