Oct. 31, 1933. W. C. PETERMAN 1,933,336

STOCK TICKER PROJECTING MECHANISM

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FIG. 1

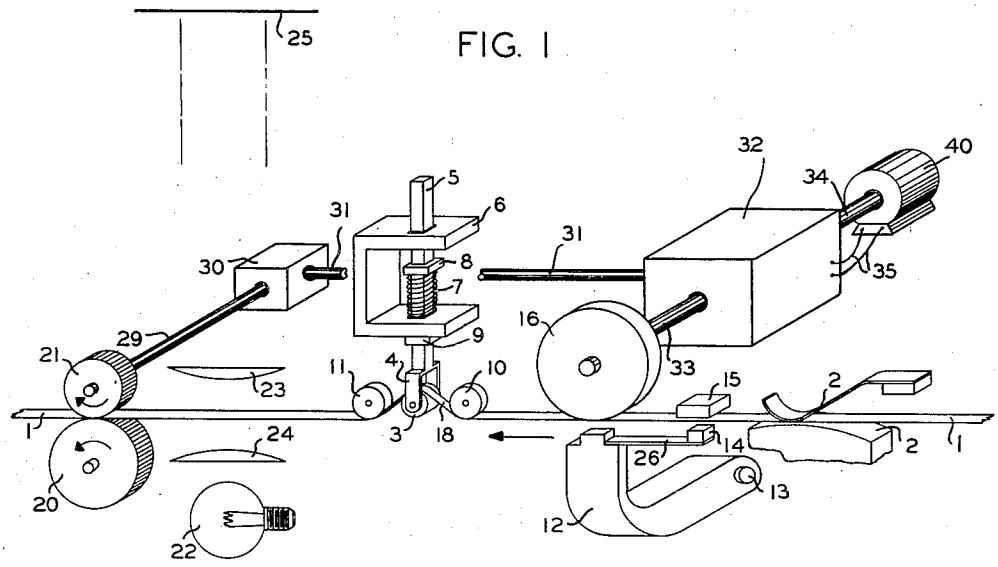
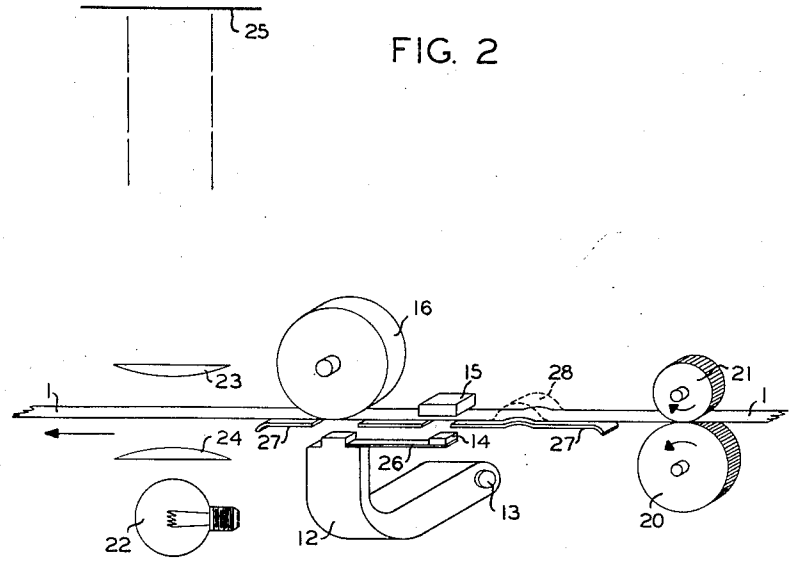


FIG. 2



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STOCK TICKER PROJECTING MECHANISM

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9 Claims. (Cl. 88—24)

My invention relates to apparatus for projecting writing or printed matter from a movable tape upon a surface in enlarged characters. The apparatus is particularly adapted to be used in connection with stock quotation projectors.

The main object of my invention relates to the method of controlling the movement of the tape to avoid a jerky or flickering motion of the projected characters.

The tape movement and the operation of the printing mechanism are controlled by a single source of motive power which may be in the form of an electric motor. The motor operates friction wheels for imparting a continuous motion to the tape as it passes through the projector system. That portion of the tape at the printing mechanism is momentarily stopped as each character is printed without interfering with the continuous motion of that part of the tape passing through the projector system.

The apparatus is designed to prevent a jerky motion of the characters which are projected upon the screen or surface of the projector system.

Various features of my invention will be noted from the description to follow.

My invention is illustrated in the accompanying drawing, wherein:

Fig. 1 shows the essential features of the recording device and projection system; and

Fig. 2 shows a modification of Fig. 1.

Referring to Fig. 1, the tape 1 is shown as moving in the direction of the arrow under the influence of the tape feeder friction rolls 20 and 21, which are continuously driven by a suitable motor 40.

The motor is provided with a shaft 34 for operating the printing mechanism and the shaft 34 is coupled to the shaft 31 which enters the gear box 30 where it is coupled to the shaft 29 for causing the operation of the friction rolls 21 and 20.

The printing mechanism for causing the operation of the type wheel 16 and print hammer 12 may be any standard type, such as disclosed in U. S. Patent No. 1,639,213, granted to F. G. Creed August 16, 1927.

However, I prefer to use a variation from the printing mechanism described in this invention, in which variation the code is made up of six or more selecting units and in which special code combinations are not used to cause the printer to shift from printing letter characters to printing numerals, or vice versa. With such a code, all characters, whether they be letters, numerals, or spaces, requiring equal length of time in transmission, can be made to follow each other at definite intervals of time and, therefore, the constant speed receiving printer motor which keeps the selecting mechanism in synchronism with the incoming electrical pulses can, in the interval of time allotted to each character, be made to advance the tape proper distance for recording the successive characters.

The motor 40 is automatically controlled to stop in case a prolonged interval occurs during the reception of signals for operating the printing mechanism. One form of mechanism for controlling the stopping of the motor is disclosed in U. S. Patent No. 1,834,349 to R. D. Salmon, granted December 1, 1931, as applied to the mechanism of the foregoing Creed patent. In this patent the circuit of a motor corresponding to 40 is automatically started upon the reception of signals and is caused to continue in operation while succeeding signals are being received, and is automatically stopped after the receipt of signals has ceased for a predetermined period. In other words the motor will continue in operation for a time after the receipt of signals has ceased. This time is utilized by my invention to advance the tape by means of the rolls 20 and 21 so the last character printed will appear in the projection system and be projected upon the screen.

The mechanism for operating the type wheel 16 and printer hammer 12 and also the motor control is designated by the block 32.

The tape 1, when in operation, passes between the type wheel 16 and the print hammer 12 which is pivoted at 13. When the print hammer is operated by the printing mechanism it lifts the friction stop 14 mounted on the spring 26 and forces the tape 1 against the block 15, causing the tape to momentarily stop while a character is being printed.

The projecting mechanism comprises a lamp 22, lenses 23, 24 and screen 25 upon which the characters printed on the tape are projected.

Interposed between the projector system and the ticker mechanism is a device for producing slack in the tape. The device comprises a U-shaped support 6 through which passes a slidable bar 5. The lower end of the bar is provided with a holder 4 for the roller 3 over which the tape 1 passes. The bar 5 is provided with a collar 8 and tensioned in an upward direction by the compressed spring 7, mounted within the U-shaped support 6. A stop 9 is fastened to the bar 5 to limit its upward movement under the influence of the spring 7.

During the operation of the device, when the print hammer 12 is in its normal position, as shown, the entire length of the tape 1 is continuously moved by the rolls 20 and 21. The tension of the spring 7 is such that the roller 3 lifts the tape upward to form a loop between the two rollers 10 and 11.

When a signal is received, the ticker mechanism is operated and the hammer 12 actuated

into its printing position against the tape 1 at the type wheel 16, and the stop 14 is forced against the tape 1 opposite the block 15, causing the tape to stop while the printing operation takes place.

When the tape is stopped at the type wheel, it, however, moves continuously through the projector system under the influence of the rolls 20 and 21. When the tape momentarily stops at the type wheel during the printing operation, sufficient strain is placed upon the tape by rolls 20 and 21 to cause the arm 5 to be drawn down by overcoming the tension of spring 7. The time consumed by the movement of the length of tape in the loop between rolls 10 and 11 is sufficient to allow for the printing time at the type wheel, and, consequently, that portion of the tape passing through the projector system does not stop and its movement is continuous. After the printing operation another loop is formed in the tape, due to the tension of spring 7.

Referring to Fig. 2, the parts corresponding to those of Fig. 1 bear the same reference characters. In Fig. 2, the tape 1, instead of being pulled through the ticker mechanism and projecting system, is pushed therethrough by the tape feeder or pusher rolls 20 and 21. The ticker mechanism and projector system is the same as described in connection with Fig. 1, but the loop in the tape in Fig. 2 is formed between the tape feeder rolls 20, 21 and the stop block 15.

When the print hammer 12 is in its unoperated position, as shown, the tape 1 is pushed continuously through the ticker mechanism and projector system. The platen is provided with a curved portion at 27 to aid in forming a loop in the tape during the printing period. When the hammer 12 is operated in response to a signal, that portion of the tape at the type wheel 16 and in the projector system momentarily stops. That portion of the tape between the friction stop 14, 15 and the rolls 20, 21 continues to move and, consequently, a loop 28 is formed. At the end of the printing period, that portion of the tape in the projection system moves forward with a rapid movement, due to the accumulated slack formed by the loop. This rapid motion prevents a blur of noticeable effect in the characters projected upon the screen 25.

While I have not shown the motor control in connection with Fig. 2, it is obvious that it may be applied as in Fig. 1.

If desired, the tape feeder rollers 20 and 21 may be driven by a second continuously operated motor having its speed regulated in a direct ratio to that of the motor 40. In this case the motor 40 would still be started and stopped by the remote control means while the second motor would operate continuously, whether or not the signals are being received by the printer.

From the foregoing it will be noted that during the operation of the device the tape is passed through the projecting system without creating a jerky effect in the projected characters, even though the tape is momentarily stopped during the printing operation.

What is claimed is:

1. In combination, a telegraph tape printer adapted invariably to print characters on a tape in response to received code combinations of uniform length, said printer having a normal and a printing position, means for feeding said tape continuously through said printer and a projecting system when said printer is in its normal position, means for converting the continuous movement of said tape through said printer into an intermittent movement when said printer moves from its normal to its printing position, and means for maintaining the continuous movement of one portion of said tape through said projecting system despite the intermittent movement of another portion of said tape through said printer.

2. In combination, a telegraph tape printer adapted invariably to print characters on a tape in response to received code combinations of uniform length, said printer having a normal and a printing position, means for feeding said tape continuously through said printer and a projecting system when said printer is in its normal position, means for converting the continuous movement of said tape through said printer into an intermittent movement when said printer moves from its normal to its printing position, and means for storing at least sufficient tape when said printer is in its normal position to cause the continuous movement of one portion of said tape through said projecting system despite the intermittent movement of another portion of said tape through said printer.

3. In combination, a telegraph tape printer having a type wheel and a hammer invariably operated to print characters on a tape in response to code combinations of uniform length received by said printer, said printer having a normal and a printing position, a tape feeder for feeding said tape continuously through said printer and a projecting system when said printer is in its normal position, means actuated by said hammer, when said printer moves from its normal to its printing position, for stopping said tape at the printer, and means for maintaining the continuous movement of one portion of said tape through said projecting system despite the intermittent movement of another portion of said tape through said printer.

4. In combination, a telegraph tape printer adapted invariably to print characters on a tape in response to received code combinations of uniform length, said printer having a normal and a printing position, a tape feeder for feeding said tape continuously through said printer and a projecting system when said printer is in its normal position, means for causing said tape feeder to feed said tape intermittently through said printer and other means for causing said tape feeder to feed said tape continuously through said projecting system when said printer moves from its normal to its printing position.

5. In combination, a telegraph tape printer adapted invariably to print characters on a tape in response to received code combinations of uniform length, said printer having a normal and a printing position, a tape feeder for feeding said tape continuously through said printer and a projecting system when said printer is in its normal position, means for stopping said tape at said printer when the latter moves from its normal to its printing position, and means for storing at least sufficient tape when said printer is in its normal position to cause said tape feeder to feed said tape continuously through said projecting system when said printer is in its printing position.

6. In combination, a telegraph tape printer adapted invariably to print characters on a tape in response to received code combinations of uniform length, said printer having a normal and a printing position, a tape feeder, exerting

a continuous force on said tape, for feeding the latter continuously through said printer and a projecting system when said printer is in its normal position, means for converting the continuous movement of said tape through said printer into an intermittent movement when said printer moves from its normal to its printing position, and means for maintaining the continuous movement of one portion of said tape through said projecting system despite the intermittent movement of another portion of said tape through said printer, comprising means for exerting a tension on said tape sufficient to form a loop therein when said printer is in its normal position but insufficient to maintain said loop against the force exerted on said tape by said tape feeder when said printer is in its printing position.

7. In combination, a telegraph tape printer adapted invariably to print characters on a tape in response to received code combinations of uniform length, said printer having a normal and a printing position, a tape feeder for feeding said tape continuously through said printer and a projecting system when said printer is in its normal position, means for stopping said tape at said printer when said printer moves from its normal to its printing position, and means for maintaining the continuous movement of one portion of said tape through said projecting system despite the stopping of another portion of said tape at said printer, comprising means for exerting a tension on said tape sufficient to form a loop therein when said printer is in its normal position but insufficient to maintain said loop against the force exerted on said tape by said tape feeder when said printer is in its printing position.

8. In combination, a telegraph tape printer adapted invariably to print characters on a tape in response to received code combinations of uniform length, said printer having a normal and a printing position, a tape feeder for feeding said tape continuously through said printer and a projecting system when said printer is in its normal position, and means for causing said tape feeder to feed said tape intermittently through said printer when the latter moves from its normal to its printing position, said last-mentioned means cooperating with said tape feeder to cause the latter to feed said tape in a visually continuous manner through said projecting system when said tape printer leaves its printing position.

9. In combination, a telegraph tape printer adapted invariably to print characters on a tape in response to received code combinations of uniform length, said printer having a normal and a printing position, a tape pusher for feeding said tape continuously through said printer and a projecting system when said printer is in its normal position, and means for causing said tape pusher to feed said tape intermittently through said printer when the latter moves from its normal to its printing position, said last-mentioned means and said tape pusher cooperating to form a slack in said tape which causes said tape pusher to push said tape through said projecting system in a visually continuous manner when said printer moves from its printing to its normal position.

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