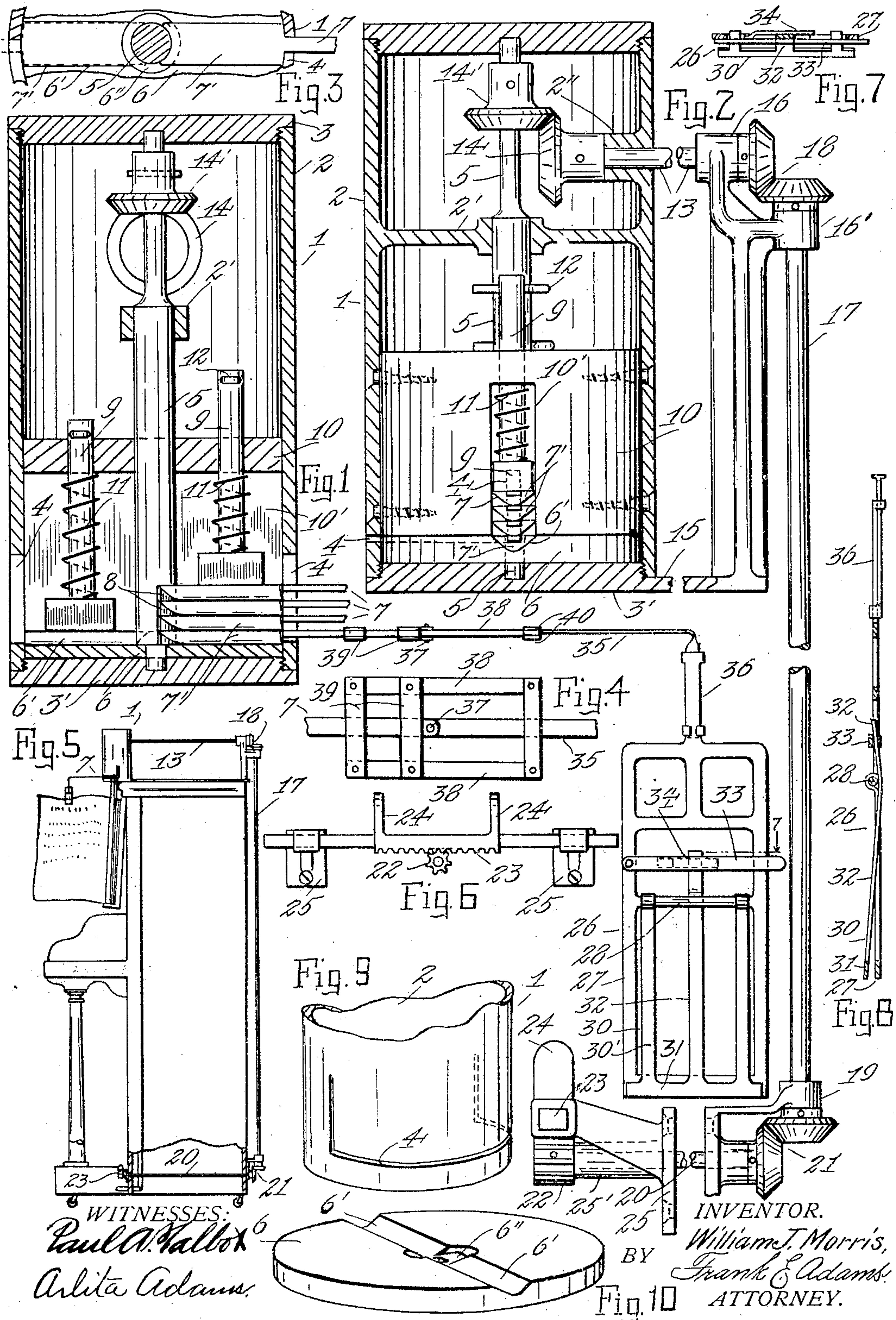


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W. J. MORRIS.  
MUSIC LEAF TURNER.  
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# UNITED STATES PATENT OFFICE.

WILLIAM JAY MORRIS, OF MARYSVILLE, WASHINGTON.

## MUSIC-LEAF TURNER.

SPECIFICATION forming part of Letters Patent No. 787,989, dated April 25, 1905.

Application filed August 25, 1904. Serial No. 222,119.

*To all whom it may concern:*

Be it known that I, WILLIAM JAY MORRIS, a citizen of the United States of America, and a resident of the town of Marysville, in the county of Snohomish and State of Washington, have invented certain new and useful Improvements in Music-Leaf Turners, of which the following is a specification.

My invention relates to improvements in music-leaf turners, and has for its objects to provide a simple and inexpensive device of this character which shall be positive and efficient in action, easy to operate, and embody but few parts.

The above-mentioned and other desirable objects are attained by the construction, combination, and arrangement of parts, as disclosed on the accompanying drawings, set forth in this specification, and pointed out in the appended claims.

With reference to the drawings filed herewith and bearing like reference characters for corresponding parts throughout, Figure 1 is vertical sectional elevation of the device with the leaf-turning arms all at one side and showing one of the clasps for engaging the leaves connected with one of said arms, the outer ends of the other arms being broken away. Fig. 2 is a vertical elevation of the device with the clasps removed and the standard in diametrical section at right angles to Fig. 1 and shows the mechanism for operating the device, with portions broken away. Fig. 3 is a fragmentary view of the device. Fig. 4 is a plan view of the outer end portion of one of the leaf-turning arms. Fig. 5 is an end view, on small scale, of a piano with the device shown in position thereon and one of the leaf-turning arms partly advanced. Fig. 6 is a detailed view of the foot-piece included in the mechanism for operating the device and shows the brackets for supporting the same. Fig. 7 is a transverse section of the leaf-clasp, taken on line 7 of Fig. 1. Fig. 8 is a longitudinal section of same. Fig. 9 is a view in perspective of the lower portion of the standard of the device, showing the guideway for the leaf-turning arms; and Fig. 10 is a perspective view of the carrier for said arms.

Referring to the drawings, 1 indicates the

standard of the device, preferably of cylindrical form and comprising a vertical tubular portion 2 and circular heads, as 3 and 3', having screw-threads on the periphery, which engage corresponding screw-threads provided in the end portions of said tubular portion, whereby the heads can be conveniently removed when desired. The tubular portion 2 is provided adjacent the inner face of head 3' with a guideway consisting of a slot 4, extending circumferentially substantially half-way about said portion and terminating at the ends in vertical extensions leading upwardly. Intermediate the ends of this tubular portion is a transversely-disposed bar 2', having a journal-aperture formed concentric with said portion, and above this bar a boss 2'' is formed on the inner surface of the tubular portion 2 midway the end extensions of slot 4 and opposite to the semicircular portion thereof and provided with a journal-aperture extending through the wall of said tubular portion at right angles to the journal-aperture in said bar. Within the standard is a vertical spindle 5, fitting rotatably in the aperture of the bar 2' and engaging at the ends in suitable holes provided in the heads of said standard. Secured to this spindle adjacent the lower end is a carrier adapted to swing the leaf-turning members or arms and consisting of a circular disk 6, provided in the upper face with a centrally-located circular depression 6'' and opposite radially-disposed grooves 6', which extend from said depression to the periphery of the disk and are formed with upwardly-diverging side walls.

Reference character 7 indicates the leaf-turning arms, preferably four in number, each of which is formed with the outer end portion of suitable size in cross-section to fit freely in the guideway or slot 4 and the inner end portion, as 7', of suitable length to fit snugly but freely between the spindle 5 and the side wall of standard 1. This portion 7' is formed with the side surfaces diverging upwardly, so that said portion will fit in groove 6' of the carrier, while the inner end is made in the form of a part hub, as 8, of suitable size to embrace said spindle and fit freely in the depression 6'' of the carrier, and the outer end



surface is formed convex to fit against the inner surface of the side wall of the standard.

Arranged at opposite sides of spindle 5 and in line with the vertical portions of slot 4 are vertically-movable plungers 9, which are adapted to yieldingly press the leaf-turning arms toward the carrier 6, so as to insure their moving consecutively into engagement with the grooves 6' as the carrier is rotated.

These plungers are each formed with a stem of suitable length and a head substantially equal in width to the portions 7' of the leaf-turning arms, and they are conveniently mounted in a bushing 10, secured in casing 1 and provided with a diametrical slot 10', adapted to receive heads and which extends upwardly from the lower face of the bushing, and in the top wall of said slot apertures are provided to receive the said stems, while open coiled springs 11 are placed between said wall and heads to increase the downward pressure of said plungers, and suitable stops, as laterally-projecting pins 12, are provided on said stems above the bushing, so as to engage the top surface thereof and limit the downward movement of the plungers, so that they will be kept from entering the grooves 6' in case all of the arms are at any time moved from beneath the head of either plunger.

Connected with the leaf-turning arms are downwardly-projecting clasps, as 26, each of which includes a flat base part 27 of open rectangular form, provided with a transverse pivot-bar 28 intermediate the ends, and a jaw 30, formed with opposite stems 30', swingingly connected with said bar by bending the upper end portions thereabout, a transverse bar 31, secured to the lower ends of said stems and opposed to the front surface of the lower bar of said base part, and a tongue 32, composed of a strip of resilient metal secured to bar 31 and extending upwardly back of the pivot-bar and bent forwardly adjacent the upper end. Mounted on the base part 27 is a latch 33, consisting of a strip of metal pivoted to one of the side bars of said base adjacent the upper end of tongue 32 and of suitable length to extend across the opposite side bar, and secured to the back surface of said latch is a finger 34, which extends parallel therewith and is arranged at suitable separation therefrom to receive the free end portion of the tongue between the latch and finger when desired to engage the clasp loosely with the sheets or leaves to be turned, the bend in the tongue serving to bring the gripping end of the jaw forwardly from the base part when the jaw is so engaged. When desired to grip the sheets or leaves firmly, the upper end portion of the tongue is pressed forwardly and the latch is swung downwardly back of same, thereby pressing upon the back surface of the tongue and forming the gripping end of the jaw toward the base part of the clasp. Each clasp is provided with a suitable stem consist-

ing of a horizontal part 35 and an extensible vertical part 36, the latter of which comprises overlapping sections, one of which is connected with the horizontal part 35 and the other with the upper bar of the base part of the clasp, and these sections are slidably connected with each other by bending suitable side extensions of the free end portions thereof about the opposing section, so as to embrace same snugly. The horizontal parts of the stems of the clasps are connected with the outer ends of the leaf-turning arms by vertical pivots, as 37, which permits said stems to so swing that the clasps will lie one behind the other when the said arms are in vertical alinement. To conveniently limit the swinging movement of the stem on the arm, I provide stops for the stem, consisting of opposite bars 38, projecting outwardly from the pivot 37 and secured to transverse pieces, as 39, fastened to the arm, and to the outer ends of these bars are secured opposite guide-pieces 40, between which the stem fits freely.

From the foregoing description of the clasps it will be understood that they can be closed with a firm grip upon sheets of music which are detached from each other and the sheets thereby supported by the leaf-turning arms, while in the case of bound books or the like the clasp can be applied loosely to the leaves, so that the vertical movements of the leaf-turning arms as they move to and from the carrier will not cause the clasps to tear the leaves.

Mounted in the journal-aperture of boss 2' is a shaft 13, which is of any desired length, and at the inner end of this shaft a bevel-gear 14 is secured thereto, and a similar gear 14', meshing therewith, is secured to the spindle 5, whereby motion is transmitted from the shaft to said spindle. The shaft 13 can be operated in any desired manner; but in the present instance, where the leaf-turning device is adapted for use on a piano, I preferably provide a rearwardly-projecting base-piece 15 on the standard 1, which is of suitable length to extend to the rear side of the piano and carries a stand at the rear end. This stand is provided with a bearing 16 for the said shaft and a bearing 16' at right angles thereto for a shaft 17, which is operatively connected with shaft 13 by means of a pair of bevel-gears 18 and extends downwardly to a point adjacent the base of the piano, where a suitable angle-bearing, as 19, is secured to said piano and serves to rotatably support shaft 17 and also a shaft 20 at right angles thereto, which is connected with shaft 17 by means of a pair of bevel-gears 21. The shaft 20 projects from the front side of the piano just above the pedals thereof, being supported at this end in a suitable journal 25' secured to the front wall of the piano-casing, and secured to the forwardly-projecting end of this shaft is a spur-pinion 22, which meshes with



a movable foot-piece consisting of a slidably-mounted bar 23, provided with teeth on the under side, engaging said pinion and having upwardly-projecting lugs 24 arranged at suitable distance apart to receive the foot of the operator therebetween, whereby the foot-piece can be shifted in either direction to rotate said shaft as desired by moving the foot laterally. This bar is conveniently supported on suitable opposite brackets 25, secured to the front wall of the piano and formed with suitable corresponding apertures to slidably receive the end portions of the bar.

The parts of the device are normally arranged for operation with the leaf-turning arms one above the other in the right-hand end extension of slot 4, viewing the device from the front of the piano, and the lower one of said arms in one of the grooves 6' of the carrier.

If the leaves or sheets of music to be turned are bound together in book form, they are arranged on the music-shelf of the piano with the bound edges directly beneath the center of standard 1, and the clasps on the leaf-turning arms are then loosely engaged with the upper edge portions of the leaves or sheets to be turned, placing the upper ends of the tongue of the jaws 30 between the latches and the fingers thereon. If, however, the sheets are not bound together, the said clasps are closed to grip the same by placing the latches thereon back of the tongues and the arms thereby made to support the sheets.

The operation of the device is as follows: When desired to turn the upper sheet of music, the operator engages one foot with the foot-bar 23 and slides it to the left, rotating the spindle 5 through the medium of the mechanism connecting same with the bar, and thereby rotating the carrier until the lower arm, which is in one of the grooves 6', is brought to the left end of slot 4, when the opposite groove 6' will be in position to receive the succeeding arm, which is forced thereinto by action of the adjacent plunger 9. This second arm can now be swung, if desired, by sliding the foot-bar still farther to the left to rotate the carrier, when the arm first swung being kept from moving with the carrier by the end wall of slot 4 will be forced upwardly by the incline of the wall of the groove 6', in which it rests, and bears upon the face of the carrier until the second arm is brought to rest at this end of the slot beneath the first arm. The above operation of the carrier is repeated to swing the remaining arms, and, if desired, to return the arms from advanced position the carrier is reversely rotated by sliding the foot-piece to the right.

This device is simple and inexpensive to construct, efficient in operation, and has few parts likely to get out of order. Furthermore, it is capable of modifications to adapt it for use in connection with other instruments than

piano without departing from the spirit of the invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States of America, is—

1. In a music-leaf turner, the combination with a standard, of a carrier rotatably mounted therein, and provided with arm-engaging means, and a leaf-turning arm operable by said carrier and having an axis common therewith, said arm being movable longitudinally of said axis whereby it is engaged with and disengaged from said means.

2. In a music-leaf turner, the combination with a standard, of a plurality of leaf-turning arms swingingly mounted therein and having a common path of swing, said arms being consecutively movable longitudinally of their axis to or from said path at a limit of their swing.

3. In a music-leaf turner, the combination with a standard, of a plurality of leaf-turning arms swingingly mounted therein and having a common path of swing, said arms being consecutively movable longitudinally of their axis to or from said path at both limits of their swing.

4. In a music-leaf turner, the combination with a standard, of a plurality of leaf-turning arms swingingly mounted therein for movement about a common axis and having a common path of swing, said arms being consecutively movable longitudinally of said axis to or from said path at the limits of their swing, the line of said longitudinal movements being in the same direction relatively to said path at each of said limits.

5. In a music-leaf turner, the combination with a standard, of a leaf-turning arm swingingly mounted therein and being movable longitudinally of the axis to or from its path of swing at the limits of said swing, the line of said longitudinal movements being in the same direction relatively to said path at each of said limits, and means to swing said arm.

6. In a music-leaf turner, the combination with a standard, of a plurality of leaf-turning arms swingingly mounted therein for movement about a common axis and having a common path of swing, said arms being consecutively movable longitudinally of said axis to or from said path at the limits of their swing, and means at said limits to yieldingly press said arms toward said path.

7. In a music-leaf turner, the combination with a standard, of a plurality of leaf-turning arms swingingly mounted therein for movement about a common axis and having a common path of swing, said arms being consecutively movable longitudinally of said axis to or from said path at the limits of said swing, means at said limits to yieldingly press said arms toward said path, and means to forcibly move said arms reversely to the action of the said first means when swung to said limits.



8. In a music-leaf turner, the combination with a standard, of a carrier rotatably mounted therein, and a plurality of leaf-turning arms operable by said carrier in a common path of swing, said arms being movable consecutively to or from said path at the limits of their swing.

9. In a music-leaf turner, the combination with a standard, of a carrier rotatably mounted therein and provided with arm-engaging means, a plurality of leaf-turning arms adapted to be moved consecutively by said carrier in a common path of swing, said arms being movable consecutively to or from said path at the limits of their swing, and means at said limits to yieldingly press said arms toward said path.

10. In a music-leaf turner, the combination with a standard, of a carrier rotatably mounted therein, a plurality of leaf-turning arms adapted to be moved consecutively by said carrier in a common path of swing, said arms being movable consecutively to or from said path at the limits of their swing, means at said limits to yieldingly press said arms toward said path, and means to move said arms against action of said first means by a movement of said carrier.

11. In a music-leaf turner, the combination with a standard, of a carrier rotatably mounted therein and provided with an arm-engaging groove, and a leaf-turning arm disposed radially to said carrier and operable thereby, said arm being movable to and from the carrier for engagement with and disengagement from said groove.

12. In a music-leaf turner, the combination with a standard, of a carrier rotatably mounted therein and provided with a radially-disposed arm-engaging groove having side walls diverging outwardly from the bottom, a leaf-turning arm disposed radially to said carrier and operable thereby, said arm being movable longitudinally of the axis of said carrier for engagement with and disengagement from said groove, opposite means to limit the movement of said arm with the carrier, and means at said limiting means to yieldingly press said arm toward said carrier.

13. In a music-leaf turner, the combination of a standard having a semicircular guideway formed with vertical end extensions, a carrier rotatably mounted in said standard and provided with a radially-disposed arm-engaging groove having side walls diverging outwardly from the bottom, a leaf-turning arm in said way disposed radially to said carrier and operable thereby, said arm being movable in said extensions longitudinally of the axis of said carrier for engagement with and disengagement from said groove, and means adjacent said extensions to yieldingly press said arm toward the carrier.

14. In a music-leaf turner, the combination of a standard having a semicircular guideway,

a carrier rotatably mounted in said standard and provided with radially-disposed arm-engaging grooves, a plurality of leaf-turning arms disposed radially to said carrier and fitting in said way, said arms being movable consecutively at the ends of said way to and from said carrier for engagement with and disengagement from said grooves, and spring-pressed plungers adjacent said ends adapted to yieldingly press said arms toward said carrier.

15. In a music-leaf turner, the combination of a standard having a semicircular guideway formed with vertical end extensions, a carrier rotatably mounted in said standard and provided with opposite radially-disposed arm-engaging grooves having side walls diverging outwardly from the bottom, a plurality of leaf-turning arms disposed radially to said carrier and fitting in said way, said arms being movable consecutively at said extensions to and from said carrier, and spring-pressed plungers adjacent said extensions adapted to yieldingly press said arms toward said carrier.

16. In a music-leaf turner, the combination of a standard having a semicircular guideway formed with vertical end extensions, of a vertical spindle rotatably mounted in said standard, a carrier secured to said spindle adjacent said way and provided with radially-disposed arm-engaging grooves having side walls diverging outwardly from the bottom, a plurality of radially-disposed leaf-turning arms in said way having portions fitting freely between said standard and spindle and partially embracing the latter, and means adjacent said extensions adapted to yieldingly press said arms toward the carrier.

17. In a music-leaf turner, the combination with a standard having a semicircular guideway formed with vertical end extensions, of a vertical spindle rotatably mounted in said standard, a carrier secured to said spindle adjacent said way and provided with opposite radially-disposed arm-engaging grooves having side walls diverging outwardly from the bottom, a plurality of radially-disposed leaf-turning arms in said way having portions corresponding to said grooves and fitting freely between said standard and spindle and partially embracing the latter and spring-pressed plungers adjacent said extensions adapted to yieldingly press said arms toward the carrier.

18. In a music-leaf turner, the combination with a standard and a horizontal leaf-turning arm swingingly mounted therein and movable longitudinally of its axis, of a vertically-disposed clasp connected with said arm and comprising a flat base part, a jaw swingingly connected therewith, and means to secure the jaw in a partly-open position or in a closed position.

19. In a music-leaf turner, the combination with a horizontal leaf-turning arm swingingly mounted therein, of a clasp comprising a flat

base part, a jaw swingingly connected there-  
with and having an upwardly-projecting re-  
siliant tongue, and a latch for said tongue  
mounted on said base and provided with a  
5 finger on the back side.

20. In a music-leaf turner the combination  
with a standard and a horizontal leaf-turning  
arm swingingly mounted therein, of a verti-  
cally-disposed leaf-engaging part having a  
10 horizontal stem part pivotally connected with

said arm to swing on a vertical axis, and means  
to limit the swing of said stem part on said  
axis.

Signed at Marysville, Washington, this 15th  
day of August, 1904.

WILLIAM JAY MORRIS.

Witnesses:

F. G. MERRICK,  
DUGALD M. INNIS.