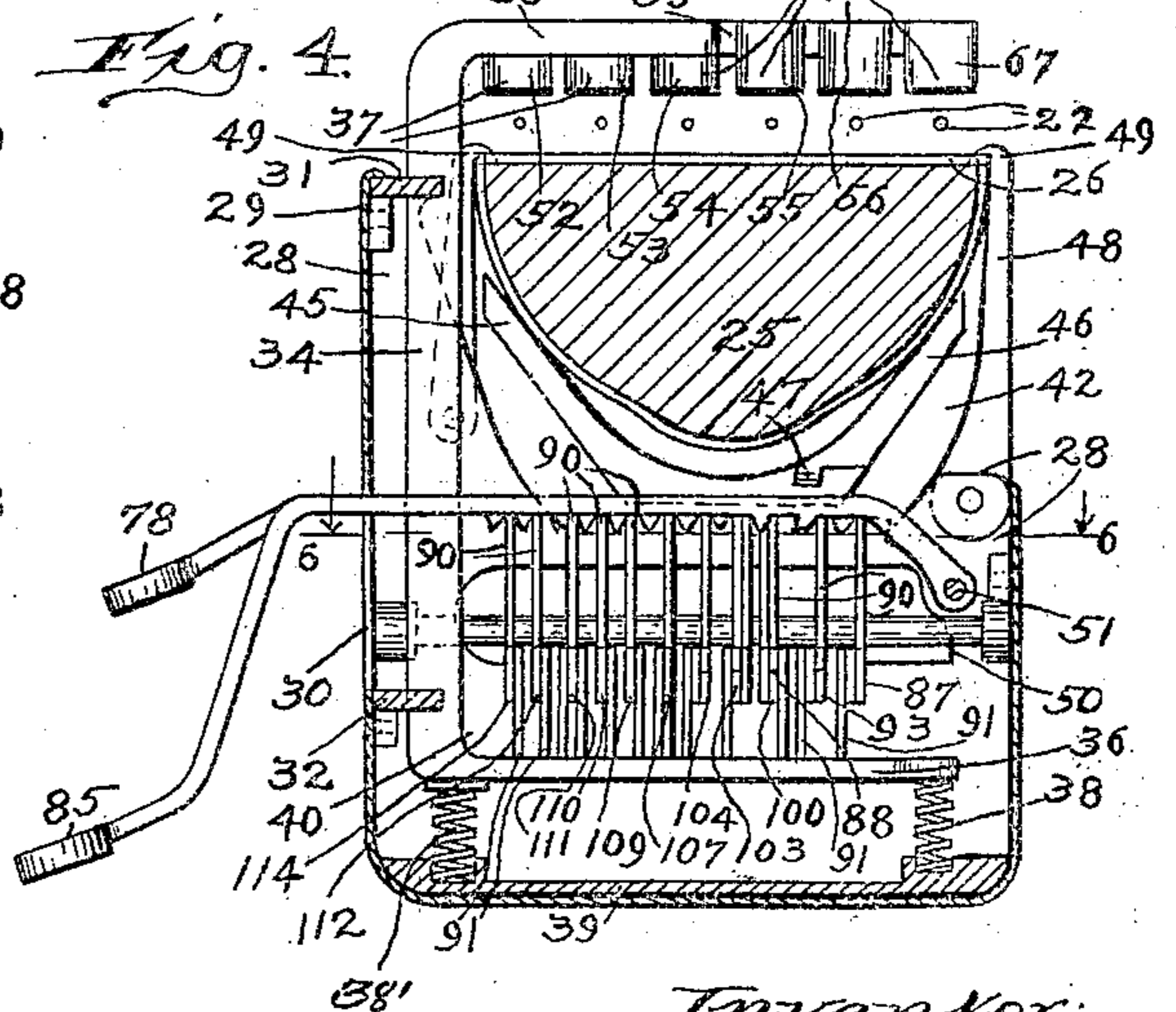
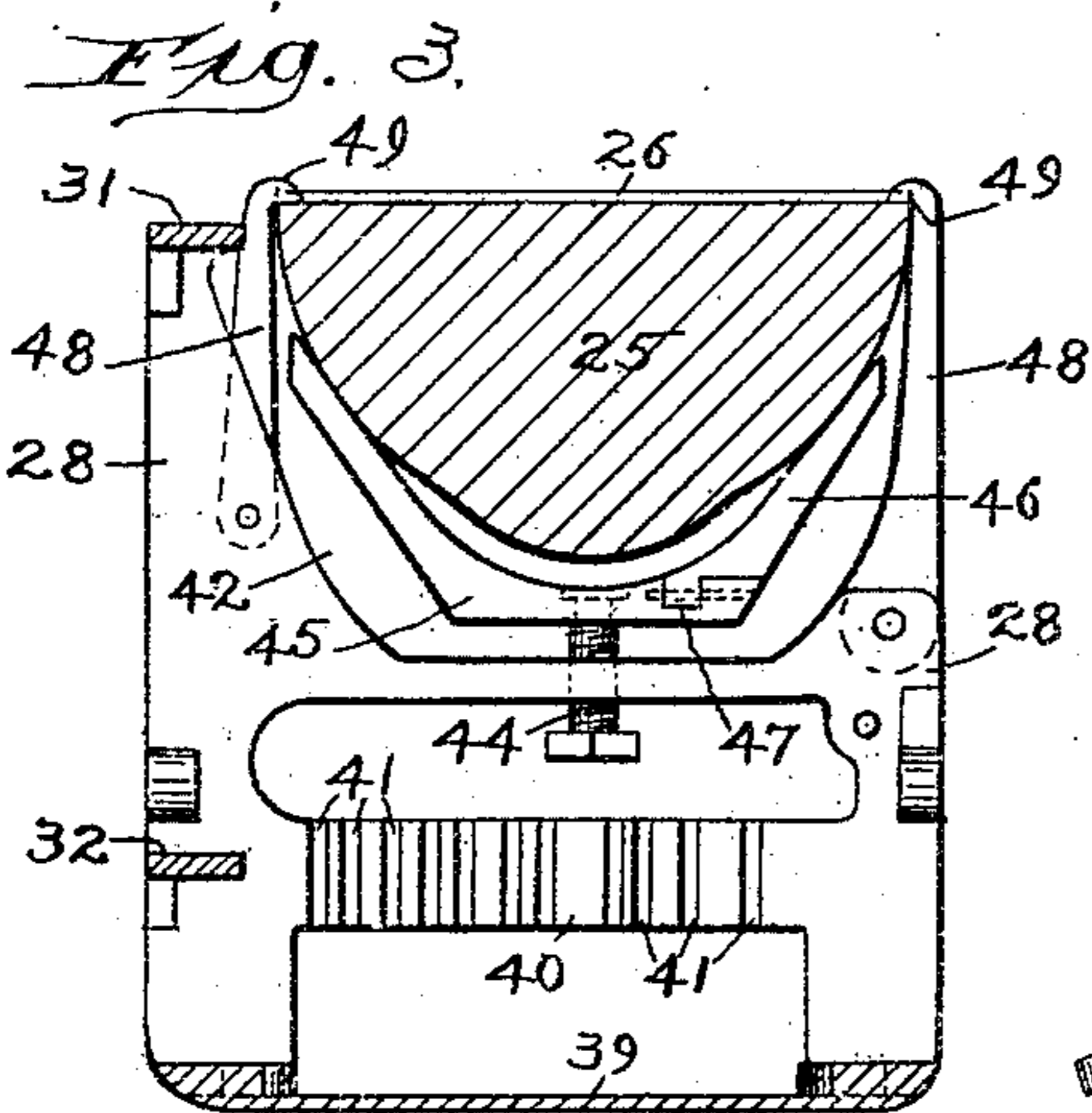
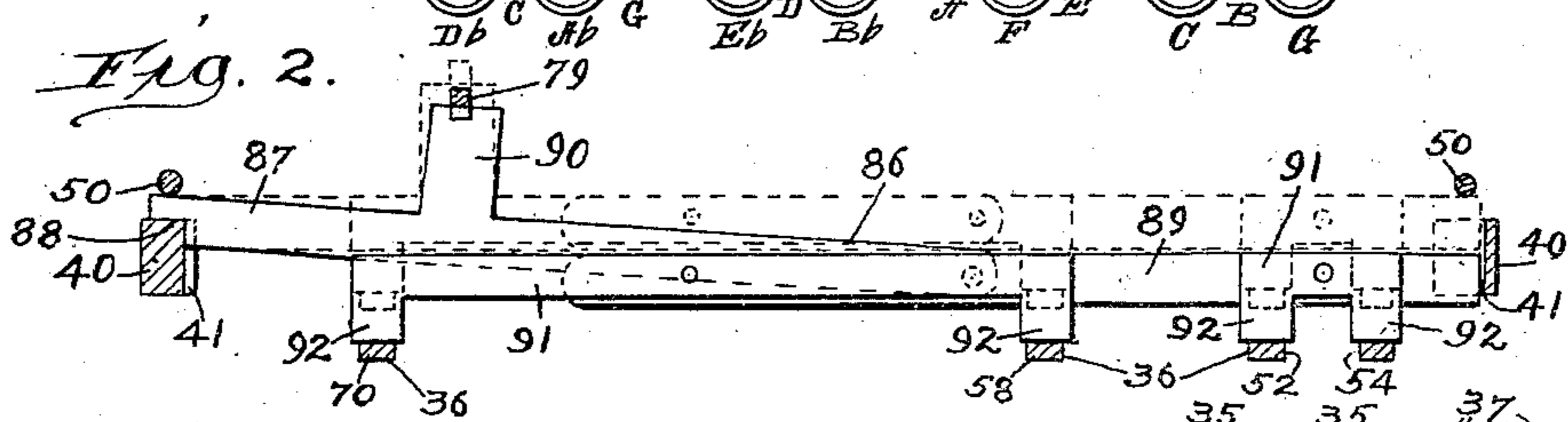
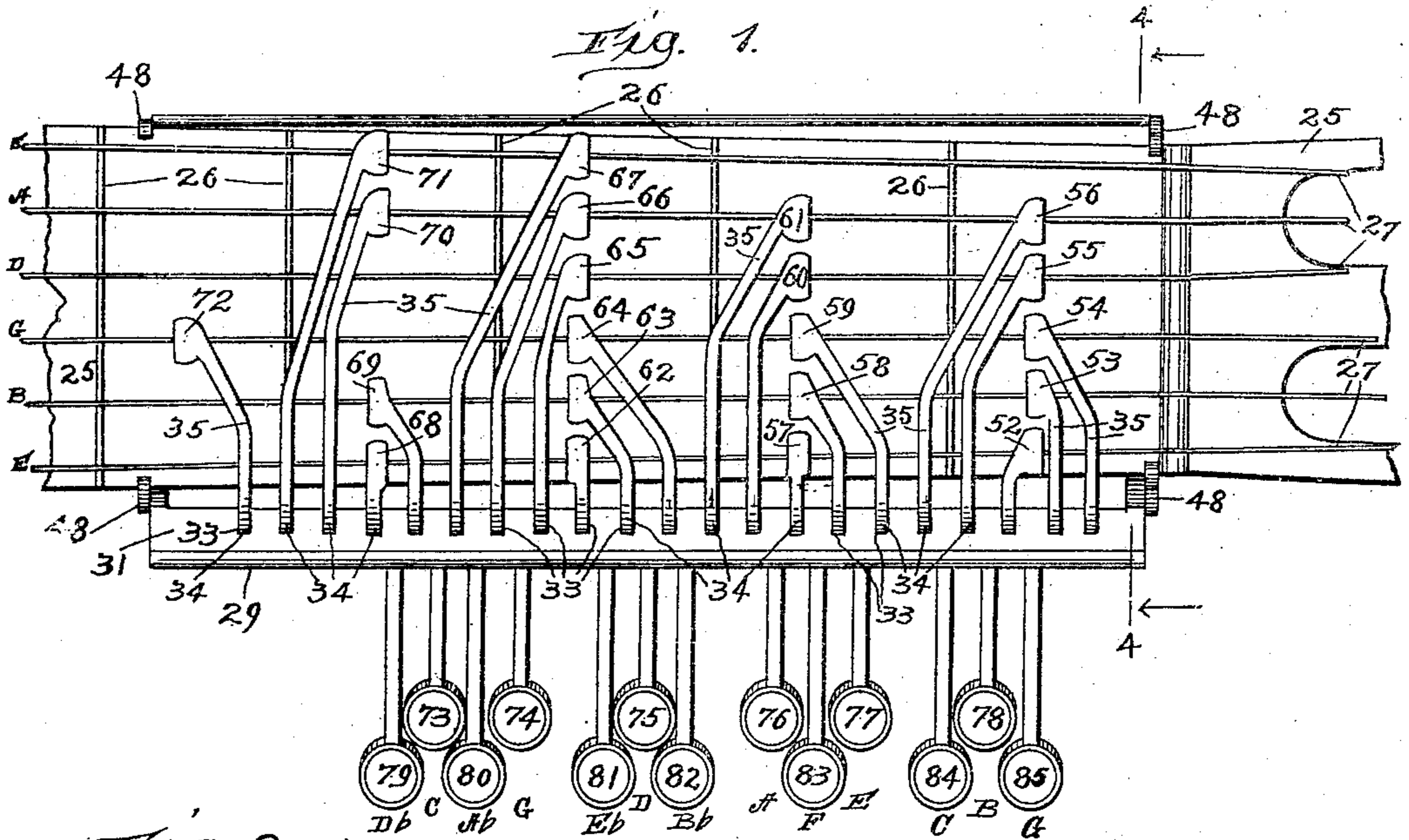


L. E. HULL.
HARMONIC ATTACHMENT FOR STRINGED MUSICAL INSTRUMENTS.
APPLICATION FILED SEPT. 5, 1908.

928,866.

Patented July 20, 1909.

3 SHEETS—SHEET 1.



Witnesses:

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Inventor:

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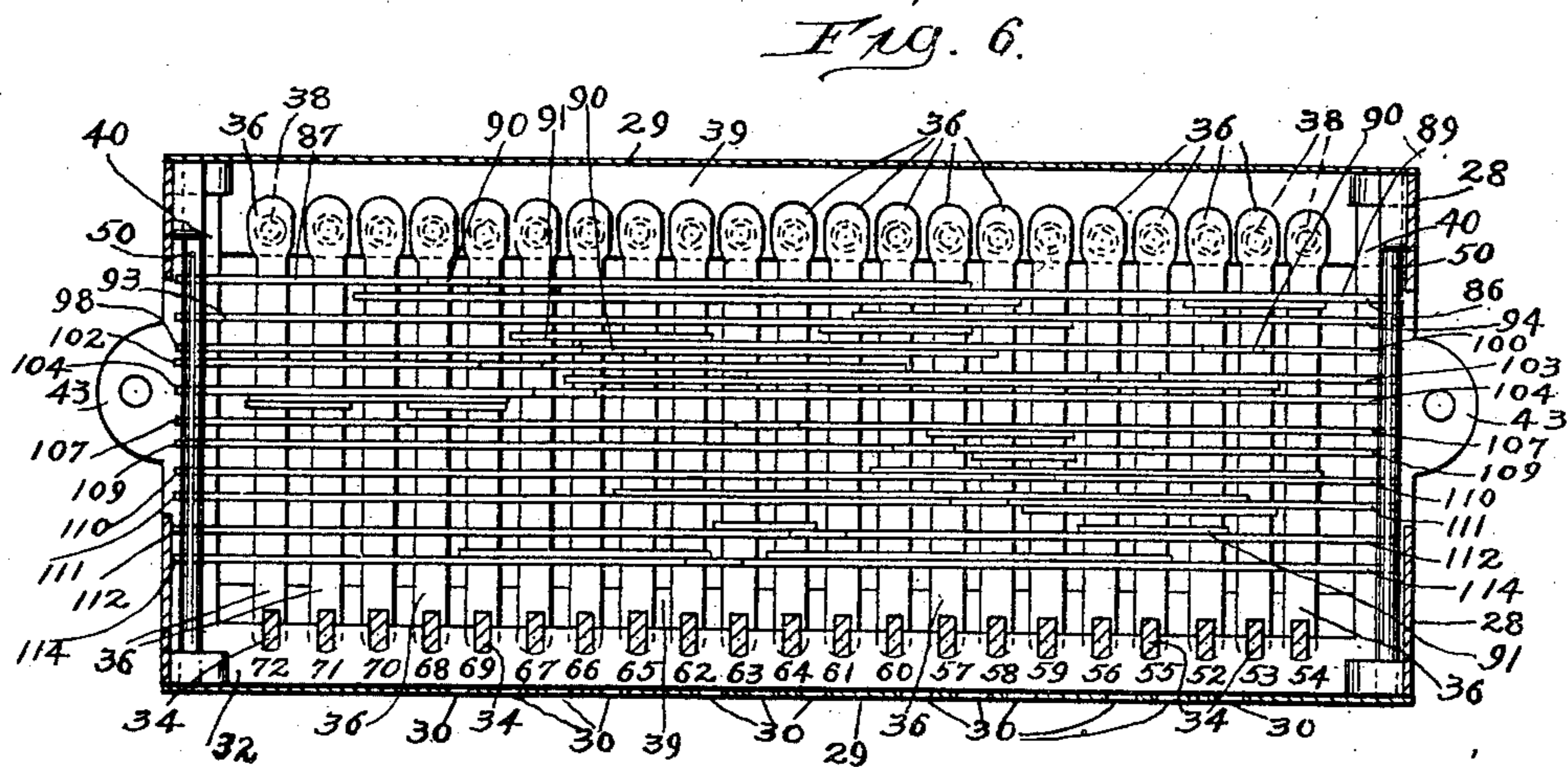
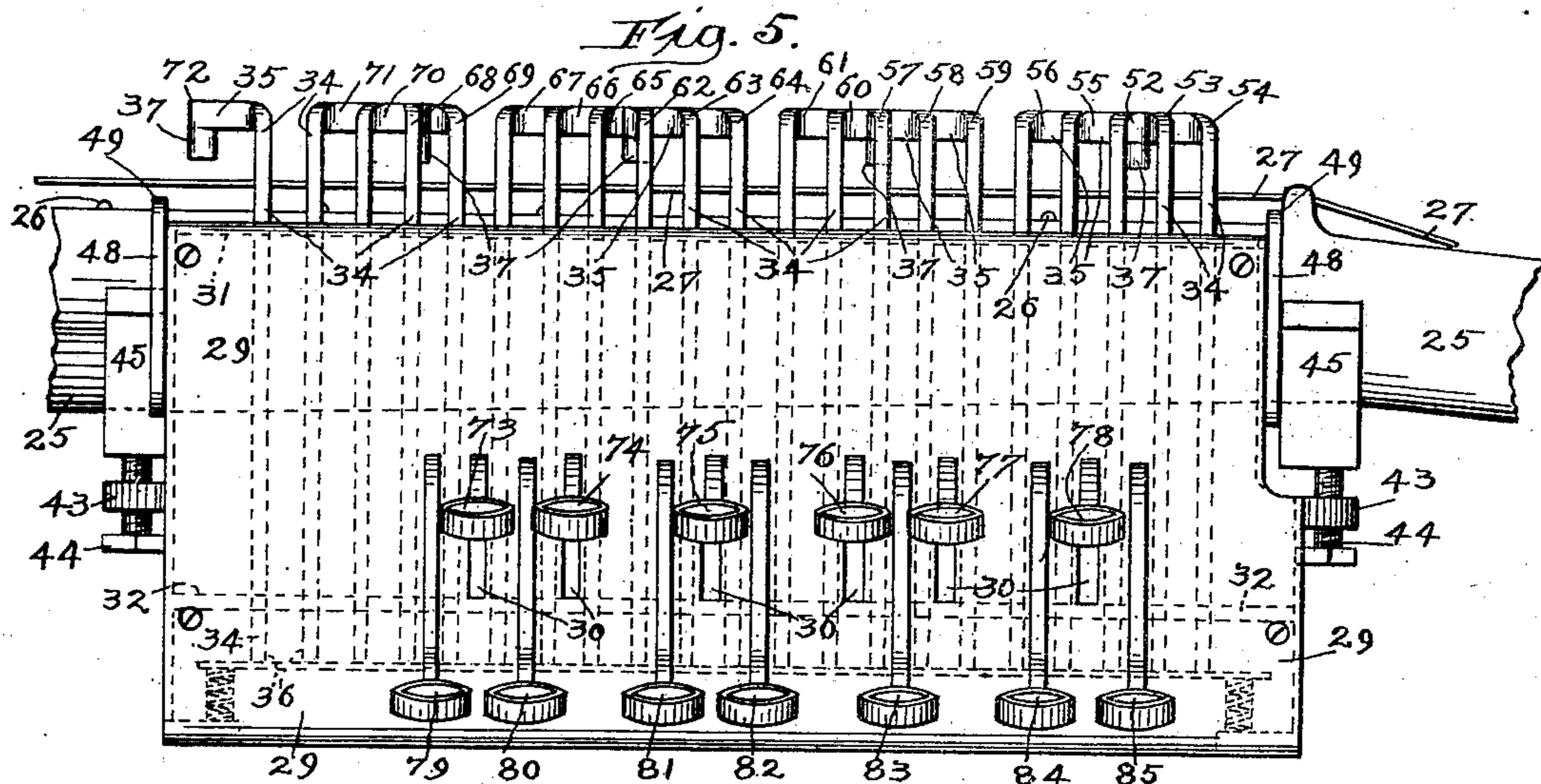
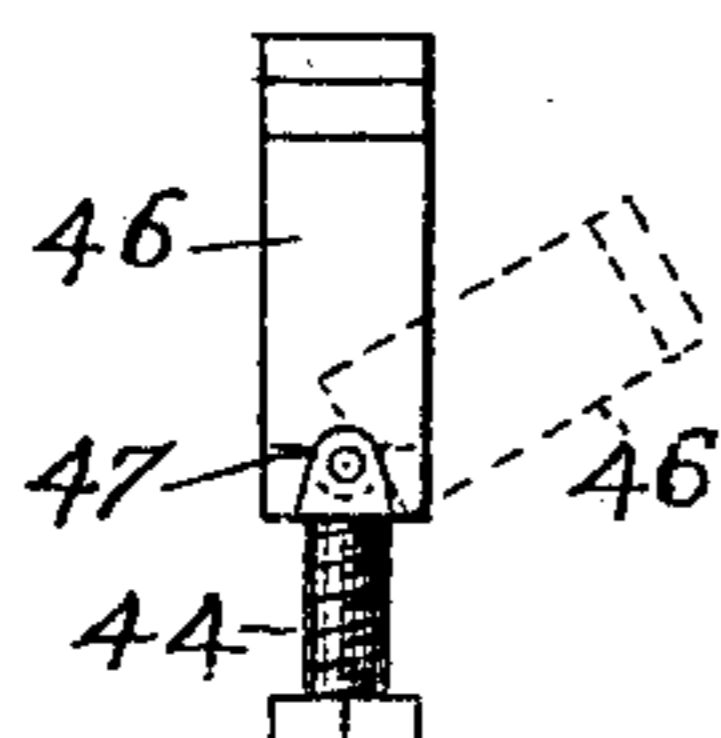
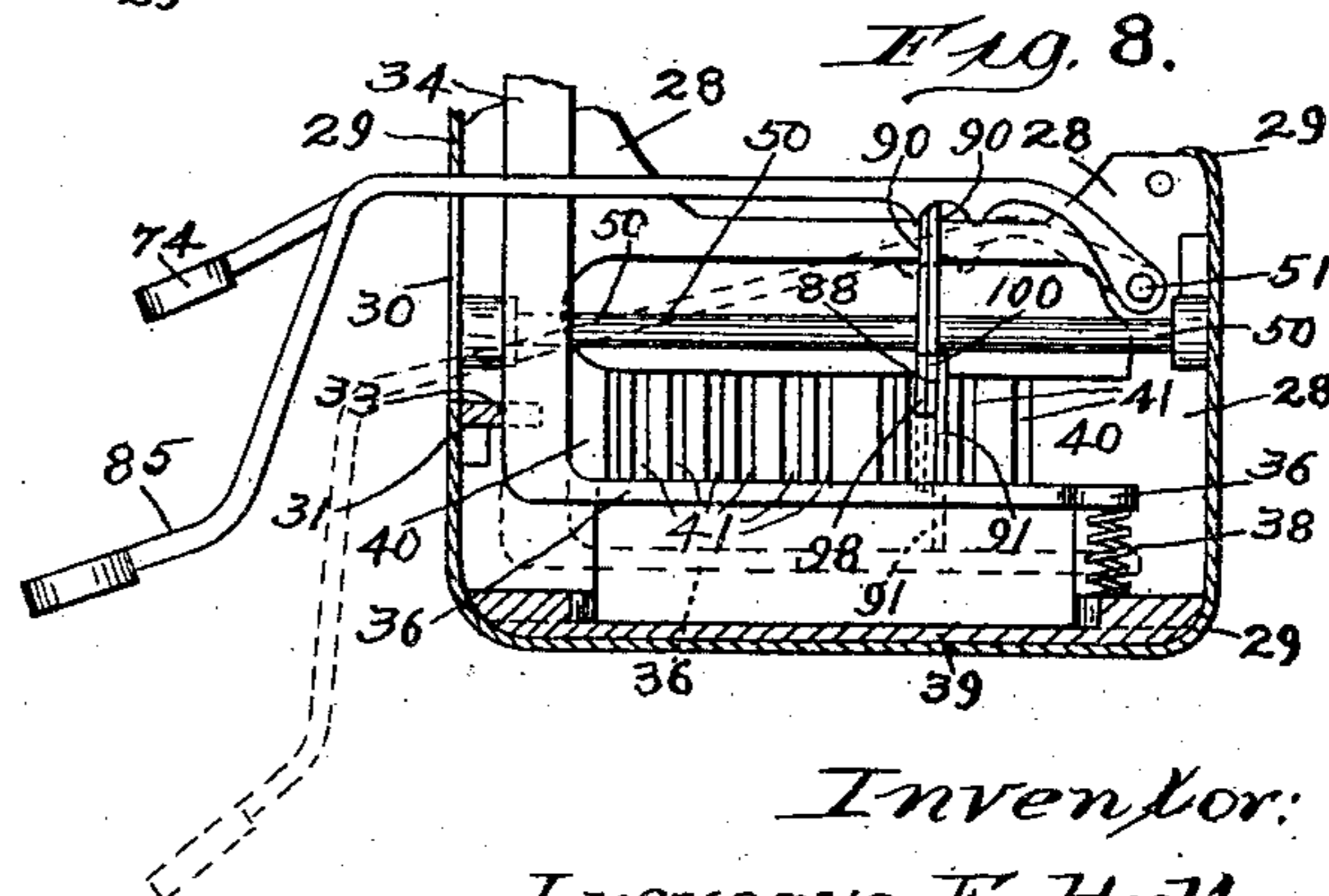


Fig. 7.



Witnesses:

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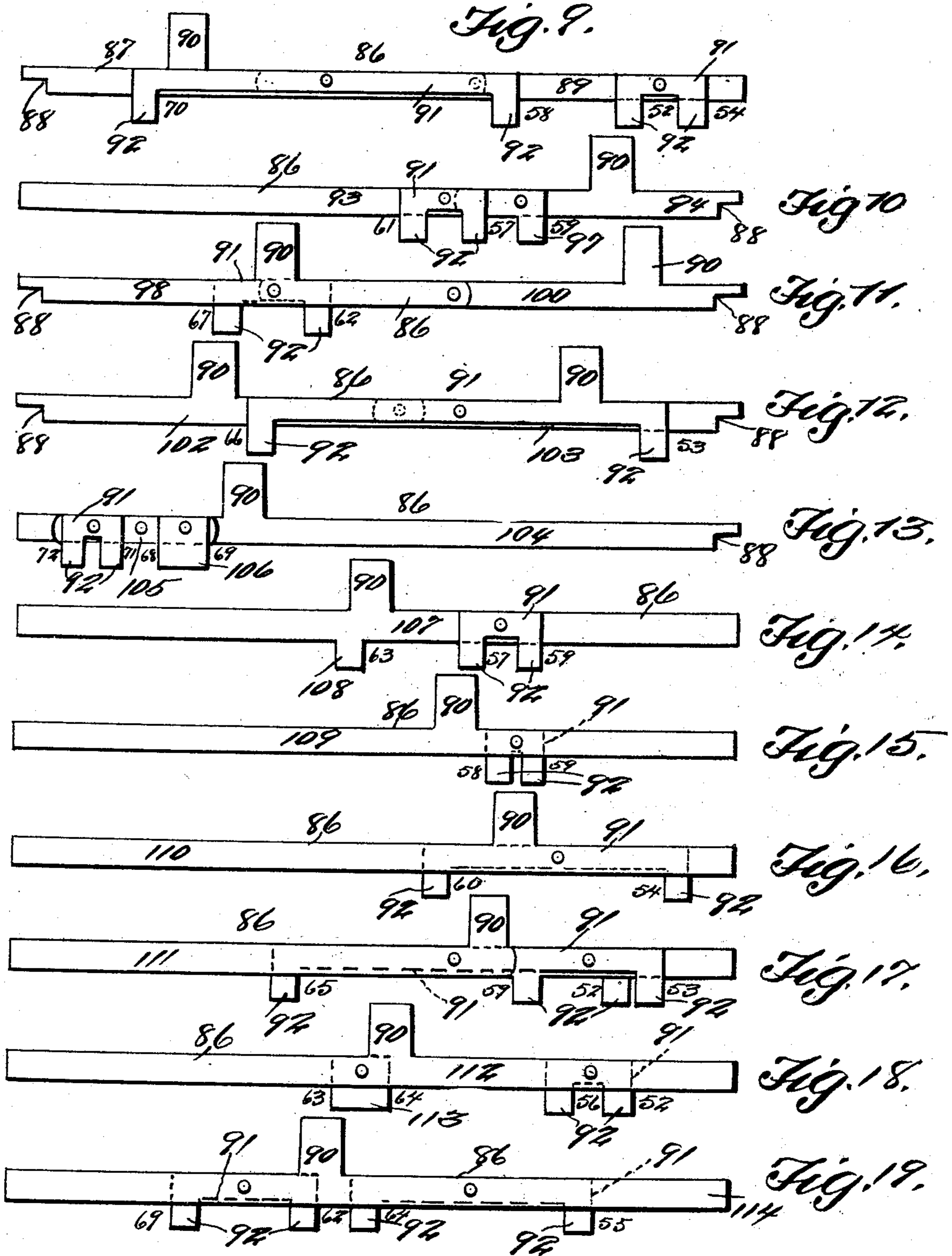
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3 SHEETS—SHEET 3.



Witnesses

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HARMONIC ATTACHMENT FOR STRINGED MUSICAL INSTRUMENTS.

No. 928,866.

Specification of Letters Patent.

Patented July 20, 1908.

Application filed September 5, 1908. Serial No. 451,873.

To all whom it may concern:

Be it known that I, LYCURGUS E. HULL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Harmonic Attachments for Stringed Musical Instruments, of which the following is a specification.

This invention relates to improvements in an attachment for stringed musical instruments, which while more especially intended to be used on guitars, and will be hereinafter described in connection therewith, yet is applicable for use, with slight modifications, on banjos, mandolins and analogous instruments, and has for its principal object to provide a device which may be readily attached to the neck of the instrument or removed therefrom, and when in place on the neck will enable the player to strike chords by the use of one finger only, thus avoiding the fatigue and injury to the fingers incident to the manipulation of the strings in the old style or way of playing.

Another object is to provide means for clamping the attachment to a guitar-neck, and for adjusting it with relation to the strings.

Other objects and advantages of the invention will be disclosed in the subjoined description and explanation.

In the accompanying drawings, which serve to illustrate the invention—Figure 1 is a plan view of the upper portion of a guitar-neck, showing the attachment secured thereto; Fig. 2 is a detail view partly in section and partly in elevation of the D-flat key and its related parts, showing by the upper dotted lines the normal positions of the parts and by the continuous lines the positions the parts will occupy when the chord is produced; Fig. 3 is a cross-sectional view of the guitar-neck, and an inner face view of one of the end pieces of the attachment frame, showing the means for clamping the attachment to the neck; Fig. 4 is a cross-sectional view partly in elevation taken on line 4—4 of Fig. 1 looking in the direction indicated by the arrows; Fig. 5 is a front elevation of the attachment in position on a portion of the guitar-neck; Fig. 6 is a plan sectional view taken on line 6—6 of Fig. 4; Fig. 7 is a detached side view of one of the adjustable yokes used in securing the attachment to the neck; Fig. 8 is a sectional view taken on

line 4—4 of Fig. 1 of a part of the attachment with all but one of the key-operated-levers which actuate the presser-members removed, and showing by dotted lines the operative positions of said parts; Figs. 9 to 19, inclusive, are detached views in side elevation of the various key-operated-levers and their pendants or eveners which impinge against the lower transverse portions of the presser-members.

Like numerals of reference, refer to corresponding parts throughout the different views of the drawings.

The neck of the instrument is designated by the reference numeral 25, and, as usual, has frets 26 across its upper surface against which the strings 27 may be pressed in producing chords. The attachment is adapted to be secured to the neck 25 in such a manner that the upper portion of the presser-members will be located above the strings and so that the operating mechanism for said members will be located beneath the neck, and includes a frame which consists of end-pieces 28 which are connected together at a suitable distance apart by means of a casing 29 which extends from the upper front portions of the end-pieces downwardly, then horizontally and then upwardly, preferably, to about the middle of the rear portion of said end-pieces, and has in its front portion a series of vertical slots 30 for the operation of the keys of the attachment. On the inner surface of the front part of the casing, by which is meant that portion on the opposite side of the neck 25 from the body of the player, are secured horizontal and longitudinally extended bars 31 and 32 which are located at the upper and lower portions of the casing, respectively, and each of which is provided with a series of spaced recesses 33 for the reception and operation of the vertical portions of the presser-members 34, each of which is substantially U shaped, that is to say, has rearwardly extending arms 35 and 36 at the upper and lower portions of its vertical part, respectively. Each of the arms 35 of the presser-members is provided on its free end with a downward extension 37 to contact with a string 27 when said member is depressed. As shown in Figs. 4, 6 and 8 of the drawings, each of the arms 36 of said members is supported at its rear portion by means of a spiral spring 38 which is interposed between said arms and a plate 39 at the lower portion

of the casing of the frame. If desired, or found necessary, a second spring 38' (Fig. 4) may be used under the front portion of said arms 36.

5 Each of the end-pieces 28 is provided at its lower part with a transverse portion 40 which is formed on its inner surface with a series of vertical ways 41 for the reception of the levers which carry pendants or eveners to contact with the arms 36. The upper portion of
10 each of the end-pieces 28 is formed with an upwardly flared recess 42, and just below the same at about the middle thereof with an outwardly extending and apertured lug 43, each of which lugs carries a set-screw 44, the
15 upper end of each of which is swiveled in the lower portion of a yoke 45 which yokes are adapted to engage the lower surface of the guitar-neck. Each of the yokes 45 has one
20 of its prongs 46 pivoted as at 47 to its lower portion so that said prong may be turned outwardly from the frame and downwardly, as shown by dotted lines in Fig. 7, to readily release the yokes from the neck. Pivotal-ly
25 secured at its lower end to the upper portion of each of the end-pieces 28 and near its front and rear portions is a clamping-arm 48, each of which is provided at its upper part with an inturned hook 49 to engage the upper surface
30 of the guitar-neck, thus it will be seen that by turning the set-screws 44 in the proper direction the yokes 45 will be caused to engage the lower part of the neck while the hooks 49 on the arms 48 will engage the upper portion
35 thereof, thus securely holding the attachment in position on the neck at the desired place.

Near each of the end-pieces the frame is provided with horizontal rods 50 which are
40 located slightly above the transverse portions 40, and unite the front and rear walls of the frame-casing. Extended longitudinally of the frame and connected at its ends to the end-pieces thereof near their rear edges
45 is a pivot-rod 51 on which are mounted the inner ends of the keys which are horizontally extended through the slots 30 in the front portion of the frame-casing. Located longitudinally with respect to the casing and supported and guided vertically by means of the
50 slotted transverse portions 40 of the end-pieces of the frame are a series of levers which carry pendants or eveners to act on the arms 36 of the presser-members.

55 For the sake of brevity the upper arms 35 and lower arms 36, which are designated in groups by the numerals 35 and 36, respectively, of the presser-members, will hereinafter be referred to individually by the same
60 reference numerals from 52 to 72, inclusive, see Figs. 1 and 6 of the drawings. The upper row of keys are designated by the numerals 73 to 78, inclusive, while the lower row of keys are designated by the numerals 79 to
65 85, inclusive.

Reading now from the rear portion of the attachment (see Figs. 6, 9 to 19, inclusive) the key-operated-levers are designated as
70 wholes by the reference numerals 86. The first of these consists of a bar 87 having at one of its ends a recess 88, and its other end pivotally connected to about the middle of another bar 89 which has its free end located
75 in one of the slots 41 of the cross-piece 40 at the outer end of the frame. The free end of the bar 87 rests on the cross-piece 40 at the opposite end of the frame and in one of the slots 41 thereof, as shown in Fig. 2. Between its ends this bar is provided with an
80 upward extension 90 to contact with the key 79 of the series, each of which keys is preferably provided on its lower surface with a recess to receive the upper ends of similar extensions on the levers. Pivotal-ly secured
85 near the inner and outer ends of the bar 89 are pendants 91 which have at each of their ends a downward extension 92 to contact with the lower arms 54, 52, 58 and 70 to cause the corresponding upper arms to press the strings against the frets to produce the D-flat
90 chord, for it will be understood by reference to Fig. 2 that by pressing on the key 79 it will be caused to engage the extension 90 and force the inner portion of the bar 87 downwardly, thus carrying the bar 89 and the
95 pendants 91 with it until the extensions 92 thereon contact with the above-named lower arms of the presser-members, which will be depressed, and by reason of their connection with the upper arms of the presser-members
100 will cause the latter to press the strings as above stated.

The second lever 86 consists of a bar 93 having its inner portion secured to another bar 94 which has its free end provided with a
105 recess 88 and with an upward extension 90. The inner end of the bar 93 is provided with a downward extension 97 to depress the arm 59, and the projections 92 of a pendant 91 pivotally secured to the inner portion of the
110 bar 93 will contact with the lower arms 57 and 61. This lever is operated by the key 78, and it is obvious that when the parts are depressed thereby the B-chord will be produced.

115 The third lever consists of a bar 98 having a recess 88 at its free end and pivoted at its other end to about the middle of another bar 100 which has at its free end a recess 88. Each of these bars is provided with an upward extension 90, and the bar 100 has pivotally secured at its inner end a pendant 91 having downward extensions 92 to engage the lower arms 62 and 67. To operate this
120 lever the key 74 may be pressed against the extension 90 on the bar 98 to produce the chord of G in the key of G, and by pressing the key 85 against the extension 90 on the bar 100 the chord of G in the key of C will be
125 produced.

The fourth lever consists of two bars 102 and 103 pivotally connected at their inner portions, and each having a recess 88 at its outer end and an upward extension 90. Pivoted to the bar 103 is a pendant 91 having at its ends extensions 92 to contact with the lower arms 53 and 66. By pressing the key 73 against the extension 90 on the bar 102 the chord of C in the key of G will be struck, and by pressing the key 84 against the extension 90 on the bar 103 the chord of C in the key of C will be produced.

The fifth lever consists of a single bar 104 having at one of its ends a recess 88 and near its other end an upward extension 90. Pivoted on the bar 104 between the extension 90 and the end adjacent thereto is a bar 105 which has pivoted near one of its ends a pendant 106 to engage the lower arms 68 and 69, and near its other end a pendant 91 having downward extensions 92 to engage the lower arms 71 and 72. By pressing the key 80 against the extension 90 on the bar 104 the chord of A-flat in the key of A-flat may be sounded.

The sixth lever consists of a single bar 107 having near its middle an upward extension 90 and a pendant 108 to engage the lower arm 63. Pivoted on the bar 107 is a pendant 91 having downward extensions 92 to engage the lower arms 57 and 59. By pressing the key 75 against the extension 90 on the bar 107 it is apparent that the chord of D in the key of D may be sounded.

The seventh lever consists of a single bar 109 having an upward extension 90 and provided near said extension with a pivoted pendant 91 having downward extensions 92 to engage the lower arms 58 and 59, so that when the key 76 is depressed the chord of A in the key of A may be sounded.

The eighth lever also consists of a single bar 110 having an upward extension 90 and provided with a pivoted pendant 91 having downward extensions 92 to engage the lower arms 54 and 60. By pressing the key 77 against the extension 90 the chord of E in the key of E may be produced.

The ninth lever consists of a single bar 111 having an upward extension 90 and two pendants 91 pivoted thereto on each side of the extension 90, and each having downward extensions 92 to engage the lower arms 52, 53, 59 and 65, so that by pressing the key 83 against the extension 90 the chord of F will be produced.

The tenth lever consists of a single bar 112 having an upward extension 90 and provided with a pendant 113 pivoted near one side of said extension to engage the lower arms 63 and 64, and with another pivoted pendant 91 having downward extensions 92 to engage the lower arms 52 and 56, so that by pressing down on the key 82 the chord of B-flat in the key of B-flat may be produced.

The eleventh lever consists of a single bar 114 having an upward extension 90 near its middle and provided on each side thereof with a pivoted pendant 91 each having downward extensions 92 to engage the lower arms 62, 69, 55 and 64, so that when the key 81 is pressed against the extension 90 the chord of E-flat in the key of E-flat may be sounded.

By providing some of the levers 86 with recessed ends it is obvious that the upper outer portions thereof will rest or fulcrum on the parts 40 of the frame, while the vertical end portions thereof will be held by the ways 41 in said parts, and as most of the pendants are pivotally mounted on said levers, it is apparent that uniform movement will be imparted to the lower arms of the presser-members and through the latter to the upper arms thereof and against the strings.

From the above description of my improvements it will be seen that the improved attachment constructed according to my invention is of a simple and inexpensive nature, and is especially well adapted for use by reason of the certainty and character of its operation, and of the fact that the upper arms of the presser-members will be caused to press the strings firmly and uniformly on account of the peculiar construction, arrangement and operation of the levers and the pendants which they carry, which parts co-act with the keys and the lower arms of the presser members to impart uniform or even pressure to said presser members, and through the upright portions of the presser-members to the upper arms thereon.

It will also be obvious from the above description that the device is susceptible of considerable modification without material departure from the principles and spirit of the invention, and for this reason I do not desire to be understood as limiting myself to the precise form and arrangement of the several parts of the device as herein set forth in carrying out my invention in practice.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters-Patent, is—

1. A harmonic attachment consisting of a frame, means for detachably securing said frame below the neck of a musical instrument, a series of presser members having arms which extend across said neck above and below when the attachment is in place, and means carried by said frame for actuating said arms.

2. A harmonic attachment consisting of a frame, means for securing said frame below the neck of an instrument when said attachment is in place, a series of presser members having arms occupying corresponding positions above and below said neck, and means operating on the arms below said neck to actuate the arms above said neck.

3. A harmonic attachment comprising a detachable frame, U-shaped members mounted in said frame and having their arms extending above and below the neck of an instrument when said attachment is in place, means operating on the arms below said neck to actuate them in predetermined sets, and means operative on said actuating means to set the latter in operative position.
4. A harmonic attachment for musical instruments comprising a frame, presser members movably mounted in said frame, said presser members having arms extending transversely of said frame and adapted to occupy corresponding positions above and below the neck of an instrument when said frame is in place, and means operative on the lower arms to give a vertical movement to the upper arms.
5. A harmonic attachment for musical instruments comprising a frame adapted to be secured below the neck of a stringed instrument, a series of U-shaped presser members whose arms extend transversely above and below said neck when the attachment is in place, and means operative on the lower arms, to impart a vertical movement to the arms.
6. A harmonic attachment for stringed musical instruments comprising a frame adapted to be secured below the neck of an instrument, a series of U-shaped presser members whose arms extend transversely above and below said neck when the attachment is in place, means for holding said arms normally elevated, and means operative on the lower arms to impart a downward vertical movement to the upper arms.
7. A harmonic attachment for stringed musical instruments, comprising in combination with an instrument having a neck, a frame adapted for attachment below said neck, a series of transverse arms mounted in said frame and extending below said neck, a second series of transverse arms occupying positions above said neck corresponding to and rigid with said first series of arms, means for holding said arms normally raised, means for imparting a downward vertical movement to said arms, and means for depressing said arms in pre-selected groups.
8. An attachment for stringed musical instruments consisting of a frame, means for attaching it to the neck of an instrument, a series of presser-members mounted for vertical movement on the frame and having upper and lower arms extended above and below the neck respectively when said attachment is in place, a series of keys pivotally secured at one of their ends on the frame and extended through the same, and means interposed between the keys and said lower arms to cause the presser-members to be deflected by the downward pressure of the keys.
9. A harmonic attachment for stringed musical instruments comprising in combination with an instrument having a neck, a frame adapted to be secured below said neck, a series of U-shaped members having arms extending transversely above and below said neck when said attachment is in place, means acting on the lower of said arms to normally hold said members in elevated position, means for moving said members to lowered position in pre-selected groups and means comprising key-levers projecting through said frame, for actuating said pre-selected groups.
10. A harmonic attachment for stringed musical instruments consisting of a frame, means for attaching it to the neck of an instrument, a series of presser-members mounted for vertical movement on the frame and having upper and lower arms extended above and below the neck respectively when said attachment is in place, springs to hold said members in their elevated positions, a series of keys pivotally secured at one of their ends on the frame, and means movably supported on the frame longitudinally thereof and connecting the keys and lower arms of the presser-members to cause the latter to be deflected by the downward pressure of the keys.
11. An attachment for stringed musical instruments consisting of a frame, means for attaching it to the neck of an instrument, a series of presser-members mounted for vertical movement on the frame and having upper and lower arms extended above and below the neck respectively when said attachment is in place, springs to hold said members in their elevated positions, a series of keys pivotally secured at one of their ends and extended crosswise of the frame, levers movably supported on the frame longitudinally thereof between the keys and said lower arms, extensions mounted on said levers to engage the keys and arms so that the presser-members will be deflected by the downward pressure of the keys.
12. An attachment for stringed musical instruments consisting of a pendant frame, means for attaching it to the neck of an instrument, a series of presser-members mounted for vertical movement on the frame and having upper and lower arms extended above and below the neck respectively when said attachment is in place, a series of keys pivotally mounted at one of their ends and extended crosswise of the frame, levers movably supported on the frame between the keys and said lower arms and having means to engage the keys, and pendants pivotally mounted on said levers and having downward extensions to engage the lower arms of the presser-members.
13. An attachment for stringed musical instruments consisting of a frame, means for detachably attaching it to the neck of an instrument, a series of presser-members mount-

ed for vertical movement on the frame and having upper and lower arms extended above and below the neck, respectively when said attachment is in place, springs engaging said lower arms to hold the members in their elevated positions, a series of keys pivotally secured at one of their ends and extended crosswise of the frame, levers movably supported on the frame between the keys and said lower arms and having means to engage the keys, and pendants pivotally mounted on said levers and having downward extensions to engage the lower arms of the presser-members.

14. An attachment for stringed musical instruments consisting of a frame, means for detachably and adjustably attaching it to the neck of an instrument, a series of presser-members mounted for vertical movement on the frame and having upper and lower arms extended above and below the neck respectively when said attachment is in place, a series of keys pivotally secured at one of their ends and extended crosswise of the frame, springs engaging the rear lower portions of said arms to hold the members in their elevated positions, levers movably supported on the frame longitudinally thereof between the keys and said lower arms and having means to engage the keys, and pendants piv-

otally mounted on said levers and having downward extensions to engage the lower arms of the presser-members and other extensions on some of said levers to engage said arms.

15. In an attachment for stringed musical instruments, the combination with a frame having upwardly flared recessed end-pieces, of a clamping-arm pivotally secured to said end-pieces on each side of the recess therein and adapted to engage the upper portion of the neck of the instrument, and a yoke adjustably secured on each of the end-pieces of the frame and having one of its arms pivoted for longitudinal movement with respect to the neck.

16. In an attachment for stringed musical instruments, the combination with a frame having spaced apart end-pieces, of clamping-arms pivotally secured to said end-pieces, one near each of its side edges, and adapted to engage the upper portion of the neck of the instrument, and a yoke adjustably secured on each of the end-pieces of the frame to engage the lower portion of the neck of the instrument.

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