

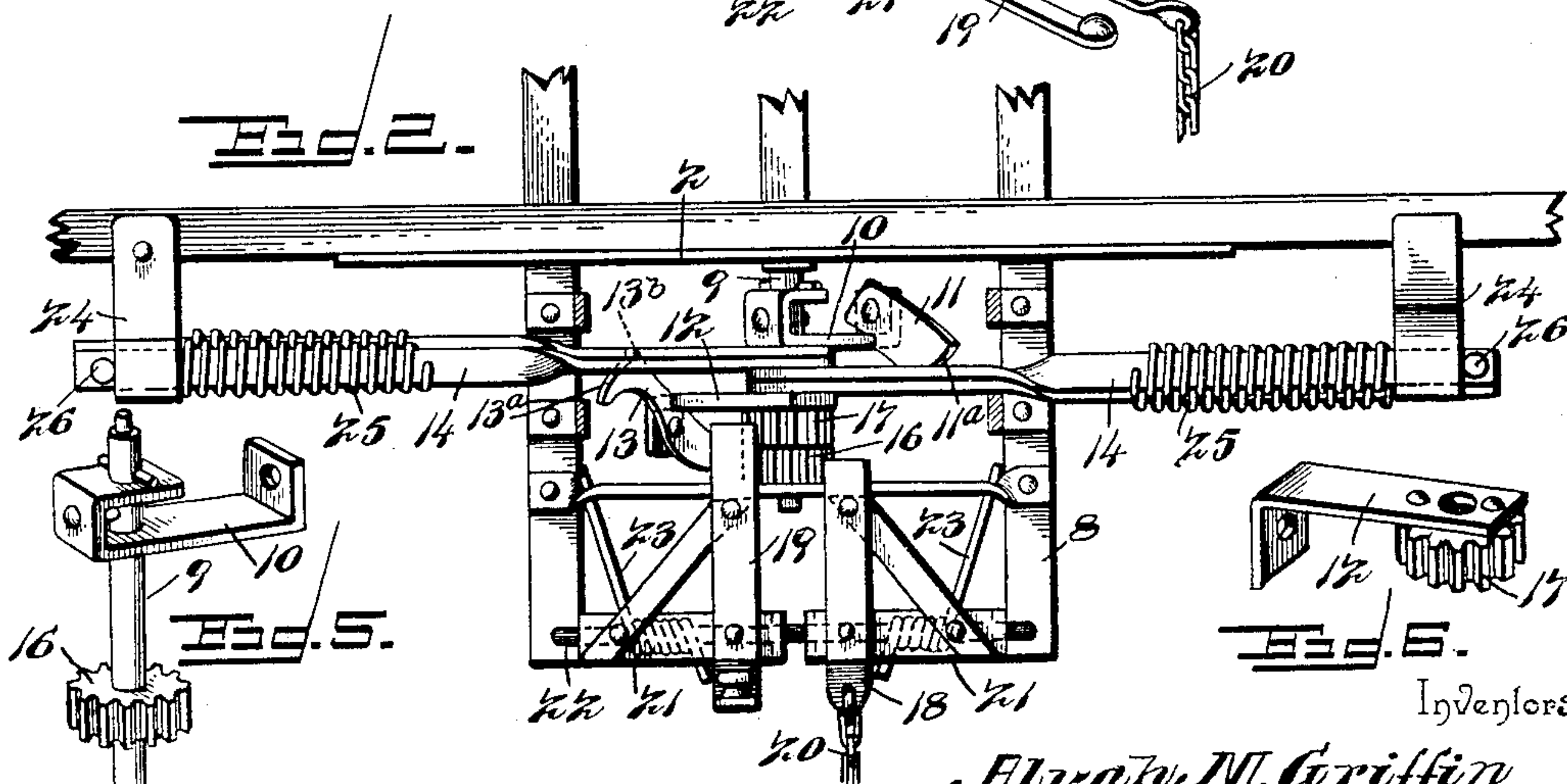
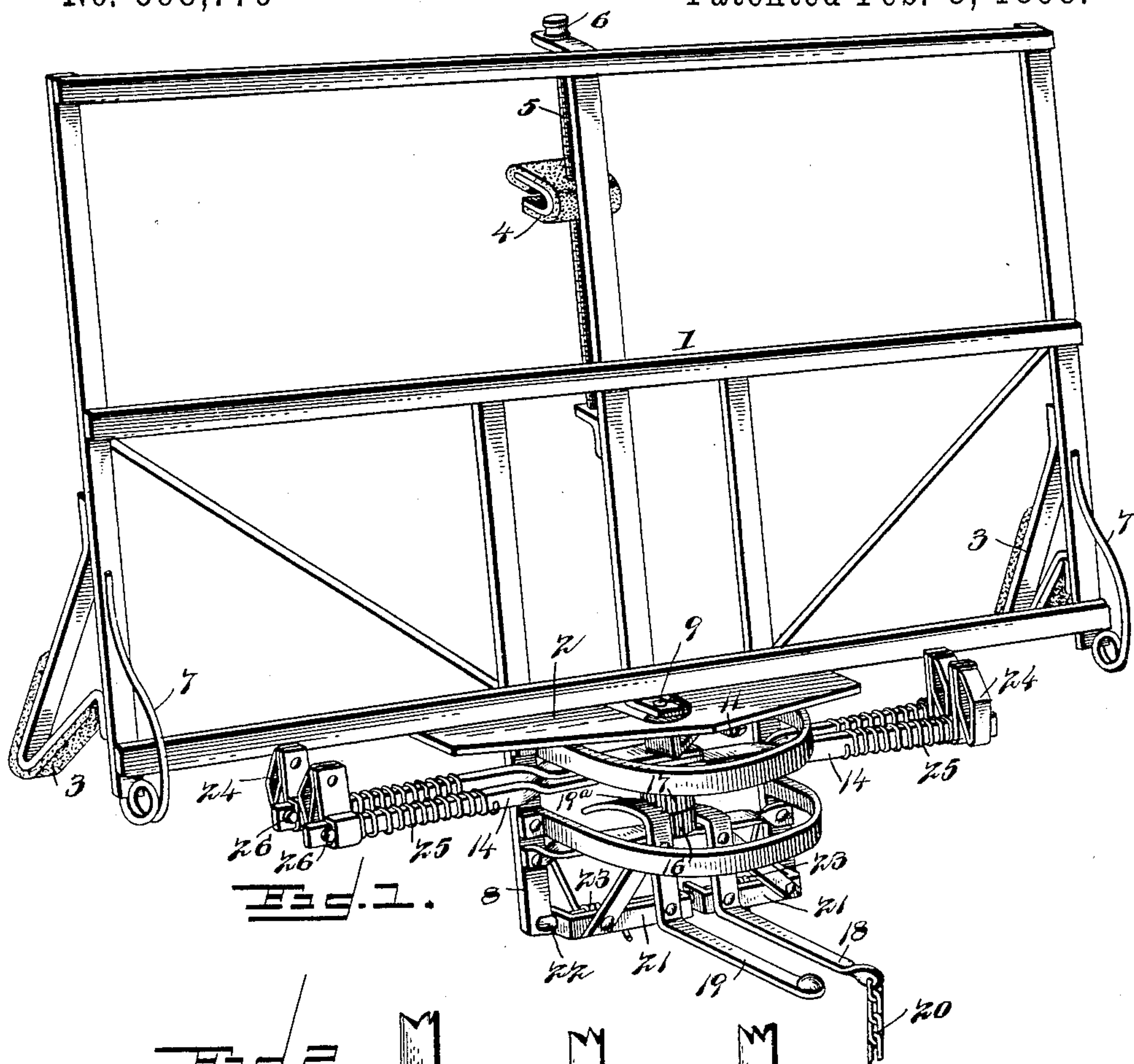
(No Model.)

2 Sheets—Sheet 1.

A. M. GRIFFIN & F. H. SHULER.
MUSIC LEAF TURNER.

No. 598,779

Patented Feb. 8, 1898.



Witnesses
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By their Attorneys,

Alvah M. Griffin
Frederick H. Shuler

Calhoun & Co.

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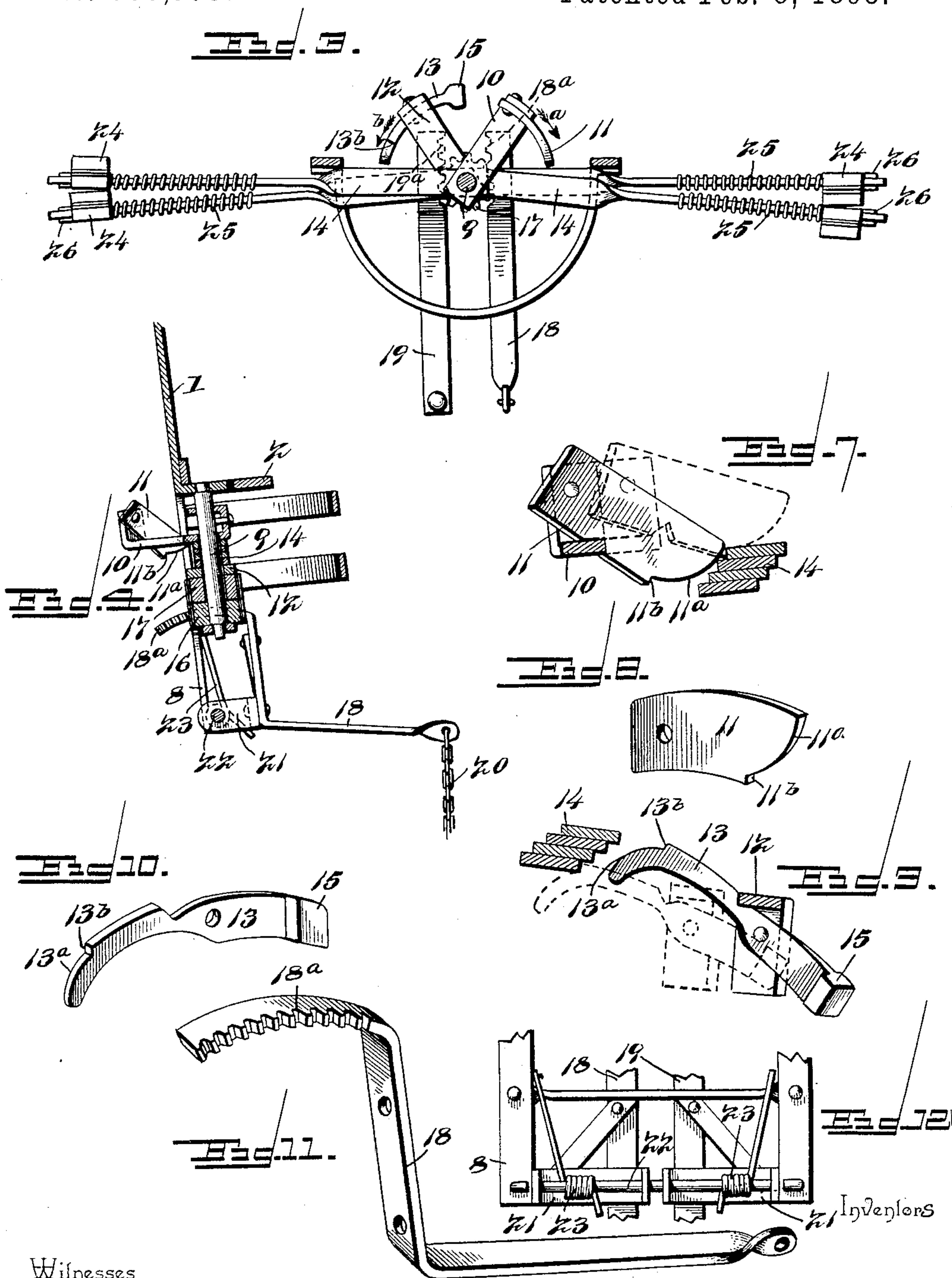
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UNITED STATES PATENT OFFICE

ALVAH M. GRIFFIN AND FREDERICK H. SHULER, OF VINING, KANSAS.

MUSIC-LEAF TURNER.

SPECIFICATION forming part of Letters Patent No. 598,779, dated February 8, 1898.

Application filed March 8, 1897. Serial No. 626,471. (No model.)

To all whom it may concern:

Be it known that we, ALVAH M. GRIFFIN and FREDERICK H. SHULER, citizens of the United States, residing at Vining, in the county of Clay and State of Kansas, have invented a new and useful Music-Leaf Turner, of which the following is a specification.

Our invention relates to music-leaf turners, and has for its object to provide a simple and efficient construction and arrangement of parts whereby the leaves of a book or sheet-music may be turned either forward or backward with the minimum exertion upon the part of the operator.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of an apparatus constructed in accordance with our invention. Fig. 2 is a detail front view of the mechanism for operating the turning-arms. Fig. 3 is a detail plan view of the operating mechanism, the rack and the rest for supporting the book or sheet being omitted. Fig. 4 is a detail vertical section of the operating mechanism, taken in the plane of the spindle upon which the turning-arms are fulcrumed. Fig. 5 is a detail view in perspective of the spindle and the attached pinion and pawl-carrying arm, whereby forward motion is communicated to the turning-arms. Fig. 6 is a similar view of the pawl-carrying arm and attached pinion for communicating backward movement to the turning-arms. Fig. 7 is a detail view of the forwardly-operating pawl and the arm by which it is carried, said pawl being shown in operative relation with the turning-arms. Fig. 8 is a detail view of said pawl detached. Fig. 9 is a detail view of the rearward-operating pawl and the arm by which it is carried, said pawl being shown in operative relation with the turning-arms. Fig. 10 is a detail view of said arm detached. Fig. 11 is a detail view in perspective of one of the operating-levers. Fig. 12 is a detail rear view of the rockers to which the operating-levers are secured.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a rack provided with a book or sheet rest 2, adapted to be arranged upon the music-rack of a piano, organ, or similar instrument, the same having clothed supports 3 and an adjustable clip 4 for engaging the rack of the instrument, said adjustable clip being mounted upon a screw-rod 5, terminating at its upper end in a finger-hold or knob 6 to facilitate adjustment. Also, the rack is provided at its extremities with spring-actuated holding-fingers 7 to engage the portions, as the covers, of a sheet or book which is supported by the rest 2.

Mounted below the plane of the rest, upon a depending bracket 8, is a spindle 9, to which is fixed a pawl-carrying arm 10, having a forwardly-operating pawl 11, and loosely mounted upon said spindle is a pawl-carrying arm 12, to which is pivoted a rearwardly-operating pawl 13. These pawls are provided with beveled faces 11^a and 13^a, respectively, and also with shoulders 11^b and 13^b, respectively, to cooperate with the turning-arms 14, which are coaxially mounted upon the spindle between the planes of the pawl-carrying arms, as shown clearly in Figs. 2 and 4. These turning-arms are arranged in relatively flat parallel positions contiguous to their fulcrumed extremities to occupy contiguous planes, and the construction and arrangement of the operating-pawls are such that when the forwardly-operating pawl is actuated in the direction indicated by the arrow *a* in Fig. 3 the beveled face 11^a thereof rides upon the rear edges of the arms and thereby raises the free end of said pawl (see Fig. 7) against a yielding force (in this case gravity being depended upon as the yielding force) until the shoulder 11^b reaches a point in the plane of the uppermost or the terminal arm, this being the first one to be actuated. The continued forward motion of the pawl-carrying arm 10 causes forward-swinging movement to be communicated to said uppermost or terminal turning-arm and enables the operator to swing said turning-arm to a position at the left of the rack. Figs. 1, 2, and 3 show the turning-arms equally divided at the right and left of the rack, while in Fig. 7 all of the arms are shown in one position. In the same way when forwardly-swinging movement is imparted to the rearwardly-oper-

ating pawl 13 in the direction indicated by the arrow *b* in Fig. 3 the front end of said pawl, by the contact of its beveled face 13^a with the contiguous rear edges of the turning-arms 14, is depressed (said front end being normally held elevated by a yielding force, in this case gravity, by reason of the weighted rear end of the pawl, as shown at 15) until the shoulder 13^b reaches a point in the plane of the lowermost or terminal turning-arm, (see dotted lines in Fig. 9,) when the continued forward movement of the pawl will impart swinging movement to said terminal or lowermost turning-arm and will move the latter to a position at the right of the rack. In Fig. 9 all of the turning-arms are shown in operative relation with the rearward-operating pawl.

The means which we have illustrated in the drawings for actuating the turning-arms include pinions 16 and 17, respectively connected with the forward pawl-carrying arms 10 and 12, the pinion 16 being preferably keyed to the spindle 9, while the pinion 17 is secured directly to the turning-arm 12 and turns loosely upon the spindle, and forwardly and rearwardly operating levers 18 and 19, provided with segmental toothed arms 18^a and 19^a, which respectively mesh with the pinions 16 and 17 at opposite sides thereof, whereby downward movement of the front end of either lever will communicate forwardly-swinging movement to the operating-arm connected to the pinion with which the segmental arm of said lever meshes. In other words, if the front end of the operating-lever 18 is depressed—and this may be accomplished either by direct pressure upon the lever or by means of a foot-treadle (not shown) through the medium of the flexible connection 20—the pinion 16 is turned to actuate the operating-arm 10 in the direction indicated by the arrow *a* in Fig. 3, whereas the depression of the front end of the lever 19 will cause the pinion 17 to turn in a direction to impart motion in the direction of the arrow *b* in Fig. 3 to the operating-arm 12.

The operating-levers may be fulcrumed in any suitable manner upon the bracket 8, as by means of rockers 21, fitted upon a transverse rod 22 and provided with return-springs 23. Furthermore, any suitable means may be employed in connection with the turning-arms for engaging the leaves to be turned, such as clasps 24, mounted to slide upon the arms and yieldingly held at the limit of their outward movement (or movement toward the extremities of the arms) by springs 25, coiled upon the arms, the limit of such outward movement being determined by stop-pins 26. This adjustment of the clasps upon the arms enables the device to be adapted for sheets and books having leaves of different widths and also enables the clasps to exert an outward strain upon the leaves to maintain them in a flat condition upon the rack.

By using pawls 11 and 13 of such construction as to have at their free or operative ends an extent of movement or "throw" which is equal in extent to the combined thicknesses of the contiguous extremities of all of the turning-arms in use I am enabled to employ operating-arms 10 and 12, which are mounted to operate permanently in given planes, or, in other words, I am enabled to avoid movement of the arms 10 and 12 in a direction parallel with the axis of the turning-arms and yet insure the engagement of the shoulder of either of said pawls with the desired turning-arm; also, in order that the free end of each pawl may be capable of the necessary movement adapted to bring its shoulder 11^b or 13^b in engagement with the uppermost or lowermost turning-arm respectively I construct the cam-faces 11^a and 13^a of an extent equal to the combined thicknesses of the turning-arms. Hence whether all of the turning-arms are arranged at one side of the spindle and therefore in the path of a given pawl or whether only one of the turning-arms is in the path of said pawl the cam-face of that pawl must come in contact with the edge of the turning-arm when the operating-arm is actuated.

It will be understood that in practice various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described our invention, what we claim is—

1. In a leaf-turning apparatus, the combination with coaxially-mounted turning-arms arranged in contiguous planes, of coaxially-mounted upper and lower operating-arms arranged for movement in fixed planes respectively above and below the uppermost and lowermost turning-arms, and respectively carrying forwardly and rearwardly operating pawls to engage said uppermost and lowermost turning-arms, and each pawl being capable of a pivotal movement equal in extent at its engaging-point to the combined thicknesses of said turning-arms, and means for actuating the operating-arms, substantially as specified.

2. In a leaf-turning apparatus, the combination with coaxially-mounted turning-arms arranged in contiguous planes, of coaxially-mounted upper and lower operating-arms arranged for movement in fixed planes respectively above and below the uppermost and lowermost turning-arms, and respectively carrying forwardly and rearwardly-operating pawls to engage said uppermost and lowermost turning-arms, each pawl being capable of a pivotal movement equal in extent at its engaging-point to the combined thicknesses of said turning-arms, and having a cam-face projecting beyond said engaging-points to an extent equal to said combined thicknesses of

the turning-arms, and means for actuating said operating-arms, substantially as specified.

3. In a leaf-turning apparatus, the combination with coaxially-mounted turning-arms arranged in contiguous planes, of coaxially-mounted upper and lower operating-arms arranged for movement in fixed planes respectively above and below the uppermost and lowermost turning-arms, and respectively carrying forwardly and rearwardly operating pawls to engage said uppermost and lowermost turning-arms, said pawls being pivotally mounted upon the operating-arms for vertical movement at their free ends through a distance equal to the combined thicknesses of the turning-arms, and being yieldingly held by gravity in their normal positions, and means for actuating said operating-arms, substantially as specified.

4. In a leaf-turning apparatus, the combination with turning-arms and means for actuating the same, of clasps mounted for longitudinal

movement upon the turning-arms to engage the leaves to be turned, said clasps being yieldingly impelled toward the outer extremities of the arms to maintain the engaged leaves in a flattened or taut condition, substantially as specified.

5. In a leaf-turning apparatus, the combination with turning-arms and means for actuating the same, of clasps for engaging the leaves mounted to slide longitudinally upon the turning-arms, and springs for yieldingly holding the clasps at points contiguous to the extremities of the arms, substantially as specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

ALVAH M. GRIFFIN.
FREDERICK H. SHULER.

Witnesses:

L. PFISTER,
E. D. CURTIS.