

(No Model.)

2 Sheets—Sheet 1.

J. B. TRACY.
MUSIC LEAF TURNER.

No. 579,659.

Patented Mar. 30, 1897.

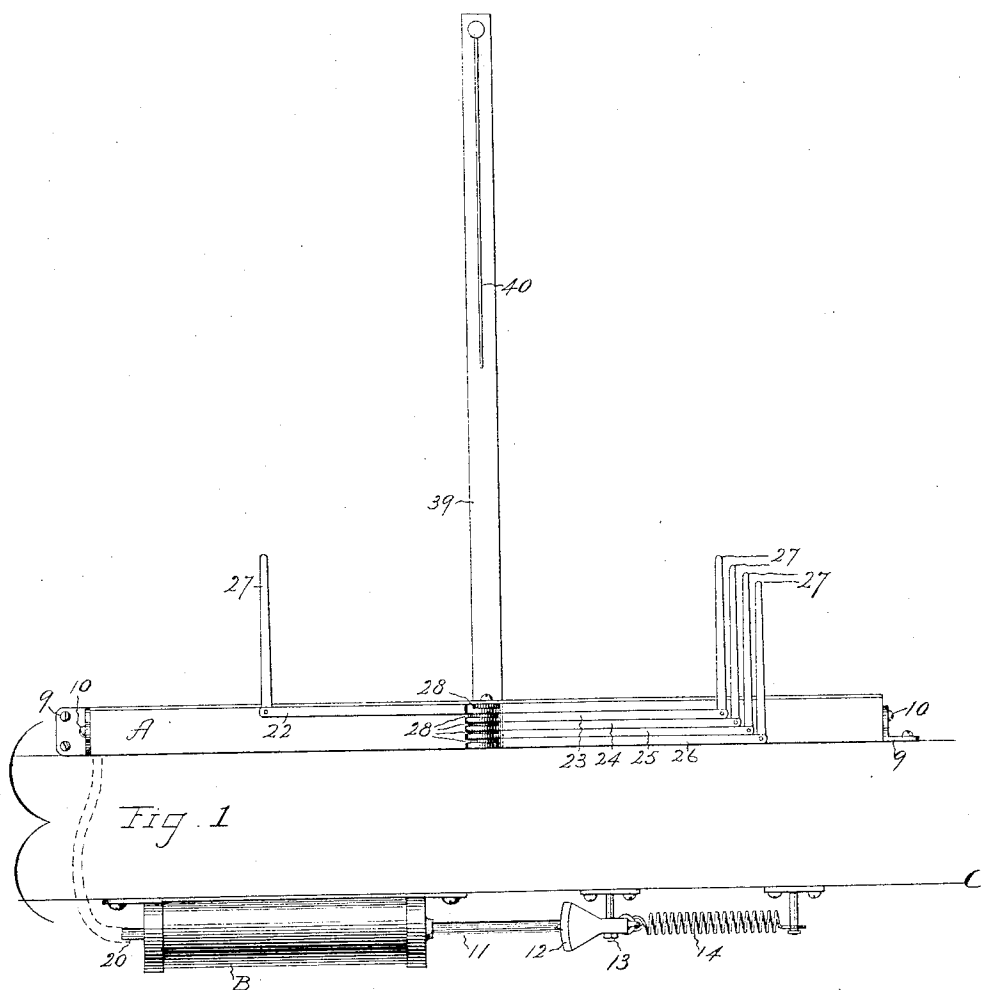


Fig. 1

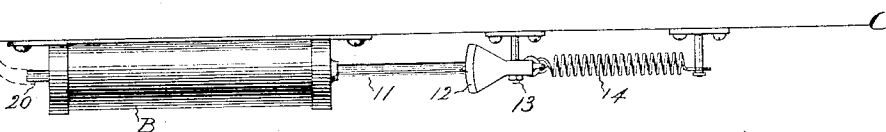


Fig. 2

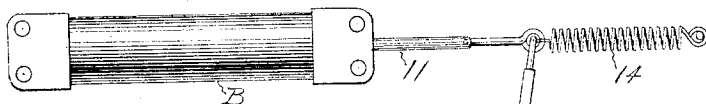


Fig. 3



Witnesses
By *W. B. Tracy*
P. J. Egan

Inventor
James B. Tracy
By *James Shepard*
Atty.

J. B. TRACY.
MUSIC LEAF TURNER.

No. 579,659.

Patented Mar. 30, 1897.

Fig. 4.

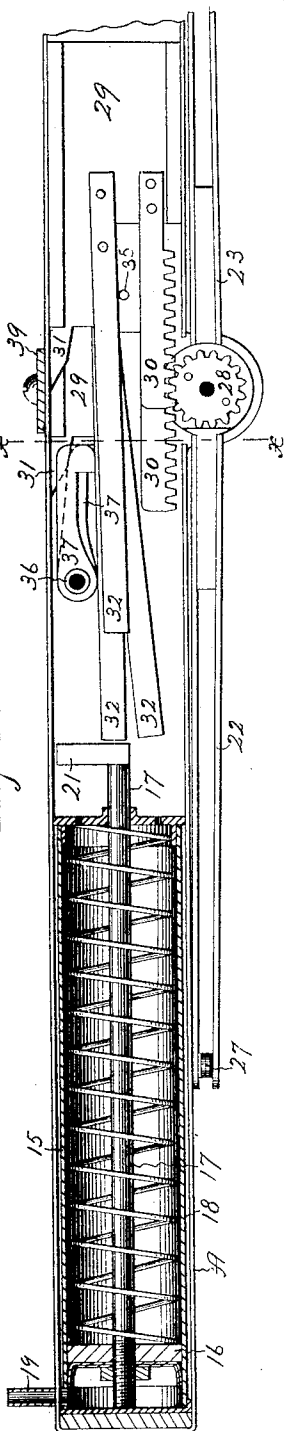


Fig. 5.

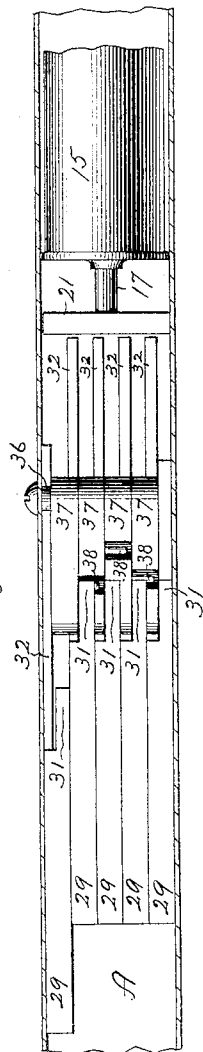


Fig. 6.

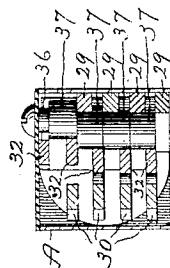


Fig. 7.

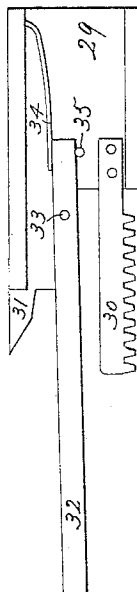
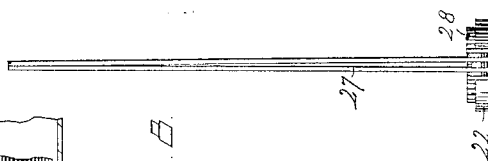


Fig. 8.



Witnesses
G. W. D. Piper
P. J. Egan

Inventor
James B. Tracy
By James Shepard.
Atty.

UNITED STATES PATENT OFFICE.

JAMES B. TRACY, OF MERIDEN, CONNECTICUT.

MUSIC-LEAF TURNER.

SPECIFICATION forming part of Letters Patent No. 579,659, dated March 30, 1897.

Application filed January 27, 1896. Serial No. 576,992. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. TRACY, a citizen of the United States, residing at Meriden, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Music-Leaf Turners, of which the following is a specification.

My invention relates to improvements in music-leaf turners; and the main object of my improvement is to enable the device to be operated pneumatically and to insure that the upper one of the several leaf-turning arms on the right-hand side shall always be the one to move at the next stroke of the actuating mechanism.

In the accompanying drawings, Figure 1 is a front view of my music-leaf turner, together with the air-pump for operating the same. Fig. 2 is a plan view of said pump. Fig. 3 is an enlarged end view of the case and one of the brackets for securing said case in place. Fig. 4 is a plan view of the main parts of the apparatus, the cap of the case being removed and the cylinder being shown in longitudinal section. Fig. 5 is a sectional rear elevation of the middle portion of the same. Fig. 6 is a transverse section of the case and parts within the case on the line *x x* of Fig. 4. Fig. 7 is a detached plan view of one of the operating-racks and attached parts, and Fig. 8 is a detached end view of one of the leaf-turning arms.

The main parts of the apparatus are contained within and attached to the case or frame A, which may be secured in any proper manner in any desired position to any convenient portion of a piano, organ, or other instrument. I prefer to employ for this purpose the brackets 9 and to secure them by a pivoted screw or rivet 10 at a point that is equidistant from the rear and bottom, so that by swinging the bracket on its center the bracket-flange may be arranged horizontally, as shown at the right-hand end of Fig. 1 and in Fig. 3, or vertically, as shown at the left-hand end of Fig. 1 and indicated by broken lines in Fig. 3.

I operate my leaf-turner pneumatically, and for this purpose arrange in any convenient location an air-pump with an operating arm, lever, or pedal, so that the user can work it by one foot or limb. In order to describe

one of the many proper modes of arranging said pump for convenient operation without the use of either hand, I have shown the pump B, of any ordinary construction, as secured to the under side of a suitable support C, for example, over the space under the keyboard of a piano, and connected to the piston-rod 11 of said pump is a lever 12, pivoted also to the same support C, as at 13, whereby a sidewise pressure on the outer end of the lever toward the right will operate the piston of the pump to force air therefrom. The interior of the pump may be provided with a spring for returning the piston, or any ordinary spring may be arranged outside thereof, as at 14.

Within the case A there is an air-cylinder 15, containing a piston 16, piston-rod 17, and spring 18, the piston being properly valved in any ordinary manner. A suitable tube or connection 19 projects from near one end of the cylinder, to which a rubber tube or other connection (as indicated by broken lines in Fig. 1) may be attached and connected by its other end to a similar tube or nozzle 20 on the air-pump, so that when air is forced from the pump the piston and piston-rod of the cylinder are forced against the spring to move the plunger 21 at the outer end of the piston-rod. Upon the return stroke of the air-pump piston the spring 18 will return the plunger 21 to its normal position.

At about the middle of the length of the case A, on the outside at the front, I pivot a series of leaf-turning arms 22 23 24 25 26, the upper arm 22 being the shortest and each successive arm a little longer, as shown in Fig. 1, whereby the holding-fingers 27, which are pivoted to the outer ends of the respective arms, may all be made to pass by the ends of the other arms at any time. These arms are each made of an open form, as shown in plan view, Fig. 4, so that the fingers may be turned on their pivots and folded down into the body of the arms when desired. The fingers are also made each of two like members, as best shown in Fig. 8, so that the leaves to be turned may be inserted between the two members composing the several fingers. Each arm has rigidly secured to its hub a pinion 28, the rear edge of which pinion projects slightly into the interior of the case, as shown in Fig. 4.

Within the case there are as many slides 29 as there are arms outside the case, said slides being guided longitudinally in the case by the sides of the case and by resting one upon the other or by other suitable guides. Each slide has also rigidly secured to it a rack 30 for engaging the pinions of the respective leaf-turning arms and also carries a wedge or cam 31 and push-bar 32. The wedge or cam 31 of the lower slide may be omitted, if desired, as it is useless. The push-bar of the upper slide may be rigidly secured, as it does not in use have any lateral movement. The push-bars of the other slides are pivoted thereto on the pins 33 and have their heels pressed upon by a spring 34, that forces them against the stop-pins 35, (see Fig. 7,) whereby the spring tends to normally hold said push-bars substantially parallel to the length of the slides, but permits their left-hand end to be moved laterally toward the front. When these push-bars stand parallel to the slides, their ends are immediately in the path of the plunger 21, and when they are swung laterally toward the front by the means hereinafter described they are without the path of said plunger. Upon the post 36 in the rear part of the case I pivot as many swinging blocks 37 as there are slides and arms, less one, and these swinging blocks are of such vertical thickness that when each block is swung forward by the wedging action of the cam 31 of one slide said block presses forwardly the push-bar 32 of the slide-plate immediately below the one whose cam has thus acted upon said swinging block. In addition to this the upper swinging block carries a downwardly-projecting pin 38, that extends down behind the block immediately below it, and that block has a like pin extending down in the rear of the next lower block, and so on to the bottom, as shown by the rear view of Fig. 5, whereby whenever any one of the swinging blocks is pressed forwardly all of the blocks below it are carried with it to move forwardly all of the push-bars lying below the one that is thus acted upon by the direct action of the wedge of the actuating-slide.

The top of the case should be smooth, so that the lower edge of a music-book or sheet-music can rest thereon. For use with sheet-music I employ the holder or upright 39, having a pendent wire spring 40 to serve as a temporary clasp for holding the sheets together and forming the hinge or central point about which the leaves may be turned. Such sheets can readily be slipped into place under the wire spring. The holder is preferably secured to the back of the case by a single screw or rivet, so that it may be turned down by the rear side of the case when desired.

In use the music is placed on the top of the case. All of the arms are turned to their extreme right-hand position and the leaves to be turned arranged between the fingers of the arms, the leaf to be turned first being in

the fingers of the upper arm, and so on downwardly in regular succession. In moving the arms to the right all of the slides are carried to the left, and consequently all of the push-bars (except the upper one, which has nothing to push it forward) are forced out from the path of the plunger. Upon working the air-pump the plunger is reciprocated and in its outward movement strikes the push-bar of the upper slide, thereby moving said slide and its rack to the right, and through the pinion carrying the upper arm around to the left, as shown. The movement of the upper slide to the right, as before described, withdraws its wedge or cam 31 from behind the push-bar of the next lower slide, so that its spring throws the push-bar and swinging block engaged therewith back to bring the end of said bar into the path of the plunger, all as best shown in Fig. 4. The next movement of the plunger under the influence of the air-pump operates the next push-bar, slide, rack, and leaf-turning arm and withdraws the cam or wedge of said slide and lets the next lower push-bar into the path of the plunger, ready to be acted upon as before described, and so on until all the arms have been thrown. For using again the arms should all be turned to the right and again arranged in connection with the sheets or leaves that are to be turned. Whenever any one of the several arms has been turned to the right, the push-bars for the slides of all the arms under it will be held out of the path of the plunger, no matter in what position the lower arms may be placed.

In the construction herein specifically shown and described the racks and pinions constitute the means for operatively connecting the slides and leaf-turning arms, and I wish it distinctly understood that I intend to apply the ordinary doctrine of equivalents to said means.

While I prefer to actuate the plunger pneumatically, it is evident that the parts actuated through said plunger will operate as before described whenever said plunger is reciprocated by any means. I reserve the usual right to make such changes in the construction as fairly fall within the spirit and scope of my invention.

I claim as my invention—

1. The combination of a series of swinging leaf-turning arms, the slides having cams and push-bars, means for operatively connecting said slides and leaf-turning arms, the swinging blocks each interposed between the cam of one slide and the push-bar of the slide immediately below said cam, and the reciprocating plunger for acting on the push-bars to move said slides, substantially as described and for the purpose specified.

2. The combination of a case, the series of separate swinging leaf-turning arms, a series of separate slides each slide operatively connected with a separate one of the said series of leaf-turning arms, a reciprocating plunger

arranged to move always in a given longitudinal line for operating said slides and a pneumatic cylinder for operating said plunger arranged in longitudinal alinement with said series of slides within one end of said case, whereby the acting face of the plunger always moves in the same line and always moves a slide the same distance for a given movement of said plunger whether it acts upon one of the upper or lower slides in the said series substantially as described.

3. The combination of the series of swinging leaf-turning arms, the pinions secured thereto, the slides having cams, racks, and push-bars, the swinging blocks each interposed between the cam of one slide and the push-bar of the slide immediately below said cam, and the reciprocating plunger for acting on the push-bars to move said slides, substantially as described and for the purpose specified.

4. In a music-leaf turner, a series of operating slides having push-bars, a reciprocating plunger for acting on said push-bars to move said slides, and means operated by said slides for forcing all but the upper one of said push-bars out from the path of said plunger, substantially as described and for the purpose specified.

5. In a music-leaf turner, the combination

of slides, racks, push-bars and cams, with the reciprocating plunger and swinging blocks for acting in connection with said cams and push-bars, and pins connecting said swinging blocks to necessitate the simultaneous movement with each block of all the blocks below it whenever any block is forced against the push-bar by the individual cam for said block, substantially as described and for the purpose specified.

6. A music-leaf turner consisting of a case, a series of swinging arms, a series of slides within said case, a series of push-bars also within said case, the arms in said series being of such length as to bring their operative ends all in one and the same vertical plane, the cylinder within said case at one end and in longitudinal alinement with said series of slides and in longitudinal alinement with the acting position of said push-bars, the piston, the piston-rod, a plunger carried by said piston-rod and moving in a given vertical plane for acting directly upon the ends of the push-bars of said series and an air-pump for operating said plunger substantially as described.

JAMES B. TRACY.

Witnesses:

JAMES SHEPARD,
A. W. STIPEK.