

No. 885,852.

PATENTED APR. 28, 1908.

F. LOWE.

MUSIC SHEET TURNER.

APPLICATION FILED DEC. 12, 1906.

2 SHEETS—SHEET 1.

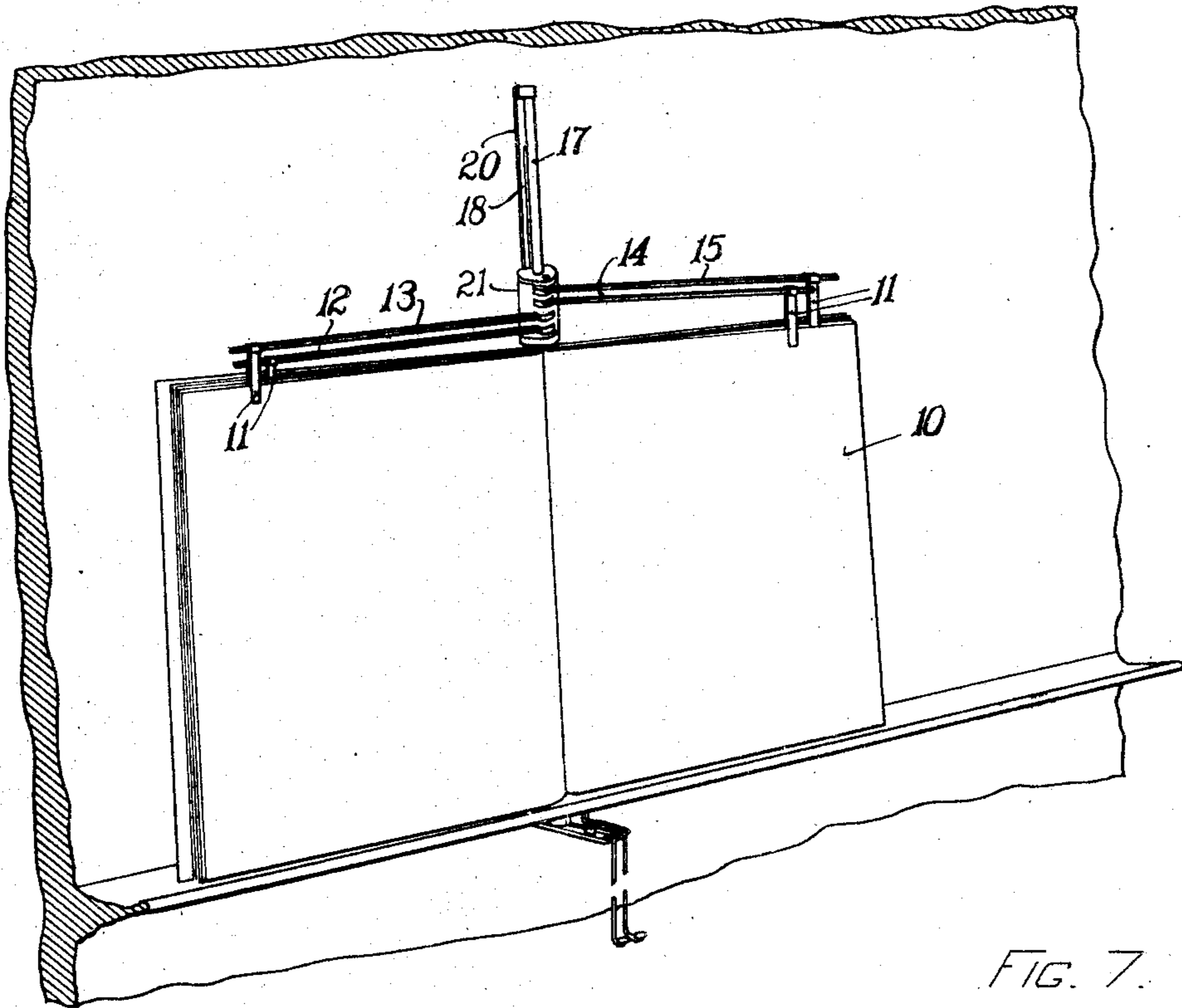


FIG. 1.

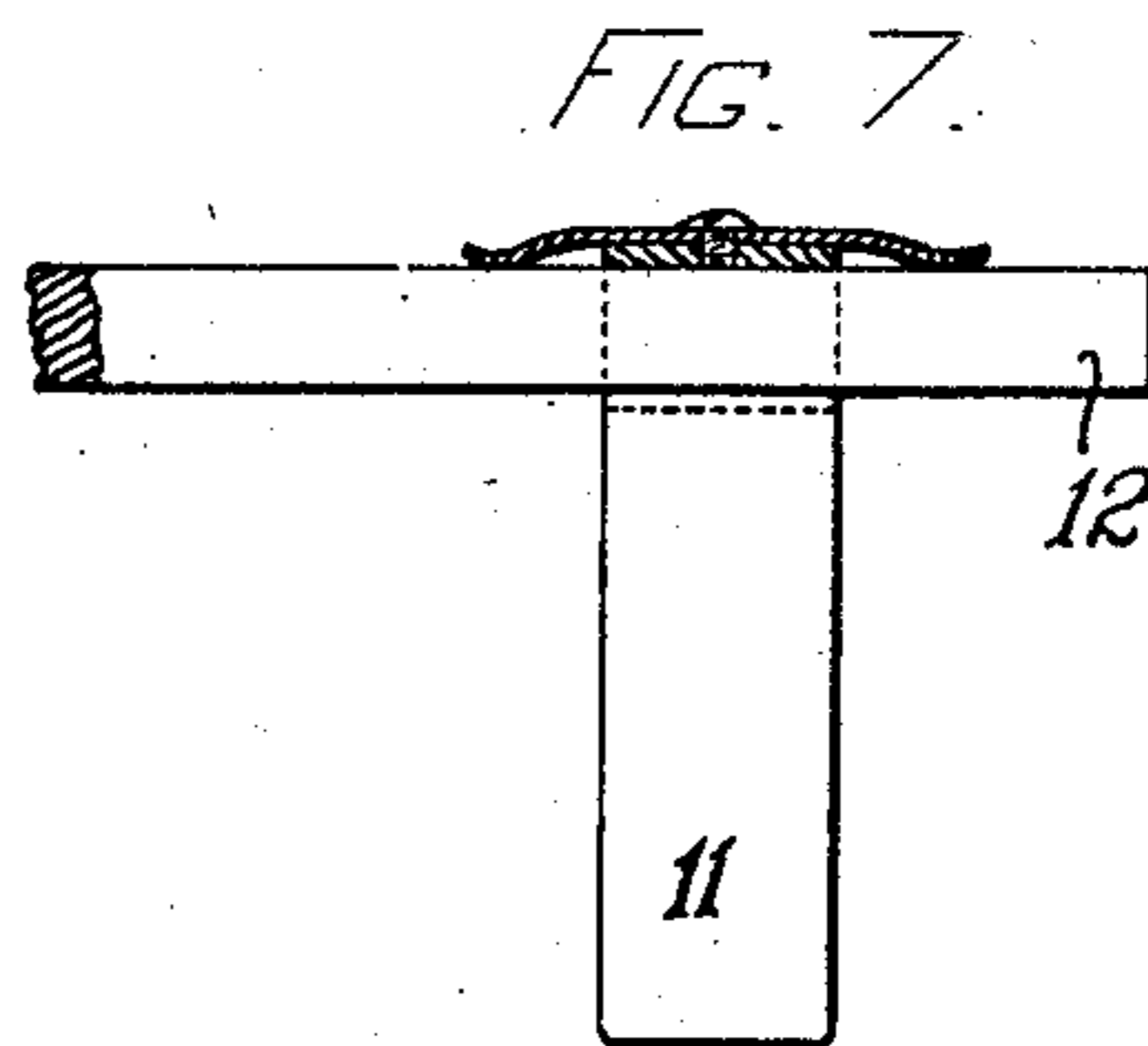


FIG. 7.

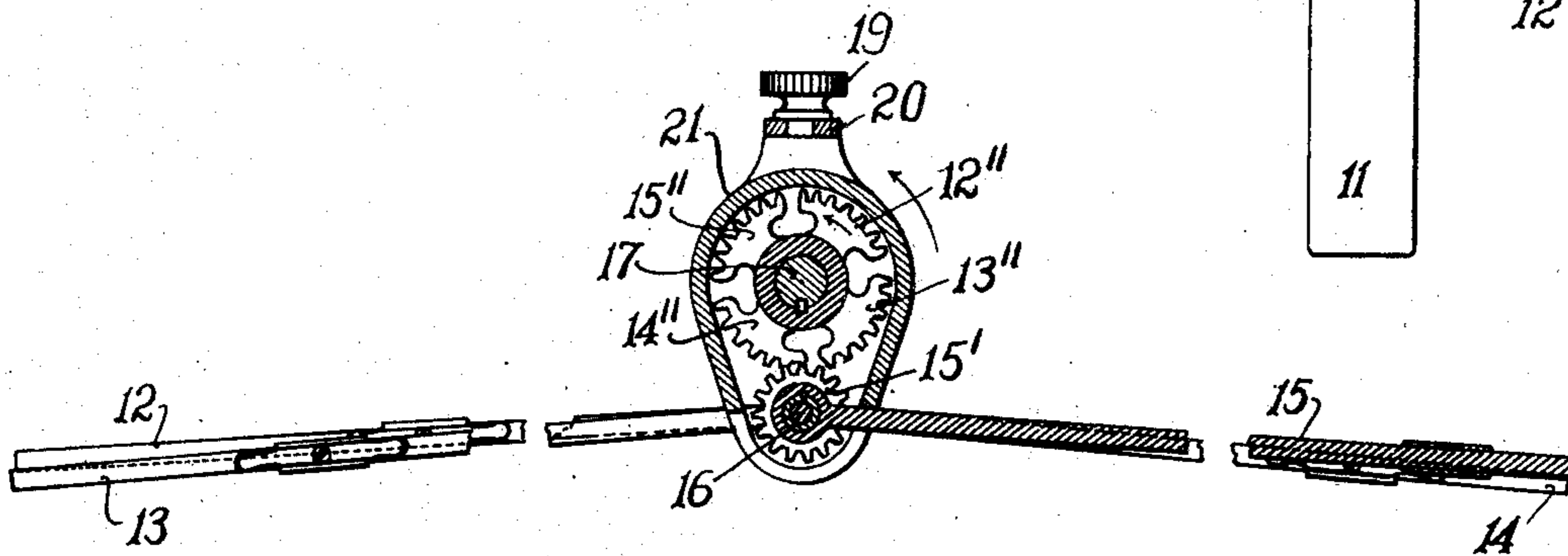


FIG. 2.

WITNESSES

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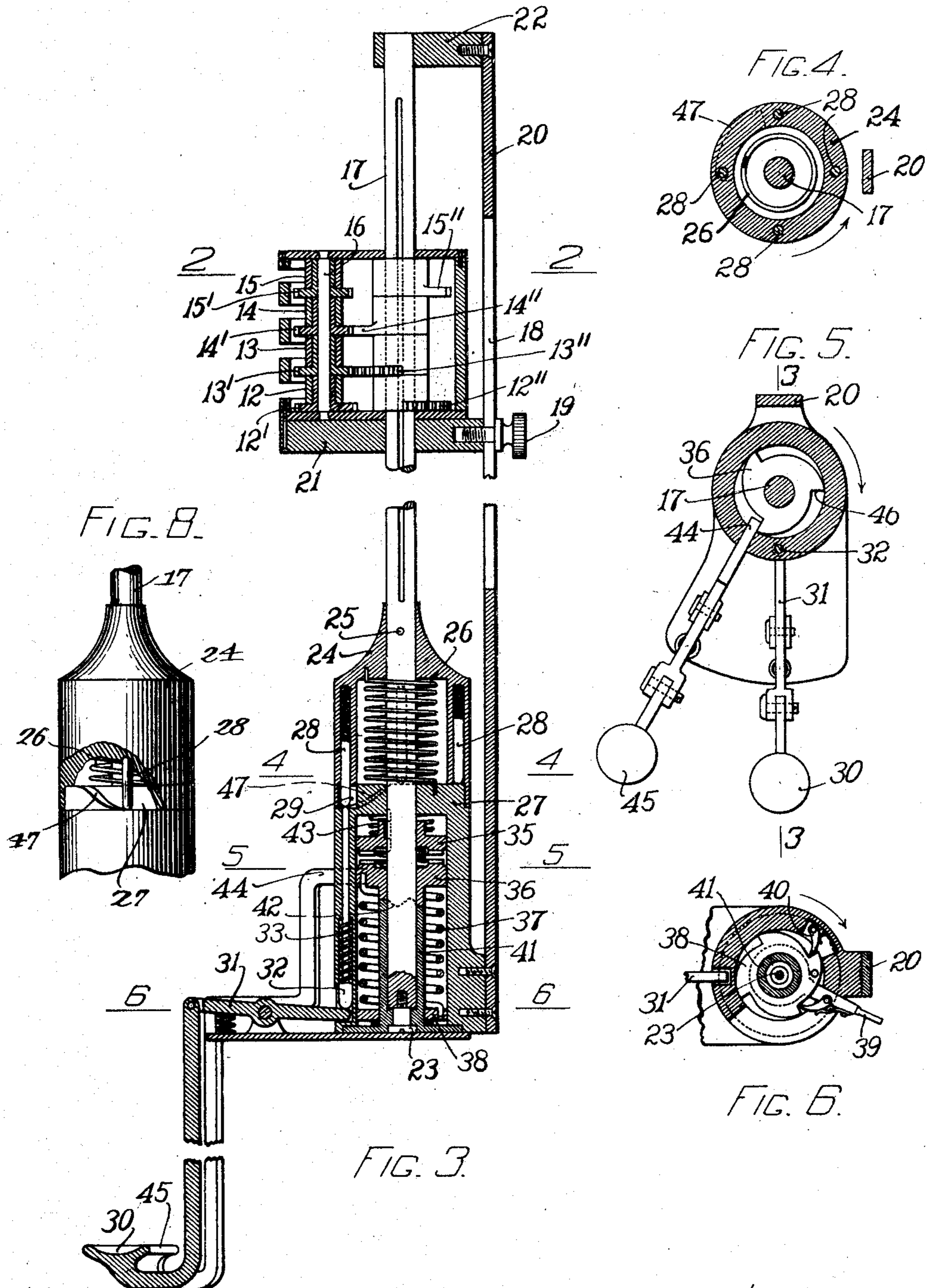
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

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## MUSIC-SHEET TURNER.

No. 885,852.

Specification of Letters Patent.

Patented April 28, 1908.

Application filed December 12, 1906. Serial No. 347,436.

*To all whom it may concern:*

Be it known that I, FREDERICK LOWE, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Music-Sheet Turners, of which the following is a specification.

This invention relates to music sheet turners.

More particularly, it relates to devices intended to be used in connection with a book or sheets of music upon a piano, or a music rest, by the operation of which a page of music may be turned by the player by simply touching a lever with his finger or foot. In the device here shown pages may be turned in either direction by touching a key.

One form of device embodying the invention is shown in the accompanying drawings, in which

Figure 1 represents in perspective the apparatus applied to a book of music. Fig. 2 is a plan view in section on the line 2—2 of Fig. 3. Fig. 3 is an elevation in section, the section in the lower part being taken on the line 3—3 of Fig. 5. Fig. 4 is a sectional plan on the line 4—4 of Fig. 3. Fig. 5 is a sectional plan on the line 5—5 of Fig. 3. Fig. 6 is a sectional plan on the line 6—6 of Fig. 3. Fig. 7 is an enlarged representation of the end portion of one of the music turning arms shown in front elevation. Fig. 8 is a side elevation of a detail, with a part represented as broken away.

Referring to the drawings: 10 represents a leaf or a sheet of music, which may be clasped by spring fingers 11 mounted on swinging arms 12, 13, 14 and 15, which are similar in construction but are designated by different numerals for clearness in description. Any desired number of these arms may be provided. All of them are pivotally mounted, one above the other, on a counter shaft 16, and each of them has at that point a pinion 12', 13', 14' and 15' arranged to mesh respectively in quadrants 12'', 13'', 14'' and 15'' mounted on a rotatable vertical shaft 17. The hubs of these quadrants are splined to the shaft and are adjustable up or down to any desired position, and may be fastened in position by a set screw 19, which clamps a stationary rear upright bar 20, all the parts thus described as movable on shaft 17 being inclosed in a casing 21 from which screw 19 projects through slot 18. The quadrants are arranged on this rotating shaft in the position

indicated in Figs. 2 and 3, and bear the relation to the pinions there indicated, in which during a complete rotation of the shaft the quadrants successively come into engagement, each with its proper pinion, the movement of a quadrant from its beginning to its end past the medial line causing a nearly complete half revolution of the pinion; for example, the quadrant 14'' has just come into engagement with its pinion 14' in Fig. 2, and when it moves a quarter revolution in the direction of the arrow it will cause the pinion to rotate a half revolution in the opposite direction, thus throwing the arm 14, which is attached to page 10, through a half revolution and turning the page. The quarter rotation of the shaft which caused this turning has brought the quadrant 15'' to the position which quadrant 14'' occupies in Fig. 2, ready to engage and turn pinion 15' and arm 15 when the shaft is next given a quarter revolution. By referring to Fig. 3 it will be seen that the quadrants are spaced vertically suitable distances apart, so that each quadrant meshes with one pinion and no other, and therefore is out of mesh three-fourths of the time. Although the apparatus is here shown as it may be used to turn four sheets of music in succession, it will be obvious that by suitable changes in the number and proportion of the parts described it might be made to turn any desired number of sheets. When operated in the reverse direction the same actions take place reversely.

The operation of the foregoing mechanism is effected by giving successive quarter revolutions in the desired direction to the shaft 17. This shaft is journaled at the top in piece 22 and at the bottom in the base of the apparatus, and may conveniently be held in place by a screw 23 having a flanged head. At the lower part of the shaft a hood 24 encircles the same and is rigidly attached in any convenient method, indicated in the drawing by a pin 25. This incloses and protects a torsional spring 26, one end of which, being hooked into the hood and the other into the stationary part 27, tends to rotate the hood and attached shaft in the direction shown by the arrow in Fig. 4, which is the direction for turning leaves under normal condition as one progresses from page to page. Such rotation is prevented by spring-pressed pins 28, carried by the hood, each of which when opposite a depression 29 in the stationary part of the base is forced therein,

and constitutes a latch, locking the shaft against rotation under influence of spring 26. Such pin may be raised, thus releasing the shaft and allowing it to rotate under said influence by depressing key 30, which, acting through a lever 31, raises releasing-pin 32, forcing pin 28 upward and thus unlatching hood 24. Said releasing pin is normally maintained retracted and inactive by its spring 33. There are four of the latch pins 28, and each engages in the notch or depression 29 upon reaching it. Thus, the shaft 17 turns but one-fourth revolution each time it is released by a momentary depression of key 30.

The mechanism for turning pages in reverse direction is as follows: In a cavity within the base 27 is a clutch in the form of a two-part sleeve, having one member 35 slidably but not rotatably mounted on shaft 17, with teeth or serrations pointed downward toward the opposing member 36, which is mounted below it loosely on the shaft and has similar serrations pointed upward to engage as a clutch. A spring 37 is attached at one end to the member 36 and tends to rotate it in the opposite direction from the rotative effect of spring 26, having its other end attached to a ratchet disk 38 (see Fig. 6) which may be rotated in one direction to wind the spring by a lever and pawl 39, but is always held against reverse rotation by a pawl 40. Clutch member 36 rests upon a stationary sleeve 45 which also forms a socket for shaft 17, which sleeve has an upper cam surface 42 bearing against a similar surface on clutch member 36, so formed that when the clutch member rotates thereon it rises, moving in the axial direction of the shaft, in order to pass over the high places of the cam. In so doing it engages the opposing teeth of clutch member 35 and rotates them, this member being held in suitable position by a spring 43; and this rotates shaft 17 in the reverse direction from that in which it is rotated by spring 26. Normally, clutch member 36 is locked against rotation by a latch 44 (see Fig. 5) which may be released by the operator by depressing lever 45. When thus released the latch 44 is withdrawn from the ratchet teeth 46 on the periphery of clutch member 36. This allows spring 37 to rotate clutch 36, during which operation the clutch member 36 is raised by the cam 42 into engagement with the opposing clutch member 35, and thus rotates the shaft 17. This rotation continues as long as the latch 44 remains disengaged, and in so doing spring 26 is wound, this spring being weaker than spring 37, the pins 28 sliding up an inclined surface 47 (seen dotted in elevation in Fig. 3 and in plan in Fig. 4) out of the notch 29. This is the motion for turning leaves in the reverse direction, as, for example, re-turning *de capo*. If it is desired to re-turn but a

single page that may be effected by touching lever 45 only instantaneously. In such case it will engage the very next tooth 46.

Another feature of the invention consists in the separation of the teeth on ratchet 46 at greater angular distances than the separation of the pins 28. Thus, as represented in Fig. 5, the teeth are 120 degrees apart, while the pins 28, shown in these drawings, are 90 degrees apart. The difference is allowed for the rotation which takes place while clutch member 36 is rising into engagement and falling away therefrom, leaving an active period of engagement sufficient to rotate the hood and pins the desired 90 degrees.

In operation, the spring 37 is first wound by means of the ratchet lever 39, and the spring 26 is then wound by depressing lever 45; and the apparatus is then ready for use. Each time lever 30 is depressed the music is turned one page forward. By depressing lever 45 momentarily the music will be turned one page backward, incidentally re-winding spring 26 correspondingly, in order to turn forward over the same page, by depressing lever 30 when ready. A return to the very beginning may be made simply by holding lever 45 depressed.

The spring 37 is preferably made of large capacity so that one winding will suffice for a long time, even larger than the requirements of clearness have permitted in the drawing.

Other variations from the specific embodiment of the invention here shown may be made within the scope of the invention, as will naturally occur to those skilled in the art.

I claim:

1. Apparatus of the class described, comprising a driving shaft; a series of pivoted arms; mechanism engaged between the shaft and the arms whereby the arms are moved successively by said shaft; means pressing the shaft continuously in one direction; a latch restraining this movement; and means to operate the shaft in the opposite direction.

2. Apparatus of the class described, comprising a series of arms; a shaft mounted rotatably and having means whereby it engages the arms successively; means pressing the shaft continuously in one direction of rotation; a latch restraining its movement; and means to drive the shaft in opposite direction.

3. Apparatus of the class described, comprising a driving shaft; a series of arms and means whereby they are moved successively by said shaft; two springs acting in opposed directions and each arranged to engage and actuate said shaft; and means to throw the shaft under control of either spring.

4. Apparatus of the class described, comprising a series of arms; a shaft, and means

whereby it actuates them successively; springs arranged to engage and operate the shaft in opposite directions, one spring being more powerful than the other, and being normally disengaged; and means to throw the

5 more powerful spring into engagement.

5. Apparatus of the class described, comprising a series of arms; a driving shaft, and means whereby it actuates them successively; springs arranged to engage and operate the shaft in opposite directions, one spring being more powerful than the other, and being normally disengaged; a latch blocking the unwinding movement of each spring;

15 and a release key for each latch.

6. Apparatus of the class described, comprising a shaft; a series of arms and means whereby they are actuated successively by said shaft; means pressing the shaft in one direction of rotation, there being a stationary part having a shoulder, and there being a multiplicity of pawls carried by the shaft, one for each stationary position thereof, arranged to engage said shoulder successively;

25 there being a movable pin in front of said shoulder for disengaging the pawls.

7. Apparatus of the class described, comprising a shaft; a series of arms and means whereby they are driven successively by said shaft; an actuating spring permanently connected to the shaft; a stronger spring, opposed and normally disconnected; and means whereby the stronger spring engages and moves the shaft, thereby winding the

35 first spring while actuating the shaft and arms in reverse direction.

8. In apparatus of the class described, a rotary driving shaft; arms, and means whereby they are moved successively by the shaft; an actuating spring therefor; and connections between the shaft and spring, comprising a clutch face non-rotatable on the shaft; and an adjacent sleeve loose on the shaft, having an opposing clutch face and a cam for

45 throwing the same axially; the spring being connected between said sleeve and a stationary part; and a latch for the sleeve, the sleeve engaging the shaft through the clutch when rotated.

50 9. Apparatus of the class described, comprising a rotary driving shaft and means to stop its rotation in forward direction at fixed intervals; arms and means whereby they are moved successively by the shaft; a sleeve

normally loose on the shaft; means to drive 55 it in the reverse direction and to latch it at intervals exceeding said forward periods; there being a clutch, and a cam for projecting the sleeve and shaft into clutch when the latch is released.

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10. Apparatus of the class described, comprising swinging arms; a shaft and means whereby it swings the same; and a carriage for supporting the arms, adjustable to various positions on the shaft.

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11. Apparatus of the class described, comprising swinging arms; a rotary driving shaft; there being a counter shaft parallel thereto on which the arms are mounted; a movable carriage supporting the arms; and gearing having a member movable with the carriage, splined to the shaft, forming the connection for engagement of the shaft with the arms.

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12. Apparatus of the class described, comprising a series of arms; a shaft mounted rotatably, there being means whereby it actuates the arms successively; springs tending to rotate the shaft in opposite directions, each having a latch normally restraining movement in the forward direction of its spring but not in the reverse direction; and means to unlatch either spring.

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13. Apparatus of the class described, comprising a series of swinging arms adapted to turn pages; a driving shaft connected therewith; a hood upon the shaft, there being a forward driving spring and latches inclosed therein; a reverse driving spring and a sleeve driven thereby surrounding the shaft; a latch normally restraining this spring; and means for engagement with the shaft upon its release.

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14. In apparatus of the class described, a driving shaft; a driving spring therefor; and latches normally restraining movement, comprising latch pins set parallel to the axis of the shaft and rotatable therewith; a stationary part, having a notch to be engaged by the pins and a releasing pin for ejecting said latch pins from the notch.

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In testimony whereof I hereto affix my signature, in presence of two witnesses at Boston this ninth day of November, 1906.

FREDERICK LOWE.

Witnesses:

M. E. MURPHY,  
EVERETT E. KENT.