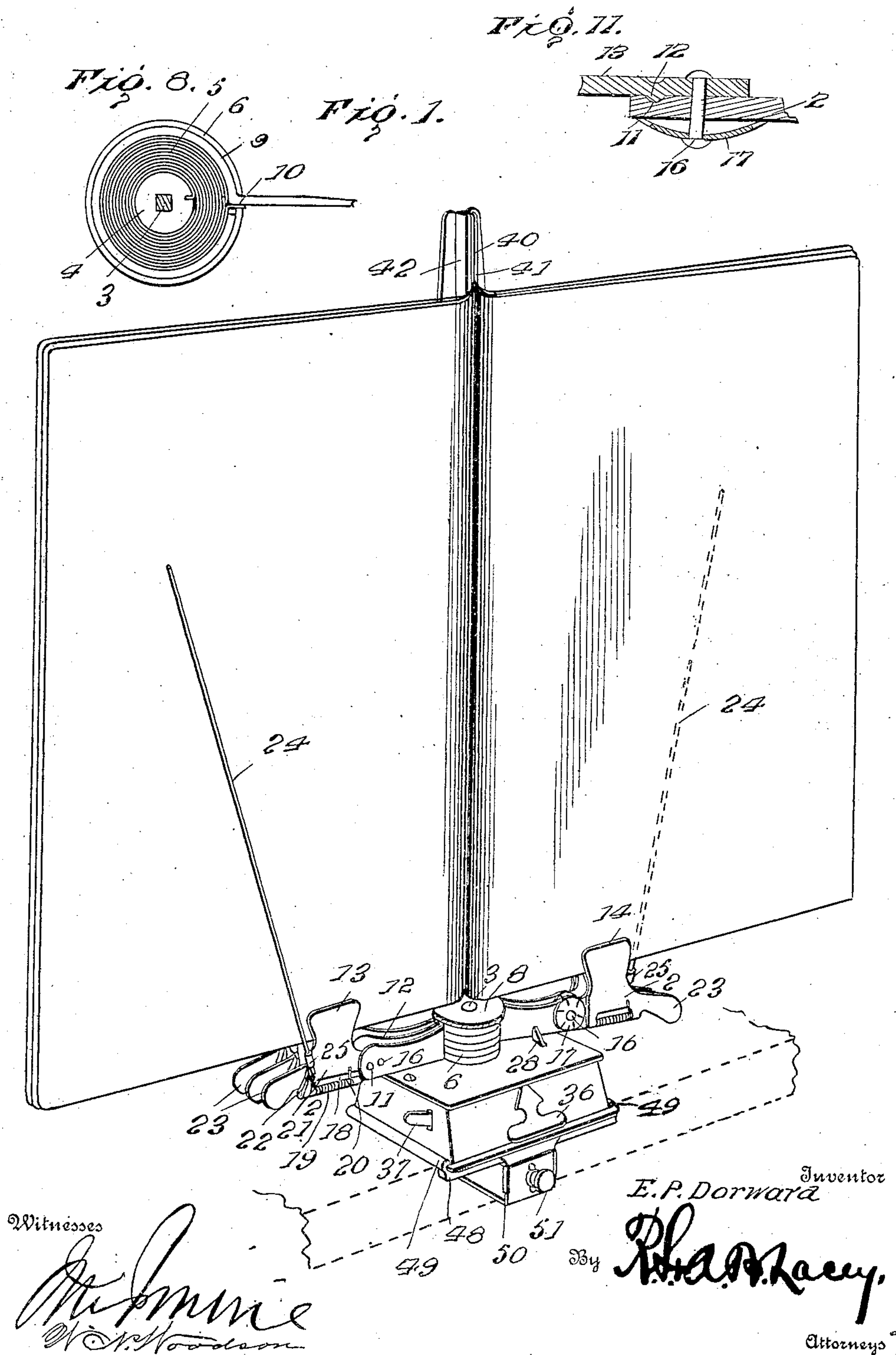


No. 876,781.

PATENTED JAN. 14, 1908.

E. P. DORWARD.  
MUSIC LEAF TURNER.  
APPLICATION FILED DEC. 13, 1906.

3 SHEETS—SHEET 1.

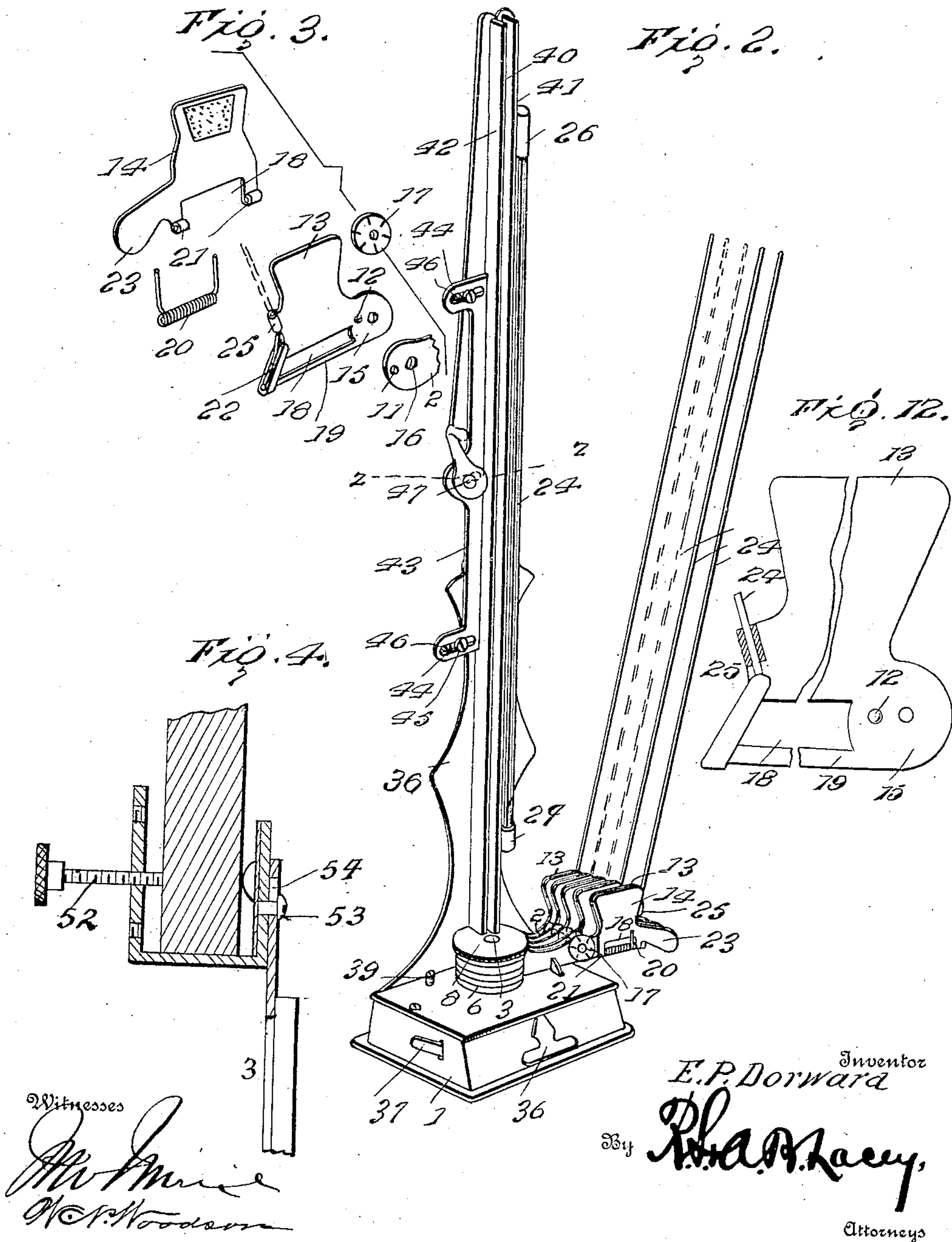


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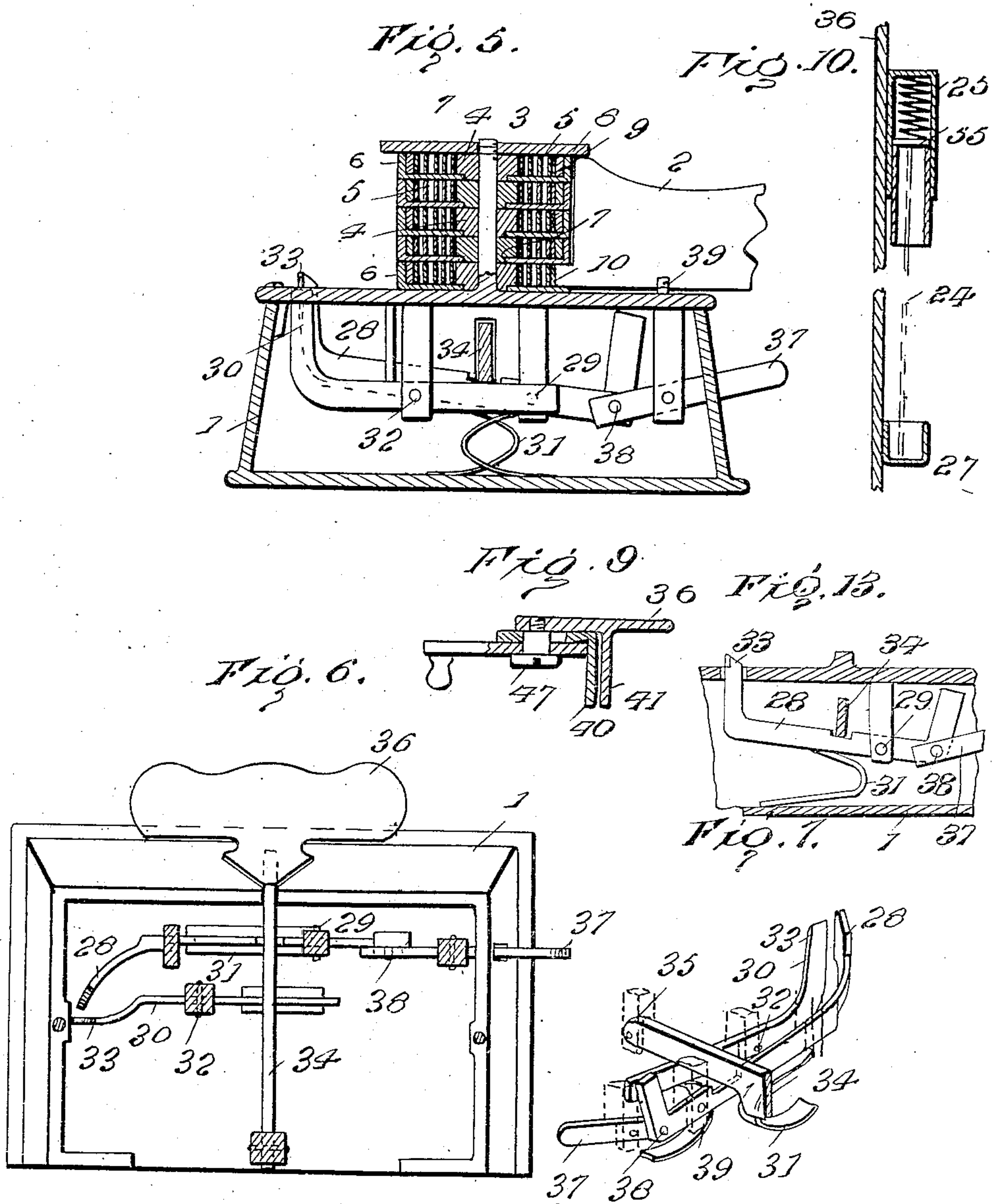


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3 SHEETS—SHEET 3.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## MUSIC-LEAF TURNER.

No. 876,781.

Specification of Letters Patent.

Patented Jan. 14, 1908.

Application filed December 13, 1906. Serial No. 347,710.

*To all whom it may concern:*

Be it known that I, EDWIN P. DORWARD, citizen of the United States, residing at Marion, in the county of Marion and State of Ohio, have invented certain new and useful Improvements in Music-Leaf Turners, of which the following is a specification.

Leaf turners for musical compositions usually embody spring actuated turning arms, detents coöperating with the turning arms and a manually operable key, or like device, for actuating the detents to effect successive release of the turning arms.

This invention relates to music turning devices of the character aforesaid and has for its object to simplify the construction and to provide a device which will be responsive in action, efficient in operation and not liable to get out of repair, and which will admit of the music being easily, conveniently and quickly placed in position and removed when through with, and which when not in use may be reduced to a compact form.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result, reference is to be had to the following description and accompanying drawings.

While the invention may be adapted to different forms and conditions by changes in the structure and minor details without departing from the spirit or essential features thereof, still the preferred embodiment is shown in the accompanying drawings, in which:

Figure 1 is a perspective view of the music leaf turner embodying the invention, showing a piece of music in position. Fig. 2 is a perspective view of the device, having all the leaf turning arms moved to the right and showing certain leaf supporting rods slipped into the sockets. Fig. 3 is a detail view in perspective of the several parts comprising a leaf clamp and its supporting arm, the same being separated and relatively disposed in a group to bring out more clearly the structural details and arrangement. In said figure one clamp member is indicated at 14, the other clamp member at 13, the spring for pressing the clamp members together at 20, the spring washer at 17, and a portion of the turning or supporting arm at 2. Fig. 4 is a sectional view showing the form of clamp for attaching the device to the vertical extension. Fig.

5 is a vertical longitudinal section of the casing and conjunctive parts showing the same on a larger scale. Fig. 6 is a horizontal section of the casing, taken on a line corresponding with the lower face of the top, or cover thereof. Fig. 7 is a detail perspective view of the spacing and restraining detents and the parts intimately associated therewith. Fig. 8 is a horizontal section of the post upon which the leaf turning arms are mounted showing the barrel, collar, spring and leaf turning arm. Fig. 9 is a transverse section on the line  $z-z$  of Fig. 2 showing the parts on a larger scale. Fig. 10 is a detail view of the means for holding the rods employed in connection with the leaf clamps to assist materially in turning the leaves and holding the same in place. Fig. 11 is a horizontal section of a portion of a turning arm, the clamp member pivoted thereto, and the spring washer, showing more clearly the pivot connection between them and the interlocking projection and depression between the turning arm and leaf clamp to hold the latter in normal position. Fig. 12 is a front view of the clamp member 13 showing a rod in the socket 25 thereof, the latter being in section. Fig. 13 is a detail view of the detent 28 and the spring coöperating therewith.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The frame-work comprises a casing and a support, the latter sustaining the music and provided with a music clamp. The casing 1 is of box form and receives the coöperating detents and the springs acting in conjunction therewith and, upon it, the leaf turning arms are mounted. The leaf turning arms 2 are provided in series and are spring actuated, and since each turning arm and the adjunctive parts are alike, a detailed description of one will be given only.

A post 3 projects upwardly from the casing 1 and is of angular formation in horizontal section to make positive engagement with and prevent turning thereon of the collars 4 to which the inner ends of the springs 5 are attached. Each turning arm is provided at its inner end with a barrel 6, the several barrels have a superposed relation and are mounted upon the post 3. Each of the collars 4 is slipped upon the post and is held



from turning thereon and its lower end is reduced as shown at 7 to pass through an opening in the bottom of the barrel, thereby preventing said barrel from turning upon the angular portion of the post. By having the reduced end 7 of one collar engage with and rest upon the collar next below, the series of barrels are prevented from binding and are held in proper relation, being confined, as it were, between spaced shoulders, or stops. The bottom of one barrel forms a top, or cover, for the barrel next below, whereas, the topmost barrel has its upper side closed by means of a cap plate 8, the same being threaded upon the upper reduced end of the post 3. A helical spring 5 is provided for each turning arm and is located in the barrel thereof and has one end attached to the collar and the opposite end secured to the barrel and said spring is normally under tension so that when a turning arm is released, it will move from right to left and turn the music in the manner well understood.

The turning arms 2 are of like formation so as to present a symmetrical and uniform appearance. However, they are connected with their respective barrels at different elevations corresponding to the relative positions of the barrels. A strip 9 projects from the inner end of each turning arm and is bent into circular form so as to fit within the cooperating barrel. The circle formed by bending the strip 9 is slightly larger than the inner diameter of the barrel, whereby when said circle is fitted within the barrel, it is contracted and the tendency of the same to expand, causes the circle to engage frictionally with the sides, or rim, of the barrel and retain the circle therein against casual displacement. A notch 10 is formed in a side of the barrel between the strip 9 and the outer end of the spring 5. The outer end of each arm 2 is made rounding and is provided with an opening, or depression 11 to receive a projection 12 of a member of the leaf clamp, whereby the latter is held in normal position.

The leaf clamps are pivoted to the outer ends of the turning arms to admit of their being turned downward out of the way to clear the leaves of the music when placing the latter in position, or removing it from the appliance. Each leaf clamp comprises gripper members 13 and 14 which are hinged in a manner to admit of their opening to permit of the leaf being readily placed in position, or removed from the clamp as may be required. The gripper member 13 is formed with an extension 15 which is placed to receive the pivot fastening 16 by means of which the clamp is connected to the turning arm. A spring washer 17 is mounted upon the pivot fastening 16 and is confined between an end of said fastening, and the extension 15, and normally serves to press said extension against the turning arm to hold

the projection 12 in the opening 11. The spring washer 17 is formed with a series of radial slits to provide a plurality of spring portions which permit of the leaf clamp turning upon the pivot fastening and the projection 12 riding out of the opening 11 and upon the turning arm when the leaf clamp is turned down out of the way.

A slot 18 is formed near the lower end of the gripper member 13 and the portion 19 below said slot constitutes a bar upon which the gripper member 14 is pivotally, or hingedly mounted, a spring 20 being mounted on the bar 19 and having one end in engagement with the gripper member 13 and the opposite end in engagement with the gripper member 14, whereby the latter is caused to close against the gripper member 13 when released. The gripper member 14 has spaced extensions 21 which are bent into circular form to receive the bar 19. A strap 22 embraces opposite sides of the outer lower corner portion of the member 13 and receives the outer end of the bar 19. An extension 23 projects outwardly from the lower outer corner of the gripper member 14 and constitutes a finger piece which is grasped between the thumb and finger of the hand when it is required to open the clamp either to admit of placing a leaf in position, or releasing the leaf held by the clamp. The gripper members of the leaf clamp normally project upward above the plane of the turning arms so as to grip the leaf placed between them. The gripping surfaces of the members 13 and 14 are roughened, or supplied with an abrasive material, or may have pieces of sand paper affixed thereto, the purpose being to prevent slipping of the music and insure movement thereof with the turning arm. Each leaf clamp is provided with a rod, or bar 24, which extends in the rear of the leaf engaged by the clamp so as to support the leaf and insure its proper turning and the holding of the same in place after being turned. The leaf engaging rods, or bars, 24 are detachably connected with the leaf clamps, the said rods projecting through the sockets 25 and resting upon the strap 22.

As shown, a socket 25 is provided to receive the lower end of the rod 24 and this socket is preferably an integral part of the gripper member 13, being formed by bending an extension thereof into cylindrical form.

The strap 22 is in line with the socket 25 and forms a stop to engage with the lower end of a rod 24 and limit the downward movement thereof. The leaf engaging rods consist of lengths of spring wire of suitable gage and when not required for immediate use, they are placed in a holder upon the upright of the frame-work, said holder consisting of an upper socket 26 and a lower socket



27, the rods being bent to admit of placing them in position in the sockets, or removing them from said sockets.

The detents are of two kinds, the one serving to space the leaf turning arms, and the other to restrain the same when in position to effect turning of the music. The spacing detent 28 consists of a lever fulcrumed at 29 to a post bent from the top of the casing 1 and having an extension at one end which is adapted to be projected through a slot in the top of the casing to obstruct the forward movement of the turning arm next in order to that engaged by the restraining detent 30. A spring 31 exerts an upward pressure upon the end of the spacing detent 28 remote from that provided with the engaging extension so as to hold the latter below the top of the casing and normally out of the path of the turning arms. The restraining detent 30 is fulcrumed at 32 to a post pendent from the top of the casing. The restraining detent is likewise provided with an extension 33 which normally projects above the top of the casing and across the path of the leaf turning arms to hold them in normal position when the appliance is adjusted for turning a piece of music. The upper forward corner of the extension 33 of the restraining detent is beveled to admit of the turning arms riding thereon, and depressing the detent when said turning arms are moved to the right.

When the turning arms have been moved to the right, they are held in position against the tension of their springs 5 by means of the detent 30. An operating lever 34 is fulcrumed at its inner end at 35 to a post pendent from the top of the casing and extends through a slot in the front of the casing 1 and is provided with a finger piece 36 which is adapted to be pressed upon when it is required to actuate the lever 34 to effect releasing of the foremost leaf turning arm to bring a new page of the music under observation of the performer. The operating lever 34 extends across the path of the detents 28 and 30 and is arranged so as to move the spacing detent first, to throw its engaging end across the path of the turning arms in the rear of that engaged by the extension 33 of the detent 30, after which the latter is moved to effect release of the turning arm in advance of the spacing detent.

The operating lever 34, when pressed upon, moves the detents in opposite directions, *i. e.*, it results in projecting the spacing detent and repressing the restraining detent. This is effected by having the lever 34 engage with the detent 28 at a point between which and the extension is located the fulcrum 29, whereas the said lever 34 engages with the restraining detent at a point between its fulcrum 32 and the extension 33 thereof. When pressure is removed from the finger piece 36, the detents 28 and 30 return to normal posi-

tion. A finger lever 37 is fulcrumed between its ends to a post projected from a part of the casing and its inner end engages with the restraining detent at 38, whereas its outer end projects through a slot in an end of the casing and is conveniently positioned to be pressed upon when it is required to release the series of leaf turning arms, so that they may move from right to left. A stop 39 projects from the top of the casing and limits the position of the leaf turning arms when moving from right to left.

The support, or upright, 36 of the framework is provided with a clamp for receiving the back of the music, and said clamp consists of companion members 41 and 42, each consisting of a strip. The member 41 is fixed, whereas the member 42 is movable. One of the members, as 41, is made hollow upon its gripping face to prevent injury to the back of the music when held by the clamp. The end portions of one of the members are deflected slightly towards the coöperating member to insure firm gripping of a piece of music, comprising three leaves only, as well as adapting the clamp for holding a piece of music comprising a greater number of leaves. The deflected end portions of the clamp member, which in the present instance is the movable member 42, gradually decrease in thickness towards the extremities to render them more flexible, thereby permitting a continued movement of the clamp member 42, after its end portions have come in contact with the music. A wing 43 projects from the clamp member 42 about at a right angle and is provided with slots 44 to receive headed fastenings 45, by means of which member 42 is held to the support 40 and directed in its lateral movements. Light springs 46 are interposed between the outer ends of the slots 44 and a side of the headed fastenings 45, and serve to press the movable clamp member 42 outward. These springs 46 are located in the outer portions of the slots 44 and are protected thereby. A cam lever 47 is mounted upon the central headed fastening 45 and is adapted, when operated, to press the clamp member 42 inward so as to grip the piece of music placed in position between the clamp members 41 and 42.

As hereinbefore stated, the appliance is adapted to be secured to a music rack, instrument, or other support, by means of a suitable clamp best adapted for the location and particular support to which the appliance is to be secured. As indicated in Fig. 1 the clamp consists of a plate 48 having inturned flanges 49 at opposite ends to slip upon corresponding flanges at opposite ends of the casing 1. The plate 48 is resilient and is slightly curved upward between the inturned flanges 49 so as to exert sufficient friction upon the casing to retain the device in position upon the clamp, after the latter has been fitted to



the support, or musical instrument. A clamp member 50 is adjustably connected to the plate 48 by means of a set screw 51, the latter passing through a slot in a bent end portion of the clamp member 50 and through an opening in a projecting portion at one edge of the plate 48. The clamp shown in Fig. 4 consists of a form of substantially U form, one member of the frame being provided with a series of threaded openings, in one of which is fitted a set screw 52, the other member being covered upon its inner side and supplied with buttons of rubber, or other material, to prevent injurious contact of the clamp with a music rack, instrument, or other support to which the clamp may be attached. The outer member of the clamp is provided with headed studs 53 to pass through key-hole slots 54 near the lower end of the support, or upright 40. The construction is such as to admit of the music turner being readily fitted to, or detached from, the clamp after the latter has been placed in position.

After the appliance has been secured to the selected support, which may consist of the rack of a musical instrument of the pianoforte type, the music to be turned is placed with its back between the members 41 and 42 of the music clamp and is secured by operating the cam lever 47. The leaves of the music are separated and each is secured between the gripping members of the leaf clamps, the several leaves being spaced and supported by means of the rods 24. When the music is properly adjusted for turning its leaves, the turning arms 2 occupy a position at the right of the appliance and when it is required, either in the execution of the piece, or otherwise, to turn a leaf, the finger piece 36 is depressed, thereby actuating both sets of detents, 28 and 30 in the manner herein specified and permitting the foremost turning arm 2 to move from right to left and bring the next page of the music in position to be read by the performer.

As shown in Fig. 10 one of the sockets of the holder for the leaf engaging rods is provided with a spring actuated plate 55, said plate having sufficient movement to admit of the lower ends of the rods 24 clearing the socket 27 both when placing the rods in position or removing them from the holder.

Having thus described the invention, what is claimed as new is:

1. In a music leaf turner, the combination of a support, leaf turning arms mounted upon the support, means for actuating the leaf turning arms, leaf clamps carried by the arms, and rods carried by the said clamps.

2. In a music leaf turner, the combination of a series of leaf turning arms, leaf clamps pivotally connected thereto, and leaf engaging and supporting rods detachably fitted to said leaf clamps.

3. In a music leaf turner, the combination of a support, leaf turning arms mounted upon the support, clamps carried by the leaf turning arms, said clamps being formed with sockets, and rods received within the sockets.

4. In a music leaf turner, the combination of a support, leaf turning arms mounted upon the support, and clamps carried by the leaf turning arms, each of said clamps comprising companion gripping members one of which is slotted to form a bar while the opposite gripping member is pivoted upon said bar.

5. In a music leaf turner, the combination of a support, leaf turning arms mounted upon the support, and clamps carried by the leaf turning arms, each of said clamps comprising companion members, one of said members being formed with a bar and carrying a strap engaging the said bar, while the opposite complementary member is pivoted upon the said bar.

6. In a music leaf turner, the combination of a support, leaf turning arms mounted upon the support, leaf clamps carried by the said arms, each of said clamps comprising companion gripping members one of which is formed with a bar and also with a socket and carries a strap engaging the bar and in alignment with the socket while the opposite companion member is pivoted upon the bar, and rods received within the sockets and engaging the said straps.

7. In a music leaf turner, the combination of a support, leaf turning arms mounted upon the support, and leaf clamps carried by the said arms, each of said clamps comprising hinged gripping members, one of the said gripping members being formed with an inward extension pivotally connected to the leaf turning arm while the opposite gripping member is formed with an outer extension constituting a finger-piece.

8. In a music leaf turner, the combination of leaf turning arms, leaf clamps pivoted to the arms, a projection extended from one of the parts to enter an opening in the other part to hold the leaf clamps in proper position, and spring means for pressing the leaf clamp to its supporting arm to hold the projection in the opening.

9. In a music leaf turner, the combination of a support, leaf turning arms mounted upon the support, leaf clamps pivoted to the leaf turning arms, and spring washers applied to the pivot between the leaf turning arms and clamps.

10. In a music leaf turner, the combination of a support, leaf turning arms mounted upon the support, clamps pivotally connected to the leaf turning arms, one of the members carrying a projection while the opposite member is formed with a depression designed to receive the projection to hold the clamp in a predetermined position, and a spring



washer applied to the pivot for holding the projection normally within the depression.

11. In a music leaf turner, the combination of a frame-work comprising a support, spaced 5 sockets applied to said support, leaf turning arms, leaf clamps carried by said arms, and leaf engaging and supporting rods detachably fitted to the leaf clamps and adapted when not in use to be held by the aforementioned spaced sockets. 10

12. In a music leaf turner, the combination of leaf turning arms, a barrel at the inner end of each arm, a post, a collar for each barrel located therein and mounted upon the post 15 and held from turning thereon and having a portion extended through the barrel to form a bearing therefor, and a helical spring arranged within each barrel and having one end connected to the collar and the opposite 20 end to the said barrel.

13. In a music leaf turner, the combination of a post, a series of leaf turning arms having barrels at their inner ends slipped upon the post and arranged one upon the other, a series of collars slipped upon said post and held 25 from turning thereon, one collar being provided for each barrel and located therein and having a portion reduced and extended through the barrel to form a mounting therefor, one barrel forming a closure for the open 30 side of the next barrel, and helical springs located in the barrels, each having one end

connected to a collar and the other end secured to the barrel.

14. In a music leaf turner, the combination 35 of leaf turning arms having strap extensions at their inner ends bent into rings, barrels receiving the said rings of the turning arms, and springs arranged within the barrels and the rings, of the leaf turning arms, and 40 adapted to move the latter in one direction.

15. In a music leaf turner, the combination of a barrel having a notch in its rim, or side, a leaf turning arm having a strap extension bent into circular form and sprung into a said 45 barrel and fitted into the notch thereof, and a helical spring located within the barrel and having one end connected therewith and the opposite end connected with the support upon which the leaf turning arm is mounted. 50

16. In a music leaf turner, the combination of a support, leaf turning arms mounted upon the support, a spacing detent for the said arms, a restraining detent for the said 55 arms, a lever for actuating the detents to release the arms individually, and a second lever for actuating the detents to release the arms collectively.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN P. DORWARD. [L. s.]

Witnesses:

FRANK M. KNAPP,  
J. H. EYMON.