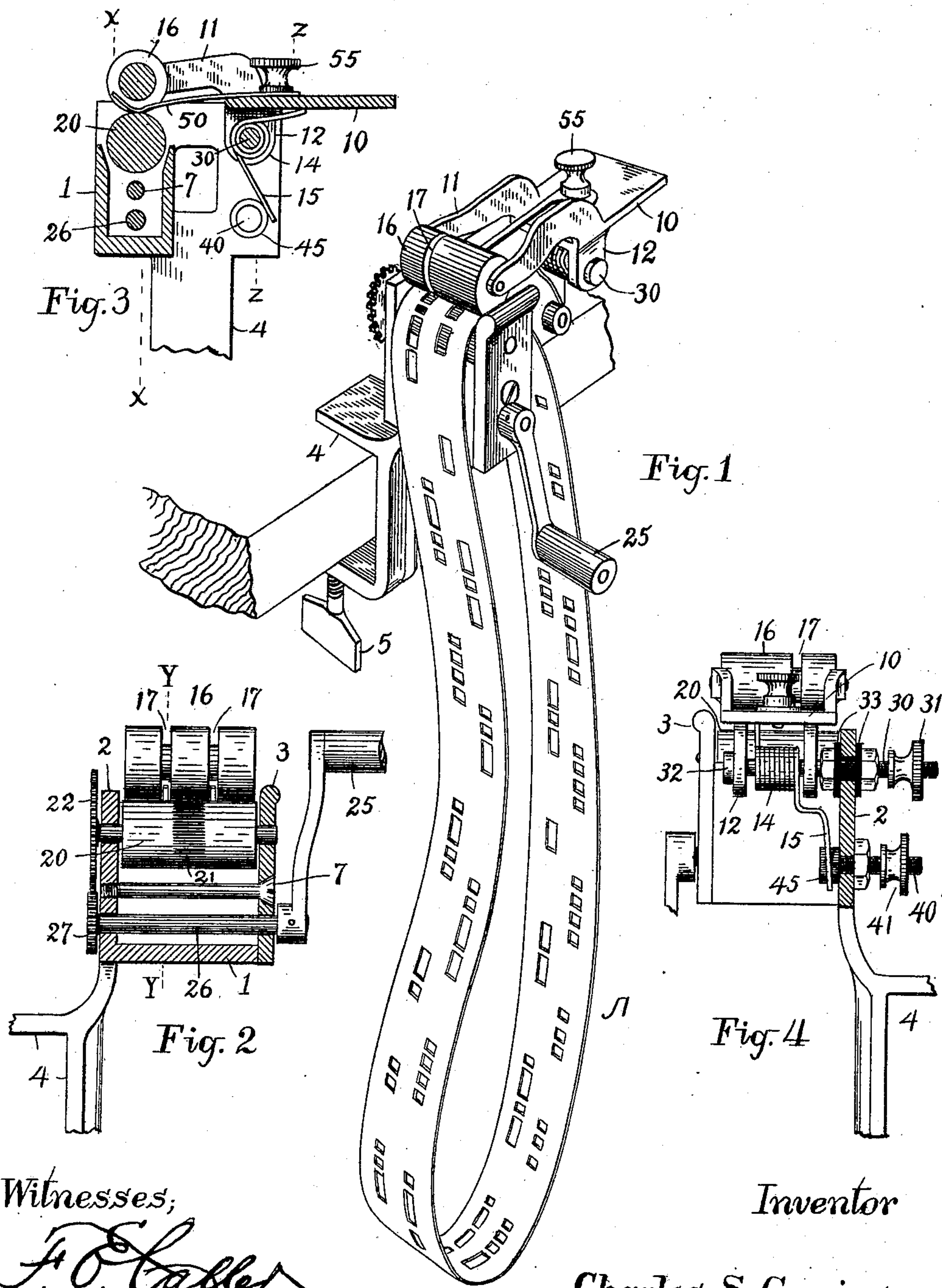


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TRANSMITTER FOR EDUCATIONAL PURPOSES.

(Application filed Apr. 6, 1901.)

(No Model.)



Witnesses;

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TRANSMITTER FOR EDUCATIONAL PURPOSES.

SPECIFICATION forming part of Letters Patent No. 683,171, dated September 24, 1901.

Application filed April 6, 1901. Serial No. 54,738. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. COMINS, of Quincy, in the county of Norfolk, State of Massachusetts, have invented certain new and useful Improvements in Transmitters for Educational Purposes, of which the following is a full, clear, and exact description.

In learning telegraphy sufficiently to "read by ear," as it is termed, it is essential that the student shall not be aware of what particular words or letters are being received except as he recognizes them by the sound made by the instrument. Where there are two or more students working together, this is easily accomplished; but for a single learner to act both as receiver and transmitter there can of course be no receipt of unknown messages except through the aid of some automatic transmitting device. In a companion application of mine, Serial No. 10,223, I have set forth an automatic transmitter in which a perforated non-conducting tape is moved between a spring-tongue and a conducting-body, which tongue and body compose the terminals of an electric circuit, including a receiver, and so enable the student to transmit unknown messages to himself.

My present invention differs therefrom in certain particulars set forth below and illustrated in the drawings, forming part of this specification, in which—

Figure 1 is a perspective view of my complete transmitting device. Fig. 2 is a sectional view thereof through the line X X in Fig. 3, but slightly modified to the extent of forming the roller 16 with two grooves instead of one. Fig. 3 is a sectional view of the same through the line Y Y in Fig. 2. Fig. 4 is a sectional view through the line Z Z in Fig. 3.

The body of the transmitter is formed with a pair of clamping-jaws 4 and a thumb-screw 5 for enabling the device to be firmly secured to a table or shelf, and said body consists of a shell 1, the side frame 2, and the plate 3, fixed to the shell by means of the screw 7. Between said plate and side frame is the cylinder 20, having the axis revolubly supported in said parts, having the spur-gear 22 fixed upon the projecting end of said axis. Meshing with the said gear 22 is a pinion 27, fixed on the shaft 26, the opposite end of which is provided with the crank-handle 25 and by

means of which said cylinder is revolved. Elastically pressed upon said cylinder 20 is a roll 16, between which cylinder and roll is introduced the endless tape A, having two rows of perforated Morse characters. By turning the crank-handle 25 the cylinder 20 is caused to feed the tape and the spring-finger 50, which follows one of the rows of perforations, to make and break the circuit in the desired manner. My means for elastically pressing the roll 16 upon the cylinder 20, and thereby insuring that the tape A shall be fed by the rotation of said cylinder, consist of the clip 10, having ears 12, pivoted on the bolt 30, arms 11, rigidly projecting from said clip and revolubly carrying said roll, and the spring 14, whose lower end rests against the insulating-collar 45 of the binding-post 40. The spring-finger 50 is secured to the clip 10 by the thumb-screw 55, inserted through the eye 52 of said finger and tapped into the clip. As shown in Fig. 1, the spring-finger 50 is offset with reference to its eye 52, and the groove 17, designed therefor in the roll 16, is similarly set nearer one end of the roll to coincide with one of the two rows of perforations in the tape A. The object of this is as follows: In the first place it should be noted that the width of the tape is substantially equal to the distance between the plate 3 and side frame 2 and is hence kept from lateral shifting during its passage beneath the spring-finger 50. Moreover, said tape being formed with two rows of perforations at equal distances from its edges either of said rows can be brought into play with said finger by simply turning the tape over, such reversal of the tape being permitted by pressing down upon the clip 10, thereby raising the roll 16 and so enabling the tape to be removed from between the said roll and the cylinder 20 and then to be returned after the desired manipulation. Inasmuch as practically all the Morse characters when turned end for end form some other character, figure, or punctuation-mark, by thus turning the tape end for end as well as reversing it I can produce four different rows of perforations from the single two-rowed endless tape when words are not being sent. The spring-finger 50 being one terminal of an electric circuit and the cylinder 20 being the other, the circuit-wires are put

into communication with the respective parts in the following manner: The bolt 30, upon which the clip 10 is pivoted, although rigidly supported by the side frame 2, is insulated therefrom by the insulation 33, (shown in Fig. 4,) while the binding-post 40 is fastened to said side frame without separating insulation. Hence the spring-finger, the clip, and the bolt, while in electric connection with each other, are insulated from the side frame and the cylinder 20. The circuit-wires being secured to said bolt and binding-post by the nuts 31 and 41, respectively, the circuit can only be closed when the spring-finger drops through a perforation in the tape and contacts with the cylinder. To insure that there shall be no accidental closing of the circuit by contact between the roll 16 and the plate 3 or side frame, I prefer to form said roll of hard rubber or other non-conducting substance.

I have discovered that a single spring-finger is liable to be kept from perfect contact with the cylinder on account of fine particles of dust or bits of fiber or lint, so that instead of every dot and dash being perfectly sounded a dot might be neglected or a dash divided into two dots. To prevent this, I have formed the spring-finger with a plurality of contacting ends and made the perforations wide enough to accommodate the same. In this way the fleck of dust or lint which supported one finger-point would hardly be able to affect the other and so a true sound is always transmitted.

The reason for my use of a separated crank-handle and the gear connection thereof with the cylinder 20 is twofold—first, to enable the crank-handle to be turned in the natural direction with the hands of a watch, and, second, to permit of the crank being turned considerably faster than the cylinder, and hence insuring a greater degree of steadiness to the rotation of the latter than would be given by a crank connected directly with the same. As shown in Fig. 2, the cylinder 20 is roughened or knurled upon that portion of its periphery midway of its ends, the object of the same being to better grip and feed the tape A, and the location thereof being necessitated, first, by the requirement of leaving a smooth line of periphery for contacting with the finger 50, and, second, by the fact, which I have discovered, of the paper tape being liable to be warped out of true when the cylinder is roughened at its ends, while the location of the same along the center-line of the tape for some reason hard to discern does not thus warp the tape and prevent its accurate feeding between the roll and cylinder.

What I claim as my invention, and for

which I desire Letters Patent, is as follows; to wit:

1. In a transmitting device, the combination with a tape having two rows of perforations at equal distances from the respective edges thereof, of a feeding device therefor constructed to keep the same from lateral divergence, and circuit-closing devices including a finger permanently set to engage one of said rows of perforations but capable of being raised for permitting the removal of the tape, whereby the return of the tape in a reversed position presents to the finger the other of said rows of perforations, substantially as described.

2. In a transmitting device, the combination with a tape having two rows of perforations at equal distances from the respective edges thereof, of the feeding device comprising the rotative metal cylinder and the non-conducting roll elastically pressed against said cylinder, said roll being formed with an annular groove near one end, means for preventing the tape from lateral divergence, and a spring-finger normally pressed against said cylinder in said groove; said roll and finger being constructed to be raised away from the cylinder to permit the removal of the tape and its replacement in a reversed position in order to present to said finger either of the two rows of perforations, substantially as described.

3. In a transmitting device, the combination of the tape; the side frame; the cylinder supported by said frame and feeding the tape; the bolt rigidly projecting from the said frame but insulated therefrom; the clip pivoted on said bolt and having the contact-finger and the roll; the binding-post connected with said frame and thereby adapted to render said cylinder one terminal of an electric circuit; and a thumb-nut turning on said bolt for connecting the same and said finger with the other terminal of the circuit, substantially as described.

4. The combination with the revoluble metallic cylinder of the roll elastically pressed thereon and having an annular groove near one end, and the contact-finger located within said groove and pressed against said cylinder; said cylinder being roughened or knurled about its periphery midway between its ends, substantially as described.

In testimony that I claim the foregoing invention I have hereunto set my hand this 25th day of March, 1901.

CHARLES S. COMINS.

Witnesses:

MARGARET L. WAITE,
A. B. UPHAM.