No. 835,751. PATENTED NOV. 13, 1906.

J. GELL.

AUTOMATIC TRANSMITTER FOR TELEGRAPHIC SYSTEMS.

APPLICATION FILED SEPT. 29, 1905.

Fig. 1.

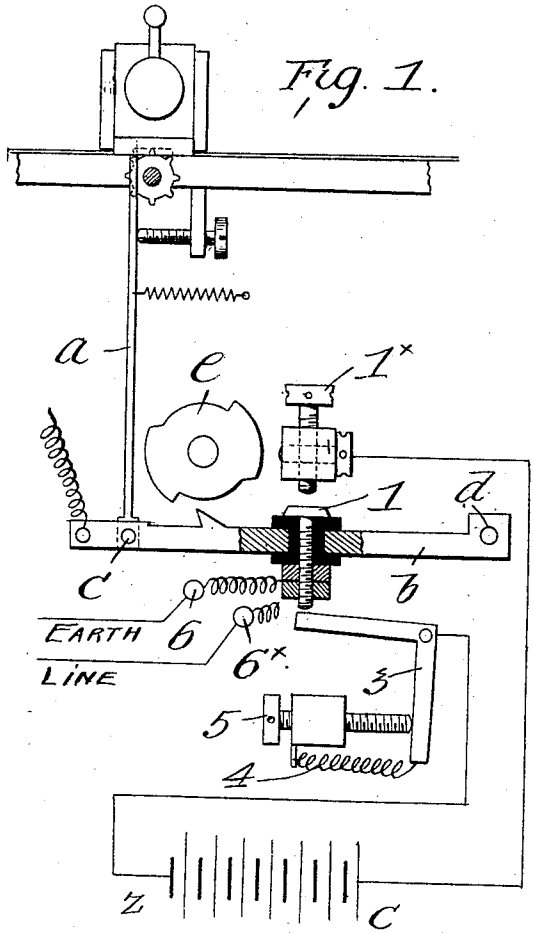


Fig. 3

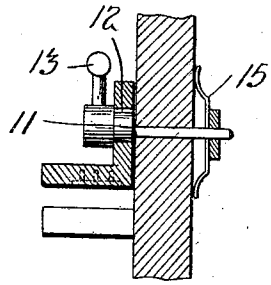


Fig. 4.

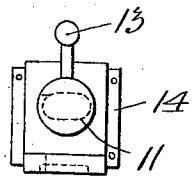


Fig. 5.

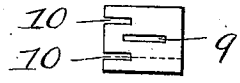
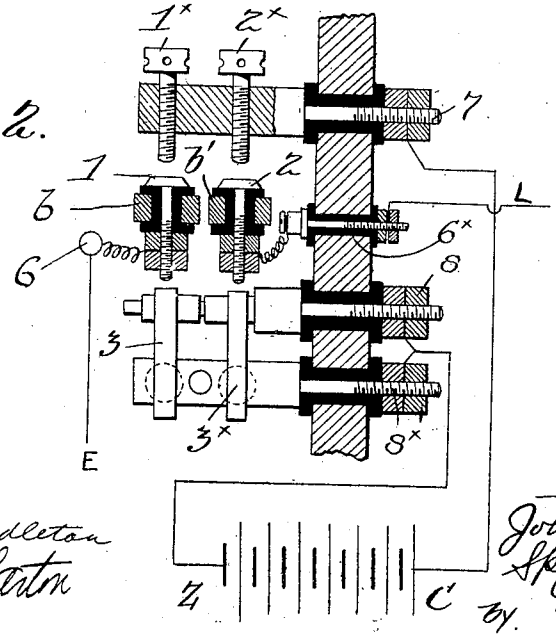


Fig. 2.



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JOHN GELL, OF LONDON, ENGLAND.

AUTOMATIC TRANSMITTER FOR TELEGRAPHIC SYSTEMS.

No. 835,751. Specification of Letters Patent. Patented Nov. 13, 1906.

Application filed September 29, 1905. Serial No. 280,653.

To all whom it may concern:

Be it known that I, JOHN GELL, a subject of the King of Great Britain, and a resident of London, England, have invented certain new and useful Improvements in Automatic Transmitters for Telegraphic Systems, of which the following is a specification.

My present invention relates to the form of apparatus disclosed by me in an application for Letters Patent of the United States, filed November 28, 1904, Serial No. 234,620. In said apparatus a perforated tape is fed by a star feed-wheel to present its perforations to transmitting-pins adapted to rise vertically through said perforations, the pins being connected with levers controlling electrical contacts and operated upon by cams which depress the levers and then allow them to be subjected to the lifting power of springs, so that if at this time there is a perforation in the tape opposite the end of either transmitting-pin the corresponding contact-lever will be raised to the appropriate electrical circuit, and thus give the electrical impulse; but if there is no perforation in the tape over the transmitting-pin when it rises the said pin in its upward movement will be arrested by the imperforate portion of the tape and this will prevent the lever from closing its contact, and no electrical impulse will result.

The object of my present invention is to provide an arrangement for double current working, only one battery being used and two connections being broken at proper times.

I have also in my present invention provided an improved form of check foot or shoe under which the perforated tape passes to act in conjunction with the transmitting-pins.

The invention consists in the features and combination and arrangement of parts hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side view of the invention, partly in section and partly in the nature of a diagram. Fig. 2 is a sectional view in a plane at right angles to the plane of Fig. 1. Fig. 3 is a detail sectional view of the improved check-foot. Fig. 4 is a front view, and Fig. 5 a bottom plan view of the same.

In Fig. 1 only one of the contact-levers appears, it being understood that the other lever is immediately back of and in the same plane with the lever shown, so that it is hidden from view. The same is true of the transmitting-pins. The transmitting-pin is marked *a* and the lever *b*. The transmitting-pin is connected to the lever at *c*, and said lever is pivoted at *d*. The cam or segment-wheel for operating the levers is shown at *e*.

The lever companion to the one shown in Fig. 1 is represented in section in Fig. 2 and is marked *b'*. The contacts or anvils carried by the levers are marked 1 and 2, respectively, and their corresponding contacts $1^{\times}$ and $2^{\times}$.

In this present form of my invention for double-current working I add two supplemental contacts in the form of angle-levers $3\ 3^{\times}$, which by the force of springs 4 follow up the anvil-contacts 1 and 2 until their upper parts nearly touch the contact-screws $1^{\times}$ $2^{\times}$, the amount of travel being limited by the stop-screws 5.

The anvil 1 is connected to earth through the plug 6, shown for convenience diagrammatically; but in reality this is arranged like the plug $6^{\times}$ in Fig. 2 and alongside the same. The anvil-contact 2 is connected to line through the contact-plug $6^{\times}$. A single battery is employed, the carbon-terminal being connected with the plug 7, which holds the contact-screws $1^{\times}$ $2^{\times}$. The zinc terminal of this battery is connected to the plug 8, to which is pivoted the angle-levers $3\ 3^{\times}$

The action of the double-current apparatus just described is as follows: When the transmitting-pin connected with the inner key or lever *b'* rises through a hole in the tape, the anvil 2 makes contact with the screw $2^{\times}$ and breaks contact with the angle-lever $3^{\times}$. The current from the copper pole of battery passes through $7, 2^{\times}, 2$, and $6^{\times}$ to line, and the zinc current passes at the same time through $8\ 8^{\times}$, angle-lever 3, contact 1, and plug 6 to earth, the imperforate part of the tape having held the transmitting-pin *a* down together with its lever and the contact between 3 and 1 being thereby maintained. By this arrangement anvils 2 and 1 are continually in contact with $3^{\times}$ and 3 when the imperforate portions of the tape goes through. The frequent connection of the line and earth resulting from this arrangement facilitates the line discharging to earth frequently, and by the use of properly-shaped cams the line can be made to momentarily discharge to earth between each signal. This facilitates clear and rapid signaling under certain conditions. When the

outer transmitting-pin *a* rises through a hole in the tape, contact is made through 1 and $1^{\times}$ and broken between 1 and 3 and maintained broken between $2^{\times}$ and 2 and in contact between 2 and $3^{\times}$. The zinc current flows through 8, $8^{\times}$, $3^{\times}$, 2, and $6^{\times}$ to line and the copper current through 7, $1^{\times}$, 1, and 6 to earth.

Figs. 3, 4, and 5 show my preferred form of check-shoe. This shoe has a groove 9 for the star feed-wheel to work and two saw-cuts 10 for the transmitting-pins, which cuts reaching out to the edge expose the pins to view and facilitate accurate adjustment and the clearance of the fluff from the edges of the holes in the paper instead of allowing this waste to work down into the mechanism.

In order to start a piece of tape in the middle, it is necessary to raise the shoe in order to adjust the tape over the star feed-wheel to the proper point. For this purpose an eccentric 11 is used, moving in a slot 12. When turned by the handle 13, the eccentric will turn to raise and lower the check-shoe. The shoe moves in side guides 14. In Fig. 3 the shoe is shown in its upper position. 15 is a spring to keep the shoe against the side of the machine. The advantage of this arrangement is that the shoe is firmly or rigidly held in all of its adjusted positions to take up the upward thrust exerted through the transmitting-pins and the tape.

I claim as my invention—

1. In an automatic telegraphic instrument, the combination of a battery, two transmitting-pins, a star feed-wheel, levers controlled by the said pins, a cam device also controlling the levers, contacts carried by the levers, a pair of supplemental contacts for double-current working arranged between the contacts on the levers and one pole of the battery, connections from the contacts of the levers to the earth and line respectively and a pair of contacts to be engaged by the lever-contacts and connected to the other pole of the battery, substantially as described.

2. In an automatic telegraphic instrument employing a perforated tape, the combination of a pair of main contacts connected respectively to earth and line, movable carrier means for said contacts, means controlled by the passage of the tape for controlling the contact-carriers, a battery, a pair of supplemental contacts to coact with the main contacts and arranged between the main contacts and one pole of the battery and a pair of contacts to coact with the main contacts and connected to the other pole of the battery, substantially as described.

3. In an automatic telegraphic instrument, the combination of a pair of main contacts connected respectively to earth and line, movable carrier means for said contacts, means controlled by the passage of the tape for controlling the contact-carriers, a battery, a pair of supplemental contacts to coact with the main contacts and arranged between the main contacts and one pole of the battery and a pair of contacts to coact with the main contacts and connected to the other pole of the battery, said supplemental contacts being movable to follow up the movement of the main contacts and to be stopped while the main contact continues its movement, substantially as described.

4. In combination with the star feed-wheel, transmitting-pins, a check-shoe an eccentric for elevating the check-shoe and a spring for applying tension to the parts whereby the check-shoe will be maintained at different elevations to which it may be raised by the eccentric, substantially as described.

5. In an apparatus of the class described, and in combination with the star feed-wheel and transmitting-pins, a check-shoe having a groove for the star feed-wheel and open notches for the transmitting-pins, substantially as described.

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

JOHN GELL.

Witnesses:
H. D. JAMESON,
F. L. RAND.