

1,037,175.

Patented Aug. 27, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

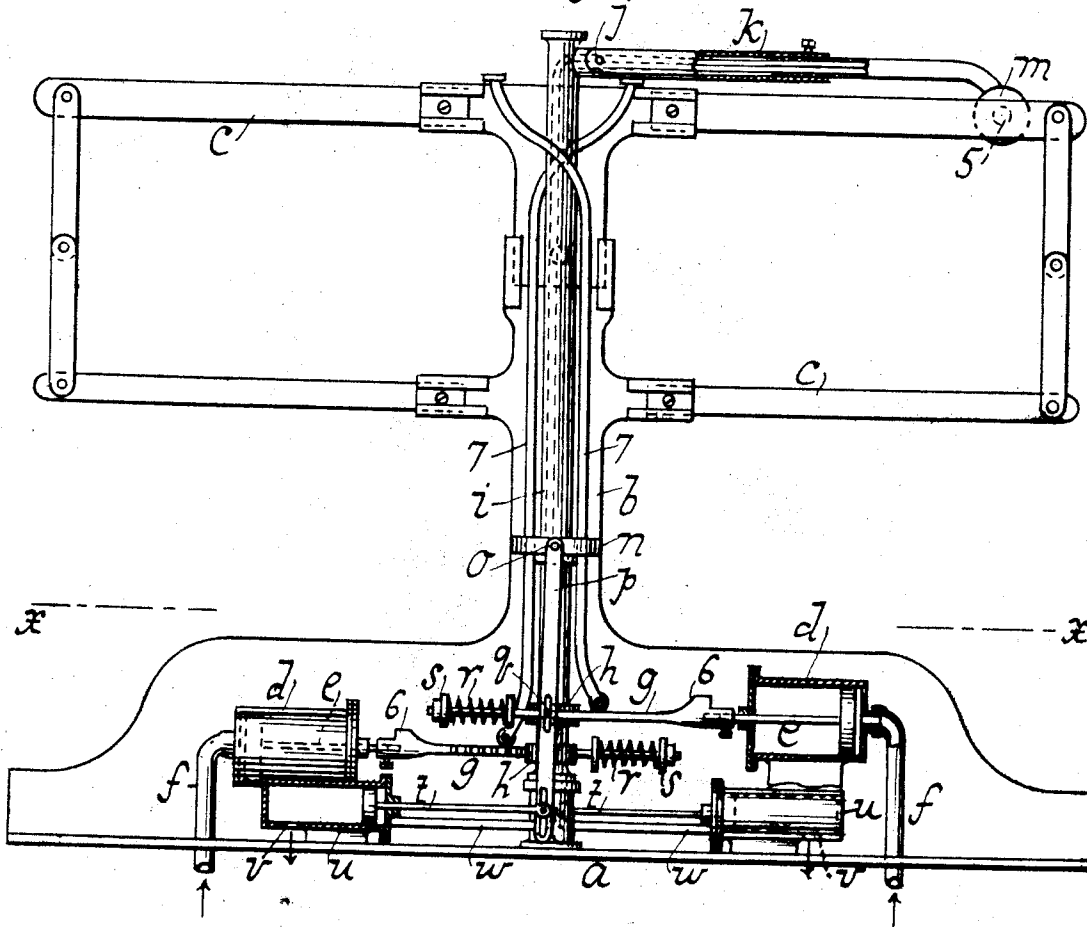
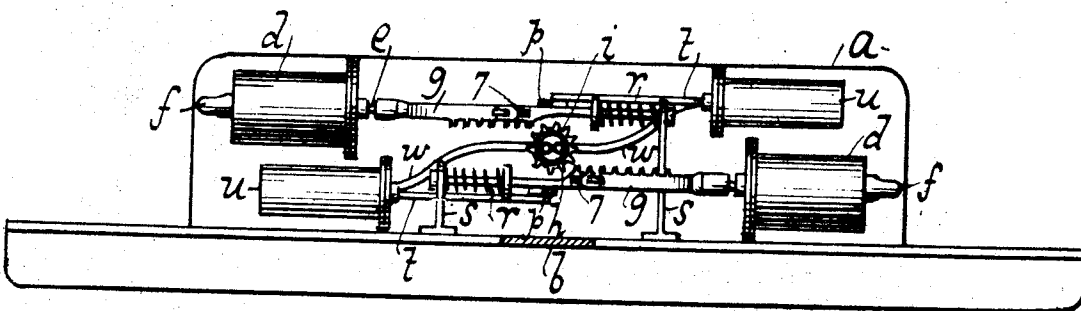


Fig. 2.



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LEAF TURNER.
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2 SHEETS--SHEET 2.

Fig. 3.

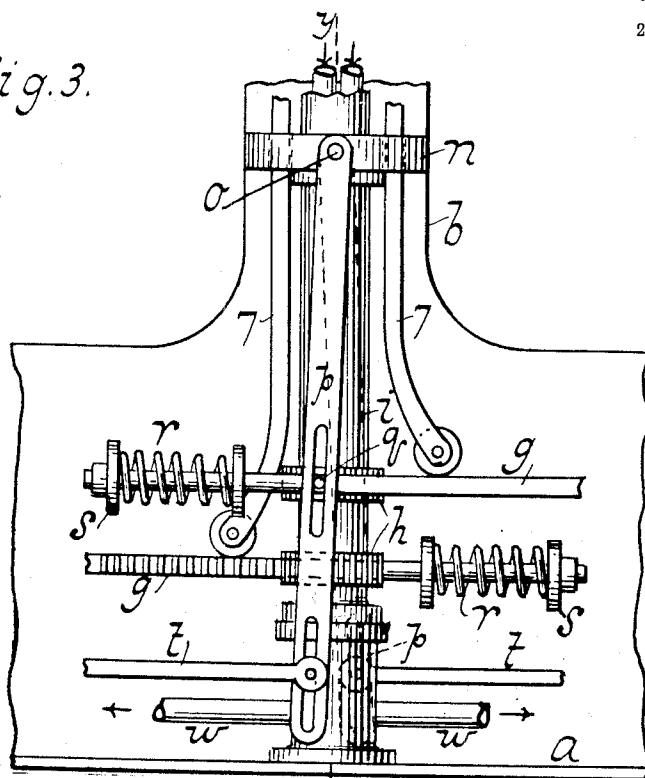


Fig. 4.

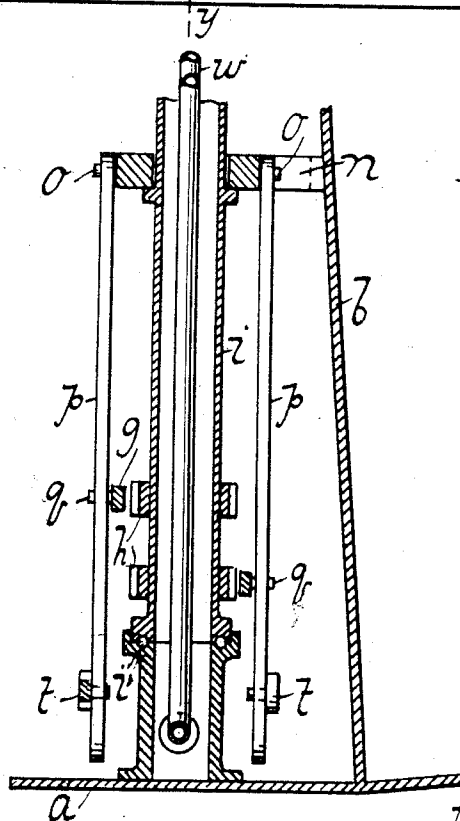
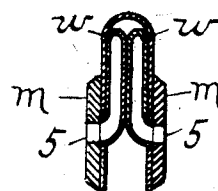


Fig. 5.



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UNITED STATES PATENT OFFICE.

EDGAR M. FRASER, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-FOURTH TO CHARLES OHLMAN AND ONE-FOURTH TO JAMES P. OHLMAN, OF BROOKLYN, NEW YORK.

LEAF-TURNER.

1,037,175.

Specification of Letters Patent.

Patented Aug. 27, 1912.

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To all whom it may concern:

Be it known that I, EDGAR M. FRASER, a citizen of the United States, residing at Brooklyn, county of Kings, State of New York, have invented new and useful Improvements in Leaf-Turners, of which the following is a specification.

This invention relates to a leaf turner which is adapted for turning the leaves of music, books or advertising cards.

The device is provided with an arm equipped with two suction inlet devices whereby the leaf can be held and turned in either direction. Each suction device is independent of the other consequently one inlet can be operated while the other is inactive. The arm is oscillated by a pair of plungers, one of the plungers being operated at a time, to swing the arm and turn the leaf. The reverse movement of the arm can be effected by switching the air pressure from one of the plungers to the other. Each plunger operates a lever connected to a suction pump and each pump has a suction pipe communicating with the suction inlet device carried by the arm, thus when one plunger is in operation one of the suction devices will grip the leaf and swing it in an arc of a circle, while the other suction device is out of action. After the leaf has been turned the plunger is timed to operate a lifting rod for raising the arm out of contact with the leaf, a spring will then restore the arm and plunger to their normal positions.

The novel features of the invention are more fully described in the following specification and claims and illustrated in the accompanying drawings in which:

Figure 1 represents a rear elevation partly in section of a leaf turner embodying this invention. Fig. 2 is a horizontal section along the line $x-x$ of Fig. 1. Fig. 3 is a detail rear elevation of the plunger mechanism. Fig. 4 is a vertical section along the line $y-y$ of Fig. 3. Fig. 5 is detail section of a suction device.

In this drawing the letter a designates a base having an upright frame b with arms c . The frame and the arms are adjustable to fit the frame to music or cards of different dimensions. On the base is secured a pair of cylinders d each cylinder having a plunger e mounted in and sliding in the

cylinder. Each cylinder has a feed pipe f connected to a pump (not shown). Each plunger is provided with a rack g of suitable construction to engage a pinion h which is fixed to a vertical tubular stem i . The lower end of the stem rests on ball bearings i' best seen in Fig. 4. The rack is adjustable to vary its distance between the plunger and the pinion. In other words the rack can be adjusted to time its engagement with the pinion. To the upper portion of the tubular stem is pivoted at j an arm k carrying suction devices m the construction and operation of which will be hereinafter explained.

On a bracket n secured to the frame is pivoted at o a pair of levers p . Each lever is engaged by a pin q secured to the rack. On the stem portion of each rack is mounted a spring r while each rack is adapted to slide in bearings s secured to the frame. To the lower portion of each lever is pivoted a rod t having a piston sliding in a suction pump cylinder u with an exhaust opening v . Each pump has a pipe w extending into the tubular stem and communicating with one of the suction inlets 5 at the end of the arm best seen in Fig. 5. These pipes may be made of flexible material and adjust themselves to the different positions of the arm. It will be seen that when a plunger actuates a lever p it forces the piston t of a suction pump rearward thus sucking air into one of the inlets 5 , the piston upon reaching the end of the cylinder will uncover an exhaust v and hence cut off the suction.

Each rack is provided with a cam 6 which at the forward stroke of the plunger operates a rod 7 to swing the arm of the suction device upwardly over the upper edge of the leaf. Two of these lifting rods are shown one being in operation while the arm is swinging from right to left and the other for the reverse movement. The device is automatic, the arm needs no resetting, after all the leaves are turned in one direction that is necessary is to switch the air pressure from one plunger to the other, the device can then be operated the reverse.

Two suction pumps are shown in the drawing each having a lever to actuate the piston of the pump. The suction pipes leading from the pumps communicate with each side of the suction device so that either side

of said device can be utilized to draw the leaf, without adjusting or resetting.

When a plunger is actuated it compresses the spring *r* mounted on its stem, and when
5 the arm has moved the required distance and the pressure has been removed from the rear of the piston, the spring will swing the arm back to its normal position.

Each rack is timed to actuate the suction
10 apparatus before it engages a pinion so that the leaf will be gripped before the arm begins to move.

I claim:—

1. In a leaf turner, the combination with
15 a plunger, of an arm operated thereby, suction devices having inlets carried by the arm for coöperation with either page of a leaf, means operated by the plunger and communicating with the inlets for creating a suction
20 at either inlet.

2. In a leaf turner, the combination with
a pair of plungers, of an arm adapted to be oscillated thereby, suction devices having inlets
25 carried by the arm for coöperation with either page of a leaf, and means operated by the plungers and communicating with the inlets for creating a suction at either inlet.

3. In a leaf turner, the combination with
a plunger, of an arm operated thereby, suction
30 devices having inlets carried by the arm for coöperation with either page of a leaf, means operated by the plunger and communicating with the inlets for creating a suction at either inlet, and means carried by
35 the plunger for lifting the arm out of action.

4. In a leaf turner, the combination with
a pair of plungers, of an arm operated thereby, suction devices having inlets carried by
40 the arm for coöperation with either page of a leaf, means operated by a plunger and communicating with an inlet for creating a suction at the inlet, and means operated by

the plungers for lifting the arm out of action at each turn of a leaf and stopping the suction at the inlet.

45. 5. In a leaf turner, the combination with a pair of plungers, of an arm operated thereby, suction devices having inlets carried by the arm for coöperation with either page of a leaf, a lever connected to the plungers, a
50 suction pump operated by the lever and communicating with an inlet for creating a suction at either inlet.

6. In a leaf turner, the combination with
a pair of plungers, of an arm operated thereby, suction devices having inlets carried by
55 the arm for coöperation with either page of a leaf, a lever connected to the plungers, suction pumps operated by the lever and connected to the inlet devices for creating a suction
60 at either inlet, and means carried by the pumps and operated by a plunger for stopping the suction at the termination of each stroke.

7. In a leaf turner, the combination with
65 a pair of plungers, of an arm operated thereby, suction devices having inlets carried by the arm for coöperation with either page of a leaf, levers connected to the plungers, suction pumps operated by the levers and connected
70 to the inlet devices for creating a suction at either inlet, means carried by the pumps and operated by the plungers for stopping the suction at the termination of each swing of the arm, and devices carried
75 by the plungers for automatically swinging the arm back to its normal position.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EDGAR M. FRASER.

Witnesses:

WM. E. WARLAND,

CHRISTIAN H. ALMSTAEDT.