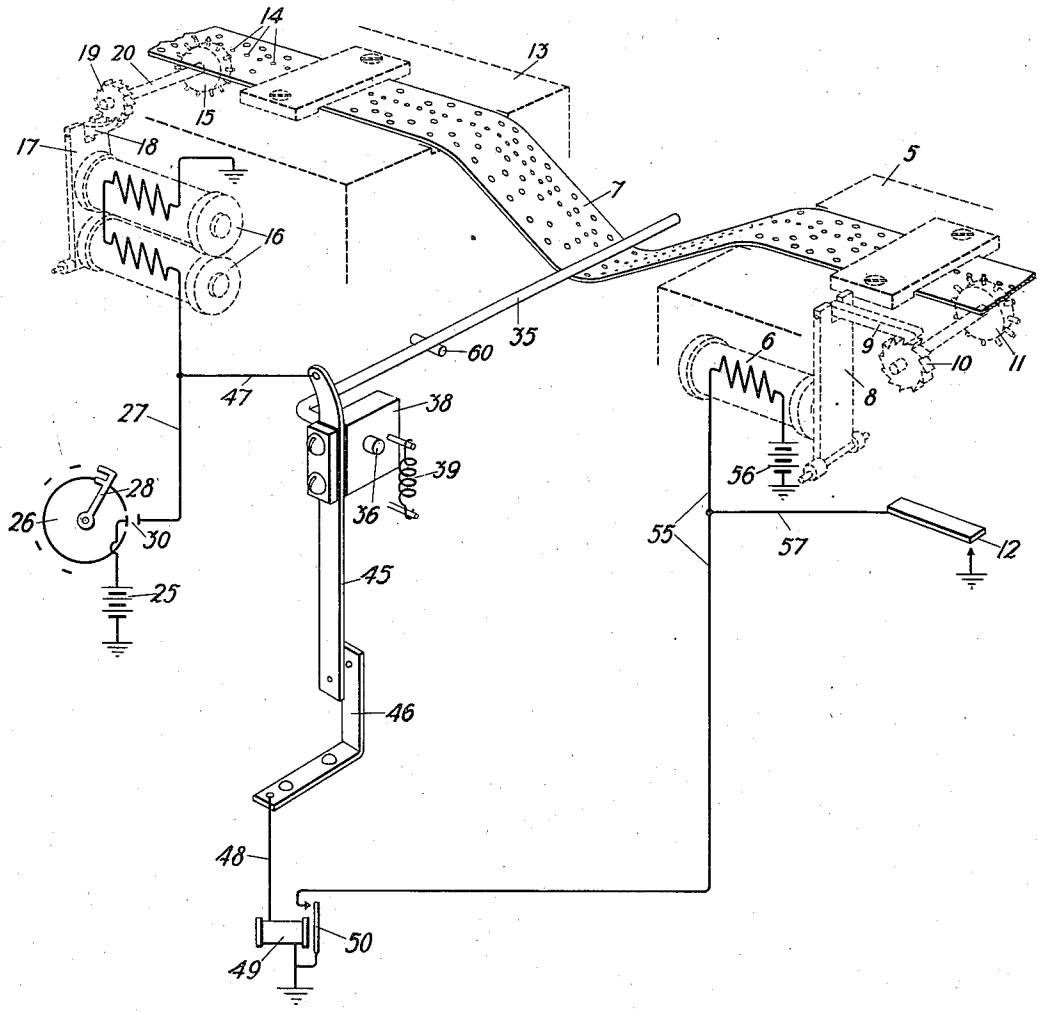
A. F. DIXON.

CONTROLLING SYSTEM.

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1,174,236. Patented Mar. 7, 1916.



Witnesses:
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UNITED STATES PATENT OFFICE.

AMOS F. DIXON, OF NEWARK, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WESTERN ELECTRIC COMPANY, INCORPORATED, A CORPORATION OF NEW YORK.

CONTROLLING SYSTEM.

1,174,236. Specification of Letters Patent. Patented Mar. 7, 1916.

Application filed March 16, 1914. Serial No. 825,109.

To all whom it may concern:

Be it known that I, AMOS F. DIXON, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Controlling Systems, of which the following is a full, clear, concise, and exact description.

This invention relates to controlling systems, and more particularly to controlling systems wherein the medium operated upon may control the action of one of the operating mechanisms.

The principal object of this invention is to provide a system of the above type wherein the medium automatically insures the continuance of its own supply. To this end means under the direct control of the tension of the medium are provided, whereby the continuance of the operation of the supplying mechanism is effected.

The above and other objects of the invention will be fully set forth in the following description and claims, and will be more readily understood by reference to the accompanying drawing, in which the invention is shown embodied as a part of an automatic printing telegraph system.

The medium or member operated upon in the illustrated embodiment of the invention is a perforated automatic transmitter controlling paper tape, while the operating mechanisms comprise a perforator and an automatic signal transmitter. Where the tape is passed directly from the perforator to the transmitter and, for any reason, the operation of the perforator is interrupted or delayed, tape will no longer be supplied in sufficient quantities, and, if no precautions are taken, the transmitter continuing its feeding action may cause the tearing out of some of the feed openings, and consequently interfere with the further transmission of signals. This invention serves to obviate such a contingency by causing the perforator to continue its feeding action regardless of the performance of its other functions.

The perforator 5 may be any one of the well known electromagnetically actuated types, the electromagnet 6 of which serves for perforating and feeding or simply for feeding the tape depending upon the style of mechanism used. The details of construction are not shown, since both types of apparatus are well known in the art. The energization of magnet 6 causes the step-by-step advance of a paper tape 7, through the agency of its armature 8, pawl 9, ratchet 10, and feed wheel 11. A contact maker 12, which is preferably under manual control, is operated upon each actuation of the selecting mechanism, such as the keys, (not shown) of the perforator 5 to cause the energization of magnet 6. The tape 7, after being acted upon by the perforator 5, is drawn by and passes directly to an automatic transmitter 13, wherein are located mechanisms by means of which the openings in the tape control the character of the current impulses delivered to the line. None of this mechanism is shown, since it may be any one of several well known structures. The tape 7 has, in addition to the signal controlling openings, a line of openings 14 which are adapted to be engaged by the teeth of the perforator feed wheel 11 and the transmitter feed wheel 15 to insure a uniform and positive movement thereto. The feed wheel 15 is rotated step-by-step by means of an electromagnet 16 acting through armature 17, pawl 18, ratchet 19 and shaft 20.

The energizing coils of electromagnet 16 receive current from a source of energy 25, through a distributer 26, and conductor 27, when the trailing brushes on a rotating arm 28 bridge a pair of contacts 30. This method of driving an automatic signal transmitter is well known in the art, and consequently needs no further explanation.

Positioned above the band of tape passing between the perforator and transmitter is an arm 35 pivotally mounted to a suitable support at 36. Secured to the arm 35 and moved by it about the pivot 36 is a contact supporting block 38 to which is secured one end of tension spring 39. Block 38 also carries an insulated contact spring 45, which is normally out of engagement with a fixed contact spring 46, but which is adapted to be moved into engagement therewith, as hereinafter described. Contact spring 45 is joined to conductor 27 by conductor 47 and contact spring 46 is connected to earth through conductor 48 and relay 49. The front contact of armature 50 of relay 49 is joined by conductor 55 to a grounded source of energy 56 through the coil of magnet 6.

A circuit may likewise be established for magnet 6 from the source of energy 56 through conductors 55 and 57 and contact maker 12, and it is this last circuit which normally effects the operation of the perforator feeding mechanism. Normally, the tension of spring 39 holds the arm 35 depressed against a stop 60, in which condition the contact springs 45 and 46 are separated. In this condition, upon each revolution of arm 28 of the distributer 26, an impulse from the grounded source of energy 25 passes through contacts 30, conductor 27, coils of transmitter magnet 16 to ground, causing the tape to be advanced as hereinbefore described. Relay 49 is undisturbed at such times, because of the separation of springs 45 and 46. When, however, due to interruptions in, or slowness of the operation of the perforator, the tape, continuing to be fed by the transmitter, becomes taut, the tension of spring 39 is overcome, the arm 35 is elevated and contact springs 45 and 46 are caused to engage each other. As long as this condition obtains, upon each revolution of arm 28, an impulse is sent not only through the coils of magnet 16, as hereinbefore described, but to relay 49 through contacts 30, conductors 27 and 47, contacts 45 and 46, conductor 48 and relay 49 to ground. Relay 49 thereupon attracts its armature 50 which completes a circuit from grounded source of energy 56, coil of perforator magnet 6, conductor 55 and armature 50 to ground, causing the momentary energization of magnet 6, so that the perforator automatically feeds the tape at the same time as the transmitter, regardless of the actuation of contact maker 12. In this manner, the tape is never allowed to become so taut as to cause the tearing out of its feed openings.

What is claimed is:

1. A tape controlling system comprising means for supplying a tape, an operative device to cause said means to supply the tape, mechanism for moving the tape from said supplying means, an electroresponsive device controlled by the tension in the tape, and means affected thereby coöperating with and causing the operation of said tape supplying means independently of said device to prevent undue tension in the tape.

2. A tape controlling system comprising a tape supplying perforator, means for causing said perforator to supply the tape step-by-step, an automatic transmitter for drawing the tape from said perforator step-by-step, and means controlled by the tape for causing the operation of said perforator independently of said first means.

3. A tape controlling system comprising a tape supplying perforator, feeding means for advancing the tape step-by-step, manual means for controlling said feeding means, a tape controlled transmitter drawing the tape step-by-step from said perforator, an arm located above the tape to be actuated thereby when the tape becomes taut, and electromagnetic means controlled by said arm for causing the actuation of said feeding means independently of said manual means.

In witness whereof, I hereunto subscribe my name this 13th day of March, A. D. 1914.

AMOS F. DIXON.

Witnesses:
E. ELDER,
N. E. TUTHILL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."