

R. M. NEIMAN.
MUSIC LEAF TURNER.
APPLICATION FILED MAR. 4, 1911.

1,059,901.

Patented Apr. 22, 1913.

4 SHEETS-SHEET 1.

Fig. 1.

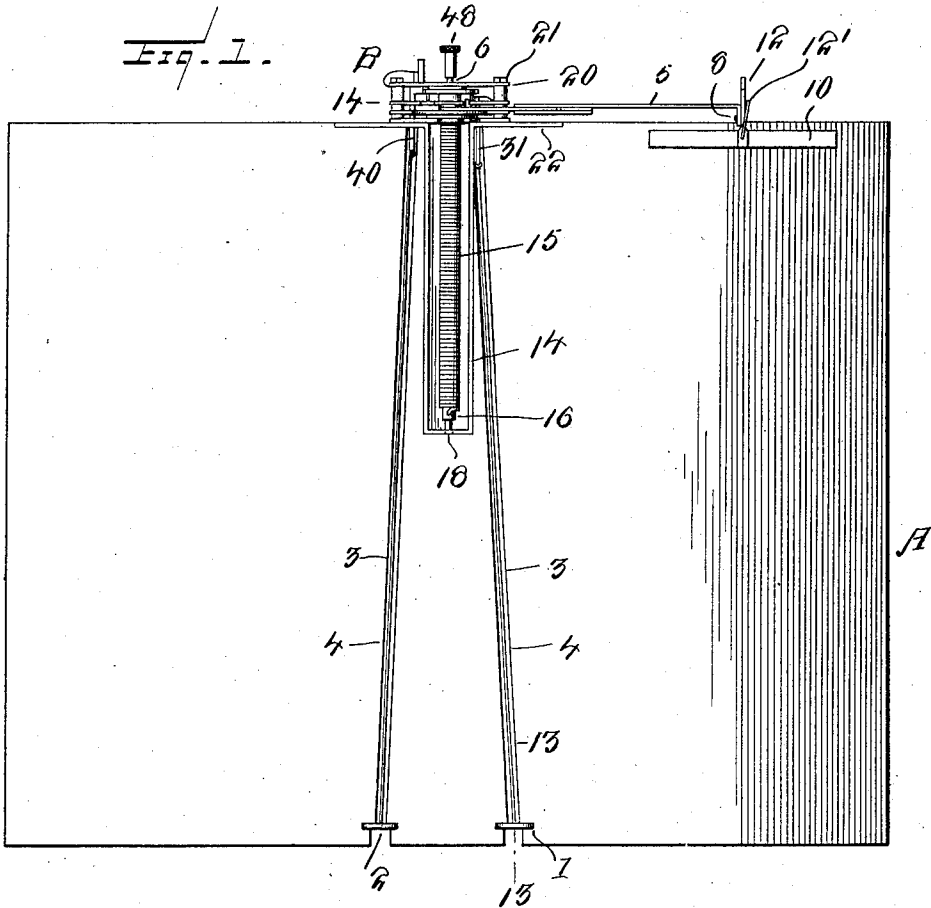
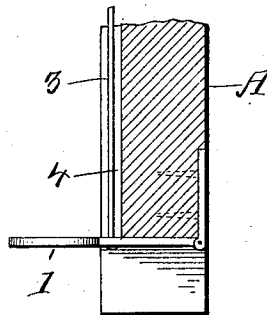


Fig. 13.



Witnesses
E. R. Ruppert
C. M. Lang.

Inventor
Ralph M. Neiman

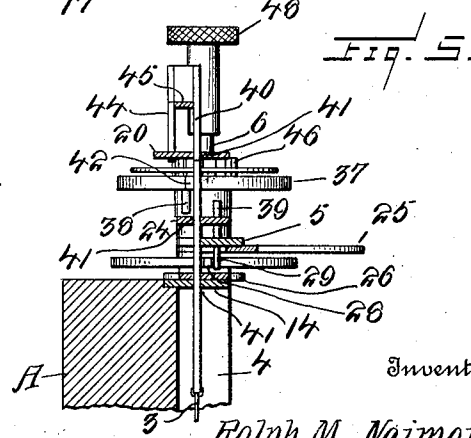
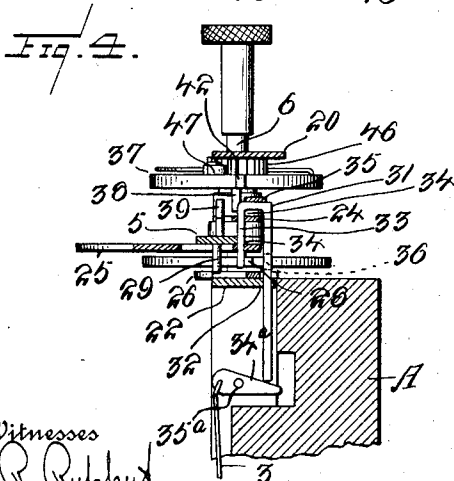
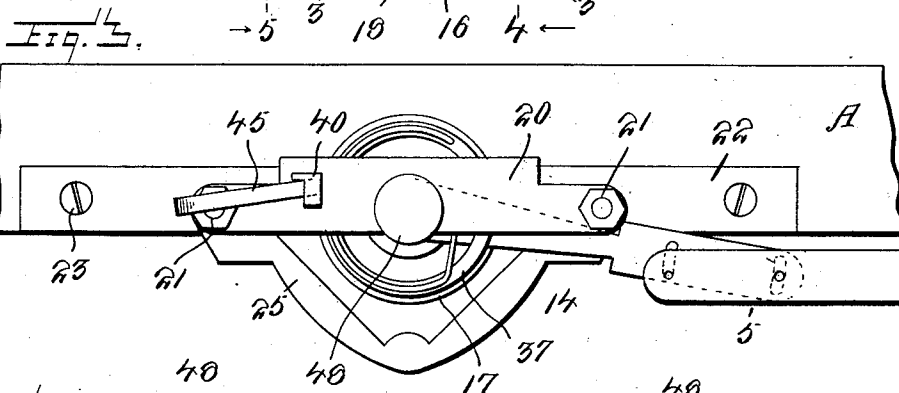
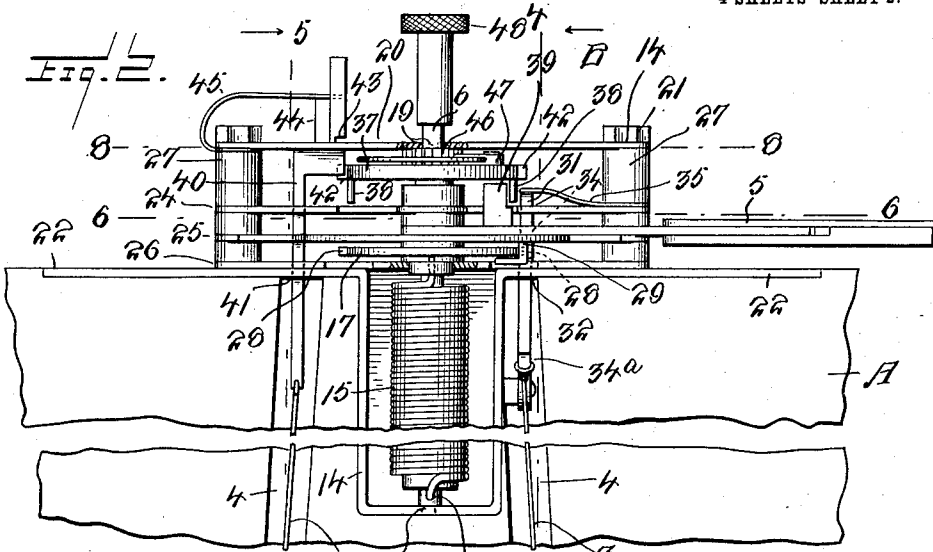
By Victor J. Evans
Attorney

R. M. NEIMAN.
MUSIC LEAF TURNER.
APPLICATION FILED MAR. 4, 1911.

1,059,901.

Patented Apr. 22, 1913.

4 SHEETS—SHEET 2.



Witnesses
E. R. Ruppert.
C. R. Ruppert.

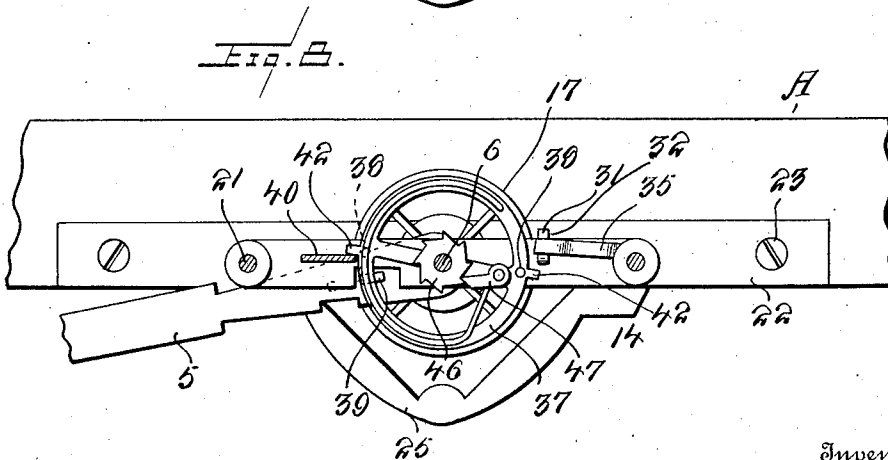
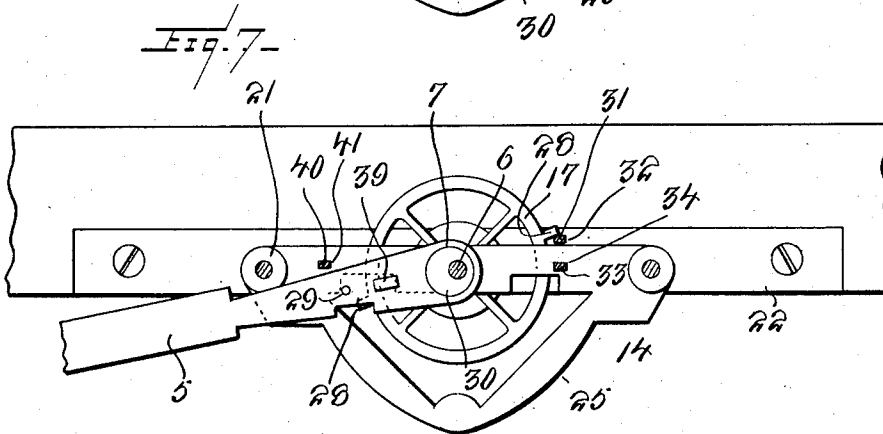
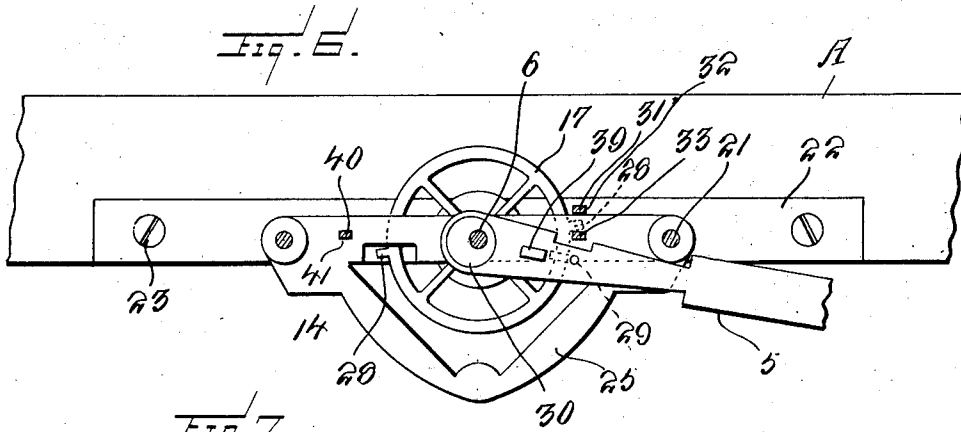
Inventor
Ralph M. Neiman
By Victor J. Evans
Attorney

R. M. NEIMAN.
MUSIC LEAF TURNER.
APPLICATION FILED MAR. 4, 1911.

1,059,901.

Patented Apr. 22, 1913.

4 SHEETS—SHEET 3.



Witnesses
E. R. Ruppert.
C. M. Ruppert.

Inventor
Ralph M. Neiman

By Victor J. Evans
Attorney

R. M. NEIMAN.
MUSIC LEAF TURNER.
APPLICATION FILED MAR. 4, 1911.

1,059,901.

Patented Apr. 22, 1913.

4 SHEETS-SHEET 4.

Fig. 9.

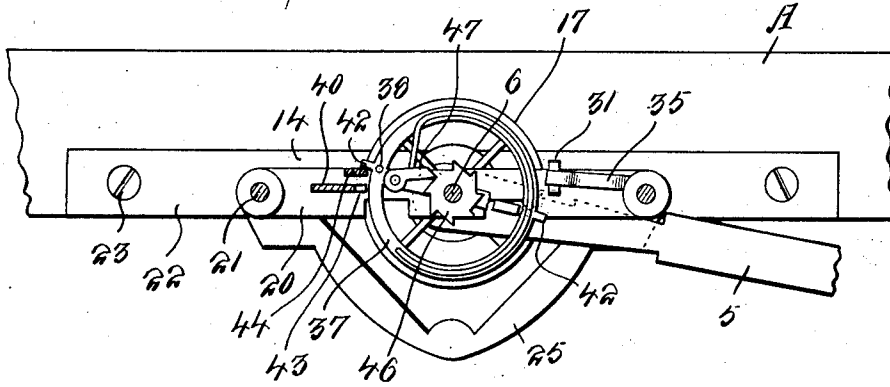


Fig. 10.

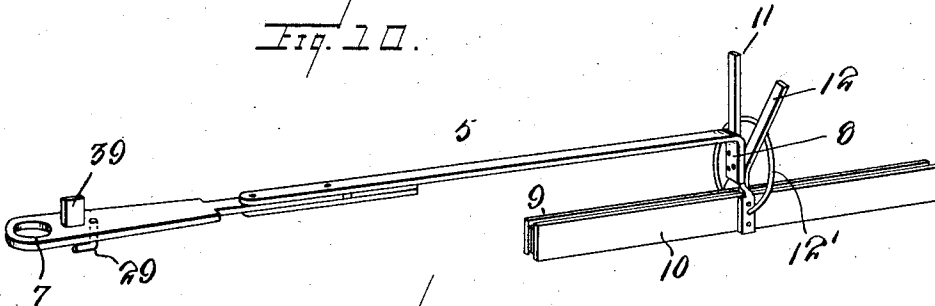


Fig. 11.

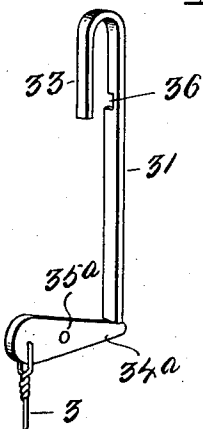
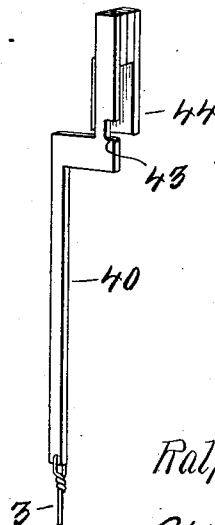


Fig. 12.



Witnesses
E. R. Ruppert
C. M. ...

Inventor
Ralph M. Neiman
By Victor J. Evans
Attorney

UNITED STATES PATENT OFFICE.

RALPH M. NEIMAN, OF LANCASTER, NEBRASKA.

MUSIC-LEAF TURNER.

1,059,901.

Specification of Letters Patent.

Patented Apr. 22, 1913.

Application filed March 4, 1911. Serial No. 612,251.

To all whom it may concern:

Be it known that I, RALPH M. NEIMAN, a citizen of the United States, residing at Lancaster, in the county of Lancaster and State of Nebraska, have invented new and useful Improvements in Music-Leaf Turners, of which the following is a specification.

This invention relates to a music leaf turned of that type in which the leaf to be turned can be turned forwardly or backwardly by the pressing of separate keys, thus rendering it unnecessary to turn the leaf in the usual rather awkward manner.

The invention has for one of its objects to improve and simplify the construction and operation of devices of this character so as to be reliable and efficient in use, readily manipulated, and of comparatively simple and durable construction.

Another object of the invention is the provision of a leaf-turning device including an arm for turning the leaf that is adapted to be actuated both forwardly and backwardly by a single spring which can be wound and placed under tension from time to time as required.

A further object of the invention is the provision of novel means for throwing the leaf-turning arm forwardly, in conjunction with novel means for throwing the arm backwardly when it is necessary to repeat a portion of the music.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawings, which illustrate one embodiment of the invention, Figure 1 is a front view of the music leaf turner. Fig. 2 is an enlarged front view of the arm-throwing mechanism. Fig. 3 is an enlarged plan view of the said mechanism. Figs. 4 and 5 are vertical sections on lines 4-4 and 5-5, Fig. 2. Fig. 6 is a horizontal section on line 6-6, Fig. 2, showing the forward arm-throwing element in set position for throwing the arm. Fig. 7 is a similar view showing the arm thrown. Fig. 8 is a horizontal section on the line 8-8, Fig. 2, showing the backward arm-throwing ele-

ment preparatory to the arm being thrown. Fig. 9 is a similar view showing the arm thrown backwardly. Fig. 10 is a perspective view of the leaf-turning arm. Fig. 11 is a perspective view of the dog or catch for the upper arm-throwing element or wheel. Fig. 12 is a perspective view of the catch or dog for the lower arm-throwing wheel. Fig. 13 is a detail sectional view on line 13-13 of Fig. 1, showing one of the keys.

Similar reference characters are employed to designate corresponding parts throughout the views.

Referring to the drawing, A designates a support in the form of a plate or other suitable structure which is adapted to be held on the music holder of the organ or piano, the support being disposed upright and having at its upper edge the leaf-turning mechanism B which is controlled by keys 1 and 2 at the lower edge of the support. The key 1 is depressed when the leaf of the music is to be turned forwardly, while the key 2 is depressed when the leaf is to be thrown backwardly for repeating any part of the music. These keys are hinged on the bottom of the support A, and each is connected, by a pull wire 3 or equivalent means, with the mechanism B, the said wires being disposed in channels 4 in the front face of the support A.

The mechanism B includes a leaf-turning element or arm 5 which swings in a horizontal plane on a vertical shaft 6 as an axis, which shaft passes through an opening 7 in one end of the arm. The outer end of the arm 5 is bent downwardly at 8 and carries a pair of jaws 9 and 10 which grip the upper edge of the leaf to be turned. The jaw 9 has an upwardly-extending lug 11 riveted to the extremity 8 of the leaf-turning arm, while the jaw 10 has a lug 12 pivoted to the said extremity, the upper ends of the lugs being normally spaced apart. The jaws are held closed by a spring 12' which is shaped like a ring with its ends engaging the middle portions of the jaws so as to hold the latter closed. By pressing the upper ends of the members 11 and 12 together, the jaws will be opened against the tension of the spring.

The shaft 6 extends longitudinally of a rectangular frame 14 which is set into the support A and surrounding this shaft is a torsional spring 15 which has its lower end

connected at 16 with the shaft and its upper end connected with a wheel 17 which throws the leaf-turning element 5 to the left or forwardly. The lower end of the shaft is journaled in a bearing 18 in the lower part of the frame 14, while the upper end is journaled in a bearing 19 in a cross piece 20 which is fastened by bolts 21 to the upper end of the frame 14. The frame 14 is a strip of metal formed into a rectangular or U-shaped structure with oppositely-bent members 22 at its upper end which are fastened to the support A by screws 23 and it is through these ends 22 that the bolts 21 pass. Between the upper end of the frame 14 and upper cross piece 20 are additional cross pieces 24, 25 and 26 that are held in place by the bolts 21, there being spacers 27 on the bolts to hold the cross pieces spaced apart. These cross pieces have openings to permit the shaft 6 to pass therethrough.

The wheel 17 is disposed between the cross pieces 25 and 26 and it is provided with teeth 28 at diametrically opposite points which are adapted to engage a tooth 29 on the arm 5, so that as the wheel turns the arm will move with it. The arm 5 is disposed eccentric to the axis of the wheel 17, so that after the latter turns through one hundred and eighty degrees approximately, the tooth of the wheel will disengage the tooth 29 of the arm 5 after said arm has been turned from the right to the left. This permits the wheel 17 to turn in one direction while the arm is capable of being thrown backwardly or to the right. The leaf-turning arm is arranged eccentrically to the wheel 17 by means of a bearing or fixed eccentric 30 on the top side of the cross piece 25.

The arm-throwing wheel 17 is normally held against rotation under the spring 15 by means of a catch 31 which slides vertically in an opening 32 in the right member 22 of the frame 14, the upper end of the catch being formed with a vertical finger or bill 33 that slides in openings 34 in the cross pieces 24 and 25, the lower end of the finger being disposed in the path of the teeth 28 of the wheel 17. This catch or dog 31 is held downwardly in wheel-engaging position by a leaf spring 35 arranged to press on the upper end of the catch and this spring also maintains the lower end of the catch on a lever 34^a fulcrumed at 35^a on the frame 14. The front end of the lever is connected with the wire 3 which leads to the right key 1. When this key is depressed, the catch is raised so that the wheel 17 can make a half turn and carry the leaf-turning arm with it. In Fig. 6, the leaf-throwing wheel 17 is ready to throw the element, and as soon as the catch is disengaged from the right tooth, the torsional spring 15 comes into play and moves such

right tooth into engagement with the tooth 29 on the arm 5 and as soon as the arm reaches its left hand position, the teeth automatically disengage but the wheel is prevented from continuing its rotation by the other tooth 28 thereof striking the back of the catch 31 which is held raised by the key 1 being still depressed. This catch 31 is provided with a recess 36 that permits the tooth to pass when the catch has reached the end of its downward movement by its spring upon the key being released. The recess 36 is so disposed that its bottom is located approximately in a horizontal plane with the lower end of the finger 33 of the catch so that when the tooth passes through the recess, the said finger will be in a position to engage the tooth and hold the wheel 17 against further movement until the key 1 is again depressed.

In order to reverse the leaf-turning element or arm 5, an upper arm-throwing wheel 37 is rigid on the shaft 6 and on this wheel are depending teeth 38 arranged diametrically opposite from each other. These teeth are adapted to engage an upwardly-extending tooth 39 on the arm 5, and as the arm is eccentric to the wheel 37 the tooth on the wheel will disengage the tooth on the arm after the latter has been moved from the left to the right. The rotation of the wheel is effected by the spring 15 acting through the shaft 6, and the wheel is controlled by a catch 40 which slides vertically through openings 41 in the parallel cross pieces fastened to the frame 14. On the wheel 37 are outwardly-extending teeth 42 which alternately engage with the catch 40 and in this catch is a recess 43 which is moved into the plane of the wheel when the key 2 is depressed, so that the wheel will be released for the purpose of throwing the leaf-turning arm to the right. Continued rotation of the wheel is interrupted by the opposite tooth 42 from that first engaged with the catch striking the rear side of a finger 44 formed on the catch 40. The catch 40 is held normally raised by a leaf spring 45, and when the catch is moved upwardly upon the release of the key 2 the finger with which the tooth 42 has been engaged will slide upwardly past such tooth and allow the upper wheel to turn until it strikes that part of the catch 40 under the recess 43 where the wheel will be held until the key 2 is again depressed. The wheel 37 is connected with the arm 5 by means of a ratchet wheel 46 fixed on the shaft and a spring-pressed pawl 47 fixed on the wheel 37, and on the upper end of the shaft is a knob 48 whereby the shaft can be turned in a direction for winding the spring without the upper wheel turning therewith.

From the foregoing description, taken in connection with the accompanying draw-

ings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have
 5 described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made
 10 when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim as new, is:—

15 1. An apparatus of the class described comprising a support, a leaf-turning element mounted thereon, a helical torsion spring mounted on the support, separate devices connected with the spring for throwing
 20 the element alternately in opposite directions, a controlling dog for each device, and a key connected with each dog for releasing the same.

2. An apparatus of the class described
 25 comprising a support, a vertically-disposed shaft mounted thereon, separate wheels on the shaft, a leaf-turning element disposed between the wheels and mounted to turn on an axis eccentric to the axis of the wheels, a
 30 member on each wheel for engaging the element for turning the latter and automatically disengaged from the element after the latter is turned due to the eccentricity of the elements and wheels, key-actuated means
 35 for controlling the movement of the wheels, a spring directly connected at one end with one wheel for turning the same and indirectly connected at the other end with the other wheel through the said shaft for turning
 40 such wheel oppositely to the first-mentioned wheel.

3. An apparatus of the class described comprising a support, a vertically-disposed shaft thereon, a spring coiled around the
 45 shaft and having one end connected therewith, spaced wheels on the shaft, the lower wheel being connected with the other end of the spring, a pawl and ratchet device between the upper wheel and shaft for causing
 50 the wheel and shaft to turn together in one direction and for permitting the shaft to turn in the opposite direction independently of the wheel for winding the spring, a device controlling the turning of each wheel,
 55 and a leaf-turning element associated with the wheels to be thrown in opposite directions by the alternate action of the said devices.

4. An apparatus of the class described
 60 comprising a support, a vertically-disposed shaft thereon, a spring coiled around the shaft and having one end connected therewith, spaced wheels on the shaft, the lower wheel being connected with the other end of
 65 the spring, a pawl and ratchet device be-

tween the upper wheel and shaft for causing the wheel and shaft to turn together in one direction and for permitting the shaft to turn in the opposite direction independently
 70 of the wheel for winding the spring, a device controlling the turning of each wheel, a leaf-turning element mounted between the wheels and arranged eccentrically to the latter, a plurality of teeth on each wheel, and
 75 teeth on the element arranged respectively to be engaged by the teeth of the wheels to turn the element in opposite directions by the alternate movement of the wheels.

5. An apparatus of the class described comprising a support, a vertical shaft
 80 mounted thereon, a spring having one end connected with the shaft, a wheel mounted on the shaft and connected with the other end of the spring to turn in one direction, a second wheel disposed above the first and
 85 connected with the shaft to turn in the opposite direction, catches disposed at opposite sides of the shaft engaging the wheels, keys for releasing the catches from the wheels, whereby the latter may be rotated,
 90 a leaf-turning element through which the shaft extends, a bearing located eccentrically to the shaft and on which the element turns, means on one wheel for turning the element in one direction, and means on the other
 95 wheel for turning the element in the opposite direction.

6. An apparatus of the class described comprising upper and lower wheels, means
 100 connected with the wheels for turning the latter in opposite directions, teeth arranged at diametrically opposite points on each of the wheels, a spring-pressed device engaging one of the teeth of the lower wheel,
 105 a slidable device for engaging the teeth of the upper wheel to permit the latter to make a half turn at a time, keys connected with the devices for releasing the latter from engagement with the teeth whereby
 110 the wheels may revolve, a leaf-turning element mounted between and eccentrically to the axis of the wheels, a tooth on the element for engaging with a tooth of the lower wheel to move with the latter, teeth on the
 115 upper wheel, a tooth on the element for engaging one of the last-mentioned teeth to turn with the upper wheel in the opposite direction, and means for turning the wheels.

7. An apparatus of the class described comprising upper and lower wheels, teeth
 120 arranged at diametrically opposite points on each of the wheels, a spring-pressed device engaging one of the teeth of the lower wheel, a slidable device for engaging and disengaging the teeth of the upper wheel to
 125 permit the latter to make a half turn at a time, keys connected with the devices for releasing the latter from engagement with the teeth whereby the wheels may revolve, a leaf-turning element mounted between and
 130

eccentrically to the axis of the wheels, a
tooth on the element for engaging with a
tooth of the lower wheel to move with the
latter, teeth on the upper wheel, a tooth on
5 the element for engaging one of the last-
mentioned teeth to turn with the upper
wheel in the opposite direction, and a single
spring operatively connected with the

wheels for turning the same in opposite di-
rections.

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

RALPH M. NEIMAN.

Witnesses:

THOMAS J. WARD,
EVERETT EDWARDS.

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