No. 699,037.

Patented Apr. 29, 1902.

J. TALBOT.

LEAF TURNER.

(Application filed Nov. 15, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig 1

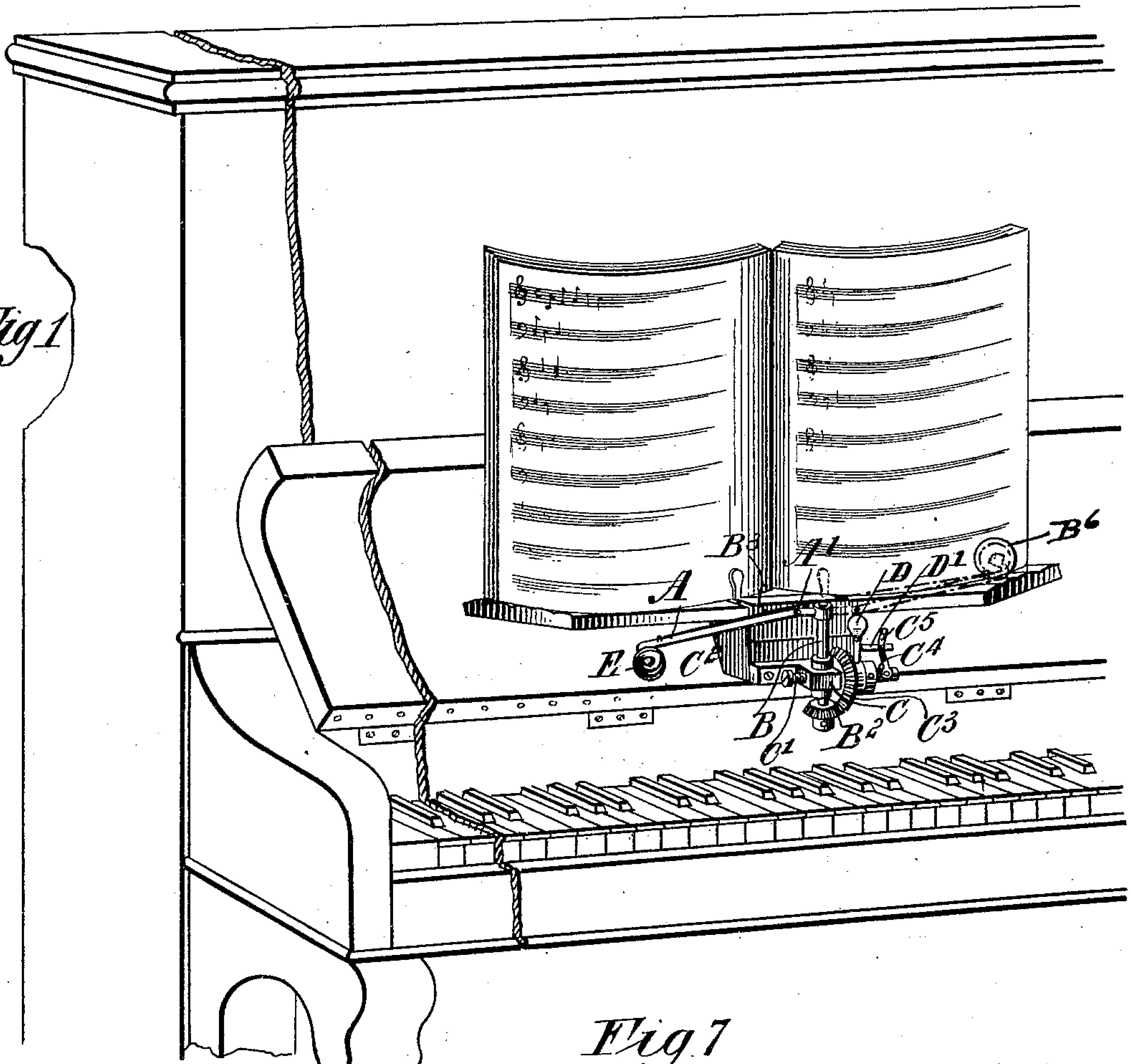


Fig 7

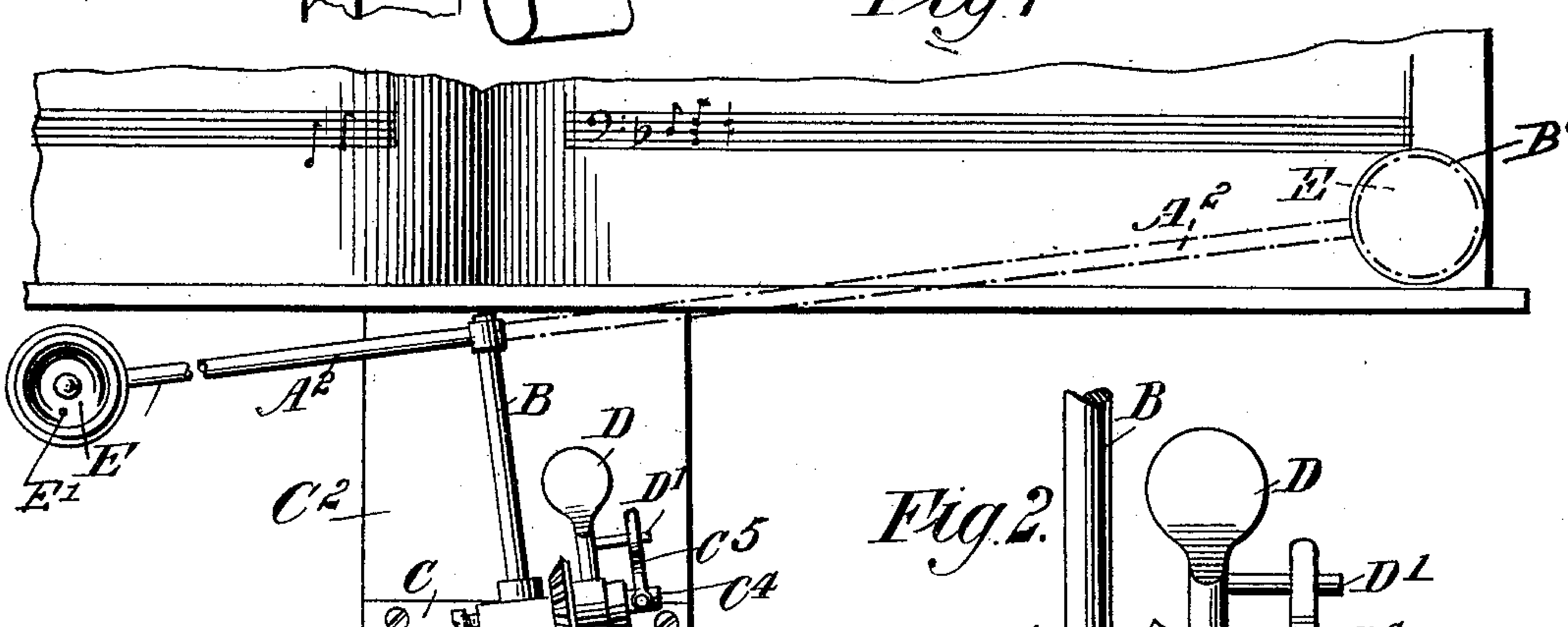
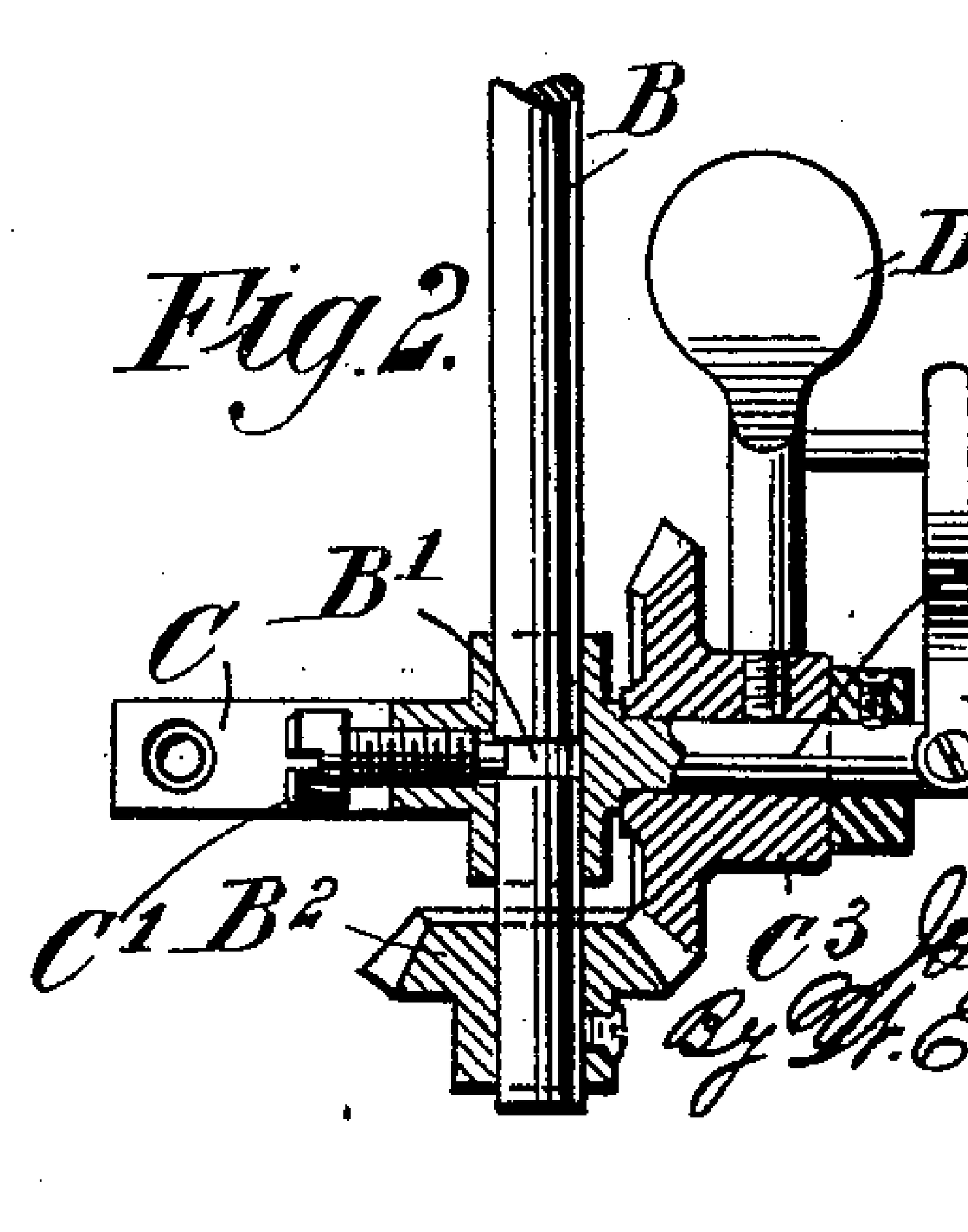


Fig.2.



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No. 699,037. Patented Apr. 29, 1902.

J. TALBOT.

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(Application filed Nov. 15, 1901.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 4

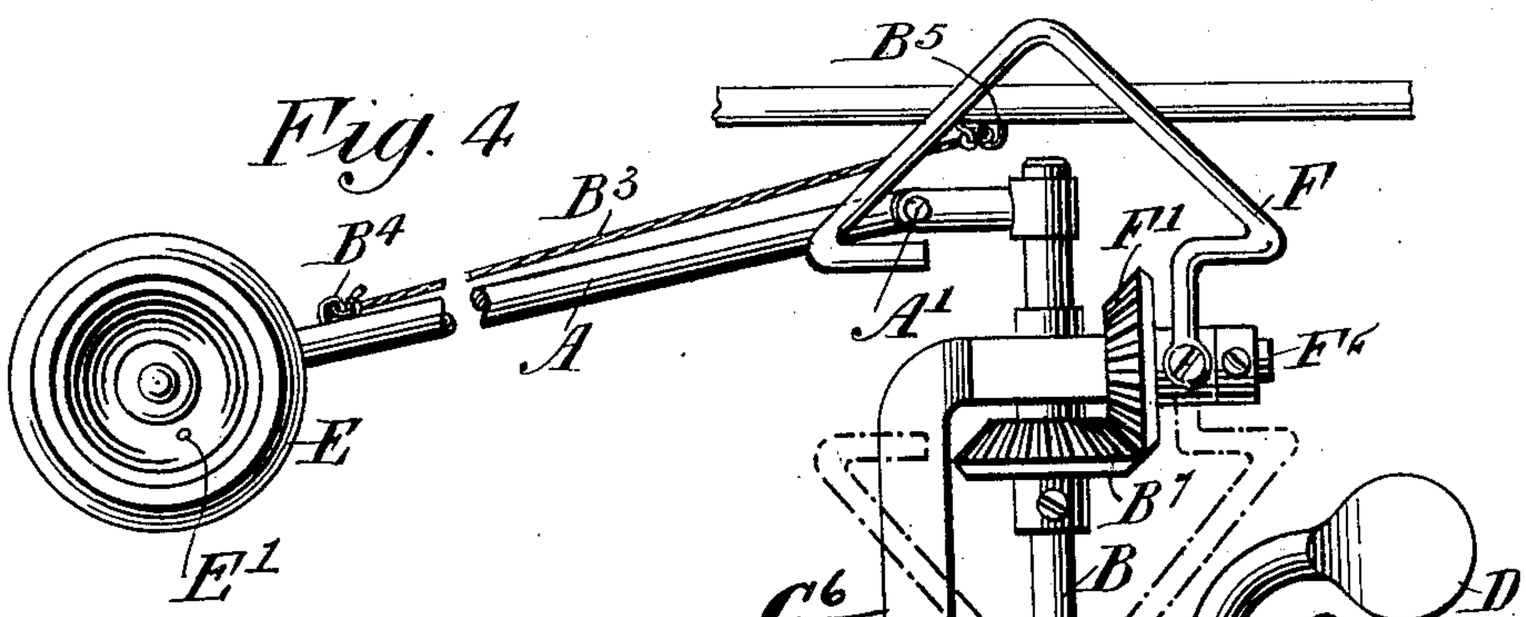

Fig. 6

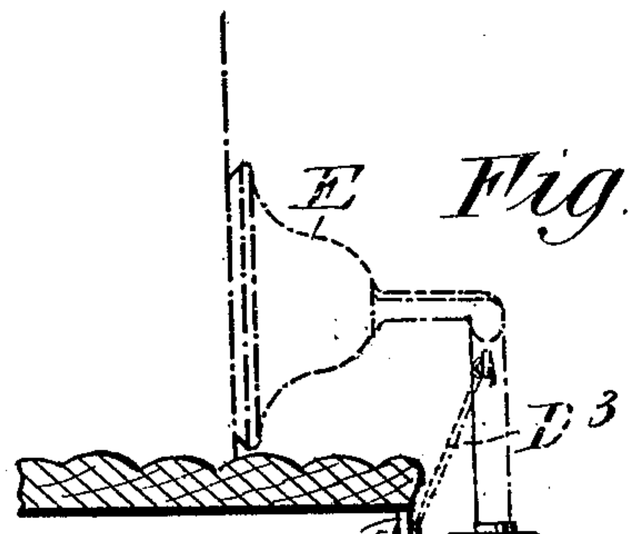

Fig. 5.

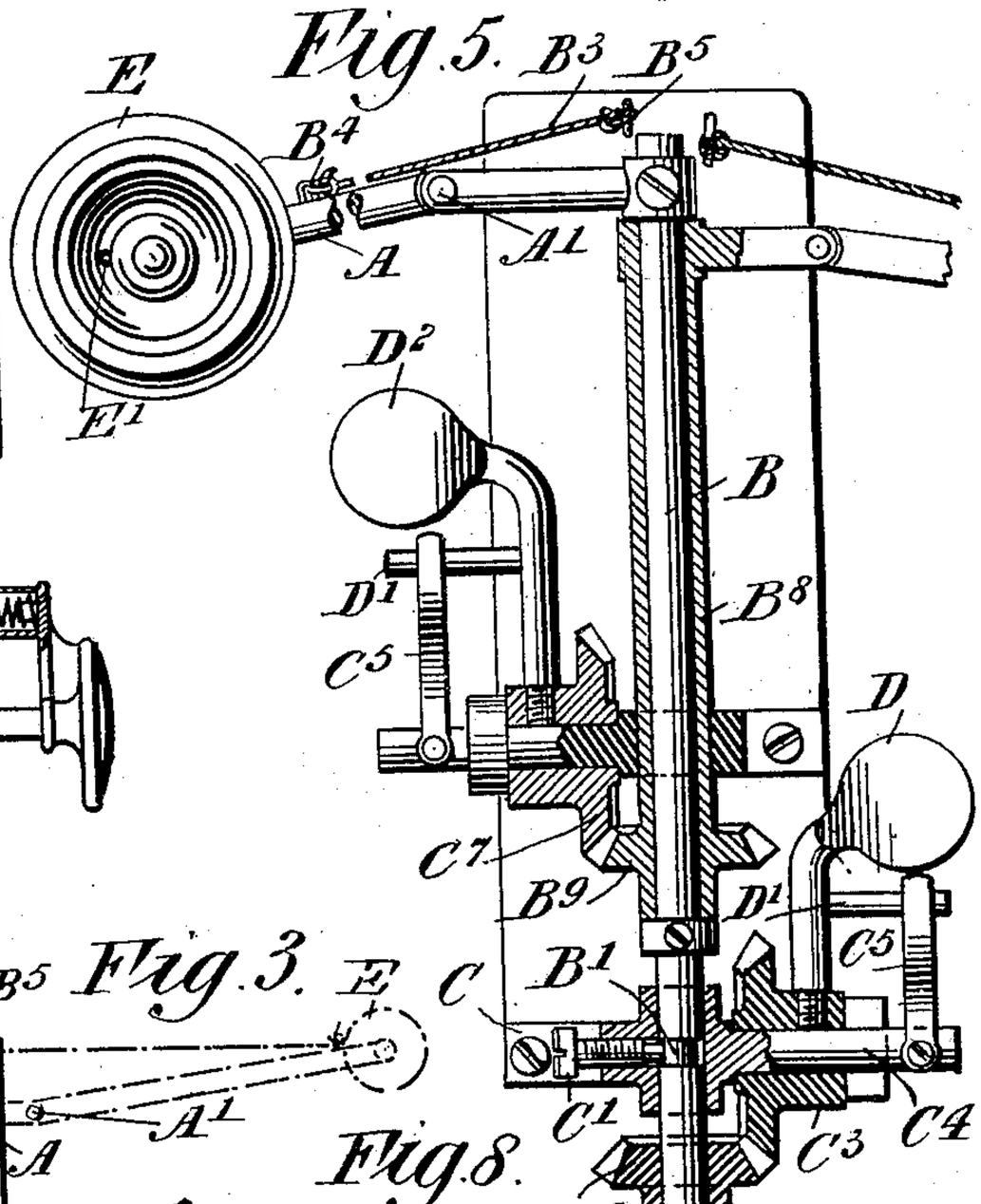

Fig. 3.

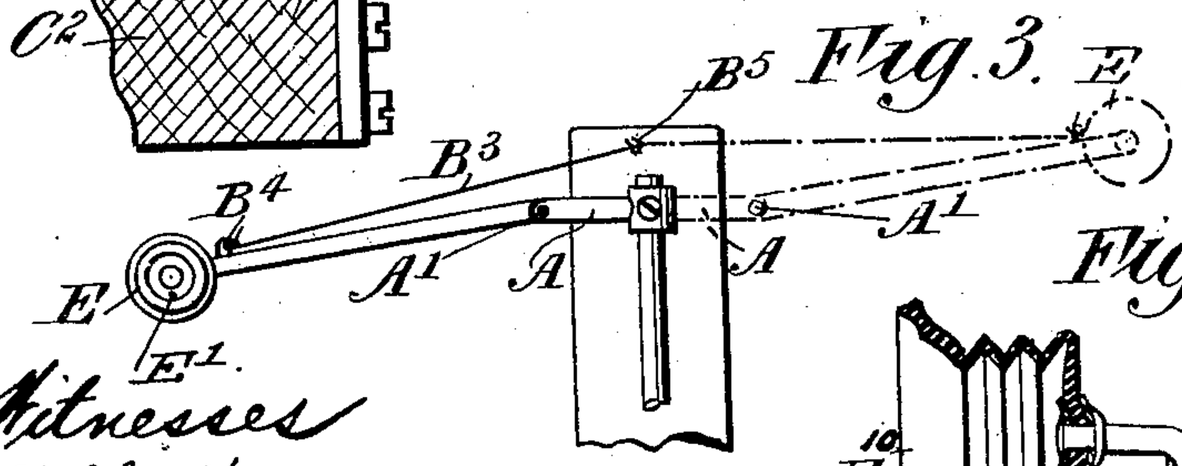

Fig. 8.

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UNITED STATES PATENT OFFICE.

JOHN TALBOT, OF LEDBURY, ENGLAND.

LEAF-TURNER.

SPECIFICATION forming part of Letters Patent No. 699,037, dated April 29, 1902.

Application filed November 15, 1901. Serial No. 82,338. (No model.)

To all whom it may concern:

Be it known that I, JOHN TALBOT, a subject of the King of England, residing at Ledbury, in the county of Hereford, England, have invented certain new and useful Improvements in or Relating to Leaf-Turners, (for which I have made application for Letters Patent in Great Britain, No. 5,159, dated March 11, 1901,) of which the following is a specification.

This invention relates to apparatus for turning over the leaves of books by means of suction, its object being to construct a device which is readily manipulated and which while holding the paper effectively will release it readily when desired.

The invention may be best described in connection with the accompanying drawings, which illustrate convenient forms of apparatus for turning leaves of music.

Figure 1 shows a perspective view of a music-turner attached to a piano. Figs. 2 and 3 are details, on a larger scale, of parts of the operative mechanism. Fig. 4 is an elevation of a form of music-turner with an automatically-adjustable leaf-holder. Fig. 5 illustrates a form of turner provided with two arms to enable leaves to be turned backward or forward. Fig. 6 shows a form of turner operated by a pushing device. Fig. 7 shows a further modification, and Fig. 8 illustrates an alternative form of suction-cup.

Like letters indicate like parts in all figures.

Referring first to Figs. 1, 2, and 3, an arm A, formed in two parts connected together by a hinge-joint at A′, is fixed on the upper end of a vertical shaft B, rotatably carried in a bracket C. The shaft may be kept from endwise movement by any convenient device, such as collars, preferably as shown in Fig. 2, by means of a screw-stud C′, the end of which engages in a groove B′ in the shaft B. The bracket C may be secured to the piano in a convenient manner—say by a block C^2, forming part of the music-rest. Fixed on the lower end of the shaft B is a bevel-wheel B^2, which gears with a second bevel-wheel C^3, revolubly carried on a pin C^4, secured in or formed integral with the bracket C. Fixed on the boss or otherwise secured to the wheel C^3 is a handle D, having a pin D′, which engages a spring C^5, arranged to hold the arm D in the position shown in the figures—that is, with the apparatus inoperative. In practice the spring is made sufficiently long to prevent the pin from riding off the end thereof during the swinging movement of the pin, which latter in practice moves through only about one-fourth of a circle. Fixed on the free end of the arm A is an expansion-chamber or suction-cup E, which I call the "sucker." This may be of any suitable shape and material so as to readily compress and expand. Preferably a rubber cup, as shown in Figs. 1 to 7, is employed. An alternative form (designated as E^{10}) is shown in Fig. 8, in which plaits, formed as in an accordion, are employed. The sucker is provided with a small hole E′, so regulated as to size as to break the vacuum and release the sheet so soon as it has been lifted sufficiently to assume its required position on the other side of the book. A cord B^3, to support the hinged end of the arm A, is attached at one end to the arm at a point intermediate the sucker and the elbow-joint, say B^4. The other end of the cord is attached to the music-rest or frame-block—say at B^5—above the arm and slightly to one side of the shaft B—viz., that side on which the arm extends when the apparatus is in inoperative position, as shown in the figures. The action of this cord is to allow the outer portion of the arm to fall below the music-book when the arm is in the inoperative position, as shown in full lines in Figs. 1 and 3, and to raise the same and bring the sucker over the leaf to be turned when the arm is swung over into the position shown in dotted lines in those figures.

The apparatus is operated as follows: By smartly pulling down the handle D against the tension of the spring C^5 the shaft B is given approximately a half-turn, swinging the arm A over and bringing the sucker with a sharp blow against the surface of the leaf to be turned, and thus expelling the air from within it. On releasing the handle the spring reverses the action, returning the arm quickly to its first position. The sucker clinging under atmospheric pressure to the leaf raises the same until the leaf having been carried over far enough to fall on the opposite side the vacuum is broken by the operation of the small hole E′ and the sucker is released.

Many papers are too flexible or have surfaces not adapted for the action of a sucker. In such cases a wad B^6 may be gummed or otherwise attached to each leaf, formed of celluloid, rubber, or other suitable substance. These pads will not only insure the action of the sucker in adhering to the leaf, but will facilitate the turning of the same by allowing air to lie between the leaves, or the leaves themselves may be thickened and firmed in a suitable spot for the sucker to strike.

A flap for holding the leaves in position between the turning of the same may be advantageously employed. A suitable arrangement for automatically operating such a flap is shown in Fig. 4, in which a flap F is shown carried on the boss of a bevel-wheel F'. This wheel is adapted to rotate on a pin F^2, fixed on an extension C^6 of the bracket C^{10}, and gears with a bevel-wheel B^7 on the shaft B, the flap and wheels being so arranged that the former is in the position shown in full lines in Fig. 4—that is, engaged with the leaves of the music-book—when the apparatus is in inoperative position, but swings down into the position shown in dotted lines when the shaft B is rotated.

A duplex apparatus to turn leaves in either direction at the will of the operator is shown in Fig. 5. For turning the leaf from right to left the arrangement is the same as that shown in Fig. 1. To turn leaves in the opposite direction, a second arm A is provided, carried on a sleeve B^8, rotatably carried on the shaft B and operated in a similar manner to the first arm, the sleeve being rotated by mechanism similar to that previously described—viz., a bevel-wheel B^9, gearing with a bevel-wheel C^7, operated by a spring-controlled handle D^2.

In Fig. 6 an apparatus similar to that first described is shown; but instead of the shaft being rotated by a lever-handle and bevel-wheels it is operated by a push-rack G, gearing with a cog-wheel G'. The rack works in guides in an extension C^8 of the bracket C and is held in its inoperative position by the tension of a spring G^2.

Instead of the arrangement for controlling the position of hinged arms by cords, the operating-shaft B may be placed slightly out of the perpendicular, as shown in Fig. 7, the arm A^2, carrying the suckers, being in this construction formed in one piece.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a music-turner or paper-lifter, the combination of a frame, a rock-shaft supported thereon, an arm formed of two pivotally-connected parts secured at one end to the shaft and having an expanding chamber on its free end, a cord, one end of which is secured to the arm intermediate its pivotal joint and the expanding chamber and its other end being secured to the frame at a point above the arm on the same side of the shaft as that in which the arm lies when in its inoperative position, means adapted to be actuated by the operator to rotate the arm in one direction through one-half of a revolution and automatic means to return the arm, substantially as and for the purpose specified.

2. In a music-turner or paper-lifter and in combination, a frame, a rock-shaft supported thereon, an arm formed of two pivotally-connected parts, fixed by one end to the shaft and having an expanding chamber on its free end, a cord one end of which is secured to the arm intermediate its pivotal joint and the expanding chamber while its other end is secured to the frame at a point above the arm on the same side of the shaft as that in which the arm lies when in its inoperative position, a bevel-wheel on the shaft gearing with a bevel-wheel supported on the frame, an operating lever or handle fixed on the boss of the latter wheel and a spring engaging the handle to return the same to normal position after movement by the operator substantially as specified.

3. In a music-turner or paper-lifter and in combination, a frame, a rock-shaft supported thereon, an arm formed of two pivotally-connected parts, fixed by one end to the shaft and having an expanding chamber on its free end, a cord one end of which is secured to the arm intermediate its pivotal joint and the expanding chamber while its other end is secured to the frame at a point above the arm on the same side of the shaft as that in which the arm lies when in its inoperative position, a bevel-wheel on the shaft gearing with a bevel-wheel supported on the frame, an operating lever or handle fixed on the boss of the latter wheel, a spring engaging the handle to return the same to normal position after movement by the operator and a leaf-flap such as F carried on a bevel-wheel gearing with a second bevel-wheel carried on the aforesaid shaft, substantially as specified.

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

JOHN TALBOT.

Witnesses:
FRED HOWARTH,
T. H. DOWDING.