

Oct. 23, 1928.

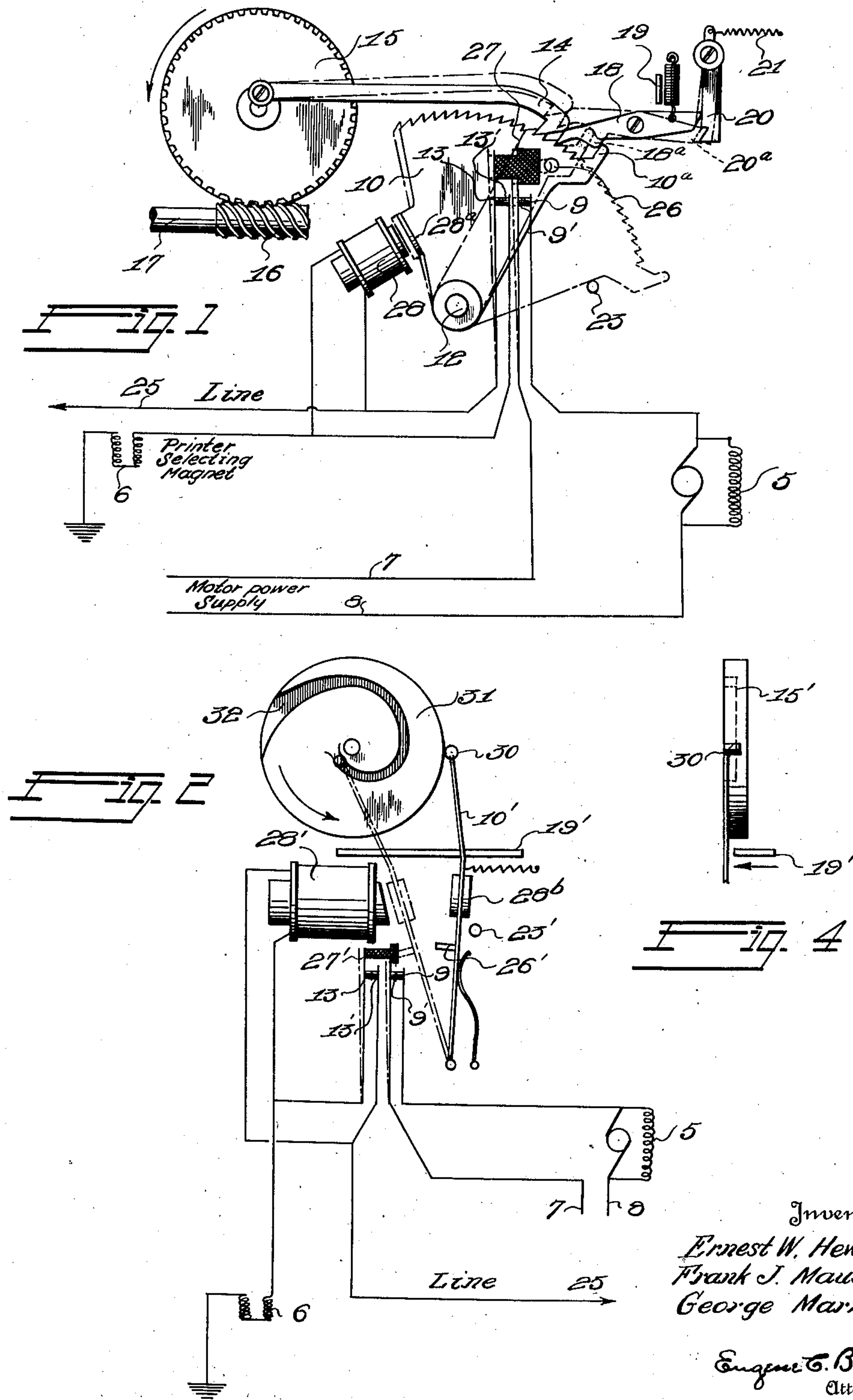
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Filed Feb. 26, 1927

2 Sheets-Sheet 1



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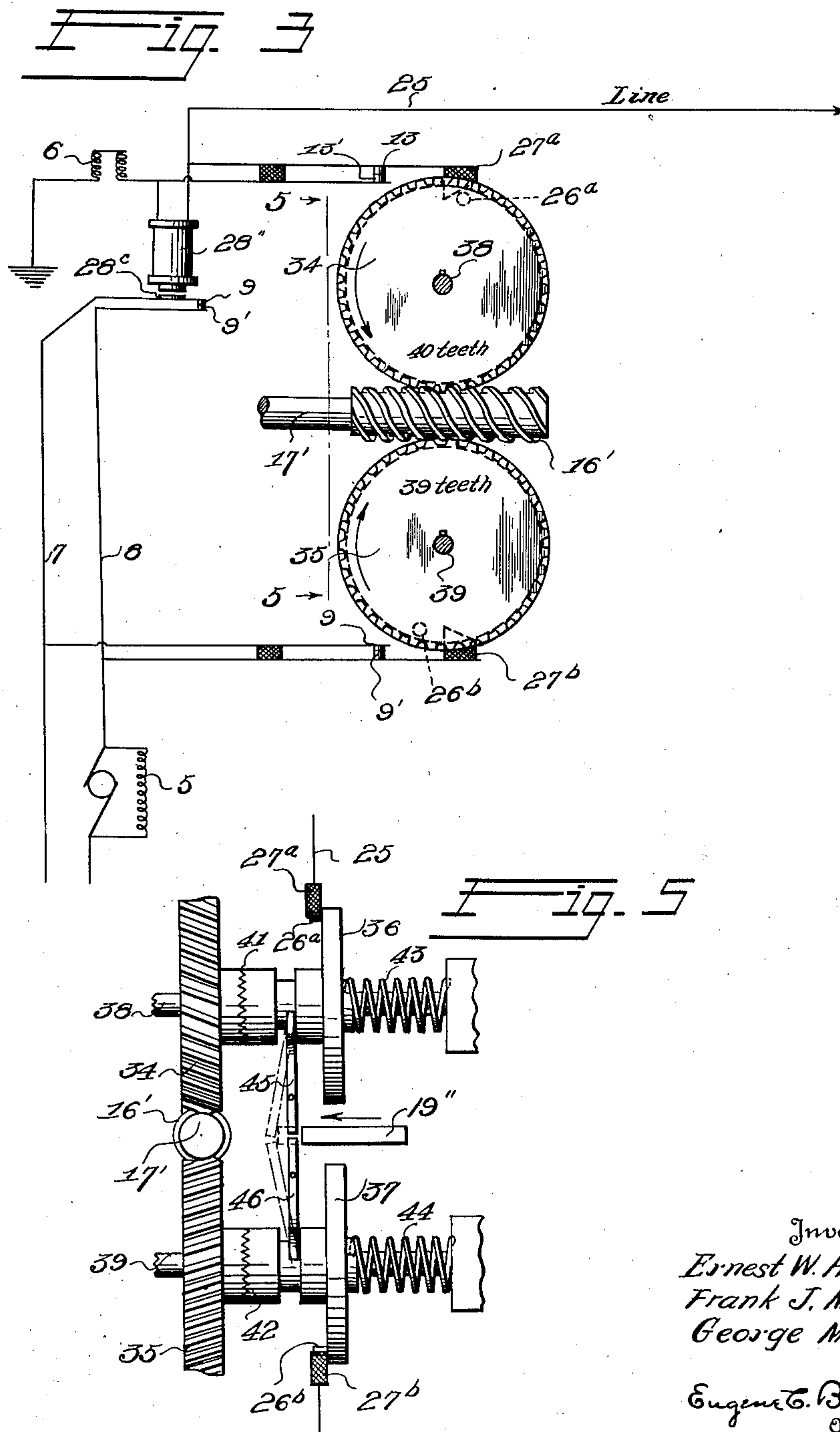
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MOTOR-STOPPING DEVICE FOR TELEGRAPH TYPEWRITERS.

Application filed February 26, 1927. Serial No. 171,328.

This invention relates to devices for stopping the driving motor of printing telegraph machines.

The object of our invention is to provide means for automatically breaking the circuit of the motor which drives the operating mechanism of a printing telegraph machine when no signals have been received for a predetermined period. A further object is to prevent the motor from being stopped while the printer is in operation.

In the accompanying drawings, Figures 1, 2 and 3 are diagrammatic illustrations respectively of three different motor stopping devices for accomplishing our purpose; Fig. 4 is an end elevation of the cam mechanism shown in Fig. 2; and Fig. 5 is an elevation of the timing mechanism of Fig. 3 taken on the line 5—5.

Our motor stopping devices may be applied to the printing telegraph machines now in use, such for instance, as the telegraph typewriter disclosed in U. S. patent to Edward E. Kleinschmidt, No. 1,567,599, dated December 29, 1925. The driving motor is indicated at 5 and the printer selecting magnet at 6 in each of the forms illustrated. The motor circuit 7, 8 is normally closed at the contacts 9, 9'.

In the arrangement shown in Fig. 1, the motor stopping device consists primarily of a toothed sector 10, pivoted at 12 and which is advanced one tooth at a time by a reciprocating feed pawl 14, pivoted eccentrically on the gear 15. The gear is driven very slowly, say four revolutions per minute, by a worm 16 on a shaft 17 which is connected in any suitable manner to be driven rapidly by the motor 5, say four hundred revolutions per minute. In this manner the toothed sector is slowly moved about its pivot, backward movement being prevented by the dog 18. At each movement of the printing bail to throw a type-bar forward into printing position, an intermediate member 19, connected to the printing bail, is moved downward to disengage the dog 18 from the toothed sector and lift it, together with the pawl 14 sufficiently to allow the sector to swing back into its initial position against the stop pin 23, as shown in dotted lines.

After the printing of each letter or character, the printing bail and the member 19 re-

turn to normal position, permitting the pawl 14 and dog 18 to drop back into engagement with the teeth of the sector. If no signals are received over the telegraph line 25, the reciprocations of the pawl will swing the sector around until a pin 26 thereon engages an insulating switch button 27, which opens the motor circuit at the contacts 9, 9' and also the short-circuit around the magnet 28 at the contacts 13, 13'. This stops the motor and energizes the magnet 28. As the latter attracts its armature 28^a, the sector is given a sudden strong pull which causes the finger 10^a to engage the projection 18^a, thereby lifting the dog 18 high enough to cause its outer end to notch in the lower end of the locking member 20 and be locked in this position by the action of the spring 21.

Although the pawl and dog are held away from the teeth of the sector, the latter is held by the magnet until the operator at the other end of the line desires to send a message. The opening of the line deenergizes the magnet 28 and allows the sector to swing back to initial position against the stop 23, thereby closing the contacts 9, 9' to start the motor 5 and the contacts 13, 13' to close the shunt around the magnet. When the printing bail of the printer is operated to cause the printing of the first letter of the message, the tripping arm or member 19 pushes the dog 18 downwardly until its outer end moves along the inclined wall of the notch 20^a and swings the member 20 outwardly enough to permit the dog 18 and the pawl 14 to spring back into engagement with the sector teeth. Thereafter the reciprocating movement of the pawl 14 gradually moves the sector one tooth at a time; but each time the printer bail operates to print a character, the tripping arm 19 lifts the pawl and dog from the teeth, thus permitting the sector to swing back to initial position. In this manner the sector is prevented from moving far enough, while the printer is in operation, to cause the pin 26 to open the switch contacts. As soon as the transmission ceases the sector will be moved without interruption until the pin 26 opens the switch contacts after predetermined interval and stops the motor.

The arrangement illustrated in Fig. 2 accomplishes the same purpose as the apparatus shown in Fig. 1. In this form of the inven-

tion, the pin which opens the switch contacts is carried by a lever 10' and is gradually moved from initial position to switch-operating position by means of a cam disk 15'.

5 The disk is connected in any suitable manner to be slowly rotated by the motor 5. The lever arm 10', which carries the switch actuating pin 26', is provided with a stud projection 30 which rides against the periphery
10 of a cam disk 31 and then enters the cam groove 32, by which it is gradually moved toward the center of the disk.

During the interval when no message is transmitted, the lever will be moved from
15 full line to dotted line position. At this point in its travel the pin 26' engages the insulating block 27' and opens the pairs of switch contacts 9, 9' and 13, 13', thus stopping the motor and opening the shunt around the
20 magnet 28'. The armature 28^b is then attracted which moves the stud 30 out of the groove, being held in this position by the magnet. When the next message is to be transmitted the circuit is first broken there-
25 by, deenergizing the magnet and permitting the lever 10' to swing back to initial position.

At each operation of the printer magnet the printing bail causes a cam lever 19' to push the arm 10' laterally, thereby freeing
30 the stud 30 from the cam slot 32 and permitting the arm 10' to spring back to initial position. This prevents the stopping of the motor while a message is being received by the printer.

35 A third form of apparatus for carrying out this invention is illustrated diagrammatically in Figs. 3 and 5. The shaft 17' is connected to the driving motor 5 of the printer in a manner to be driven at say 400 revolutions per minute. Disks 36 and 37 which
40 carry the switch actuating pins 26^a, 26^b, are loose on the shafts 38 and 39 and are driven by the gears 34 and 35 through the clutches 41 and 42. The gears are provided with dif-
45 ferent numbers of teeth. If gear 34 has 40 teeth and gear 35 has 39 teeth, then when the shaft 17' is rotated at 400 revolutions per minute, the pins 26^a and 26^b will engage the respective switch blocks 27^a and 27^b simul-
50 taneously after they have been rotating about four minutes. When this occurs the switch contacts 9, 9' will be open and also the con-
55 tacts 13, 13'. The opening of the contacts 13, 13' breaks the shunt around magnet 28'' which is immediately energized and opens the contacts, 9', 9', thereby opening the circuit 7, 8 and stopping the motor. It will be

observed that the opening of either set of con-
60 tacts 9, 9 or 9', 9' does not open the motor circuit since they are connected in parallel. It is necessary to open both sets simultaneously to break the motor circuit.

In order that the motor shall not be stopped while a message is being received, a device to interrupt the motion of the timing mecha-
65 nism is provided, as in the two forms previously described. Torsion springs 43, 44 surround the shafts and are connected at one end to the hubs of the disks and at the other end to the stationary bearing posts. When the
70 disks are rotated, the springs are wound about the shafts and placed under tension. Each operation of the printing bail of the printer actuates the lever 19'' and causes it to move
75 the yokes 45 and 46, sliding the disks and disengaging the clutches 41, 42. The springs then return the disks to initial position.

It will be observed that each form of apparatus performs the same function of opening
80 the motor circuit when no message has been received for a predetermined period, but interrupting the operation of the timing device during the reception of a message at each operation of the printing function.

We claim:

85 1. In combination with a printing telegraph machine having an electric motor to operate the movable parts, of a motor stopping device comprising an actuating element driven by said motor, timing mechanism op-
90 erated by said actuating element, a switch in the motor circuit operated to open position by said timing mechanism when the latter has operated a predetermined period, and
95 means controlled by the operation of the printing mechanism of the machine to release said timing mechanism and permit it to move to initial position.

2. In an organization as set forth in claim 1, an electro-magnet connected in the tele-
100 graph line circuit and positioned to hold the timing mechanism in position to maintain the switch in the motor circuit open, a shunt circuit normally short-circuiting said mag-
105 net and switch contacts in said shunt circuit, said timing mechanism operating to open said switch contacts simultaneously with the opening of the switch in the motor circuit.

In testimony whereof we affix our signatures.

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