

Aug. 4, 1931.

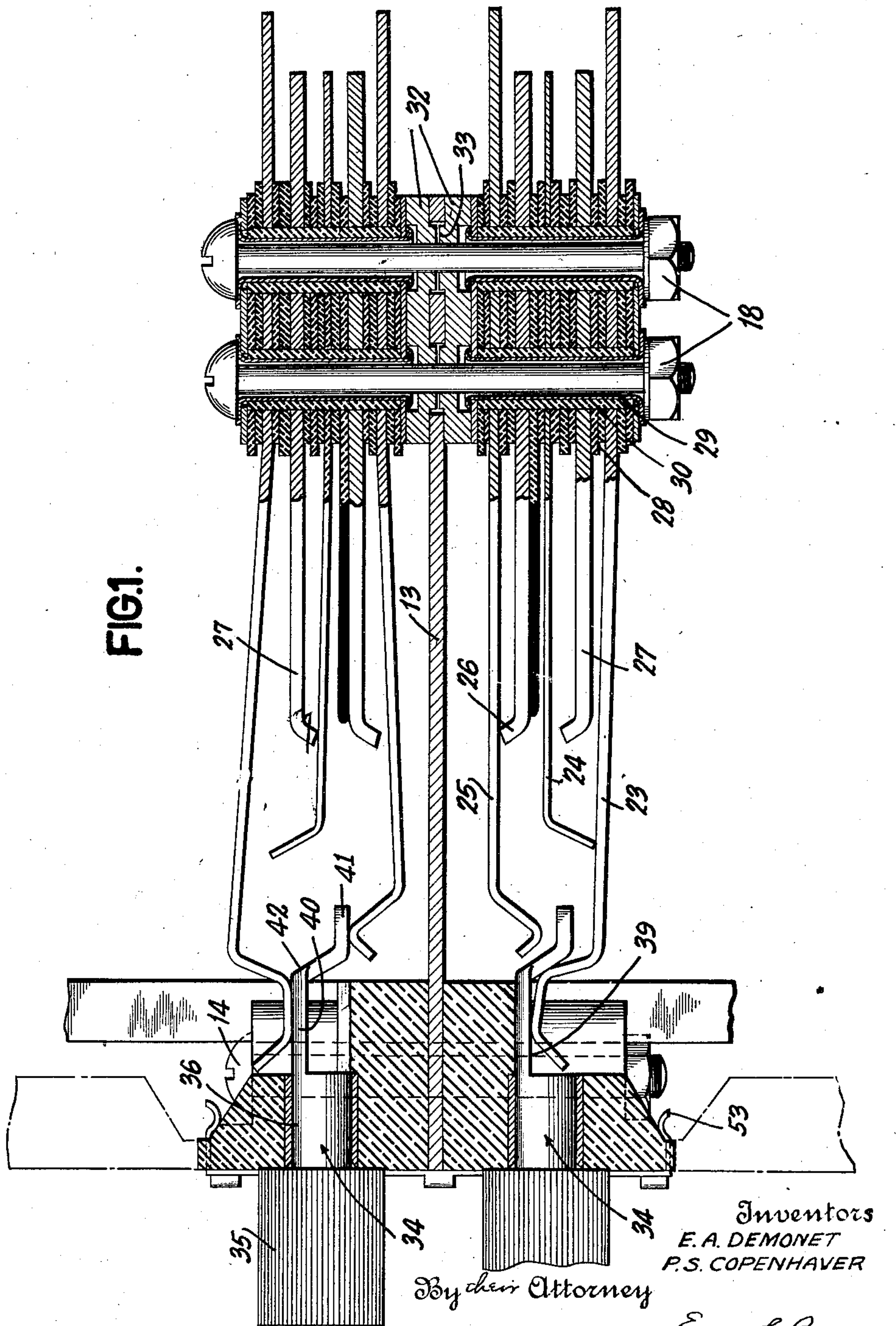
E. A. DEMONET ET AL

1,817,738

JACK PANEL UNIT

Filed July 19, 1930

4 Sheets-Sheet 1



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FIG.3.

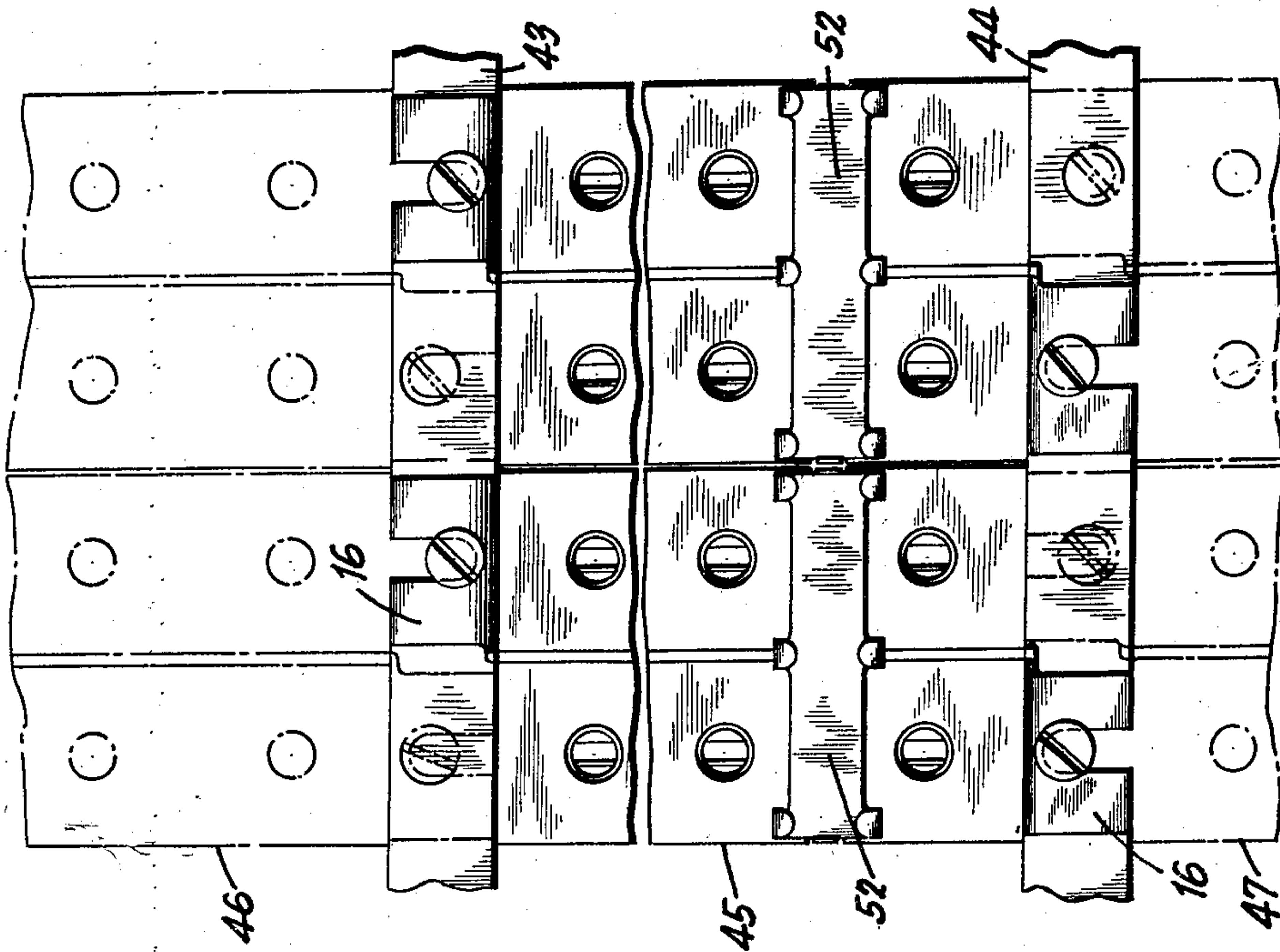


FIG.2.

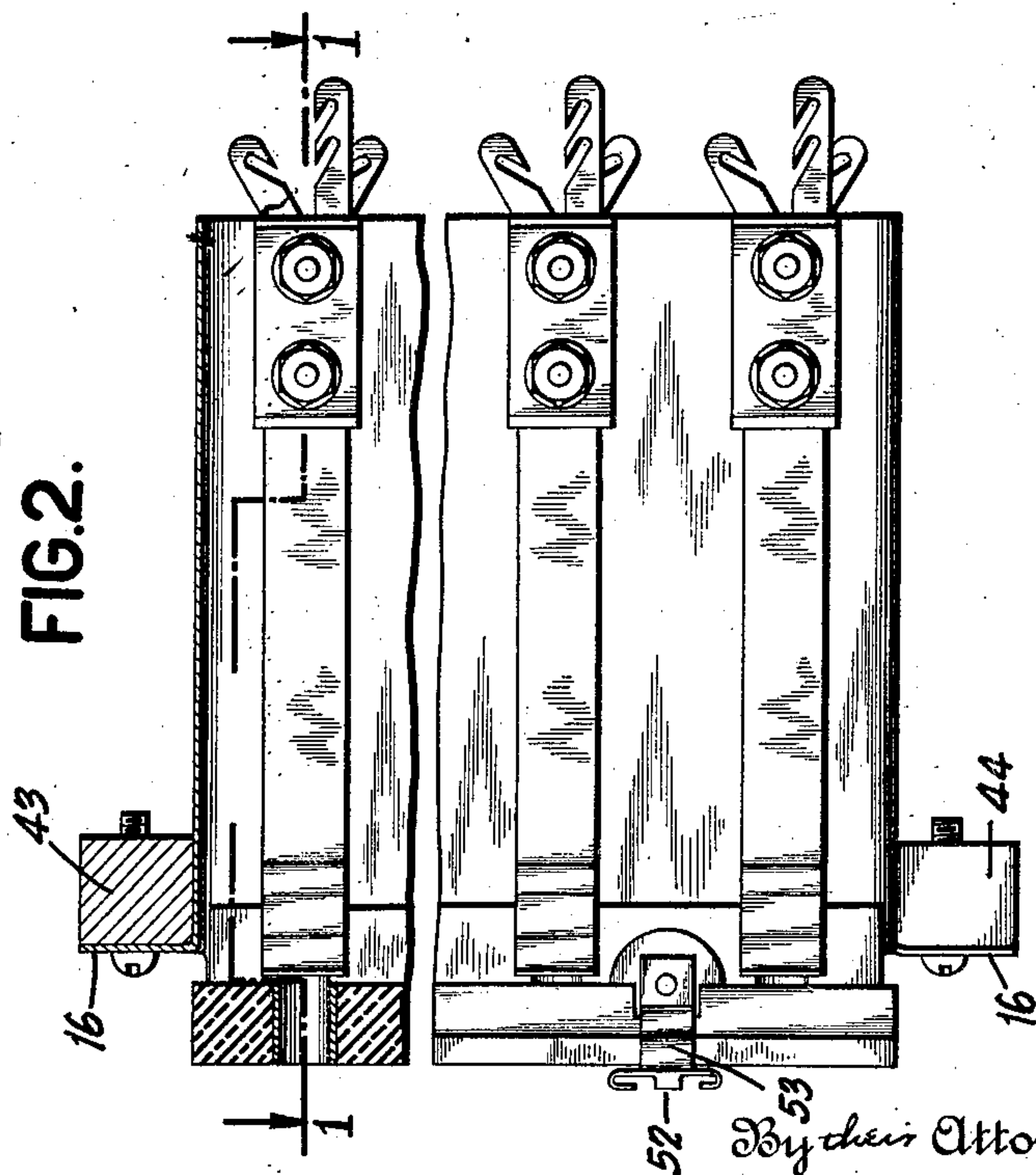
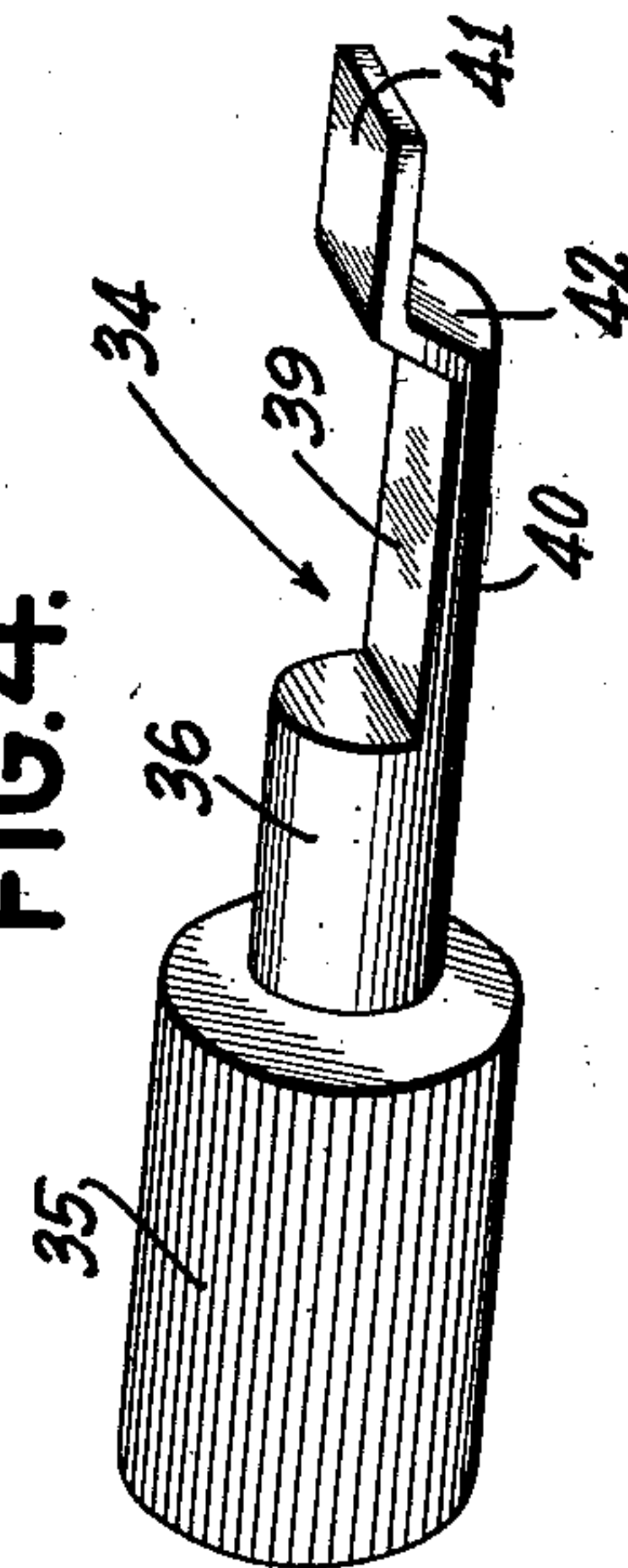


FIG.4.



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FIG. 6.

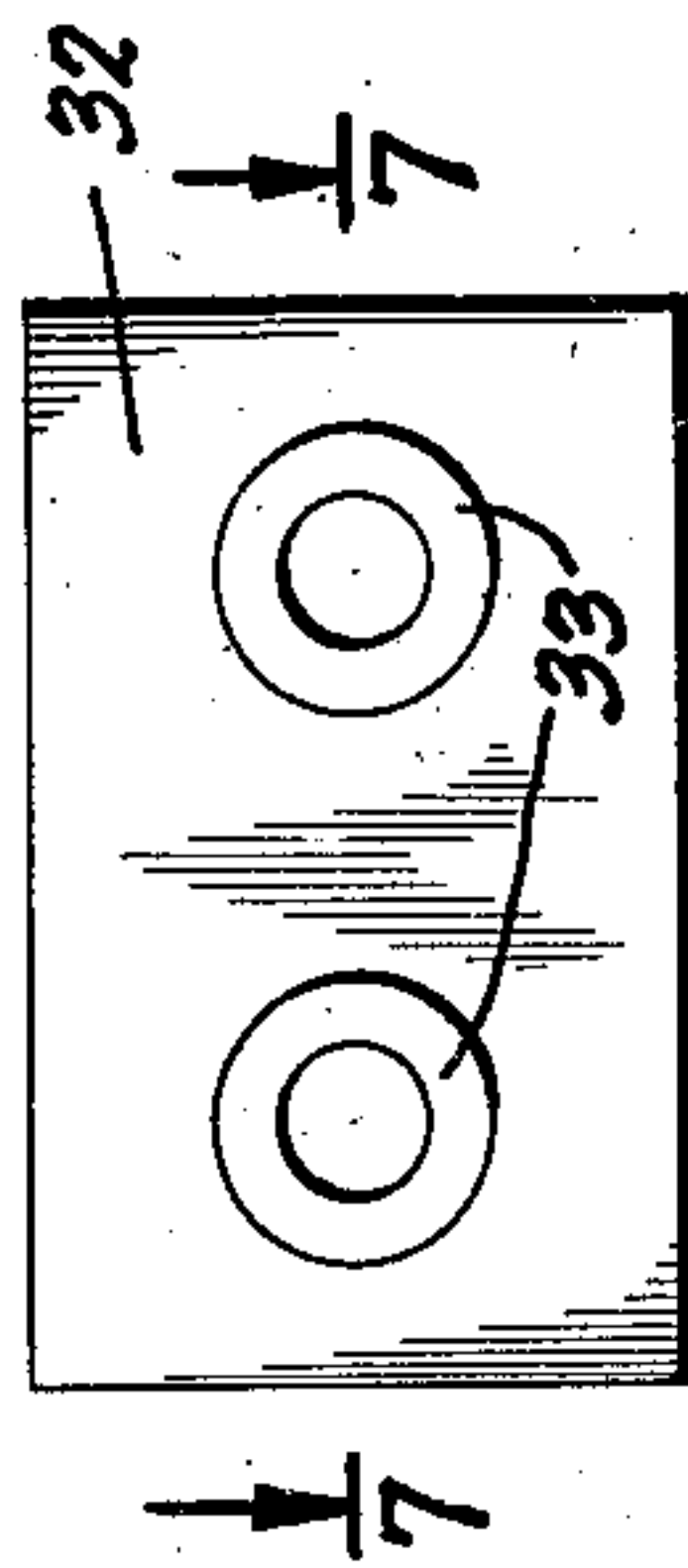


FIG. 7.

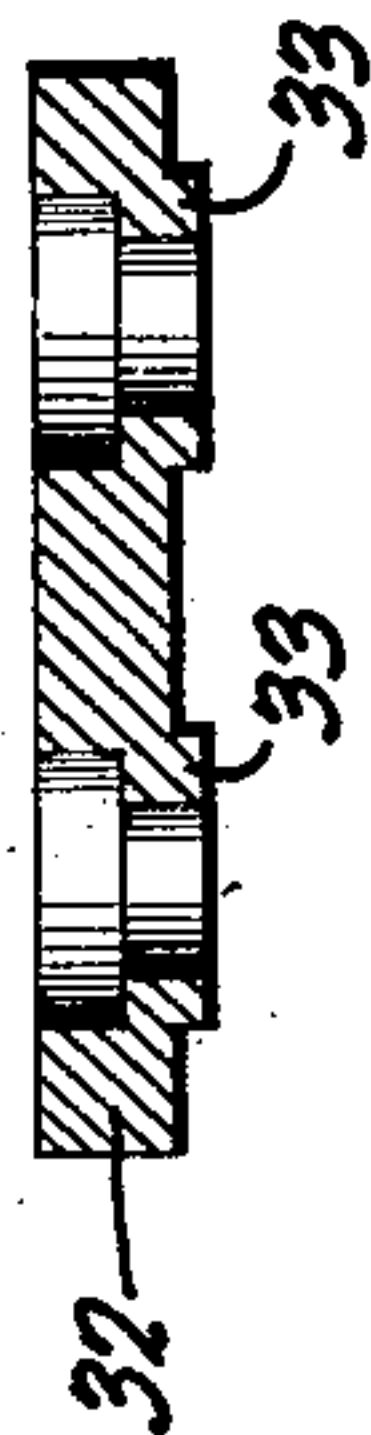


FIG. 8.

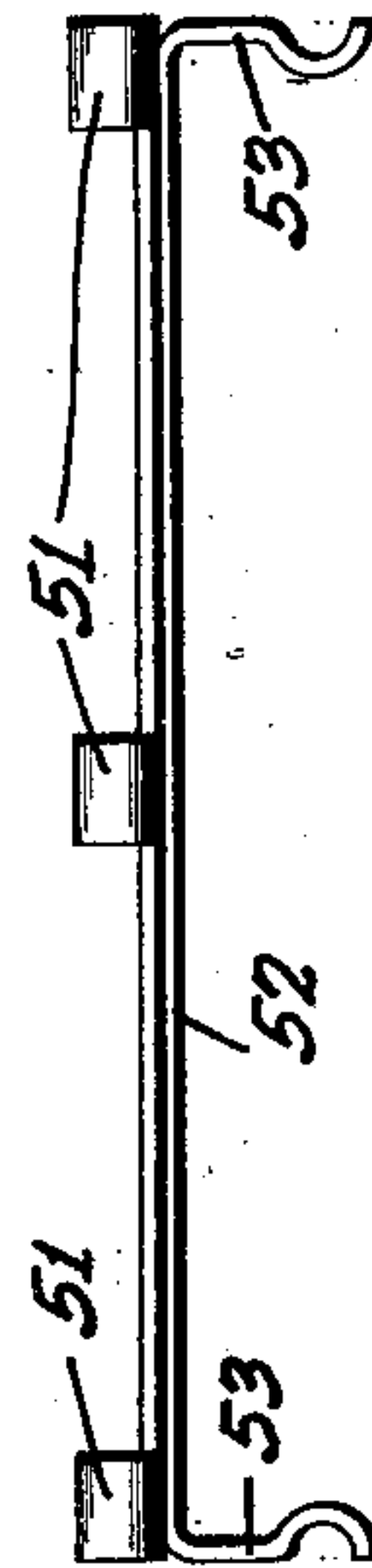


FIG. 9.

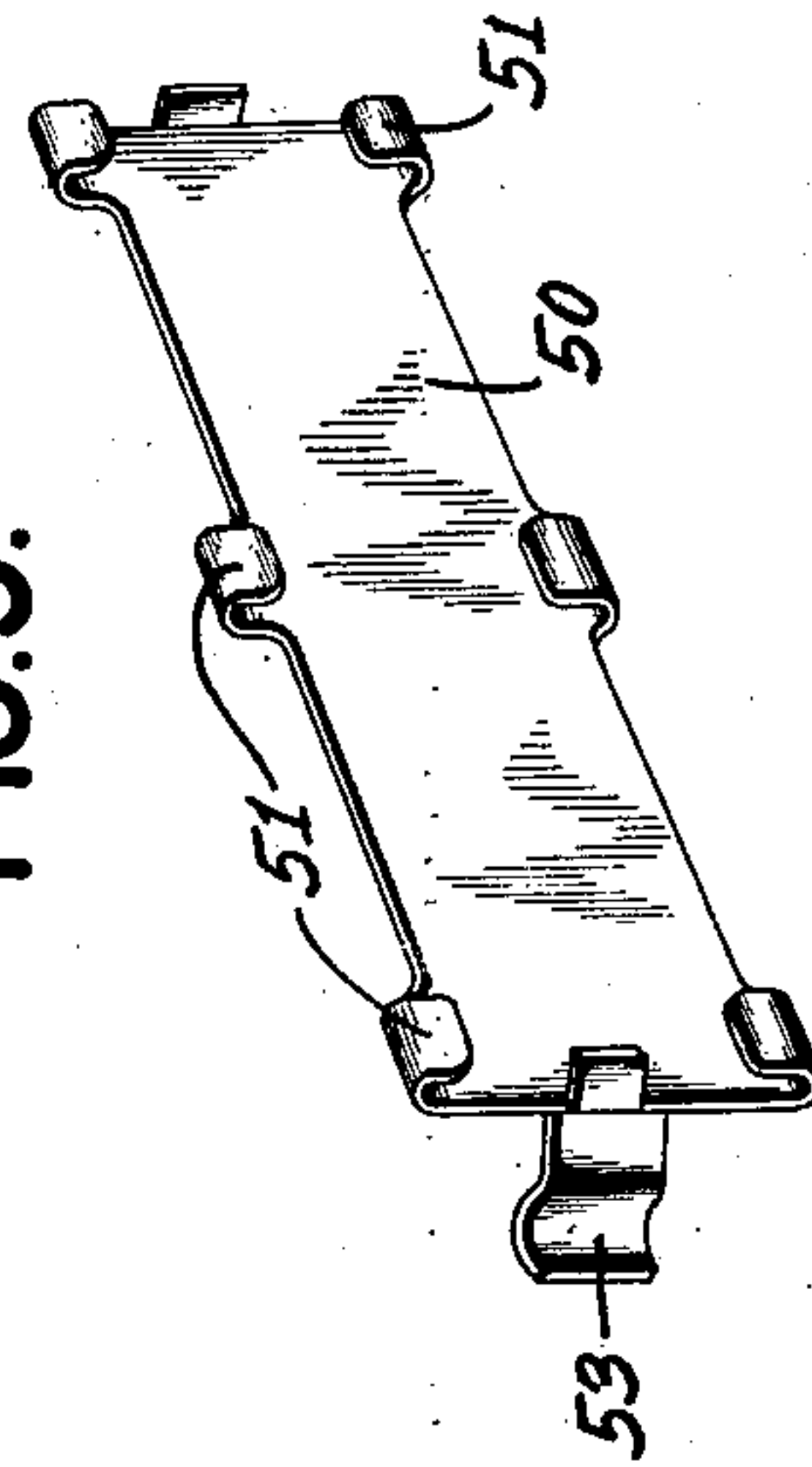
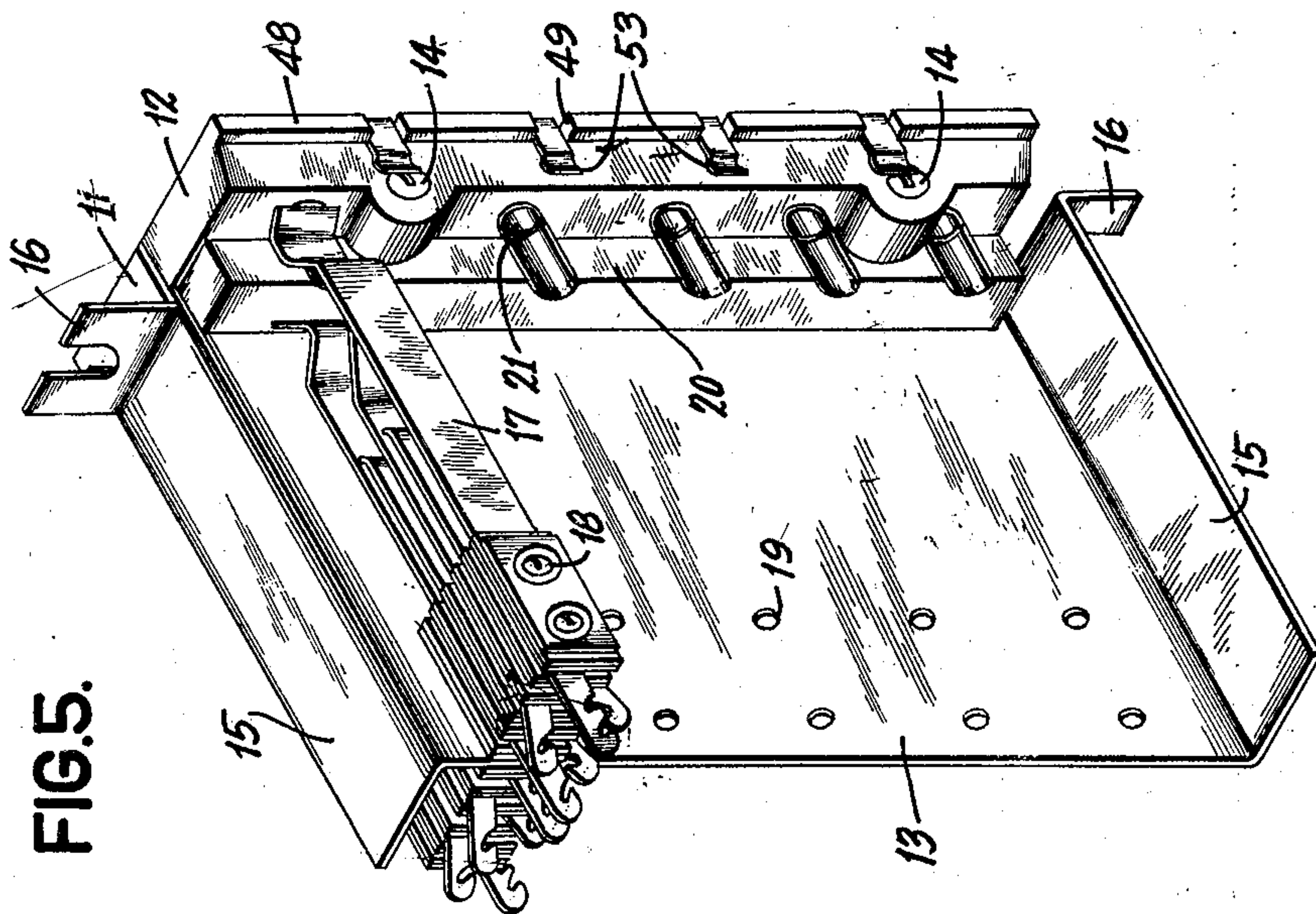


FIG. 5.



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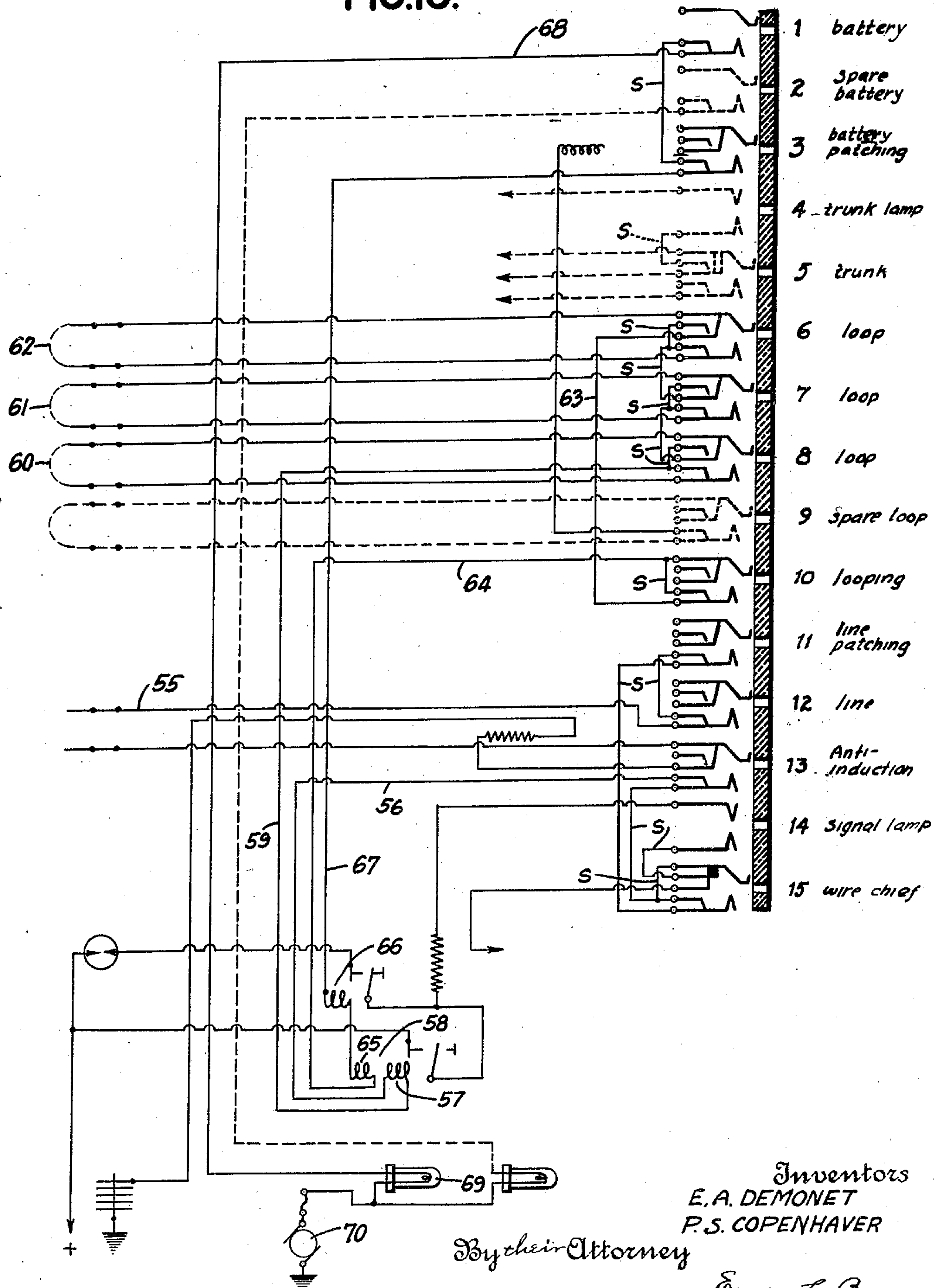
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FIG.10.



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UNITED STATES PATENT OFFICE

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JACK PANEL UNIT

Application filed July 19, 1930. Serial No. 469,131.

This invention relates to switchboard construction and more particularly to a jack panel unit assembly for a pin jack switchboard.

5 Heretofore in pin jack switchboard construction as employed for telegraph purposes, it has been the practice to mount a plurality of pin jacks upon rectangular panel units in horizontal and vertical rows, the
10 panel units then being assembled on a switchboard frame. A typical panel layout may comprise 5 vertical rows and 10 horizontal rows of such rectangular panel units, each unit having sixteen jacks arranged in four
15 vertical and four horizontal rows.

Each line entering the telegraph office terminates at one of the switchboard jacks and in order that any of these lines may be easily and quickly connected to any other line
20 entering the office, or connected to ground, to a source of potential, or to any desired apparatus, it is the practice to furnish one or more additional pin jacks for each line wire, the jacks being connected in groups termed
25 switchboard circuits. For convenience, the jacks associated with each line or circuit are grouped in one vertical row, which may extend down across several panel units. Thus for instance, a main line circuit involving
30 anti-induction apparatus and three normal loop assignments may require, at the switchboard, fifteen or more jacks. The contact springs of these jacks are provided with a considerable number of cross connections,
35 which, in view of the fact that the switchboard circuit extends over a number of panel units, must be made at the rear of the switchboard after the panel units have been assembled on the switchboard frame. With a
40 switchboard having a large number of closely spaced rows of jacks, the individual jack spring soldering lugs are not readily accessible, and the operation of making a multitude of cross connections at the rear of the board
45 is tedious and time consuming.

One of the objects of the present invention is, therefore, to provide a panel unit or a jack strip assembly, in which all the jacks associated with a particular switchboard circuit
50 may be supported upon the same panel unit,

whereby the cross connections between the jacks of each circuit may be made prior to assembly of the jack strip upon the switchboard frame.

Another object is to provide a novel means
55 of securing the jacks to the panel unit entirely at the rear of the panel and in such manner that the individual jacks may be readily removed.

Another object is to provide an improved
60 means for securing the jack panel unit to the switchboard frame.

A still further object is to provide a card holder for individual jacks which may be readily attached and detached from the panel
65 unit.

Other objects and advantages will hereinafter appear.

In accordance with one embodiment of the invention, a single insulating panel strip is
70 provided for each switchboard circuit, two of such strips being secured together and to a central jack supporting plate to comprise a single panel unit. The elements of the jacks
75 are assembled prior to attachment to the unit and the jacks are secured to the central plate by means common to one jack of each of the two switchboard circuits terminating at the panel unit. The central jack supporting
80 plate is provided with lugs at the top and bottom thereof, offset to opposite sides of the plate, by means of which the unit is secured to horizontal crossbars forming part of the switchboard frame. The top lugs of one
85 horizontal row of units alternate with the bottom lugs of the row of units thereabove.

Card holders are secured to the front of each unit, adjacent each jack, by spring clips engaging in recesses provided in the sides of the panel strips, the construction being such
90 that the adjacent panel units may be disposed in close contact with each other.

In order that the invention may be more fully understood reference will be had to the accompanying drawings in which
95

Figure 1 is a sectional view on the line 1—1 of Figure 2, of a panel unit constructed in accordance with the present invention;

Figure 2 is a side elevation of the panel unit;

Figure 3 is a fragmentary view of the front of a switchboard having a number of panel units secured thereto;

Figure 4 is a perspective view of a key which may be employed for operating the jacks shown in Figure 1;

Figure 5 is a perspective view of the panel unit with a number of the jacks removed;

Figures 6 and 7 are plan views and section views respectively, of an insulating spacing member employed in mounting the jacks upon the jack panel;

Figure 8 is a side view of one of the card holders provided for the individual jacks;

Figure 9 is a perspective view of the card holder; and

Figure 10 is a diagrammatic view of a single panel strip and associated switchboard circuit employing a large number of pin jacks.

Referring first to Figure 5 the panel unit comprises a pair of insulating panel strips 11 and 12 secured to each side of a central plate 13 by means of bolts 14. The plate 13 extends rearwardly of the panel strips and its upper and lower ends are offset as indicated by the numeral 15, to opposite sides of the plate, each of the offset portions being provided with a vertical lug 16 apertured to receive a screw for attachment of the unit to the switchboard frame. A number of jacks 17 are secured to the plate 13 by bolts 18 passing through the jack assembly and through apertures 19 in the supporting plate. The sleeve contacts of the jacks rest upon a seat 20 extended rearwardly from the insulating panel strips 11 and 12 and each of the panel strips is provided with openings 21 in alignment with the jacks for the reception of a cord plug or key.

Referring now to Figure 1, the jacks comprise a sleeve spring 23, a sleeve normal spring 24, a tip spring 25, a tip normal contact 26, and an extra contact 27 intermediate the sleeve and sleeve normal springs. The jack contacts are separated by insulating members 28 and are rigidly secured together by tubular eyelets or rivets 29 passing through the contact springs and insulating members. Insulating sleeves 30 surround the eyelets and maintain the same out of electrical contact with the jack parts.

The bolts 18 by which two of the jacks are assembled back to back on each side of the central plate 13, pass through the eyelets 29 and through insulating spaces 32 having bosses 33 disposed in the apertures 19 of the plate, so as to center the bolts in the apertures and definitely locate the jacks with respect to the panel strips.

The jacks are constructed so as to operate either as a jack or as a switch. When employed as a switch, a key 34 is inserted in the panel opening switch, in the position shown with reference to the lower jack in Figure 1, permits the jack contacts to remain closed.

If it is desired to open the jack contacts, the key is rotated 180° to the position shown with reference to the upper jack in Figure 1, thus causing the tip and sleeve springs to part from their normal contacts.

The construction of the key 34 is shown in perspective in Figure 4 and comprises an operating handle or knob 35, a cylindrical portion 36, a part of which is cut away as indicated at 37 to produce the intermediate portion 40, and a rectangular tip portion 41 joined to the intermediate portion by an inclined part 42. When the key is inserted in the jack in the normal position shown with reference to the lower jack in Figure 1, the intermediate portion 40 of the key rests within the arcuate continuation of the opening 21 formed in the seat 20 and the end of the sleeve spring 23 is positioned within the cut away part of the key.

A differential spring pressure is provided between the sleeve and sleeve normal contacts so as to cause the sleeve normal contact to follow the sleeve contact until it engages the extra contact 27. The sleeve normal contact is therefore always in engagement with one of the jack contacts.

The construction of the jack is specifically covered in a copending application, Serial No. 469,122, filed July 19, 1930, and entitled "Switchboard jack."

The switchboard frame, on which the jack panel units are assembled, has a number of horizontal cross bars, two of which are indicated in Figure 3 at 43 and 44. The panel units are secured to these cross bars by means of the lugs 16. It will be noted that the lugs at the top and bottom of the intermediate panel unit 45 alternate with the lugs at the bottom and top of the adjacent panel units 46 and 47 respectively, thus providing a compact supporting construction.

The panel strips 11 and 12 have flanges 48 at the outer edges thereof, these flanges being notched, as at 49, between the jack openings 21 to receive the spring clips of a card holder of the form shown in Figures 8 and 9. The card holder comprises a plate 50 having a number of intumed tabs 51 beneath which may be held a card containing identifying data for a particular jack opening. A spring member 52 is secured to the back of the plate 50 as by welding and is provided with rearwardly extending clips 53 which engage in the recesses 49 of the insulating jack strips. The recesses 49 retain the card holders in definite position with the spring clips substantially flush with the sides of the panel, thus enabling the adjacent panel units to be placed in close contact with each other.

In Figure 10 a complete switchboard circuit is shown, involving fifteen jacks all of which, it is to be understood, are mounted upon a single panel unit of appropriate length. The switchboard circuit may be

traced from the incoming line 55 through the tip and tip normal contacts of the line jack 12, line patching jack 11, wire chiefs jack 15, and anti-induction jack 13 and thence by conductor 56 to one winding 57 of the differential relay 58. The circuit continues by conductor 59 to the tip normal and tip contacts of a loop jack 8, through the loop 60 and thence by the sleeve and sleeve normal contacts of jack 8 to the loop jack 7 and similarly through the loops 61, loop jack 6 and loop 62 in series and thence from the sleeve normal contact of jack 6, by a conductor 63 to the tip and tip normal contacts of looping jack 10 and conductor 64 to the opposite winding 65 of the differential relay 58. The circuit continues from this point through the winding of the signal relay 66, conductor 67 to the tip and tip normal contact of the battery patching jack 3 and battery jack 1, thence by conductor 68 and resistance lamp 69 to a grounded source of potential 70. The panel unit may also include a spare battery jack 2, a trunk jack 5 and associated signal lamp jack 4, a spare loop jack 9 and a wire chiefs signal lamp jack 14.

It will be noted that the contacts of the various jacks are joined by a considerable number of cross connections or strappings S, some of which are involved in the circuit traced and others of which are required to enable the normal circuit assignments to be changed through the key 34. Since all of the jacks appear upon a single panel unit these interconnections may be made prior to the assembling of the panel unit on the switchboard frame and thus a considerable saving in time effected.

What is claimed is:

1. A jack panel unit comprising a base plate, a plurality of jacks mounted on said plate, an insulating panel carried by said plate having openings in alignment with said jacks, said jacks being electrically discontinuous with the front of said panel.
2. A jack panel unit comprising a metallic base plate having apertures along one side thereof, a plurality of jacks positioned along each side of said plate, insulating means intermediate said jacks and plate, having a portion extending into said apertures, means passing through said jacks and insulating means for securing the jacks to the plate, and a panel member mounted on said plate having openings in alignment with said jacks.
3. In combination, a jack having a plurality of contact springs, a tubular rivet rigidly securing said contact strips together, a panel unit and means passing through said rivet for securing the jack to said panel unit.
4. In combination, a jack comprising a plurality of contact springs, a tubular rivet passing through said springs for securing the same rigidly together in insulated spaced relation, a panel unit having a base plate pro-

vided with apertures, an insulating spacing member having a portion thereof extending into said apertures, means passing through said tubular rivet and said apertures for securing said jack to said plate and a panel member secured to said plate having an opening in alignment with said jack.

5. In combination, a panel unit comprising a base plate having apertures along one side thereof, a plurality of jacks arranged along each side of said plate, said jacks comprising contact elements held together by tubular rivets, means passing through said tubular rivets and said apertures for securing said jacks to the plate and insulating means for centering said securing means in said apertures.

6. A switchboard assembly comprising a plurality of horizontal frame members and panel units secured thereto, each of said units comprising a base plate, a plurality of jacks secured to the plate at each side thereof, an insulating panel member carried by the plate having openings in alignment with said jacks, said plate having a lug at each end thereof offset in opposite directions from the center thereof and means passing through said lugs for securing the unit to the horizontal frame members.

7. A switchboard assembly comprising a plurality of horizontal frame members and a plurality of rows of panel units secured thereto, each of said units having fastening lugs at the upper and lower ends thereof offset in opposite directions from the center of the panel unit and means passing through said lugs for securing said units to said horizontal frame members, the lugs at one end of the panel units of each horizontal row alternating with those at the opposite end of the panel units of the adjacent row.

8. A panel unit comprising a base plate having a plurality of jacks secured thereto, a panel member mounted on said plate, having openings in alignment with said jacks and card holders for said jacks carried by said panel member intermediate said openings, the sides of said panel member being recessed and said card holder having means engaged in said recesses to secure the same to said panel member.

9. A panel unit for a pin jack switchboard comprising a panel member having two vertical rows of openings therein, jacks mounted behind said panel unit in alignment with said openings, the edges of said panel member being recessed between said openings and card holders mounted on said unit, having means engaging in said recesses.

10. In combination a switchboard frame, a plurality of telegraph switchboard circuits terminating at said frame, each circuit including a plurality of jacks, a panel unit common to the jacks of each circuit comprising an insulating panel member having a

vertical row of openings, means for mounting said jacks behind said panel member in alignment with said openings, a plurality of said panel units being secured to said frame in vertical alignment with their adjoining ends in dovetailed relation.

11. A pin jack switchboard comprising a plurality of panel units, a plurality of switchboard circuits, a group of pin jacks for each of said switchboard circuits, each of said groups of jacks being mounted upon a single panel unit, whereby interconnections between the jacks of each switchboard circuit may be made prior to installation of said panel units on said switchboard.

12. A pin jack switchboard comprising a plurality of panel units, a plurality of switchboard circuits, a group of pin jacks for each of said switchboard circuits, including two or more of such jacks as line, loop, wire chief's, battery, signal lamp and patching jacks, each of said groups being mounted upon a single panel unit whereby cross connections between the jacks of each switchboard circuit may be made prior to installing said panel units on the switchboard.

In testimony whereof we affix our signatures.

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