

(No Model.)

2 Sheets—Sheet 1.

R. H. WEINY.
TELEGRAPHY.

No. 578,126.

Patented Mar. 2, 1897.

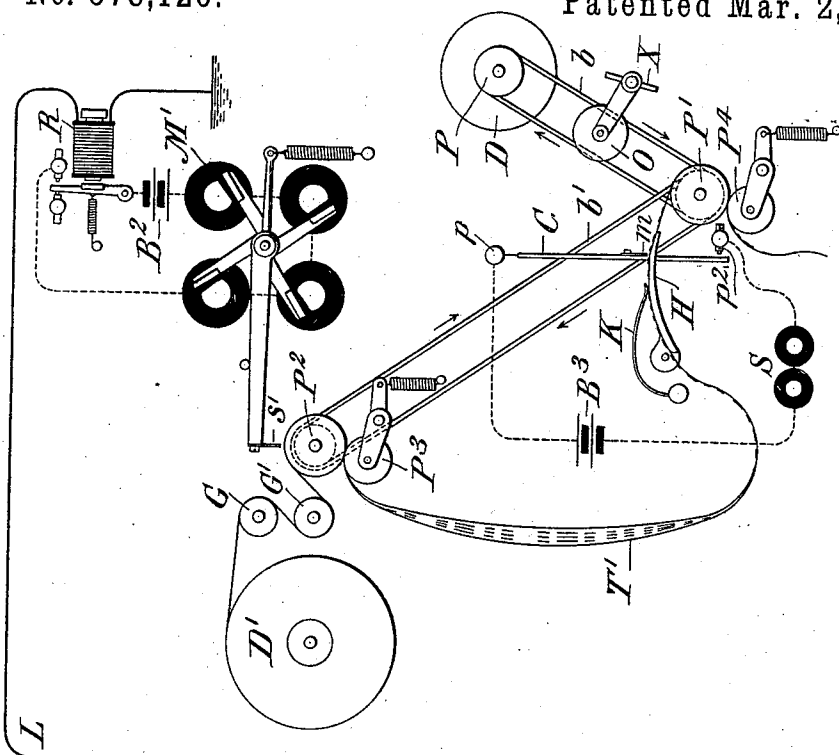
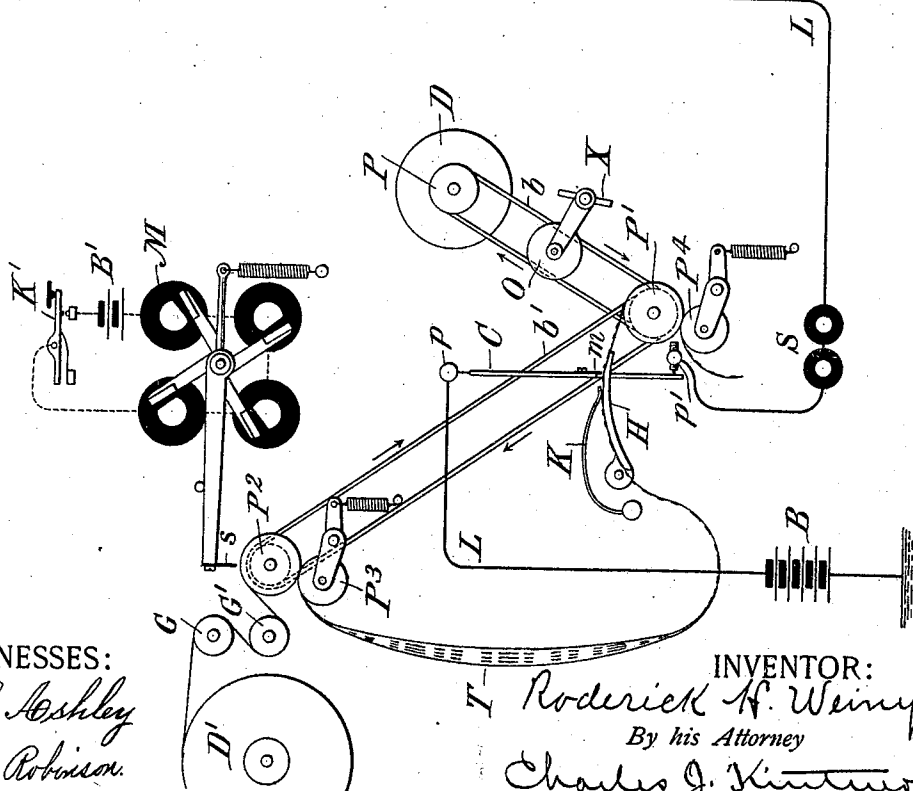


Fig. 1,



WITNESSES:
C. E. Ashley
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INVENTOR:
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By his Attorney
Charles J. Kintner

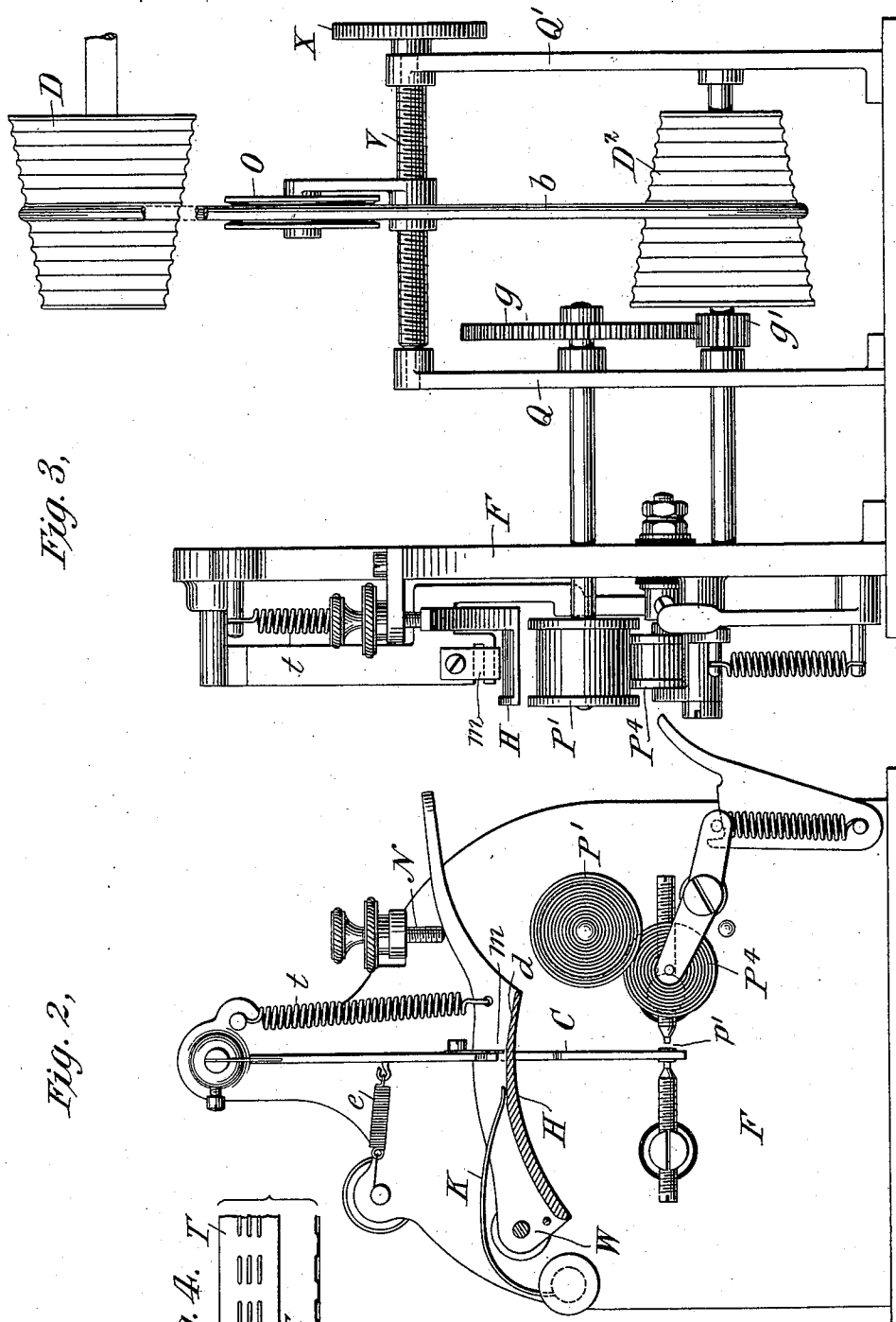
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Fig. 4. T

A diagram of a vertical rectangular structure, possibly a component of a machine. It features a series of internal components, including a top section with three vertical bars, a middle section with two vertical bars, and a bottom section with three vertical bars. The entire structure is labeled T_1 on the right side.

INVENTOR:

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By his Attorney

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UNITED STATES PATENT OFFICE.

RODERICK H. WEINY, OF ARLINGTON, NEW JERSEY, ASSIGNOR OF ONE-HALF TO WALTER P. PHILLIPS, OF NEW YORK, N. Y.

TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 578,126, dated March 2, 1897.

Application filed September 4, 1896. Serial No. 604,855. (No model.)

To all whom it may concern:

Be it known that I, RODERICK H. WEINY, a citizen of the United States, residing at Arlington, in the county of Hudson and State of New Jersey, have made a new and useful invention in the Art of Telegraphy, of which the following is a specification.

My invention is directed particularly to an improvement in the art of transmitting and receiving telegraphic messages by sound, and its object is to facilitate the speed with which Morse or analogous characters may be transmitted and received by operators who usually transmit such characters by hand through the agency of a Morse key and receive the transmitted characters by ear through the agency of the well-known form of Morse sounder. It is a well-known fact that although skilled sound operators who use the Morse code are enabled to transmit from forty (40) to sixty (60) words per minute and to receive the same by sound it is found by statistics that the average number of Morse characters transmitted and received in telegraphic systems of this type is but little more than twelve (12) words per minute. This great decrease in the actual number of words transmitted and received during business hours is due, in the first place, to the fact that operators often break in upon the transmitter and request a repetition of certain parts of the message, and again the receiver may be inexperienced in taking Morse characters by sound, which necessarily delays transmission. Furthermore, operators often utilize much of the time in talking over the line, notwithstanding the fact that there may be strict orders against conversations other than for business purposes.

My invention is designed to overcome these objectionable features and to materially increase the speed with which Morse characters may not only be transmitted by key-operators, but may be received by sound at such speed as will greatly increase the number of messages transmitted in a business day.

My invention will be fully understood by referring to the accompanying drawings, in which—

Figure 1 illustrates diagrammatically a main line with transmitting and receiving

apparatus adapted to work in one direction only. Fig. 2 is a side-elevational view of my improved form of automatic transmitter. Fig. 3 is an end-elevational view of the same, illustrating also the apparatus for regulating the speed thereof; and Fig. 4 is a plan and side-elevational view of the preferred form of embossed or indented tape used in connection with my improvement.

My invention comprehends the use of automatic transmitting apparatus which is controlled by an embossed or indented tape of well-known form and mechanism for preparing said embossed tape by an operator at any desired speed, together with additional mechanism for operatively causing the embossed tape to transmit the message over a line to a distant station, where is located a corresponding embossing or indenting apparatus controlled by a main-line relay adapted to emboss a duplicate of the transmitting-tape, said duplicate transmitting-tape being in turn utilized at the receiving-station by an apparatus which controls a Morse sounder, regulating mechanism being provided for governing the speed of the tape-embossing apparatus at both stations, and additional regulating mechanism being provided for regulating the speed of the embossed tape at the receiving-station, whereby the Morse sounder controlled thereby may be operated at such a speed as will accommodate the receiving operator.

Referring now to the drawings in detail, L represents a main line joining two stations, and B a main-line battery situated at the transmitting-station.

M and M' represent multipolar magnets, the former included in a local circuit with a battery B' and a Morse transmitting-key K' and the latter in a local-battery circuit B², controlled by a relay R in the main line L. The armatures of the electromagnets M and M' are each provided at their outer ends with an indenting-stylus s or s', adapted to indent or emboss, preferably, two or more rows of characters upon a transmitting-fillet T. (See Fig. 4.)

D' D' are rolls of fillet-paper of well-known form, adapted to pass over guiding-rolls G G' to the embossing or indenting rolls P² P², said

embossing or indenting rolls being driven by electric or other motors connected by shafting to cone-shaped pulleys D. (See Fig. 3.)

C C are conducting transmitting-arms secured by yielding springs at the points *p p* and adapted normally to stand in vertical positions, as shown in Fig. 1.

m m are straight yielding springs secured to the arms C C in the path of the embossed or indented tapes T T'. These straight springs *m m* are secured to one side of the arms C C by screws, as shown, and should be of such stiffness that they will not yield in the direction of the length of the arms, but only in the direction of the movement of the embossed or indented tape as it is drawn forward, their function being to carry the arms C C forward until the embossments are released, as will be more fully described later on.

P³ P⁴ P³ P⁴ are spring-pressed tension-rollers for regulating the tension of the embossed tapes.

Referring now to Figs. 2, 3, and 4 for a detailed description of the transmitting apparatus, F represents the framework, to one side of which is pivotally secured a transmitting-arm H, having a slightly-curved flat surface, over which the transmitting-tape is designed to pass from left to right under a yielding guiding-spring K. It will be observed that that portion of the transmitting-arm H to the left of the free end of the guiding-spring K is gradually curved and that from the end of said spring for a short distance to the right said surface is level, from which point there is a material decline, so as to constitute an angular surface *d*, the function of this declining angular surface being to allow the embossments on the upper side of the tape T to readily release themselves from the straight yielding transmitting-spring *m* on the transmitting-arm C.

t is a retractile spring adapted to sustain the pivoted arm H in its upper position against an adjustable back-stop N.

e is a retractile spring adapted to maintain the conducting transmitting-arm C in its rear position against an adjustable back-stop, so that its contact-point is out of electrical contact with a front contact-point *p*'.

The special features of novelty of this transmitting apparatus, in so far as they relate to the curved transmitting-arm H and the straight spring *m*, secured thereto, together with the downwardly-inclined face *d* and the location of the contact-points *p*' at the lower end of the transmitting-lever C, are acknowledged by me to be improvements upon the apparatus disclosed in United States Patent No. 449,655, granted to Frank Anderson on the 7th day of April, 1891, in which patent is shown and described a curved transmitting-arm and a curved yielding spring for riding over the embossments upon the transmitting-tape and also conducting-contacts, located, however, between the curved yielding spring above referred to and the pivotal point of sup-

port of the transmitting-arm. By placing the contact-points at the lower end of the transmitting-arm and substituting a straight spring *m* for the curved spring referred to I increase the break between the movable and the fixed contact and thereby render greater certainty of action and avoidance of sticking of the parts, and by providing the inclined surface *d* of the transmitting-arm I facilitate the release of the embossments and render more certain the action for each particular set of such embossments.

I have discovered that in the use of an apparatus like that disclosed in the aforesaid Anderson patent, in which the embossments are brought into contact with a curved spring adapted to yield in the direction of the supporting transmitting-arm, there does not always result perfect transmission of the characters, but by the substitution of my straight spring for the curved spring, in combination with a downwardly-inclined face whereby each embossment of the tape is caused to firmly grasp the transmitting-arm and to release it only after its supported electrical contact shall have come in contact with the fixed contact, I am enabled to transmit perfect electrical impulses which correspond identically with the indented record.

P' is a feed-roll carried by a shaft carrying a gear-wheel *g*, which meshes with a pinion *g*', carried by a second shaft, to which is keyed a cone-shaped grooved driving-pulley D², located in alinement with a second grooved cone-shaped driving-pulley D, carried by a shaft operatively connected to some source of power, as an electric motor.

b is a driving cord or belt adapted to run in the grooves of the two cone-shaped pulleys D D², and O is a grooved loose-running pulley supported by a screw-rod V, journaled at the upper ends of the sides Q Q' of the framework, and X is a regulating-handle adapted to cause the grooved pulley O to travel in either direction in such manner as to shift the cord or belt *b* to any desired position upon the two cone-shaped pulleys D D' and thereby regulate the speed at which the apparatus is driven. This feature of regulation of the speed of the apparatus in accordance with the wishes of the transmitting and receiving operators at both stations is also an essential element of my invention.

I will now describe the mode of operation. The cone-shaped pulleys D of the transmitting and receiving apparatus are kept continuously in motion by electric motors or any other desired source of power. The motor at the transmitting-station, it will be observed, is geared through belting *b* to the transmitting-roller P', the shaft of which is in turn geared through a belt or cord *b*' to the roller P², which carries the transmitting-tape T beneath the stylus *s*. The operator at the transmitting-station operates the Morse key K' at any desired speed, thereby causing the electromagnet M to actuate the stylus *s*, carried

at the free end of its armature-lever. Consequently the tape T is embossed with Morse characters and is caused to advance from the roll D', and as the message is completed the free end of the tape is passed over the curved transmitting-arm H and under the free end of the yielding spring K, there being a sufficient amount of unembossed tape to extend over the transmitting-roll P' and under the pivoted roll P⁴. Consequently as the tape is drawn forward the yielding spring *m* on the conducting transmitting-arm C is caused to carry the lower end of such transmitting-arm forward under pressure of the embossments against the conducting contact-stop in the main-line circuit L. Therefore each set of embossments will transmit impulses over the line in a well-known manner and cause the relay R at the distant station to actuate its armature and thereby close and open the circuit of the receiving-magnet M', thus causing the stylus s', carried by its armature-lever, to emboss upon the receiving-tape T' at a distant station the message transmitted, the apparatus at that station being a substantial duplicate of that already described at the transmitting-station, as clearly shown in the drawings. As the reproduced message-fillet at the receiving-station is advanced through the receiving apparatus it is caused to actuate the lever C and thereby close and open the local circuit of the battery B³ through the ordinary Morse sounder S, so that the receiving-operator is enabled to have produced in Morse characters a reproduction of the characters transmitted from the distant station, and should the message be transmitted too fast for his convenience he will so actuate the regulator through the agency of the lever X, screw V, pulley O, and cone-shaped pulleys D D' as to cause the Morse sounder to operate at the desired speed. It will be observed, therefore, that although the message may be transmitted at a very high speed it is within the power of the operator at the receiving-station to receive said message at either the same speed or such slower speed as may suit his convenience. In like manner the operator at the transmitting-station may adjust his regulator in such manner as to send the message at any desired rate of speed, either in accordance with his wishes or with the capacity of the line.

This apparatus enables an operator at the transmitting-station to accumulate messages and transmit them at will through the operation of the automatic transmitter, and in like manner it enables the operator at the receiving-station to accumulate a number of messages and translate them into Morse characters through the agency of the sound-receiving apparatus at such speed as will suit his convenience.

It will be understood, of course, that in practice the apparatus will be duplicated at all stations on the line in order to enable each operator to send or transmit at will, and such

an arrangement of apparatus is within the skill of those well versed in the art.

I am aware that it is not broadly new to utilize embossed or indented message, fillets for the purpose of enabling a student or other person to learn the art of Morse reading by sound at any desired speed, and I make no claim hereinafter broad enough to include such an apparatus, the invention referred to in this disclaimer being embraced in United States Patent No. 449,655, granted to the aforesaid Frank Anderson. My claims in this particular are directed to the combination of Morse embossing apparatus with automatic transmitting apparatus adapted to utilize the embossed fillet or tape and corresponding embossing apparatus located at a distant receiving-station controlled by the transmitting-fillet, together with a Morse sounder controlled by the duplicate prepared embossed fillet and regulating mechanism for regulating the speed of the embossed transmitting-fillet and the fillet which controls the Morse sounder. My claims also include any means, whether Morse key or otherwise, whereby Morse characters are rapidly transmitted over a line to a distant receiving-station, in combination with means at said receiving-station for embossing or preparing a record-strip with Morse characters, which record-strip in turn is used with mechanism having a regulator for controlling its speed and adapted to control in turn a Morse sounder, whereby the Morse characters may be reproduced in audible signals at a much slower rate of speed than that at which they were transmitted and recorded on the receiving-fillet.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a system of telegraphy means located at a transmitting-station for transmitting Morse characters over a main line joining the same with a receiving-station; means located at the receiving-station for making upon a record-strip a permanent record of said characters and consisting of electromagnetic apparatus controlled by the current impulses transmitted, and mechanism for continuously moving the record-strip under a stylus carried by the armature of said electromagnetic apparatus, in combination with mechanism for independently continuously moving the completed record-strip in such manner as to successively actuate a Morse sounder included in a local circuit, both of said mechanisms being driven by a single source of power as an electric motor and provided with regulating mechanism for varying the speed at which they are driven, substantially as described.

2. In a system of telegraphy located at a transmitting-station for automatically transmitting Morse characters over a main line joining the same with a receiving-station; means located at the receiving-station for making upon a record-strip a permanent record of

said characters and consisting of electromagnetic apparatus controlled by the current impulses transmitted, and mechanism for continuously moving the record-strip under a stylus carried by the armature of said electromagnetic apparatus, in combination with mechanism for independently continuously moving the completed record-strip in such manner as to successively actuate a Morse sounder included in a local circuit, both of said mechanisms being driven by a single source of power as an electric motor and provided with regulating mechanism for varying the speed at which they are driven, substantially as described.

3. In a system of telegraphy a Morse key included in a local circuit with an electromagnet, the armature of which is provided with a stylus adapted to indent a permanent record upon a record-strip; mechanism for continuously moving said record-strip; independent mechanism for continuously moving said record-strip through a transmitter adapted to cause the record to transmit electrically the Morse characters over a main line joining a receiving-station, both of said mechanisms being driven by a common source of power and provided with means for regulating the movement of the record-strip, in combination with an electromagnet located at the receiving-station for receiving the current impulses transmitted, the armature of said electromagnet being provided with an indenting-stylus; mechanism for continuously moving a record-strip beneath said stylus and independent mechanism for moving the completed record-strip in such manner as to control the operation of a local Morse sounder, said independent mechanism being driven by a common source of power as an electric motor and provided with means for varying the speed at which they are moved, substantially as described.

4. An instrument for reproducing Morse or analogous telegraphic characters, consisting of an embossed fillet or tape; a transmitting conducting-arm pivotally secured at substan-

tially right angles to the direction of the motion of said tape and provided with a moving conducting contact-point at its free or lower end adapted to make electrical contact with a stationary or fixed contact included in an electrical circuit, in combination with a straight stiff spring carried by the conducting-arm and adapted to make frictional contact with the embossments or indentations of the fillet or tape and to yield only in the direction of the movement of said tape, substantially as described.

5. An automatic transmitter provided with a conducting transmitting-arm and a straight stiff spring adapted to make mechanical contact with the embossments of a transmitting-fillet, in combination with an arm adapted to act as a guide for said transmitting-fillet, said arm being provided with a downward or angular inclination at one side of the conducting transmitting-arm whereby the embossments after carrying said movable arm to the extreme limit of its stroke are released as the fillet is drawn forward, substantially as described.

6. In an automatic transmitter a pivoted conducting transmitting-arm provided with means for making mechanical contact with the embossments or indentations of a transmitting-fillet, said means consisting of a straight stiff spring adapted to yield only in the direction of the movement of the fillet; a guide for the fillet located substantially at right angles to the transmitting-arm, said guide being provided with a downwardly-inclined surface adapted to suddenly release the transmitting-arm when it reaches the extreme limit of its stroke, substantially as described.

In testimony whereof I have hereunto subscribed my name this 3d day of September, 1896.

RODERICK H. WEINY.

Witnesses:

C. J. KINTNER,
M. M. ROBINSON.