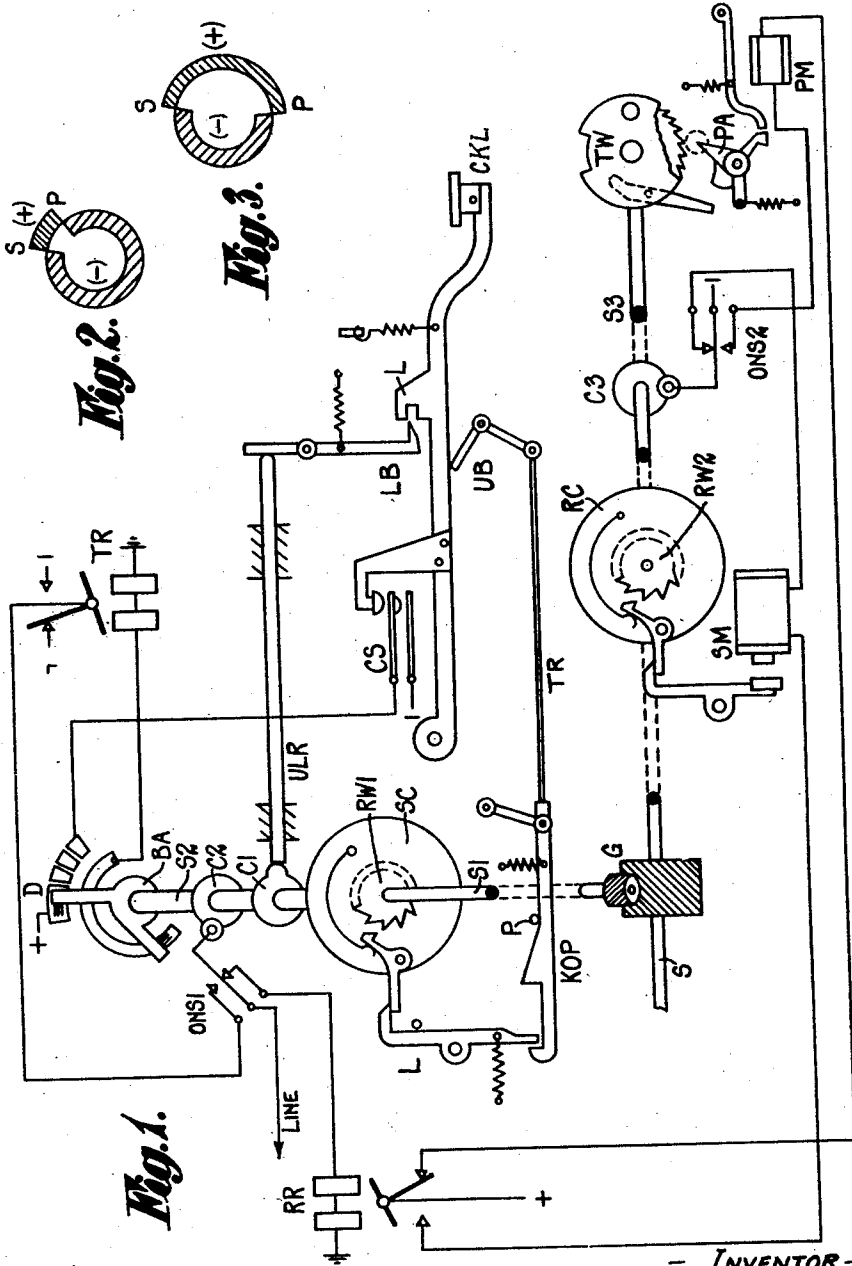


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TELEGRAPH SYSTEM

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TELEGRAPH SYSTEM

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The present invention relates to telegraph systems and is more particularly concerned with systems in which the operation of keys at the transmitting end results in the printing of the required characters at the receiving end. The general object of the invention is to apply the start-stop principle to a printer of the well-known Hughes type, thereby avoiding the necessity for accurate synchronization of the rotating members at the two ends of the line.

According to the invention when a key is depressed at the transmitting end the control shaft is set in operation for one revolution and a start or positive impulse is connected to the line. This connection is maintained until the particular position in the cycle corresponding to the character to be transmitted is reached whereupon a reversal takes place. At the receiving end a similar control shaft capable of rotation at the same speed as the control shaft at the transmitting end is released by the start impulse and allowed to make one revolution. The printing magnet is operated by the reversal and thus the particular character printed is determined by the position of the type wheel when this occurs.

The invention will be better understood from the following description of one method of carrying it into effect which should be taken in conjunction with the accompanying drawing. In the drawing, Fig. 1 shows in diagrammatic form the essential elements of a system according to the invention, while Figs. 2 and 3 indicate two examples of the selection of the various letters.

Fig. 1 illustrates the equipment at one end only, including the apparatus for both transmitting and receiving. S is a shaft continuously driven by a motor (not shown) and drives, through suitable gearing G, the ratchet wheel RW1 forming part of a single revolution clutch SC of well-known type. S also drives directly a second ratchet wheel RW2 of a second single revolution clutch RC. Cams C1 and C2 are mounted on the secondary shaft S2 controlled by SC and a brush arm BA mounted on the same shaft sweeps over a solid and a segmented ring of a distributor D. The segmented ring comprises a single long segment and a number of smaller segments corresponding to the number of characters each of such smaller segments being connected to its associated character key lever such as CKL. The distributor controls the operation of a transmitting relay TR which is

connected to earth and to the solid ring of the distributor.

The key levers CKL are adapted to close contact springs CS, and each lever rocks a universal bar UB, which by means of a trip rod TR pulls a pawl KOP to the right. This operation causes the pawl KOP to remove a latch L from the tail of the coupling pawl on clutch SC and shaft S2 is accordingly permitted to make one revolution. The pawl KOP is tripped by a pin P after releasing L, so that the latter can slip back into position in readiness to stop S2 by uncoupling shafts S1 and S2 after one revolution has been made, and thus a lengthy depression of a key lever does not result in a repetitive printing of the same letter.

As cam C1 moves from its position of rest, it permits unlocking rod ULR to move to the left and allow lock bar LB to move counter-clockwise so that it enters the slots in lugs L on all the unoperated key levers and rests on the top of the key which has been actuated, thus locking the latter and preventing improper operation of the remainder for the duration of one revolution. Cam C2 operates off-normal springs ONS1, changing over the line from the receiving relay RR to the tongue of the transmitting relay TR.

When a key is depressed to transmit a character, the shaft S2 is released for one revolution, the keys are locked and negative is connected to the corresponding segment of the distributor. Owing to the movement of the off-normal springs ONS1 by cam C2 a positive start pulse now passes to the line and this is maintained until the brush arm BA reaches the segment of D which is wired to the operated key lever CKL. A circuit is then closed from negative, CS, distributor contact, solid ring of D, winding of relay TR, earth. TR reverses and negative is connected to line by way of ONS1.

At the distant end of the line the start impulse passing through the relay similar to RR reverses it from the position shown in the drawing thus completing a circuit from positive, winding of start magnet SM, and off-normal springs ONS2 to negative. Magnet SM operates and clutch RC couples shaft S3 to S for one revolution. As S3 moves off-normal, the printing magnet PM is connected between the right-hand contact of RR and negative by way of springs ONS2 which are now operated. When the printing reversal occurs, RR completes the circuit for PM and trips the printing arm PA. The printing and paper feed arrangements are similar to those of the Baudot printer and as this is well known

and forms no part of the invention, it is not thought necessary to describe it.

The off-normal springs ONS1 are restored slightly before the brush arm BA engages the long segment of the distributor so as to prevent the reversal of TR which then takes place from sending a further start impulse. If the continuous current flow through TR while the apparatus was at rest were considered objectionable the long segment might be split and the portion engaged in the rest position left dead. This would not introduce any difficulties in working since the start impulse is not transmitted due to a reversal of TR but to the operation of the off-normal contacts ONS1.

The selection of the different letters is apparent from Figs. 2 and 3 which illustrate two different cases S in each instance representing the commencement of the start impulse and P the printing reversal.

I claim:—

1. In a printing telegraph system, a line connecting a sending device with a receiving device, means in the sender for connecting current in the line to send characters, and for changing the character of the current flow at a certain time to determine the character transmitted, and means in the receiver responsive to said current flow for printing a character when the character of the current flow is changed, the total current flowing in the line for the same length of time for each character transmitted.

2. A printing telegraph system of the start-stop type comprising sending and receiving devices connected by a line, means in the sender for sending characters to the receiver by causing current to flow over the line, the current being in one direction at the beginning to prepare the receiver and means for reversing it at a point during the signal to determine the character, and means in the receiver responsive to current in the first direction to start the receiver and responsive to the reversal to print a character determined by the point at which the second reversal occurs with relation to the beginning of the current flow, the total current flowing in the line for the same length of time for each character transmitted.

3. In a printing telegraph system of the start-stop type comprising a line connecting a sender and a receiver, means in the sender for causing a current flow in the line for each character transmitted, a polar relay in the receiver, said relay operated in one direction responsive to said current flow at the start of the reception of a character to start the receiver, and means for reversing the current flow at a predetermined point during the reception of a signal to operate said relay in another direction to print a character, the character printed determined by the point during the reception at which the relay is operated in the other direction.

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