

No. 801,512.

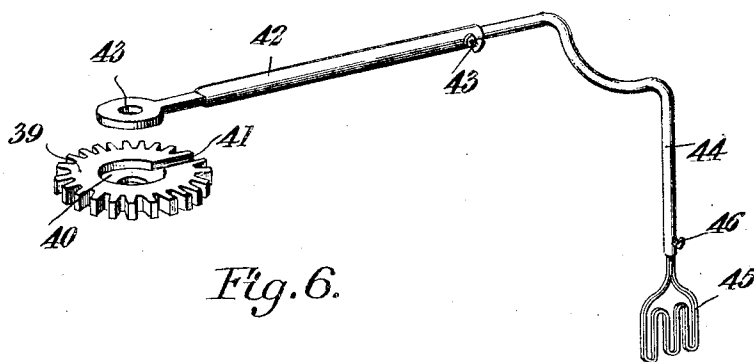
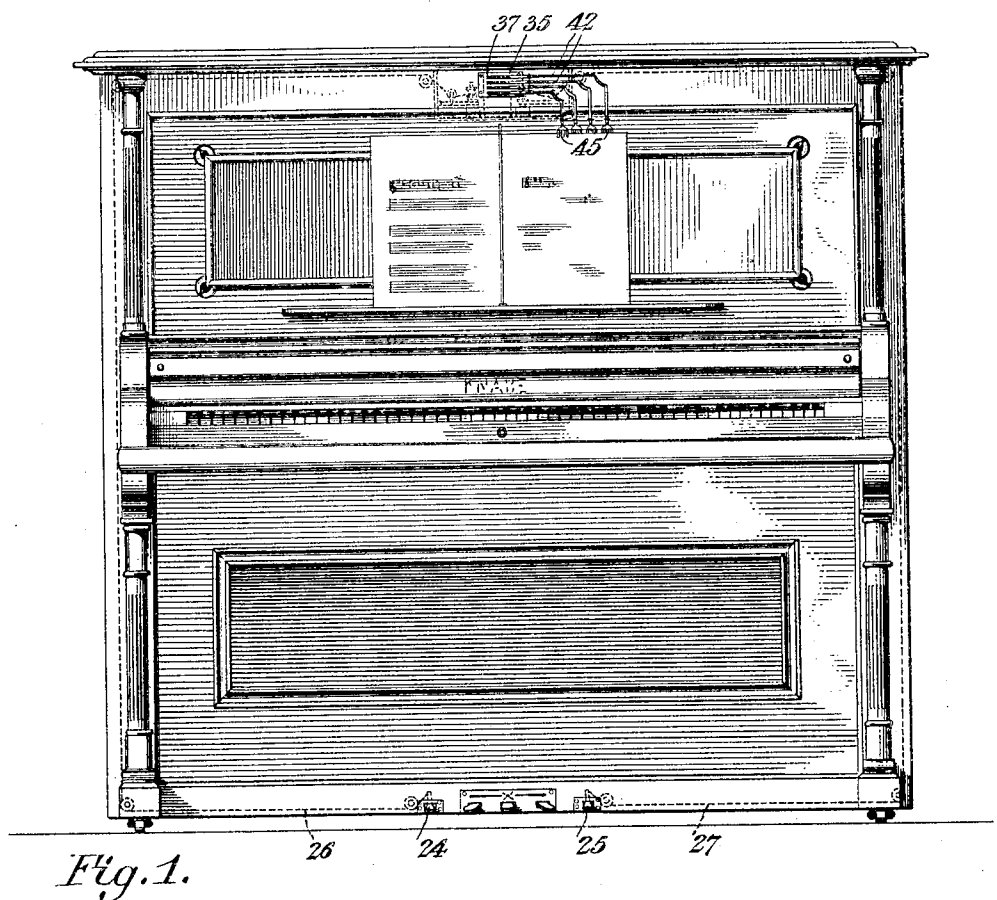
PATENTED OCT. 10, 1905.

J. M. G. DARMS.

LEAF TURNER.

APPLICATION FILED NOV. 17, 1904.

2 SHEETS—SHEET 1.



Witnesses
E. H. Stewart
John E. Parker

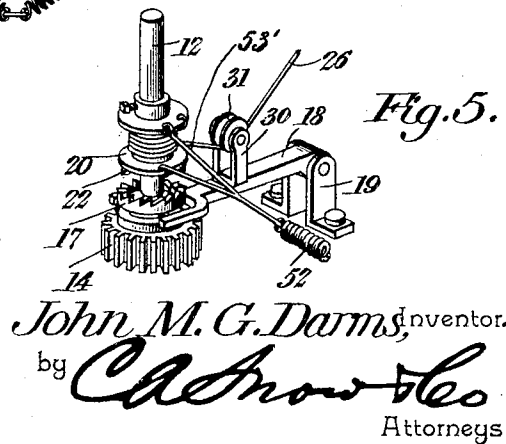
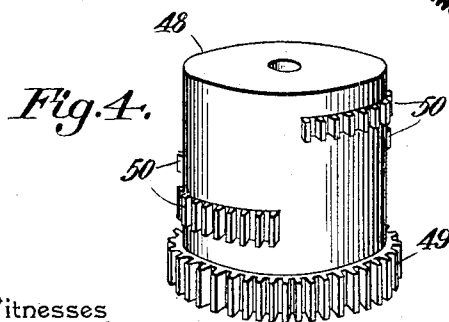
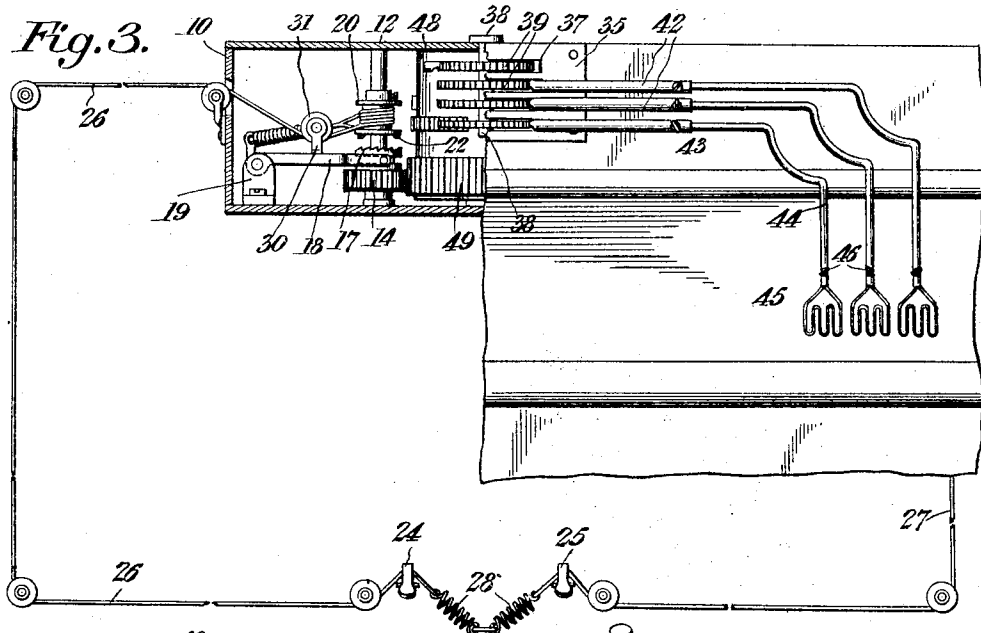
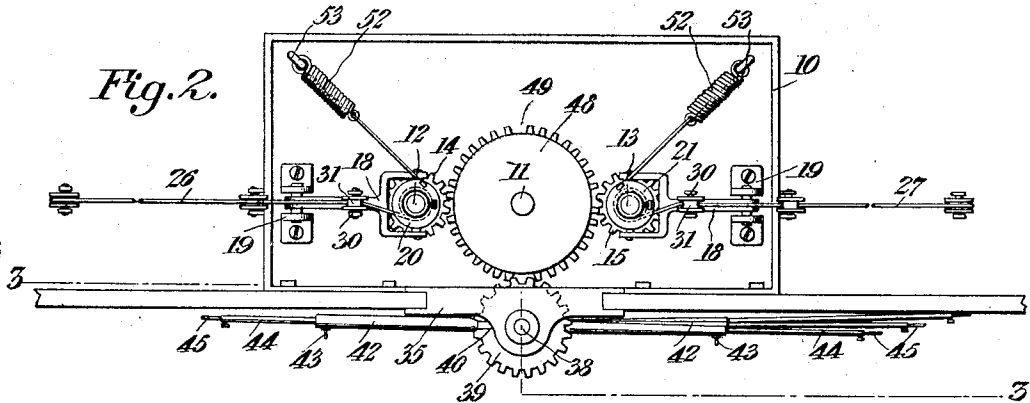
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2 SHEETS—SHEET 2.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN M. G. DARMS, OF BUFFALO, NEW YORK.

LEAF-TURNER.

No. 801,512.

Specification of Letters Patent.

Patented Oct. 10, 1905.

Application filed November 17, 1904. Serial No. 233,159.

To all whom it may concern:

Be it known that I, JOHN M. G. DARMS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Leaf-Turner, of which the following is a specification.

This invention relates to leaf-turners, and has for its principal object to provide a novel device of simple construction for turning the leaves of a music-sheet without stoppage or interruption of the playing, the device being wholly under the control of and operable from pedals within convenient reach of the performer.

A further object of the invention is to provide a novel form of music-leaf turner which may be placed in the upper portion of a piano or organ case or at other convenient point in front of the performer and arranged for movement in both directions, so that after the completion of the playing of the selection the leaves may be turned back to the original position and the turning device adjusted in readiness for another operation.

A still further object of the invention is to provide a novel form of clutch mechanism whereby suitable gearing connections may be made for the operation of consecutive leaf-engaging fingers or arms.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts herein after fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is an elevation of an upright piano provided with a leaf-turning device constructed in accordance with the invention. Fig. 2 is a plan view of the leaf-turning mechanism drawn to an enlarged scale. Fig. 3 is a longitudinal sectional elevation on the line 3 3 of Fig. 2. Fig. 4 is a detail perspective view of the rack-carrying cylinder detached. Fig. 5 is a similar view of the clutch-operating lever. Fig. 6 is a detail perspective view of one of the leaf-engaging arms and its pinion detached.

Similar numerals of reference are employed

to indicate corresponding parts throughout the several figures of the drawings.

The working parts of the apparatus are supported within a suitable casing 10, that preferably is disposed within the top of the ordinary case of the piano or organ, or it may be arranged on top of the same. Within this casing are bearings for the support of three vertically-disposed shafts 11, 12, and 13, all arranged in parallel relation. On the shaft 12 is keyed a pinion 14, and on the shaft 13 is keyed a similar pinion 15. To the hub of each pinion is secured a clutch-disk 17, having an annular groove for the reception of pins or antifriction-rollers carried by the bifurcated end of a clutch-operating member 18. Each of the clutch-operating members 18 is pivotally connected to a bracket 19 and operates to raise and lower the clutch-disk and its pinion.

Mounted loosely on the respective shafts 12 and 13 are flanged drums 20 and 21, each of which is provided with pins or teeth 22, adapted to be engaged by the teeth of the clutch-disks, and around each of these drums extends a flexible cord or chain, one end of which is secured to one of the flanges of the drum, while the other leads downward through the casing of the instrument.

At the bottom of the instrument are arranged two pedals 24 and 25, the pedal 24 being connected by the cord or chain 26 to the drum 20, while the pedal 25 is connected by a cord or chain 27 to the drum 21.

The rear ends of the pedals, to which the cords or chains are attached, are normally held depressed by tension-springs 28, and the cords or chains are guided over suitable pulleys placed at intervals throughout the casing of the instrument, so that when the rear ends of the pedals are elevated the drums will be rotated.

At the point adjacent to each of the drums each clutch-lever is provided with a vertical standard or pivot-lug 30, carrying a sheave or guiding-roller 31, under which the chain or cord passes, this sheave being disposed at a point approximately midway of the length of the clutch-operating lever, and when stress is exerted on the cord or chain the movement will result in elevating the clutch-operating lever until the clutch-disk is engaged with the teeth 22 of the drum, and the turning movement of the drum will thereupon be transmitted to the pinion on one or other of the shafts 12 13.

Secured to the front of the piano-casing or the casing which contains the operating mechanism is a small casting or pivot-lug 35, having a number of parallel horizontally-disposed openings 37, divided by suitable partitions, all of which are provided with alining openings for the passage of a pivot-pin 38. On the pivot-pin 38 are arranged a number of pinions 39, there being one of such pinions in each of the spaces 37. The upper portion of each pinion is provided with an annular recess 40 and a radial slot 41 for the reception of the inner end of a leaf-engaging arm 42, the inner end of said arm terminating in an eye 43 for the passage of the pivot-pin and the shank portion of the arm being received within a slot 41.

The arms 42 are preferably tubular in form, and near the outer front end of each is a threaded opening for the passage of a set-screw 43. Fitting within each tube is one end of a finger 44, the opposite end of which has an opening for the reception of the shank of a leaf-engaging clip 45, which may be of any suitable character, but preferably is formed of convoluted wire of such construction as to engage and firmly hold the leaf. The shank of each of the clips is adjustable within the hollow end of the finger 44 and is held in adjusted position by means of a set-screw 46, and while only four clips or arms have been shown in the present instance it is to be understood that the number may be increased or diminished in accordance with the length of the selections to be played.

The shaft 11 carries a toothed cylinder 48, at the lower end of which is a gear-wheel 49, constantly in mesh with the two pinions 14 and 15. The shaft is further provided with a plurality of racks 50, that are arranged at successively-higher levels and spaced from each other in a circumferential line around the cylinder. One of these racks is disposed in the horizontal plane of each of the gears 39, the first rack normally occupying a position ready to engage with the highest of the gears 39, while the second is so disposed that after a portion of the movement of the first gear it will be in readiness to engage the next lowest of the gears 39, and so on, the racks acting successively on the several pinions, starting with the highest or with the lowest, in accordance with the direction in which the gears are to be rotated.

The parts are normally held in inoperative position—that is to say, with the clutches inactive—by means of helical tension-springs 52, extending between fixed rings or bolts 53 in the casing 10 and the flanges of the winding-drums, a flexible connection 53' being preferably introduced between the ends of the latter and the springs, so that free revoluble movement of said drums will not be interfered with.

It will be noted that that portion of the flexible connection 53' adjacent to the end of

the winding-drum is bifurcated and engages the end flanges of the drum. This bifurcated portion is of such length that a considerable movement of the cord 26 may take place before the main portion of the flexible connection actually engages with the drum proper, so that there will be no tangling of the cord and said flexible connection.

In the operation of the device the parts will normally be placed in the position shown in Fig. 1, with the several clips 45 engaged with successive sheets of music. When the end of the second leaf has been reached, the performer depresses the pedal 24 and the stress exerted on the cord or chain 26 results in the raising of the clutch-operating lever and movement of the clutch into contact with the teeth of the drum 20, said drum 20 turning under the movement of the cord or chain and the movement being transmitted through the clutching devices to the pinion 12, the gear 49, cylinder 48, and the first of the racks 50. The first of the arm-carrying gears is then turned until the leaf has been moved to proper position, whereupon the downward pressure on the pedal is relieved and the springs immediately act to restore the parts to initial position, with the exception that the arm and its gear remain in the position to which they have been adjusted. On the next depression of the pedal the same movement will occur; but in this instance the second of the racks 50 will engage the second of the arm-carrying gears, and so on throughout the entire series of leaves until all have been turned. To restore the parts to initial position, the operator will then depress the right pedal 25 a number of times dependent on the number of fingers or arms to be moved.

With a device of this character the fingers or arms may be readily adjusted to accommodate themselves to music-sheets of different size or to suit different positions of the leaf-turning device with respect to the music-rack.

As the parts are all mounted within a separate containing-casing, they may be readily manufactured, assembled, and sold as separate articles and attached to existing musical instruments at a trifling expense.

While the device has been described as intended principally for use in connection with pianos and organs, it is obvious that it may be employed on music-racks of every description and; furthermore, that it may be used at reading-desks for the turning of note-sheets and the like without departing from the invention.

Having thus described the invention, what is claimed is—

1. In a leaf-turner, a plurality of pivotally-mounted leaf-engaging members, gears carrying the same, a cylinder, spaced racks carried thereby and serving to consecutively engage the gears of the leaf-carrying members, a gear-wheel secured to the cylinder, a shaft, a pinion

carried thereby and engaging the said gear-wheel, a winding-drum mounted loosely on the shaft, means for turning the drum, and means for clutching the pinion to the drum.

5 2. In a leaf-turner, a plurality of pivotally-mounted leaf-engaging members, gears connected thereto, a cylinder having a plurality of racks for engaging said gears, a gear-wheel carried by the cylinder, a shaft, a pinion secured to the shaft and intermeshing with the gear-wheel, a winding-drum carried by the shaft, a pedal, a flexible connecting means between the pedal and the winding-drum, interengaging clutch members on the pinion and
10 drum, a clutch-operating lever, and means for connecting the clutch-operating lever to the flexible connecting means.

3. In a leaf-turner, a plurality of pivotally-mounted leaf-engaging members, gears connected thereto, a cylinder having racks for engaging said gears a gear-wheel secured to the cylinder, a shaft, a pinion mounted thereon and intermeshing with the gear-wheel, a winding-drum mounted on the shaft, interengaging
20 clutching means between the winding-drum and the pinion, a pivotally-mounted clutch-operating lever, sheave carried thereby, a pedal, a cord or chain extending from the pedal around said sheave and connected to the winding-drum, and a spring having a flexible connection with the winding-drum and tending to resist movement of the same.

4. In a leaf-turner, a plurality of pivotally-mounted leaf-engaging members, gears connected thereto, a cylinder having a plurality of racks for engaging the gears, a gear-wheel
35

carried by the cylinder, a shaft, a pinion carried by the shaft and engaging the gear-wheel, a clutch-disk secured to the pinion and provided with an annular groove, a winding-drum
40 mounted on the shaft, means for preventing movement of the drum lengthwise of the shaft, a clutch-operating lever having a bifurcated end portion for engaging in the annular groove, a sheave carried by the lever, a pedal,
45 a cord or chain extending from the pedal, and passing around said sheave, means for connecting one end of the cord or chain to the winding-drum, and a spring connected to said winding-drum and serving to restore the same
50 to initial position.

5. In a device of the class specified, a plate having a plurality of horizontally-disposed parallel spaces divided by partitions, each of said partitions having an opening, gears arranged in the spaces and also provided with
55 openings, each of said gears having in one of its faces an annular groove, and a radial slot extending therefrom to the periphery of the groove, a leaf-engaging arm having a shank
60 portion fitting within the slot and groove, and a pivot-pin extending through the shank portions and the openings of the gears and partitions.

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

JOHN M. G. DARMS.

Witnesses:

J. H. JOCHUM, Jr.,

EMORY D. BOGLEY.