(No Model.) 2 Sheets—Sheet 1.

H. VAN HOEVENBERGH.

AUTOMATIC TELEGRAPH TRANSMITTER.

No. 261,410. Patented July 18, 1882.

Fig. 1,

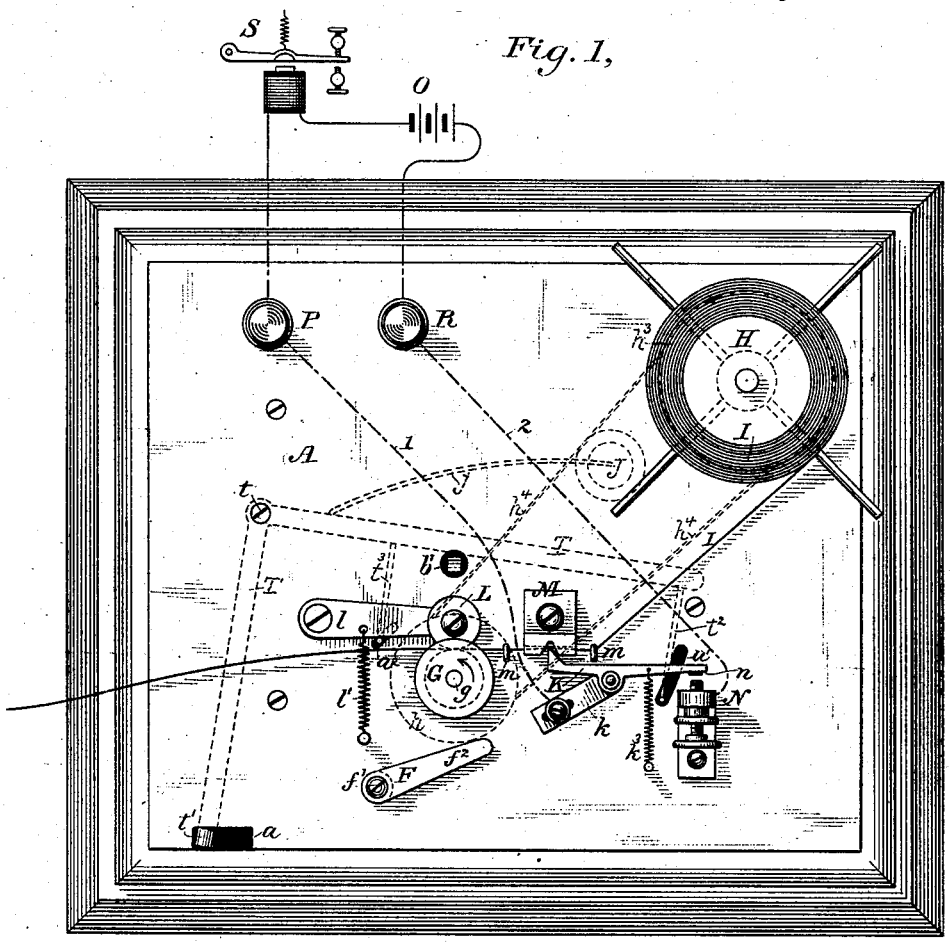


Fig. 2,

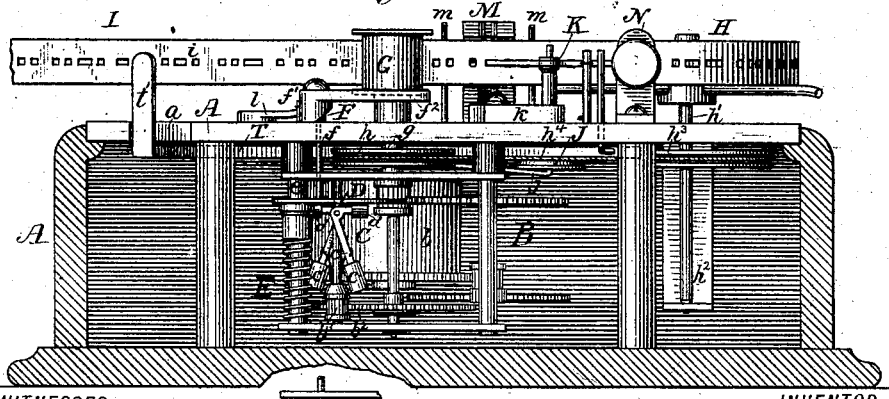
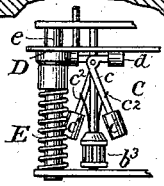


Fig 2,a



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3,

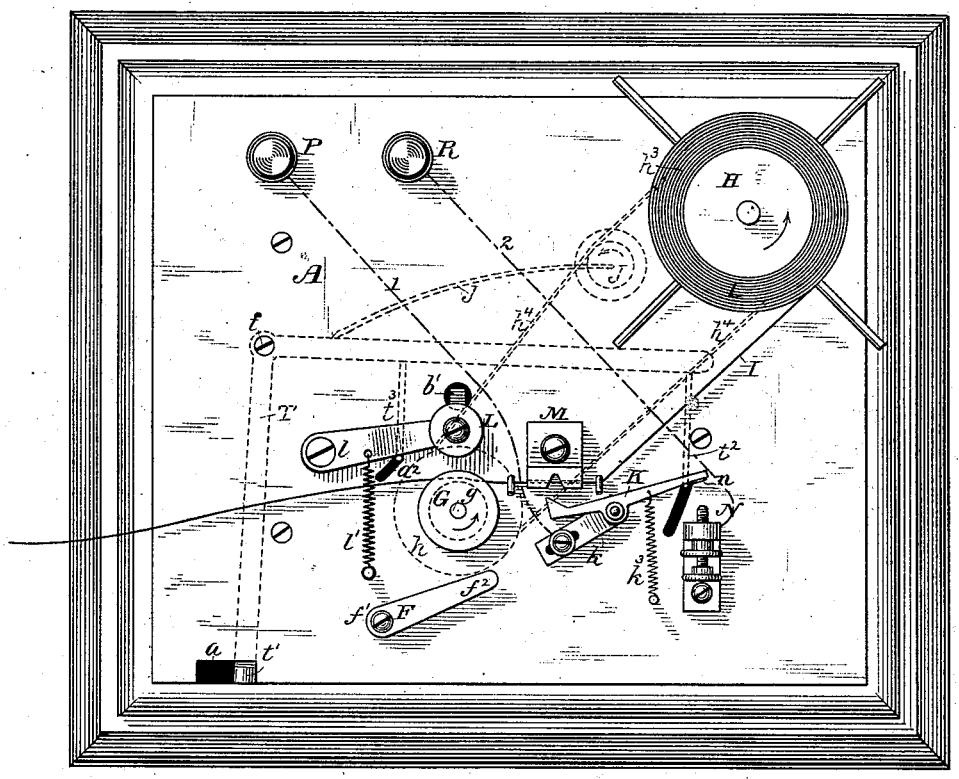
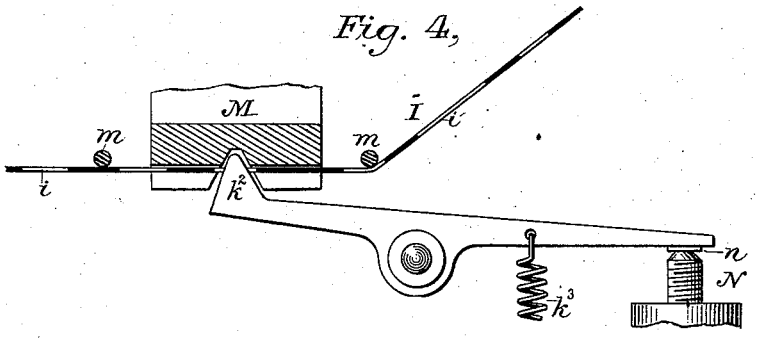


Fig. 4,



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HENRY VAN HOEVENBERGH, OF ELIZABETH, NEW JERSEY.

AUTOMATIC TELEGRAPH-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 261,410, dated July 18, 1882.

Application filed May 16, 1882. (No model.)

To all whom it may concern:

Be it known that I, HENRY VAN HOEVENBERGH, a citizen of the United States, and a resident of Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Automatic Telegraphic Transmitters, of which the following is a specification.

The object of my invention is to provide an automatic transmitting-instrument wherein the key or circuit-closer is actuated by means of successive perforations in a prepared pattern-strip, with suitable devices for controlling the movements of the pattern-strip, thereby especially adapting the instrument to the use of students of telegraphy.

My invention consists generally in providing an automatic transmitter with independent devices for imparting an advance and retrograde motion respectively to the pattern-strip, and with means for bringing either device into action and simultaneously throwing the other device out of action.

It also comprises a motor for actuating the mechanism, and a device for regulating the speed of the same.

In the accompanying drawings, Figures 1 and 3 are plan views of the apparatus in position for operating the transmitting-key and for reversing the motion of the pattern-strip, respectively. Fig. 2 is a vertical longitudinal section of the apparatus, and Figs. 2ª and 4 show certain details of construction of the governing mechanism and the transmitting-key, respectively.

Referring to the drawings, A represents a suitable case for containing and supporting the mechanism of the transmitter.

B represents a train of clock-work for propelling said mechanism in the manner hereinafter described. The clock-work is driven by a coiled spring, *b*, or other suitable motor, which may be wound, when necessary, by means of a key applied to the post *b'*. A governor, C, for regulating the speed of the clock-work, is connected therewith by a toothed wheel, b^2, and pinion b^3, and consists of two bent arms *c c*, pivoted at their respective angles to the shaft of the governor, each one of which is provided at its lower extremity with a weight, *c'*, for holding the arms in their downward position. Each of the arms *c* is also provided with a flexible spring, c^2, which is secured at its lower extremity to the shaft of the governor, and at its upper extremity encircles and is movable along the arm. The springs c^2 allow the arms *c* to be thrown outward from the shaft of the governor, but assist the weights *c'* in normally holding them in their downward position. Upon the upper extremity of each arm *c* is placed a small friction-pad, *d*, of rubber or other suitable material, supported at right angles to the shaft and adapted to rub against the under surface of an adjustable friction-disk or plate, D, and by its friction prevent a too rapid movement of the mechanism. The plate D slides up and down upon a post, *e*, in the frame of the mechanism, and is normally pressed upward by a spiral spring, E, surrounding the post. Against the upper surface of the plate D rests a vertically-movable pin or rod, *f*, extending upward through the top of the case A, which engages at its upper extremity with an adjusting-cam, as shown at F. This cam consists of a cylinder, the lower edge of which is cut into a spiral form, as shown in Fig. 2. The cam F is secured to the case A by a screw, *f'*, and is provided with an arm, f^2, for turning it in either direction, thus forcing the pin *f* to a greater or less distance downward against the plate D and regulating the pressure between the friction-plate and the pads *d* against the tension of the springs c^2 and the weights *c'*.

The governor C, which revolves continuously when the motor is in operation, has a greater or smaller retarding effect upon the mechanism accordingly as the friction between the plate D and the pads *d* is increased or diminished.

Upon a revolving arbor, *g*, of the motor, at a convenient point within the case A, is mounted a pulley, *h*, and at the upper extremity of the same shaft is placed a friction-wheel, G, both of which are caused by the motion of the arbor to revolve in the direction indicated by the arrow.

At a suitable distance from the train of clock-work is placed a reel, H, for holding the pattern-strip I, by means of which the transmit-

ting-key is actuated. This reel is mounted upon an arbor, h', extending through the case A, and having its bearing in a suitable bracket, h^2. Within the case A, and in the same plane with the pulley h, a second pulley, h^3, is mounted upon the arbor h', and the two are connected by means of a belt or cord, h^4, the normal tension of which is not sufficient to convey a positive motion from the pulley h to the pulley h^3 and the reel H, but which may be tightened, when required, by means of an idle-wheel, J, as hereinafter explained.

The pattern-strip I, which has previously been perforated by means of any well-known and suitable mechanism for the purpose with a series of long and short perforations, i, grouped in combinations to represent the letters of the Morse telegraphic alphabet, is led from the reel H through suitable guides, $m\,m$, and under the point of the transmitting-key K, from whence it passes over the roller G, against which it is pressed, when the instrument is employed for transmitting, by means of a jockey-roller, L. The jockey-roller L is carried upon the end of a movable arm, l, and is normally held against the wheel G by means of a tension-spring, l', with sufficient pressure to cause the pattern-strip I to be drawn from the reel H by the friction of the roller G and passed under the key K.

The transmitting-key K consists of a thin metal plate or bar, which is pivoted at or near the center of its length to an adjustable arm, k. It is provided at one end with a beveled point, k^2, which, under the influence of a tension-spring, k^3, falls through the successive perforations i in the pattern-strip I as the latter is led from the reel H across the face of a stationary slotted post, M. Whenever the point k^2 enters one of the perforations i a contact-point, n, at the opposite end of the key, touches an adjustable insulated contact-screw, N. The key and the contact-point are respectively connected by means of the wires 1 and 2 with the binding-screws P R. Thus it will be understood that if a receiving-instrument, S, be included in the circuit of a battery, O, the opposite poles of which are connected with the binding-posts P and R, the circuit will be closed during the time that each perforation i of the pattern-strip I is passing beneath the point k^2, and the duration and frequency of the electrical impulses in the circuit will correspond with the length and number of the perforations. The letters, words, or messages upon the pattern-strip may thus be interpreted by the sound of the receiving-instrument S in a manner well understood.

For the purpose of rewinding or replacing the pattern-strip I, or of repeating a word or sentence thereupon when desired, I provide a device for reversing the motion of the reel H, which at the same time releases the pattern-strip from the pressure of the jockey-wheel L and the key K, and also prevents the latter from closing the circuit of the battery O. This device consists of an L-shaped lever, T, pivoted within the case A by means of a screw, t. A bent arm or handle, t', extends from the end of this lever upward through a slot, a, in the case A, for the purpose of affording convenient means for operating the same. The opposite end of the L-shaped lever T carries a right-angled rod or arm, t^2, the free end of which extends through a slot, a^2, in the case A. The upwardly-projecting end of the rod t^2, while normally out of the path of the key K, engages the same when the lever is in the position represented in Fig. 3 and prevents it from touching the pattern-strip I or the contact-screw N. A similar bent arm, t^3, is attached to the lever at a point between the rod t^2 and the fulcrum t and extends through a slot, a^2. The function of the arm t^3 is to engage the arm l and remove the jockey-roller L from contact with the pattern-strip I when the instrument is in the position shown in Fig. 3.

For the purpose of increasing the tension of the belt or cord h^4 when it is desired to revolve the reel H in a reverse direction to rewind the pattern-strip, I provide a third pulley, J, which is supported in the same plane with the pulleys h and h^2 by means of a flexible arm, j, extending from the lever T, and is normally out of contact with the belt h^4. This pulley is carried against the cord by the movement of the lever-handle t' toward the right, as shown in Fig. 3, thereby increasing the tension of the same sufficiently to cause the rotary motion of the pulley h to be imparted to the pulley h^3 and the reel H. The relative positions of the arms t^2 and t^3 are such that by moving the lever-handle t' toward the right the jockey-wheel L and the key K will be simultaneously thrown back from the pattern-strip, which will thereupon be rewound upon the reel through the influence of the increased tension of the belt h^4 upon the pulley h^3. Thus the student who is learning to interpret the sounds produced upon a receiving-instrument by different letters and words transmitted in the conventional telegraphic alphabet may vary the rapidity with which the signals are automatically transmitted according to the proficiency which he has acquired, and may also cause any required letter, word, or sentence to be repeated, when necessary, with great convenience and facility.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, of a pattern-strip, a transmitting-key actuated by said pattern-strip, a motor, and independent devices for imparting an advance and a retrograde movement respectively from said motor to said pattern-strip.

2. The combination, substantially as hereinbefore set forth, of a pattern-strip, a transmitting-key actuated by said pattern-strip, a motor, independent devices for communicating an advance and a retrograde movement respectively from the motor to the pattern-

strip, and means for throwing either of said devices into action and the other simultaneously out of action, as set forth.

3. The combination, substantially as hereinbefore set forth, of a pattern-strip, a transmitting-key actuated by said pattern-strip, a revolving reel, a motor, independent devices for temporarily imparting an advance and a retrograde movement respectively from said motor to said pattern-strip and reel, and means for removing said key from said pattern-strip during the retrograde movement.

4. The combination, substantially as hereinbefore set forth, of a pattern-strip, a transmitting-key actuated by said pattern-strip, a motor, independent devices for imparting an advance and a retrograde movement respectively from said motor to the pattern-strip, and an adjustable device for varying the rate of speed of the pattern-strip while the latter is actuating the key.

5. The combination, substantially as hereinbefore set forth, of a pattern-strip, a transmitting-key actuated by said pattern-strip, a motor for imparting motion to said pattern-strip, a friction-plate, one or more friction-pads attached to an axis of said motor, and an adjustable cam for regulating the pressure of said friction pad or pads against said friction-plate.

In testimony whereof I have hereunto subscribed my name this 12th day of May, A. D. 1882.

HENRY VAN HOEVENBERGH.

Witnesses:
MILLER C. EARL,
CHARLES A. TERRY.