

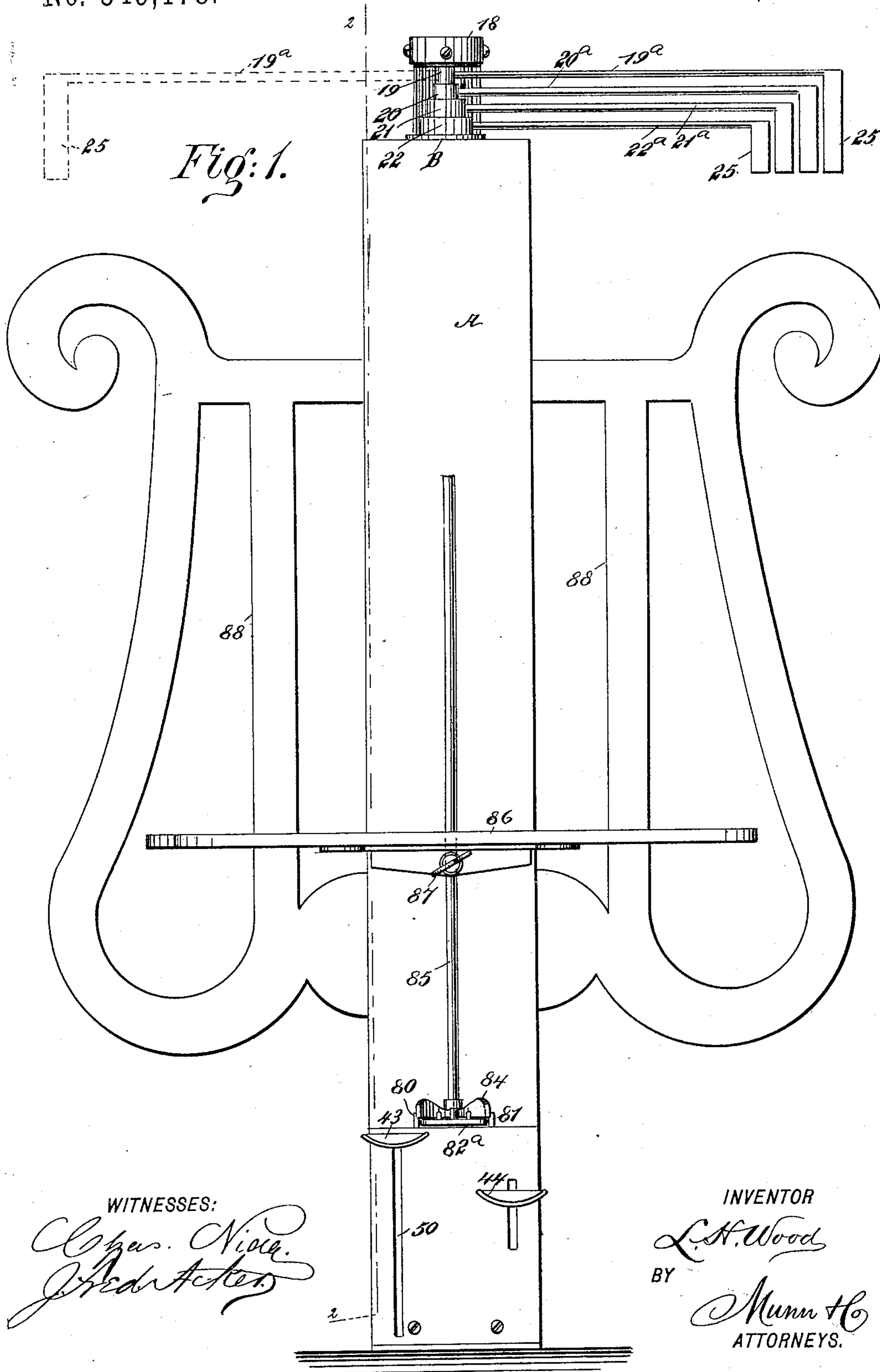
(No Model.)

3 Sheets—Sheet 1.

L. H. WOOD.  
MUSIC LEAF TURNER.

No. 549,178.

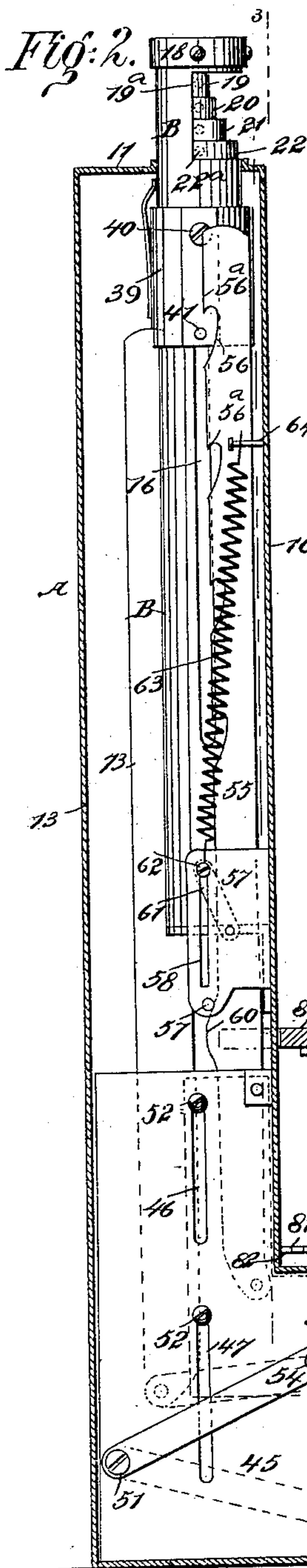
Patented Nov. 5, 1895.



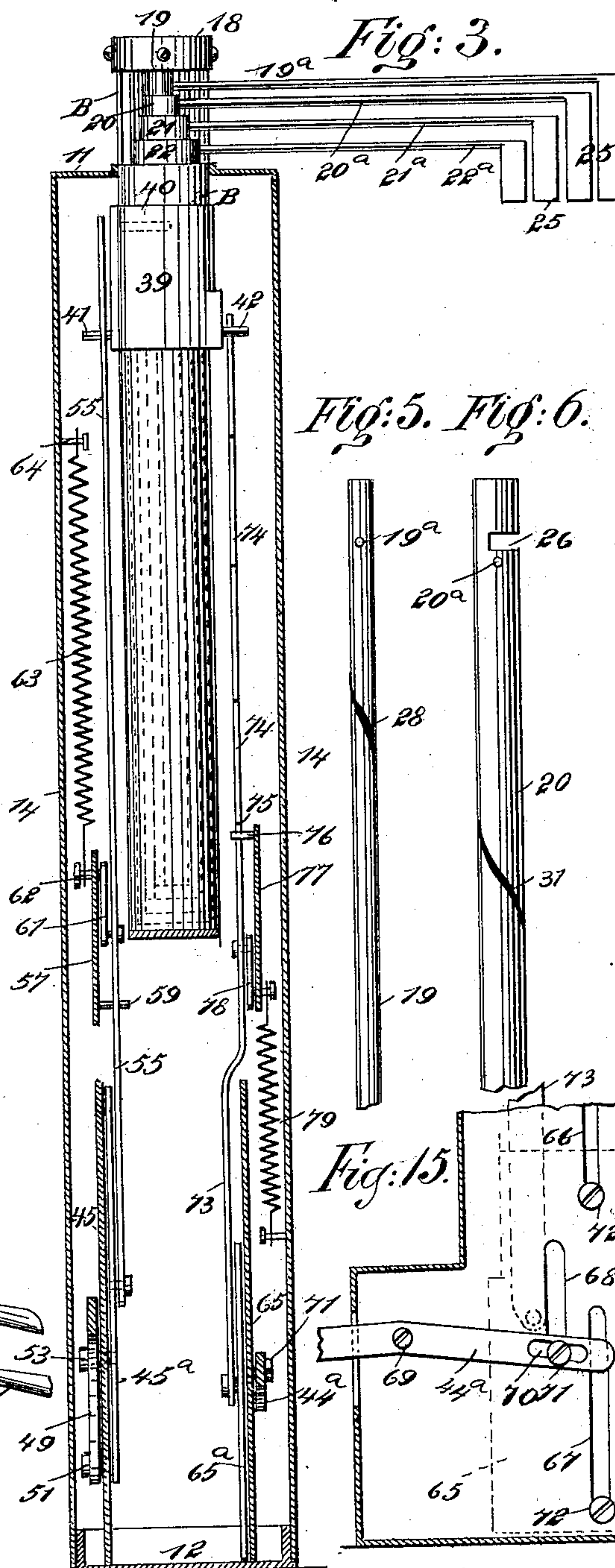
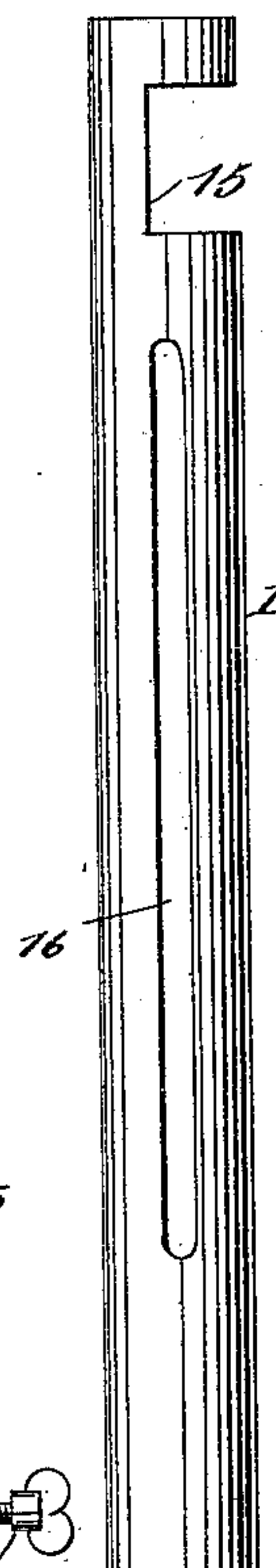
L. H. WOOD.  
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No. 549,178.

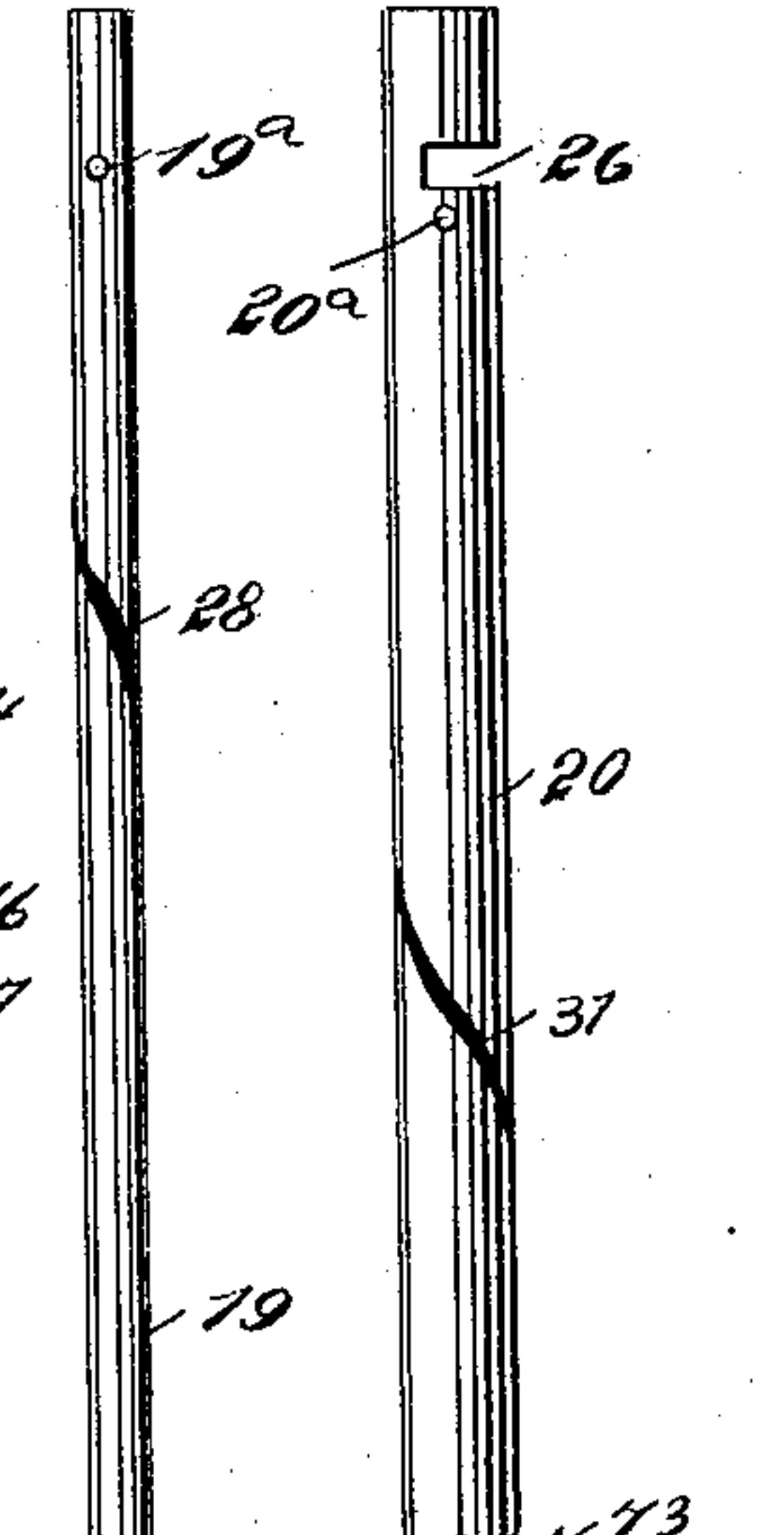
Patented Nov. 5, 1895.



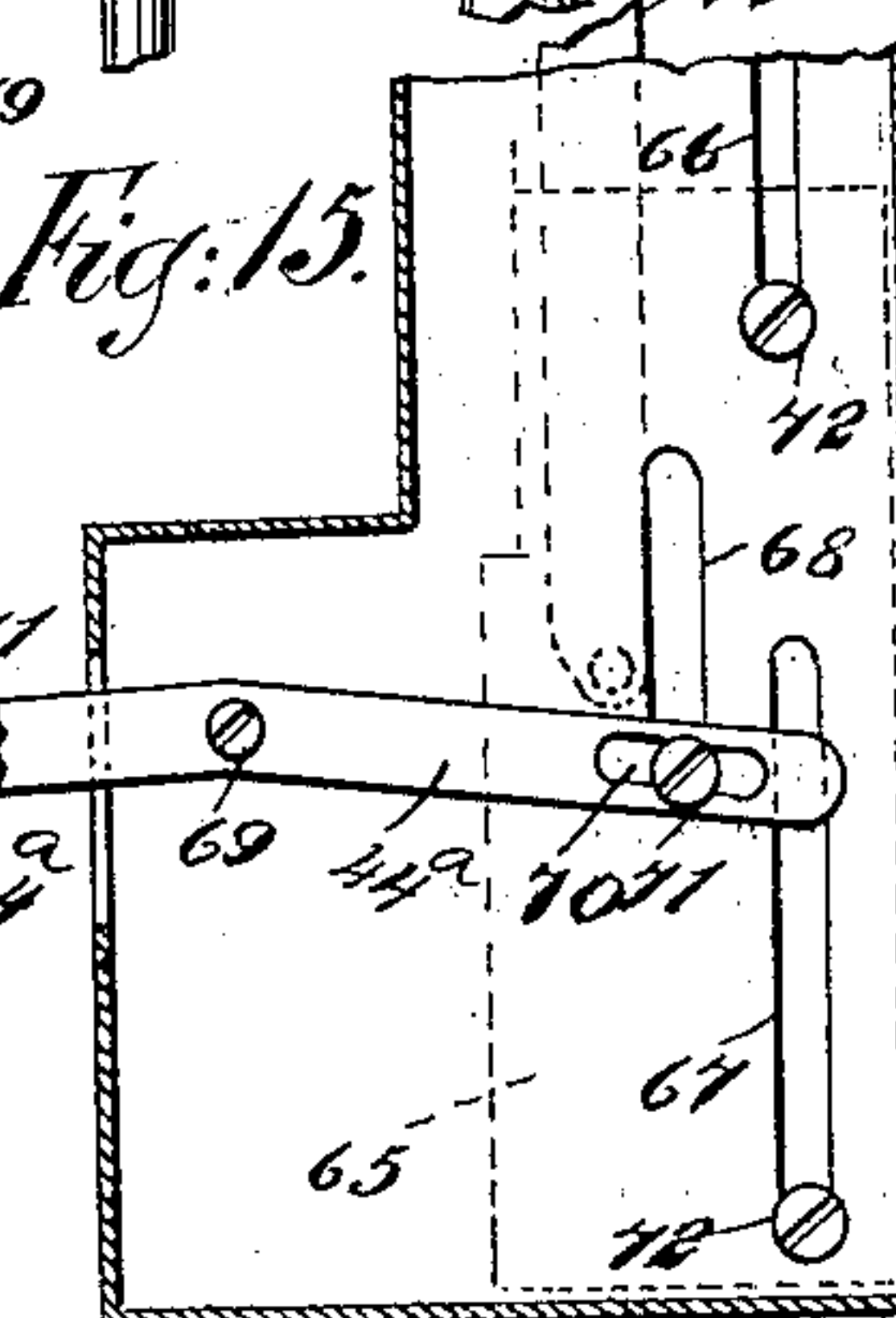
*Fig: 4.*



*Fig: 5. Fig: 6.*



*Fig: 15.*



WITNESSES:

*Chas. Viola.*  
*Fred. Aker.*

INVENTOR

*L. H. Wood*

BY *C. Munn & Co.*

ATTORNEYS.

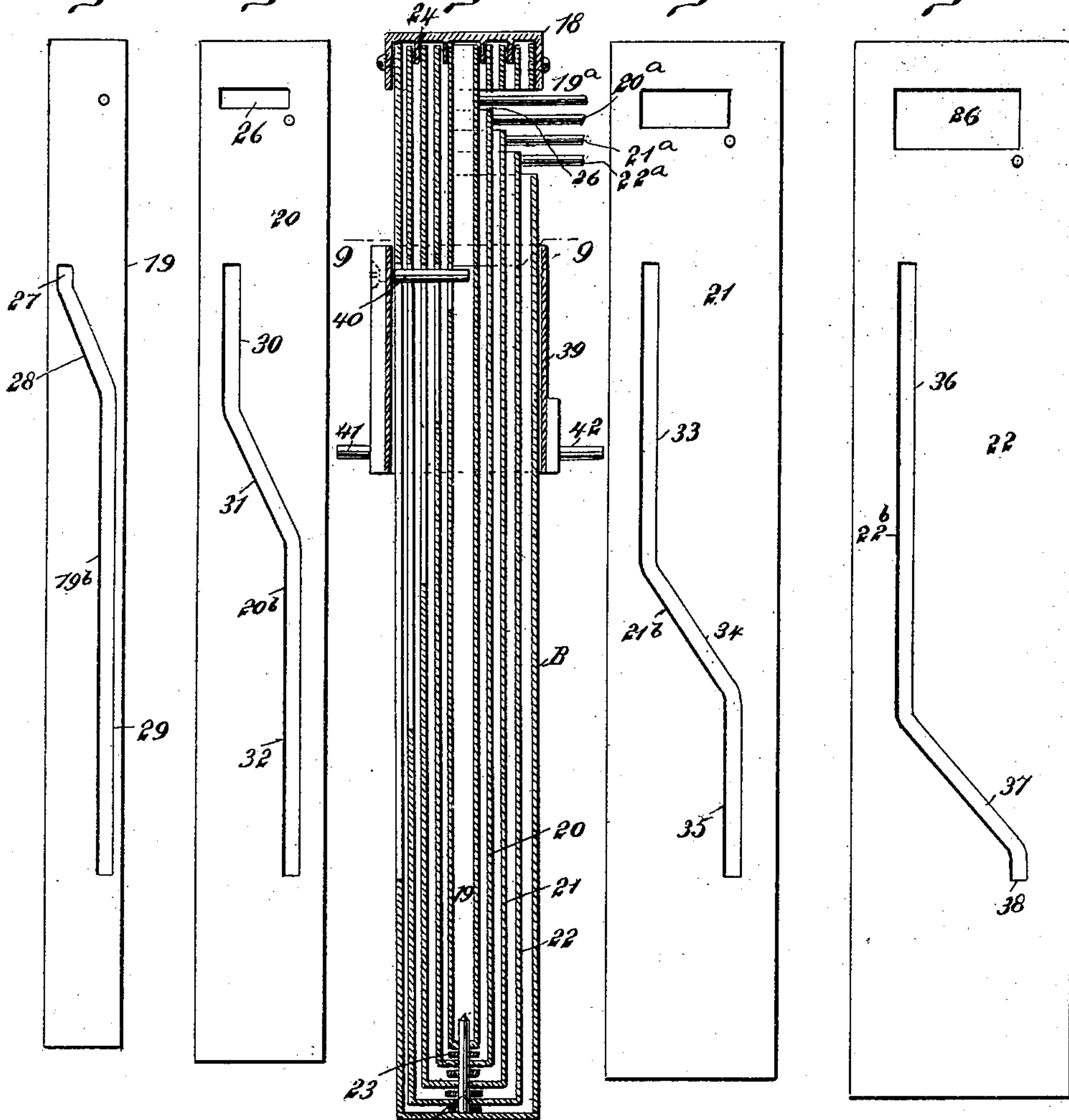


L. H. WOOD.  
MUSIC LEAF TURNER.

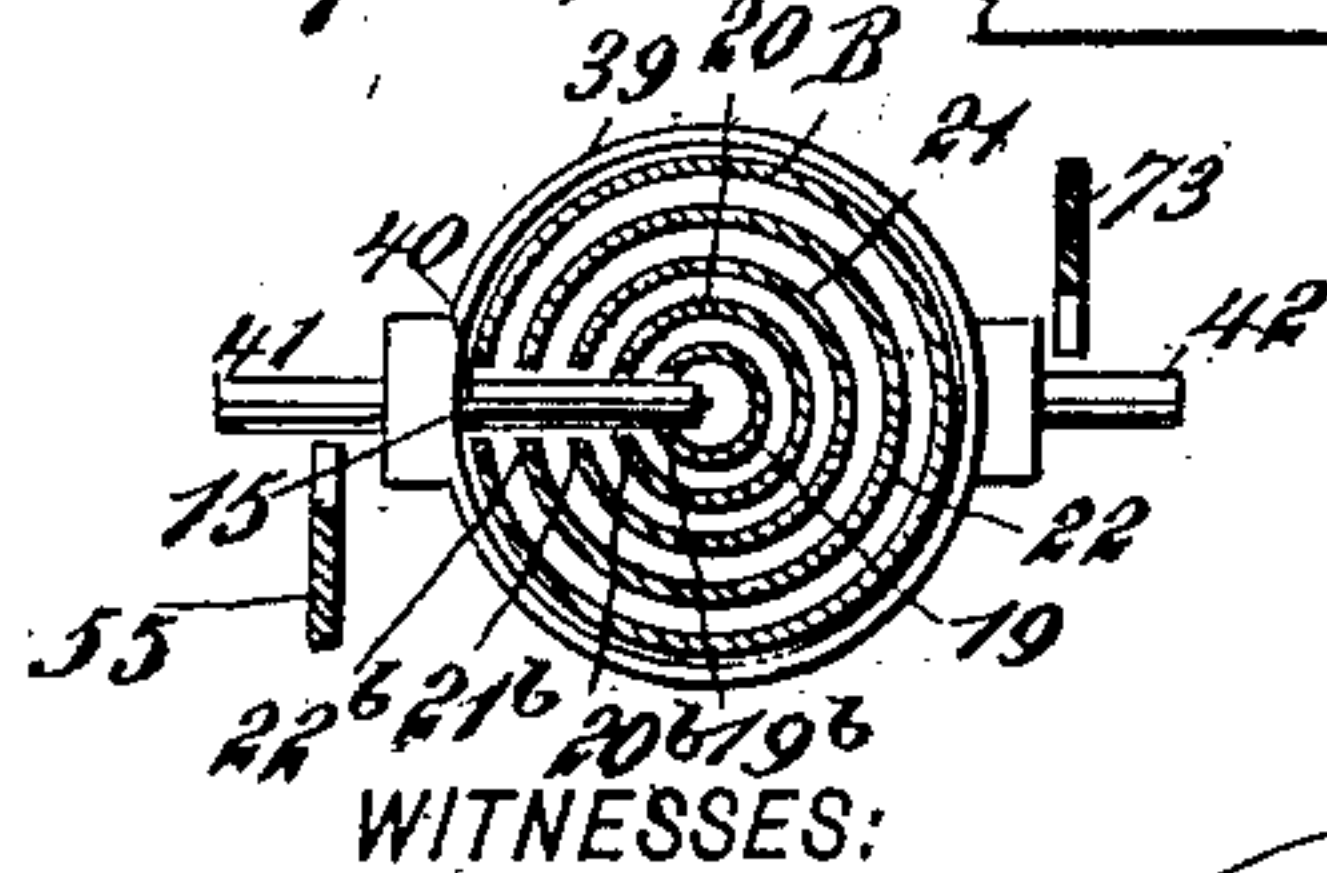
No. 549,178.

Patented Nov. 5, 1895.

*Fig:11. Fig:12. Fig:8. Fig:13. Fig:14.*



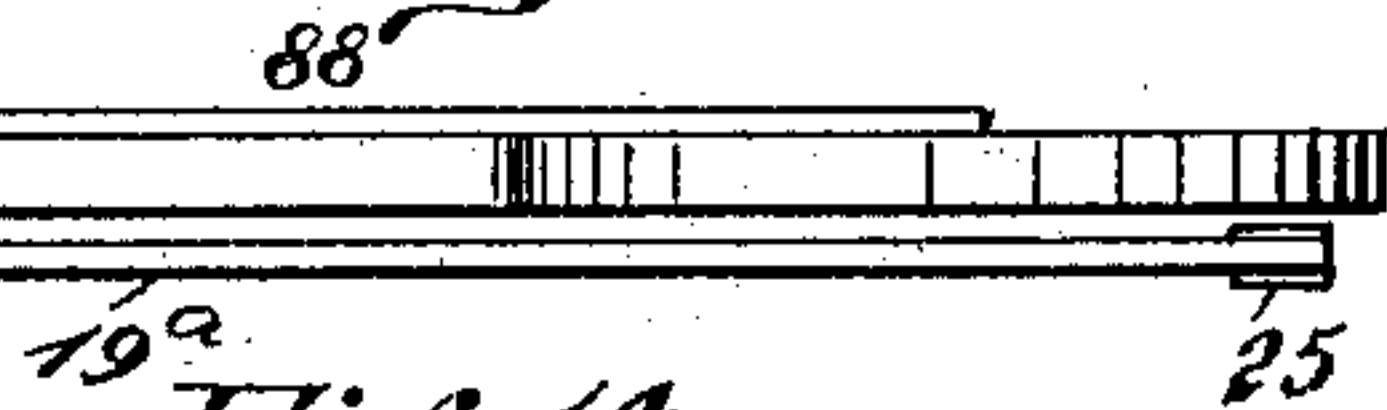
*Fig:9.*



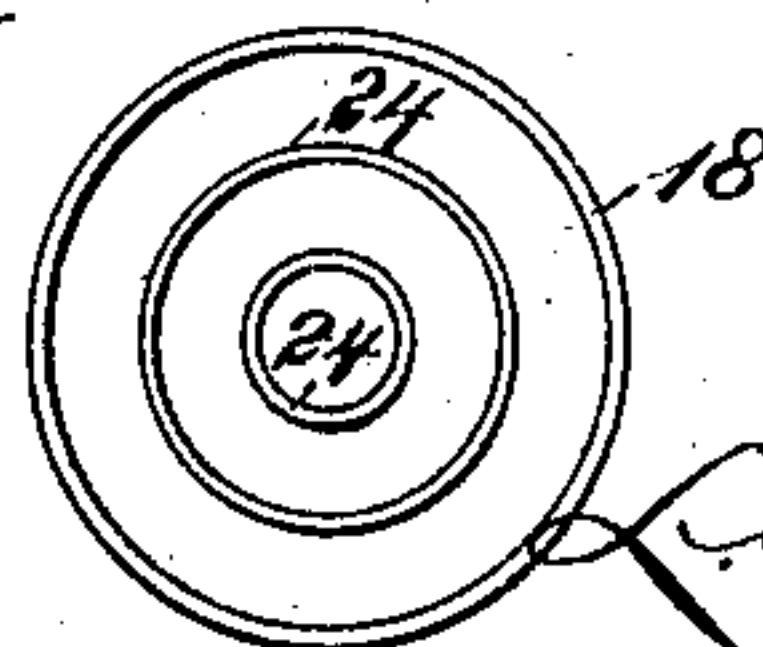
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*Fig:7.*



*Fig:10.*



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# UNITED STATES PATENT OFFICE.

LEONARD H. WOOD, OF EAST ORANGE, NEW JERSEY.

## MUSIC-LEAF TURNER.

SPECIFICATION forming part of Letters Patent No. 549,178, dated November 5, 1895.

Application filed January 25, 1895. Serial No. 536,254. (No model.)

*To all whom it may concern:*

Be it known that I, LEONARD H. WOOD, of East Orange, in the county of Essex and State of New Jersey, have invented a new and Improved Music-Leaf Turner, of which the following is a full, clear, and exact description.

My invention relates to a music-leaf turner, and it has for its object to provide a device capable of use in connection with a piano or similar instrument or in connection with a music-stand of any description, it being the object of the invention to construct the device in a simple, durable, and economic manner, and to provide for a rapid turning of the sheets of music from right to left, or vice versa, as occasion may demand, the turning being effected by the movement of levers or their equivalents operated either through the medium of the hand or of the foot of the performer, preferably the former.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of the device. Fig. 2 is a vertical section taken practically on the line 2 2 of Fig. 1. Fig. 3 is a section taken substantially on the line 3 3 of Fig. 2. Fig. 4 is a side elevation of the casing of the mechanism adapted to operate the leaf-carrying arms. Fig. 5 is a side elevation of the inner tube of the mechanism acting directly upon the leaf-carrying arms and adapted to control one of said arms. Fig. 6 is a similar view of the next outer tube adapted to control the next arm. Fig. 7 is a plan view of the device. Fig. 8 is a longitudinal vertical section through the series of tubes by which the leaf-turning arms are directly operated. Fig. 9 is a transverse section through the said series of tubes, taken on the line 9 9 of Fig. 8. Fig. 10 is an inverted plan view of the cap for the tubes. Fig. 11 is a view of the blank of the smallest or innermost tube. Fig. 12 is a view of the blank of the second tube. Figs. 13 and 14 are respectively views of the blanks of the third and fourth tubes,

and Fig. 15 is a detail sectional view of the right-hand base portion of the device.

The body-casing A of the device is preferably made of sheet metal, although other material may be used. This casing may be of any desired cross-sectional shape. In the drawings, however, it is shown as rectangular and wider at the base than at any other point in its length. In fact, preferably above the base the body-casing is made of substantially uniform size. This casing may be, and preferably is, made in sections, so that the interior mechanism may be accessible for repairs or for other purposes, and when so made the casing will consist, preferably, of a front plate 10, extending from top to bottom, to which, preferably, the top 11 and bottom 12 are secured, while the back 13 and the sides 14 will be integral or attached together, and are secured to the top, front, and bottom by means of screws or equivalent fastening devices. Within the upper portion of the body-casing an inner tubular casing B is secured, and this tubular casing extends upward through the opening in the top of the body-casing and beyond said top a predetermined distance. Near the upper end of the casing, at the front, an opening 15 is made of predetermined size, and in one side of the said inner casing a longitudinal slot 16 is produced, as shown in Fig. 4. The bottom of the casing is permanently closed and is provided with an upwardly-extending pin 17, as shown in Fig. 8, while the top of the said inner casing B is normally closed through the medium of a cap 18.

A series of tubes is located within the inner tubular casing B, and these tubes are graduated in diameter, being nested or contained one within the other, so that the innermost tube 19 is the smallest, the next outer tube 20 being of a slightly greater diameter. The third outer tube 21 is of still greater diameter, while the outermost tube 22 is the largest of the four. These tubes are preferably all closed at the bottom and are pivoted upon the said pin 17, suitable washers 23 being interposed, and the tubes are graduated in length as well as in diameter, as shown best in Fig. 8. These tubes are guided at their upper ends by means of annular flanges 24, which are formed upon the under face of the



cap 18. The tubes 19, 20, 21, and 22 may be properly termed "turning-tubes," since they are adapted to act directly upon the arms to which the sheets of music to be turned are attached. In the drawings four such arms are illustrated, and they are denominated, respectively, as 19<sup>a</sup>, 20<sup>a</sup>, 21<sup>a</sup>, and 22<sup>a</sup>, since one of these arms is secured to each of the turning-tubes at a point near their upper ends, as shown in Figs. 1, 3, and 8 and in the blanks, Figs. 11, 12, 13, and 14. These leaf-receiving arms are provided with pendent latches or clamps 25 at their outer ends, and the uppermost arm is the longest of them all, the other arms being graduated so that the clamps may be in a horizontal line, as shown in Figs. 1 and 3, and as these arms are located one above the other the clamps are graduated as to length, the clamp of the upper arm being the longest and that of the lower arm the shortest.

Since the turning-tubes are concentrically arranged all the tubes, except the innermost one, are provided near the top with a horizontal slot 26 to admit of the outward extension of the arms. Each tube is provided with a slot in one of its sides, as particularly shown in the blanks in Figs. 11, 12, 13, and 14. These slots differ somewhat in shape. The slot 19<sup>b</sup> in the inner tube 19 is provided with a short straight longitudinal section 27, a diagonal or spiral section 28, and then a long and straight longitudinal section 29. The slot 20<sup>b</sup> in the next inner diagonal tube consists of an upper longitudinal straight section 30, corresponding to the combined length of the diagonal and straight sections 27 and 28 of the inner tube, next a diagonal or spiral section 31, which is followed by a longitudinal straight lower section 32. The slot 21<sup>b</sup> in the next outer tube 21 is provided with an upper straight longitudinal section 33 of a length corresponding to the combined length of the sections 30 and 31 of the slot in the tube 20. The section 33 is followed by a diagonal or spiral section 34, followed by a straight section 35, shorter than the upper one 33. The slot 22<sup>b</sup> in the tube 22 is provided with an upper straight longitudinal section 36, equal to the combined length of the upper section 33 and the diagonal intermediate section 34 of the tube 21. The said upper section 36 is followed by a diagonal spiral section 37 and a straight short longitudinal section 38, corresponding practically to the upper section 27 of the smallest tube. In fact, the slot 22<sup>b</sup> in the outer tube is practically like the slot 19<sup>b</sup> in the inner tube reversed.

A sleeve 39 is held to slide upon the inner casing B, surrounding the turning-tubes, and this sleeve is provided near its upper end with a pin 40, which extends into and through the slots of all of the short tubes, as shown in Figs. 8 and 9. This sleeve is further provided near its lower end with two diametrically-located pins 41 and 42, the said pins being located, preferably, one at each side of

the sleeve, it being understood that the upper pin 40, which is adapted to partially revolve the various turning-tubes, extends likewise through the longitudinal slot 16 in the inner casing.

As the sleeve 39 is carried downward, it will reach first the spiral section of the inner tube-slot, giving it a quarter-turn, but not affecting the other tubes, since the pin will travel in the straight sections of their slots. The pin will then reach a spiral section in the slot of the next outer tube, giving it a quarter-turn, but not affecting the other tubes, and thus as the pin travels down it will reach alternately the spiral section in the slots of the various tubes, turning them one after the other, and each time a tube is turned the arm adapted for attachment to a sheet of music and carried by that tube will be carried from right to left—that is, when the sleeve is being carried downward. It will therefore be readily understood that when the said sleeve is carried upward the tubes will be turned to their normal position, being turned in the reverse direction, and the arms connected with the tubes will then be carried from left to right.

The mechanism for operating the said sleeve 39 is as follows: The sleeve is moved downward in order to carry a sheet-carrying arm from right to left by pressing downward upon a key 43, located at the left-hand side of the front base portion of the main casing A, while the movement of the said arm may be reversed—that is, turned to the right—by pressing a second key 44, located at the right-hand side of the base portion of the casing. At the left-hand side of the main casing in the base a plate 45 is rigidly secured, preferably to the front of the casing, and this casing is provided near its top with a longitudinal slot 46. A second slot 47 is made in the plate below the slot 46, and a third slot 48 is produced in the plate between the slot 47 and the front of the main casing, as shown in Fig. 2. The key 43 is attached to a stem or lever 49, which extends within the main casing through a vertical opening made in its front. This key-lever is fulcrumed at its inner end upon the rear portion of the plate 45, the fulcrum-pin being designated as 51, and it is best shown in Fig. 2. A sliding plate 45<sup>a</sup> is located upon the inner face of the stationary plate 45, the said sliding plate 45<sup>a</sup> being provided with pins or studs 52, entering and adapted to travel in the slots 46 and 47 of the said plate 45, and a third pin or stud 53 is passed outwardly from the sliding plate 45<sup>a</sup>, through the forward slot 48 in the plate 45, and through a slot 54 produced in the key-lever 49. Thus when the key 43 is pressed downward the sliding plate 45<sup>a</sup> will be carried downward also in a vertical direction. A rack-bar 55 is pivotally attached at its lower end to the sliding plate 45<sup>a</sup>, and the upper portion of the said rack-bar is provided at its rear edge with a series



of downwardly-curved recesses 56, forming at the upper portion of each recess a downwardly-curved tooth 56<sup>a</sup>, as is likewise shown in Fig. 2, and the number of these recesses 56 corresponds to the number of turning-tubes used. At a predetermined point above the stationary plate 45 a bracket 57 is secured to the front of the body-casing and extends rearwardly, the said bracket being provided with a vertical slot 58 and a pin 59 at the bottom, which is adapted to engage with a shoulder 60 on the rack 55, and limit the upward movement of the latter. A link 61 is pivoted upon the inner face of the said bracket 57, and the opposite end of the link is provided with a stud 62, which passes outwardly through the slot 58 in the bracket 57 and is adapted to slide therein, while a spring 63 is attached to this stud 62 and extends upwardly to an engagement with a fixed support, usually a pin 64, project from the casing. This spring 63 exerts constant upward tension upon the rack-bar. Owing to the link 61, when the rack-bar is drawn downward by the action of the key 43 the bar will be carried rearward at the same time that it is carried downward, and thus its recesses 56 will be brought into proper alignment to engage with the left-hand pin 41 on the sleeve 39.

Supposing all of the leaf-carrying arms to be in their normal position—that is, at the right of the machine—when the first leaf is to be turned the key 43 is pressed downward and the rack-bar 55 will be carried downward and rearward, the upper tooth 56<sup>a</sup> being brought in engagement with the pin 41 of the sleeve 39, and the movement of the key 43 is such as to carry the said sleeve downward a distance slightly greater than the length of the spiral section 28 of the slot of the inner turning-tube. Therefore that tube will have been given a quarter-turn to the left and the upper arm will have been carried over to the left-hand side of the machine. The moment that the key 43 is released the spring 63 will draw the rack-bar upward, and consequently the key, and as the rack-bar is carried upward it is forced in a forward direction out of the path of the said pin 41, and the sleeve 39 will have been placed in a position to be engaged by the next stroke of the key-lever 49 by the second upper tooth 56<sup>a</sup> in the rack-bar to carry the second arm connected with the second inner tube over to the left.

The mechanism for reversing the movement of the leaf-carrying arms, or returning them to the right-hand side of the machine, is just the reverse of that described for carrying them to the left-hand side, and is as follows: At the right-hand side of the base a plate 65 is secured, corresponding to the plate 45, and this plate is provided with an upper slot 66, a lower slot 67, and an intermediate slot 68. The shank 44<sup>a</sup> of the key 44, which is at the right of the machine, is fulcrumed upon the plate 65 at or near the front edge of the latter, as shown at 69 in Fig. 15, and

the rear or inner end of this key is provided with a slot 70, which receives a stud or pin 71, extending through and traveling in the intermediate slot 68 of the plate 65, and the said stud is attached to a sliding plate 65<sup>a</sup>, the said plate corresponding to the opposing plate 45<sup>a</sup>, as shown in Fig. 3. The said plate 65<sup>a</sup> is provided with studs 72, having movement in the slots 66 and 67, as is likewise shown in the said Fig. 15. A rack-bar 73, corresponding to the rack-bar 55, is pivotally attached to the sliding plate 65<sup>a</sup>, and this rack-bar 73 is provided with recesses 74, corresponding in number to the recesses in the bar 55. The recesses 74 are formed just the reverse of the recesses 56<sup>a</sup>, the curved teeth of the recesses being at the bottom thereof, since the rack-bar 73 is adapted to push the sleeve 39 upward. The recesses in the right-hand rack-bar are produced in its forward edge, and the downward movement of this rack-bar 73 is limited by a shoulder 75 thereon engaging with a pin 76, located upon a bracket 77, secured to the casing, as shown in the said Fig. 3, and the said rack-bar 73, as it is pushed upward by the action of the key 44 and its levers, is carried forward or in direction of the pin 42 of the sleeve 39, with which it is to engage, by means of a link 78, pivotally connected with the rack-bar and held to slide in a slot in the bracket 77 in like manner as the link 61 of the rack-bar 55. A spring 79 is connected with the stud of the link 78, passing through a slot in the bracket, and with a support at the lower end of the casing, the tendency of this spring being to draw the rack-bar 73 downward. Thus it will be observed that whenever the right-hand key 44 is pressed downward the right-hand rack-bar 73 will be brought in engagement with the stud or pin 42 of the sleeve 39, and will force that sleeve upward a sufficient distance to carry the arm attached to the music from the left-hand side of the machine over to the right.

Upon the top of the base extension of the casing, as shown in Figs. 1 and 7, two parallel guide-bars 80 and 81 are located, having teeth 82 produced in their inner edges at the top, a slideway being made in said bars below said teeth. This slideway is adapted to receive a plate 82<sup>a</sup>, provided with two spring-controlled pawls 83, adapted to engage with the teeth 82 to hold the plate in a fixed position, the pawls being operated through the medium of thumb pieces 84, connected with them, and upon the rear portion of this plate 82<sup>a</sup> a post 85 is secured, which extends upward a predetermined distance in front of the main casing of the machine, and this post is adapted to receive a rest-bar 86 for the purpose of supporting the music, the rest-bar being adjustably secured to the post by a set-screw 87, or the equivalent thereof. The plate is made adjustable in order that the post 85 may be carried inward or outward to accommodate a book or sheet-music of different degrees of thickness, and a wing 88, of any desired construction or design, is either



permanently or removably secured one at each side of the main casing, as shown in Fig. 1, in order to provide an extended support for the book or for sheet-music placed on the rest-bar.

5 Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a music leaf turner, a series of nested and pivoted tubes, sheet carrying arms se-  
10 cured to the tubes, a sliding sleeve, and a pin and slot connection between the sleeve and the several tubes for turning them as the sleeve is raised or lowered, substantially as described.

15 2. In a music leaf turner, a series of tubes having slots produced longitudinally therein, each slot containing a spiral section, and the spiral sections of the several slots being in stepped relation to each other, a slide, and a  
20 pin carried by the said slide, entering the slots of all of the tubes, and arms secured to the said tubes, the arms being provided with means for clamping sheets of music, as and for the purpose specified.

25 3. In a music leaf turner, a series of concentric tubes, a casing in which the tubes are pivoted, the casing being provided with a longitudinal slot, each of the tubes being likewise provided with a longitudinal slot, each  
30 slot having a spiral section within its length, the spiral sections of the several slots being out of alignment, leaf-carrying arms secured to the several tubes, a slide provided with a pin entering the slot in the casing and ex-  
35 tending into the slots of all of the tubes, and means for reciprocating the said slide upon the casing, as and for the purpose specified.

4. In a music leaf turner, the combination, with a casing provided with a longitudinal  
40 slot therein, a transverse opening near one of its ends, and a support for the said casing, of a series of concentrically arranged tubes pivoted in the said casing, sundry of the tubes being provided with transverse openings near  
45 one of their ends in registry with the similar opening in the casing, each of the said tubes being provided with a longitudinal slot having a spiral section therein, the spiral sections of the several slots being out of horizontal  
50 alignment, a leaf-carrying arm projected from each tube and extending outward through the opening in the casing, a sleeve having sliding movement upon the casing and provided with a pin extending through the slot in the  
55 casing and into the slots of all the tubes, and keys connected with the said sleeve, one key being arranged to give upward and the other downward movement to the sleeve, substantially as and for the purpose specified.

60 5. In a music leaf turner, the combination, with a casing, means for supporting the same, the casing being provided with a longitudinal slot in its side and a transverse opening near one of its ends, a series of tubes lo-  
65 cated one within the other and pivotally mounted in the casing, each tube being pro-

vided with a longitudinal slot having a spiral section, the spiral sections of the several slots being in stepped arrangement, sundry of the tubes being likewise provided with openings  
7 near one of their ends, and sheet-carrying arms secured one to each of the said tubes and extending outward through the opening in the casing, of a slide having movement  
7 upon the casing and provided with a pin extending through the slot of the casing and through the slots of all the tubes, the said slide being provided with projections from opposite sides, racks adapted to engage with  
8 the said projections, and keys connected with the said racks, the key of one rack being fulcrumed to impart an upward move-  
8 ment to its rack and the opposite key being fulcrumed to impart a downward movement to the rack with which it is in connection, as  
8 and for the purpose set forth.

6. In a music leaf turner, the combination, with a casing, means for supporting the same, the casing being provided with a longitudinal slot in its side, and a transverse opening near  
9 one of its ends, a series of tubes located one within the other and pivotally mounted in the casing, each tube being provided with a longitudinal slot having a spiral section, the  
9 spiral sections of the several slots being in stepped arrangement, sundry of the tubes being likewise provided with openings near one of their ends, and sheet-carrying arms se-  
10 cured one to each of the said tubes and extending outward through the openings in the casing, of a sleeve having sliding movement  
10 on the casing, provided with a pin extending through the slot in the casing and through the slots in all the tubes, the said sleeve being provided with extensions at opposite sides,  
10 a rack located at each side of the sleeve, one rack having upwardly and the other downwardly facing teeth, links connecting the said  
11 racks with a fixed support, having sliding movement in the said support, key levers con-  
11 nected with the said racks, imparting to one an upward and to the other a downward movement, as and for the purpose specified.

7. In a music leaf turner, the combination, with a series of tubes pivotally mounted and  
11 arranged one within the other, each tube being provided with a slot having a spiral section contained in its length, sheet carrying arms connected with the said tubes, a slide  
12 having movement around the group of tubes and provided with a pin entering the slots of  
12 all the tubes and likewise provided with projections on opposite sides, of racks adapted to engage with the said projections and normally held out of engagement therewith, one  
12 rack having upwardly and the other downwardly extending teeth, brackets secured to a fixed support and provided with slots, links  
13 having sliding movement in the slots of the brackets and pivotally connected with the  
13 said racks, springs controlling the said links, the spring attached to one link imparting



downward and the other upward pressure, key levers, and a connection between each lever and one of the racks, as and for the purpose specified, whereby the racks when operated by the key levers are given end and lateral movement for the purpose set forth.

8. In a music leaf turner, the combination with a support, of a post projecting in front of the support and adjustable to and from the same, and a rest carried by said post, substantially as described.

9. In a music leaf turner, the combination with a casing, of a plate adjustable to and from the casing, a post carried by the plate and projecting in front of the casing, and a

rest adjustably secured on the post, substantially as described.

10. In a music leaf turner, the combination, with a casing having wings at opposite sides, a slide secured horizontally upon the casing and provided with teeth, a plate having movement in the slide and provided with spring-controlled pawls adapted for engagement with the teeth, a post secured to the said plate, and a rest adjustable upon the said post, substantially as shown and described.

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Witnesses:

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