

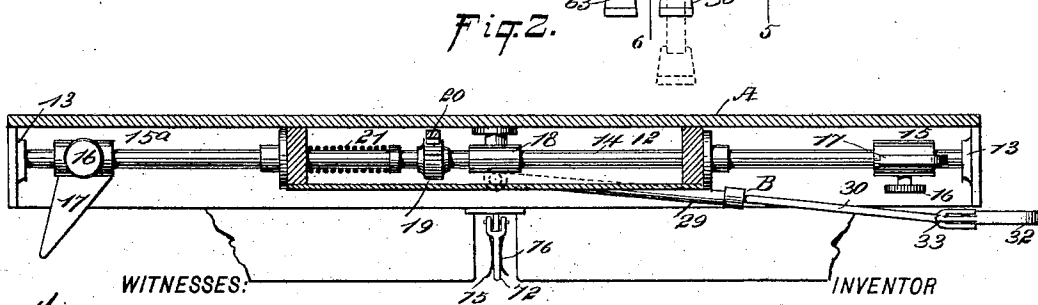
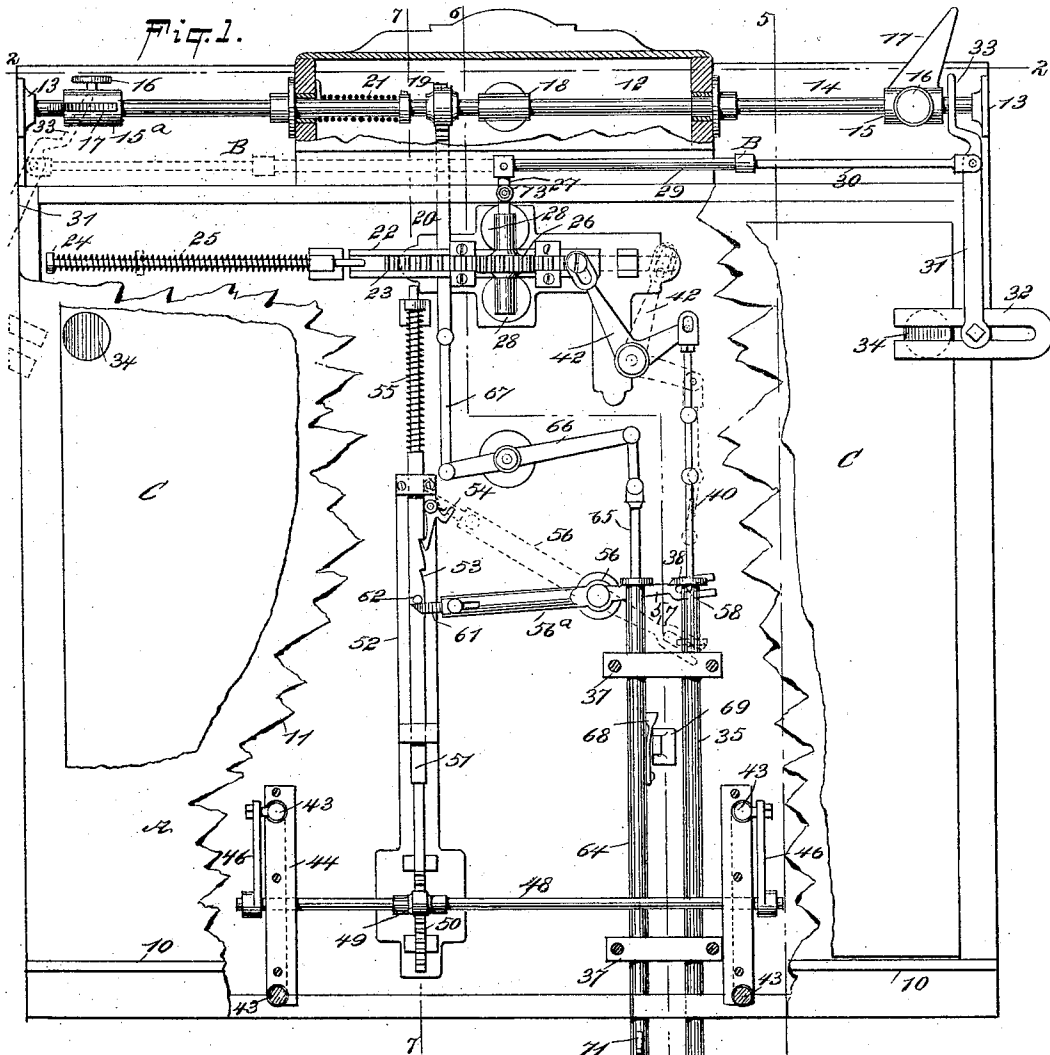
(No Model.)

4 Sheets—Sheet 1.

W. E. SOMERS.
MUSIC LEAF TURNER.

No. 546,908.

Patented Sept. 24, 1895.



WITNESSES:

William Goebel
Fred. Acker

INVENTOR

W. E. Somers

BY

Munn & Co
ATTORNEYS.

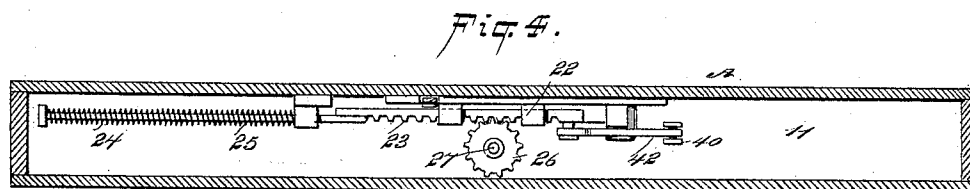
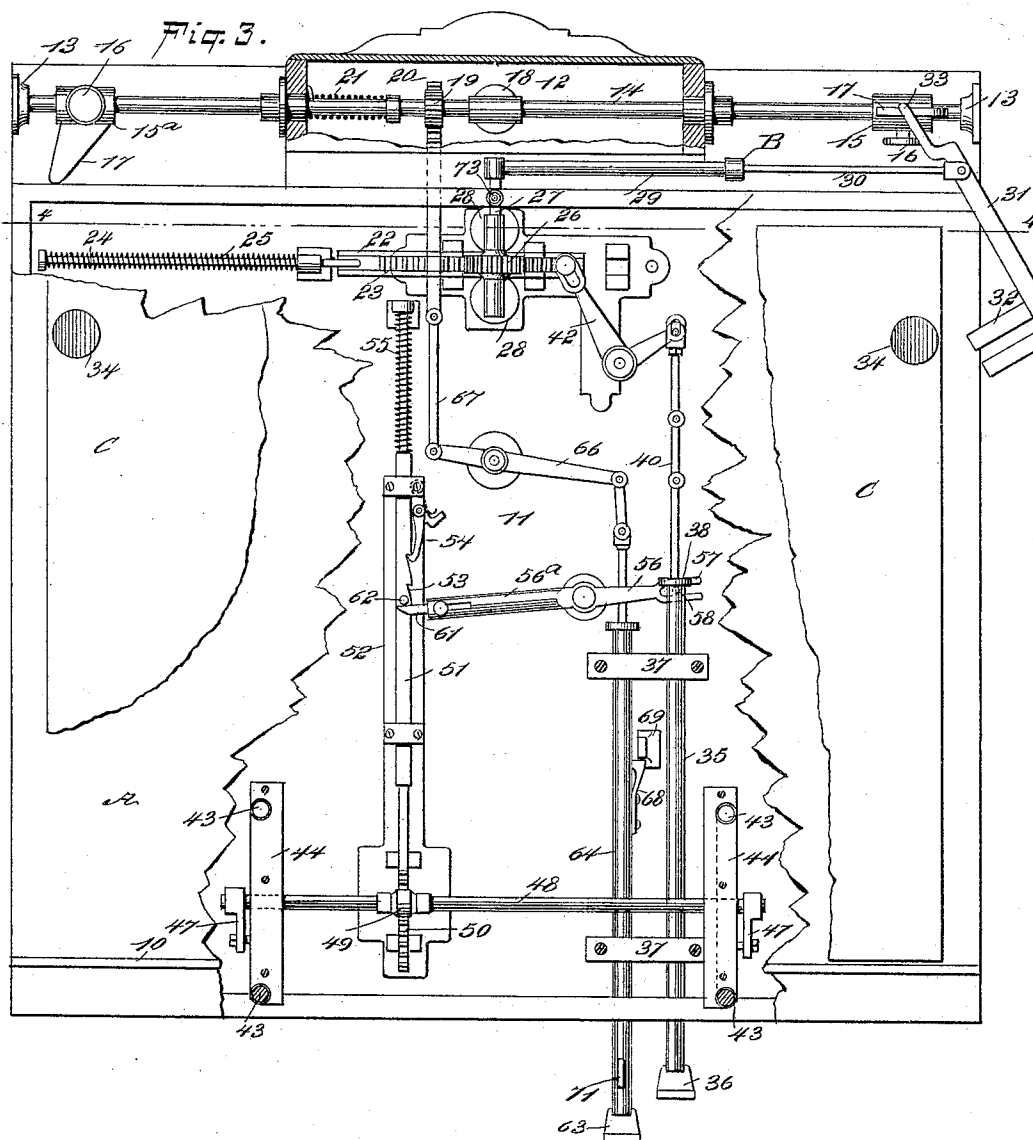
(No Model.)

4 Sheets—Sheet 2.

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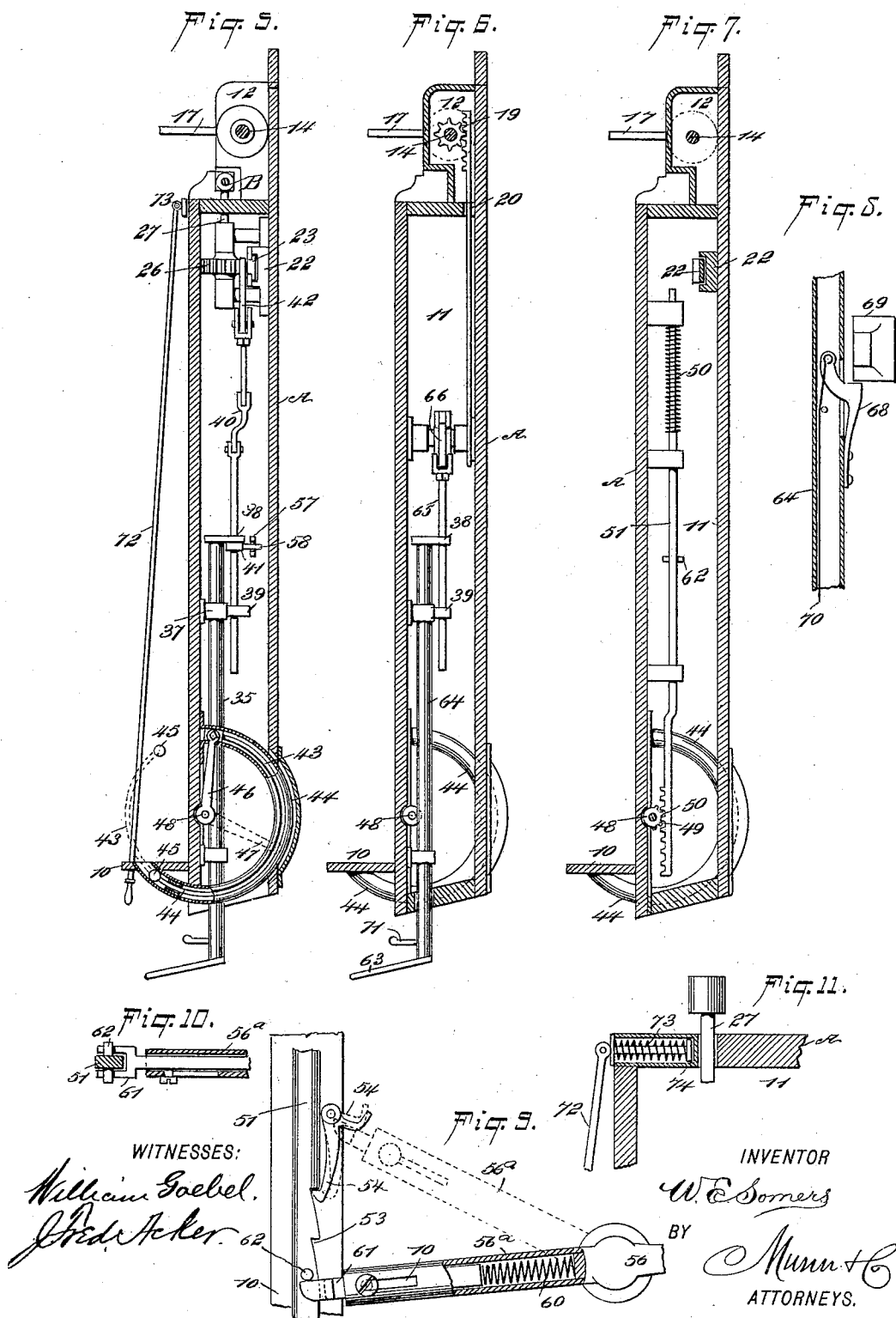
(No Model.)

4 Sheets—Sheet 3.

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(No Model.)

4 Sheets—Sheet 4.

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Fig. 12.

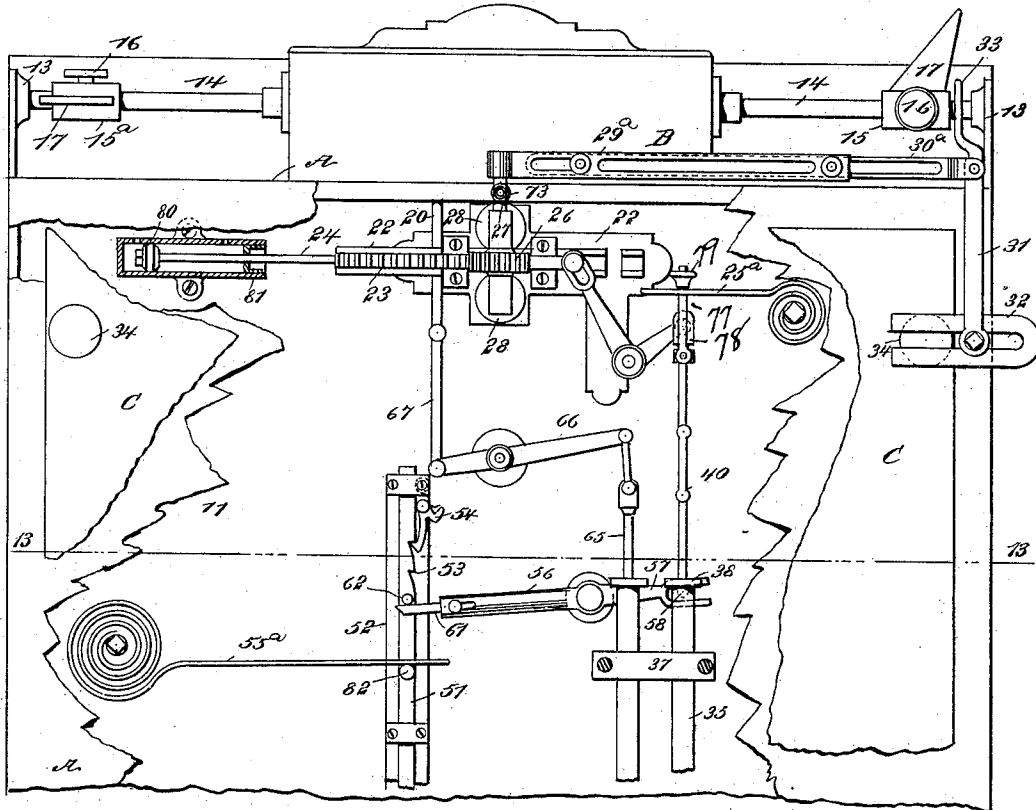


Fig. 13.

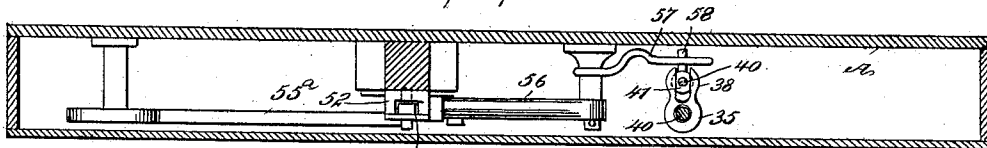


Fig. 14.

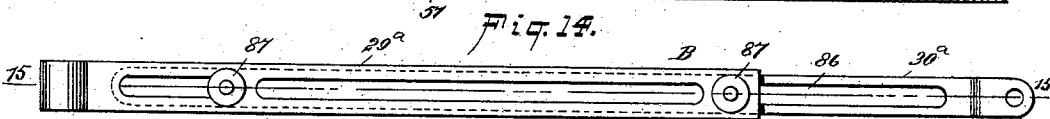
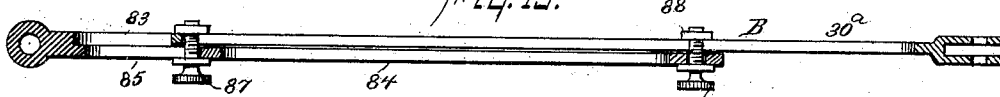


Fig. 15.



WITNESSES:

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Fig. 16.

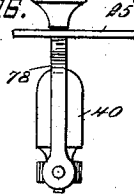
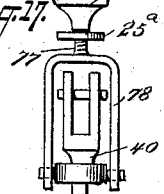


Fig. 17.



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UNITED STATES PATENT OFFICE.

WILLIAM E. SOMERS, OF SAG HARBOR, NEW YORK.

MUSIC-LEAF TURNER.

SPECIFICATION forming part of Letters Patent No. 546,908, dated September 24, 1895.

Application filed November 24, 1894. Serial No. 529,816. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. SOMERS, of Sag Harbor, in the county of Suffolk and State of New York, have invented a new and Improved Music-Leaf Turner, of which the following is a full, clear, and exact description.

My invention relates to a music-leaf turner; and it has for its object to provide such an apparatus which will be simple and durable in its construction and through the medium of which the leaves of the book or sheet-music may be turned either from the right to the left or from the left to the right, as occasion may demand, and whereby the turning of the leaves may be effected in an exceedingly expeditious and convenient manner, and whereby, further, the pages will be sure to be presented as desired.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of the operative parts of the music-leaf turner, illustrating it in position to turn the leaves from right to left, and in said view the casing of the operative parts is represented as in a measure broken away. Fig. 2 is a horizontal section taken substantially on the line 2 2 of Fig. 1. Fig. 3 is a view similar to Fig. 1, illustrating the position of the parts when the leaves are to be turned from the left to the right. Fig. 4 is a horizontal section taken substantially on the line 4 4 of Fig. 3. Fig. 5 is a vertical section taken substantially on the line 5 5 of Fig. 1. Fig. 6 is a similar section taken substantially on the line 6 6 of Fig. 1. Fig. 7 is a vertical section taken substantially on the line 7 7 of Fig. 1. Fig. 8 is a detail view illustrating the stop mechanism employed with relation to the mechanism for shifting the action of the magnet. Fig. 9 is an enlarged detail view and a partial sectional view of the actuating-arm whereby the mechanism for holding the leaves in position on the rack is controlled. Fig. 10 is a section taken substantially on the line 10 10 of Fig. 9. Fig. 11 is a detail sectional view of a portion of the mechanism adapted to enter the central por-

tion of a book or sheet of music placed upon the rack for the purpose of staying the same. Fig. 12 is a partial front elevation of the operative parts of the music-leaf turner, illustrating it in position to turn the leaves from right to left, and in said view the casing of the operative parts is represented as in a measure broken away; and this view likewise illustrates slight modifications in the manner of locating the springs and likewise in the formation of the magnet-carrying arm. Fig. 13 is a horizontal transverse section taken practically on the line 13 13 of Fig. 12. Fig. 14 is a side elevation of the magnet-carrying arm on a larger scale than shown in Fig. 12. Fig. 15 is a longitudinal section through the magnet-carrying arm, the section being taken substantially on the line 15 15 of Fig. 14. Fig. 16 is a front elevation of the connection shown in Fig. 12 between the spring controlling the upper rack or slide and likewise the key employed for turning the leaves, and Fig. 17 is a side elevation of the connection shown in Fig. 16.

In carrying out the invention the rack A is provided with the usual shelf 10, upon which the sheet-music or book is made to rest, and this rack is of substantially box-like construction, being provided with a chamber or compartment 11, extending, preferably, from the bottom to a point at or near the top, and at the top of the rack a second and upper compartment 12 is made. This upper and second compartment, however, usually extends but a short distance each side of the transverse center of the rack, while the lower and main compartment 11 may be said to extend from end to end.

In suitable bearings 13 at the side portions of the upper part of the rack a shaft 14 is journaled, and this shaft extends through the compartment 12, receiving additional support from its walls. At or near each end of the shaft a sleeve is located, the right-hand sleeve being designated as 15 and the left-hand sleeve as 15^a, and these sleeves are held securely yet adjustably upon the shaft through the medium of set-screws 16. Each sleeve is provided with a spur 17, projected from the sleeve at a right angle thereto, and one side of each spur—the inner side—is made tapering, as shown in Fig. 1. The sleeves are so set on the shaft 14 that when one of them is in a vertical position the other one will be

horizontal. When the leaves are to be turned from right to left, the spur of the right-hand sleeve is vertical, while that of the left-hand sleeve is horizontal, as shown in Fig. 1, and when the leaves are to be turned in a reverse direction the spurs of the said sleeves have a reverse position, as illustrated in Fig. 3.

The shaft is preferably provided with a central bearing 18, contained within the upper compartment 12, and is further provided within said compartment with a pinion 19, adapted for engagement with a rack 20, the said rack being vertically placed and made to extend downward within the main compartment 11. A spring 21 is also placed upon this shaft within the upper compartment 12, and the spring is so connected with the shaft that it tends to normally hold the spur of the right-hand sleeve vertically and that of the left-hand sleeve horizontally, whereby the leaves may be turned from right to left, in which direction it is usual to carry them.

Within the compartment 11, preferably at the central portion thereof and near the top, a horizontal slideway 22 is formed transversely within said compartment, as shown in Figs. 1 and 3, and in this slideway a rack 23 has movement, the said rack being sometimes connected at one end with a rod 24, controlled by a spring 25, the spring serving to draw the rack and hold the same in direction of the left-hand end of the casing. The rack 23 is engaged by a pinion 26, and this pinion is secured upon a shaft 27, held to turn in suitable bearings 28. The upper end of the shaft 27 is attached to a tube 29, said tube being horizontally located, and it contains a rod 30, capable of sliding movement within the tube, and the said rod 30 may be held at any desired distance out from the tube by means of a set-screw or its equivalent. Owing to the action of the spring 25 upon the rack the latter acts upon the pinion 26, so as to normally hold the tube 29 and rod 30 at the right-hand side of the casing A, as shown in Figs. 1, 2, and 3.

The tube 29 and rod 30 may be combinedly termed an arm composed of telescopic sections. The arm, which in its entirety may be designated as B, is provided at its outer end with a bar 31, pivotally attached thereto, and said bar at its lower extremity carries a magnet 32, while the upper end of the bar is provided with an upwardly-extending finger 33, adapted to strike and slide upon the horizontally-projecting spur 17 of either the sleeve 15 or 15^a on the upper shaft 14, and when so engaging with the horizontal spur the finger will cause the bar 31 to move outward or forward and disengage the magnet 32 from a sheet that it has turned.

Each sheet of music or each leaf of a book is provided upon both sides with a plate 34 of metal, made very thin and capable of being attracted by the magnet. These plates 34 are usually made round and are placed one over the other. A tube 35 is held to slide in the main compartment 11 of the casing, and the

said tube extends below the bottom of the casing, terminating in a key 36, suitable guides 37 being secured within said compartment, through which the tube 35 passes. This tube 35 is provided with a head 38 at its upper end, and an eye 39 or its equivalent is projected rearward from the upper guide-bar 37. The lower member of pivotally-connected links 40 is made to pass through a suitable aperture in the head 38 and the eye 39, and this member of the links 40 is provided with a collar 41, limiting the upward movement of the links by striking against the head 38 of the said tube 35; and the uppermost member of the connected links 40 has pivotal connection with one member of an elbow-lever 42, the opposite member of the said lever being connected with the slide 23. A sheet of music C being in position upon the casing, the magnet 32 will normally engage with the outermost metallic plate 34 on the right-hand sheet, as shown in Fig. 1. By pressing down upon the key 36 the tube 35 is carried downward and the elbow-lever 42 is rocked to the dotted position shown in Fig. 1, whereupon the rack 23 is carried to the right, placing the spring 25 connected with it under tension, and the pinion 26 will then rotate in such a manner as to carry the magnet-arm B over to the left of the casing, the magnet connected with said arm taking with it the sheet with which it is held in contact, and when the magnet-carrying arm shall have reached the left-hand side of the casing the finger 33 of that arm, by engaging with the inclined plane or beveled surface of the spur 17 of the left-hand sleeve 15^a, will carry the supporting-bar 31 of the magnet outward to the position shown in dotted lines at the left in Fig. 1, and therefore out of engagement with the leaf that it has just turned and immediately upon the key 36 being released from pressure the spring 25 will restore the tube 35 and the rack 23 to their normal position. Consequently the magnet-carrying arm will be taken over again to the right of the casing and made to engage with the metallic plate of the next sheet preparatory to turning over the same.

The sheets are held in position upon the casing through the medium of semicircular pistons 43, one of said pistons being held to slide at each side of the center of the casing in covered grooves or ways 44, of like formation. These covered grooves or ways at their lower ends extend beyond the front of the casing and upward through the shelf 10, as is best shown in Figs. 5, 6, and 7. Each piston 43 is ordinarily made to terminate at its lower end in a knob 45, and each of the pistons at its upper end is connected with a crank-arm 46, the two crank-arms being secured upon a shaft 48, journaled in suitable bearings within the compartment 11 of the casing, near the bottom thereof. This shaft 48 is provided with a pinion 49, and said pinion engages with a rack 50, located upon one end of a bar 51, vertically located within the said compartment 11, as shown in Fig. 7, and having slid-

ing movement in suitable guides 52, secured within the casing.

The inner edge of the bar 51 is provided with a series of notches 53, and any one of these notches may be engaged by a gravity-latch 54. The upper end of the said bar 51 is controlled by a spring 55, the said spring serving to hold the bar in a lower position, or so that the teeth of the pinion 49 shall engage with the upper teeth in the rack 50. A lever 56 is fulcrumed in the said compartment 11, and the pivotal end of this lever has a fork 57 connected with it, (see Fig. 13,) adapted to receive a pin 58, attached to the lower member of the links 40, connecting the key-tube 35 with the bell-crank lever 42. The opposite end of the lever 56 is made tubular, as shown in Fig. 9, the tubular section being designated as 56^a. This tubular section contains a spring 60, and the said spring normally forces outward a bolt 61 from the tube, and the outer end of this bolt is bifurcated in order that it may receive between its members the bar 51, and the outer end of the bolt is also beveled and engages with a pin 62, extending beyond both sides of the bar and below the teeth 53 produced therein.

When the key 36 is in its normal position, the pistons 43 will be in the position shown in dotted lines in Fig. 5—that is, so placed that their knobs 45 will engage with the outer faces of the sheets of music or leaves of a book and hold the same in position on the casing. When, however, the key 36 is pressed downward to throw the magnet-carrying arm over one side of the casing, the key-carrying tube 35 descends, and as it so descends it raises the bolt end of the lever 56, as shown in dotted lines in Figs. 1 and 9, and this bolt will in its turn raise the bar 51, and therefore cause the shaft 48 to rotate in a direction to draw the pistons 43 within their slideways 44, freeing the leaves from their pressure, and the continued upward movement of the bolt end of the lever 56 will cause the gravity-latch 54 to engage in one of the notches 53 in the said bar 51, and therefore hold the pistons in their inner position, and under this construction no impediment will be offered to the leaves while being turned.

At about the end of the delivery stroke of the magnet-carrying arms B the bolt-head of the lever 56 will have engaged with the gravity-latch 54 and carried said latch out of engagement with the sliding bar 51, and the spring 55 will then act to throw the bar downward, and consequently force the pistons 43 again to an engagement with the leaves of the book or the leaves of sheet-music, holding them firmly in position.

It is sometimes desirable and necessary that the leaves should be turned from left to right instead of from right to left, and this change can be readily accomplished by simply changing the position of the spurs 17 on the shaft 14, and in shifting the position of the spurs the magnet-carrying arm will be immediately

placed in position to release the magnet from the page with which it was in contact, since by turning the right-hand spur to a horizontal position the spur will force the pendant 31, to which the magnet is attached, outward and cause the magnet to leave the metal disk 34. This change in position may be accomplished automatically and conveniently in the following manner: A key 63 is located at one end of a shaft 64, placed, preferably, parallel with the key-tube 35 used in turning the sheets. This tube 64 is connected by links 65 or their equivalents with a lever 66, the connection being effected in substantially the same manner as the link connection between the tube 35 and the elbow-lever 42. The lever 66 is likewise connected by a link 67 with the rack 20, operating upon the pinion 19 on the shaft 14. A latch 68 is secured to the tube 64 and extends out beyond the said tube, being adapted for engagement with a stop 69, located within the casing, and this latch 68 may be drawn out of engagement with the stop, when in contact therewith, by means of a tape or wire 70 or its equivalent, attached to a lever 71, which is fulcrumed in the lower portion of the tube 64, above the key 63, and projects outwardly therefrom, the said wire 70 being shown in Fig. 8.

When a change is to be made in the direction in which the leaves are to be turned, it is accomplished by pushing downward upon the key 63, whereupon the lever 66 will be drawn downward at the end attached to the tube 64 and will force upward the rack 20, and in so doing it will rotate the upper shaft 14 a sufficient distance to reverse the position of the spurs 17 carried by the shaft—that is to say, it will place the right-hand spur 17 in a horizontal position, as shown in Fig. 3, and the left-hand spur in a vertical position, as illustrated in the same figure—and when the key 63 has been carried a sufficient distance downward to accomplish this result the latch 68 will have engaged the under portion of the stop 69 and the shaft will be held in the said position. Now by pressing downward upon the turning-key 36 the magnet-carrying arm will engage with the leaf when carried to the left and will disengage from the leaf after it has been carried over to the right, it being understood, as heretofore stated, that when the shaft 14 is reversed the spur which had been in a vertical position when lowered to the horizontal position will automatically throw the magnet-carrying arm out of engagement with the disk with which it was in contact, thus leaving the arm free to act in the desired reverse direction.

To restore the shaft 14 to its normal position the lever 71 is simply drawn downward to release the latch 68 from the stop 69, and the spring 21 on the shaft 14 will immediately act to turn the shaft once more to its normal position. As an additional means for holding the sheet-music or book stationary upon the casing or rack a binding-arm 72 is pivot-

ally attached to a spring-controlled piston 73, located in a casing 74, preferably placed upon the top central portion of the casing of the compartment 11, as shown in Fig. 11, and this binding-arm is carried downward along the central portion of the book, for example, and passes at its free end between clamps 75, placed in a recess 76 made in the central portion of the shelf 10 of the casing, as shown in Fig. 2. The spring-controlled piston 73 will admit of the binding-arm being adjusted to books of different thickness, while the telescopic arrangement of the magnet-carrying arm B will admit of its being adjusted for use with sheets or with books of different widths.

When the device is not in use, the two keys 36 and 63 may be pushed upward, either separately or together, until they are substantially flush with the bottom of the rack or casing.

In Fig. 12 I have illustrated a slight modification in sundry of the parts, in which it will be observed that the spring 25, controlling the upper rack or slide 23, is omitted and is substituted by a coiled spring 25^a, located adjacent to the links 40, operated by the key 36. The said spring 25^a is attached at one end to a fixed support, is then coiled around the support at its free end, and is made to span a post 77, formed upon a yoke 78, which yoke is connected in any approved manner with the uppermost link of the said series of links 40, and the spring, while having play upon the post 77, is prevented from leaving it by placing on the post, over the spring, a nut 79. (Illustrated in detail in Figs. 16 and 17.) This spring exerts constant upward tension on the links 40, and consequently holds the rack 23 in the same position that it would be held by the spring 25, and when the rack is to be moved to the left, after having been carried to the right, instead of the spring acting directly upon the rack, as in Figs. 1 and 3, it will act directly upon and over the key 36, controlling the movement of the magnet-carrying arm, and through the medium of the links 40 and lever 42 the said spring 25^a will act on the said slide or rack 23.

In order that the return movement of the magnet-carrying arm shall not be a violent one, the rod 24, connected with the left-hand end of the slide or rack 23, is provided with a piston-head 80, held to slide in a cylinder 81, suitably placed within the chamber 11 of the casing, the cylinder being provided with vents, whereby the said rack 23 will be pneumatically controlled.

Another modification consists in dispensing with the spring 55, whereby the bar 51 is controlled, and substituting a spring 55^a at one side of this bar 51, which spring is likewise secured at one end to a fixed support and is coiled around said support, and its opposite end is carried to a bearing upon a stud 82, secured upon the said bar 51. In this manner the downward tension of the spring 55^a is more direct upon the shifting mechanism for

the sheet-retaining devices than in the form shown in Figs. 1 and 3.

Another modification consists in the construction of the magnet-carrying arm B. The arm is still made telescopic and comprises what may be termed a "body-section" 29^a, which is preferably flat, having a guideway 83 upon one side and slots 84 and 85 produced longitudinally in the opposite side, extending through. The second section 30^a may be denominated an "extension-section," and this extension-section is adapted to slide in the said ways 83 of the body-section and is provided with one or more longitudinal slots 86, and the fastening of the two sections one upon the other is accomplished through the medium of set-screws 87, which pass through the slots of the two sections and likewise through clamps or nuts 88 at the back of the arm, since the screws are manipulated from the front. I desire it to be understood that a suitable gage-mark will be placed upon the shaft 14, so that the sleeves 15 and 15^a may be quickly and accurately set in position.

If in practice it is found desirable, the latch 54 may be normally held in locking position by a spring, as shown in dotted lines in Fig. 12.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a music leaf turner, the combination, with a shaft provided with adjustable spurs located thereon, one at each side of the center, a swinging arm adapted for engagement with the sheet to be turned and provided with a trip for engagement with one of the said spurs on the shaft, of a key, a spring-controlled rack, a pinion connected with the arm operated by the rack, and a connection, substantially as shown and described, between the key and the rack, whereby the latter may be drawn against the tension of the spring, substantially as and for the purpose specified.

2. In a music leaf turner, the combination with an arm adapted for engagement with the leaf to be turned, a key operating the said arm, and a trip mechanism whereby the arm may be released from the sheet, of retaining members having sliding movement in a guide support and adapted normally for engagement with the front of the sheets to be operated upon, a shaft having link connection with each of said retaining members and provided with a pinion, a sliding bar having a rack surface engaging with the said pinion, the said bar being spring-controlled and provided with a series of teeth in one of its sides, independent of the rack teeth, a latch adapted for engagement with the said teeth, a lever operated from the said key, and means for lifting the bar from the said lever and likewise for releasing the latch from the bar on the upward movement of the lever, as and for the purpose specified.

3. In a music leaf turner, the combination, with a swinging arm adapted for engagement with the leaf to be turned, a key whereby the

said arm is manipulated, a spring-controlled shaft, adjustable shifting spurs located on the said shaft, and a trip carried by the said swinging arm, adapted for engagement with one of the said spurs, of retaining members adapted normally for engagement with the sheets to be operated upon, a shifting device operated from the said key and acting upon the said retaining members, a rack, a pinion carried by the said spring-controlled shaft and engaging with the said rack, a key-operated lever connected with the said rack, a keeper, and a latch operated in conjunction with the key-operated lever and adapted for engagement with the said keeper, as and for the purpose set forth.

4. In a music leaf turner the combination of a turning arm having a pivoted magnet for engaging and moving a sheet to be turned, means for actuating said arm, and a releasing device adapted to move the pivoted magnet out of operative position, whereby the sheet is released, substantially as set forth.

5. In a music leaf turner the combination of a turning arm having a pivoted device for engaging and moving the sheet to be turned, means for actuating said arm, and a movable releasing device adapted to engage the sheet-engaging device on the arm and move the same out of operative position, substantially as set forth.

6. In a music leaf turner the combination of a casing, a turning arm having a device for engaging and moving the sheet to be turned, means for actuating said arm, and movable releasing devices, located at opposite sides of the casing for engaging the sheet engaging device on the arm and moving the same out of operative position whereby the sheet is released, substantially as set forth.

7. In a music leaf turner the combination of a casing, a turning arm provided with a device for engaging and moving the sheet to be turned, means for actuating said arm, and releasing devices located at opposite sides of the casing for engaging the sheet-engaging device on the arm and moving the same out of operative position, whereby the sheet is released, said releasing devices being so arranged and connected that when one is moved into operative position the other will be simultaneously moved out of operative position, substantially as set forth.

8. In a music leaf turner, the combination of a casing, a turning arm, a trip lever pivoted thereon, a magnet carried by the trip lever and adapted to attract an armature mounted on the sheet to be turned, means for actuating the turning arm and a releasing device adapted to engage the trip lever and move the magnet out of position to attract said armature, substantially as set forth.

9. In a music leaf turner, the combination of a casing, a turning arm, a trip lever pivoted thereon, a magnet carried by the trip lever and adapted to attract an armature mounted on the sheet to be turned, means for

actuating the turning arm, a movable releasing device adapted to engage the trip lever and move the magnet out of position to attract its armature, and means for moving the releasing device to throw the same into and out of position to engage the trip lever, substantially as set forth.

10. In a music leaf turner, the combination of a casing, a turning arm, means comprising a rack and pinion for moving said arm in opposite directions, a cylinder, and a piston connected to said rack and movable in said cylinder, said piston and cylinder being arranged to cushion said arm at the end of each stroke thereof, substantially as set forth.

11. In a music leaf turner, the combination of a casing, a spindle mounted therein and provided with a pinion and with a turning arm, a rack slidingly mounted in the casing in engagement with said pinion, a key connected to the rack and having a retracting spring adapted to move the same in one direction, means for moving the rack in the opposite direction, a cylinder mounted in the casing, and a piston arranged to play in the cylinder and connected to and adapted to move with said rack, substantially as set forth.

12. In a music leaf turner, the combination of a casing, a turning arm mounted thereon and provided with a device for engaging and holding the leaf to be turned, a shaft rotatively mounted transversely of the casing, means for rotating said shaft, and releasing devices adapted to engage the leaf engaging device on the arm and move the same out of operative position, said releasing devices being mounted on said shaft and adapted as the same is rotated to be thrown into and out of operative position, substantially as set forth.

13. In a music leaf turner the combination of a casing, an extensible turning arm mounted thereon and provided with a device for engaging and holding the leaf to be turned, a shaft mounted transversely of the casing, means for rotating said shaft and releasing devices adapted to engage the leaf engaging device on the arm and move the same out of operative position, said releasing devices being adjustably mounted on the said shaft and adapted as the same is moved to be thrown into and out of operative position, substantially as set forth.

14. In a music leaf turner, the combination of a casing, a curved guide, a semi-circular piston mounted to play in said guide and adapted to engage the leaves, a rock shaft connected to and moving with the piston, a spring for holding said piston normally in position to engage the sheets, and means for rocking said shaft whereby the piston is moved out of its operative position, substantially as set forth.

WILLIAM E. SOMERS.

Witnesses:

WILLIAM J. MAGEE,

C. AUGUSTUS HAVILAND.