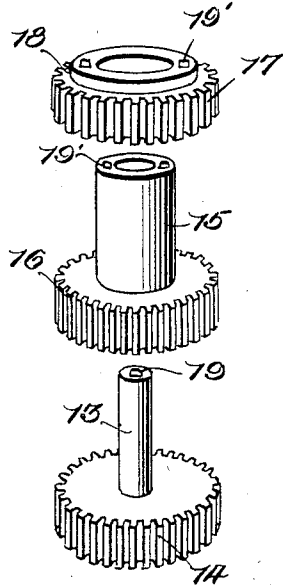


APPLICATION FILED JAN. 30, 1912.

2 SHEETS--SHEET 1.



G. B. Norton.

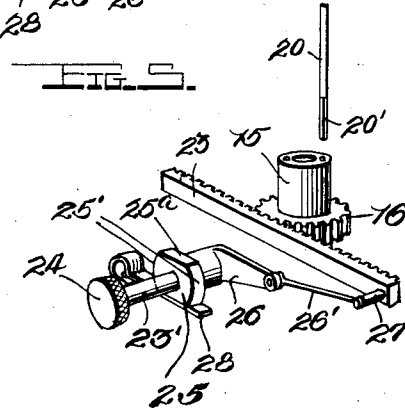
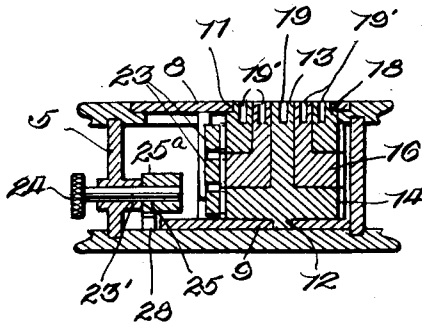
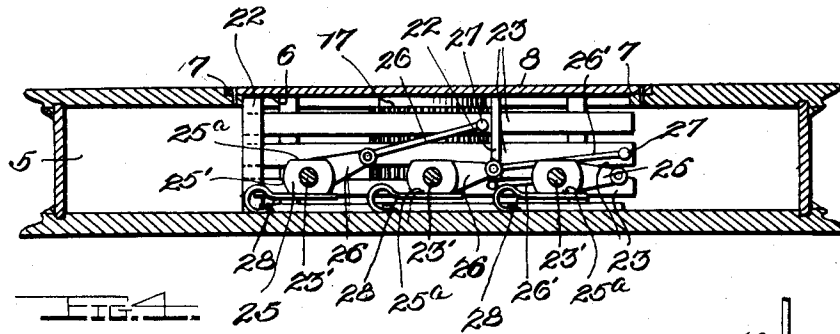
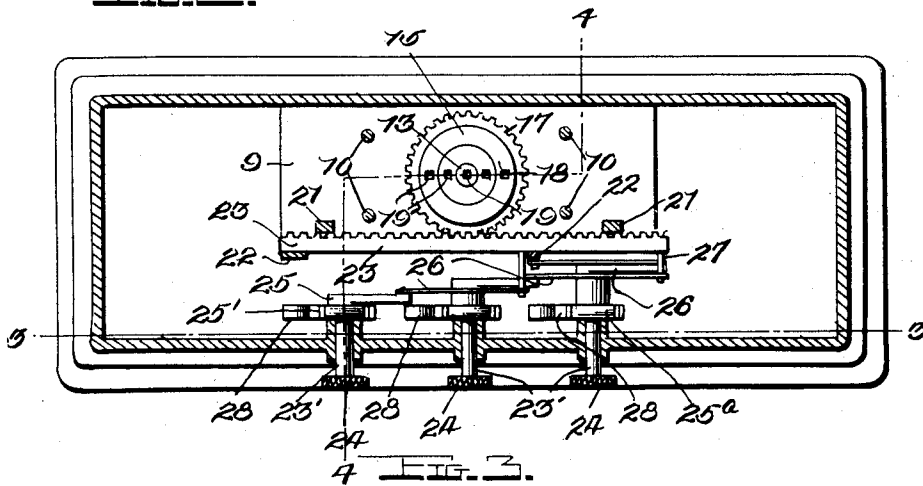
Watson E. Coleman
Attorney

W. & C. M. BORNEMAN.
MUSIC LEAF TURNER.
APPLICATION FILED JAN. 30, 1912.

1,035,774.

Patented Aug. 13, 1912.

2 SHEETS—SHEET 2.



Witnesses

Chas. L. Griesbauer.
G. B. Norton.

By

Inventors
William Borneman and
Charles M. Borneman
Watson E. Coleman.
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM BORNEMAN AND CHARLES M. BORNEMAN, OF ALLENTOWN, PENNSYLVANIA.

MUSIC-LEAF TURNER.

1,035,774.

Specification of Letters Patent.

Patented Aug. 13, 1912.

Application filed January 30, 1912. Serial No. 674,316.

To all whom it may concern:

Be it known that we, WILLIAM BORNEMAN and CHARLES M. BORNEMAN, citizens of the United States, residing at Allentown, in the county of Lehigh and State of Pennsylvania, have invented certain new and useful Improvements in Music-Leaf Turners, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to leaf turners of that type wherein a plurality of swinging arms are employed, the primary object of the invention residing in the provision of actuating means of novel construction for successively swinging said arms to turn the leaves.

Another object of our invention is to produce a leaf turner of the above character which consists of comparatively few parts of simple form and arrangement, whereby a device is produced which is not liable to get out of order, may be manufactured at small cost and is durable and efficient in practical operation.

With the above and other objects in view, the invention consists of the novel features of construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which,

Figure 1 is a side elevation of a music leaf turner embodying our improvements, showing the same applied to a music stand; Fig. 2 is an enlarged horizontal section taken on the line 2—2 of Fig. 1; Fig. 3 is a section taken on the line 3—3 of Fig. 2; Fig. 4 is a section taken on the line 4—4 of Fig. 2; Fig. 5 is a detail perspective view of the operating mechanism; Fig. 6 is a similar view of the arm carrying members disassembled; and Fig. 7 is a detail perspective view of one of the rack bars.

Referring in detail to the drawings 5 designates a casing of rectangular form in plan and constructed of wood, sheet metal or other desired material. The top of this casing is provided with an opening 6 the edge of which is rabbeted as indicated at 7 to receive a plate 8 which is secured in said opening at its edges by means of a plurality of fastening screws. A second plate 9 is centrally arranged upon the upper surface of the bottom of the casing 5 and is also rigidly secured thereon. These upper and lower plates 8 and 9 respectively are

connected by means of a plurality of brace bolts 10 which are rigidly fixed to the respective plates at their upper and lower ends. The plate 8 in the top wall of the casing 5 is provided with a central circular opening 11 and the bottom plate 9 is also provided with a central socket opening 12 to receive the lower end of a perpendicular shaft 13. Upon this shaft adjacent to its lower end a cog or pinion 14 is provided. A sleeve 15 is provided on one end with a gear 16 and this sleeve is adapted to be disposed upon the upper portion of the shaft 13, the cog carried thereby resting upon the cog or pinion 14 on said shaft. Upon the sleeve 15 a short cog or pinion 17 is loosely mounted, and has formed upon its upper surface an annular flange or shoulder 18 which is adapted to be received in the central opening 11 of the plate 8, the upper surface of said flange being flush with the upper surface of the plate. It will be readily seen that by thus mounting the several cogs or pinions between the upper and lower plates 8 and 9, they are held in position therebetween and have independent rotary movement with respect to each other.

The upper ends of the shaft 13 and sleeve 15 are disposed in a plane flush with the upper surface of the flange 18 carried by the gear 17. The upper end of the shaft 13 is provided with a square socket 19 and the upper end of the sleeve 15 and the flange 18 are provided at diametrically opposite points with the square socket 19'. These sockets are adapted to receive the squared end portions 20' of the leaf carrying arms 20. By providing the sockets 19' at diametrically opposite points in the sleeve 15 and flange 18, the leaf carrying arms may be fitted into said sockets upon either side of the shaft 13 so that the positions of the arms may be changed so that the leaves may be turned in either direction.

Spaced vertical guide rails 21 are arranged between the top and bottom plates 8 and 9 upon opposite sides of the series of gears or pinions and slightly forwardly thereof. Upon the inner face of the top plate 8 of the casing 5 and at opposite ends of the opening 6 the vertical bars 22 on which shoulders are formed are arranged. A plurality of rack bars 23 are arranged in superposed parallel relation between the vertical rails or guides 21 and the bars 22, said rack bars extending upon the shoulders

of the bars 22 at their ends whereby said shoulders retain the rack bars in their proper positions and in engagement with the respective cogs or pinions 14, 16 and 18.

5 In the front wall of the casing 5 the transversely disposed spaced shafts 23' are mounted, and these shafts are extended through the side of the casing and are provided upon their outer ends with heads 24.
10 Upon the inner ends of the transversely disposed shafts 23' the plates 25 are rigidly fixed, and to each of these plates one end of an arm 26 is integrally connected and rods 26' connect these arms to the studs 27 carried by the movable rack bars 23. It will be observed that the plate 25 is provided with opposite convex edge portions 25' and flat edge portions 25^a. With one of these flat surfaces of the plate, a leaf spring 28
20 engages, the other end of said spring being rigidly fixed to the wall of the casing 5. The leaf springs 28 when engaged with either the convex or flat edge portions of the plates 25 serve to yieldingly hold said plates against movement whereby the rack bars 23
25 are held in the positions to which they have been moved.

Upon the top wall of the casing 5 at the rear edge thereof a book rack or supporting
30 frame 29 is rigidly mounted upon which the open book is supported. The laterally extending upper end portions of the leaf carrying arms 20 are disposed in vertical spaced relation and are adapted to receive suitable clips which are provided for attachment
35 to the several leaves or sheets of music. Upon the corners of the rectangular rack or frame 29 the spring plates 30 are preferably arranged and are adapted to be engaged with the covers of the book to hold the same
40 in open position and relieve the sheet carrying arms of the strain which would otherwise devolve thereon owing to the tendency of the covers of the book to close.

45 In the practical operation of the device, the arms 20 are connected to the several sheets of music by means of attaching clips and when the operator desires to turn the uppermost sheet or leaf, one of the heads 24
50 is turned whereby the shaft 23' is rotated in the wall of the casing 5 to turn the plate 25 and engage one of the convex edge portions thereof with the spring plate 28. In this movement of the plate 25, the rack bar 23
55 which is connected thereto by means of the arm 26 is moved longitudinally and the gear or cog which is engaged by the teeth of said rack bar is rotated, thereby swinging the leaf carrying arm which is connected to said gear in the manner previously explained. This movement of the rack bar is of sufficient extent to effect one-half of a complete revolution of the cog or pinion whereby the sheet carrying arm describes a semicircular movement and the
65

sheet which is connected thereto is thereby turned so that the opposite side of the sheet becomes visible. The successive sheets of music are turned in the same manner and these sheets may be readily returned to their
70 former positions by simply reversing the rotation of the shaft 23. The sheets may be turned from right to left or left to right by simply reversing the disposition of the sheet carrying arms with relation to the shaft 13 and engaging the lower ends of
75 said arms in the proper socket 19' in the sleeve 15 and the flange 18.

From the foregoing it is thought that the construction and operation of our improved
80 music leaf turner will be fully understood.

The device consists of comparatively few elements which are of simple form and may be readily assembled. The device is also very positive in its operation, and provides
85 means for quickly turning the leaves.

While we have shown and described the preferred construction and arrangement of the various parts, it will be obvious that the construction and arrangement thereof is susceptible of considerable modification without departing from the essential feature or
90 sacrificing any of the advantages of the invention.

Having thus described the invention what
95 is claimed is:—

1. In a leaf turner, the combination of a plurality of superposed independently rotatable pinions, leaf carrying arms connected to the respective pinions and actuated thereby, a plurality of superposed rack bars meshing with said pinions, vertical guides for the rack bars, a series of shafts, a disk on each of the shafts having opposite flattened peripheral faces, means connecting
100 each of the shafts with one of said rack bars to move the rack bars longitudinally when the respective shafts are rotated, and a leaf spring bearing against the periphery of each of the disks and coacting with the flattened faces thereof to yieldingly hold said shafts against turning movement.
105

2. In a leaf turner, the combination of a plurality of superposed independently rotatable pinions, leaf carrying arms connected to the respective pinions and adapted to be actuated thereby, spaced vertical guides, a plurality of superposed longitudinally movable rack bars arranged between said guides and meshing with said pinions, a series of shafts, each of said shafts having a crank arm on one end, a disk on each of the shafts, a leaf spring bearing against the periphery of each disk to yieldingly hold the shaft against rotation, and rods pivotally connected to said arms and to the rack bars to move the rack bars longitudinally when the shafts are rotated to rotate the respective pinions and turn the leaf carrying arms.
110
115
120
125

3. In a leaf turner, the combination of a
130

plurality of superposed independently rotatable pinions, leaf carrying arms connected to the respective pinions and adapted to be actuated thereby, spaced vertical guides, a
5 plurality of superposed rack bars meshing with said pinions and longitudinally movable between the guides, studs projecting from each of the rack bars, a series of shafts, a crank arm on one end of each shaft, a rod
10 connecting each of the crank arms to the stud on one of the rack bars, a disk on each shaft having opposite flattened peripheral faces, and leaf springs bearing against the peripheries of the disks and adapted to contact with the flattened faces thereof to yield- 15
ingly hold the shafts against turning movement.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

WILLIAM BORNEMAN.
CHARLES M. BORNEMAN.

Witnesses:

HENRY H. HARTZELL,
F. T. L. KETTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
