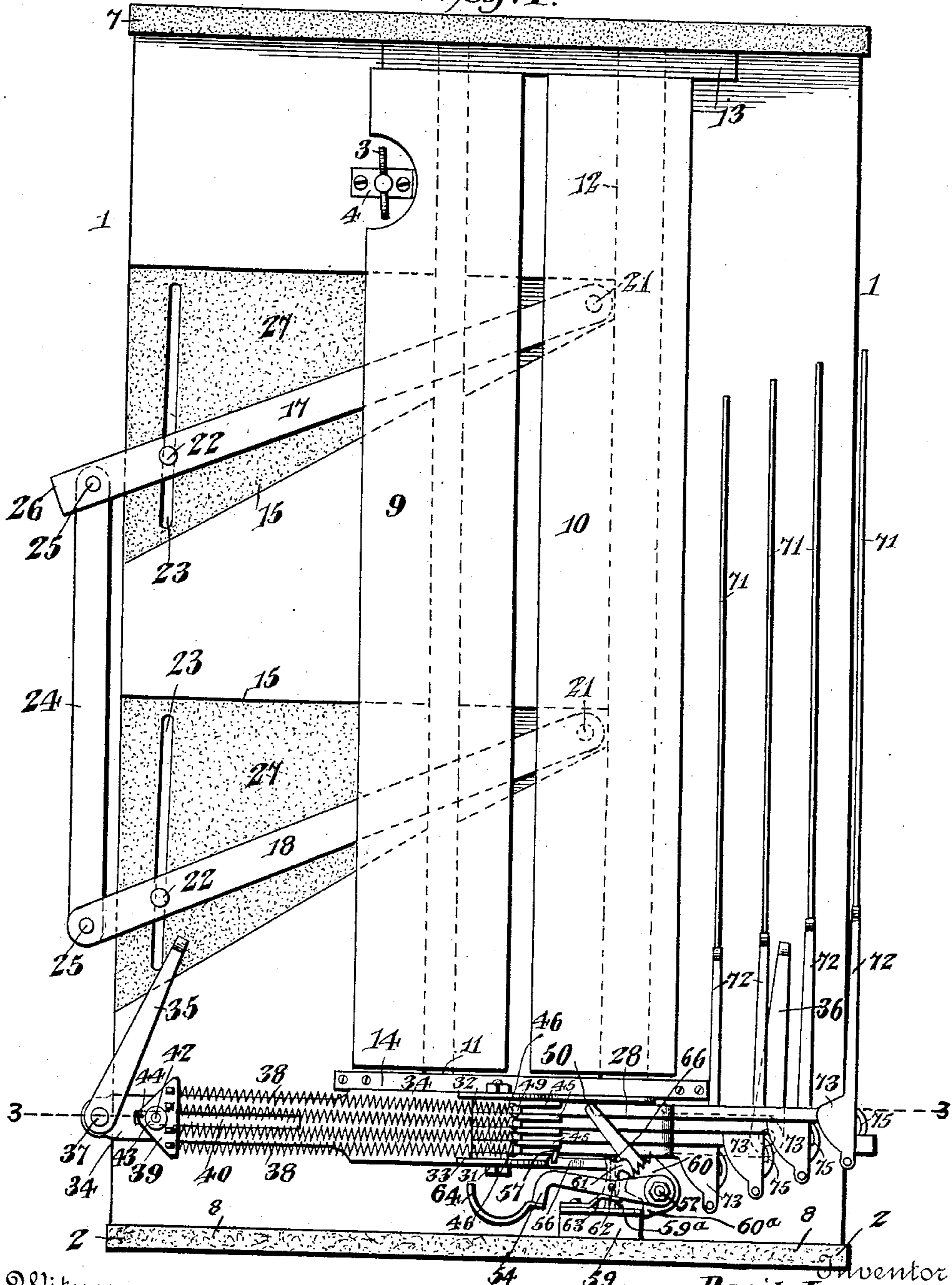


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D. JAMES.
MUSIC LEAF TURNER.
APPLICATION FILED MAY 28, 1907.

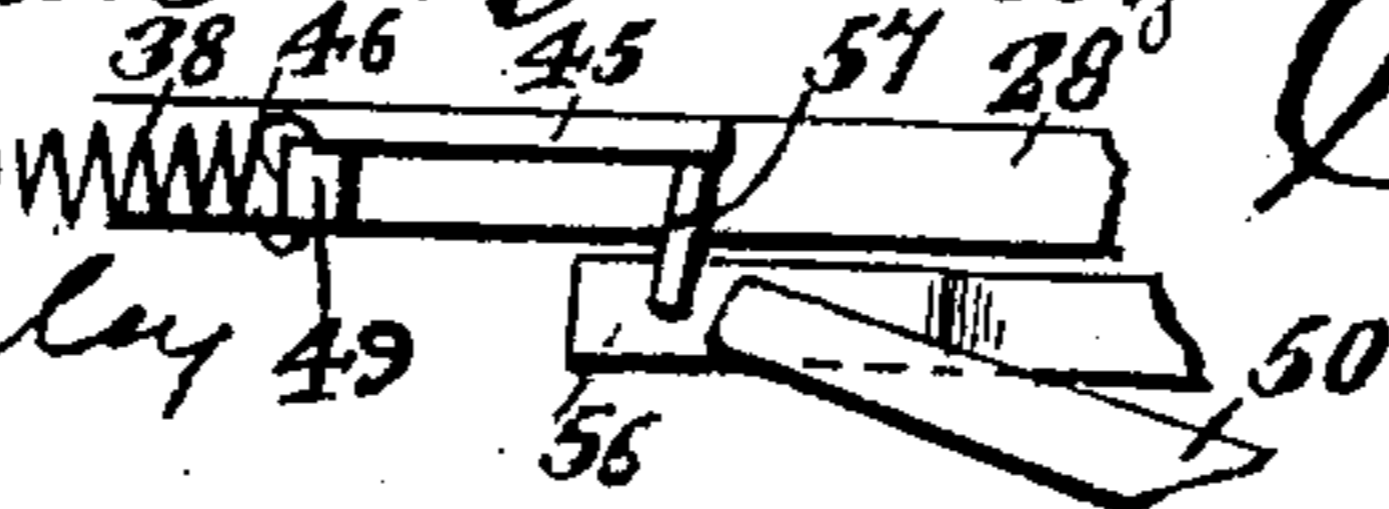
Patented Apr. 27, 1909.
3 SHEETS—SHEET 1.

Fig. 1.



Witnesses
Jas. K. McEachran
J. F. Riley

Fig. 17.



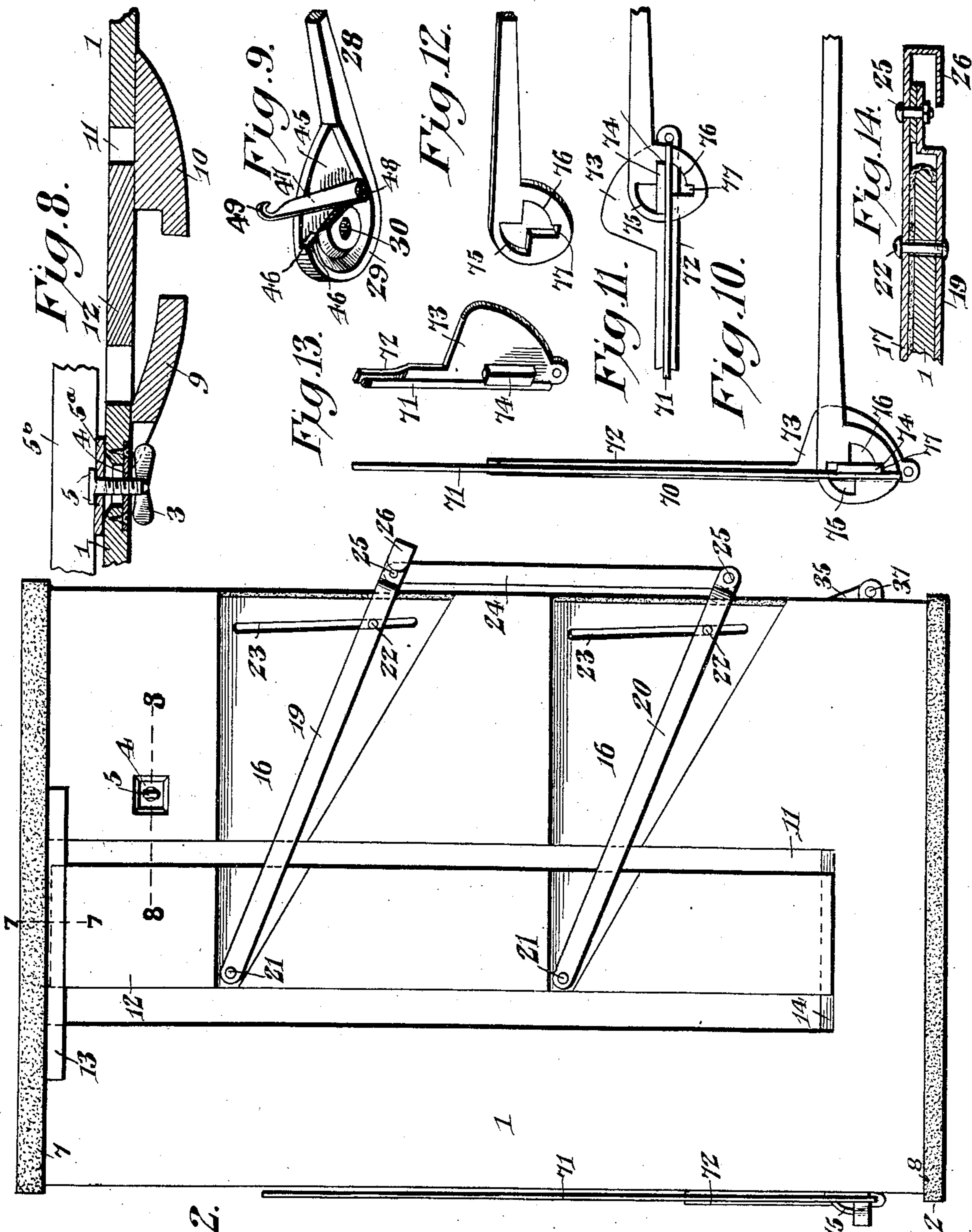
David James
Attorney

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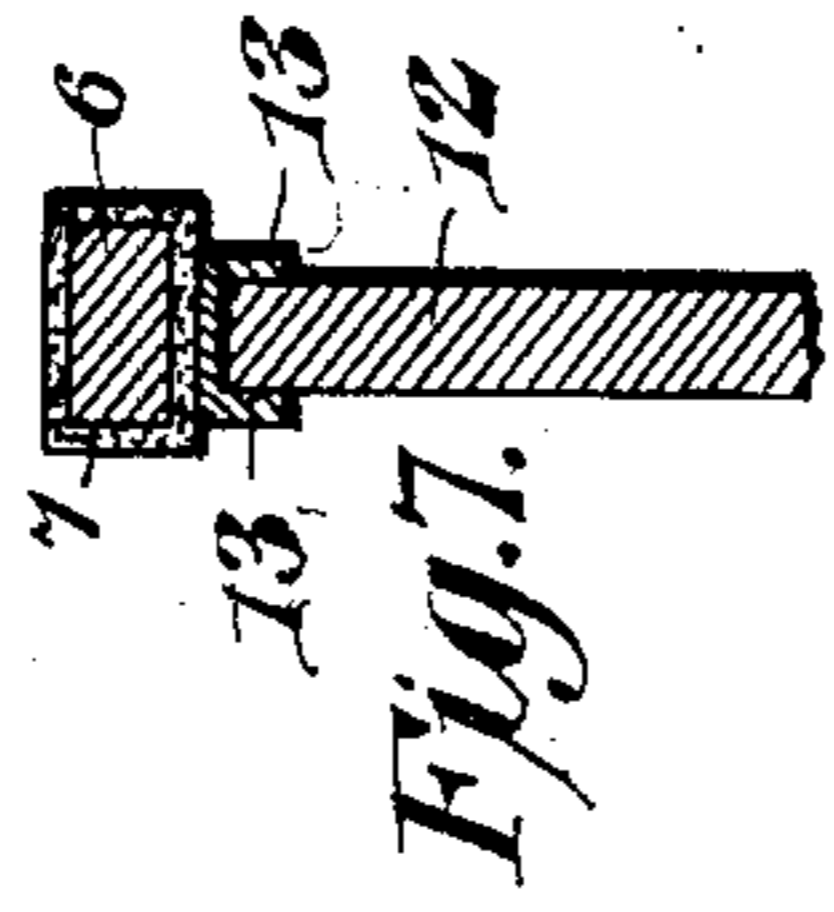
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3 SHEETS—SHEET 2.



Witnesses
Jas. E. McEathran
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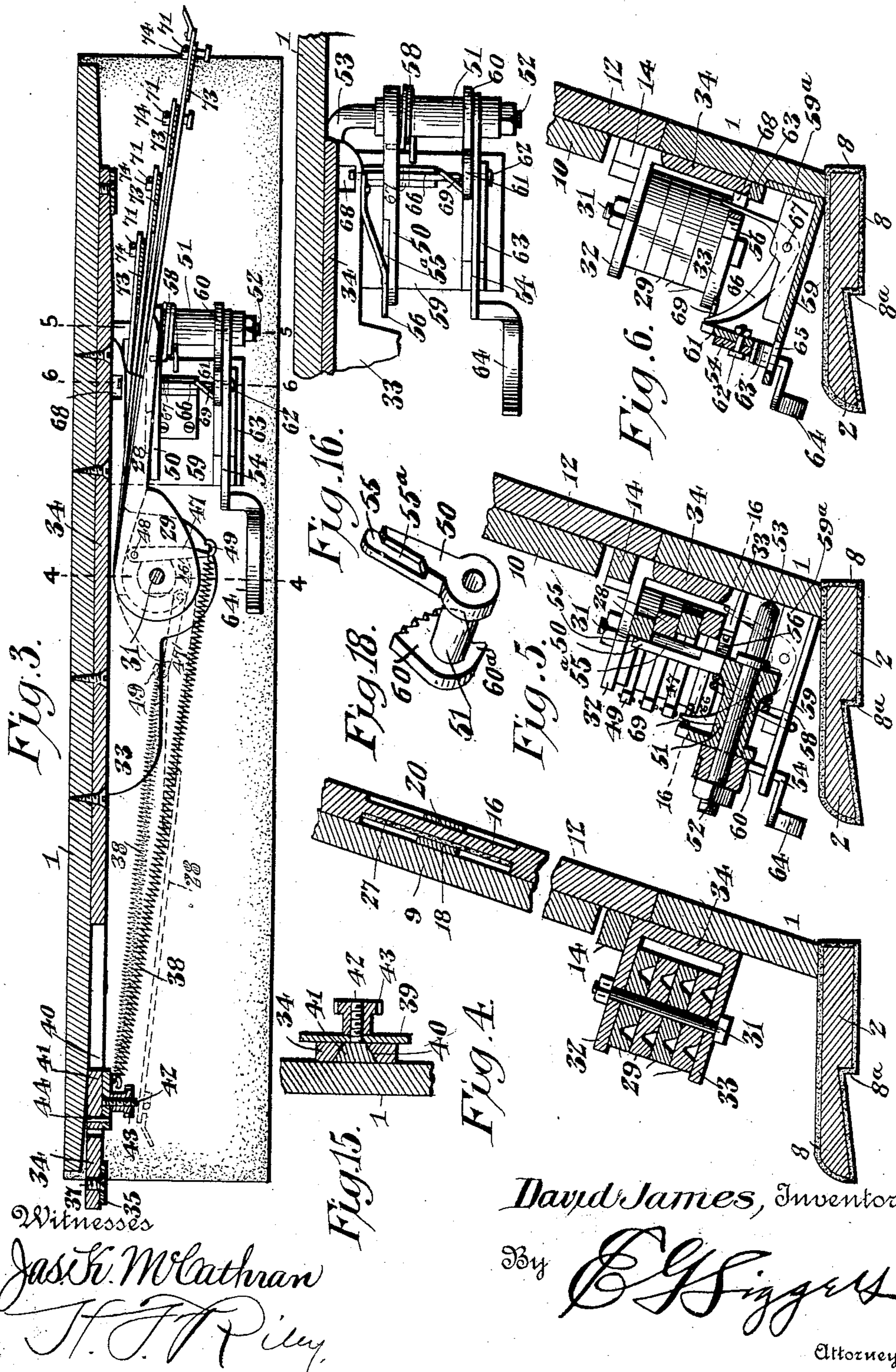


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919,357.

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Patented Apr. 27, 1909.
3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE

DAVID JAMES, OF COFFEYVILLE, KANSAS, ASSIGNOR OF ONE-FOURTH TO JAMES F. KEEFAUVER, OF COFFEYVILLE, KANSAS.

MUSIC-LEAF TURNER.

No. 919,357.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed May 28, 1907. Serial No. 376,091.

To all whom it may concern:

Be it known that I, DAVID JAMES, a citizen of the United States, residing at Coffeyville, in the county of Montgomery and State of Kansas, have invented a new and useful Music-Leaf Turner, of which the following is a specification.

The invention relates to improvements in music leaf turners.

The object of the present invention is to improve the construction of music leaf turners, and to provide a simple and inexpensive leaf turner, capable of enabling a plurality of sheets or pages to be successively and accurately turned.

A further object of the invention is to provide a music leaf turner having means for clamping a plurality of sheets or pieces of music to form a temporary binder for the same, and to enable the leaf turning mechanism to be readily transferred from one set of the leaves or pages to another, when desired, so that any of the contents of the music leaf turner may be quickly arranged for use.

Also the invention has for its object to improve the construction of the leaf turning mechanism, and to provide means for enabling a set of springs to actuate a set of leaf turning arms with the desired strength throughout the entire movement of the arms.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a front elevation of a music leaf turner, constructed in accordance with this invention. Fig. 2 is a rear elevation of the same. Fig. 3 is a horizontal sectional view, taken substantially on the line 3—3 of Fig. 1. Fig. 4 is a sectional view, taken substantially on the line 4—4 of Fig. 3, with the leaf turning arms arranged at the left hand side of the device. Fig. 5 is a detail sectional view, taken substantially on the line 5—5 of Fig.

3. Fig. 6 is a transverse sectional view, taken substantially on the line 6—6 of Fig. 3. Fig. 7 is a detail sectional view, taken substantially on the line 7—7 of Fig. 2, the jaw, which is carried by the slide being omitted. Fig. 8 is a detail sectional view, taken substantially on the line 8—8 of Fig. 2. Fig. 9 is a detail perspective view of the inner end of one of the leaf turning arms, illustrating the arrangement of the link for connecting the arm with one of the springs. Fig. 10 is an elevation of the outer portion of one of the leaf turning arms, the fingers thereof being arranged in a vertical position. Fig. 11 is a similar view, the finger being arranged in a horizontal position. Fig. 12 is a detail view of the outer end of one of the arms, the finger being removed. Fig. 13 is a detail view of the lower portion of one of the fingers. Fig. 14 is a detail sectional view of the outer portion of the upper links of the music rack. Fig. 15 is a detail sectional view, illustrating the construction of the tension device for varying the tension of the springs, which actuate the leaf turning arms. Fig. 16 is a detail sectional view, taken substantially on the line 16—16 of Fig. 5. Fig. 17 is a detail view, illustrating the manner of releasing the oscillatory member from the spring when the leaf turning arms are swung from the left hand side of the music leaf turner to the other side of the same. Fig. 18 is a detail view of the sleeve, illustrating the construction of the oscillatory member and the ratchet plate.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a music rack, having a foot 2 at the bottom and adapted to be applied to a piano, organ, or the like, and it is provided at its upper portion with a thumb screw 3, mounted in a threaded perforation of a plate 4 and provided at its front or outer end with a head, and having lugs 5 at its inner end for engaging a suitable keeper 5^a, designed to be fixed to the musical instrument 5^b. The threads of the plate 4 enable the screw to be adjusted inwardly or outwardly to arrange it properly with relation to the keeper. The keeper 5^a may consist of a plate suitably secured to the portion 5^b of the musical instrument, and provided with an oblong slot, and the lugs 5 of the

thumb screw 3 are adapted to be passed through the slot and arranged transversely thereof to engage the inner face of the plate. The plate 4 is secured by screws, or other suitable fastening devices to the music rack, which is provided with an opening for the thumb screw 3. The music rack is preferably provided at the top with a strip 6, which projects forwardly and rearwardly, as clearly illustrated in Fig. 7 of the drawings, and the foot 2 also projects forwardly, as shown, the foot and the strip being provided with fabric coverings 7 and 8 of plush, or any other suitable material, to prevent the device from scratching or otherwise marring a musical instrument. The foot is recessed at the lower face of its front or outer portion to provide a shoulder 8^a for engaging a musical instrument to prevent the music leaf turner from slipping, when it is not fastened to the musical instrument.

In order to enable the music rack to hold a number of pieces or sheets of music in position for enabling any of them to be used, it is provided with a fixed jaw 9 and a movable jaw 10, extended from the top of the device to the lower portion thereof. The fixed jaw, which consists of a strip of wood, or other suitable material, is set at a slight angle to the body portion of the music rack, as clearly illustrated in Fig. 8 of the drawings.

The music rack, which is designed to be arranged at a slight inclination, is provided at the center with a longitudinal opening 11 to receive a slide 12, to which the movable clamping jaw is secured. The slide 12 has its upper end arranged in a guide 13, constructed of sheet metal, or other suitable material, and provided with spaced side flanges, as clearly illustrated in Fig. 7 of the drawings. The lower end of the slide 12 is guided by a strip 14, secured to the front face of the body portion of the music rack, and extending across the lower end of the opening 11. The strip 14 holds the lower end of the slide against forward movement, and the movable jaw, which projects beyond the slide and overlaps the body portion of the music rack, as clearly illustrated in Fig. 8 of the drawings holds the slide against backward movement. The movable jaw is actuated by upper and lower parallel links, arranged in pairs and located at the front and rear faces of the music rack and operating in front and rear recesses 15 and 16. The upper and lower front links 17 and 18 are arranged in the front recesses 15, and the rear links 19 and 20 are arranged within the rear recesses 16. The upper and lower links are secured to the slide of the movable jaw by means of pivots 21, and they are connected at an intermediate point between their ends by means of suitable fastening devices 22, operating in upper and lower

slots 23. The upper and lower slots are arranged at a slight inclination and, when the upper and lower links are swung downwardly from a horizontal position, the movable jaw 10 is carried toward the fixed jaw 9 for clamping and temporarily binding a plurality of sheets or pages of music. The music rack is adapted to hold any number of sheets or pages within the capacity of the clamping means, and the links are connected at their outer ends by a link or member 24, which is located at the left hand edge of the music rack, as clearly illustrated in Fig. 1 of the drawings. The rear links 19 and 20 have their outer ends bent at an angle, and connected at the outer ends to the front links 17 and 18 by fastening devices 25, which pivotally connect the ends of the link or member 24 to the upper and lower links. The front link 17 has its outer end extended to provide a grip or handle portion 26 by means of which the clamp may be readily operated, or the connecting link 24 may be used for operating the link. The connecting link 24 will form a convenient operating member for opening and closing the clamp. The music rack is provided at the front recess with fabric pieces 27 of felt, or other suitable material to enable the front links to slide readily over the music rack without scratching or otherwise marring the same. The body portion of the music rack may, however, be constructed in any other preferred manner, as will be readily understood.

The leaf turning mechanism comprises a set of leaf turning arms 28, which may be of any preferred number and which have enlarged inner ends 29, provided with bearing openings 30 for the reception of a pivot or spindle 31. The pivot or spindle 31, which is in the form of a bolt, or other suitable fastening device, pierces upper and lower flanges 32 and 33 of a bracket 34, mounted on and extending across the lower portion of the music rack, as clearly illustrated in Fig. 3 of the drawings. The bracket consists of a flat back plate, and the said projecting flanges 32 and 33 may be constructed of any suitable material. The terminals of the back plate form supports for pivoted spring clips 35 and 36, which are adapted to clamp the first and last sheets or pages of the music, or those portions of the contents arranged in front and in rear of the sheets or leaves with which the arms are connected. Each of the spring clips 35 and 36 consists of a tapered strip or piece of resilient material, extending upwardly from the bracket, and secured to the same by a single fastening device 37, which permits the clip to be readily swung into and out of engagement with the sheets of music. The engaging ends of the spring clips are also adapted to be drawn outwardly or for-

wardly to engage or disengage the music from them.

The leaf turning arms are actuated by a set of coiled springs 38, extending from the central portion of the bracket to the left hand end portion thereof, and secured at their outer ends to an adjustable plate 39, which is slidably connected with the bracket. The bracket is provided at its left hand end with a longitudinal slot 40, having beveled or angularly related edges to receive a tapered or wedge-shaped slide 41, which is connected with a plate 39. The slide is provided with a threaded stem or screw 42, extending forwardly or outwardly from the slide and piercing the plate 39 and receiving a clamp nut 43. The slide is also provided with a projecting pin 44, which pierces and loosely receives the adjustable plate 39. The pin 44 prevents the adjustable plate 39 from rotating on the screw, when the nut 43 is tightened to clamp the slide at a point along the slot 40 of the bracket. By means of the tension device, the springs 40 may be stretched to any desired tension to secure the desired rapidity of the movement of the oscillatory leaf turning arms.

The leaf turning arms are provided at their enlarged ends with lower recesses 45, forming shoulders 46, which are located at the front of the enlarged ends of the arms and in advance of the pivot or spindle 31, when the arms are arranged at the right hand side of the music leaf turner, as illustrated in Fig. 3 of the drawings. These shoulders 46 are arranged to be engaged by links 47, extending across the lower faces of the enlarged portions of the arms, when the latter are arranged at the right hand side of the music leaf turner, and pivoted to the arms at points diametrically opposite the shoulders, the pivots 48 being arranged in rear of the spindle 31 when the arms are arranged as shown in Fig. 3. The outer or free ends of the links are provided with hooks 49 to which the inner ends of the coiled springs are connected. The links operate to space the inner ends of the coiled springs from the spindle 31 to afford the necessary leverage for enabling the springs to readily rotate the arms to turn the leaves or sheets of music, and when an arm is released, as hereinafter explained, and is actuated by its coiled springs, this leverage, which is the greatest at the starting point of the arm, gradually decreases during one quarter of a revolution of the arm, or until the arm is carried from the right hand side of the music leaf turner to a point approximately in front of the center of the same. This quarter of a revolution carries the outer end of the link from the front to the left hand side of the pivot or spindle 31, and the said link, which, when the leaf turning arm is set, is arranged approximately at right an-

gles to the spring and the arm, is gradually carried from such relative angular position to a position in alinement with the spring, the link operating in the nature of a lever during such movement and being in engagement with the shoulder 46 of the arm. A continued movement of the arm from a central position in front of the music turner to the left hand side of the latter carries the pivot 48 of the link outward in front or in advance of the spindle 31, thereby increasing, during the latter half of the movement of the arm, the leverage of the spring, incident to the eccentric pivoting of the link. The leverage of the spring is increased as the spring through its contraction loses its power, and a comparatively slight distension of the spring is enabled to positively actuate the leaf turning arms throughout the entire movement thereof, as the construction maintains an eccentric connection between the inner ends of the springs and the leaf turning arms. This construction also enables springs of less power to be employed, than where the energy of the springs is practically expended at the beginning of the movement of the leaf turning arms, and the tendency of the leaf turning arms to rebound is materially reduced by the particular manner in which the power of the relatively weak springs is applied in actuating the arms practically during the entire movement of the same.

The arms, which are arranged to swing across the music leaf turner, are located in different inclined planes, the pivot or spindle 31 being set at a slight inclination, as clearly illustrated in Fig. 4 of the drawings, and the said arms are retained at the right hand side of the music leaf turner by an oscillatory member 50, arranged in the path of the arms and disposed at an inclination, as clearly illustrated in Fig. 1 of the drawings, when the music leaf turner is set for operation. The oscillatory arm, which is adapted to be swung downward with a step by step movement to progressively release the spring actuated leaf turning arms, is connected with one end of a sleeve 51, which is mounted on a pivot or spindle 52. The pivot or spindle, which extends outwardly or forwardly from a point below the leaf turning arms, is provided with a shank portion 53, which is rigidly secured to the bracket 34 by solder, or other suitable means, and the said pivot also has mounted on it an operating lever 54, adapted to actuate the oscillatory member 50 to release the leaf turning arms. The oscillatory member 50, which extends upwardly from the inner end of the sleeve 51, is provided at its upper or outer end with a recess 55, forming a shoulder and adapted to receive the uppermost one of the leaf turning arms at the right hand side of the device to enable the uppermost leaf turning

arm to extend slightly in advance of the other engaged arms, as clearly illustrated in Fig. 5 of the drawings. The recess 55 is located at the upper or outer end of the oscillatory arm 50, which is also provided with a longitudinal recess 55^a, forming a branch or extension of the recess 55 and arranged to receive the leaf turning arms, as the member nears the limit of its lower movement and approaches a horizontal position. This branch or extension of the recess insures the proper engagement of the member 50 with the lower leaf turning arm. When the inclined oscillatory member 50 is swung downward by the operating mechanism, hereinafter described, the uppermost arm is released, and the member is carried downwardly a sufficient distance to permit the next arm to move outwardly into the recess 55. The arm released swings across the music leaf turner, and turns the sheet or page of music to which it is connected, as will be readily understood. The arm holding or confining member 50 is moved downward until all of the leaf turning arms are released, and it is held at the limit of its downward movement by means of a spring 56, arranged at the bottom of the bracket and adapted to engage the shoulder, formed by the recess 55^a of the said member 50. The spring 56, which is secured at one end to the lower flange of the bracket, has its other end free and arranged to automatically engage the said member 50. The lowermost leaf turning arm of the set or series is provided with a depending pin 57, located adjacent to the enlarged or inner end of the arm and arranged to engage the spring 56 and trip the said member 50, when all the arms are swung from the left hand side of the music leaf turner to the right hand side thereof to set the music leaf turner for another operation. When the pin 57 moves the spring 56 out of engagement with the oscillatory member 50, the latter is swung upwardly to a position in front of the leaf turning arms by a coiled spring 58, disposed on the sleeve 51 and connected at one end with the member 50, and at its other end with a fixed support or plate 59. The support or plate 59, which is in the form of a bracket, extends outwardly at right angles to the plane of the body portion of the music rack, and is provided at its inner end with an angularly bent portion that is suitably secured to the said music rack.

The sleeve 51 is provided at its outer end with a toothed flange or ratchet member 60, extending upwardly and inwardly toward the central portion of the music leaf turner and provided with teeth corresponding with the leaf turning arms, and adapted to be engaged by a dog or pawl 61, which is pivotally mounted on the operating lever 54. The pawl or dog, which is hook-shaped, as

clearly shown in Fig. 1, is pivoted at its lower end to the lever 54 by a rivet 62, or other suitable fastening device, and it is maintained in position for engaging the ratchet member 60 by means of a spring 63, secured at one end to the upper face of the support 59, and having its other end free and engaging the lower end of the shank or stem portion of the pawl or dog. The operating lever, which is fulcrumed at one end on the pivot 52, is provided at its other end with a curved finger piece 64, adapted to be tapped or otherwise pressed downward with the finger for actuating the ratchet member. The downward movement of the lever is limited by the support 59, which is provided beneath the spring with an opening 65, and when the lever is depressed, the oscillatory member 50 is swung downwardly a sufficient distance to release one of the arms, and to carry its shoulder to a point below the next arm, whereby the latter arm is caused to enter the recess 55, and engage the shoulder of the member 50 to hold the latter against upward movement. The opening 65 prevents the free end of the spring from being jammed between the support and the lever 54, when the latter is operated. The member 50 will be held by the engaged arm to prevent the said member from being swung upward by the spring 58, while the operating lever is moving upward. When the leaf turning arms are swung from the left hand side of the music leaf turner to the right hand side thereof, the dog is disengaged from the ratchet member by a trip lever 66 to permit a complete upward movement of the oscillatory member 50 without carrying the lever 54 higher than is necessary to enable it, when depressed, to have sufficient motion to release only one of the leaf turning arms. The upward movement of the member 50 is positively limited by a shoulder 60^a, carried by the ratchet plate at the bottom thereof and arranged to engage the support 59, as clearly shown in Fig. 1 of the drawings. The trip lever, which is substantially U-shaped, is composed of two arms, arranged at an angle to each other and extending upwardly from a pivot 67, upon which the lever 66 is mounted. The pivot 67 pierces the lever 66, and the flange 59^a is disposed transversely of and extends upward from the upper face of the support 59. The trip lever 66 is disposed transversely of the leaf turning arms, when the latter are at the right hand side of the music turner, and the inner arm of the trip lever is arranged in an opening 68 of the bottom flange of the bracket, and projects above the said bottom so as to lie in the path of the bottom or lowermost leaf turning arm, whereby when the set of arms is swung to the right hand side of the music leaf turner, the lowermost arm will engage the upper

end of the inner arm of the lever and will swing the outer arm into engagement with an angularly disposed pin 69, forming a cam and carried by the pawl or dog 61. When the trip lever is oscillated, the pawl or dog is swung backward out of engagement with the ratchet member, and the oscillatory member 50 is swung upward into position for engaging the entire set of leaf turning arms. As the downward movement of the operating lever is limited by the support 59, and as the movement is just sufficient to release one of the leaf turning arms, it will be apparent that the operating lever may be touched as lightly or as sharply with the finger as desired without liability of releasing more than one of the leaf turning arms.

Each of the leaf turning arms is provided with a lever or sheet-engaging finger 70, consisting of a rod 71 and a resilient clamping member 72, which is adapted to hold a sheet or page of music between it and the rod. The resilient clamping member is provided at its lower end with an enlarged portion or plate 72, which is spaced from the lower end of the rod by an oblong lug or piece 74, and the latter operates in diagonally opposite substantially quadrant shaped openings 75 and 76. The openings 75 and 76 communicate at the center of the lug or piece 74, which extends from the curved or peripheral edge of one opening to the curved or peripheral edge of the other opening. These openings, which are arranged at an inclination, permit the finger to oscillate and swing from a vertical to a horizontal position, and in order to lock the finger in an upright position, the plate or enlargement is provided at the bottom of the lower opening 76 with a notch 77 into which the lower end of the lower lug drops, when the finger is in an upright position, whereby the said finger will be held against pivotal movement. This construction enables the fingers to be readily swung upwardly or downwardly, and the fingers are swung downwardly from an upright to a horizontal position to permit the music, clamped by the music rack, to be turned freely, and the fingers are adapted to be swung upwardly to engage them with any of the sheets or leaves. When it is desired to fill the music turner, the fingers are dropped to a horizontal position and the clamp is opened to receive the music, which is firmly held in proper position by the jaws 9 and 10, when the clamp is closed. The leaf turning arms are swung to the left hand side of the music leaf turner, preparatory to connecting the fingers with the leaves to be turned, and the fingers are then raised successively to connect the leaves with the arms, which, when swung to the right hand side of the music leaf turner, are adapted to be successively released as before explained.

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

1. The combination of a support, a pivotally mounted leaf turning arm, a spring for actuating the arm, and a link connected with the spring and eccentrically pivoted to the arm, said link being arranged to engage the arm at a point intermediate of the ends of the said link during a portion of the movement of the arm.

2. The combination with a support, of a leaf turning arm pivotally mounted on the support and provided with a shoulder, a spring for actuating the arm, and a link eccentrically pivoted to the arm and connected with the spring and arranged to engage the shoulder of the arm during a portion of the movement of the latter.

3. The combination with a support, of a leaf turning arm, a coiled spring for actuating the arm, means for setting and tripping the arm, a link eccentrically pivoted to the arm and connected with the spring, said link serving to eccentrically connect the spring to the arm, and means carried by the arm and arranged in the path of and engaged by the link during a portion of the movement of the said arm.

4. The combination of a horizontally swinging pivotally mounted arm having a shoulder, a substantially horizontal coiled spring fixed at one end, means for setting and tripping the arm, and a link disposed transversely of the pivoted end of the arm and pivoted at its inner or rear end to the same and connected at its outer or front end to the spring and engaging the shoulder of the arm during the first portion of the movement thereof, the pivoted end of the link being carried outward beyond the pivot of the arm during the latter portion of the movement of the arm to increase the leverage of the spring.

5. The combination of a support, a plurality of leaf turning arms pivotally mounted on the support and provided with shoulders, links pivoted to the arms and arranged to engage the shoulders during a portion of the movement of the arms, and springs connected with the links for actuating the arms.

6. The combination of a leaf turning arm, a coiled spring for actuating the same, a link pivoted to the arm and connected to the spring, means carried by the arm and engaging the link at a point intermediate of the ends thereof during a portion of the movement of the arm, and means for setting and tripping the arm.

7. The combination with a plurality of spring actuated leaf turning arms, of an oscillatory member arranged in the path of the arms for holding the same, operating mechanism for progressively operating the member to successively release the arms, and

mechanism for locking the said member out of the path of the arms at the end of such progressive movement.

8. The combination with a plurality of spring actuated leaf turning arms, of an oscillatory member arranged in the path of the arms for holding the same, operating mechanism for progressively operating the member to successively release the arms, mechanism for locking the said member out of the path of the arms at the end of such progressive movement, and means for automatically releasing the oscillatory member when the arms are swung back to their initial position.

9. The combination with a plurality of spring actuated leaf turning arms, of an oscillatory member arranged in the path of the arms for holding the same, operating mechanism for progressively operating the member to successively release the arms, mechanism for locking the said member out of the path of the arms at the end of such progressive movement, and means carried by the arms for unlocking the oscillatory member.

10. The combination with a plurality of spring actuated leaf turning arms, of an oscillatory member arranged in the path of the arms for holding the same, operating mechanism for actuating the member to successively release the arms, a spring for locking the said member out of the path of the arms at the limit of its releasing movement, and a projection carried by one of the arms and arranged to engage the spring for releasing the said member.

11. The combination with a plurality of spring actuated leaf turning arms, of an oscillatory member arranged in the path of the arms for holding the same, said member being provided at its outer end with a recess forming a shoulder and adapted to permit one of the arms to lie in advance of the other, and operating mechanism for progressively actuating the member to successively release the arms.

12. The combination with a plurality of spring actuated leaf turning arms, of an oscillatory member arranged in the path of the arms for holding the same, said member being provided at its outer end with a recess forming a shoulder and adapted to permit one of the arms to lie in advance of the other, operating mechanism for progressively actuating the member to successively release the arms, a spring located beneath the arms and arranged to engage the shoulder of the said member for holding the latter out of the path of the arms, and a projection carried by one of the arms and arranged to engage the spring to release the oscillatory member.

13. The combination with a plurality of spring actuated leaf turning arms, of an

oscillatory member arranged in the path of the arms for holding the same against movement, a ratchet member connected with the oscillatory member, a lever provided with a pawl or dog arranged to engage the ratchet member for actuating the oscillatory member to release the arms, a spring for moving the oscillatory member in the opposite direction, and means operated by the arms for disengaging the pawl or dog from the ratchet member.

14. The combination with a plurality of spring actuated leaf turning arms, of an oscillatory member arranged in the path of the arms, a ratchet member connected with the oscillatory member, a lever provided with a pawl or dog for engaging the ratchet member to actuate the oscillatory member for releasing the arms, and a trip lever arranged in the path of the arms and adapted to throw the pawl or dog out of engagement with the ratchet member.

15. The combination with a plurality of spring actuated leaf turning arms, of an oscillatory member arranged in the path of the arms, a ratchet member connected with the oscillatory member, a lever provided with a pawl or dog for engaging the ratchet member to actuate the oscillatory member for releasing the arms, a trip lever arranged in the path of the arms, and a cam carried by the pawl or dog into a position to be engaged by the trip lever for throwing the pawl or dog out of engagement with the ratchet member.

16. The combination with a plurality of spring actuated leaf turning arms, of an oscillatory member arranged in the path of the arms for holding the same against movement, a ratchet member connected with the oscillatory member, an operating lever having a pawl or dog for engaging the ratchet member, a spring bearing against the pawl or dog and maintaining the same in engagement with the ratchet member and holding the operating lever elevated, and a tripping device actuated by the arms for throwing the pawl or dog out of engagement with the ratchet member.

17. The combination with a plurality of spring actuated leaf turning arms, of an oscillatory member arranged in the path of the arms, a ratchet member connected with the oscillatory member, an operating lever having a pawl or dog for engaging the ratchet member, said pawl or dog being provided with an angularly disposed projection forming a cam, and a trip lever arranged in the path of the arms and having an arm arranged to engage the cam for throwing the pawl or dog out of engagement with the ratchet member.

18. The combination with a leaf turning arm provided with upper and lower quadrant shaped openings and having a notch

at the bottom thereof, and a finger mounted on the arm and provided with means operating in the openings for pivotally connecting the finger with the arm, said means being also adapted to engage the notch for locking the finger in an upright position.

19. The combination with a leaf turning arm provided with upper and lower opposite quadrant shaped recesses and having a notch, and a finger having spaced portions to receive the arm and provided with a lug operating in the said openings and arranged to engage the notch.

20. The combination of a leaf turning arm provided with opposite tapering openings, a finger having a portion operating in the openings, whereby it is pivotally connected with the arm.

21. The combination of a leaf turning arm provided with opposite tapering openings, a finger having a portion operating in the openings, whereby it is pivotally connected with the arm, and means for locking the finger in an upright position.

22. The combination of a support, a pivotally mounted leaf turning arm, a coiled spring extending from the arm and fixed

at its outer end, and means for eccentrically connecting the inner end of the spring with the arm and for automatically carrying the inner end of the spring outwardly from a line intersecting the attached end of the spring and the pivot of the arm during a portion of the oscillatory movement of the latter.

23. The combination of a support, a pivotally mounted leaf turning arm, a coiled spring extending from the arm and fixed at its outer end, and means for eccentrically connecting the inner end of the spring with the arm and for automatically carrying the inner end of the spring away from a line intersecting the attached end of the spring and the pivot of the arm during the latter portion of the oscillatory movement of the said arm.

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

DAVID JAMES.

Witnesses:

LIZZIE WALLINGFORD,
A. M. RAGLE.