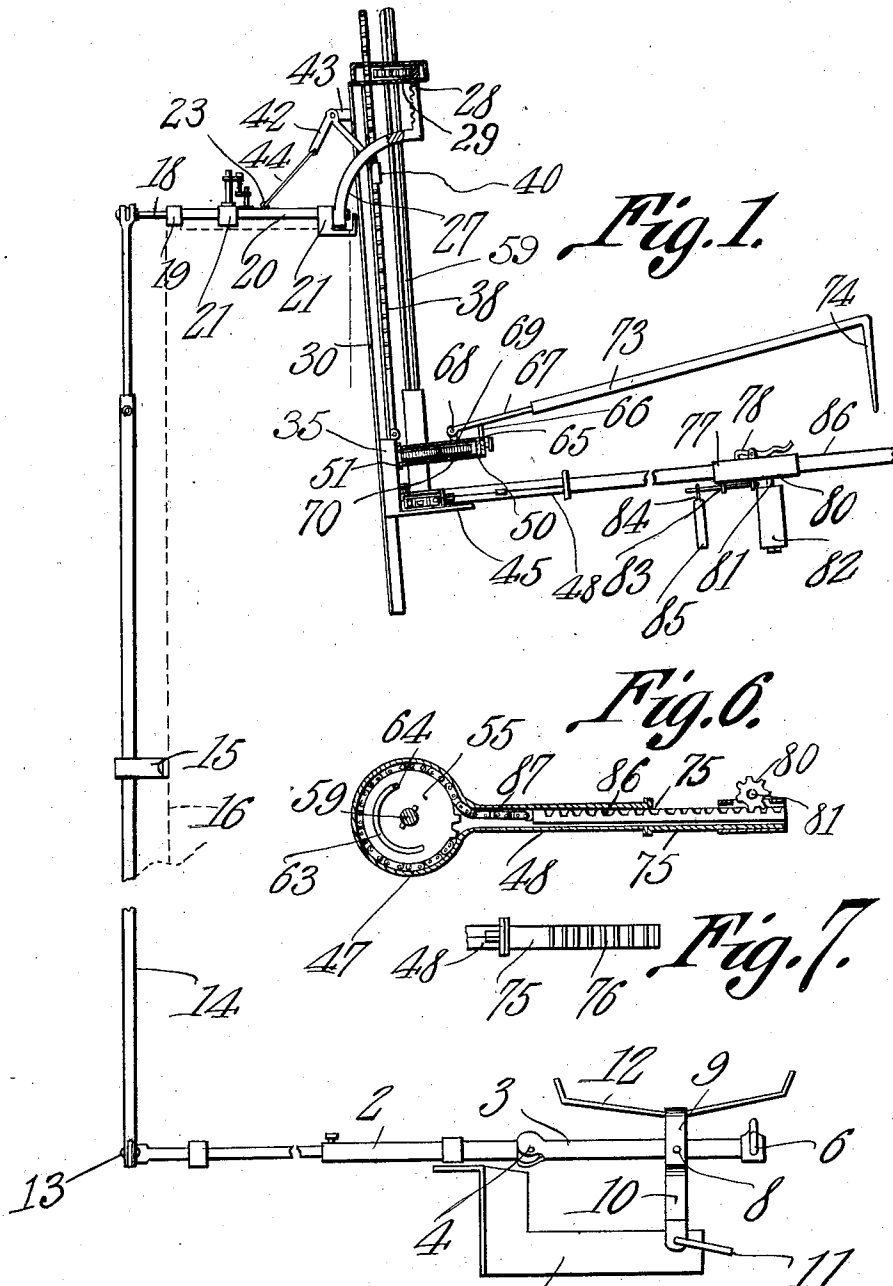


1,021,940.

E. MEIER.
MUSIC LEAF TURNER.
APPLICATION FILED APR. 20, 1910.

Patented Apr. 2, 1912.
3 SHEETS—SHEET 1.



Witnesses

E. J. Meier
Herbert D. Lawson

Ernst Meier
Inventor.

by *Cashow & Co.*
Attorneys

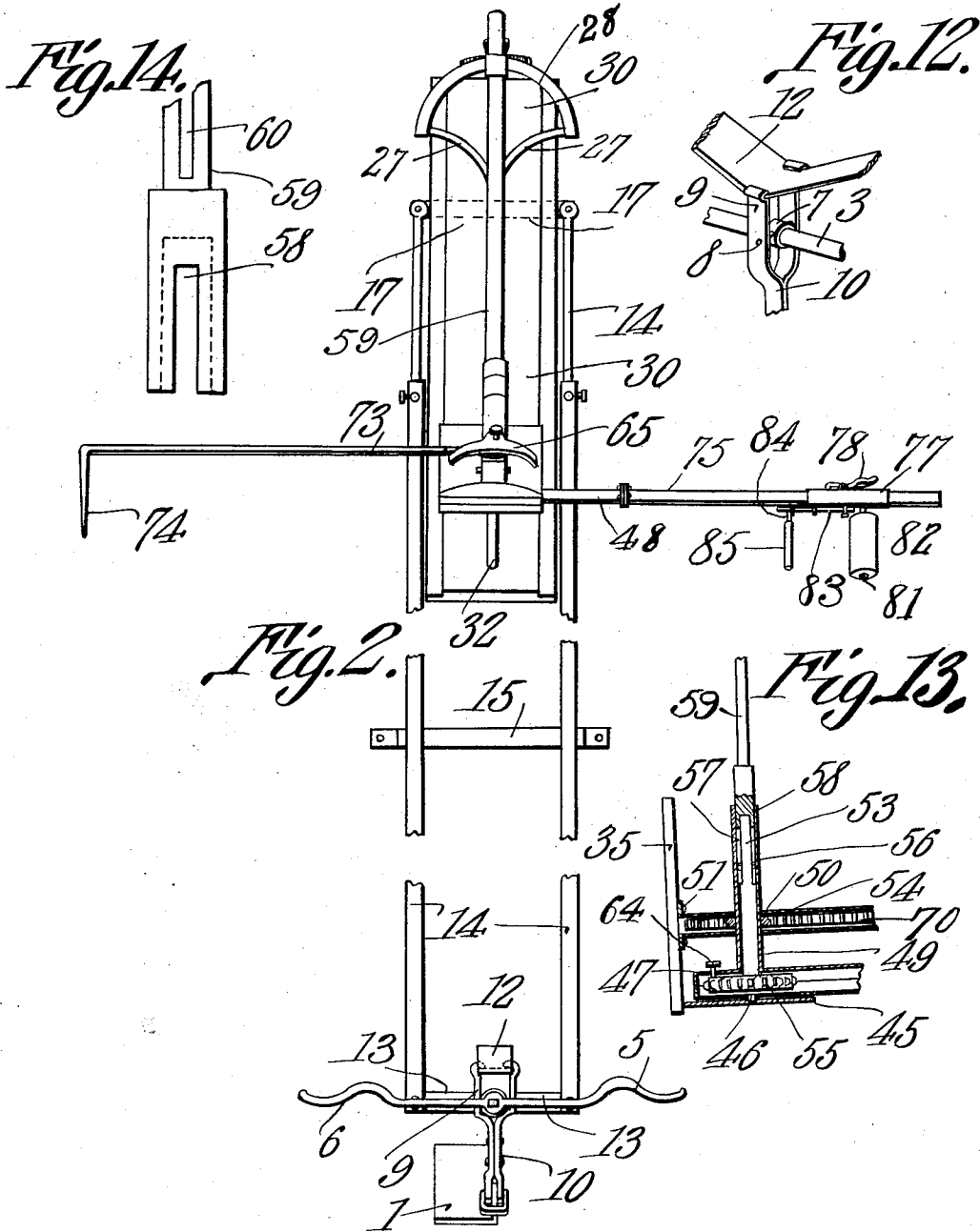
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Herbert Lawson

Ernst Meier
Inventor.

by

C. A. Snow & Co.
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3 SHEETS-SHEET 3.

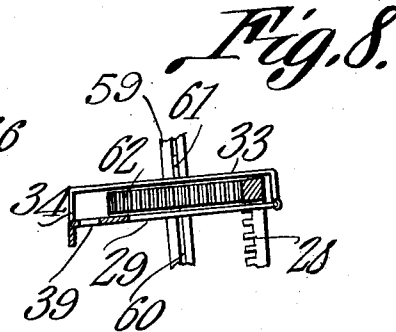
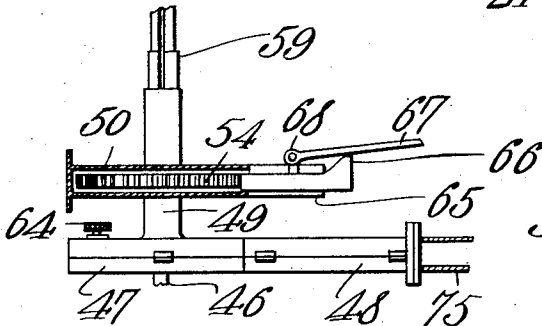
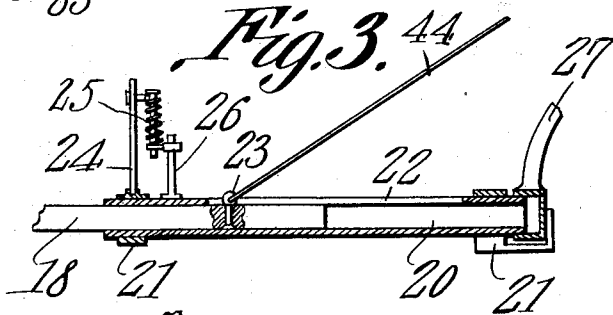
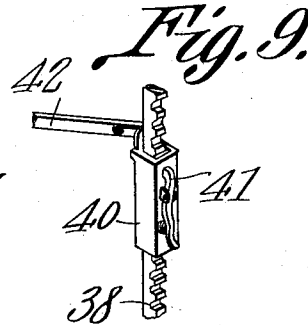
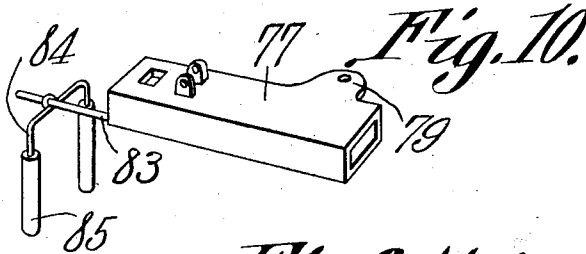


Fig. 4.

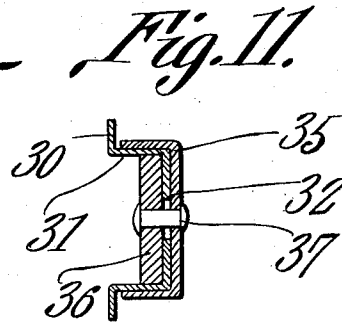
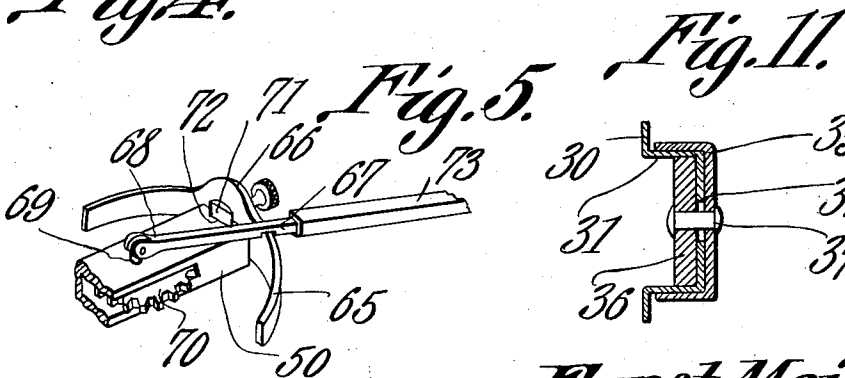


Fig. 5.

Fig. 11.

Witnesses

E. P. Lawson
Herbert D. Lawson.

Ernst Meier
Inventor.

by

C. A. Snow & Co.
Attorneys

UNITED STATES PATENT OFFICE.

ERNST MEIER, OF HYE, TEXAS, ASSIGNOR OF ONE-HALF TO ALBERT MEIER, OF HYE, TEXAS.

MUSIC-LEAF TURNER.

1,021,940.

Specification of Letters Patent.

Patented Apr. 2, 1912.

Application filed April 20, 1910. Serial No. 556,506.

To all whom it may concern:

Be it known that I, ERNST MEIER, a subject of Switzerland, residing at Hye, in the county of Blanco and State of Texas, have invented a new and useful Music-Leaf Turner, of which the following is a specification.

This invention relates to music leaf turners for use in connection with pianos, organs and the like and which can also be used upon ordinary types of music racks.

One of the objects of the invention is to provide a device of this character utilizing revoluble means for shifting an exposed leaf out of contact with the adjoining leaf and into position where it can be properly engaged so as to be turned by the mechanism.

A further object is to provide means under the control of a foot of the operator, for successively buckling and engaging the leaf to be turned, then turning the leaf, and finally disengaging the mechanism from the leaf and returning the said mechanism to its initial position.

Another object is to provide improved means for holding a sheet against displacement after it has been turned, said holding means also serving to prevent the turning of more than one leaf at a time and being operated by the same mechanism utilized for actuating the turning mechanism.

With these and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a view partly in section and partly in side elevation of the complete mechanism, the turning and holding arms being shown in their intermediate positions and portions of the back rods being removed. Fig. 2 is a front elevation of the parts shown in Fig. 1, the two arms, however, being shown in their normal position. Fig. 3 is a vertical longitudinal section through the telescopic rock shaft. Fig. 4 is a side elevation of the gear case used in connection with the turning arm. Fig. 5 is a perspective view of a portion of the upper gear case and of the supporting strip carried thereby, the holding arm being shown

pivotally connected to the gear in the case and resting on the strip, only a portion of said arm being illustrated. Fig. 6 is a horizontal section through the case of the turning arm and showing a portion of the rack and its gear and chain. Fig. 7 is a plan view of a portion of said case. Fig. 8 is an enlarged elevation of the gear mounted on the upstanding shaft of the device and showing the rack in section, the gear holding frame being shown partly in section and partly in elevation. Fig. 9 is a perspective view of the adjusting rack bar and the connection between it and the arm of the bell crank lever included in the elevating mechanism. Fig. 10 is a perspective view of the sleeve used in connection with the turning arm. Fig. 11 is an enlarged transverse section through the base and the slide thereon. Fig. 12 is a perspective view of a portion of the intermediate pedal and the adjoining parts. Fig. 13 is an enlarged vertical section through the gear casings and the revoluble standard, the adjoining portions of the shafts being shown partly in section and partly in elevation. Fig. 14 is an enlarged elevation of the lower portion of the main upstanding shaft.

Referring to the figures by characters of reference, 1 designates a bracket adapted to be secured to the front portion of a piano, organ or other instrument, close to the pedals and this bracket has a shaft 2 journaled upon it and extending rearwardly therefrom, there being an extension 3 connected to the front end of the shaft by means of a universal joint 4 or the like, the front end of the extension being provided with oppositely extending pedals 5 and 6. The extension 3 is journaled within a bearing ring 7 having trunnions 8 which are journaled within opposite portions of a fork 9. This fork is located at the upper end of a standard 10 which straddles and is pivotally connected to the front portion of the bracket 1. The connection between the standard 10 and the bracket 1 is preferably made by means of a spring loop 11 the ends of which are sprung into registering openings within the said standards and the brackets. An intermediate foot rest or pedal 12 is engaged by the terminals of the forks 9 and extends above and between the pedals 5 and 6 and in the general direction of the length of the ex-

tension 3. Arms 13 extend in opposite directions from the back end of the shaft 2 and parallel back bars 14 are pivotally connected to the outer ends of these arms and
5 extend through a guide bracket 15 which may be secured in any preferred manner to the back of the piano, organ, or any other supporting structure, a portion of which has been indicated by dotted lines at 16 in Fig. 1.
10 The upper ends of the bars 14 are pivotally connected to the outer ends of oppositely extending arms 17 secured to the rear end of the back section 18 of an extensible shaft. This section is mounted to slide and rotate
15 within a bracket 19 and projects loosely into the tubular front section 20 of said shaft. This front section is mounted to rotate within bearings 21 but is not adapted to slide therein. A slot 22 is formed longitudinally
20 within the section 20 and a projection 23 extends into and is adapted to slide within the slot 22, the said projection being secured to or formed upon the shaft section 18. An ear 24 projects upwardly from the rear bearing
25 21 and is connected by a spring 25 with an ear or projection 26 secured to the section 20. It is to be understood that this spring serves to hold the projection 26 normally vertical and, therefore, when the shaft sections are turned to the right or to the left,
30 the spring 25 will be placed under stress so that as soon as the shaft is released, the spring will return it to its initial position.

Forwardly curved diverging arms 27 extend from the front end of the shaft section
35 20 and are secured to or formed with the ends of an arcuate rack 28. This rack is movably mounted above a bracket 29 extending forwardly from the upper end of the
40 base 30 which is preferably formed of a strip of metal having a longitudinal channel 31 in the back thereof. The channeled portion of the said base has a longitudinal slot 32 for the purpose hereinafter set forth. An
45 angular retaining plate 33 is hingedly connected to the front end of the bracket 29 and is adapted to project over the rack 28 and to also extend parallel with the bracket 29, the back end of the said plate 33 being turned
50 downward as indicated at 34 so as to rest upon the bracket. A slide 35 straddles and is movably mounted upon the outstanding longitudinally extending portion of the base 30 and a retaining plate 36 is mounted with-
55 in the channel 31 and is connected to the slide by means of one or more rivets 37 or the like extending through the slot 32.

A rack bar 38 is pivotally connected to the upper end of the slide 35 and is slidably
60 mounted within an opening 39 formed within the bracket 29, there being a sleeve 40 slidably mounted on the rack bar and carrying a spring pressed dog 41 designed to be placed in engagement with any one of the
65 teeth on the rack bar. One arm of a bell

crank lever 42 is pivotally connected to the sleeve 40, this lever being fulcrumed upon a bracket 43 extending from the base 30. The other arm of the bell crank lever 42 is connected, by means of a rod 44, with the pro-
70 jection 23 heretofore referred to. A shelf or ledge 45 extends forward from the lower end of the slide 35 and is adapted to receive a trunnion 46 extending downwardly from the center of a substantially cylindrical
75 casing 47. This casing is preferably made up of two sections detachably connected and provided with an angular tubular arm 48 extending from the periphery thereof. A tubular standard 49 extends up-
80 wardly from the center of the casing 47 and loosely through an upper casing 50 one end of which is secured, as at 51, to the slide 35. A shaft 53 is journaled within the standard 49 and has a gear 55 secured to its lower
85 end and mounted to rotate within the casing 47. Another gear 54 is secured to the standard 49 and is adapted to rotate therewith and within the casing 50. Stud 56 extends
90 radially from that portion of the shaft 53 located in the standard 49 and project into longitudinal slots 57 formed in the forked portion 58 of a shaft 59. The upper end
95 of this shaft is journaled within openings formed in the bracket 29 and the plate 33 and a longitudinal groove 60 is formed within the shaft and is adapted to receive a
dog 61 secured to a gear 62 which is mounted on the shaft 59 and is arranged between
100 the bracket 29 and the plate 33. It will be apparent therefore that while the shaft 59 is capable of being shifted longitudinally, the gear 62 will be held against movement by the bracket 29 and the plate 33 although
105 the dog 61 will cause the gear to rotate at all times with the shaft. The gear 55 has an arcuate groove 63 in one face thereof and concentric with the shaft 53, there being a screw 64 or other projection extending from
110 the casing 47 and into the groove.

An arcuate supporting arm 65 is secured at its centre to the front end of the casing
50 and has its upper edge provided with an upwardly curved extension 66 located at the center thereof. This upper edge constitutes
115 a bearing for an arm 67 which is pivotally connected, as at 68, to the shaft 69 of a gear 70 which is journaled within the casing 50 and meshes with the gear 54. The arm 65 may be connected to the casing 50
120 in any preferred manner, as by means of a dove-tailed tongue 71 seated within a dove tailed groove 72 formed in the front end of the casing 50, both the tongue and the groove being tapered toward the lower end.
125 This structure has been illustrated in Fig. 5. The arm 67 is preferably formed with a tubular section 73 which is slidably mounted thereon and carries a depending finger
74 at its free end. It will be apparent 130

therefore that this arm can be adjusted to any desired distance from the supporting strip 65 simply by sliding the section 73 along the arm 67.

5 Bolted or otherwise secured to the radial tubular arm 48 of casing 47 is a longitudinally channeled extension 75 having rack teeth 76 pressed into or otherwise formed upon the upper face thereof. A sleeve 77 is slidably mounted on the extension 75 and carries a spring pressed dog 78 which normally engages one of the teeth 76 so as to hold the sleeve against movement along the extension 75. Ears 79 extend laterally from the sleeve and journaled between them is a gear 80 secured to a shaft 81 which extends downwardly from the ears and has a roller 82 secured to it. A spring arm 83 is secured to the bottom portion of the sleeve 77 and is provided, adjacent its free end, with a transversely extending yoke 84 the hanging end portions of which are provided with jackets 85 formed preferably of rubber tubing, these jackets being supported beyond the side faces of the casing 77 for the purpose hereinafter set forth. The gear 80 constantly meshes with a rack bar 86 which is slidably mounted within the channeled extension 75 and has a sprocket chain 87 connected to one end thereof and extending into the casing 47, said chain being in constant engagement with the gear or sprocket 55.

It is to be understood that when the parts are in their normal positions, the turning arm 48 with its extension 75 is extended to the right above the upper edge of one of the exposed leaves to be turned and with one of the jackets 85 in yielding contact with the leaf while the finger 74 is extended to the left and in contact with the first leaf of the music which has been turned, the arm 67 and its extension 73 being also located above the leaf. When it is desired to turn a page from the right to the left, the pedal 6 is depressed and causes the shaft 2 to turn in one direction, motion being thus transmitted through the bars 14 to the rock shaft 18—20. The arcuate rack 28 will thus rotate the gear 62 and cause a corresponding movement of the shaft 59, and as this shaft is in sliding engagement with the shaft 53 but is keyed to it, it will be apparent that said shaft 53 will also be rotated and thus cause a corresponding movement of the gear 55. Said gear will therefore rotate within the casing 47 and push on the chain 87 and cause the rack 86 to slide within arm 48 and its extension 75. The sliding movement of the rack 86 will cause the roller to rapidly rotate, buckling the page between the roller and the holding finger 85 until said page has passed from behind the roller, whereupon it will spring outwardly and cross the exposed portion of the roller. This movement of

the roller 82 is brought to a stop by the end wall of the groove 63 coming in contact with the stop screw 64. Further depression of the pedal 6 will cause arm 48 and its extension 75 to swing from the right to the left and inasmuch as the leaf to be turned is in the path of the roller 82, it will be apparent that said leaf will also be swung from the right to the left. Inasmuch as the gear 54 is secured to and rotates with the casing 47, it will be apparent that the gear 70 will be rotated thereby during the swinging movement of the arm 48 so as to cause the arm 73 to also swing but in a direction opposite to that in which the arm 48 is moving. Arm 73 will travel along the upper edge of the strip 65 and just before the arm 48 arrives in position thereunder, the arm 67 will travel upwardly on the raised portion 66 and thus cause the finger 74 to be elevated out of the path of the extension 75. After the finger 74 has passed the extension 75, it will drop down to its normal position and during the further movement of the arm 67 in the same direction, the said finger 74 will be brought into contact with the newly exposed sheet of music. Simultaneously with the arrival of the finger 74 in this position, the shifting sheet is brought to its new position at the left of the device and the mechanism is then ready to be again set. To do this the operator pushes backwardly against the pedal 12 so as to cause the shaft 2 to push backwardly on the lower ends of the bars 14. The said bars will therefore swing upon the bracket 15 and their upper ends will push forward on the shaft section 18 causing it to slide within the section 20. Motion will therefore be transmitted through the rod 44 to the bell crank lever 42 and this lever will pull upwardly on the sleeve 40 which is locked to the rack bar 38. The said rack bar will therefore pull the slide 35 upwardly on the base 30 a sufficient distance to withdraw the two holding devices 85 above the turned leaf so as to permit said leaf to fall flat against the adjoining leaf. By now depressing the pedal 5 and releasing the pedal 12 the said pedal 12 and shaft 2, rod 14 and shaft section 18 will be moved to their initial positions, the slide 35 also moving downwardly to its initial position under the action of gravity. The depression of the pedal 5 causes the rack 28 to rotate gear 62 and shaft 59. Gear 55 thus rotates and pulls the rack 86 back to its initial position, whereupon one end wall of groove 63 moves against stud 64 and causes casing 47 to rotate and move arm 48 back to its initial position at the right. At the same time arm 67 and its extension 73 and finger 74 will be swung to the left until the holding device 85 is brought into contact with the next sheet to be turned. and the finger 74 is

brought against the sheet which has already been turned. The foregoing operation can then be repeated.

Should it be desired to turn back a leaf located at the left of the apparatus, the parts should not be elevated above the newly turned page by pressing pedal 12, but should be allowed to remain in engagement with the leaf so that when the arm 48 and its extension 45 are returned to their initial positions, the leaf will be carried therewith. If desired the base 30 may be attached to a suitable back board adapted to be secured to the musical instrument or to rest on the music rack thereof.

Various changes can of course be made in the construction and arrangement of the parts to adapt the machine for use in connection with different types of instruments. These and other changes can of course be made without departing from the spirit or sacrificing any of the advantages of the invention as defined in the appended claims.

What is claimed is:—

1. A music leaf turner including oppositely movable holding and turning members adapted to pass each other, means for simultaneously actuating the same, and means for elevating one of the members when passing the other member.

2. A music leaf turner including a turning arm mounted to move in a plane perpendicular to the supported leaf, means upon said arm and movable about an axis perpendicular to said plane for buckling the leaf and shifting the same into the path of the said revoluble means, and means for rotating said leaf buckling means and subsequently swinging the arm.

3. A music leaf turner including a turning arm mounted to swing in a plane perpendicular to the supported leaf, a leaf holding device connected to the arm, means upon the arm and revoluble about an axis perpendicular to said plane, and coöperating with said leaf holding device, for buckling a leaf and shifting the same into the path of said revoluble means, and mechanism for rotating said revoluble means and subsequently swinging the arm.

4. A music leaf turner including a turning arm mounted to swing in a plane perpendicular to the supported leaf, a holding element, a leaf engaging device revoluble about an axis perpendicular to said plane and carried by the arm, and mechanism for rotating said device for buckling the engaged leaf.

5. A music leaf turner including a turning arm mounted to swing in a plane perpendicular to the supported leaf, a leaf holding element connected thereto, means upon the arm and revoluble about an axis perpendicular to said plane for shifting a leaf into the path of said means, and mechanism

for rotating said means and subsequently shifting the arm.

6. A music leaf turner including oppositely movable holding and turning members, means for simultaneously actuating the same, and means for elevating said members.

7. A music leaf turner including an arm mounted for swinging movement in a plane perpendicular to the supported leaf, a leaf engaging device movable with the arm and mounted for rotation about an axis perpendicular to said plane, a pedal, and means operated by the pedal for actuating the device to shift a leaf from a position back of said device to a position in front thereof.

8. A music leaf turner including an arm mounted for swinging movement in a plane perpendicular to the supported leaf, a device thereon for engaging a leaf to be turned, said device being revoluble about an axis perpendicular to said plane, power transmitting mechanism, and a pedal for actuating said mechanism to actuate said device to shift the leaf into the path thereof, and for actuating said mechanism to shift the arm and device to turn the leaf.

9. A music leaf turner including an arm mounted for swinging movement, a leaf engaging device movable with the arm, mechanism for rotating said device to shift the leaf into position in the path of the device, power transmitting mechanism, a pedal for actuating said power transmitting mechanism to rotate the leaf shifting device and for swinging the arm, arm elevating means actuated by said power transmitting mechanism, and a pedal for shifting said mechanism to actuate the elevating means.

10. A music leaf turner including an arm mounted for swinging movement, a roller depending therefrom, a gear revoluble with the roller, a rack slidably mounted within the arm and meshing within the gear, and mechanism for shifting the rack and subsequently swinging the arm.

11. A music leaf turner including an arm mounted for swinging movement, a roller depending therefrom, a gear revoluble with the roller, a rack meshing with the gear and slidably mounted within the arm, a gear mounted for rotation, a flexible connection between the gear and rack, means for transmitting motion from the gear to the arm, said means being adapted to permit a predetermined amount of lost motion prior to the actuating of the arm, and means for rotating the gear.

12. A music leaf turner including a casing mounted for rotation, a holding arm, mechanism for transmitting motion from said casing to the arm to swing the arm in one direction, a gear within the casing, an arm extending from the casing, a revoluble leaf engaging device carried by said arm

of the casing, means for rotating the gear, means actuated by the gear for rotating the leaf engaging device, and means for transmitting motion from the gear to the casing subsequent to the rotation of said device, the two arms being movable simultaneously in opposite directions.

13. A music leaf turner including an arm mounted for swinging movement, a sleeve adjustably mounted thereon, a roller carried by and depending from the sleeve, a gear revoluble with the roller, a rack meshing with the gear and slidably mounted in the arm, and means for shifting the rack and subsequently swinging the arm.

14. A music leaf turner including an arm mounted for swinging movement, a sleeve, a roller depending from the sleeve, depending sheet holding devices extending from the arm, yielding means for pressing one of said devices against a sheet, and means for rotating the roller to buckle said sheet between the roller and the holding device contacting with the sheet.

15. A music leaf turner including a shaft, a gear thereon, an arcuate rack meshing with the gear and mounted for swinging movement, an arm, a revoluble sheet engaging device carried by the arm, means operated by the shaft for successively rotating said device and swinging the arm, and means for elevating the arm relative to the gear.

16. A music leaf turner including an arm mounted for swinging movement, a revoluble leaf engaging device carried by the arm, an extensible shaft, means operated by the rotation of the shaft for successively rotating said device and swinging the arm, and means operated by the longitudinal movement of a portion of the shaft for raising or lowering the arm.

17. A music leaf turner including an arm mounted for swinging movement, revoluble leaf engaging means carried by the arm, means actuated by the rotation of the shaft

for successively rotating the leaf engaging device and swinging the arm, means operated by the longitudinal movement of a portion of the shaft for elevating the arm, and yielding means for holding the shaft normally elongated.

18. A music leaf turner including a base, a slide thereon, an arm mounted for swinging movement upon the slide, a revoluble leaf engaging device carried by the arm, an extensible shaft, means operated by the shaft when rotated, for successively rotating said device and swinging the arm, and means operated by the shaft when adjusted longitudinally, for shifting the slide upon the base.

19. A music leaf turner including a slide, a base supporting the same, an arm mounted for swinging movement, a revoluble leaf engaging device carried by the arm, a holding arm mounted for swinging movement, a supporting guide therefor and connected to the slide, an extensible shaft, means operated by the shaft when rotated, for successively rotating the leaf engaging device and shifting the arms in opposite directions, and means operated by the shaft when adjusted longitudinally, for moving the slide upon the base.

20. A music leaf turner including a base, a slide thereon, a turning arm mounted to swing upon the slide, a holding arm carried by the slide and mounted for swinging movement, an extensible shaft, means actuated by the shaft when rotated, for simultaneously swinging the arms in opposite directions, and means operated by the shaft when adjusted longitudinally, for actuating the slide.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ERNST MEIER.

Witnesses:

M. HEINRICH,
H. ERLER.