F. L. ROGERS.

TRANSMITTER FOR CABLES.

APPLICATION FILED MAY 5, 1919.

1,366,838.

Patented Jan. 25, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

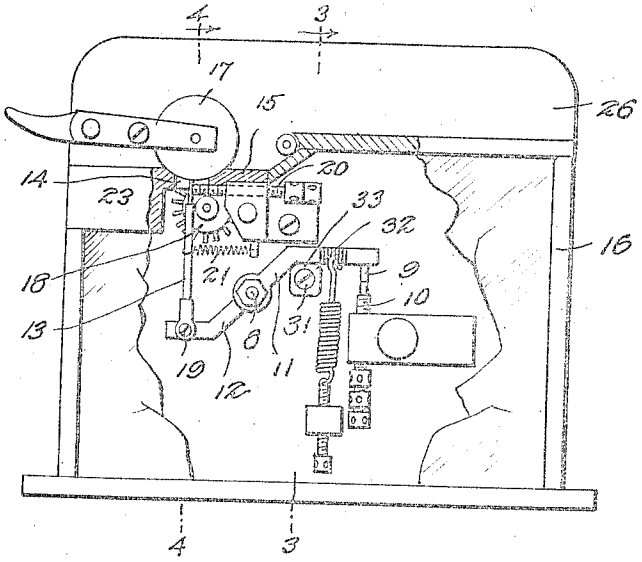
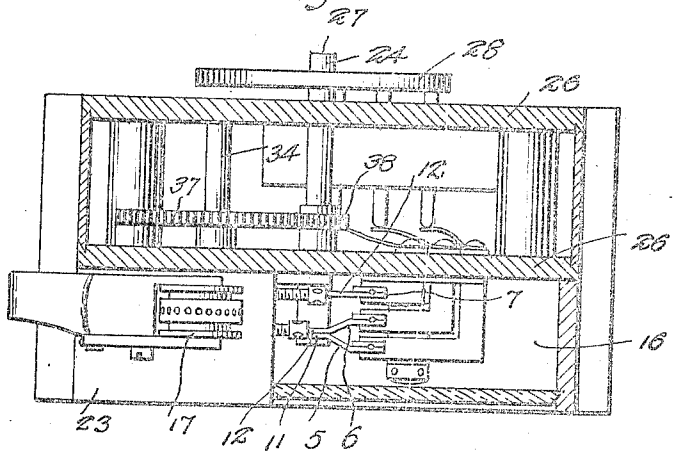


Fig. 2.



INVENTOR

Fred L. Rogers,

BY

Victor J. Evans

ATTY.

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2 SHEETS—SHEET 2.

Fig. 4.

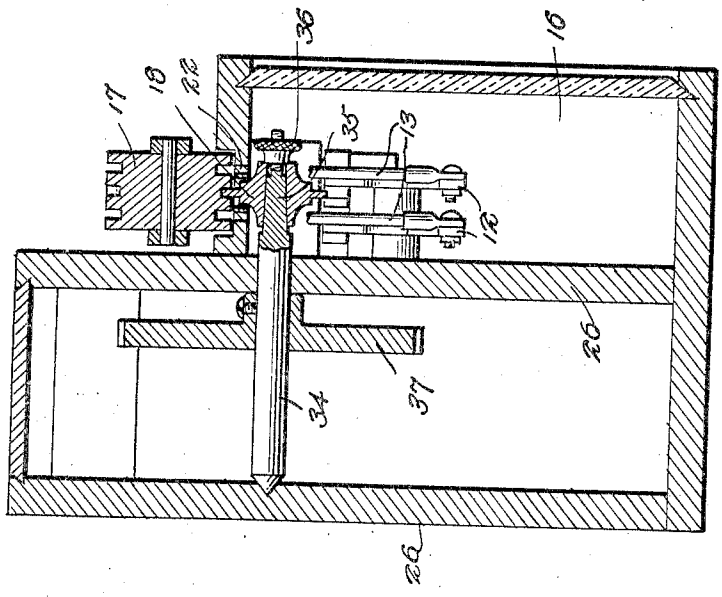
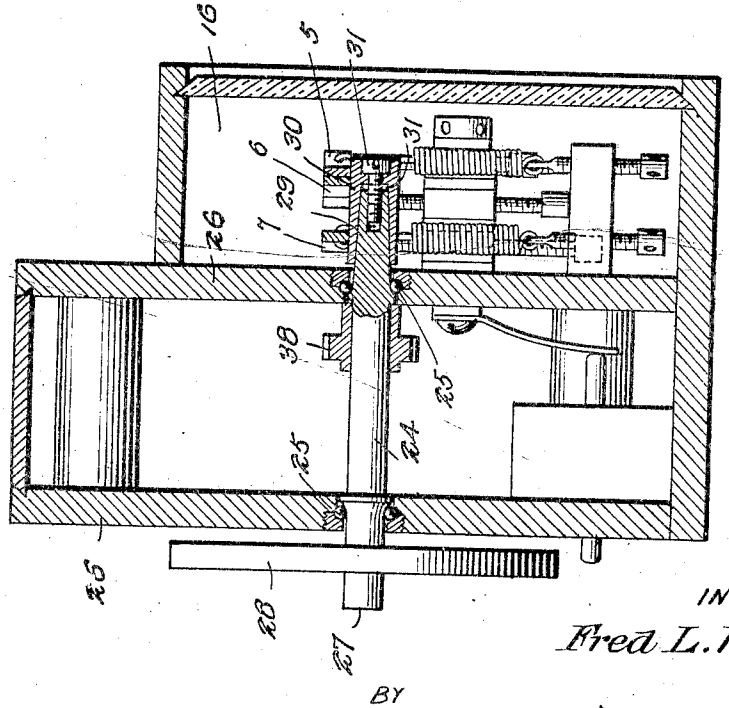


Fig. 3.



INVENTOR

Fred L. Rogers

BY

Victor J. Evans

ATTY.

UNITED STATES PATENT OFFICE.

FRED L. ROGERS, OF BROOKLYN, NEW YORK.

TRANSMITTER FOR CABLES.

1,366,838. Specification of Letters Patent. Patented Jan. 25, 1921.

Application filed May 5, 1919. Serial No. 294,814.

To all whom it may concern:

Be it known that I, FRED L. ROGERS, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Transmitters for Cables, of which the following is a specification.

This invention relates to automatic telegraph transmission devices and has for its principal object the provision of a device of this character whose construction is materially simplified over former well known transmission instruments, and wherein means are employed for rendering the action of the parts, quick, certain and free of lost motion.

An important feature of the invention resides in the provision of means wherein transmission of signals will be satisfactorily effected with an increase in the rate of progress and with greater legibility of the signals, and in order to accomplish this purpose I have paid particular regard to the arrangement of the contact levers and the embodiment therewith of a mechanism wherein said contact levers will be quickly and positively operated upon to automatically make and break the contacts in the transmission of electric impulses and I have further associated as an operative combination, parts which are capable of convenient adjustment without disabling the instrument should the device need attention through the fact of atmospheric influences or the action of vibrations.

Another object of the invention resides in the provision of contact levers and an actuating mechanism for said levers which will consist principally of a driver shaft on which a single cam is fixed and provided with one or any preferred number of working surfaces which are adapted to be presented at one and the same time against the levers to respectively permit of movements of the pins relatively of the ribbon while allowing for operative contacting of the levers as the ribbon progresses.

Another object of the invention resides in the provision of a transmitter which will consist of a spur or star wheel for feeding the perforated ribbon in the presence of the pins of the contact arms, associating therewith a driver shaft having a simple gear train for driving said spur or star wheel; providing the driver shaft with a cam; providing contact levers having branch arms mating with the cam to be simultaneously operated upon thereby, and so arranging the respective parts that the driver shaft may be conveniently supplied with power by directly connecting the same with a suitable operating motor or the like.

In the drawings:—

Figure 1 is a side view of the instrument.

Fig. 2 is a plan view thereof with parts in section.

Fig. 3 is a section on line 3—3 of Fig. 2.

Fig. 4 is a section on line 4—4 of Fig. 2.

The features which I desire to particularly emphasize are maximum simplicity of construction, and elimination of certain well known parts such as what are known in the art as walking-beam mechanisms for actuating the contact levers, and otherwise re-arranging the parts so as to materially reduce lost motion and friction and thereby permit of the transmission of electric impulses with a high measure of rapidity and legibility. Another feature to which I attach importance is the arrangement of a simplified combination of working parts which will operate to retain the instrument in adjustment under ordinary conditions and yet permit of convenient manipulation of the parts without the necessity of disabling the instrument.

In carrying the invention into practice, use is made of a ground contact lever 5 and the usual battery and line contact levers 6 and 7. All of these levers are mounted to rock upon a supporting shaft 8 and each is provided with a metallic surface or pin 9, adapted to co-act with an adjustable contact screw 10. The ground contact lever 5 is provided with a short branch arm 11 which is disposed immediately at one side of the long branches 12 of the contact levers 6 and 7.

The long branches 12 of the contact levers 6 and 7 are provided with the usual vertical pins 13 which extend in an upward direction through an opening 14 in the wall 15 of a casing structure 16. These pins mate with the roller 17 and the latter co-acts in the usual manner with the star feed wheel 18, by means of which the usual perforated ribbon is adapted to be carried across the opening 14 where its perforations are presented to the action of the pins 13 whereby to control the action of the respective contacts at intervals to be hereinafter explained. The pins 13 are pivoted at 19 to the free terminals of the extensions 12 of the contact levers 6 and 7 and said pins are yieldingly held against stop screws 20 by means of springs 21. The

upper extremities of the pins are free to tilt in bifurcations 22 in a bracket 23 secured to the top wall 15. This arrangement is preferred in order to always maintain a uniform vertical alinement of the working ends of the pins with respect to the perforations at the sides of the center of the ribbon. The star feed wheel is of course adapted to engage in the central perforations of the ribbon.

A driver shaft 24 is journaled in antifriction bearings 25—25 in the vertical walls 26—26 of the casing 6. This driver shaft is adapted to be directly driven by a suitable motor which may be connected with the terminal 27 of the shaft. In lieu thereof, however, the driver shaft can be provided with a friction disk 28 of the usual well known type. Said driver shaft is provided with a conical extension 29 on which a cam 30 is mounted, the bore 31 of the cam being formed with due regard to the conical portion 29 so as to permit friction to be induced between the parts and thus eliminate lost motion when the cam is revolved. A screw 31 on the shaft 24 co-acts with the cam so that on adjustment of the screw the cam will be moved in wedge-like contact with the conical surface 29 to establish the desirable binding action as stated.

This cam in the present instance is of rectangular configuration. It has equally proportioned sides and at the vertices of the sides it is provided with uniform continuous working surfaces 32. In addition to said surfaces the cam is provided with flat sides or surfaces 33, the latter being also of uniform and continuous formation. This cam has a length exceeding the span across all of the respective contact levers 5, 6 and 7 so that said levers will be simultaneously operated when the cam is in motion. The construction of the instrument wherein I have eliminated many working parts heretofore employed, is responsible for a more perfect transmission of signals whenever interruptions in the cable known as induction, slight earth currents, lightning, bad balancing of the cable etc., occur to which the cable is subjected.

The faces 33 being nearer to the axis of the cam will of course permit the requisite freedom of the contact arms whereby the pins 13 will operatively enter the perforations in the ribbon as the latter progresses. The corner faces 32 being farther away from the axis of the cam permit the contact levers to freely move to their open circuit positions as will be understood.

Bearing in mind that it is simplicity of construction primarily that I have brought about with resulting advantages and higher efficiency, I wish now to describe the means for transmitting motion from the driver shaft 24 to the star feed wheel 18, and in this connection I have also endeavored to bring about a combination of instrumentalities which will eliminate lost motion and thereby permit of greater legibility in the transmission of electric impulses. To this end the transmitting mechanism consists of a shaft 34 having a conical portion 35 on which the star feed wheel 18 is mounted, the bore of the latter following the configuration of the portion 35 so that a binding action between the respective parts can be effected by moving the wheel endwise of the axis of the shaft 34. A screw 36 on the shaft 34 provides means whereby its adjustment can be operatively established. The shaft 34 is provided with a fixed gear wheel 37 arranged in mesh with a small driving pinion 38 on the driver shaft 24. In this manner the desired balance of parts is established and the highest measure of efficiency has been found to present itself from the arrangement specified.

The ground contact lever 5 is so constructed as to render the same adjustable in order to provide a longer or shorter period of engagement between said lever and the mating contacts 6 and 7, the latter functioning directly into the cable; either positive or negative current as the case may be. For illustration, it is assumed that the earthing contact is closed so as to not operate from the cam 30. This effect on the two adjacent contacts of the lever 6 and 7 would act as a direct and full period engagement from either one of said levers which might be in active operation and would, in most cases, result in too long a period, causing the signal transmitted to appear too heavy or muddy. This movable contact lever 5 thus acts in conjunction with the adjustable contact screw 10 to overcome this objection. By merely opening or closing said earthing contact, it accurately governs the period of time of its two adjacent levers 6 and 7. The arrangement provides positive means for regulating the period of time the current is allowed to flow into the cable, either positive or negative, as stated and resulting in a heavier or lighter transmission as may be most suitable to create the highest measure of efficiency and accuracy of the instrument.

The terms "earthing contact lever" and "ground contact lever" as used in this description and in the appended claims do not have the common meaning that the lever is connected to the ground or earth so that the electricity may pass off to the ground, but have the specific meaning well known and familiar to all skilled in the use of transmitters for cables, viz., a separate contact which acts in conjunction with either the dot or dash contact for completing the circuit.

What is claimed as new is:—

1. In an automatic telegraphic transmitter

the combination with the perforated ribbon actuating devices, of battery and line levers carrying transmitting pins co-acting with the perforations in the ribbon, contacts co-acting with said levers, an earthing lever, a cam common to all of said levers for lifting the same from their co-acting contacts and for releasing the pins from the perforations, means for yieldingly advancing said levers against their contacts, and means for shifting the engaging position of the earthing lever relatively to the cam so as to affect the interval of engagement of the battery and line levers with their co-acting contacts and serving to regulate the length of time the current is permitted to flow into the cable from said battery and line levers.

2. In an automatic telegraph transmitter, the combination with the perforated ribbon actuating devices, of battery and line levers carrying transmitting pins, co-acting with the perforations in the ribbon, contacts co-acting with said levers, an earthing lever, a cam common to all of said levers for lifting the same from their co-acting contacts and for releasing the pins from the perforations, means for yieldingly advancing said levers against their contacts, means for shifting the engaging position of the earthing lever relatively to the cam so as to affect the interval of engagement of the battery and line levers with their co-acting contacts and serving to regulate the length of time the current is permitted to flow into the cable from said battery and line levers, and means acting as a common support for all of said levers.

3. In an automatic telegraph transmitter the combination with the perforated ribbon actuating devices, of battery and line levers carrying transmitting pins co-acting with the perforations in the ribbon, contacts co-acting with said levers, an earthing lever, a cam common to all of said levers for lifting the same from their co-acting contacts and for releasing the pins from the perforations, means for yieldingly advancing said levers against their contacts, and means for shifting the engaging position of the earthing lever relatively to the cam so as to affect the interval of engagement of the battery and line levers with their co-acting contacts and serving to regulate the length of time the current is permitted to flow into the cable from said battery and line levers, an actuating shaft for the cam, the said cam having a socket receiving one end of the shaft, and means for moving the cam endwise on the shaft and for securing the same to the shaft.

4. In an automatic telegraph transmitter, the combination with the perforated ribbon actuating devices, of battery and line levers carrying transmitting pins co-acting with the perforations in the ribbon, contacts co-acting with said levers, an earthing lever, a contact co-acting with the earthing lever and adjustable vertical with respect thereto, a support common to all of said levers, an actuating shaft, and a cam carried by said shaft and acting as a common controlling means for all of said levers.

In testimony whereof I have affixed my signature.

FRED L. ROGERS.