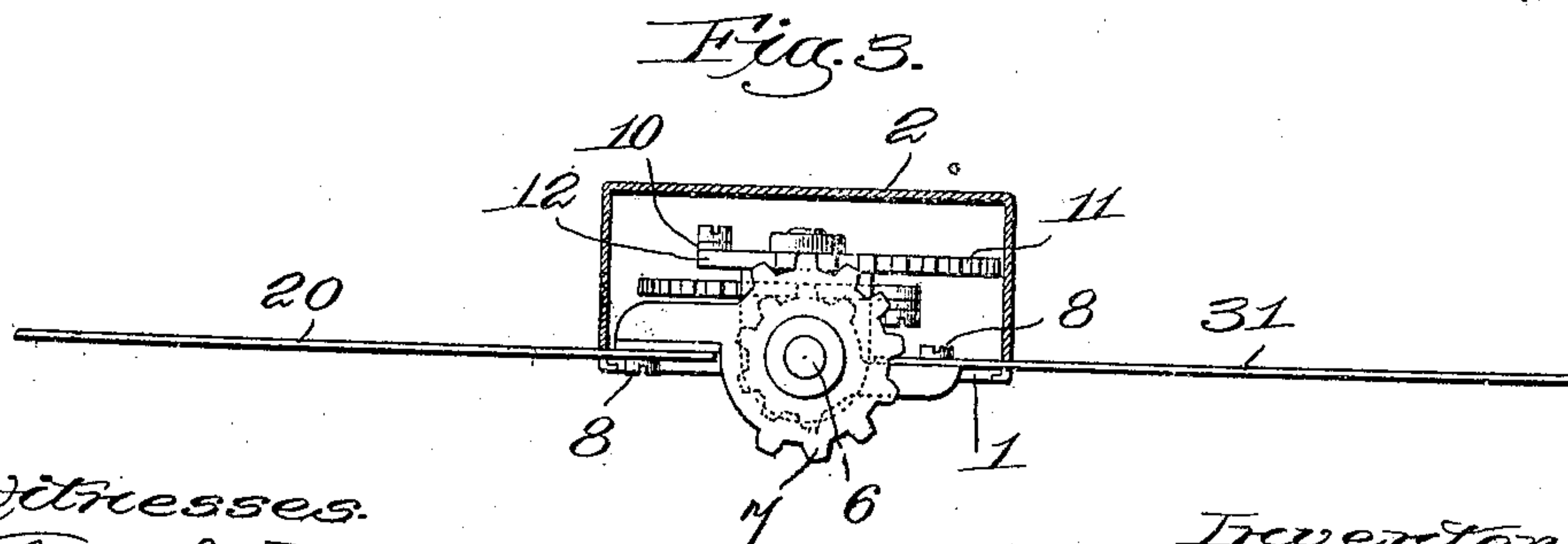
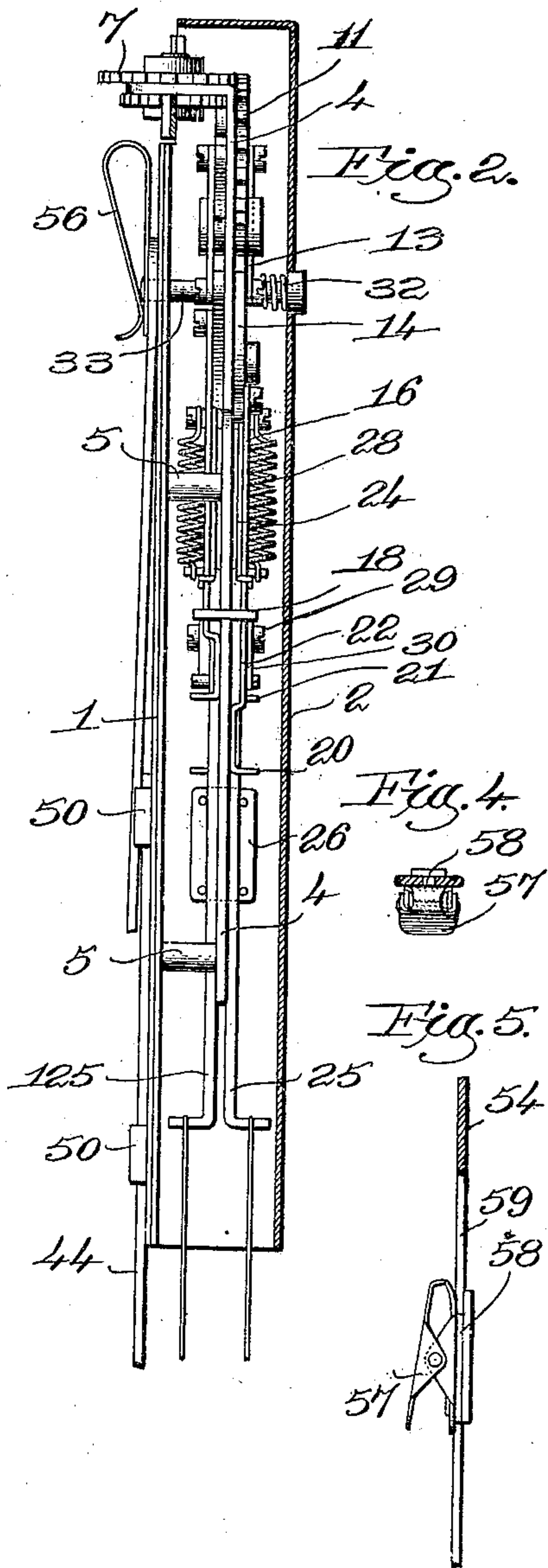
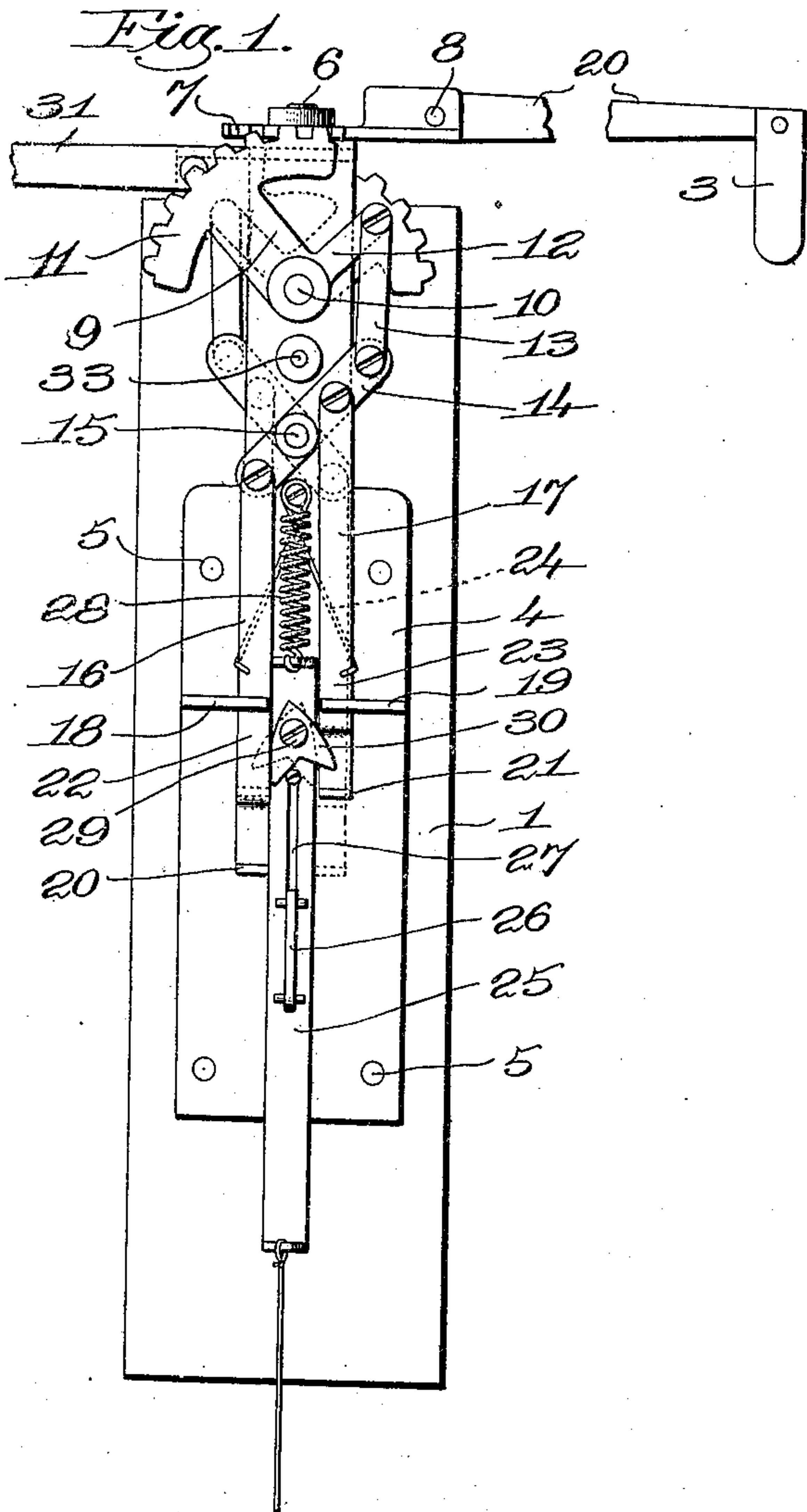


M. S. LEAL, JR.
MUSIC LEAF TURNER.
APPLICATION FILED SEPT. 30, 1910.

991,519.

Patented May 9, 1911.

3 SHEETS-SHEET 1.



Witnesses.
Thomas J. Drummond.
Joseph M. Ward.

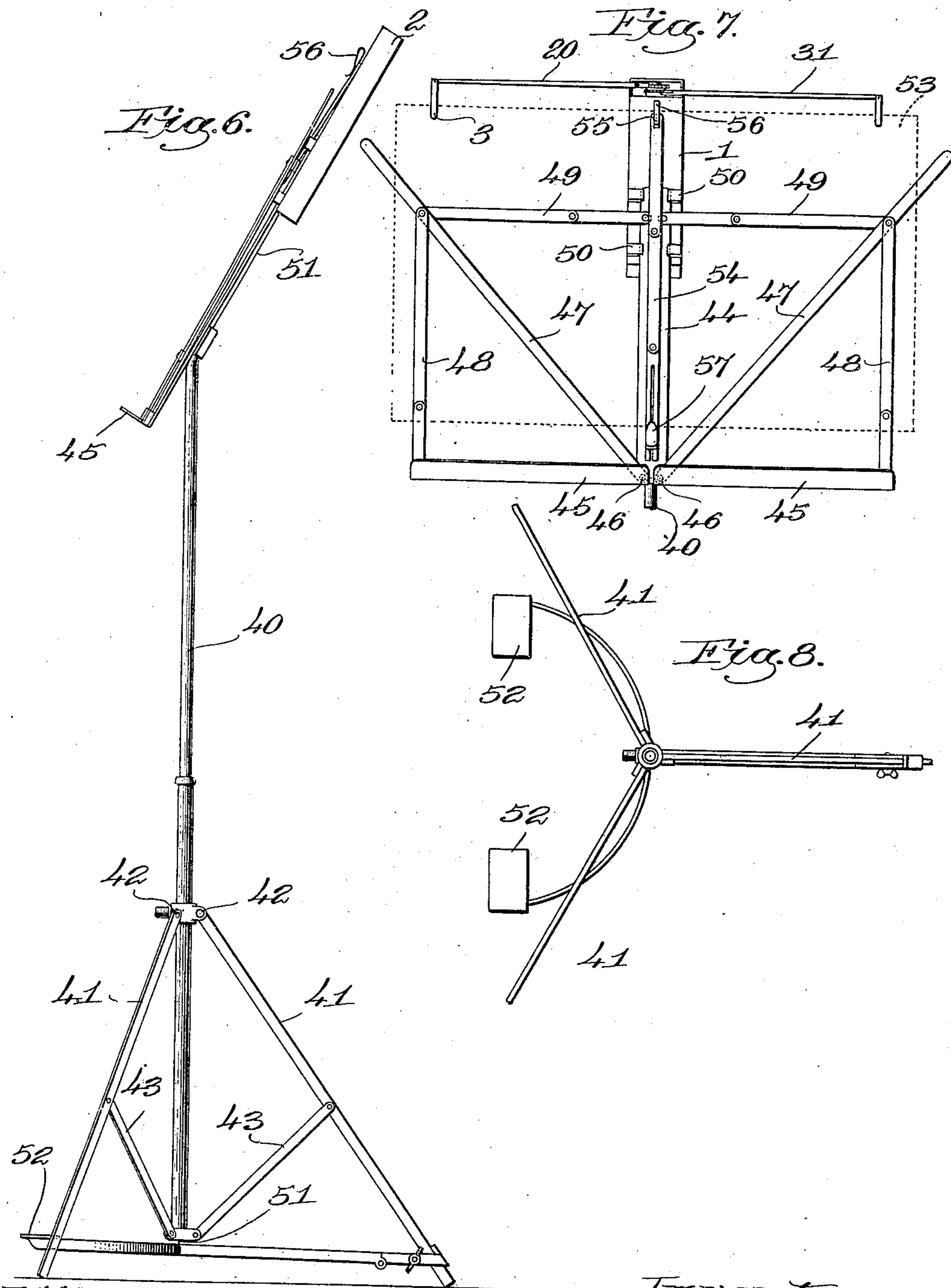
Inventor.
Manuel S. Leal, Jr.
by Leroy & Guyon Attys.

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3 SHEETS—SHEET 2.



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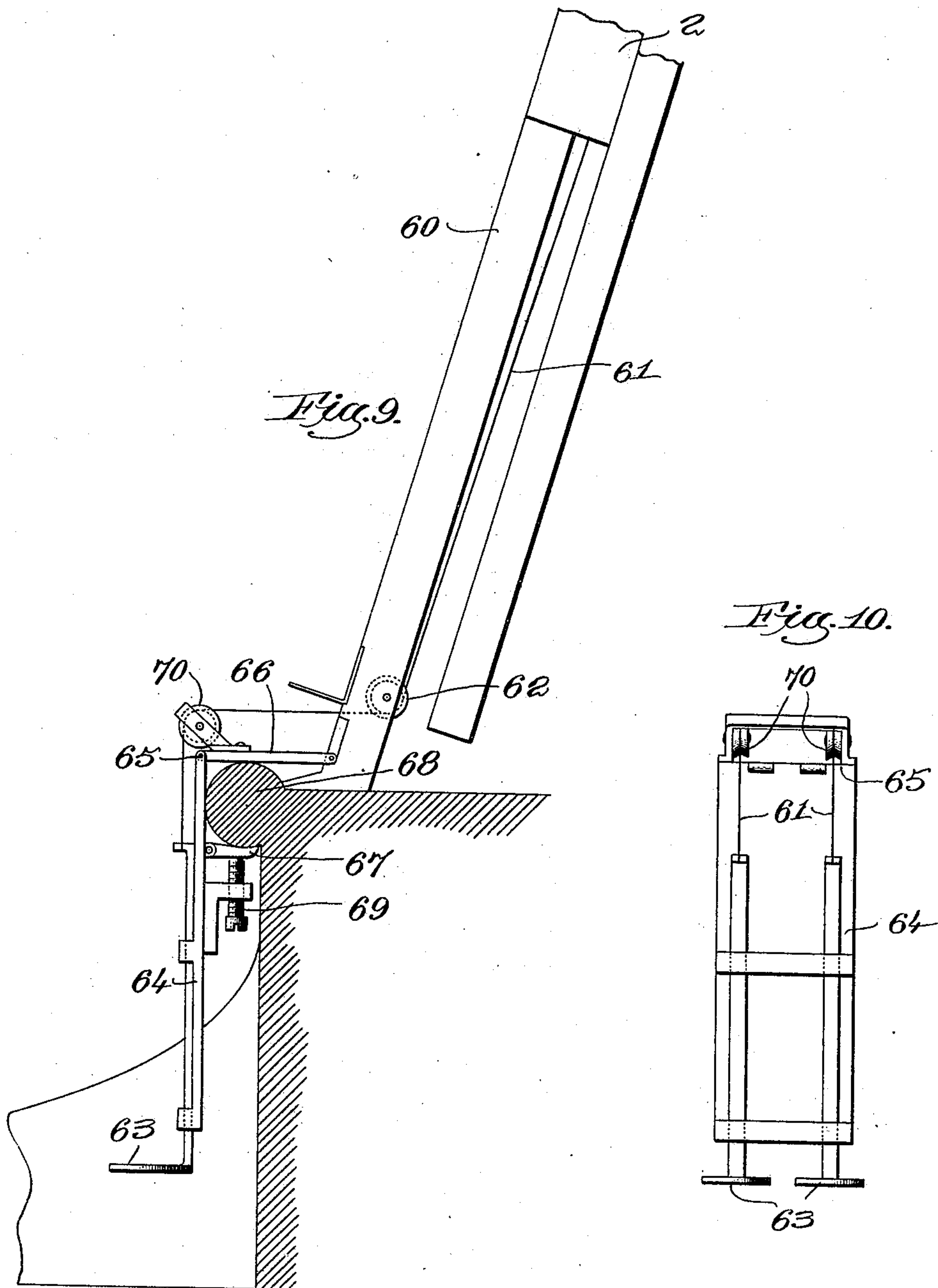
Inventor.
Marcel S. Leal, Jr.
by Leroy Murphy atty.

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3 SHEETS—SHEET 3.



Witnesses.
Thomas J. Drummond.
Joseph M. Ward.

Inventor.
Manuel S. Leal, Jr.
by *Ernest & Young Attys.*

UNITED STATES PATENT OFFICE.

MANUEL S. LEAL, JR., OF SOMERVILLE, MASSACHUSETTS.

MUSIC-LEAF TURNER.

991,519.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed September 30, 1910. Serial No. 584,661.

To all whom it may concern:

Be it known that I, MANUEL S. LEAL, JR., a citizen of the United States, and resident of Somerville, county of Middlesex, State of Massachusetts, have invented an Improvement in Music-Leaf Turners, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to a device for turning the leaves of a book of music, and its object is to provide a device of this character which can be accurately and efficiently operated in a simple manner to turn the leaves in either or both directions, and without interfering with the playing or directing of the music.

An important feature resides in the provision that each leaf may be turned in either direction when desired by the depression of the operating key either by the hand or the foot. This is important because in the playing or in the directing of the playing of music it is essential that little or no consideration should be given to the turning of the music. It is an easy matter during the playing to depress a key either with the hand or with the foot, but any other movement requires more attention.

These and other features of the invention will appear more fully from the accompanying description and drawings, and will be particularly pointed out in the claims.

The drawings show a preferred form of the invention, adapted for the control of two leaves, and arranged either in connection with a music stand or the music rest of a piano.

In the drawings, Figure 1 is a rear elevation of the principal parts of the apparatus with the cover of the inclosing casing removed. Fig. 2 is a side elevation of parts shown in Fig. 1, with the casing cover in place and in cross section. Fig. 3 is a top plan view with the casing in cross section. Fig. 4 is a detail in top plan and cross section of the device shown in Fig. 5. Fig. 5 is a side elevation of a portion of a device for positioning the book upon the music rack or rest. Fig. 6 is a side elevation of a music rack having this invention connected therewith. Fig. 7 is a front elevation of the book supporting portion of the music rack, shown in Fig. 6. Fig. 8 is a top plan view of the lower portion of the music rack to

show the keys for operating the leaf turner. Fig. 9 is a side elevation partially in cross section of a portion of a piano with a leaf turner embodying this invention applied thereto. Fig. 10 is a front elevation of the operating case and connected parts of the device, shown in Fig. 9.

The essential features of the device, namely, the leaf engaging and turning arms with the mechanism for turning them are shown in detail in the preferred form, and suitable for controlling two leaves of a book of music, in Figs. 1, 2 and 3 of the drawings, and, as therein shown, the main working parts are inclosed in a casing. The device as thus illustrated is capable of being mounted in any location where a book of music is to be used; that is, for example, upon the book rests found upon various instruments such as pianos, organs, etc., or, for example, the supporting portion of a rack independent of the instrument.

The immediate operating instrumentalities will vary somewhat according to the position which the leaf turning device may occupy under these various conditions. In the drawings two forms are shown, the parts of the device shown in Figs. 1, 2 and 3 being the same in each instance. In Figs. 6, 7 and 8 these parts are carried upon the supporting portion of an independent rack, and the operating instrumentalities are keys or pedals near the floor adapted to be depressed by the foot of the director or reader of the music; in Figs. 9 and 10 these parts are mounted upon the book rest of an ordinary piano, and the operating instrumentalities are keys extending adjacent to the keys of the pianoforte, and adapted to be operated by being depressed by the fingers of the performer.

Referring first to the main parts of the device shown in Figs. 1, 2 and 3, 1 indicates the base and 2 the cover of a rectangular metal casing supporting and containing the working parts of the device. For each leaf to be turned a leaf engaging arm 20 is provided having at its end a clasp 3 to engage the upper edge of the leaf. There may be as many of these arms as required. In the construction illustrated, two such arms are shown, and this will be found sufficient in many cases. Each arm is operated by the same group of elements, so that the increasing of the number of arms simply multiplies the other elements of the device. A sup-

porting plate 4 is carried by the pins 5 from the base 1. The mechanism for operating one arm is located upon one side of this supporting plate, and that operating the other arm upon the other side, and as these mechanisms are precisely similar in construction and operation, it will be sufficient to describe but one, namely, that shown in full in Fig. 1, which secures the operation of the arm 2. The supporting plate 4 is bent transversely at its upper end, and on this bent portion is pivotally mounted on the vertical pivot 6 a segmental gear plate 7 forming a portion of the leaf turning arm 20, this arm being jointed at 8, so that it can be folded into position parallel with the casing for packing. A swinging member 9 is pivotally mounted upon the horizontal pivot 10 on the supporting plate, and engages with and turns the arm 20. This swinging member is herein shown as a bell crank lever, one arm 11 of which constitutes a segmental gear engaging with and turning the segmental gear 7 and the other arm 12 of which is connected by a link 13 with a lever 14 fulcrumed at 15 on the supporting plate 4. A pair of parallel bars 16 and 17 are connected at their upper ends to the lever 14 on opposite sides of the fulcrum 15, and are mounted to slide on the supporting plate 4 being guided in their sliding movement by the guiding brackets 18 and 19 respectively. These bars are each bent horizontally at their lower ends to form projecting lugs 20 and 21, and they are also each formed or bent so that the portions 22 and 23 thereof respectively form vertical guides, these projecting lugs and guides coöperating with the heart trip to be described. A spring 24 engaging each of the bars 16 and 17 allows them to yield slightly laterally. A slide shown as a long flat bar 25 is mounted to slide on the supporting plate 4, being held and guided in its movement by a rib 26 projecting from the plate 4 through a slot 27 in the slide 25. This slide is normally elevated by means of a coiled spring 28 attached at its upper end to the plate 4, and at its lower end to the slide. The slide 25 carries pivoted thereto at 29 a heart trip 30 adapted to engage alternately the projecting lugs 20 and 21 of the sliding bars 16 and 17, and to be guided alternately into engagement with these projecting lugs by the guiding portions 22 and 23 of the said bars.

The operation of the parts will now be apparent. With the parts in the position shown in full lines in Fig. 1 upon the depression of the slide 25 the heart trip 30 would engage the projecting lug 21 and carry down the bar 17, thus turning the lever 14 about its pivot 15 to swing downwardly, through the medium of the link 13, the arm 12 of the swinging member 9 thus swinging the member 9 and through it the

leaf engaging arm 20 through an angle of about 180 degrees, or to the opposite position. Upon the release of the slide 25 the spring 28 acts to elevate it again into the position shown in Fig. 1, and during this elevation the heart trip held against the vertical guiding portion 23 of the bar 17 is swung into position to come into the path of the projecting lug 20 of the bar 16, the bar 16 yielding laterally under the influence of the spring 24 to allow the heart trip 30 to pass the projecting lug 20. The parts are then in the position indicated in dotted lines in Fig. 1. Upon the succeeding depression, therefore, of the slide 25 the heart trip will now engage the projecting lug 20 and carry down with it the bar 16, causing through the medium of the connected parts the reverse operation of the leaf engaging arm 20. Thus, it will be seen, that successive depressions of the slide 25 turns the leaf engaging arm in opposite directions about its pivot.

The second leaf engaging arm illustrated is shown at 31, and is mounted on the lower side of the horizontally bent upper end of the supporting plate 4, and operated by a duplicate set of mechanism of that already described, and terminating in the slide 125.

The casing cover 2 is grooved at its edges to slide on the base 1 and is held in place by a spring button 32 carried by a pin 33 extending through the supporting plate 4 and the base 1.

In Figs. 6, 7 and 8 a music rack of a general well known form, but involving novel features, enabling it to be folded into compact form, is illustrated with a leaf turning device of this invention applied thereto. The vertical standard of the rack is shown at 40 supported on the floor by the legs 41 pivoted directly thereto at 42, and connected therewith by the links 43. This standard 40 is hollow throughout, and carries at its upper end a novel form of folding support. This support comprises the central vertical standard 44, the base members 45 pivoted thereto at 46, the diagonals 47 pivoted thereto at 46, the jointed verticals 48 and the jointed top pieces 49 connecting the diagonals to the base members 45, and to the standard 44 respectively, the whole being arranged as shown so as to be readily collapsed into alinement with the standard 44.

The casing 1 and 2 with its contained elements is removably mounted on the standard 44 by means of clips 50. Cords 51 extending from the lower ends of the slides 25 and 125 are carried down through the hollow standard 40 and connected to keys 52, shown as foot levers pivotally mounted upon one of the tripod legs 41. Depression of the proper foot key 52 by the foot of the person using the music rack serves to depress the proper slide and turn its leaf engaging arm in the manner already described.

In Fig. 7 a music book is indicated at 53 in dotted lines with its leaves engaged by the clips on the leaf engaging arms. The book is supported in position to be thus engaged 5 and is positioned centrally of the rack by a device shown as a jointed rod 54 pivoted at 55 to the base 1 of the casing, and carrying at its upper end a spring clip 56, and at its lower end a spring clip 57, adjustable verti- 10 cally thereon. The preferred form of the spring clip 56 is better shown in Fig. 2, and the preferred form of the adjustable spring clip 57 in Figs. 4 and 5. The clip 57 is omitted from Fig. 6 for clearness of illus- 15 tration. The vertical adjustment of the latter is secured by the frictional engagement of its base 58 in a slot 59 in the rod 54.

In Figs. 9 and 10 the device is shown as applied to an ordinary form of pianoforte. 20 In this form the casing 2 is intended to be permanently secured to the rack 60, of the piano, and the cords 61 connected to the slides 25 and 125 extend downwardly under pulleys 62 mounted on the rack 60. The keys 63 to which the cords 61 are connected are mounted to slide vertically in a frame 64 pivoted at 65 to a bracket 66 also mounted on the rack 60. The frame 64 may be held in its operative and vertical position by a 30 clamp, and as herein shown, this clamp may consist of a pivoted finger 67 engaging a bead 68 such as commonly found on the fall board of a piano and locked thereagainst by the set screw 69. Pulleys 70 mounted on the bracket 66 serve to direct the cord 61 to the 35 keys 63. When the piano is to be closed the set screw 69 may be loosened and the frame 64 swung up about the pivot 65. It is obvious that various constructions may be employed for connecting the depressing keys to the apparatus shown in Figs. 1 and 2, and properly positioning the same upon the music support or rest, and that those herein- 40 before described are but illustrative of such construction.

It will be seen, therefore, that the essential features of the leaf turning device proper reside in those parts more particularly contained within the casing, because it is obvi- 50 ous that various forms of keys and connections may be employed to depress the slides. Whatever form of key and connection is used, however, it will be seen that a simple depression serves to turn the leaf engaging arm in either direction. The act of depres- 55 sion of a key, either by the hand or by the foot, is one which can be performed with little conscious effort, and practically unconsciously during the playing of the music, or the directing of the performance. Further- 60 more, in the playing of many instruments, such as the piano, organ, etc., the act of depression of the fingers is the act which is used to operate the instrument. It would be 65 difficult and would divert the mind of the

performer if he were called upon to operate a leaf turning device by any other act than the simple act of depression. It is important also that the book of music, and by the term book is included any pamphlet or 70 folder such as sheet music, shall be supported centrally of the leaf turning device, and in such a manner that no matter what its size it may be engaged by the leaf turning arms, and this invention provides a smooth 75 and efficient device for securing these ends.

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

1. A leaf turning device comprising a leaf 80 engaging arm mounted to turn on a vertical pivot, a swinging member mounted to turn on a horizontal pivot, and engaging with and turning said arm, a lever, a link connecting said lever and said swinging mem- 85 ber, a pair of parallel sliding bars connected at their upper ends to said lever on opposite sides of its fulcrum, a normally elevated depressible slide mounted to slide between said bars, and means to cause said slide upon suc- 90 cessive depressions to connect alternately with and depress said bars whereby upon successive depressions of the slide the arm is turned in opposite directions about its pivot.

2. A leaf turning device comprising a leaf 95 engaging arm mounted to turn on a vertical pivot, a swinging member mounted to turn on a horizontal pivot and engaging with and turning said arm, a lever, a link connecting said lever and said swinging member, a pair 100 of parallel sliding bars connected at their upper ends to said lever on opposite sides of its fulcrum, a normally elevated depressible slide mounted to slide between said bars, a horizontally projecting lug and a vertical 105 guide on each bar, a heart shaped trip pivoted on said slide and directed by the guide of one bar into the path of the lug of the other bar whereby said slide upon successive de- 110 pressions acts to depress said bars alternately, and cause the arm to turn in opposite directions about its pivot.

3. A leaf turning device comprising a leaf 115 engaging arm, terminating in a segmental gear, and pivoted to turn horizontally about the axis of said gear, a bell crank lever mounted on a horizontal pivot and having one arm provided with a segmental gear co- 120 operating with the gear of the leaf engaging arm, a lever, a link connecting said lever and the second arm of the said bell crank lever, a pair of parallel sliding bars connected at their upper ends to said lever on opposite 125 sides of its fulcrum, a normally elevated depressible slide mounted to slide between said bars and means to cause said slide upon said successive depressions to connect alternately with and depress said bars whereby upon successive depressions of the slide the arm is 130 turned in opposite directions about its pivot.

4. A leaf turning device comprising a leaf
engaging arm terminating in a segmental
gear, and pivoted to turn horizontally about
the axis of said gear, a bell crank lever
5 mounted on a horizontal pivot and having
one arm provided with a segmental gear co-
operating with the gear of the leaf engaging
arm, a lever, a link connecting said lever and
the second arm of the said bell crank lever, a
10 pair of parallel sliding bars connected at
their upper ends to said lever on opposite
sides of its fulcrum, a normally elevated de-
pressible slide mounted to slide between said
bars, a horizontally projecting lug and a ver-

tical guide on each bar, a heart shaped trip 15
pivoted on said slide and directed by the
guide of one bar into the path of the lug of
the other bar whereby said slide upon suc-
cessive depressions acts to depress said bars
alternately, and cause the arm to turn in op- 20
posite directions above its pivot.

In testimony whereof, I have signed my
name to this specification, in the presence of
two subscribing witnesses.

MANUEL S. LEAL, JR.

Witnesses:

LEONA CHANDLER,

FREDERICK S. GREENLEAF.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
