

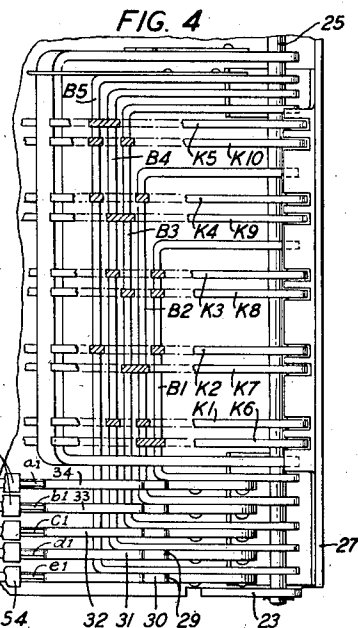
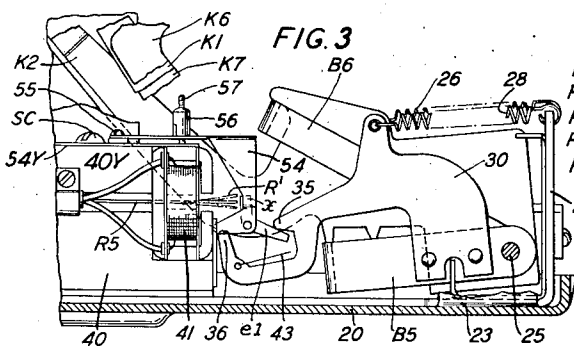
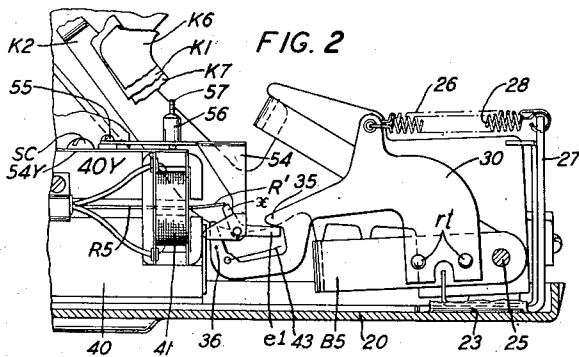
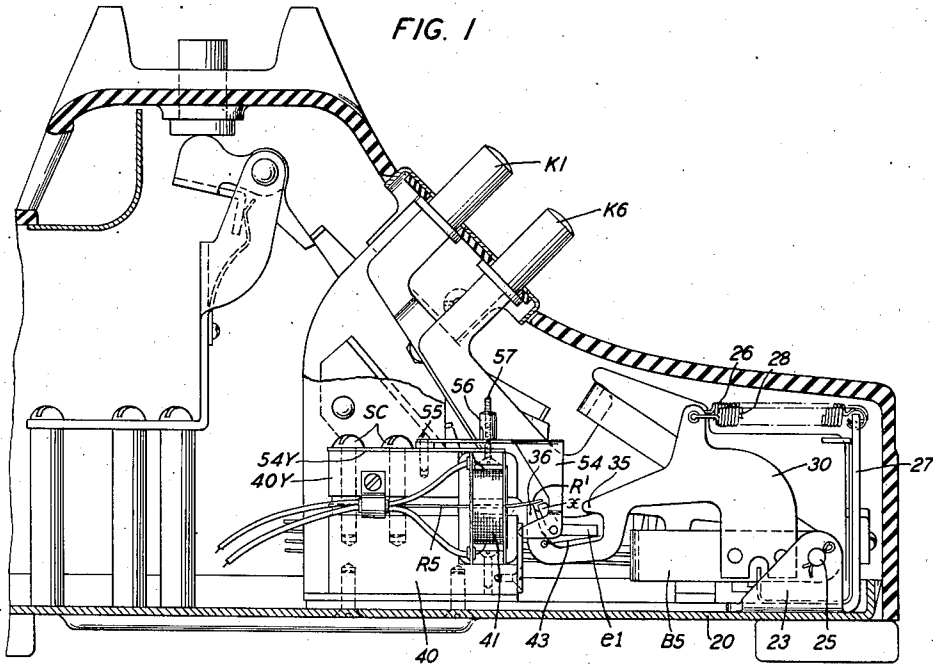
July 4, 1944.

R. F. MALLINA

2,352,724

CALL TRANSMITTER

Original Filed March 22, 1940



INVENTOR
R. F. MALLINA
BY *J. MacDonell*
ATTORNEY

UNITED STATES PATENT OFFICE

2,352,724

CALL TRANSMITTER

Rudolph F. Mallina, Hastings on Hudson, N. Y.,
 assignor to Bell Telephone Laboratories, Incorporated,
 New York, N. Y., a corporation of New York

Original application March 22, 1940, Serial No. 325,347. Divided and this application February 28, 1942, Serial No. 432,787

1 Claim. (Cl. 177—380)

This invention relates to key-controlled call transmitters of the type used in automatic telephone systems for establishing talking connections, and is an improvement over the reed plucking mechanism of my Patent 2,147,710 issued February 21, 1939. In that patent the downward operation of any one of a set of manually operable key members actuates pivoted levers or yokes in different combinations for moving trigger elements carried thereby in position for tensioning during such downward movement of the key a corresponding number of vibrative reeds to a point where the trigger elements engage stops to cause their pivotal movement during the downward movement of the key for moving such triggers out of engaged relation with the reeds for releasing them and thereby causing their vibration in the field of an electromagnet for generating alternating current signals in a coil corresponding to the digits of the successive operated keys.

In such reed operating mechanism it has been found in actual use that considerable wear developed between the end of the reeds and their actuating pawls due to the high contact pressure therebetween at the time the pawls are disengaged from the reeds resulting in necessary frequent adjustments so as to secure the uniform tensioning of the reeds and uniform strength of the alternating current signals generated by the vibrative movement of the reeds in addition to the impracticability of adjusting the release of the reeds in any of the combinations simultaneously which has been found to also affect the uniformity of the signals thus generated.

The object of the invention is to improve the construction and operation of such call transmitters.

A feature is the provision of means in the form of lever members controlled by the digit keys under the tension of retractile springs for moving and normally holding the vibrative reeds in pretensioned position beyond their point of release by the digit key actuating mechanism.

Another feature is the provision of means formed with the lever members whereby a predetermined movement of the digit keys from normal toward operated position is effective to remove the tensioning means from the reeds for permitting their movement in abutment against individually associated latching elements in the form of pawls prior to the operation of these pawls for the release of the pretensioned vibrative reeds following the continued operation of the depressed key.

Another feature is the provision of resilient means carried by the lever members whereby the latching pawls are returned in latching position with their associated vibrative reeds following the return of the digit key and the lever members to normal.

Another feature is the provision of adjustable means for the supports of the vibrative reeds, whereby the vibrative reeds are released by the key actuating mechanism from a uniform point of tension.

Other novel features and advantages of the invention will appear from the following description and by the claim appended thereby reference being had to the accompanying drawing in which:

Fig. 1 is a side elevation of the transmitter embodying the features of the invention, the housing and the base for the mechanism being shown in vertical section;

Fig. 2 is a partial view showing one of the keys and a number of pivoted bars of the latch actuating mechanism partly operated.

Fig. 3 is a view similar to Fig. 2 but showing the depressed key, the corresponding bars and latching means actuated thereby moved in unlatched position from their vibrative reeds; and

Fig. 4 is a partial view showing the operative relation of the digit key members and the arms carried by the pivoted lever members in operative relation with the vibrative reed latching members.

This application is a division of my application filed March 22, 1940, Serial No. 325,347 for a Call transmitter.

Referring to the drawing, a set of numbered key members K1, K2, K3, K4, K5, K6, K7, K8, K9 and K10 are pivoted on a shaft 25 shown in Figs. 1, 2, 3, and 4. This shaft is supported at both ends in upright supports 23 formed with a base 20, while similar retractile springs 26 shown in Figs. 1, 2 and 3 are hooked at one of their ends to the edge of an upright plate 27 formed with the base 20 and their other ends to the body portions of their respective keys K1, K2, etc., to serve for yieldably holding these keys in their normal unoperated position as shown by keys K1 and K6 in Fig. 1.

A plurality of crossbars B1, B2, B3, B4 and B5 also pivoted in shaft 25 are disposed for operation by the downward movement of the keys K1, K2, etc., in the combination shown in Fig. 4.

To the adjacently disposed pivoted arms of bars B1, B2, B3, B4 and B5 are secured the lever members 34, 33, 32, 31 and 30, respectively,

each provided with lug portions or projections 35 and 36 best seen in Figs. 1, 2 and 3, provided for a purpose which will be hereinafter described in detail.

On the base 20 is mounted an alternating current generator in the form of a permanent magnet having two complemental portions 40 and 40Y between which vibrative reed elements R1, R2, R3, R4 and R5 are clamped by a number of screws SC and on the top disposed complemental portion of the permanent magnet 40Y is secured as by screws 55, as a feature of the invention a plurality of brackets 54, one for each vibrative reed element R1, R2, R3, etc. These brackets are adjustable by the turning movement of knobs 56, engaging corresponding studs 57 carried by a plate 54Y also secured to the top disposed complemental portion 40Y by screws SC above mentioned.

To each bracket 54 is pivotally mounted a pawl-like or latching member a1, b1, c1, d1, and e1 each formed with an upwardly extending arm X disposed in engageable relation with the underside of vibrative reeds R1, R2, etc., following the return movement of the key members K1, K2, etc., from operated to normal positions as will be hereinafter described in detail. The movement of these latching members is effected by springs 43 carried by arms 30, 31, 32, etc., of bars B5, B4, etc., when these bars are returned to normal position under the tension of their retractile springs 28, following the return of their operatively associated key members K1, K2, etc., under the tension of their own retractile springs 26.

The arms 30, 31, 32, etc., according to a second feature of the invention, as above described, are provided at their free ends with lug portions 35 and 36. The function of lug portions 36 is to move the vibrative elements R1, R2, etc., in their pretensioned positions as shown in Fig. 1 under the tension of retractile spring 26 while causing the pivotal movement of the latching members a1, b1, c1, d1 and e1 under the tension of springs 43 carried by arms 30, 31, 32, etc., in the vibrative path of reeds R1, R2, etc., for preventing their vibration immediately following the movement of their respectively associated arms 34, 33, etc., as effected by the movement of key members K1, K2, etc., from the positions shown in Fig. 1 to the positions shown in Fig. 2 wherein the continued movement of the keys K1, K2, etc., from the positions shown in Fig. 2 to the position shown in Fig. 3, the lugs 35 carried by arms 30, 31, 32, etc., engage their respective latching members a', b', etc., for pivoting them from the positions shown in Fig. 2 to the positions shown in Fig. 3, for releasing the pair of reeds associated with the operated digit key, the latching members associated with the bars B1, B2 of the non-operated keys remaining in engageable rela-

tion with their respectively associated reeds as shown in Fig. 1.

Upon the release of the depressed digit key, for example key K2, by the operator, this key and bars B1 and B5 are returned to normal by the tension of retractile springs 28 and 26, respectively, the bars B1 and B5 thereby returning the arms 30 and 34 carried thereby to normal non-operated position causing the lug portions 36 of these arms to return the previously operated vibrative elements R1 and R5 in their pretensioned positions, while the springs 43 of these arms cause the pivotal movement of latching members a1 and e1 from the positions shown in Fig. 3 to the positions shown in Fig. 1, thus preparing the call transmitter for a subsequent digit key operation.

The latching members a1, b1, etc., of the vibrative reed controlling mechanism are adjusted to identical heights relative to the normal plane of vibrative reeds R1, R2, etc., by the turning movement of knob 56 so as to make possible the release of these reeds from an equal point of tension resulting in uniform alternating current signals generated in the coil 41 by the operation of these reeds.

What is claimed is:

In a call transmitter, a set of key members, a shaft for pivoting said key members, a plurality of U-shaped bars disposed transversely of said key members and having their arms pivoted on said shaft, spring means for yieldably holding said key members in normal non-operative position, means carried by said key members for engaging said bars for actuating them in a plurality of predetermined combinations, an arm carried by each of said U-shaped bars, spring means attached to said arm for yieldably holding said bars in engaged relation with the means carried by said key members, an alternating current generator having a plurality of vibrative elements, said arms having portions for engaging said elements for tensioning them, brackets mounted on said generator, a pawl-like member pivoted on each of said brackets one for each of said elements, means for adjustably moving said brackets for locating said pawl-like members in the paths of said elements when in their tensioned positions, means carried by said arms for engaging said pawl-like members during the operation of said key members for moving them out of engaged relation with said vibrative elements for permitting the operation of a number of the latter in one of said combinations, and a spring mounted on each of said arms for moving said pawl-like members into engageable relation with said vibrative elements following the tensioning thereof by the movement of the operated key to normal unoperated position.

RUDOLPH F. MALLINA.