

April 21, 1931.

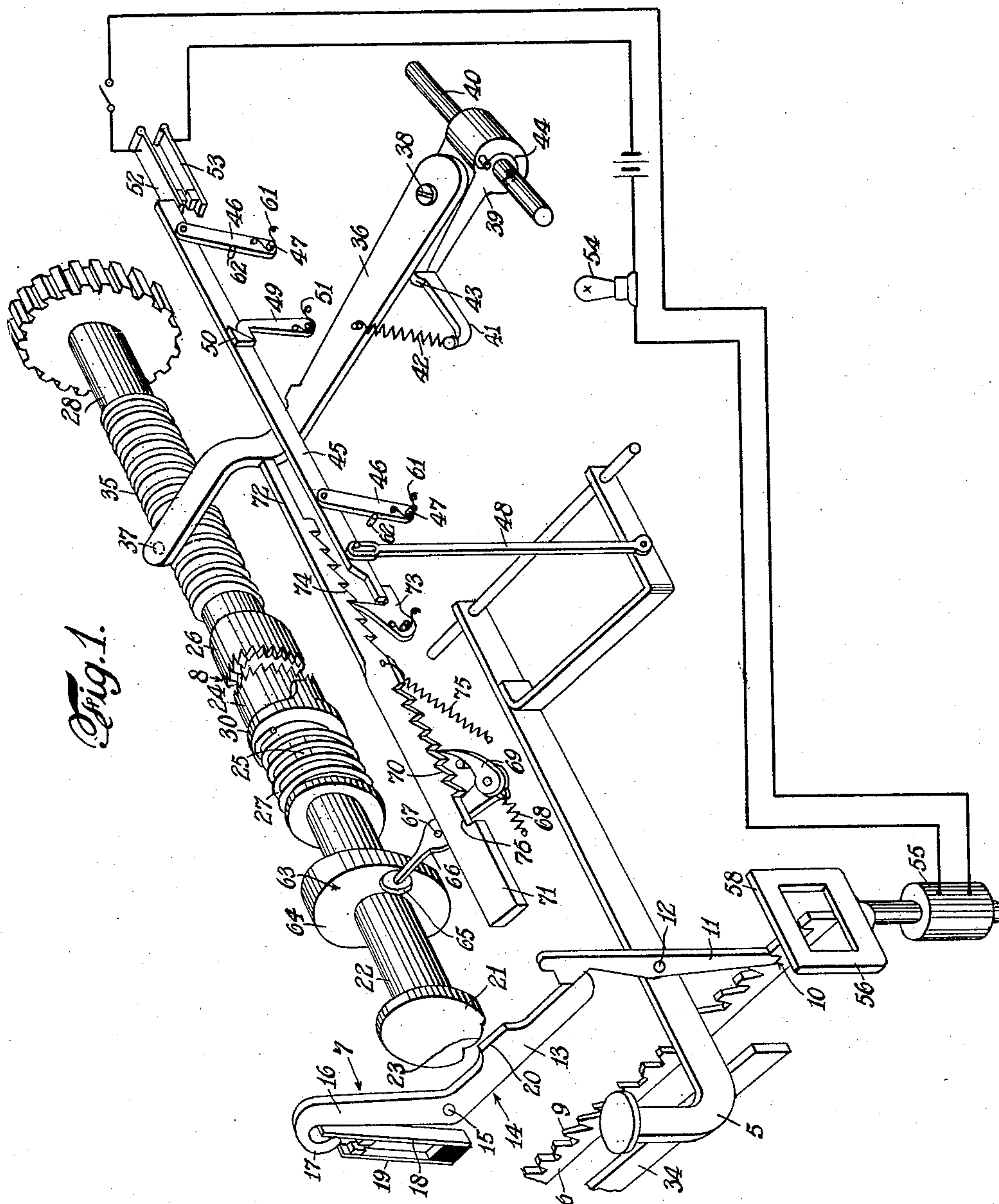
E. J. SORTORE

1,801,884

TELEGRAPH COUPON PRINTER

Filed Aug. 3, 1929

2 Sheets-Sheet 1



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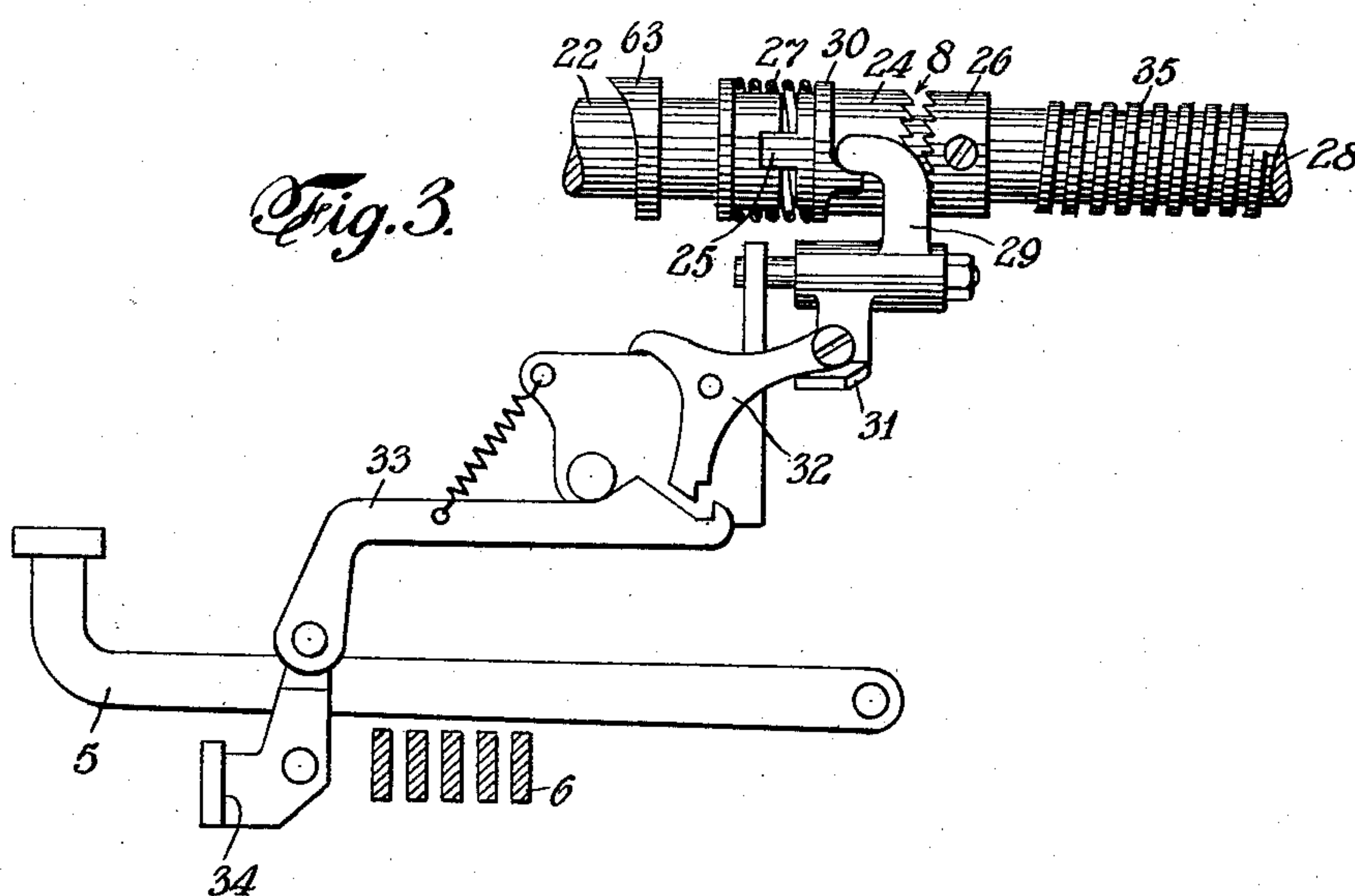
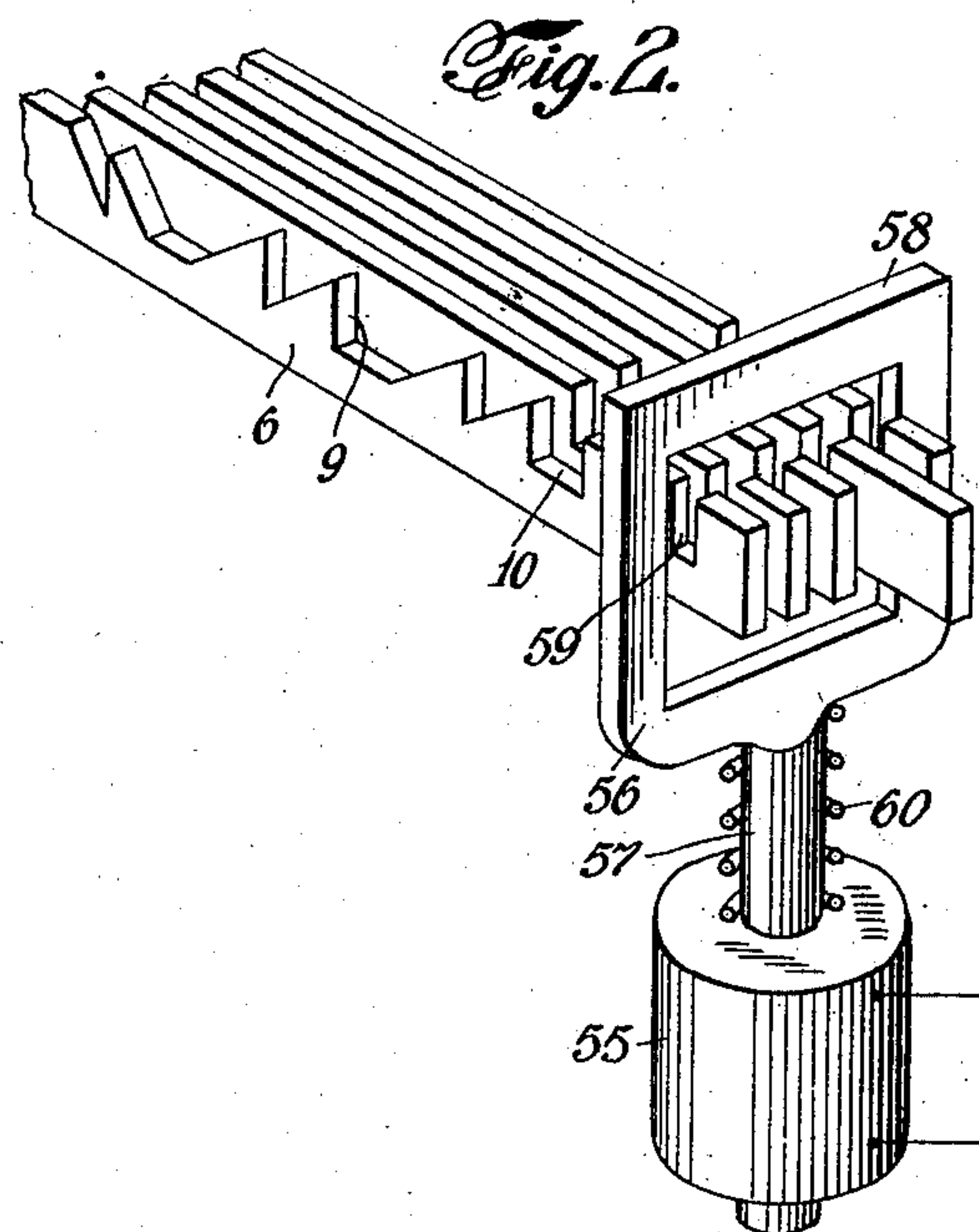
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TELEGRAPH COUPON PRINTER

Application filed August 3, 1929. Serial No. 383,328.

This invention relates to a key-board transmitter for a telegraph system employing a tape or page printing machine at the receiving end of the system, the operation of which is controlled by permutations of electrical impulses transmitted by the key-board transmitter.

In telegraph systems of this nature the depression of a definite character key lever of the key-board transmitter sends out a combination of electrical impulses, usually of five or six units, which are transmitted to the receiving station and through a printing unit having mechanism responsive to the particular signal combination transmitted, effects the selection of the proper type bar on which the desired printing character is mounted. The selected type bar is moved against the paper and the paper fed forward a single letter space preparatory for the next signal combination.

In Patent No. 1,770,888, of Long and Sortore, granted July 15, 1930, there is described and illustrated a tape or page printing telegraph unit which is constructed so as to respond to a definite code signal to feed the paper forward automatically a variable number of spaces, to form in each instance, coupons or slips of a uniform length having an order or message thereon. This machine, which has been termed a coupon printer, is employed in such business as brokerage houses, mail order concerns, department stores and the like where it is desired to transmit, from some distant point, individual orders or messages consisting of only a few characters and to receive such orders upon coupons of a length somewhat greater than the length of the message itself. In the operation of such a machine the message is transmitted, character for character, and at the completion of the message the tape feed key-lever is depressed, to transmit a definite signal combination to set into operation the automatic tape feed mechanism of the printer, to feed the paper forward a variable number of spaces. The auxiliary paper feed mechanism continues to operate until the total number of message spaces plus the va-

riable number of paper feed spaces is the same for each cycle of operation.

In the operation of the key-board transmitter it is necessary, after transmitting the automatic paper feed signal, for the operator to wait a sufficient length of time before starting the next message to enable the proper length of blank tape to be fed through the printer to form the coupon. This time is variable depending upon the length of the message previously transmitted and, heretofore, it has been necessary for the operator to estimate the time required to feed out the blank paper to form the coupon. If the key-board transmitter is operated to transmit a new message before the succeeding coupon has been completely advanced through the printing unit the message will not be properly received.

It is an object of the present invention, therefore to provide an apparatus for attachment to the key-board transmitter which will indicate to the operator when the coupon feeding operation at the printing unit has been completed.

Another object is to provide an apparatus for attachment to the key-board transmitter which is set into operation on actuation of the tape feed key lever to provide a warning signal to the key-board operator and/or to lock the key-board transmitter against premature operation during the period required for completing the coupon feeding operation.

Another object is to provide apparatus of the above nature which will not interfere with the operation of the key-board transmitter when not employed for coupon printing purposes.

Other objects and advantages will appear as the description proceeds.

In accordance with my invention I provide a mechanism on the key-board transmitter which is set into operation by the depression of the tape feed key-lever to operate a warning signal and/or to lock up the operating mechanism of the key-board transmitter to prevent the transmission of other code signals during the period required for advancing the blank tape through the printing unit to form the coupon. In the embodi-

ment of the invention illustrated in the accompanying drawings, the depression of the key lever actuates a bar which is, thereupon, locked in position to close an electrical contact to operate the warning signal or to lock up the selecting bars of the transmitter against further movement and at the same time to effect engagement of an unlocking lever with a part of the transmitting apparatus which revolves in substantial unison with the paper feed mechanism of the printing unit, whereby the lever is moved in such a manner that, at the end of the coupon feeding operation, the lever unlocks the bar to release the same and thus effect the opening of the contacts and terminate the operation of the warning signal. The lever is actuated both during the transmission of the message and during the interval required for feeding the blank paper at the printing unit so that it reaches the unlocking position in each instance after the tape has been fed a uniform distance through the printer, regardless of the length of the message.

The invention will be more fully understood by reference to the accompanying drawings in which

Figure 1 is a perspective view, partially diagrammatic, of apparatus embodying my invention associated with a key-board transmitter.

Figure 2 is a perspective view of the mechanism for locking the key-board transmitter against operation during the interval of the coupon feeding operation; and

Figure 3 is an elevational view of a portion of the operating mechanism of the key-board transmitter.

A type of key-board transmitter with which the present invention may be associated is shown in patent to Krum, 1,595,472, granted August 10, 1926 and entitled Telegraph apparatus, and in the accompanying drawings I have shown my invention as applied to a key-board transmitter of this general type, only such features of the machine being illustrated as are necessary for a proper understanding of the present invention.

Briefly the key-board transmitter consists of a bank of key-levers, one only of which is shown at 5, a number of notched code bars 6 disposed so as to be engaged by the key-levers when depressed, a contact mechanism indicated generally at 7 for setting up the selected signal combination and a clutch 8 by which the contact mechanism is driven from a motor, not shown.

The selecting bars, usually five in number, extend across the width of the key-board beneath the key-levers and are provided with triangular notches 9 arranged according to the requirements of the signal code so that they will be moved sideways, either to the right or to the left when the key-levers are

depressed and strike the slanting sides thereof. At the right-hand end of each selecting bar is a slot 10 in which one end of a vertical latch 11 is set. The latch 11 is pivoted at 12 so that, when the corresponding selecting bar is shifted, the upper end of the latch engages the horizontal arm 13 of a contact lever 14. The contact lever 14, one of which is provided for each selecting bar, is pivoted at 15 and has a vertical arm 16 provided with a hooked end 17 engaging one of a pair of contacts 18 and 19. The contact levers, in combination with the locking latches 11 control the transmitting contacts 18 and 19 which are normally held open by the contact lever 14 against the tension of the spring contact 18.

The horizontal arm 13 of each of the contact levers has a hump 20 thereon engaging the edge of a cam 21 mounted upon the shaft 22. The cam 21 has a depression 23 on one side thereof which when opposite the hump 20 permits the lever 14 to rock under the pressure of the spring contact 18, to permit the contacts 18 and 19 to close, providing they are not held open by engagement of the locking latch 11 with the arm 13. There is an individual cam for each contact lever, arranged so that the depressions 23 oppose the humps 20 of the contact levers successively. By permitting certain of the contacts to close and others to remain open the desired character signal is formed.

The cam shaft 22 is normally at rest and is permitted to make one revolution, by means of the ratchet clutch 8, for each signal combination set up. The driven ratchet 24 of the clutch is keyed to the cam shaft by a key and slot 25 so as to be movable longitudinally into engagement with the driving ratchet 26, by a clutch spring 27. The driving ratchet is fixed to the driving shaft 28 which is geared to the motor, not shown. The clutch faces are normally held out of engagement, by a clutch stop arm 29 pivoted below the shaft and having a curved end extending into the path of a cam 30 on the driven ratchet 24. The stop arm 29 has a horizontal extension 31 which is engaged by a pivoted pawl 32, operated by a trip off pawl 33, connected to a universal bar 34 extending beneath the key-levers so as to be engaged thereby after the selecting bars have been shifted. The depression of the universal bar moves the stop arm out of engagement with the driven ratchet of the clutch so that the clutch faces will engage and cause the cam shaft to make one revolution. At the end of the revolution the clutch stop arm forces the driven ratchet out of engagement with the driving ratchet and the cam shaft comes to rest.

All of the foregoing mechanism is well known in the art and has been described in some detail in order that the present invention will be better understood and its rela-

tion to the key-board transmitter more fully appreciated.

With the mechanism so far described, if it is desired to produce a coupon at the printing unit, the message is first transmitted, character by character, after which the tape feed key 5 is depressed to set up the selecting bars and cause the contact levers to transmit the tape feed signal combination. The continued depression of the key-lever rocks the universal bar 34, releases the clutch stop arm and causes engagement of the clutch to rotate the cam shaft through one revolution after which the clutch is again disengaged. The driving shaft 28 continues to rotate in substantial synchronism with the operating shaft of the printing unit, from which the tape feed mechanism is operated. The transmitted tape feed signal sets into operation the automatic tape feed mechanism of the printing unit, to feed the tape forward a variable number of letter spaces.

In order to prevent the premature operation of the transmitter during the automatic paper feeding operation I provide a timing device which lights a warning lamp and locks up the selecting bars so that they cannot be shifted until after the conclusion of the coupon feeding operation. A screw or worm 35 is placed on the continuously rotating driving shaft 28, the worm having a number of threads or convolutions equal to or greater than the number of character spaces on the total length of one coupon. A lever 36 is supported above the worm and has a pointer or tooth 37 adapted to engage the convolutions of the worm. The lever 36 is pivoted at 38 to a bracket 39 supported on a fixed shaft 40 and free to turn thereon. The bracket has an offset arm 41 to which is attached one end of a spring 42 secured to the lever 36 for rotating the lever against the stop 43. A leaf spring 44 tends to rotate the bracket and lever 36 clockwise to hold the pointer 37 out of contact with the worm. A rod 45 mounted upon a pair of links 46, pivoted at fixed points 47, extends across the lever 36 and limits its upward movement. The rod 45 is connected by a link 48 with the tape feed key-lever 5 so that upon depression of the tape feed key-lever the rod is rocked in a clockwise direction about the points 47 and thereby lowers the lever 36 so that the pointer or tooth 37 engages the convolutions of the wormwheel. The rod 45 is locked in its lower position by a latch 49 engaging a boss 50 on the rod. The latch is biased towards the boss by a leaf spring 51. A pair of contacts 52 and 53 disposed beneath the rear end of the rod 45 are closed by the downward movement of the rod to complete the circuit to the warning lamp 54 and to a solenoid 55.

The solenoid 55 has a rectangular frame 56 secured to its core 57 and surrounding the ends of the selecting bars 6. The horizon-

tal side 58 extends across a series of slots 59 in the selecting bars which are aligned when the bars are in the tape feed signal position. Upon energization of the solenoid, the side 58 moves into the aligned slots 59 and thus locks the bars in the tape feed signal position as long as the contacts 52 and 53 remain closed. Upon opening of the solenoid circuit the core 57 is moved upwardly by a helical spring 60, to release the selecting bars.

The bar 45 remains depressed until the lever 36, moving under the influence of the worm, engaged the locking latch 49 and moves it from the boss 50. The position of the latch 49 is such that it is released after the worm 35 has made a number of revolutions corresponding to the number of variable spaces through which the coupon is fed by the printing unit. Upon release of the latch 49 the bar is moved upwardly by springs 61 acting upon the links 46. Stop pins 62 limit the upward movement of the rod. This movement of the rod 45 permits the lever 36 to rock upwardly about the shaft 40, freeing the pointer 37 from the convolutions of the worm and permitting the lever to be returned against the stop 43 by the spring 42.

If the quantity of blank tape fed forward at the printing unit, by the depression of the tape feed key-lever of the key-board transmitter was uniform, in each instance, the lever 36 and rod 45 would cause the warning signal and selecting bar locking means to function for the exact period of the tape feed operation. However, the message and consequently the quantity of blank paper fed, may vary with each coupon and therefore I have provided mechanism for actuating the lever 36 towards the unlocking latch 49 both in response to both the message signals and the automatic tape feed signal. For this purpose a cam 63 is mounted upon the driven shaft 22 in such a position that the high side 64 thereof contacts, once each revolution, with a roller 65 disposed upon the end of a lever 66 pivoted at 67, so as to rock the lever about its pivot against the tension of a spring 68. The opposite end of the lever, from the roller 65, carries a pawl 69 which engages in a series of notches 70 provided in a ratchet bar 71, to advance the same towards the lever 36, one notch for each revolution of the cam shaft. The end 72 of the ratchet bar engages the lever 36 so as to move the same towards the locking latch 49. The spacing of the notches of the ratchet bar is such as to move the lever 36, during each revolution of the cam shaft 22, the said distance that it would be moved by one revolution of the worm 35, if in engagement therewith.

The ratchet bar is held, during the back-board movement of the pawl, by a holding pawl 73 engaging in a series of notches 74 on the underneath side of the bar.

At the commencement of the transmission

of a message the lever 36 is resting against the stop 43 free of the worm 35 and the ratchet bar 71 is in its extreme left-hand position. The distance between the lever 36 and the locking latch 49 is such that the lever will engage the latch after it is moved over a number of convolutions of the worm equal to the total number of character spaces on a single coupon. With each message character transmitted the lever 36 is moved by the ratchet bar 71 towards the latch 49 a distance equal to one convolution of the worm so that at the completion of the message it has been moved towards the latch a distance proportional to the length of the message. The tape feed key-lever 5 is then depressed to bring the pointer 37 of the lever 36 into contact with the worm to complete the movement of the lever towards the locking latch during the continued revolution of the driving shaft 28. The downward movement of the rod 45 releases the holding pawl 73 and the ratchet is returned to its left-hand position by a spring 75 in readiness for the succeeding message.

If desired, of course, the ratchet bar 71 may be omitted and the locking latch positioned with respect to the lever 36 so that the movement of the lever will correspond to the longest desired blank tape feed operation of the printer and the warning signal and locking mechanism will remain energized a variable but brief period after the completion of the tape feed operation when less blank paper is fed through the printing unit, that is, when the coupon contains a message having a larger number of characters.

The ratchet bar 71 is provided with a blank space 76 at the end of the notches which permits the pawl 69 to oscillate freely therein under the action of the cam 63, after the ratchet bar has moved to its extreme right-hand position. Thus in the transmission of messages of considerable length without intervening tape feed signals the ratchet bar will first be moved to its right-hand position by successive character signals until the pawl 69 engages in the blank space or recess 76 after which the pawl oscillates freely therein and the mechanism in no way interferes with the transmission of the message. When it is desired to again operate the transmitter in connection with printing coupons the tape feed key-lever is first depressed to release the holding pawl 73 and permit the ratchet bar to return to its left-hand position.

While I have shown a lamp for indicating the period of inactivity of the transmitter it is to be understood that any other convenient visible or audible indicator may be employed. The position of the locking frame 56 is itself an indicating means within the meaning of the terms of the claims and it is to be understood that the means for determining the period of inactivity of the trans-

mitter may comprise either the warning signal or the positive locking mechanism, or both.

What is claimed is:

1. In a key-board telegraph transmitter, a continuously rotating transmitting shaft, key-lever means for transmitting a single signal combination and means set into operation by said key lever for indicating when said shaft has made a predetermined number of revolutions after the transmission of said signal combination.

2. In a key-board telegraph transmitter, a continuously rotating transmitting element, means for transmitting a single signal combination and means actuated by said first means for preventing the subsequent operation of said transmitter until said rotating element has made a predetermined number of revolutions.

3. In a key-board telegraph transmitter, a continuously rotating element, means associated therewith for transmitting a character signal, means for transmitting a paper feed signal and means operating upon the transmission of said paper feed signal for determining when said rotating element has completed a number of rotations which added to the number of previous character signals transmitted is uniform for each coupon printing cycle of operation of the transmitter.

4. In a key-board telegraph transmitter, a continuously rotating element, means associated therewith for transmitting character and paper feed signals and means operating upon transmission of a paper feed signal to prevent the subsequent transmission of a character signal until after the rotating element has completed a number of revolutions which, added to the number of previous character signals transmitted, is uniform for each coupon printing cycle of operation of the transmitter.

5. In a key-board telegraph transmitter, a continuously rotating driving member, a driven member, means for transmitting a single signal combination during each revolution of said driven member, a timing device movable between predetermined limits, means for moving said device towards one limit of its movement during the transmission of character signal combinations and means for completing the movement thereof upon transmission of a paper feed signal combination, the total movement of said timing device corresponding to a predetermined total number of revolutions of the driven shaft prior to the transmission of the paper feed signal combination and of the driving shaft subsequent to the transmission of the paper feed signal combination.

6. A key-board telegraph transmitter for producing coupons of uniform size at a telegraph printing unit comprising means for

transmitting character signals, means for transmitting a tape feed signal and means responsive to both of said means for determining the necessary period of inaction of the key-board transmitter to permit the required quantity of blank tape to be advanced through the printing unit to form the coupon.

7. A key-board telegraph transmitter comprising a continuously rotating driving shaft, a worm thereon, a lever having movement between predetermined limits, means actuated upon depression of a definite key to move said lever into engagement with said worm, to thereby cause the lever to move between its limits and to close an electric circuit and means operated by the lever in one limit of its motion for opening said circuit, disengaging the lever from the worm and returning it to its opposite limit of movement.

8. A key-board telegraph transmitter comprising a continuously rotating driving shaft, means for transmitting a variable number of character signal combinations, means for transmitting a paper feed signal combination and means, having a definite cycle of operation, for determining when the driving shaft has made a number of revolutions, subsequent to the transmission of said paper feed signal combination, which added to the number of character signal combinations previously transmitted will be a constant for each cycle of operation.

9. A key-board telegraph transmitter comprising a continuously rotating driving element, means for transmitting a definite signal combination, means controlled by said signal transmitting means for completing an electric circuit and a timing device operable between predetermined limits for opening said circuit after said driving shaft has made a desired number of revolutions.

10. A key-board telegraph transmitter comprising a continuously rotating driving element, means for transmitting a definite signal combination, means controlled by said signal transmitting means for completing an electric circuit and a timing device brought into engagement with said driving element upon transmission of said signal combination to move the same between predetermined limits, said timing device in one limit of its movement opening said circuit and effecting its disengagement from said driving element.

11. A key-board telegraph transmitter comprising a continuously rotating shaft, means for transmitting a variable number of character signals, means for transmitting a paper feed signal, worm on said shaft, a lever disposed above said worm out of engagement therewith, said lever having movement between predetermined limits, means for moving said lever towards one limit of its movement during the transmission of the character

signals and means operated upon the transmission of the tape feed signal for effecting engagement of said lever and worm to complete the movement of the lever towards its limit of movement and a device for indicating the period of engagement of said lever and worm.

12. A key-board telegraph transmitter comprising a continuously rotating shaft, a worm thereon, a lever disposed above said worm, means controlled by a key-lever for engaging said lever and worm, locking means for maintaining said engagement, releasing means operable after a desired number of revolutions of said rotating shaft have occurred to disengage said lever and worm, an indicating device and means functioning during the period of engagement of said lever and worm for operating said indicating device.

13. In a key-board telegraph transmitter, a continuously rotating driving shaft, an intermittently rotating driven shaft for transmitting a single signal combination once each revolution thereof, a lever movable between predetermined limits, a ratchet bar actuated by said driven shaft for moving said lever towards one limit of its motion for each revolution thereof and driving means on the driving shaft, engaged by said lever upon depression of a definite key-lever to complete the movement of the lever towards its limit of movement, means for locking said lever in engagement with said driving means, means for preventing the operation of the transmitter during said period of engagement and means operated by said lever in one limit of engagement, for releasing said locking means, disengaging said lever from said driving means, returning said lever to the other limit of its movement and permitting the operation of the transmitter.

14. In a key-board telegraph transmitter, a continuously rotating driving shaft, a worm thereon, a lever disposed above said worm out of contact therewith and movable between predetermined limits, an operating bar extending across said lever, key control means for depressing said bar against said lever to cause the lever and worm to engage, means for locking said bar in its depressed position, contact mechanism closed by said bar upon depression thereof for completing a warning signal circuit, said lever being moved between its limits of movement by said worm and at one limit of its movement serving to unlock said bar whereby said contact mechanism is opened and the lever disengaged from the worm and returned to its other limit of movement.

15. In a key-board telegraph transmitter, a continuously rotating driving shaft, a uniformly rotating driven shaft for transmitting a single signal combination once each revolution thereof, a lever movable between predetermined limits, a cam on said driven shaft, a

ratchet bar actuated by said cam for moving
said lever towards one limit of its motion for
each revolution thereof, a worm on the driv-
ing shaft, an operating bar extended across
said lever, key control means for depressing
5 said bar against said lever to cause the lever
and worm to engage, means for locking said
bar in its depression position, and a contact
mechanism closed by said bar upon depres-
sion thereof for completing a warning signal
10 circuit, the movement of the lever towards its
limit of movement being completed by said
worm, and said lever at its limit of its move-
ment serving to unlock said bar whereby the
contact mechanism is opened and the lever
15 disengaged from the worm and returned to its
other limit of movement.

In testimony whereof I affix my signature.
EMERSON J. SORTORE.

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