(No Model.) 4 Sheets—Sheet 1.

Z. THUOT.

LEAF TURNER.

No. 537,733. Patented Apr. 16, 1895.

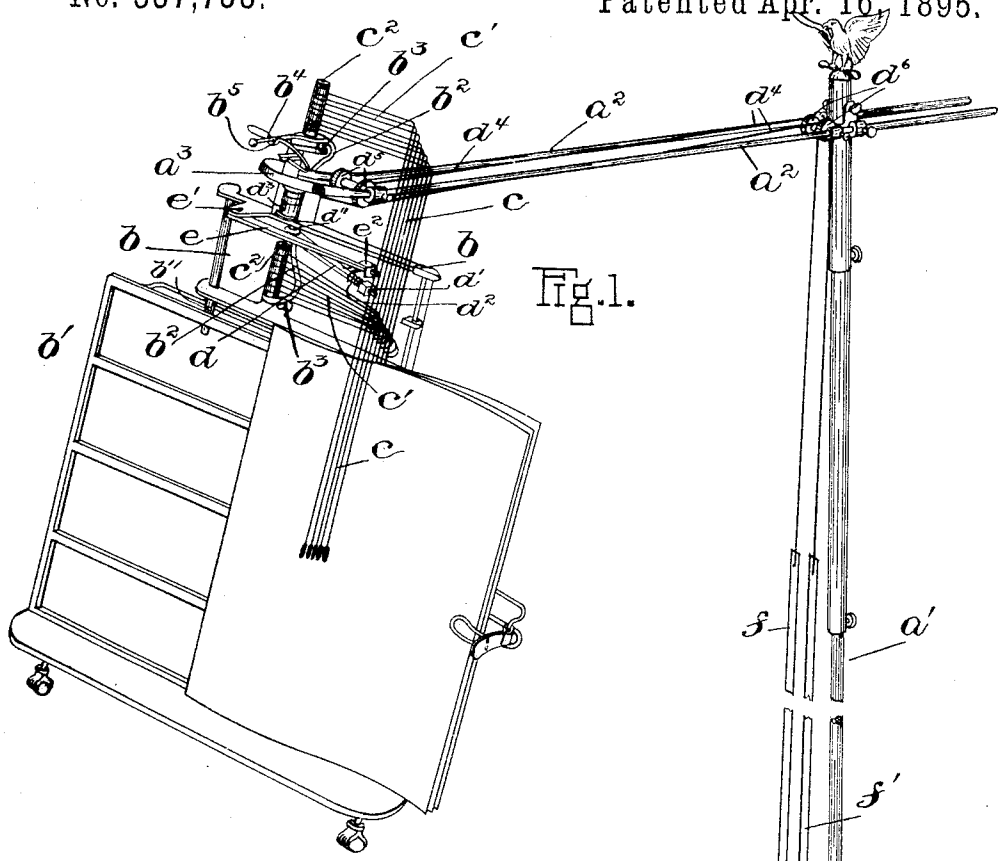

Fig. 1.

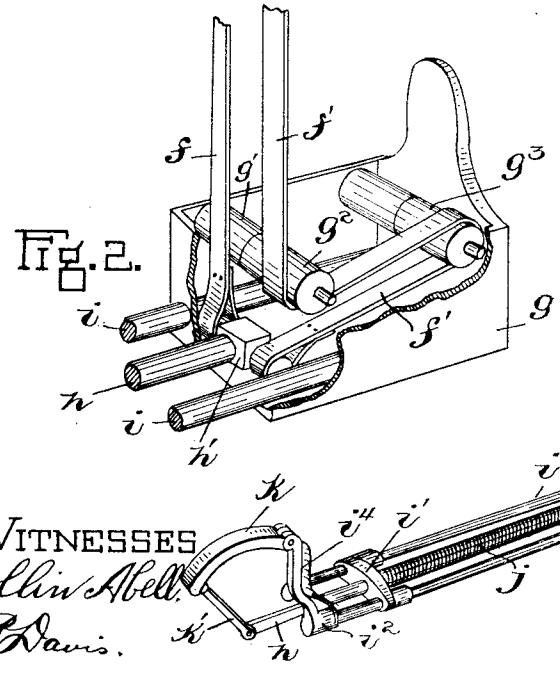

Fig. 2.

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(No Model.) 4 Sheets—Sheet 2.

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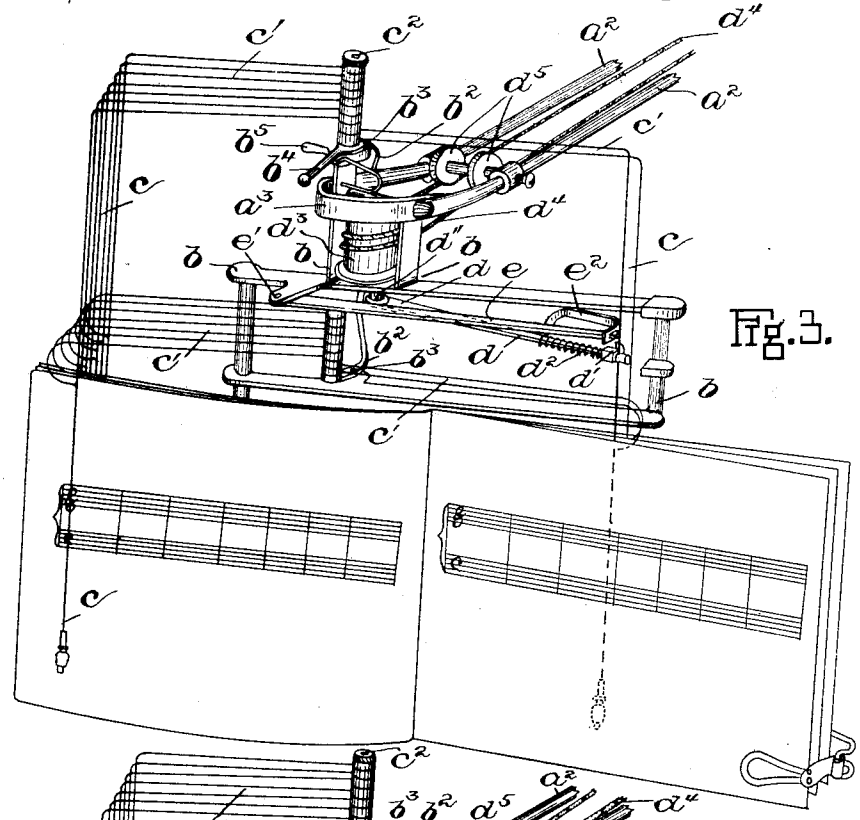

Fig. 3.

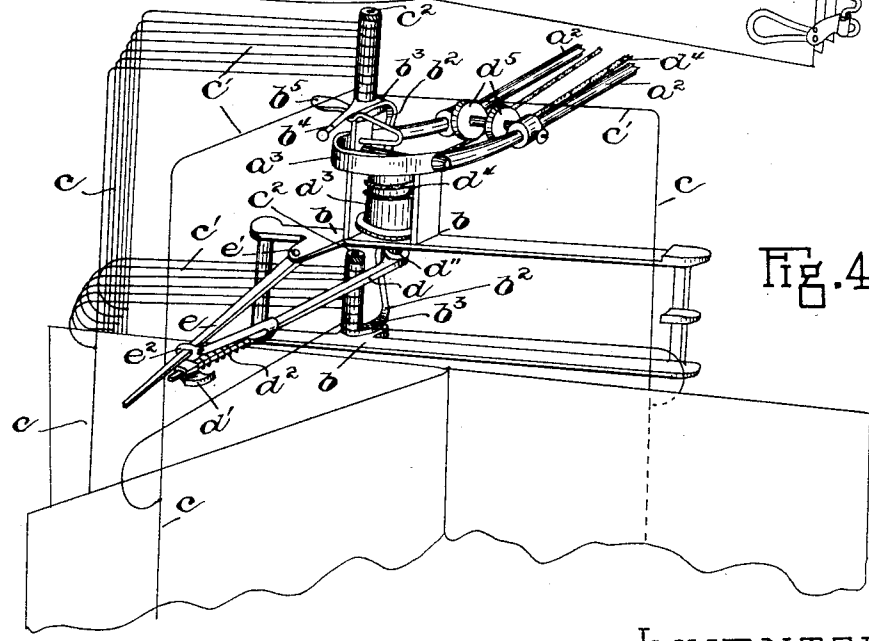

Fig. 4.

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4 Sheets—Sheet 3.

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Fig. 5.

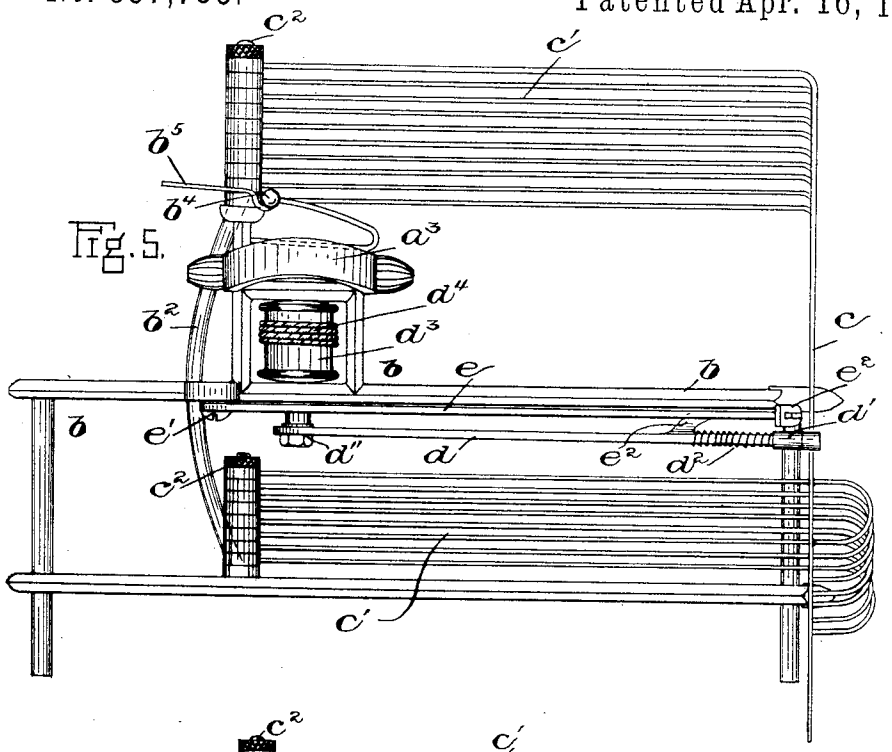
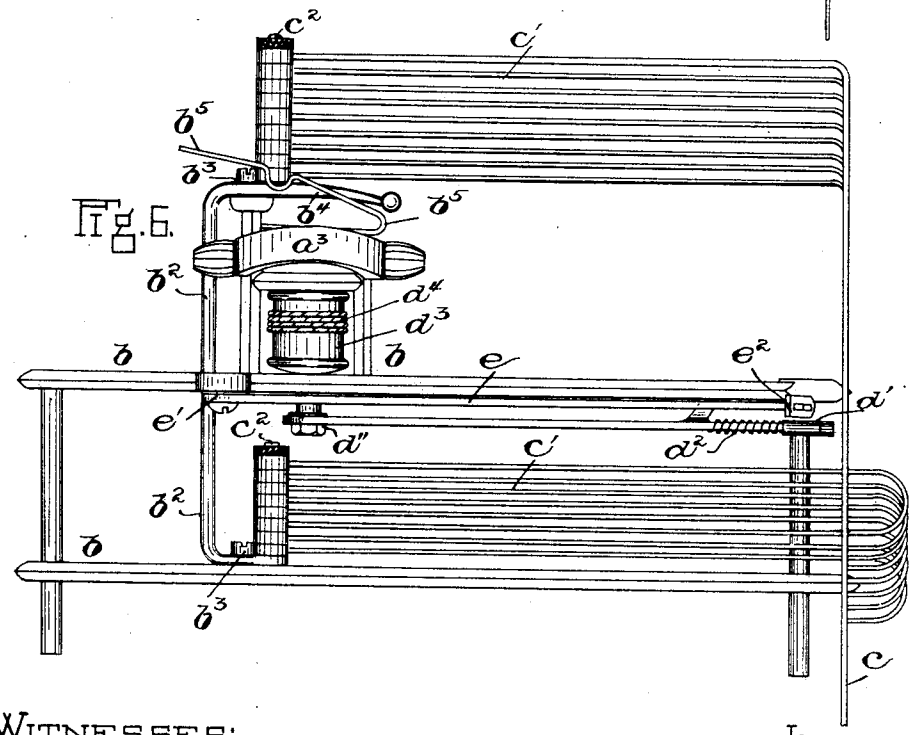


Fig. 6.



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(No Model.) 4 Sheets—Sheet 4.

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No. 537,733. Patented Apr. 16, 1895.

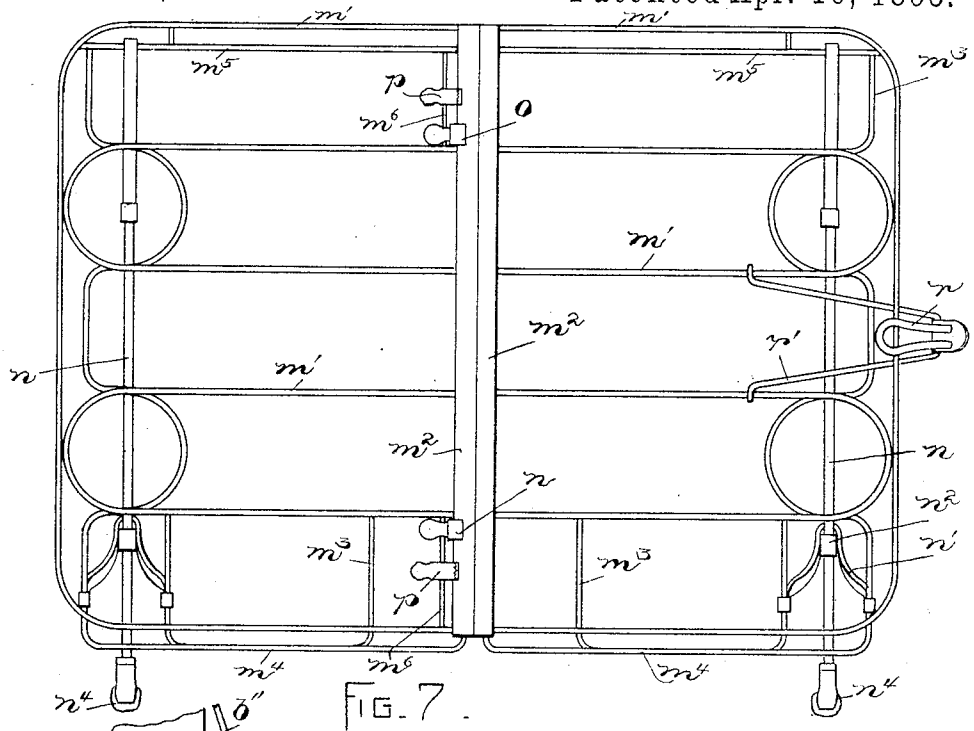

FIG. 7.

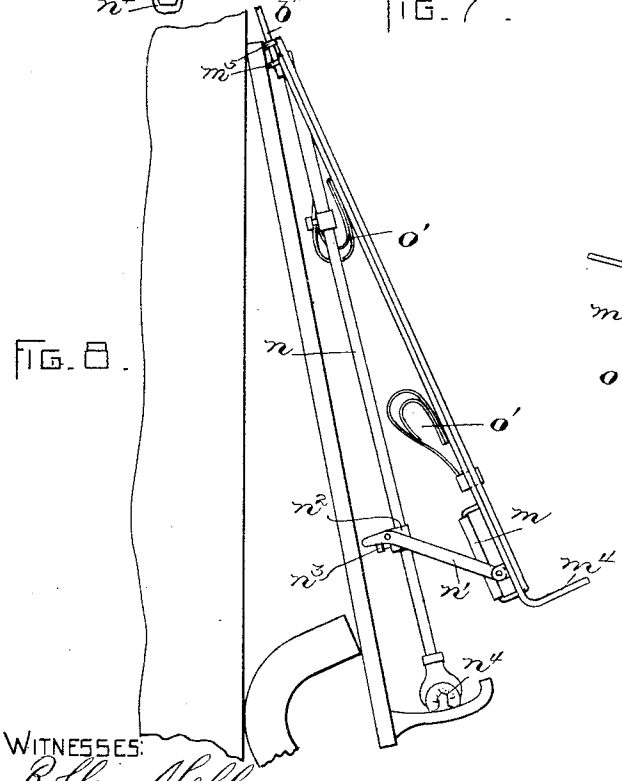

FIG. 8.

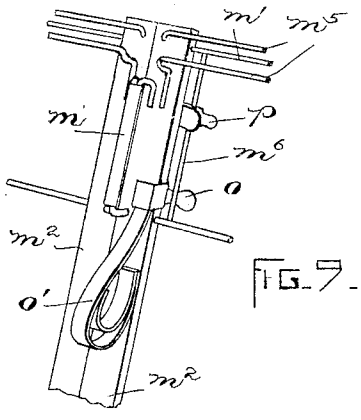

FIG. 9.

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UNITED STATES PATENT OFFICE.

ZEPHIRIN THUOT, OF FALL RIVER, MASSACHUSETTS.

LEAF-TURNER.

SPECIFICATION forming part of Letters Patent No. 537,733, dated April 16, 1895.

Application filed October 9, 1894. Serial No. 525,440. (No model.)

To all whom it may concern:

Be it known that I, ZEPHIRIN THUOT, of Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Leaf-Turners, of which the following is a specification.

This invention relates to that class of devices known as leaf-turners, designed for use principally with the piano, for turning the leaves of a piece or book of music resting on the ordinary lyre of the piano or on a special lyre connected with the leaf-turner.

My invention has in view a device of this character which will take the form of a stand, and may be conveniently operated by pressure of the foot on a treadle.

The accompanying drawings, which form part of this specification, illustrate an embodiment of the invention.

Figure 1 shows a perspective view of the complete apparatus, including a lyre on which a piece of music is represented as resting. Fig. 2 shows a perspective view, on an enlarged scale, of a part of the connections for transmitting the foot-power. Fig. 3 shows a perspective view of what may be termed the head of the machine, illustrating the most of the leaf-engaging fingers as having been swung over. Fig. 4 shows a similar view, illustrating certain carrying devices in the act of swinging one of the leaf-engaging fingers. Figs. 5 and 6 show the head in front elevation, and illustrate operative and inoperative adjustments of the leaf-engaging fingers. Fig. 7 shows in front elevation a form of lyre specially adapted for use in connection with the leaf-turner. Fig. 8 shows said lyre in side elevation, resting on the piano. Fig. 9 shows a rear perspective of a portion of the lyre.

The letter a designates a tripod on which is erected a telescopic standard a' whose upper end supports a pair of horizontal rods or bars a^2 connected together at their forward ends by a bend a^3. These rods support a pendent frame b from which a lyre b' may be suspended. A bracket b^2 is pivoted at points b^3 to ears on the frame b, so as to be capable of shifting horizontally, and said bracket has a forward-projecting handle b^4 which, when engaged with a spring-latch b^5, holds the bracket fixed; but when disengaged from said latch, serves as a means for shifting the bracket to accomplish a purpose hereinafter explained. There is a set of leaf-engaging fingers c, having horizontal branches c' pivoted on studs c^2 carried by the bracket b^2. These fingers are intended to swing through a semi-circle, and thereby turn the leaves, one after another. The means for actuating the said fingers one by one are of the following description: A horizontal arm d is pivoted to the frame b at the point d'' which, it is to be particularly noted, is in a vertical line to one side of the axis of the swinging fingers. With the fingers in their normal position, that is, swung to the right, and the said arm d also swung to the right, the end of the latter projects across in front of the outermost finger. The arm carries a sliding catch d' which is projected by a spring d^2 and has a beveled face which effects the retraction of the catch when it encounters this outermost finger, until the beveled face passes the latter, when the catch springs behind the said finger. It will now be seen that a hold is had on the finger, so that by swinging the arm d the finger will be swung; but as this same arm is to come back for the next finger, it must be retracted from in front of each finger so it will be free to fly back. This retraction is effected by the eccentricity of the arm with respect to the fingers, as heretofore mentioned, for the arm being pivoted to the right of the finger, the swinging of these two parts to the left varies their longitudinal relation, so that the finger is moved free of the arm. This occurs in the first quarter of the movement, and an auxiliary arm e is provided to carry the finger on, said auxiliary arm being arranged to advance behind the finger before the primary arm d is retracted. The auxiliary arm is pivoted to an ear of the frame b at the point e', which, it will be observed, is in a vertical line in front of the axis of the fingers, so that in swinging, said arm changes its longitudinal relation with the fingers, and in this way its projection and retraction is effected. The auxiliary arm has sliding engagement with the primary arm which carries a bracket e^2 loosely embracing the arm e.

On the journal of the arm d there is affixed a drum d^3, and on this drum is wound a cord

or band d^4, which is carried in two stretches back between the rods a^2, passing under sheaves d^5 supported between said rods near their outer ends, and over sheaves d^6 supported between the rods near the standard a'. The stretches of the band extend down, along the standard a', and are connected respectively with straps f and f'. Under the tripod a and connected therewith is a rectangular frame g in which are journaled certain sheaves g', g^2, and g^3, the sheaves g' and g^2 having a common axis near one end of the frame, and the sheave g^3 being located near the opposite end of the frame. A rod h is fitted to slide longitudinally through the frame, and carries a cross-head h' to which the straps f and f' are fastened. The strap f passes down in front of the sheave g', and the strap f' passes under the sheave g^2 and back around the sheave g^3, and is then brought forward to the cross-head. It will be seen that this arrangement provides for movement of the straps in opposite directions.

The rod h extends forward between two rods i, which are fastened in the frame g, and through cross-pieces i' and i^2 connecting said rods i. A spiral spring j is connected at one end with the cross-piece i' and at the other end with a collar i^3 on the rod h, and this spring holds the latter normally pushed outward and through the connections described throws the finger-engaging arms d and e over to the right.

A standard i^4 rises from the outer cross-bar i^2, and a treadle k is pivoted to this standard and connected by a link k' with the rod h. By depressing this treadle, the said rod may be moved back against the stress of the spring j.

The operation is as follows:—The fingers c are adjusted between the leaves to be turned, and are all moved to the right. The spring j, acting through the slide-rod h, the strap f'', the band d^4, and drum d^3, presses the arm d against the outermost one of the fingers c with such force as to carry the catch d' behind said finger, so that the latter is between this catch and the end-portion of the arm, as shown in Fig. 3. The auxiliary arm e is normally retracted from position for engagement with the finger. Upon depressing the treadle k, the rod h is pushed back and the strap f thereby pulled down, while the strap f' is slackened. This causes rotation of the drum d^3 in a direction to swing the arm d to the left, and with it the auxiliary arm e. Before the parts have moved very far, the arm e is projected behind the finger by reason of the relative locations of the axes of the finger and that arm; and when the parts have moved somewhat farther, the arm d is retracted from engagement with the finger by reason of the eccentricity of this arm with respect to the finger. The finger is at first carried by the arm d, and then by the auxiliary arm e; and so when the treadle is released, these arms are both free to swing back, leaving the finger which they have moved to the left with the leaf. Immediately upon pressure being removed from the treadle, the spring j swings the two arms back and engages the arm d with the next finger. When all the fingers have been moved over to the left, in order to get them back to their normal position back of the arm d, the latch b^5 is depressed and the bracket b^2 shifted to the right by working the handle b^4. This movement of the bracket b^2 carries the fingers beyond the end of the arm d (see Fig. 6), and the latter being brought out in front of the finger, the bracket is moved back to its original position, carrying the fingers behind the arm d.

In conjunction with the leaf-turner, I employ a lyre of special construction, which is best shown in Figs. 7, 8, and 9. The lyre is made in two sections or halves hinged together, as shown at m in Fig. 9. Each section is composed of wires m' fastened to a bar m^2, and other wires m^3 extending transversely to the wires m' and fastened thereto. At the bottom, the wires are bent out to form a ledge m^4 for the music to rest upon. At the top, there are offset wires m^5 between which and the top wires m' posts b'' of the frame b fit. By this arrangement, the lyre is held in proper relation to the leaf-turner and at the same time can be moved laterally, the wires m^5 and m' sliding along the posts b''; and moreover the engagement of the posts, b'', with the two sections of the lyre, has the effect of holding the latter open.

The lyre stands upon the ledge of the ordinary piano-lyre, as shown in Fig. 2, and is provided with extensible legs n pivoted to the top wires m^5 so as to fold, and arranged to be set at different adjustments by means of yokes n' pivoted to the rear side of the lyre and embracing collars n^2 fitted to slide on the legs n and carrying set-screws n^3. These legs have suitably padded feet n^4 to bear on the ledge of the piano lyre.

As a means for holding sheet-music at the middle, I provide clips o which are mounted on the ends of bow-springs o' fastened to the rear sides of one of the bars m^2. These clips extend over the front of said bar, and are designed to clamp the sheet-music against the bar. Additional means for holding the sheet-music are provided in the form of spring-clasps p pivotally mounted on wires m^6 extending between and fastened to certain of the wires m'. When not in use, these clasps can be turned back out of the way.

In order to prevent one leaf from turning with another, by the action of the air, I provide a hold-back device in the form of a rubber-covered looped wire r adapted to bear against the leaves and being mounted on a holder r' fitted to slide on two of the wires m' and accommodate itself to different-sized pieces of music.

What I claim as my invention is as follows:

1. In a music leaf-turner, the combination

of a number of leaf-engaging fingers each comprising a horizontal member pivoted at one end and a vertical member to act against the leaf; a horizontally swinging finger-actuating arm extending across in front of the vertical members of the leaf-engaging fingers with the latter in their initial position; a sliding spring-pressed catch on said arm somewhat back of its end and beveled for engagement with the fingers,—said catch retracted by pressure of its bevel against the vertical member of any of the fingers so that it may spring behind such finger and confine it between the projecting end of the actuating arm and the catch; and means for oscillating said arm.

2. In a music leaf-turner, the combination of a set of leaf-engaging fingers pivoted to swing horizontally, a pair of finger-carrying arms pivoted eccentrically to each other and to the fingers and one having sliding engagement with the other and the other having a catch for engagement with the fingers, and means for oscillating the arms.

3. In a music leaf-turner, the combination of a set of leaf-engaging fingers pivoted to swing horizontally, an arm pivoted eccentrically to said fingers and adapted to extend in front of them when at the end of its movement in one direction, said arm being provided with a spring-held catch to take behind the fingers, means for oscillating the arm, and an auxiliary arm pivoted eccentrically to the fingers and to the primary arm and having sliding engagement with the latter, said auxiliary arm being normally withdrawn from engagement with the fingers and adapted to be projected behind the same when moved by the primary arm.

4. In a music leaf-turner, the combination of a movable bracket, a set of leaf-engaging fingers pivoted to said bracket, a latch for holding the bracket in position to have the fingers operative, a pair of finger-carrying arms pivoted eccentrically to each other and to the fingers, one designed to extend in front of the fingers with the latter in operative position and being equipped with a catch to take behind the fingers, and the other having a sliding engagement with its mate, and means for oscillating the arms.

5. In a music leaf-turner, the combination of a set of horizontally swinging leaf-engaging fingers, a horizontally swinging arm having a spring-pressed catch for engagement with the fingers, a drum on the journal of said arm, a band winding on said drum and spring-actuated in one direction, and a treadle operatively connected with said band to impel it in opposition to the spring.

6. In a music leaf-turner, the combination of a supporting stand, horizontally swinging leaf-engaging fingers, a swinging finger-driving device, straps operatively connected with the latter, a spring-held slide with which said straps are connected, a sheave under which one of the straps passes to the slide, a pair of sheaves under and over which the other strap passes to the slide, and a treadle operatively connected with the slide to impel it in opposition to the spring.

7. In a music leaf-turner, the combination of a set of horizontally swinging leaf-engaging fingers, a horizontally swinging arm having a spring-pressed catch for engagement with the fingers, a drum on the journal of said arm, a band winding on said drum, a pair of straps connected with said band, a spring-held slide with which said bands are connected, a sheave under which one of the bands passes, a pair of sheaves over and under which the other strap passes to the slide, and a treadle operatively connected with the said slide to impel it in opposition to the spring.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 1st day of October, A. D. 1894.

ZEPHIRIN THUOT.

Witnesses:
N. HATHEWAY,
ALEXANDER THUOT.