

Dec. 17, 1946.

R. F. MALLINA

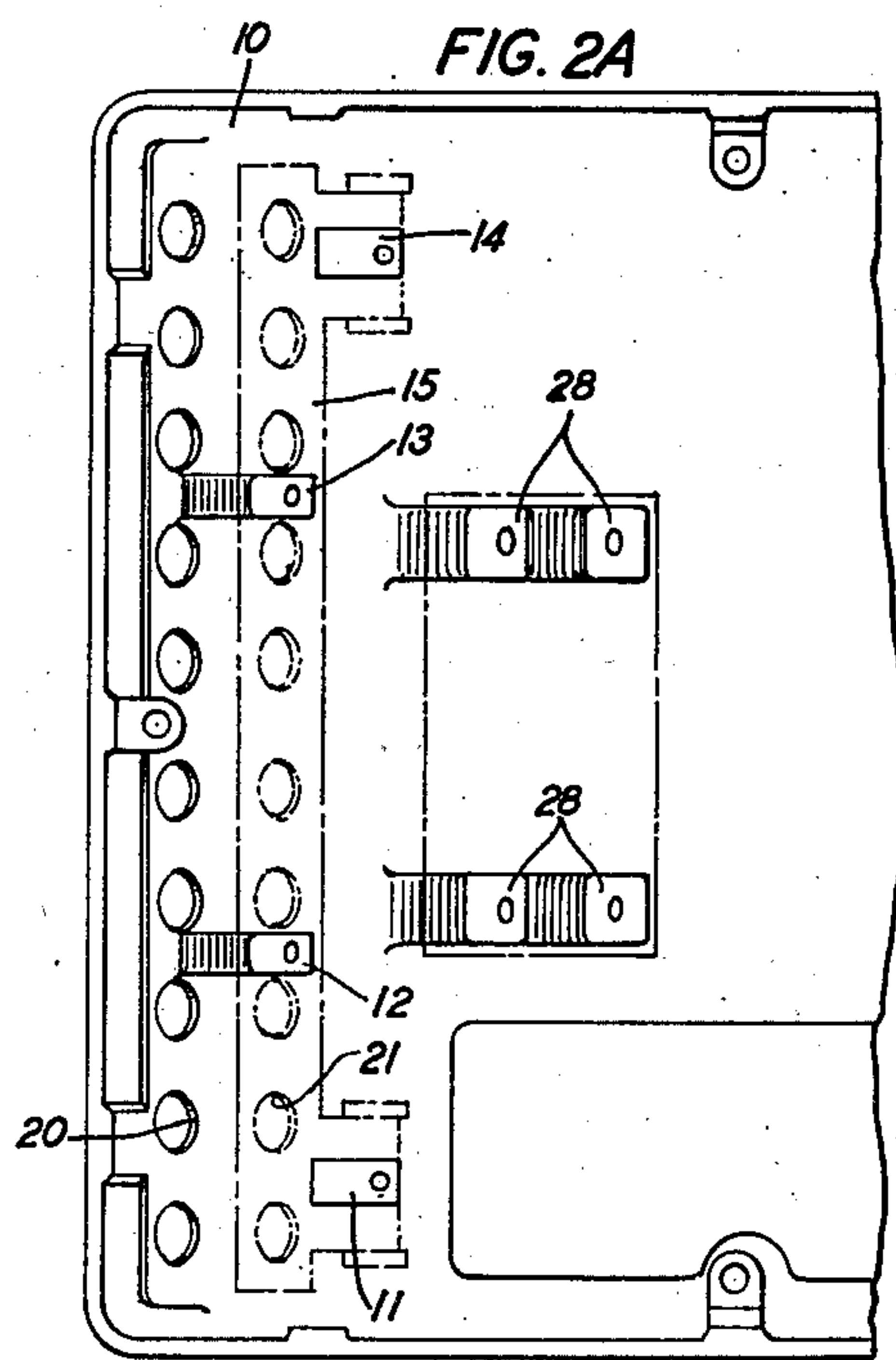
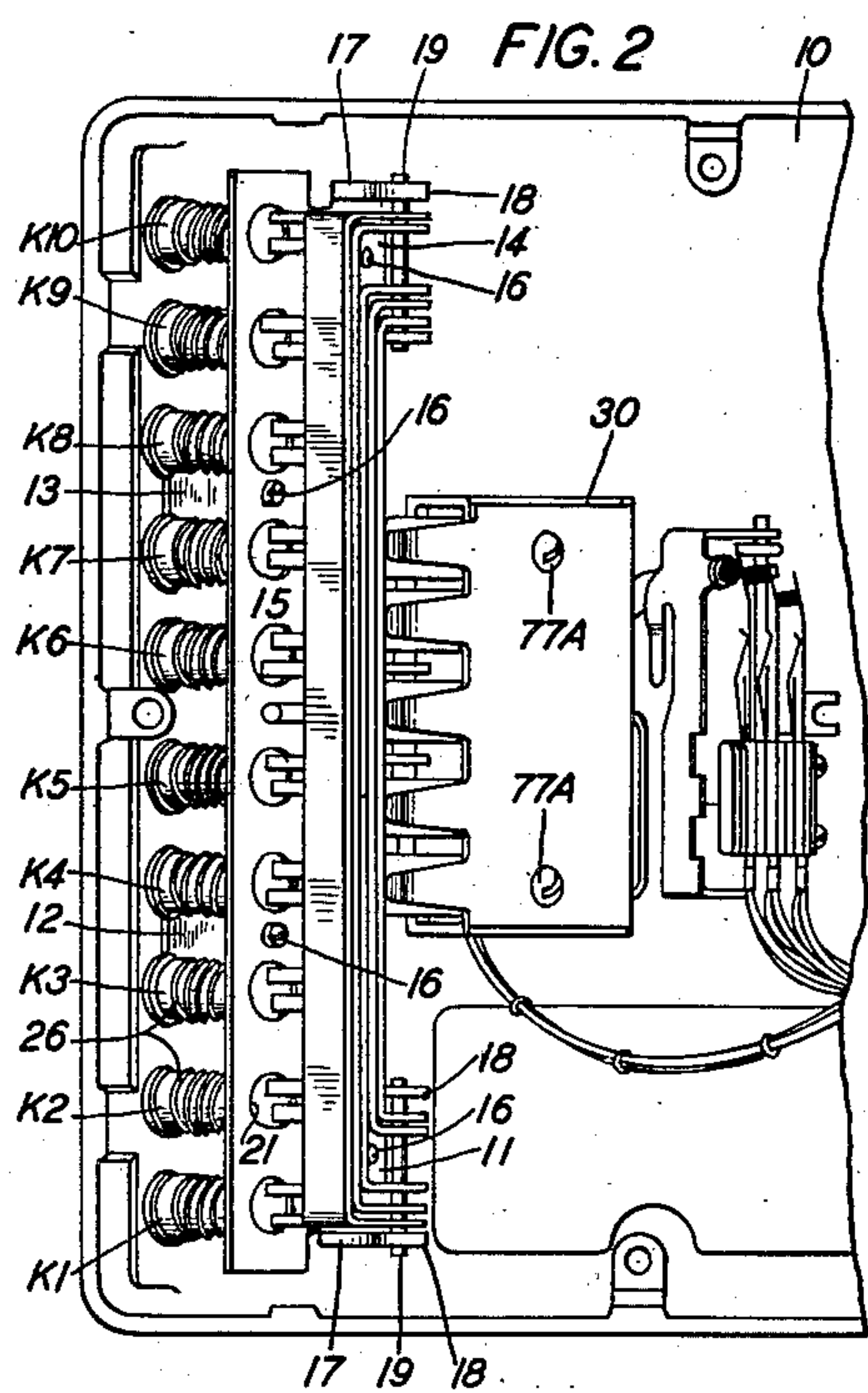
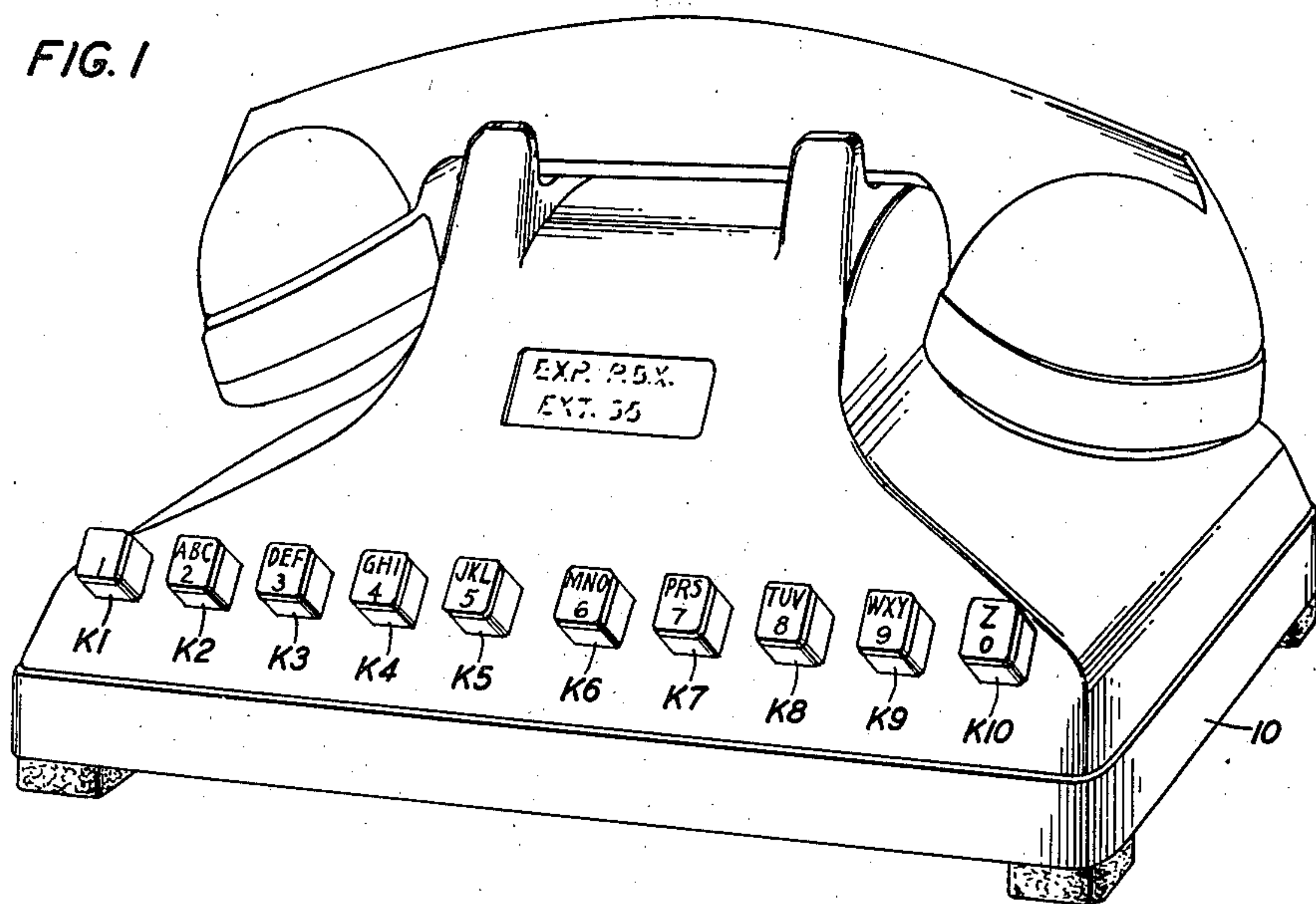
2,412,624

TELEPHONE CALL TRANSMITTER

Filed Dec. 30, 1944

3 Sheets-Sheet 1

FIG. 1



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FIG. 3

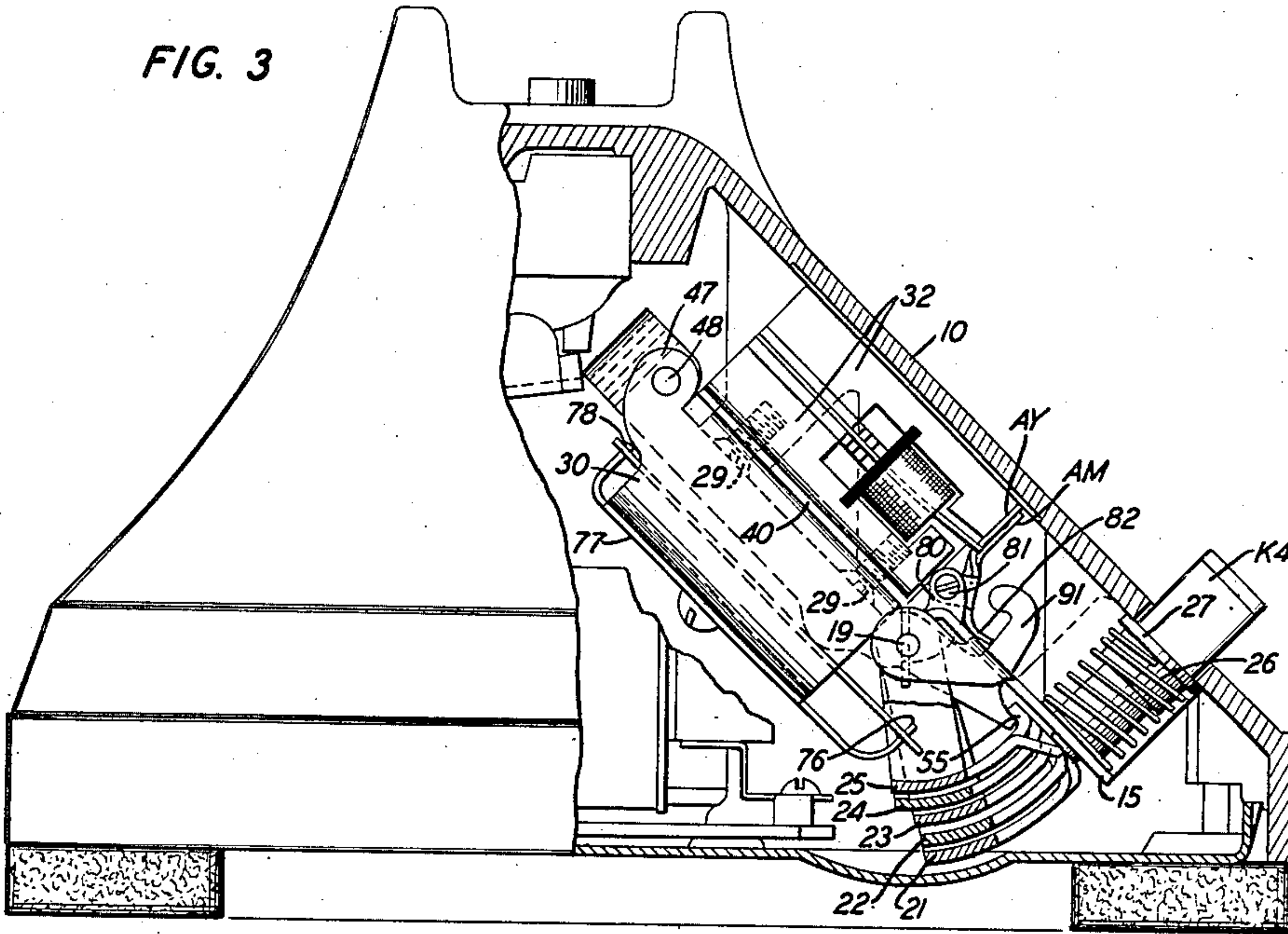


FIG. 4

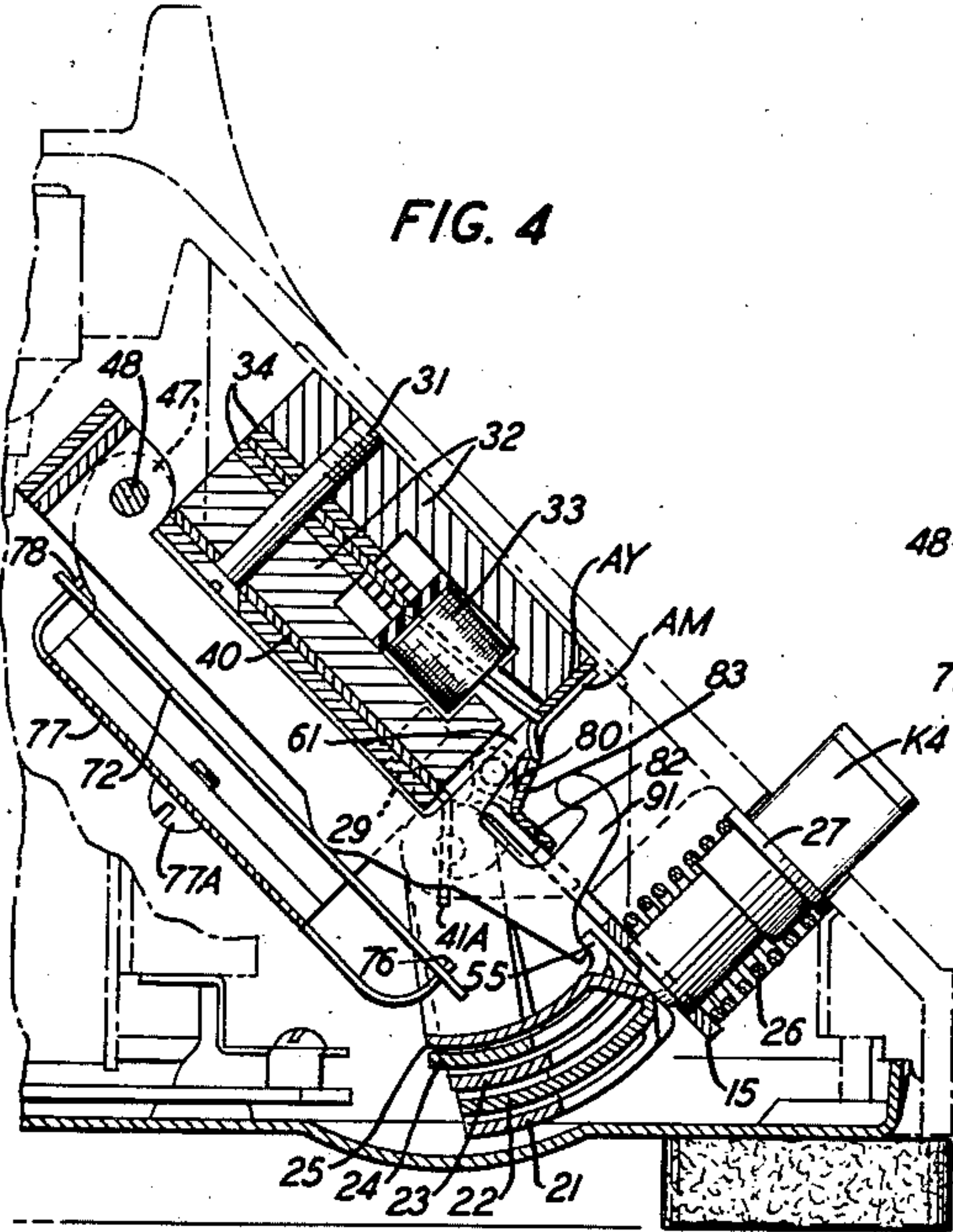
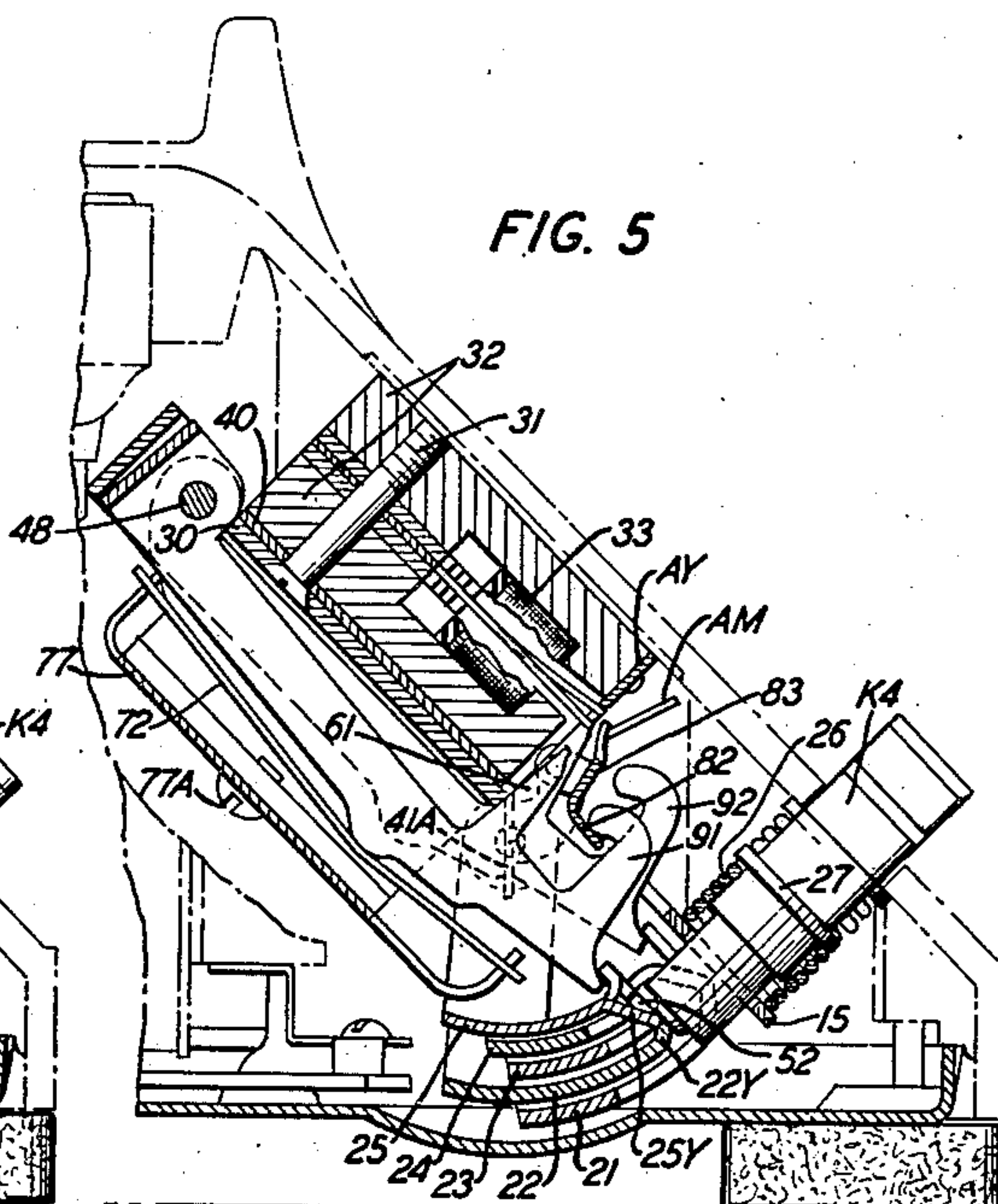


FIG. 5



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FIG. 6

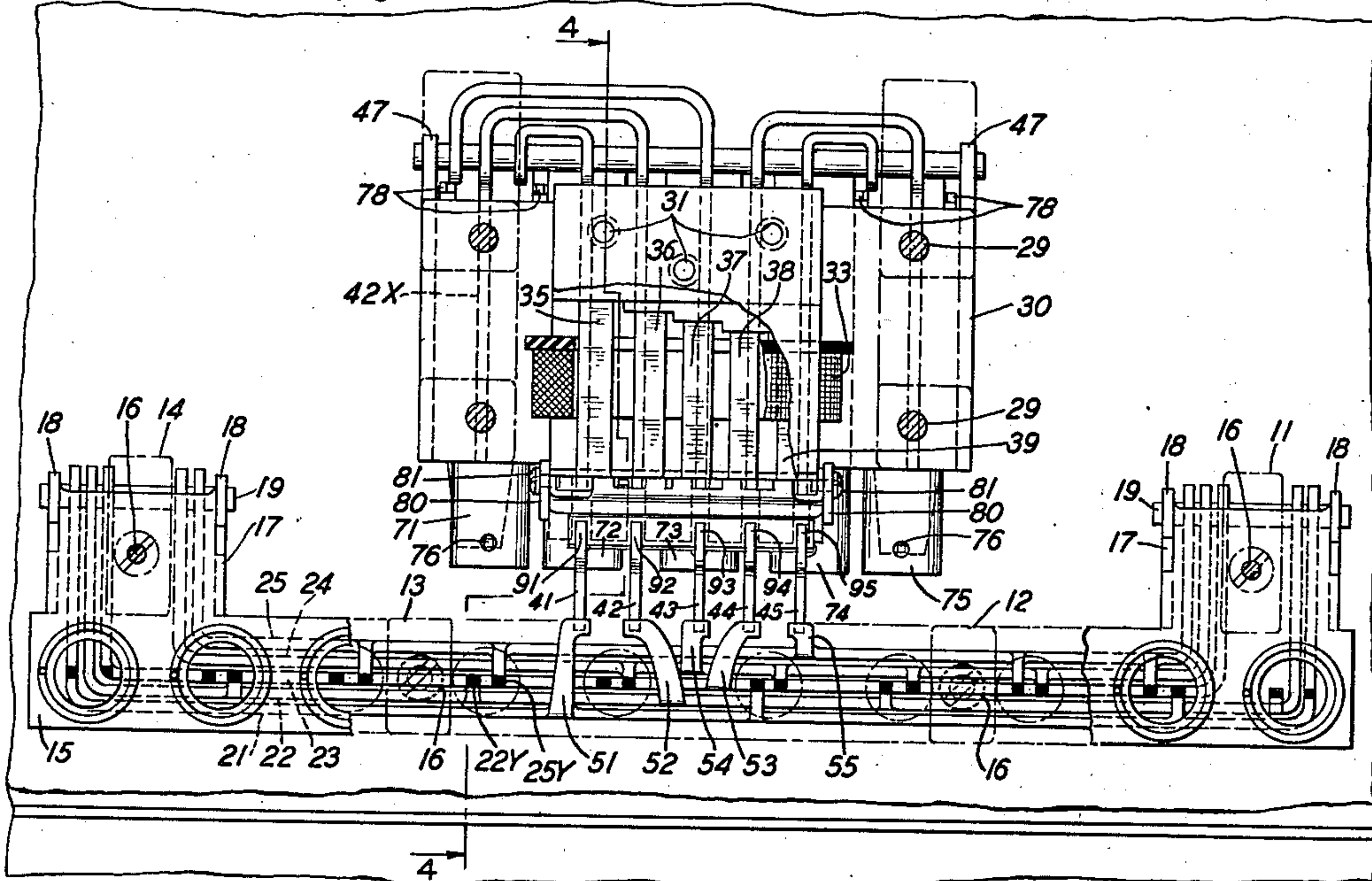


FIG. 7

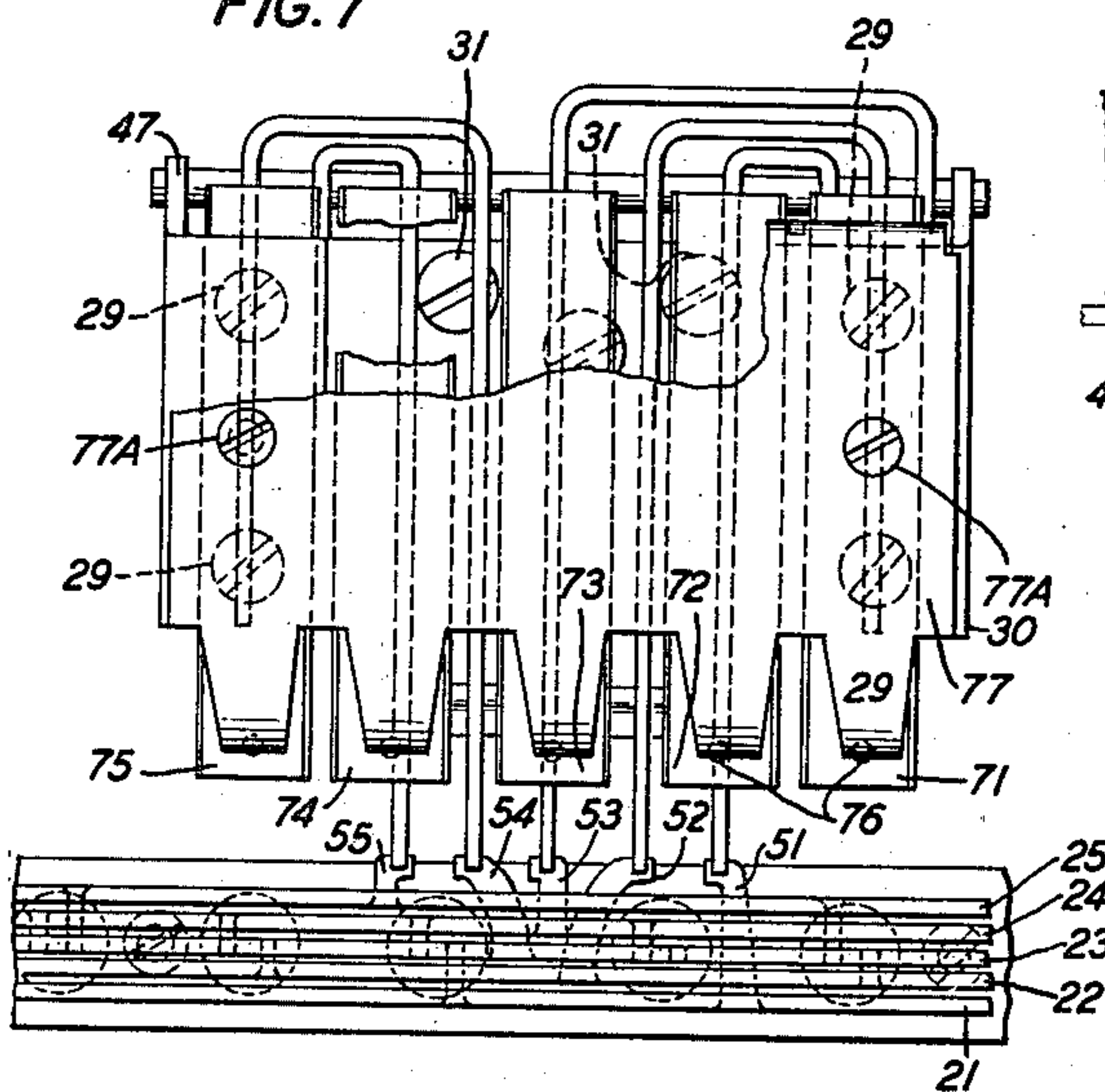
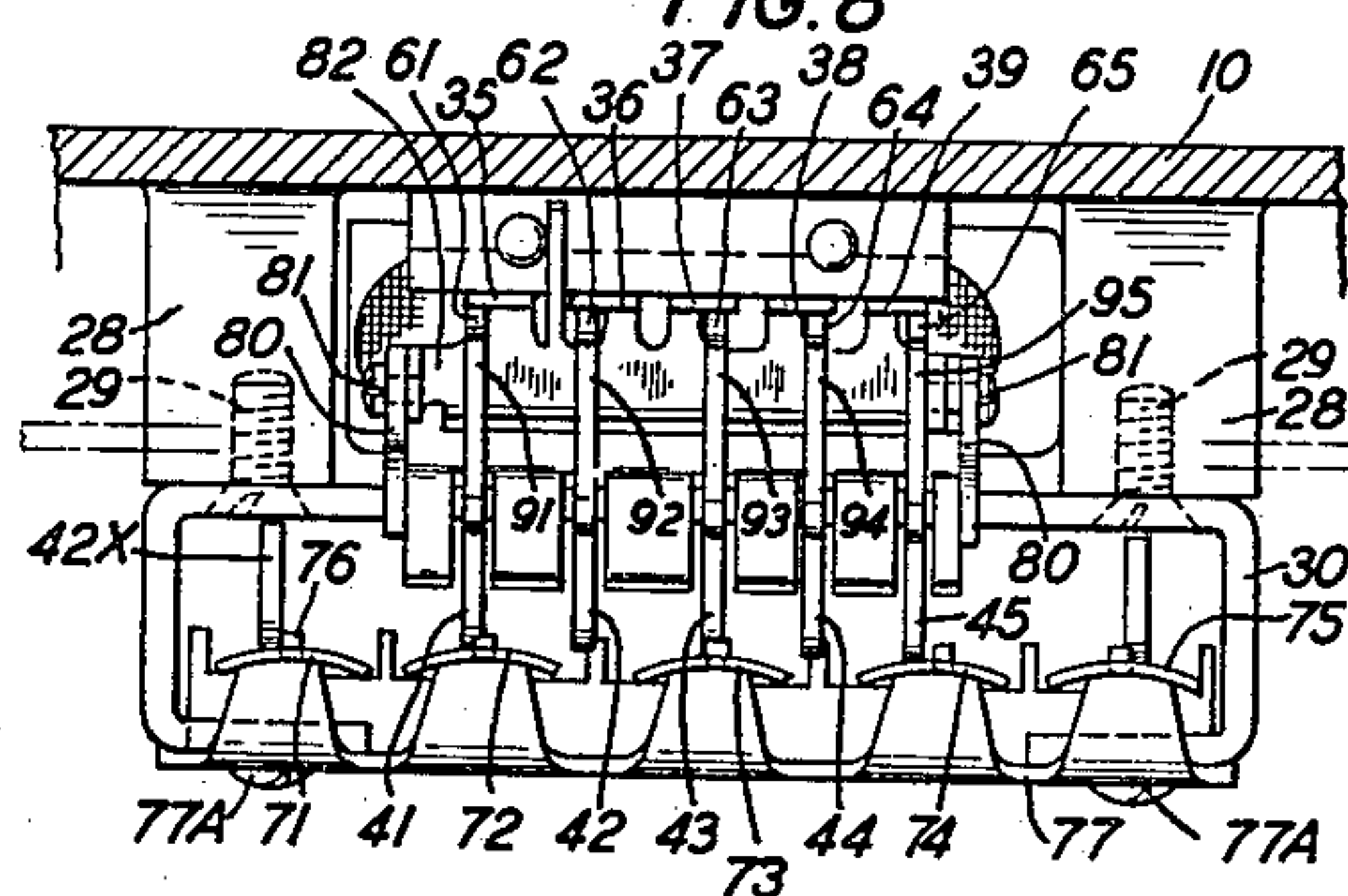


FIG. 8



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TELEPHONE CALL TRANSMITTER

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3 Claims. (Cl. 179—90)

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This invention relates to telephone call transmitter devices of the type in which the successive operation of digit key members causes the vibration of differently tuned vibrative elements in the field of a magnet for generating alternating current signals serving to control the operation of automatic switches for establishing talking connections.

The object of the present invention is to provide a call transmitter of the type above-referred to which is cheap to manufacture, convenient in use and accurate in operation.

In the drawings,

Fig. 1 is an elevational view shown in perspective and with the keys in normal position;

Fig. 2 is a view of the casing for the transmitter mechanism mounted therein shown in an inverted position;

Fig. 2A is a view of the interior of the casing in an inverted position showing elements formed with such casing serving for mounting the transmitter mechanism;

Fig. 3 is a side elevational view shown with the casing partly in longitudinal vertical section and with a number of operating parts with portions broken away;

Fig. 4 is a vertical sectional view taken on line 4—4 of Fig. 6;

Fig. 5 is a view similar to Fig. 4 but showing one of the keys and a number of operating parts controlled thereby in the operated position;

Fig. 6 is a plan view showing the alternating current generator with a number of operating parts with portions broken away and the keys removed to show more clearly the combination of the bars actuated by such keys;

Fig. 7 is a partial view of the vibrative reeds actuating mechanism shown in an inverted position; and,

Fig. 8 is a front view of the vibrative reeds actuating mechanism shown with the keys and the bars actuated thereby removed.

Referring to the drawings, a casing 10 as best seen in Figs. 1, 2, 2A and 3, and in dotted lines in Figs. 4 and 5, is formed, as best seen in Figs. 2 and 2A, with a plurality of bosses 11, 12, 13 and 14, interiorly thereof for securing as by a number of similar screws 16 a plate 15 having extensions 17 provided with bearing portions 18 shown in Figs. 2, 2A and 6 for supporting the shafts 19 serving for pivoting the arms of U-shaped bars 21, 22, 23, 24 and 25 arranged for movement concentric relative to each other as effected by a set of key members K1, K2, K3, K4, K5, K6, K7, K8, K9 and K10 disposed in a row and slidably mov-

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able in registering guiding holes 20 and 21, best seen in Fig. 2A, in the casing 10 and in the plate 15, these keys being normally held in the non-operated position, as shown in Figs. 1, 3 and 4, by similar retractile helical springs 26 tensioned between the bar 15 and collars, as 27, formed with the keys K1, K2, K3, etc.

The bars 21, 22, 23, 24 and 25, as shown in Figs. 3, 4, 5 and 6, are provided with upwardly extending lugs disposed in engageable relation with the key members K1, K2, K3, etc., for operation by pairs in predetermined combinations upon the movement of the keys for a purpose which will be hereinafter described in detail.

The casing 10 as best seen in Fig. 2A is provided with a pair of bosses 28 to which is secured, as by screws 29, a bracket 30 shown in Figs. 3, 4, 5, 6, 7 and 8 in turn serving for securing, as by a plurality of screws 31, an alternating current generator consisting of a coil 32, a permanent magnet having pole-pieces 32, a spacer element 34 between which the vibrative elements 35, 36, 37, 38 and 39 are clamped at one end by the tightening action of screws 31, which also clamps a plate 40 between the bracket 30 and one of the pole-pieces 32, the plate 40 being provided with downwardly bent portions 41A at its front disposed end forming guiding elements for a set of arms 41, 42, 43, 44 and 45 pivoted at one of their ends on a shaft 48 supported by bearing portions 47 formed with the bracket 30.

The arms 41, 42, 43, etc., extend in operative relation with hooked shaped lugs 51, 52, 53, 54 and 55, best seen in Fig. 6, formed with the bars 21, 22, 23, 24 and 25, respectively, while upwardly extending lug portions, such as 61, 62, 63, 64 and 65, best seen in Figs. 4, 5 and 8, formed with the arms 41, 42, 43, 44 and 45, are provided for engaging their respectively associated vibrative reeds, 35, 36, 37, 38 and 39 for flexing them by the normal tension of similar retractile ribbon-shaped springs 71, 72, 73, 74 and 75, these springs being held at their front disposed ends in engageable spaced relation with their respectively associated arms 41, 42, 43, 44 and 45 by lugs such as 76 formed with a plate 77 fitted in similarly sized holes in the retractile springs 71, 72, 73, etc., while the opposite ends of these springs are held in spaced relation to each other by lugs as 78 formed with the plate 77.

Plate 40 secured to bracket 30 by a pair of screws 77A is provided with two similar bearing portions 80, shown in Figs. 3, 4, 5 and 6, serving for pivotally mounting, as on pivot screws 81, a pawl-shaped bar 83 having its upper disposed

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edge normally positioned in the path of the vibrative elements 35, 36, 37, 38 and 39, as shown in Fig. 3, due to the engagement of this plate by the arms 41, 42, 43, 44, 45, the latter being held in the non-operated position as above described by the tension of their respectively associated retractile springs 71, 72, 73, etc.

The pawl-shaped bar 83, is provided with an arm AM normally bearing against a plate AY riveted to the upper disposed pole-piece 32 for limiting the engagement of the latter with the vibrating reeds. The pawl bar 82 in addition is provided with a laterally bent portion 82 disposed in engageable relation with hooked-shaped projections 91, 92, 93, 94 and 95 formed with the arms 41, 42, 43, 44 and 45 respectively to be operated by the movement of these arms for simultaneously releasing the vibrative reeds 35, 36, 37, etc. in pairs corresponding to the operated arms in the following combinations.

Key K1 operating bars 21 and 23 in turn actuating the arms 41 and 44 to cause the release of reeds 35 and 38.

Key K2 operating bars 22 and 23 in turn actuating the arms 42 and 44 to cause the release of reeds 36 and 38.

Key K3 operating bars 23 and 25 in turn actuating the arms 44 and 45 to cause the release of reeds 38 and 39.

Key K4 operating bars 22 and 25 in turn actuating the arms 42 and 45 to cause the release of reeds 36 and 39.

Key K5 operating bars 23 and 24 in turn actuating the arms 43 and 44 to cause the release of reeds 37 and 38.

Key K6 operating bars 21 and 24 in turn actuating the arms 41 and 43 to cause the release of reeds 35 and 37.

Key K7 operating the bars 22 and 24 in turn actuating the arms 43 and 44 to cause the release of reeds 36 and 37.

Key K8 operating the bars 24 and 25 in turn actuating the arms 43 and 45 to cause the release of reeds 38 and 39.

Key K9 operating the bars 21 and 25 in turn actuating the arms 41 and 45 to cause the release of reeds 35 and 39; and

Key K10 operating the bars 21 and 22 in turn actuating the arms 41 and 42 to cause the release of reeds 35 and 36.

In a typical operation of the transmitter mechanism as for sending a signal corresponding to key K4, for example, the movement of that key from the position shown in Figs. 3 and 4 to the position shown in Fig. 5 against the tension of its retractile spring 26 is effective to impart a pivotal movement to the bars 22 and 25 simultaneously through the engagement of lug portions 22Y and 25Y carried by these bars with the key K4.

The pivotal movement of bars 22 and 25 through their hook-shaped lugs 52 and 55 best seen in Figs. 6 and 7 operate their respectively associated arms 42 and 45 to cause the release of reeds 36 and 39 by the uprights extending lugs 62 and 65 formed with arms 42 and 45 so as to permit these reeds to move by the medium of their own tension onto the upper disposed edge of pawl-shaped bar 83 prior to the pivotal movement of the latter as effected by the continued movement of arms 42 and 45 caused by the engagement of the portion 82, of this pawl-shaped bar by the arms 42 and 45. The pivotal movement of pawl-shaped bar 83 from the position shown in Figs. 3

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and 4 to the position shown in Fig. 5 is effective to release the reeds 36 and 39 for permitting the vibration of the latter in the opening of coil 33 and between the poles 32 of the permanent magnet for generating an alternating current signal representing the depressed key, i. e., the key K4 above-mentioned which key is returned to normal position by its own retractile spring 25 while the bars 22 and 25 and the arms 42 and 45 actuated thereby are returned to normal position by the tension of their ribbon-shaped retractile springs 71 and 74, arm 42 being formed with an arm 42X engaging the retractile spring 71 while arm 45 directly engages its retractile spring 74 as shown in Figs. 6, 7 and 8.

Upon the return movement of arms 42 and 45 the lugs 62 and 65 carried by these arms reengage their respective vibrative reeds 36 and 39 to again flex them into the position shown in Figs. 3 and 4 followed by the reengagement of the portion 83 of pawl bar 82 by the arms for pivoting this bar to the position wherein the upper edge thereof is placed in the path of reeds 35, 36, 37, 38 and 39 thus preparing the transmitter mechanism for the operation of a succeeding key.

What is claimed is:

1. In a call transmitter device, a casing, a set of longitudinally movable key members disposed in a row, a bracket having means cooperating with means in said casing for guiding said key members in their movement from normal to operated position, a plurality of bars pivoted on said bracket having projections disposed in engageable relation with said key members in said row for operation in predetermined combinations, another bracket secured to other supporting means in said casing, a plurality of arms pivoted on the last-mentioned bracket having projections engaged by hook-shaped means carried by said pivoted bars for operation of said arms in said combinations and an alternating current generator secured to the last-mentioned bracket having vibrative reeds controlled by the operation of said arms for transmitting signals corresponding to the operation of said key members.

2. A call transmitter having a casing, a bracket secured to means carried by said casing, an alternating current generator secured to said bracket having a plurality of vibrative reeds, bearing portions formed with said bracket, a shaft journaled in said bearing portions, a plurality of arms pivoted on said shaft, one of said arms for each of said reeds, a plurality of retractile springs for said arms, a plate having means for supporting said retractile springs secured on said bracket, means carried by said arms for engaging said vibrative reeds for flexing the latter under the normal tension of said retractile springs, a set of key members, movable means disposed in engageable relation with said key members for operation in predetermined combination for actuating said arms, means normally holding said reeds in the tensioned position actuated by the operation of said arms in any one of said combinations for releasing their corresponding reeds to cause the operation of the latter for transmitting a signal corresponding to the operated key member.

3. A call transmitter having a casing, an oblong shaped plate secured at both ends to supporting means formed in said casing, a set of longitudinally movable key members representing digits, registering means formed in a row in said cas-

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ing and in said plate forming guiding elements for said key members, said key members having collar portions, helical springs tensioned between said collar portions and said plate to serve as retractile springs for said key members, a bracket secured to means carried by said casing interiorly thereof, an alternating current generator secured to said bracket having vibrative reeds, a plurality of arms pivoted on said bracket having means for engaging said reeds, another plate secured to said bracket, ribbon-shaped retractile springs for said arms supported at their ends by means formed in the last-mentioned plate and normally acting on said arms to cause the flexing of said vibrative reeds, a third plate clamped between said bracket and said generator having means serving as spacer members for holding said

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arms in registering relation with said vibrative reeds, a pawl-like member pivoted on said third plate normally holding said reeds collectively in said flexed position and operable by the operation of said arms for releasing their corresponding vibrative reeds, a plurality of bars mounted for concentric movement in said casing and supported by means formed with the first-mentioned plate, means carried by said concentrically movable bars engaged by said key members for actuating said bars in predetermined combinations and other means carried by said concentrically movable bars for actuating said arms in said combinations to cause the operation of said vibrative reeds for transmitting signals corresponding to the digits of the operated key members.

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