

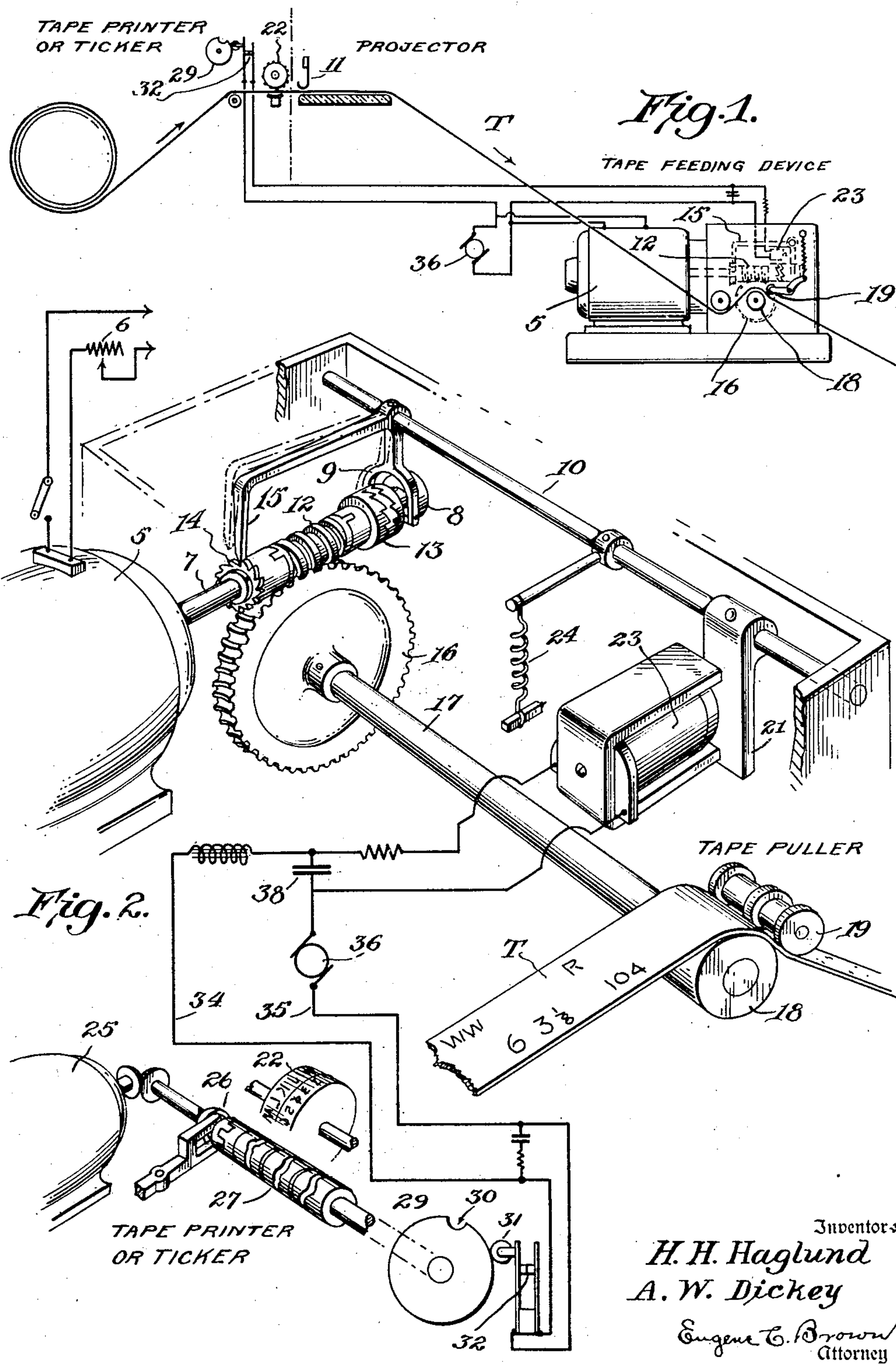
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H. H. HAGLUND ET AL

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TAPE FEED MECHANISM FOR PRINTING TELEGRAPH APPARATUS

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Inventors
H. H. Haglund
A. W. Dickey
Eugene C. Brown
Attorney

UNITED STATES PATENT OFFICE

HAKON H. HAGLUND, OF FLUSHING, AND ALBERT W. DICKEY, OF MOUNT VERNON, NEW YORK, ASSIGNORS TO THE WESTERN UNION TELEGRAPH COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

TAPE FEED MECHANISM FOR PRINTING TELEGRAPH APPARATUS

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This invention relates to the feeding of the tape through printing telegraph apparatus and is especially useful in connection with stock tickers in which it is desirable to eliminate jerky motion of the tape.

Stock or news tickers consist of well known mechanism for printing the quotations or other news on a paper strip or tape and delivering the printed strip for observation. In order that a large number of people may simultaneously observe the tape it has been customary in recent years to pass the tape from the ticker through a projection machine which projects the quotations on a screen. It is desirable to eliminate any delay between the printing of the quotation and its appearance on the screen. It has heretofore been proposed to accomplish this purpose by mounting the ticker on top of the projector and feeding the tape vertically downward through the projector. The tape was fed through the ticker and delivered therefrom by means of the usual tape-feed device of the ticker, either a ratchet wheel or a knurled feed roller, which advance the tape by short intermittent steps. Several schemes have been employed to overcome the undesirable jerky intermittent motion of the ticker-fed tape. The most satisfactory of these schemes employs a tape puller operated by an electric motor properly geared to a knurled roller with provision for adjusting the speed to substantially that of the tape as it is ejected from the ticker. A light leaf spring bears on the tape so that a loop is formed between the ticker and the projector to absorb the jerky motion. A switch lever having its free end resting in the loop controls the contacts in the motor circuit. This arrangement is disclosed in patent to R. F. Dirkes No. 1,684,309. In all such devices, however, in which the tape-puller is controlled by the tape ejected by the operation of the ticker, an interval occurs between the printing and the exposure of the tape which it is desirable to avoid. Moreover during periods when the stock market is sluggish, it frequently happens that the ticker will stop for one or more minutes so that projection of the quotation which is within the loop or which has not fed suffi-

ciently to actuate the take-up device, will be correspondingly delayed.

The object of our invention is to eliminate the necessity for a loop or slack in the tape for the control of a take-up device and to provide a means for actuating the tape independently of any feed device in the ticker so that the projector may be positioned closely adjacent to the ticker, thereby reducing the distance between the type and the projector to a minimum.

In the following description we shall refer to the accompanying drawings in which—

Figure 1 is an explanatory diagram to illustrate the operation of our invention; and Figure 2 is a diagrammatic illustration, partly in fragmentary perspective, showing an embodiment of our invention.

The method which we have devised involves a telegraph tape printer which employs a uniform code of positive and negative impulses such as the well-known six-unit code. It cannot be applied to tickers in which there is a variable time interval between successive characters such as the self-winding ticker.

We dispense with the feeding mechanism in the ticker and operate the tape through the ticker and across the exposure area of the projector by the direct pull of the tape-puller which is actuated by a continuously operating electric motor. The tape feeding device or puller is provided with a clutch mechanism having an electromagnetic device which is controlled by an element or part of the ticker making a cyclic movement in response to each printed character. The initial movement of this element closes a circuit which actuates said electromagnetic device and engages the clutch of the tape feeding device.

The tape feeding device or puller comprises a continuously operating electric motor 5 connected to a suitable source through a speed regulating resistance 6, the shaft 7 having a clutch member 8 splined thereon and movable longitudinally by means of a yoke arm 9 secured to a rock-shaft 10. A worm gear 12 carrying a clutch member 13 at one end and a ratchet 14 at the other end

is loose on said shaft. A dog 15 carried by the yoke arm 9 engages the ratchet 14 when the clutch members 8 and 13 are disengaged to stop the worm gear and lock it against movement. The worm 12 meshes with the gear 16 on the shaft 17 which carries the tape pulling roller 18. A spring pressed idler friction roller 19 cooperates with the roller 18 to grip the tape.

The rock-shaft 10 carries an armature 21 which is attracted by the magnet 23 to engage the clutch members 8 and 13, and disengage the locking dog 15, the parts being returned by the spring 24 when the magnet is deenergized.

The stock ticker employed may be one of the well-known tape printers which is actuated in response to a uniform code of combinations of positive and negative impulses. A tape printer of this type is illustrated conventionally by the typewheel 22, motor 25, operating through the clutch 26 to drive the cam selector drum 27. A circular cam 29 having a notch 30, carried by the selector shaft by some other element which makes one revolution or cycle for each character printed, engages a roller 31 to maintain the contacts 32 of the switch closed during the reception of the impulses of the code character which causes the ticker to print the selected character. The closing of the switch contacts closes a circuit 34, 35 from the generator 36 to the magnet 23 which rocks the shaft 10, throwing in the clutch 8, 13 to thereby drive the shaft 17 and pull the tape T through the ticker, under the presser spring 11 and across the projector. As the puller motor 5 operates continuously, there is no delay and the tape is moving when the character is printed. The interval of time required for the type to impress the character is so very short relative to the motion of the tape that no smudging or blurring occurs.

When the stock quotations follow in rapid succession, which is the normal condition during the business hours, the tape is moved continuously and smoothly without any fluctuation. For this purpose we provide a condenser 38, which discharges when the contacts 32 open momentarily as the switch roller 31 enters the notch 30, the condenser current serving to maintain the energy of the magnet 23 and hence there is no fluctuation in the rotation of the tape puller shaft 17. When the stock quotations cease for an interval somewhat greater than the time interval represented by the passage of the notch 30, the condenser loses its charge as the contacts remain open, the selector cam shaft stopping with the roller 31 in the notch 30. The deenergizing of the magnet 23 permits the armature 21 to retract and the spring 24 rocks the shaft 10 to disengage the clutch and move the dog 15 into engagement with the ratchet 14.

The organization described above provides a means for feeding the tape through the ticker and projector at a uniform constant rate during the reception of stock quotations, the control being independent of the tape and permitting the projection to take place immediately after the tape has received the impression of the type in the ticker.

The tape feed is controlled by an element or part of the ticker which operates through a cyclic movement in response to each received code combination of electrical conditions causing the ticker to print a character on the tape.

We claim:

1. In combination with a telegraph tape printer adapted to operate in response to received code combinations of electrical conditions, means for feeding the tape through the printer, comprising a continuously operating motor, a friction roller in engagement with the tape, a driving connection between said motor and said roller including a clutch device, an electromagnet controlling the engagement and disengagement of said clutch device, a circuit connecting said magnet with a source of power and including a switch actuated by an element in said printer which operates in response to each code combination.
2. In news exhibiting apparatus comprising a telegraph printing mechanism selectively responsive to received code combinations of electrical conditions for recording data upon a movable tape, means for pulling the tape through said printing mechanism embodying a continuously operating motor, a tape engaging roller or pulley and an electro-magnetically controlled clutch operating in response to each actuation of said printing mechanism to connect the motor shaft with said roller.
3. In news exhibiting apparatus comprising a telegraph printing mechanism selectively responsive to received permutation code combinations of current impulses for recording data upon a movable tape, and embodying an element making one cyclic movement for each received code combination, means for pulling the tape through said mechanism comprising a motor-actuated tape engaging device controlled by the cyclic movement of said element.
4. In apparatus as set forth in claim 3, an energy-storing device for maintaining the continuous operation of said motor-actuated device during the interval between the reception of closely succeeding code combinations.
5. In news exhibiting apparatus embodying a telegraph tape printer selectively responsive to received code combinations of current impulses for recording data upon a movable tape, means for pulling the tape through the printer, comprising a continu-

ously operable electric motor, a tape drive shaft carrying a frictional tape-engaging member, gearing connected to said drive shaft, a clutch having an electromagnetic control device to connect said gearing to said motor, and a switch actuated by said printer to close a circuit to said control device.

6. In an apparatus set forth in claim 5, a condenser in said circuit in shunt to said electromagnetic device acting to prevent its deenergization during a momentary opening of said switch.

In testimony whereof we affix our signatures.

HAKON H. HAGLUND.
ALBERT W. DICKEY.