

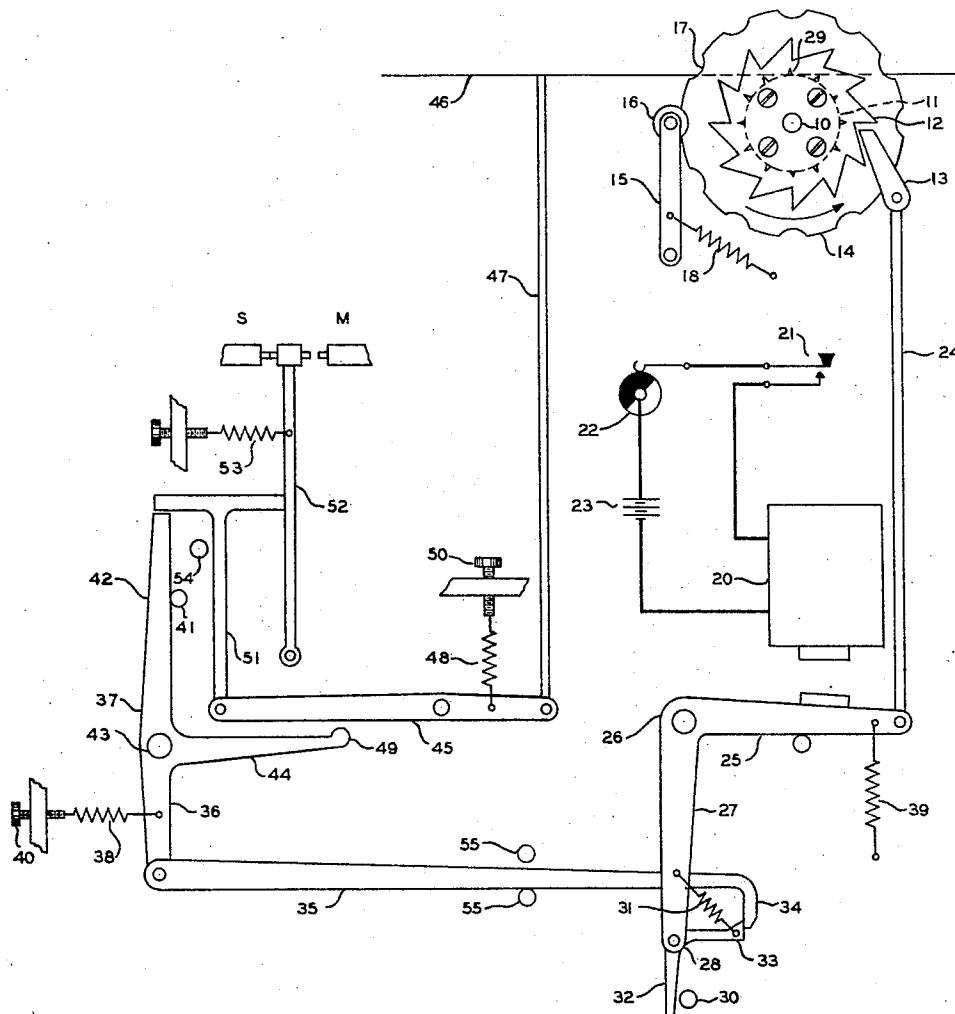
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STEP-BY-STEP TRANSMITTER

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STEP-BY-STEP TRANSMITTER

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This invention relates to step-by-step transmitters and especially to automatic telegraphic and cable transmitters of the type employing a perforated tape.

5 It is an object of the invention to facilitate the transmission of telegraphic signals.

A feature of the invention resides in the provision of a transmitter of the type mentioned wherein the transmitting contacts are
10 closed for a maximum length of time to insure positive transmission of signals.

It is another feature that the pressure effecting and maintaining the closure of the transmitting contacts is independent of the
15 pressure of the pecker rods on the tape.

It is a further feature of the invention that the biasing means which closes the contacts and the biasing means which forces the peckers against the tape each has means for adjusting its tension independently of that of
20 the other.

Other features and advantages will become apparent from the following description and appended claims.

25 For the purpose of illustrating the genus of the invention a concrete embodiment is shown in the accompanying drawing, in which the single figure schematically depicts the essential features.

30 In the embodiment illustrated, a main operating shaft 10 is provided for effecting rotation of a tape feed wheel 11 fixed thereon. A ratchet wheel 12 is also fixed to shaft 10. A feed pawl 13 co-operates with the teeth of this ratchet wheel to rotate the shaft. A cam
35 wheel 14 is attached or coupled to the shaft or a fixed member thereon and thus rotates with the ratchet wheel. A jockey arm 15 is provided with a roller 16 which co-operates
40 with recessed portions 17 of the cam wheel 14 normally to maintain the ratchet wheel 12 in position to co-act with the feed pawl 13. A spring 18 biases roller 16 into engagement with the periphery of cam wheel 14. The
45 cam wheel 14 may, if desired, be omitted and a jockey provided which would engage the periphery of ratchet wheel 12 to position the same.

50 The above tape feed mechanism may be actuated through pawl 13 by any suitable inter-

mittent operating means. To this end there may be provided one form of intermittent operating means comprising an electromagnet 20 having its winding in circuit with a key 21, a rotating commutator or interrupter
55 22 and a source of current supply 23. When the key 21 is closed, the circuit through magnet 20 is completed and the latter is intermittently operated by the commutator 22. A link 24 connects armature 25 of magnet 20 to
60 the feed pawl 13. Energization of magnet 20 causes movement of pawl 13. However, the latter does not at once engage a tooth of ratchet wheel 12 but picks up a tooth after a partial throw of armature 25. Continued
65 movement of pawl 13 rotates the ratchet wheel 12, the tape feed wheel 11 and the cam wheel 14. The tape feed wheel 11 is provided with projections 29 for engaging perforations in a tape 46 to cause its advance.
70 When the magnet 20 becomes de-energized the pawl 13 is returned by a spring 39 to a position to engage the next tooth of wheel 12, but when so positioned is separated from that tooth so that the latter is not actuated
75 until the armature has moved a part of its throw, as previously described.

The armature 25 constitutes one arm of a bell crank lever 26 employed to control the operation of the pecker rod and contact
80 mechanism. A second arm 27 of the bell crank lever carries a latch 28 which is also in the form of a bell crank and has one arm 32 biased into engagement with a fixed stop
85 30 by a spring 31 to position a second arm 33 in the path of a co-operating hook portion 34 on a link 35 when the magnet 20 is de-energized. This link is pivoted to an arm
90 36 of a T lever 37. A spring 38 having a tension adjusting screw 40 normally biases another arm 42 of the T lever against a stop 41, the T lever being pivoted on a pin
95 43 at the junction of the arms of the T lever. A third arm 44 of lever 37 is disposed in position to cause a projection 49 thereon to engage a rocking lever 45 to disengage a pecker rod 47 from the tape 46 against the action of spring 48 which is provided with an adjusting screw 50. To rocking lever 45
100 is also pivoted a T member 51 which is raised

or lowered as the pecker rod 47 finds a solid portion or a perforation in the tape 46. Lever 45, pecker rod 47 and T member 51 are of relatively light material in order that their inertia may be low so that a light spring 48 may be employed. In its lowered position the T member 51 is adapted to engage the arm 42 of T lever 37 and to be swung thereby to cause contact arm 52 to engage a marking contact M. When the pecker rod 47 engages a solid portion of tape 46 the T member 51 is held in its raised position and clears arm 42 so that a spring 53 swings contact arm 52 into engagement with a spacing contact S. Guide pins 54 and 55 serve to maintain link 35 and T member 51 in operative position.

In the operation of the device, magnet 20 attracts the armature 25, which forms an arm of the bell crank lever 26. This motion first advances link 35 to the right, swinging the T lever 37 so that it raises the left end of rocking lever 45, thus bringing the pecker rod 47 clear of tape 46. The continued movement of armature 25 causes it to pick up the ratchet wheel 12 and rotate tape feed wheel 11 to advance the tape. The latch 28 is so adjusted that, at the end of the tape feed stroke, it disengages the link 35, permitting spring 38 to swing the T lever 37 to its normal position. At the same time, it permits the pecker rod attached to pivoted lever 45 to seek a perforation in tape 46. If the pecker rod finds a perforation, the T member 51 is lowered in front of arm 42 of T lever 37 so that the spring 38, through the T member 51, would impart a pressure on the contact arm 52 and swing the same into engagement with the marking contact M.

It is noted that the foregoing functions are effected on the energizing stroke of the electromagnet 20. The pecker rod remains in engagement with the tape and the spacing or marking contacts remain in closed position after the de-energization of the magnet 20 and until the next forward stroke. This insures a long contact time and produces signals or impulses of a maximum length.

It is also noted that the contact pressure is determined solely by springs 38 or 53 and is not dependent upon the pressure of the pecker rod on the tape 46.

Although the step-by-step transmitter, as above described, employs but a single pecker rod, it is to be understood that the transmitter is particularly designed for two or five unit cable work, in which case the number of T members 51, contact arms 52, contacts S and M, pecker rods 47, rocking levers 45, T levers 37, links 35 and their associated tensioning springs would be increased accordingly. To this end latch 28 is made sufficiently wide to engage enough links 35 to operate the number of pecker rods 47 re-

quired for the particular type of code work desired.

As many changes could be made in the above construction any many apparently different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. In a step-by-step transmitter, the combination of a tape and feeding means therefor, a pecker rod, means for normally biasing said pecker rod into engagement with said tape, an electromagnet having a reciprocatory armature, means including a latch and controlled by said armature upon the energization of said electromagnet to disengage said pecker rod from said tape, means controlled by said armature and effective during the energization of said electromagnet and after said pecker rod has disengaged said tape for operating said feeding means to advance said tape, and means for tripping said latch at the conclusion of the advance movement of said tape to render said biasing means effective to cause said pecker rod again to engage said tape.

2. In a step-by-step transmitter, the combination of a tape and feeding means therefor, a pecker rod, means for normally biasing said pecker rod into engagement with said tape, a pair of contacts, means operable in accordance with the character of the engagement of said pecker rod with said tape for controlling the operation of said contacts, means for maintaining said contacts under closing pressure independent of the pressure exerted on said tape by said pecker rod, intermittently operated driving means having a reciprocatory member, means connected to said member for operating said feeding means intermittently to advance said tape, means including a latch connected to said member for disengaging said pecker rod from said tape during its advance movement, and means to trip said latch at the conclusion of the advance movement of the tape to render said biasing means effective to cause said pecker rod again to engage said tape.

3. In a step-by-step transmitter, the combination of a tape and a feed wheel therefor, a ratchet wheel rotatable with said feed wheel, a pecker rod, means for normally biasing said pecker rod into engagement with said tape, a pair of contacts, means operable in accordance with the character of the engagement of said pecker rod with said tape for controlling the operation of said contacts, means for exerting closing pressure on one of said contacts independent of the pressure exerted on said rod by said tape, an electromagnet having a reciprocatory armature,

- means for intermittently energizing said magnet to operate said armature, means connected to said armature and engaging said ratchet wheel for rotating said feed wheel
 5 intermittently to advance said tape, means including a latch connected to said armature for disengaging said pecker rod from said tape prior to the forward movement of said tape, means for tripping said latch at the
 10 conclusion of the forward movement of said tape to render said biasing means effective to cause said pecker rod again to engage said tape, and means for maintaining said ratchet wheel in position at the conclusion of the forward movement of said tape and during the
 15 deenergization of said electromagnet.
4. In a step-by-step transmitter, the combination of a tape and a feed wheel therefor, a pecker rod, means for normally biasing said pecker rod into engagement with
 20 said tape, an electromagnet comprising a winding and an armature, means for energizing said winding to cause movement of said armature, means including a latch connected to said armature for disengaging said
 25 pecker rod from said tape upon the initiation of movement of said armature, means connected to said armature for rotating said feed wheel upon continued movement of said armature and means for tripping said latch
 30 at the conclusion of the movement of said armature to render said biasing means effective to cause said pecker rod again to engage said tape.
5. An automatic transmitter comprising,
 35 in combination, a lever pivoted at one end and having a contact making portion at the other end, a first and a second contact upon the first of which said lever normally rests, a perforated tape, a pecker rod engaging said
 40 lever through a series of levers, means for biasing said pecker rod into engagement with said tape, and additional means effective upon the passage of said pecker rod through a perforation in said tape for causing said
 45 lever to engage the second contact under a closing pressure independent both of the pressure exerted on said tape by said pecker rod and of the pressure exerted by said lever against said first contact.
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6. An automatic transmitter according to claim 5, characterized in this, that means is provided for intermittently withdrawing
 55 said pecker rod from said tape, subsequently advancing said tape and finally releasing said pecker rod for engagement with said tape.
7. An automatic transmitter according to claim 5, characterized in this, that means is provided for controlling the operation of
 60 said transmitter, said means comprising an electromagnet having a bell crank armature with two arms, said armature being pivoted at the junction of its two arms, a latch on one of said arms for causing the pecker rod to
 65 be disengaged from said tape, a link on the other of said arms for subsequently causing the tape to be advanced, and additional means for tripping said latch at the completion of the advance movement of said tape to release said pecker rod for engagement with
 70 said tape.
- In witness whereof, I hereunto subscribe my name this 19th day of October 1931.
 ALLISON A. CLOKEY.
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