A. J. SWANSON.

AUTOMATIC MUSIC LEAF TURNER.

APPLICATION FILED OCT. 16, 1908.

970,766.

Patented Sept. 20, 1910.

3 SHEETS—SHEET 1.

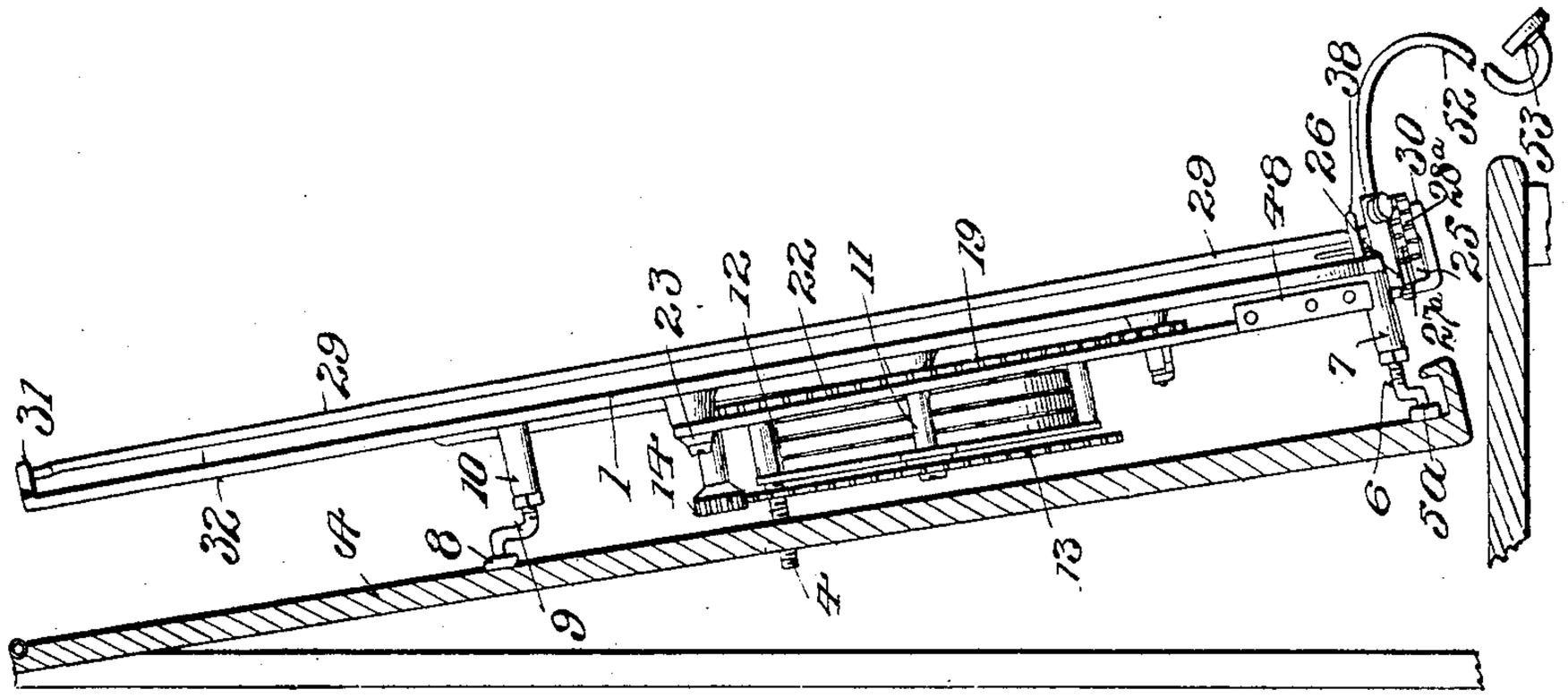

FIG. 2.

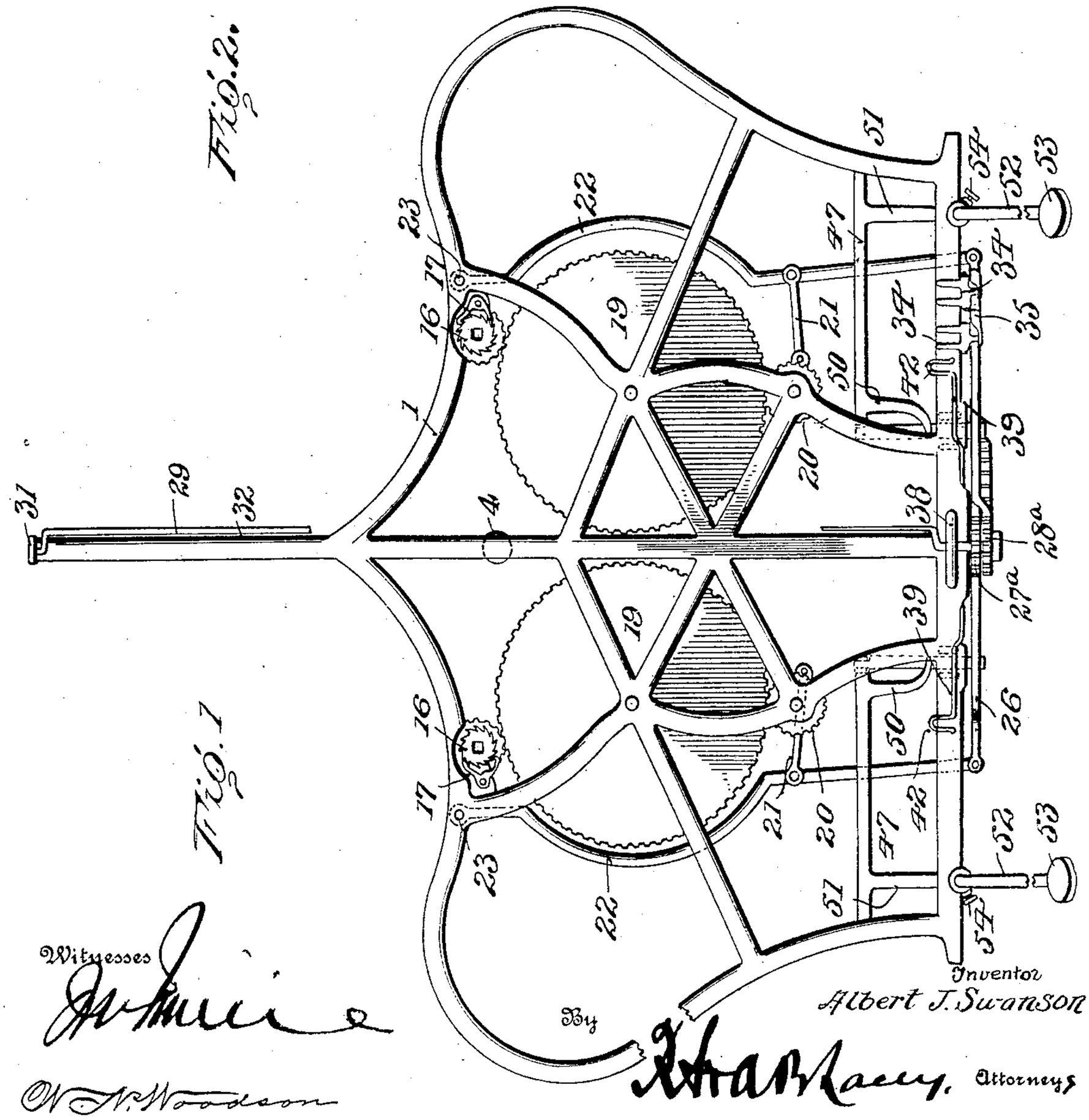

FIG. 1.

Witnesses

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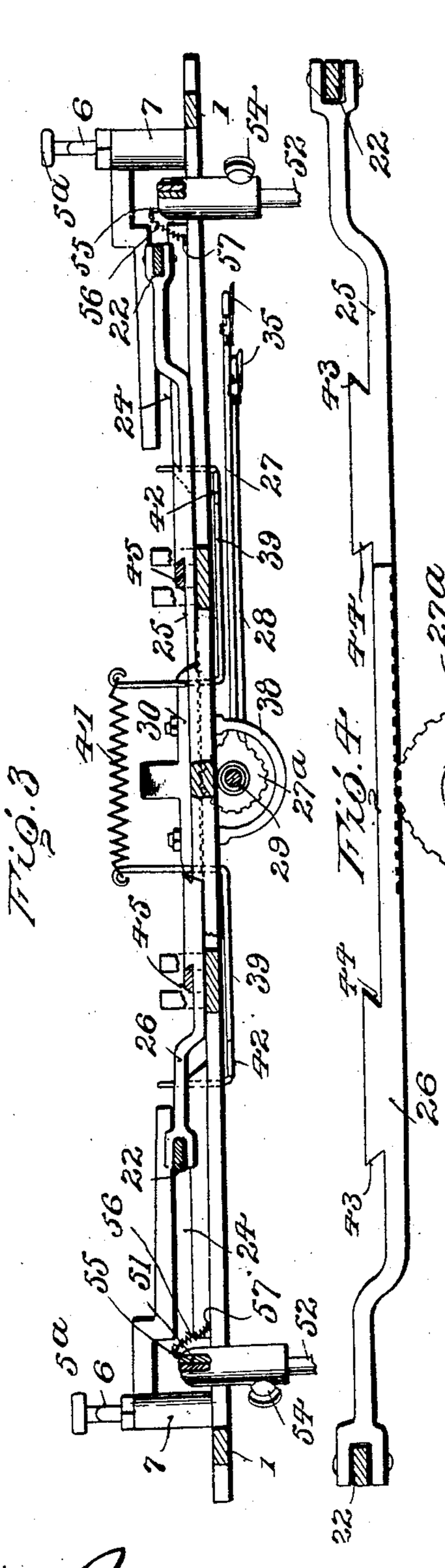

Fig. 3

Fig. 4.

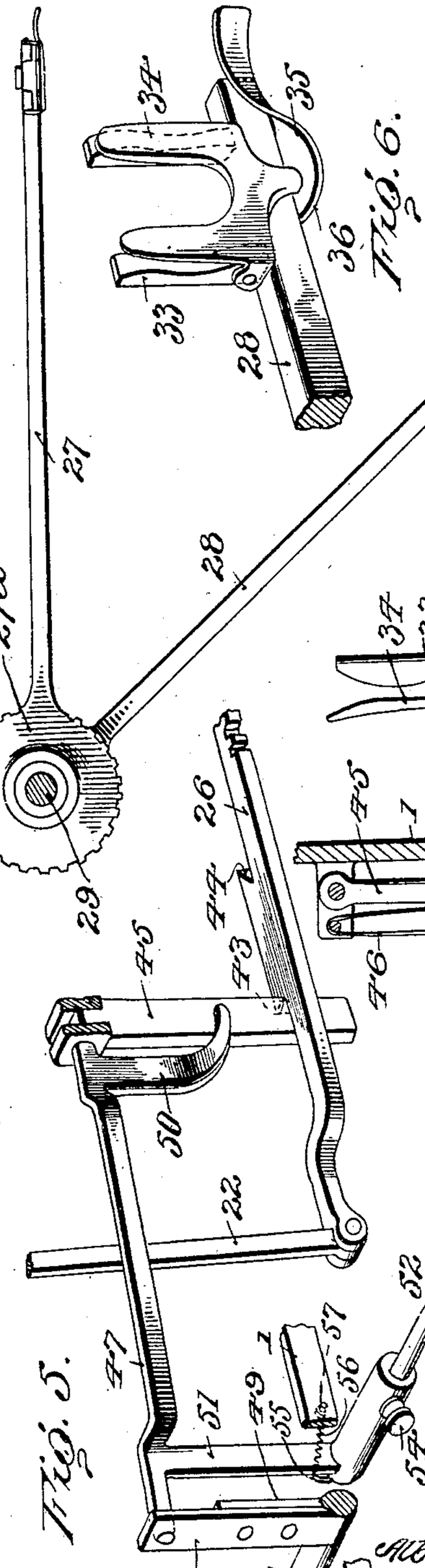

Fig. 5.

Fig. 6.

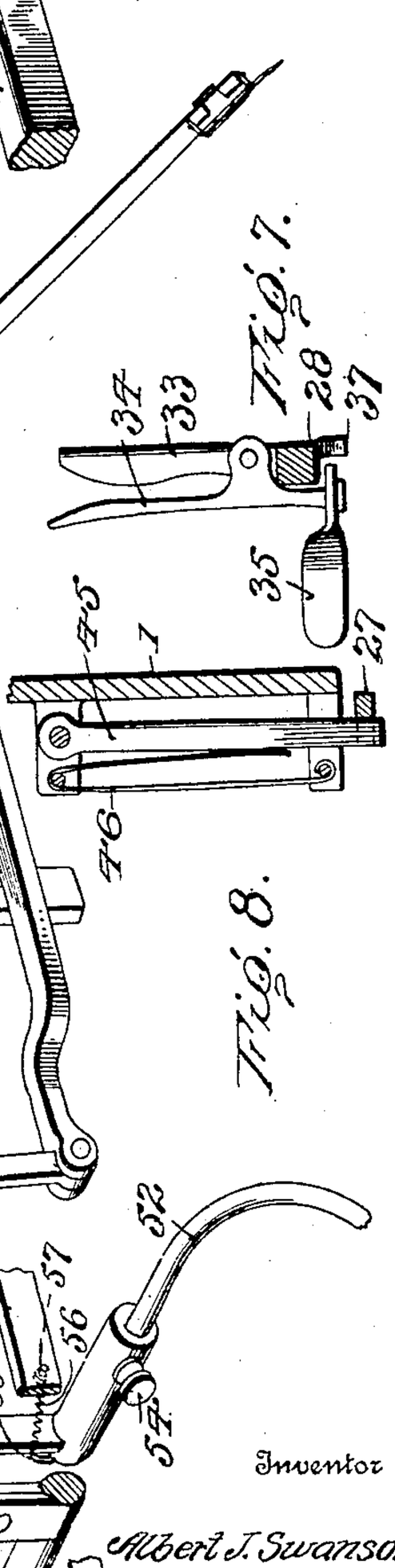

Fig. 7.

Fig. 8.

Witnesses:

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3 SHEETS—SHEET 3.

Fig. 11.

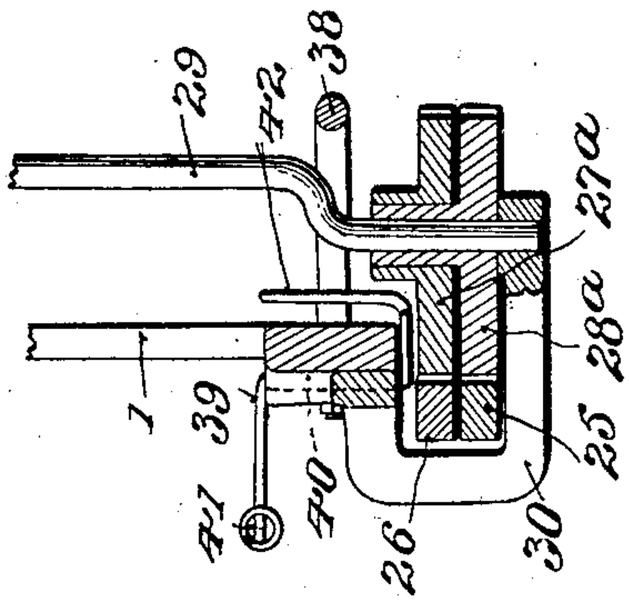


Fig. 12.

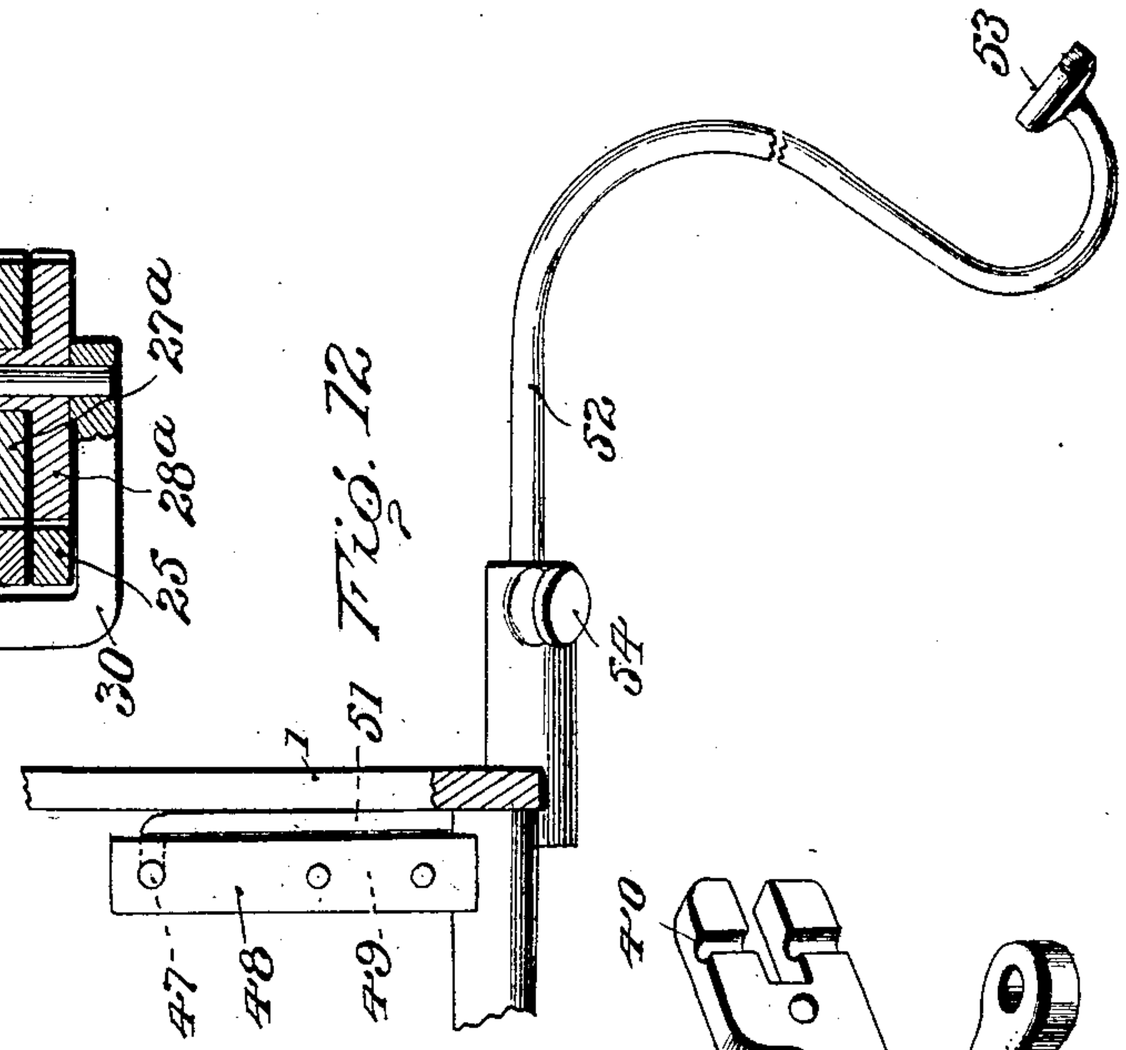


Fig. 10.

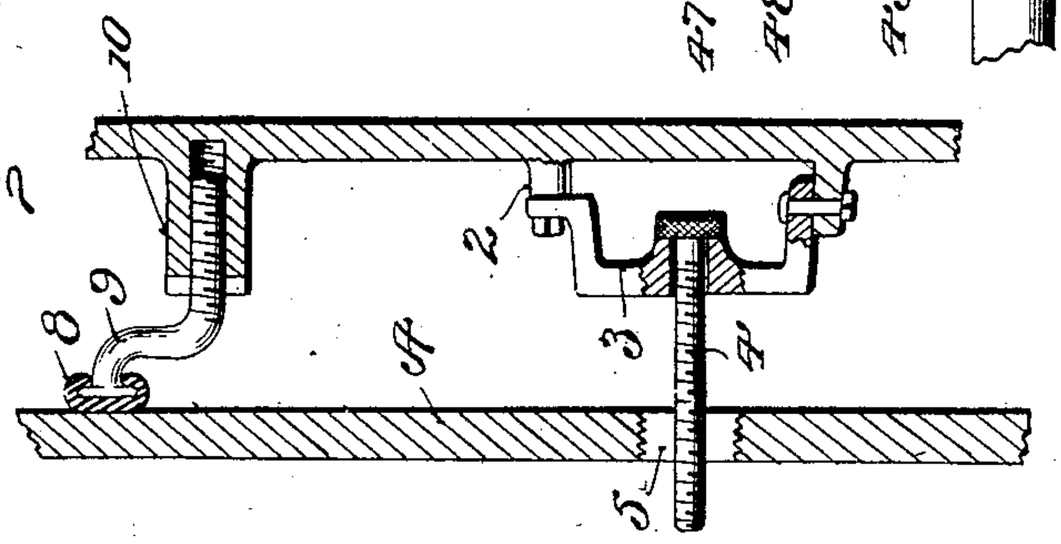


Fig. 13.

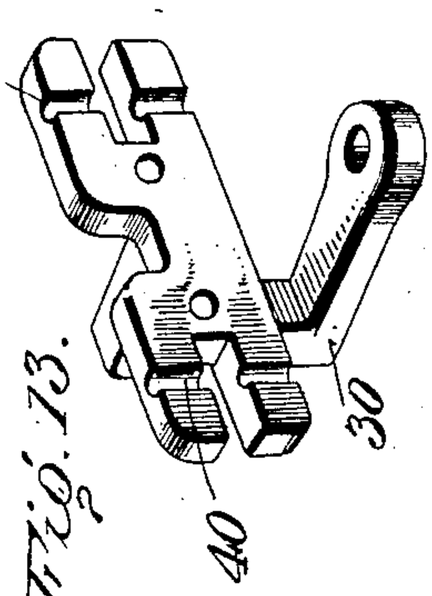
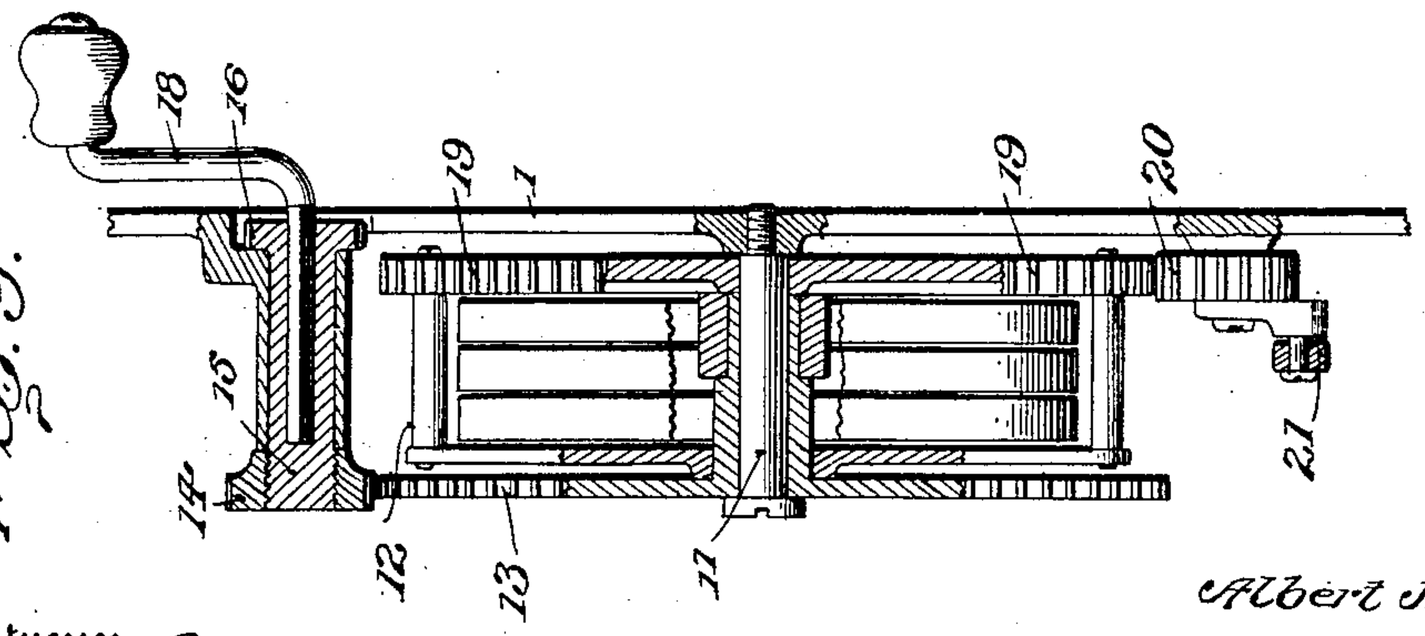


Fig. 9.



Witnesses

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UNITED STATES PATENT OFFICE.

ALBERT J. SWANSON, OF STOCKPORT, IOWA.

AUTOMATIC MUSIC-LEAF TURNER.

970,766.

Specification of Letters Patent. **Patented Sept. 20, 1910.**

Application filed October 16, 1908. Serial No. 458,023.

To all whom it may concern:

Be it known that I, ALBERT J. SWANSON, citizen of the United States, residing at Stockport, in the county of Van Buren and State of Iowa, have invented certain new and useful Improvements in Automatic Music-Leaf Turners, of which the following is a specification.

This invention comprehends certain new and useful improvements in devices designed to rest upon or be secured to the music desk of a piano, organ, or similar instrument, for the purpose of automatically turning the leaves of a musical composition as it is being played. And the present invention relates particularly to a device of the character disclosed in my prior Letters Patent of the United States #896,480, dated August 18, 1908. This prior patented apparatus comprises essentially, as also does the present invention, a supporting frame, motors mounted in said frame, arms mounted to oscillate in said frame and arranged to be driven by the motors, the arms being provided with clips for attachment to the music sheets, reciprocating bars mounted in the frame and having operative connection with the oscillating arms, means adapted to engage the bars so as to hold them and their actuating motors normally in an inoperative condition, and means actuated by the player for releasing the bars so as to permit the arms to oscillate in the desired direction to turn the pages.

The present invention embodies special improvements in this type of automatic music leaf turner, such improvements being hereinafter specifically described and pointed out in the appended claims.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a face view of my improved automatic music leaf turner, a portion of the spindle for supporting the leaf turning arms; Fig. 2 is a side elevation or edge view of the apparatus. Fig. 3 is a horizontal sectional view of the same; Fig. 4 is a detail top plan view of the leaf turning arms and the reciprocating bars with which said beams are connected; Fig. 5 is a detail perspective view of a portion of the actuating mechanism; Fig. 6 is a detail perspective view of one of the clips; that are carried by the free ends of the oscillating leaf turning arms. Fig. 7 is a detail sectional view through one of said arms showing the clip attached. Fig. 8 is a detail sectional view illustrating one of the dogs or detents for holding the rack bars stationary; Fig. 9 is an enlarged view partially in section of one of the motors; Fig. 10 is a detail sectional view illustrating the means for attaching the device to the music desk of a piano or similar instrument; Fig. 11 is an enlarged sectional view of the apparatus showing that portion where the oscillating arms are journaled; and, Fig. 12 is a detail view of one of the actuating levers; Fig. 13 is a detail perspective view of a bracket hereinafter referred to.

Corresponding and like parts are referred to in the following description, and indicated in all the views of the accompanying drawings by the same reference characters.

Referring to the drawings, the numeral 1 designates the supporting frame of my improved automatic music leaf turner, said frame comprising a plurality of connected bars of the desired configuration, the same being arranged, however, to support at their intersections and other points, a number of actuating parts of the mechanism. This frame 1 is formed at about its middle with rearwardly projecting lugs 2 (see Fig. 10) to which a yoke 3 is connected, the said yoke carrying a screw 4 designed to engage a nut 5 secured in any desired way to the music desk A of a piano or organ case, so as to secure the apparatus thereto in proper position for holding a musical composition. At its lower end, the frame carries knobs 5^a covered with felt or the like and designed to rest against the front surface of the music desk A so as to prevent the apparatus from marring the same, the said knobs 5 being secured to or formed on the ends of threaded shanks 6 which are angular in the present instance and which are screwed into interiorly threaded sleeves 7 formed on or projecting rearwardly from the supporting frame 1.

8 designates a similar knob carried by an angularly threaded shank 9 which screws in a sleeve 10 formed on and projecting rearwardly from the supporting framework above the knobs 5^a before mentioned, the three knobs together, with their supporting shanks 9 and 6 serving to properly space the supporting frame from the front of the music desk A to provide sufficient space for

some of the actuating parts which are mounted on the frame 1 at the back thereof.

Spindles 11 are secured to the frame 1 and project rearwardly therefrom, and spring drums or motors 12 are mounted for rotation on the respective spindles, each of said spring motors embodying a gear wheel 13 which meshes with a pinion 14 on the rear end of a hollow shaft 15 journaled in the supporting framework 1. The front end of each shaft 15 is formed with a ratchet wheel 16 engaged by a pawl 17 fulcrumed on the framework. The drums or motors may be wound up to the desired tension by means of a crank handle 18 inserted in the bore of the hollow shafts 15 so as to turn said shafts. Each spring drum or motor 12 also embodies a driving gear wheel 19 which meshes at a point preferably diametrically opposite to the winding mechanism and ratchet wheel 16 with a toothed crank disk 20 rotatably mounted on the framework 1. The crank disks 20 are connected by pitmen 21 with levers 22 which are vertically disposed as shown and which are fulcrumed at their upper ends as at 23 to swing about a substantially horizontal axis in a plane parallel with the framework, that is laterally, or in a sidewise direction. The lower ends of the swinging levers 22 pass through laterally extending guide slots 24 formed in the lower edge of the supporting framework 1, and the lower ends of said levers are respectively connected to rack bars 25 and 26 that are reciprocated by said levers and that extend toward each other, as clearly illustrated in the drawing. The meeting ends of the rack bars 25 and 26 overlap as shown and the toothed portions of said ends mesh respectively with segmental gears 27^a and 28^a formed on the ends of the oscillating arms 27 and 28. The arm 28 is mounted on the lower end of a pintle rod 29, said rod being journaled at its lower ends in a bearing formed in the forwardly projecting arm of a bracket 30, and the upper end of the pintle rod 29 is correspondingly journaled in a forwardly projecting bracket 31 formed on the upper end thereof of an upwardly extending arm 32 constituting part of the supporting framework 1. The pintle rod 29 is bent or offset between its journaled ends or trunnions, as shown, the offset portions extending toward the outer or free end of the oscillating arm 28 which is secured to said pintle rod, this offset portion being provided for the purpose of preventing the music leaves from bearing tightly against the pintle rod and tearing as the said rod turns. The oscillating arm 27 is not connected to the pintle rod 29 but is merely mounted to swing upon the upwardly extended hub of the arm 28, as shown in Fig. 11. These arms 27 and 28 are provided at their outer or free ends with clips, shown in detail in Fig. 6. Each clip comprises a relatively stationary jaw 33 formed on and projecting upwardly from the arm, and a relatively movable pivoted jaw 34 on which a thumb lever 35 is mounted, said thumb lever being formed with a cam 36 designed to engage a lug 37 formed on the oscillating arm so that by turning the thumb lever in one direction, the jaws will be closed to grasp the lower edge of the music leaf.

The bracket 30 is secured to the lower edge of the supporting framework 1 by a substantially U-shaped rod 38, the ends of which are secured by nuts or the like to the framework and to the ends of the brackets, the main or body portion of said rod projecting forwardly from the frame and serving to assist in supporting the musical composition, the leaves of which slide over said rod as they are turned.

39 designates two spring rods that are connected at their outer ends to the supporting framework at the lower edge thereof and that extend in a substantially horizontal plane toward each other, the inner ends of said spring rods passing through grooves 40 formed in the ends of the bracket 30 and being secured at the rear edge of the framework to the opposite ends of a compression spring 41. The musical composition is intended to rest upon these spring rods 39 and the rod 38, the upwardly crimped portions 42 of the spring rods 39 taking over the cover pages of the musical composition, the spring 41 serving to place the spring rods 39 under tension so as to securely hold the musical composition in place.

Each of the two rack bars 25 and 26 is formed on its rear edge with two oppositely facing shoulders 43 and 44, designed to be engaged by a dog 45 pivoted at its upper end to the framework 1 and extending downwardly, the said dog being pressed by a spring 46 against the adjoining rack bar. In order to release the dogs 45 from the rack bars, I have provided a trip device for the respective dogs. Each of these trip devices embodies a transversely extending shaft 47 which is journaled at one end in the pivoted end of the adjoining dog, and which is journaled at its opposite end in a cone bearing formed in the upper free end of a spring plate 48. This plate is secured to a projection 49 formed on the supporting framework and exerts an inward tension on the outer end of the shaft 47 so as to take up any wear and maintain the shaft in proper condition for its rocking movement about its longitudinal axis. Each shaft 47 is formed near one end with a depending finger 50 engaging the adjoining dog so as to swing the same out of engagement with one of the shoulders of the rack bars, and the shaft 47 is provided near its opposite end with an arm 51 which projects outwardly at its lower extremity and which is hollow at

such extremity so as to receive the end of an actuating handle 52 carrying a button 53 at its outer end. The actuating handle 52 is held in the hollow extremity of the actuating arm 51 by a set screw 54 as shown so that the actuating handle may be turned to the desired adjustment. Each of the two actuating arms 51 is provided with a pin 55 connected to one end of a spring 56, the other end of said spring being secured to a screw 57 or the like mounted in the framework, so as to normally hold the trip devices in an inoperative position.

In describing the practical operation of my improved automatic music leaf turner, it is clear that after the device has been secured in place and the clips fastened to the sheet of a musical composition, the motors or spring drums would, if permitted to do so, act continuously to oscillate the arms 27 and 28 back and forth so as to turn the leaves to the left and to the right. This action is prevented, however, by the engagement of the dogs 45 with the shoulders of the rack bars 25 and 26. If it be assumed then, that the arms 27 and 28 have been swung over to the right to engage with the sheets of the musical composition that is being played, it will be clear that the dogs 45 will engage the innermost shoulder 44 of the rack bar 26 and the outermost shoulder 43 of the rack bar 25.

After a page has been played, and it is desired to turn the leaf over, it is only necessary for the player to press upon the actuating handle 52 which controls the arm 28, whereupon, the dog 45 will be disengaged from the shoulder of said arm, and the motor will be at once permitted to start to swing said arm over from the right to left. At the completion of this movement of the arm, it is clear that the dog will again engage the other shoulder of the rack bar which is operating said arm and thereby automatically stop the motor so as to prevent the arm from being carried upwardly again. The next sheet is swung over by the corresponding movement of the other actuating handle; it is obvious that in order to turn the pages back again, it is only necessary to again press upon the keys 53 in succession, but in inverse order, owing to the fact that the swinging levers 22 work in both directions being connected by the bars 21 with the rotatable crank disks 20. Preferably, in the use of my improved music leaf turner, all loose or single leaves to be turned, should be gummed, or otherwise fastened together at their inner edges, to the cover pages.

It is to be understood, that I do not limit myself to the exact construction, arrangement, and combination of the parts herein shown and described, as minor changes may be made within the scope of the appended claims. Neither do I herein broadly claim the entire invention as described at the present time, for the reason, that my prior patent embodies the same subject matter as is disclosed in the present application and broadly claims the same; but,

What I do claim as new is:

1. A music leaf turner, comprising a supporting framework, leaf turning mechanism carried thereby and embodying reciprocating bars formed with shoulders, dogs pivotally suspended in the framework and spring pressed in a direction to engage said shoulders, and trip devices designed to disengage the dog from the shoulders, each of said trip devices embodying a transversely extending shaft which is journaled at one end in the pivoted end of the adjoining dog, a spring plate in the free end of which the other end of the shaft is journaled, said spring exerting a tension in a longitudinal direction on the shaft so as to maintain the same for a turning movement, the shaft being provided near one end with a depending finger curved to engage the dog and extending over the front face thereof and the shaft being also provided near its opposite end with a depending arm, and an actuating handle secured to said arm.

2. A music leaf turner, comprising a supporting framework, leaf turning mechanism carried thereby and embodying reciprocating bars formed with shoulders, dogs pivotally suspended in the frame work and spring pressed in a direction to engage said shoulders, and trip devices designed to disengage the dog from the shoulders, each of said trip devices embodying a transversely extending shaft which is journaled at one end in the pivoted end of the adjoining dog, a spring plate in the free end of which the other end of the shaft is journaled, said spring exerting a tension in a longitudinal direction on the shaft so as to maintain the same for a turning movement, the shaft being provided near one end with a depending finger curved to engage the dog and extending over the front face thereof and the shaft being also provided near its opposite end with a depending arm, said arm having a forwardly projecting hollow end, and an actuating handle mounted detachably in said end.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT J. SWANSON. [L. S.]

Witnesses:

H. U. HOAGLIN,

CARL A. SWANSON.