June 12, 1945. R. STEENECK 2,377,978

TELEGRAPH TAPE TRANSMITTER

Filed Sept. 1, 1944

FIG. 1

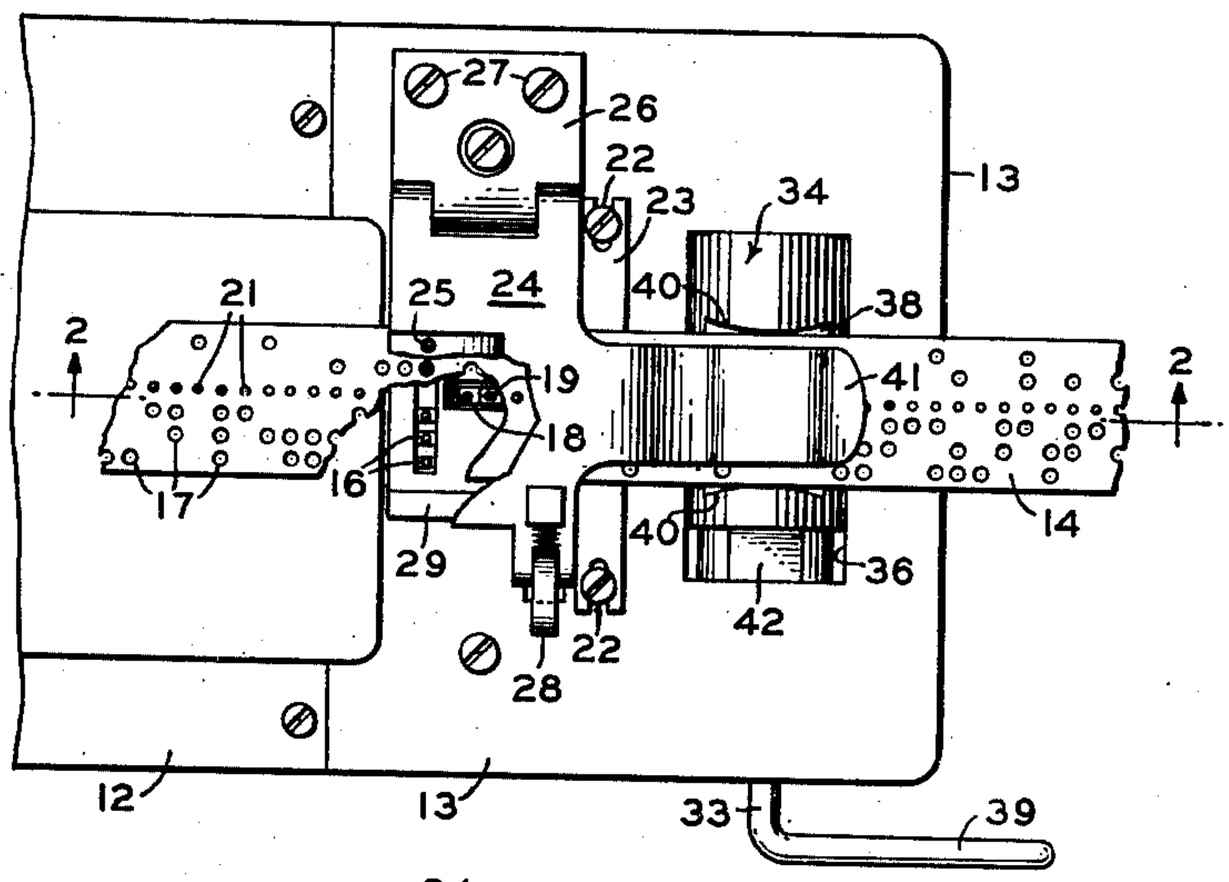


FIG. 2

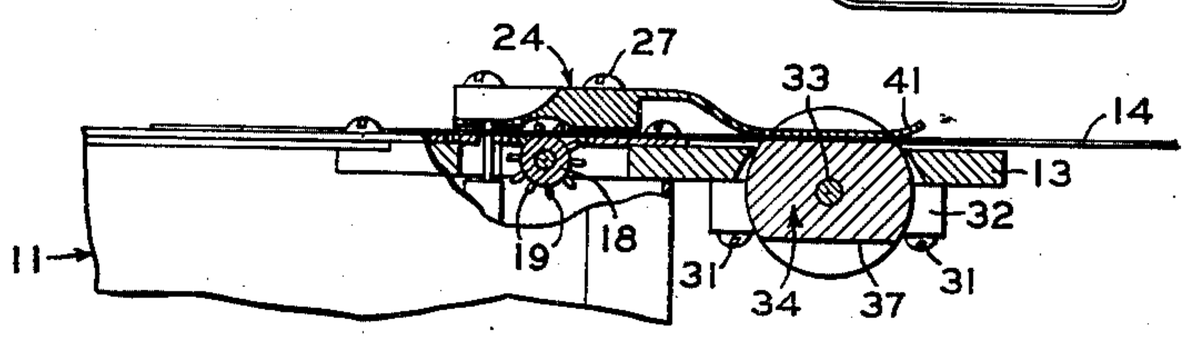


FIG. 3

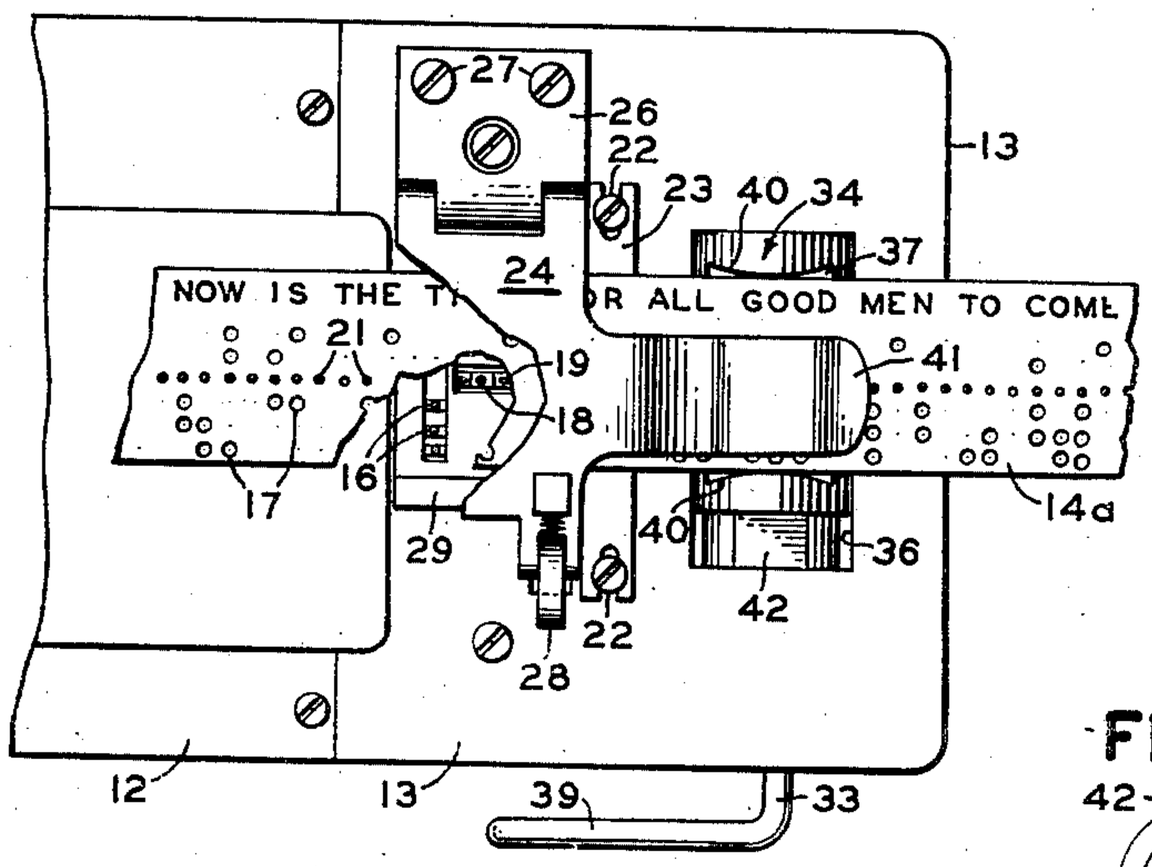


FIG. 4

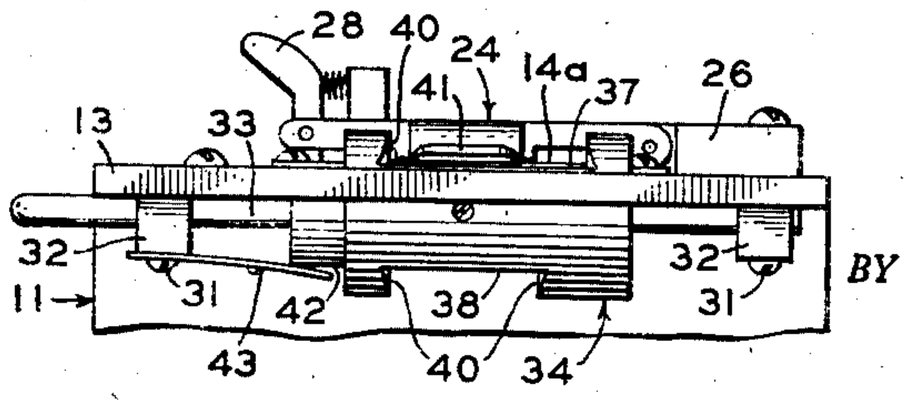
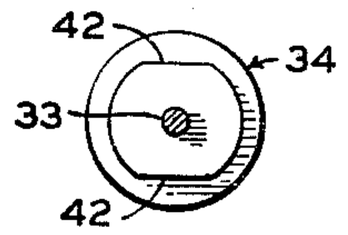


FIG. 5



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TELEGRAPH TAPE TRANSMITTER

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11 Claims. (Cl. 178—17)

The present invention relates to telegraph tape transmitters, and more particularly to improvements in tape guiding arrangements for such transmitters.

It is often desirable to store telegraph signals prior to their transmission over a line circuit, and for this purpose relatively narrow perforated paper tapes have been found quite satisfactory. Such tapes, when employed to store Baudot or permutation type signals, are usually arranged in such a manner that successive transverse sections thereof are perforated in accordance with character representing groups of impulses. If the tape is employed to store signals of the five-unit type, wherein characters are represented by five permuted impulses of one line condition or another, each transverse section of the tape will have five code storing positions and these will be selectively perforated to represent one line condition of the stored impulses of a code group and the absence of a perforation to represent the impulses the other line condition.

Tapes of the above type may be prepared from a manually operated keyboard perforator or, as is usually the case at repeating or telegraph switching centers, by a reperforator operating in response to received signals. Such keyboard perforators are well known in the art, and the reperforators may be of the type disclosed in U. S. patents to Dirkes et al., Nos. 1,931,791 and 2,174,731. The second mentioned one of said patents discloses a reperforator which, in addition to perforating the tape in accordance with received signals, also prints characters thereon which represent in printed form the received signals. Such printed characters in the above type of reperforator are in the same transverse section as their representative perforation and hence require a slightly wider tape, other things being equal, than perforators or reperforators that only effect a perforating operation.

The perforated tapes are employed to control automatic tape transmitters which effect transmission of permutation groups of signals representing the perforations in the tape. Such type of transmitters are illustrated in the patents to G. R. Benjamin, No. 1,298,440, and H. Angel et al., No. 2,172,269, and include means for sensing the perforations in the tape and advancing means therefor. For proper operation of the transmitter the tapes have to be accurately guided therethrough so that the sensing elements sense their respective perforations and the feeding of the tape can be effected without tearing or mutilation thereof. The feeding is usually accomplished by feed means engaging feed holes that are perforated concomitantly with each character representing perforation.

In tape transmitters available heretofore a printed and perforated tape is too wide for use in a tape transmitter designed for use with a tape having only perforations therein and likewise, a tape transmitter arranged for operation in conjunction with a wide printed and perforated tape cannot properly employ a narrower tape of the type having only perforations therein. Accordingly, it has been necessary heretofore, when desiring to transmit from both types of tape over a common circuit, to provide two transmitters, one for each type of tape.

It is therefore one of the objects of the present invention to provide an arrangement whereby a single tape transmitter of the type noted above can easily and quickly be adapted to operate and be controlled in conjunction with tapes of different widths.

The feed holes perforated in the tape in conjunction with the character perforations sometimes vary with respect to the edges of the tape in such a manner that tapes prepared on different perforators of either the keyboard type or the reperforator type have the feed holes different distances from the edges thereof. The tapes are guided through the transmitters by guide means on opposite sides of the feed means and it is often necessary to adjust the guide means of the transmitter so that the different tapes can be used.

In connection with the above, it is a further object of the present invention to provide tape guiding means for a tape transmitter that does not require adjustment to enable the transmitter to employ tapes wherein the feed holes are different distances from the edges of the tape.

The above and further objects of the present invention will be more apparent hereinafter when taken in conjunction with the following detailed description thereof wherein reference is made to the accompanying drawing, in which:

Fig. 1 is a plan view of a part of a tape transmitter with the elements of the present invention associated therewith;

Fig. 2 is a vertical transverse sectional view taken substantially on line 2—2 of Fig. 1;

Fig. 3 is a view similar to Fig. 1, showing the transmitter associated with a printed and perforated tape;

Fig. 4 is an end view of the elements shown in Fig. 3; and

Fig. 5 is a detail view of one of the elements of the tape guiding means.

Referring to the drawing, a part of a tape transmitter is shown and indicated generally by reference numeral 11 and while the tape transmitter 11 may be essentially of the type disclosed in the above mentioned Benjamin patent, it will be obvious that the invention is in no manner limited in application to this particular type of transmitter and the principle thereof may be applied to various other types. The tape transmitter 11 has a top surface composed of plates such as 12 and 13 which form a surface over which a tape such as 14, Figs. 1 and 2, is arranged to pass. The plate 13, as shown in Fig. 2, extends to the right out beyond the main body portion of the transmitter and forms a support for the tape and some of the guiding elements therefor.

The tape transmitter includes a series of sensing elements or pins 16 arranged to move vertically and sense perforations, such as 17, in the control tape 14. Also included in the tape transmitter disclosed is a feed wheel 18 having radially extending pins 19 adapted to engage feed holes 21 in the control tape whereby the tape is advanced as the feed wheel 18 is rotated. Secured to the upper side of the plate 13 by screws 22 is a plate 23 which has appropriate openings therein through which the upper ends of the sensing pins 16 extend and also some of the pins 19 on the feed wheel 18.

To hold the tape 14 in operative relation with the sensing pins 16 and the feed wheel 18, a hinged latch 24 is provided. The latch is pivotally attached to a member 26 secured by screws 27 to the top of the plate 13. With the latch in a down position such as that shown in Figs. 1 and 2, the same holds the tape in operative relation with the sensing pins 16 and feed wheel 18 and is latched in this position by means of a latching element 28. Holes 25 in the latch 24, in alignment with the pins 16, permit the ends of the pins to pass through perforations in the tape to control the transmitter in accordance with the perforations. A raised portion 29 on the plate 23 holds the main portion of the latch 24 a slight distance above the center portion of the plate 23 and thereby provides a passageway between the underside of the latch and the top side of the plate 23 for the tape 14. This passageway is considerably wider than the widest tape to be used in the transmitter and also slightly greater than the thickness of the tape so that the tape may move freely therethrough.

Secured to the underside of the plate 13, by screws such as 31, as best shown in Figs. 2 and 4, is a pair of blocks 32 which pivotally supports a rod 33. Secured to the rod 33 for rotation therewith adjacent its center is a cylindrically shaped member indicated generally by reference numeral 34, a portion of which extends up through a rectangular recess 36 in the plate 13. The cylindrical member 34 has on opposite sides in the main cylindrical portion thereof a pair of flats 37 and 38, Fig. 4. As best shown in Figs. 2 and 4, the depth of the flats 37 and 38 is substantially equal to the greatest distance the cylindrical member 34 extends above the top of the plate 13. Accordingly when the cylindrical member 34 is in the position shown in Fig. 2 or is rotated 180° from this position, one or the other of the flats 37 or 38 will be in substantially the same plane as the top of the plate 13. The flats 37 and 38 as shown in Fig. 4 extend different distances along the axis of the cylindrical member 34.

The rod 33 has at its forward end, Figs. 1 and 3, a radially extending handle portion 39 whereby the rod and the cylindrical member 34 secured thereto may be rotated. When the tape transmitter 11 is to be controlled by perforations in a narrow tape such as 14, Fig. 1, the cylindrical member 34 is rotated to bring the shorter flat 38 thereon to the top. The shortest dimension of the flat 38 is slightly greater than the width of the narrow tape 14 and permits the tape to pass between the ends without binding or excessive drag. Since the ends of the flat 38 extend up beyond the surface of the plate 14, the said ends serve as guides for the tape in its movement through the transmitter.

When the transmitter is to be controlled by a wider tape such as 14*a*, Fig. 3, which as shown may have printed characters thereon as well as the characters representing perforations, the cylindrical member 34 is rotated by means of the handle 39 on the rod 33 to bring the wider flat 37 to the top. The narrowest dimension of the wider flat 37 is slightly greater than the width of the wide tape 14*a* and therefore with the cylindrical member 34 in the position shown in Fig. 3, the ends of said flat form guides for the tape 14*a*. Accordingly all that is necessary when it is desired to change the controlling tape in the transmitter 11 from one width to another is to rotate the cylindrical member 34 to bring the proper flat 37 or 38 to the top and this may be done easily and quickly.

The latch 24 has a rightwardly extending section 41 which extends over the cylindrical member 34 into the recesses formed therein by virtue of the flats 37 and 38 and this section, when the latch is down, holds the tapes 14 and 14*a* in the recesses of the cylindrical member 34 that are formed by the flats 37 and 38. As will be noted, the edges 40 of the flats 37 and 38 are slightly rounded away from the tapes and these rounded edges are the only parts of the transmitter adapted to engage the edges of the tapes 14 and 14*a*. Accordingly, the tapes when in the transmitter may pivot or swivel in the plane thereof to a limited degree and still be guided by the curved surfaces 40 at the ends of the flats. This pivoting of the tapes permits the pins 19 of the feed wheel 18 which is spaced from the cylindrical member 34 to engage the feed holes 21 in tapes where the feed holes 21 are located different distances from the edges of the tapes. Accordingly the feed wheel can not cause the tape to jam or bind against the guides therefor as is the case in transmitters provided heretofore wherein the tape is guided by guides so located as to engage the tape in transverse sections common to the feed wheel. By guiding the tapes in such a manner as to permit swiveling the planes thereof about points spaced away from the feed means in the direction of travel of the tapes, the location of the feed holes in the tape is not as critical as is the case where the tape guides are located opposite the feeding means. Thus no readjustment of the tape guides of the transmitter are required to permit the same to use tapes with feed holes different distances from the edges.

As best shown in Figs. 4 and 5, the cylindrical member 34 has on one end thereof an additional pair of flats such as 42 substantially parallel to the flats 37 and 38. A spring member 43 resiliently engages the end of the cylindrical member and cooperates with the flats 42 to jockey or resiliently hold the cylindrical member 34 in either one of its operative positions.

Although the invention has been shown and described as being adapted to guide tapes of two different widths through a transmiter, it will be obvious that a greater number of surfaces or flats such as 37 and 38 could be arranged on the cylindrical member 34 to enable the same to guide tapes of more than two different widths. Furthermore, a transmitter provided with tape guiding means constructed in accordance with the present invention can employ tapes wherein the location of the feed holes with respect to the edges of the tape vary without readjustment of the guiding means.

It will also be obvious that various other modifications of the invention may be made without departing from the spirit or essential attributes thereof and it is desired, therefore, that only such limitations be placed thereon as are specifically set forth in the appended claims.

What is claimed is:

1. In combination, a telegraph tape having signal representing indicia and feed holes therein, a telegraph tape transmitter having means engaging said feed holes to advance said tape and means for sensing the signal representing indicia therein, a tape guiding member on said transmitter for guiding said tape relative to said feed and sensing means and means for changing the position of said guiding member to enable the same to guide a tape of different width through said transmitter.

2. In combination, a telegraph tape having signal representing indicia and feed holes therein, a telegraph tape transmitter having means engaging said feed holes to advance said tape and means for sensing the signal representing indicia therein, a movable member on said transmitter having a plurality of pairs of guiding surfaces adapted to engage the edges of tapes to guide the same through said transmitter, and means for moving said member to bring said pairs of tape surfaces one pair at a time into tape guiding position whereby said transmitter is adapted to be controlled by different width tapes.

3. In a telegraph tape transmitter for transmitting signals representing perforations in a tape, tape advancing means, a plurality of individual tape guiding means, said means being operative to guide tapes of different widths relative to said sensing and feeding means and means for bringing said tape guiding means individually into tape guiding position on said transmitter.

4. In combination, a telegraph tape having signal representing indicia and feed holes therein, a telegraph tape transmitter having means engaging said feed holes to advance said tape and means for sensing the signal representing indicia therein, a rotatable member with the axis thereof disposed substantially transversely of said tape, said member having a plurality of pairs of tape guiding surfaces and means for rotating said member to bring various ones of said pairs of surfaces one pair at a time into guiding relation with tapes associated with said sensing and feeding means, said pairs of guiding surfaces being separated by different distances whereby said member guides tapes of different width through said transmitter.

5. In a telegraph tape transmitter for transmitting signals representative of perforations in a control tape, said transmitter including tape sensing and tape advancing means, a multi-positionable member having a plurality of separate tape guiding means thereon, each of said separate tape guiding means being operative to guide a tape of different width relative to said tape sensing and tape advancing means and means for positioning said multi-positionable member to bring said separate tape guiding means one at a time into tape guiding position relative to said tape sensing and advancing means.

6. In a telegraph tape transmitter for transmitting signals representative of perforations in a control tape, said transmitter including tape sensing and tape advancing means, a multi-positionable member having a plurality of separate tape guiding means thereon, each of said separate tape guiding means being operative to guide a tape of different width relative to said tape sensing and tape advancing means, means for positioning said multi-positionable member to bring said separate tape guiding means one at a time into tape guiding position relative to said tape sensing and advancing means and means for biasing said member in each of said plurality of tape guiding positions.

7. In a telegraph tape transmitter for transmitting signals representative of perforations in a control tape, said transmitter including tape sensing and tape advancing means, a rotatable member having a plurality of pairs of tape guiding surfaces, said pairs of surfaces being adapted to guide tapes of different widths relative to said advancing and sensing means and means for rotatively positioning said member to bring said tape guiding surfaces one pair at a time into tape guiding position.

8. In a telegraph tape transmitter for transmitting signals representative of perforations in a control tape, said transmitter including tape sensing and tape advancing means, tape guiding means spaced from said tape sensing and advancing means relative to the direction of movement of tapes through said transmitter, said guiding means having a pair of curved surfaces curving away from opposite edges of the tape therebetween, said curved surfaces serving to guide said tape relative to said sensing and advancing means and by the curvature thereof permitting limited swiveling movement of said tape in the plane thereof with the pivot for said swiveling movement being between said curved tape guiding surfaces.

9. The combination as set forth in claim 8 wherein said tape guiding means includes a plurality of pairs of curved tape guiding surfaces located different distances apart and means for bringing said pairs of surfaces one pair at a time into tape guiding positions whereby tapes of different widths may be guided through said transmitter.

10. In a telegraph tape transmitter for transmitting signals representative of code perforations in a tape, said transmitter including a substantially flat surface over which tape is adapted to pass and having perforation sensing and tape advancing means, tape guiding means having a plurality of pairs of guiding surfaces adapted to engage the edges of a tape to guide the same, said guiding surfaces being movable one pair at a time into tape guiding position with respect to the tape passing over said flat surface, and means including the different distances between different pairs of tape guiding surfaces included in said tape guiding means and the movability thereof one pair at a time into tape guiding posi-

tion to adapt said transmitter for control by different width tapes.

11. In a telegraph tape transmitter for transmitting signals representative of code perforations in a tape, said transmitter including a substantially flat surface over which said tape is adapted to pass and having perforation sensing and tape advancing means adapted to operate on said tape, a tape guiding member having a plurality of different width tape guideways therein and means for positioning said member to bring said guideways one at a time into the plane of said flat surface with said guideways in position to guide tape for said tape sensing and advancing means whereby tapes of different widths may be correctly guided over said flat surfaces and employed to control said transmitter.

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