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G. EHRENBERG

TELEPRINTERS

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2 Sheets-Sheet 1

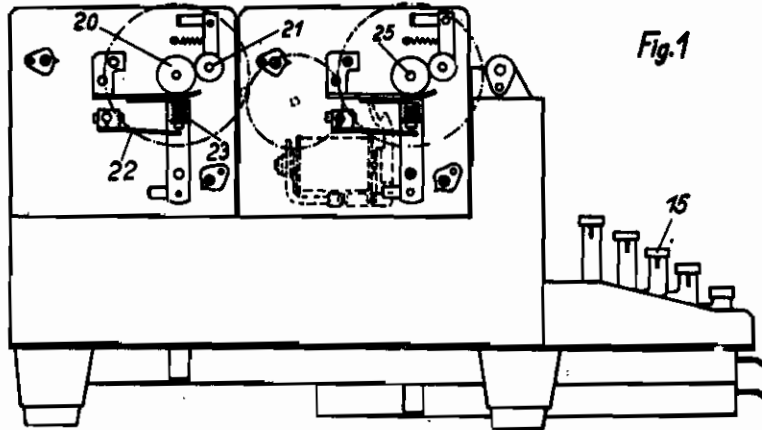


Fig. 1

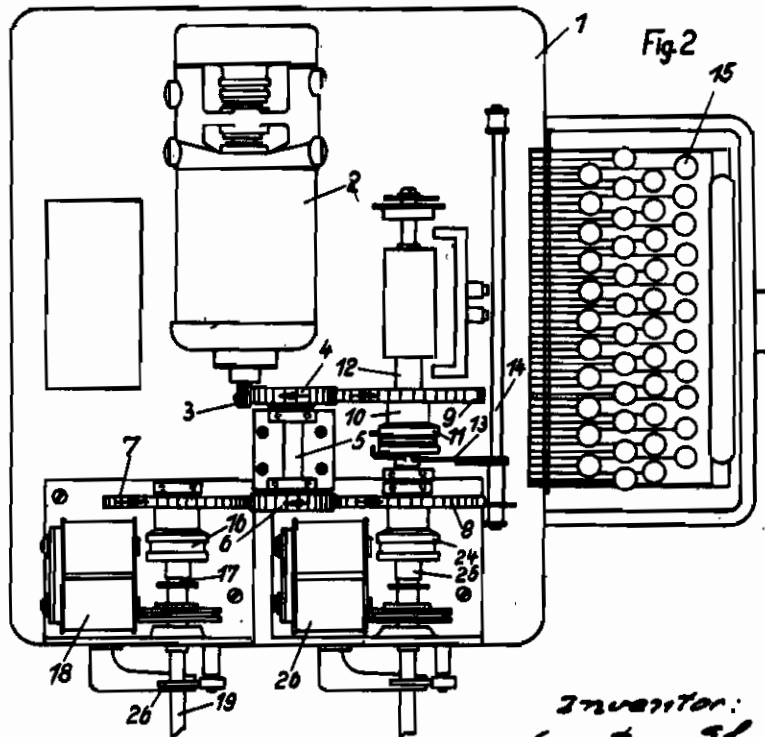


Fig. 2

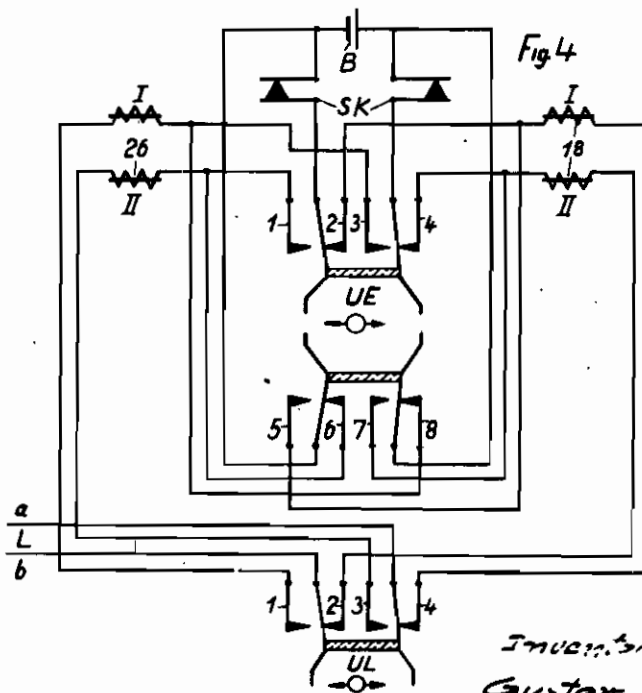
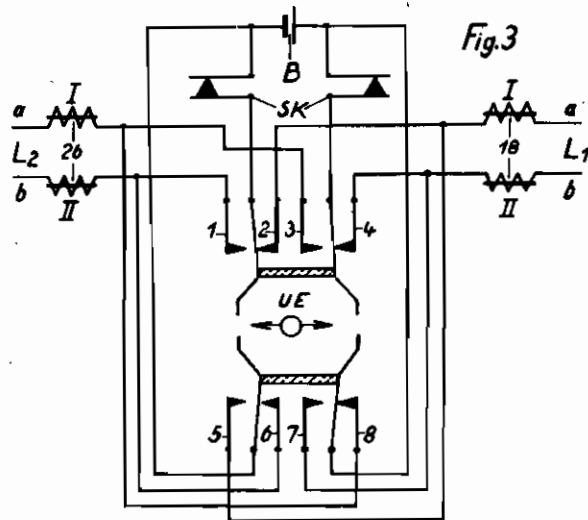
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ALIEN PROPERTY CUSTODIAN

TELEPRINTERS

Gustav Ehrenberg, Berlin-Adlershof, Germany;
vested in the Alien Property Custodian

Application filed January 25, 1941

This invention relates to improvements in teleprinters.

In the teleprinting art it is usual to combine a transmitter with a receiver to a unit so as to enable an up and down working. In certain cases this arrangement presents, however, disadvantages.

This is, for instance, the case in road-traffic signalling systems. In general, two lines and at train signalling stations. It is true that a simultaneous up and down working of these two lines may in general be dispensed with; however, each of the two lines must be ready for receiving signals.

According to the invention a particularly advantageous apparatus is employed for such operating conditions. The invention consists in combining a transmitter and various receivers to a unit in the manner that the transmitter and one of the receivers may alternately cooperate with a remote apparatus so as to effect an up and down working, while the other receivers receive the text to be transmitted from the other remote transmitters.

In such an apparatus all receivers, preferably two receivers being employed, are always connected to the corresponding line. Consequently, in urgent cases which occur particularly when the train travels at a high speed, the signal can always be received. As compared to the use of two complete telegraph apparatus the apparatus according to the invention is insofar simpler as only one transmitter with a keyboard and a driving motor is necessary. The number of the receivers may be adapted to the prevailing operating conditions. Known connections for the remote control may be employed for starting the apparatus.

If only one line is employed at a certain station the connection may be carried out in such a manner that the second receiver serves as a standby. In this case a corresponding double-throw switch is furthermore provided.

The apparatus with various receivers may, however, be used preferably at stations which are connected to one or more lines passing by the stations, for instance, intermediate stations connected to district lines, block stations connected to train signalling lines etc. It may also be employed if lines passing by and ending at the stations are to be connected.

The receivers, the transmitter and the motor are preferably arranged on a common base plate so as to attain a self-contained apparatus. The transmitter and receivers, each of which is pro-

vided with a separate driving coupling, are driven by the common motor through a gearing.

In the accompanying drawings is shown an embodiment of the invention in diagrammatic form.

Fig. 1 shows a side elevational view of the apparatus and Fig. 2 the top view thereof.

Fig. 3 shows a connection of the apparatus with the change-over switch for use on two lines and Fig. 4 a connection with one line in which the second receiver serves as a standby receiver.

On the base plate 1 is secured a motor 2 which drives through a pinion 3 a gear 4 mounted on the shaft 5. On the shaft 5 is also mounted a gear 6 which in turn drives the gears 7 and 8. The gear 4 drives a further gear 9 secured to the shaft 10 on whose end is mounted the coupling 11. On the transmitting shaft 12 is arranged the second disk of the friction coupling 11. The coupling is released in a known manner through the bars 13 and 14 by depressing one of the keys 15 for one rotation.

The gear 7 drives the receiver shaft 17 of the one receiver through the coupling 18. The coupling is stopped by the armature of the receiving magnet 18 in a known manner (not shown) until the arrival of the starting impulse and is then released for one rotation. The printing of the letters on the paper tape 19 is effected in the usual manner, for instance, by building up or forming the image of the letters of character elements, such as is described in the U. S. Patent No. 2,139,352. The receiver may, however, be also operated on any other known telegraphic principle; for instance, on the five-unit code or the facsimile principle. The typewheel is inked by the ink roller 21, while the paper tape 19 is pressed against the typewheel 20 by the spring 22 of the printing hammer 23. In exactly the same manner the gear 8 drives through the coupling 24 the shaft 25 of the second receiver which is controlled by the armature of the receiving magnet 26. The parts of the second receiver correspond exactly to the parts of the first receiver so that a further description thereof is not deemed necessary.

In Fig. 3 the apparatus is shown as connected to two lines. When connecting the transmitter to the line L₁ the change-over switch UE is in the position shown and the circuit extends from the battery B through the transmitting contact sk, the contacts ue₂ and ue₁ respectively, the two windings I and II of the receiving magnet 18, the two conductors a and b of the line L₁ to the remote apparatus. At the same time the

voltage of the battery B is applied to the conductors a and b of the line L₂ through the contacts ue₆ and ue₈ and the two windings I and II of the magnet 26. In this position the transmission and reception may therefore be effected over the line L₁, i. e., impulses arriving over the line L₁ influence the receiving magnet 18. At the same time also a reception may be effected over the line L₂ controlled by the receiving magnet 18 but a transmission cannot be effected at the same time.

If the transmission is to be effected over the line L₂ the switch UE is changed over so that the transmitter is connected through the contacts ue₁ and ue₃ to the windings I and II of the magnet 26 and the battery is connected to the contacts ue₆ and ue₇ and therefore to the two windings I and II of the magnet 18. In this connection the receiving magnet 18 is operated from the line L₁ and only a reception can be effected over this line. A transmission and a reception may be effected over the line L₂. To avoid disturbing interruptions of current or short circuits the contacts of the change-over switch must be so controlled as to obtain the following sequence of operations:

- (1) UE₅ and UE₇ close
- (2) UE₆ and UE₈ open
- (3) UE₂ and UE₄ open
- (4) UE₁ and UE₃ close

By changing over the switch to the position 30

shown the following sequence of operation is to be maintained.

- (1) UE₈ and UE₆ close
- (2) UE₅ and UE₇ open
- (3) UE₁ and UE₃ open
- (4) UE₂ and UE₄ close.

In Fig. 4 is shown how the apparatus may be connected to one line. In this case the second receiver serves as a standby. Besides the change-over switch UE which is provided at all events, a second change-over switch UL is employed, to the control contacts of which are connected the conductors a and b of the line L. These central contacts may be connected either to the contacts 1 and 3 or 2 and 4 and therefore either to the coils of the magnet 26 or to those of the magnet 18. The change-over of the transmitter is effected in the same manner as in Fig. 3 by means of the change-over switch UE.

If a key 15 of the apparatus shown in Figs. 1 and 2 is depressed in one of the two connections shown in Fig. 3 or 4, the coupling 11 is released for one rotation and the transmitter transmits the corresponding series of impulses. The receiver lying in the same line prints the text transmitted and at the same time the text transmitted from a separate remote apparatus may be received on the second receiver.

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