July 11, 1961 E. E. ELLIOTT 2,991,680

PAGE TURNER

Filed Jan. 12, 1959

2 Sheets-Sheet 1

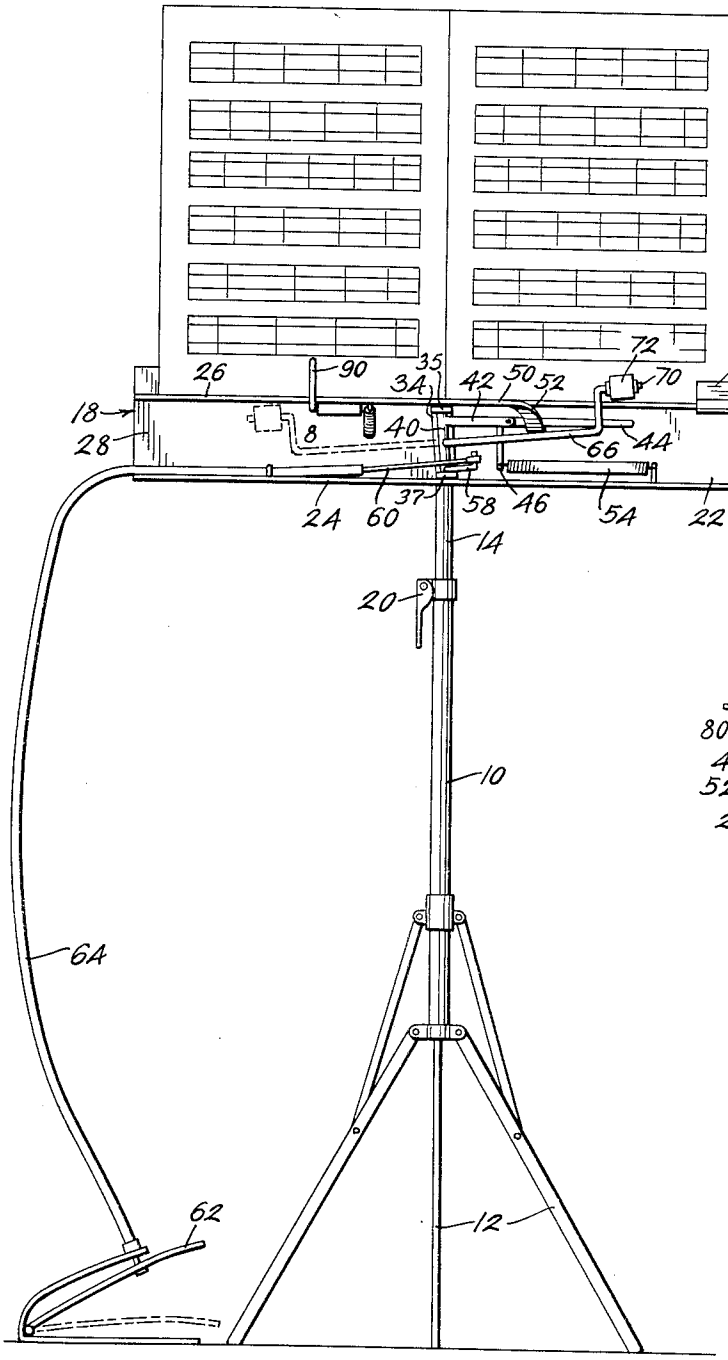


FIG. 1.

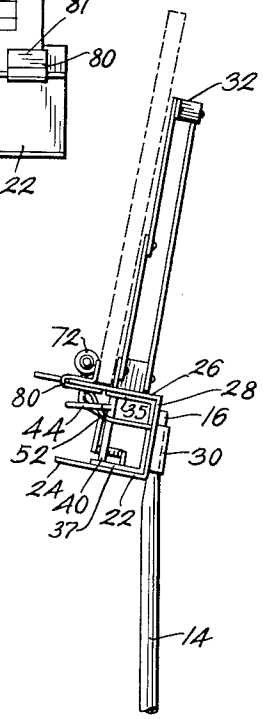


FIG. 2.

INVENTOR.

EVERETT E. ELLIOTT

BY

Anderson, Spangler & Wymore

ATTORNEYS

July 11, 1961 E. E. ELLIOTT 2,991,680

PAGE TURNER

Filed Jan. 12, 1959 2 Sheets-Sheet 2

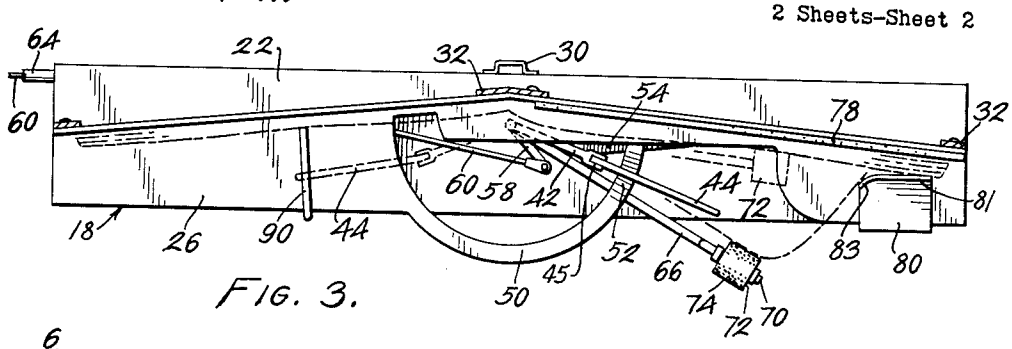


FIG. 3.

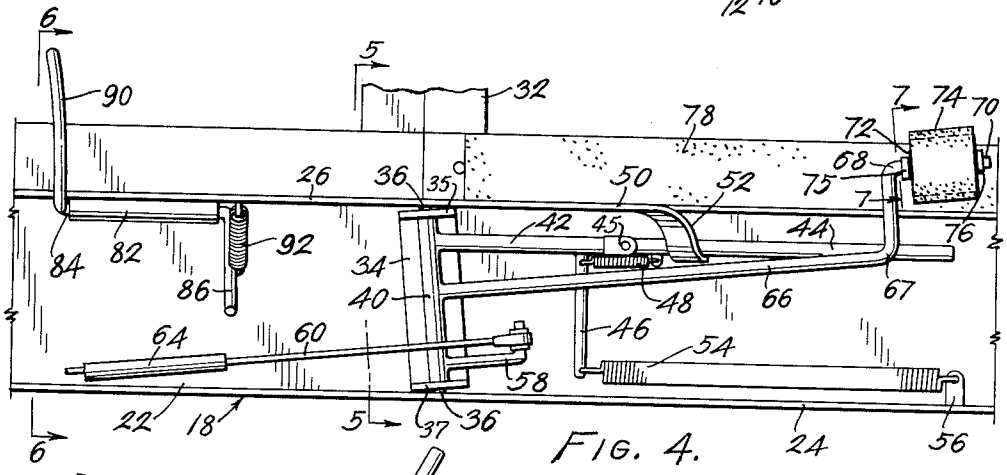


FIG. 4.

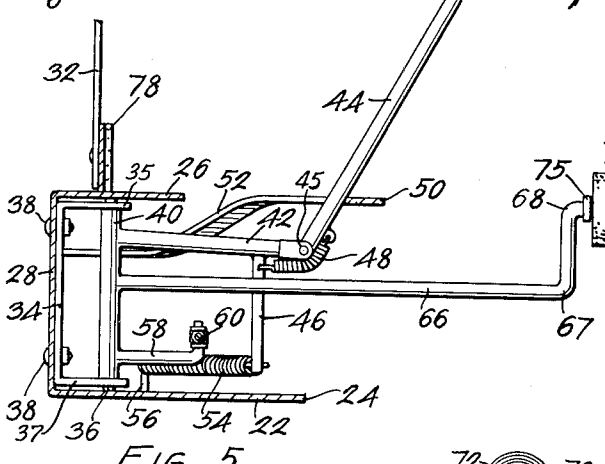


FIG. 5.

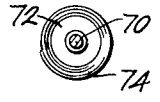


FIG. 7.

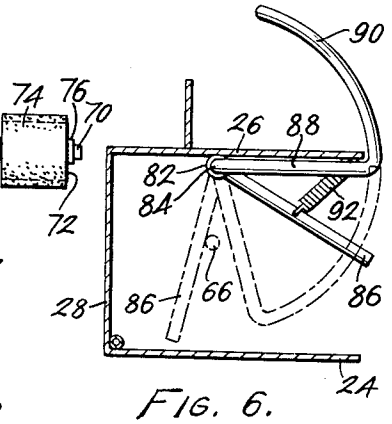


FIG. 6.

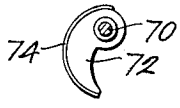


FIG. 8.

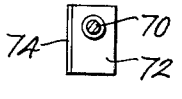


FIG. 9.

INVENTOR.
EVERETT E. ELLIOTT
BY
Anderson, Spangler & Wymore
ATTORNEYS.

United States Patent Office 2,991,680 Patented July 11, 1961

2,991,680

PAGE TURNER

Everett E. Elliott, 23 N. Meade, Colorado Springs, Colo., assignor of twenty-five percent to Zene L. McMurtry, Colorado Springs, Colo., and twenty-five percent to George H. Keener, Joseph Dern, and W. A. Campbell, all of Colorado Springs, Colo.

Filed Jan. 12, 1959, Ser. No. 786,312
6 Claims. (Cl. 84—517)

This invention is directed to page turners and, more particularly, to a page turner of the type adapted to turn the pages of sheet music, books and the like without the use of the operator's hands.

In general, the prior art devices include one or more frames or clips which are required to be attached to each individual page. As each frame or clip is turned, the attached page is also turned. Such devices require considerable time and inconvenience on the part of the operator in attaching each page individually to the frames for turning.

It is an important object of this invention to provide an improved page turner which is simple of construction, sturdy, compact and being light weight, is readily portable.

It is a further important object of the present invention to provide improved means for selectively turning a single page and one which does not require extensive preparation of the sheets prior to use.

A further object of the present invention is to provide an improved page turner with positive page turning action and means to automatically hold each page in the turned position.

A further object of the invention is to provide novel means for picking up each page individually as it is to be turned including a novel page lifting arm provided with a tacky material adapted to releasably adhere to a page during the turning operation.

Another important object of the present invention is to provide an improved page turner adapted for use on a conventional music stand standard or to be a part of or be supported by the music rack of a piano and the like.

Another object of the invention is to provide an improved page turner that is simple to use and operate having a unitary control for the operating parts so that no attention on the part of the operator is necessary except to actuate the mechanism as desired.

In accordance with the invention, the page turner comprises a base and attached frame for supporting a plurality of pages to be turned, a pick-up arm mounted on the base for rotary movement, and a pick-up member rotatably mounted on the free end of the pick-up arm having a tacky material on the surface thereof adapted to releasably adhere to a page on contact therewith.

For a better understanding of the present invention, together with other and further objects thereof, reference is had to the following description taken in connection with the accompanying drawings, and its scope will be pointed out in the appended claims.

In the drawings:

FIGURE 1 is a front elevation of the page turner of this invention as mounted on the conventional tripod music stand support;

FIGURE 2 is a side view of the page turner of FIGURE 1 with parts broken away;

FIGURE 3 is an enlarged plan view of the page turner of FIGURE 1;

FIGURE 4 is a view in elevation to a further enlarged scale of the mechanism and operating parts of the page turner of FIGURE 1;

FIGURE 5 is a view along line 5—5 of FIGURE 4;

FIGURE 6 is a view along line 6—6 of FIGURE 4; and,

FIGURES 7, 8 and 9 show the various forms that the pick-up member on the free end of the pick-up arm may take.

Referring to FIGURE 1, 10 indicates a lower standard to the lower end of which is pivoted foldable legs 12, after the manner of the well known music stand construction. An upper standard 14 is telescoped into lower standard and provided at the upper end thereof with a flattened portion 16 adapted to engage the music turner 18. A clamp 20 is provided at the upper end of the lower standard to secure the telescoping members in fixed relative position and provide for adjusting the overall height as is conventional. The page turner is seen to be comprised of a base 22, which is shown as a U-shaped channel with legs 24 and 26 and web 28. A loop 30 is attached to the rear of web 28, and is adapted to receive flattened portion 16 of the upper standard 14. Base 22 supports a rectangular frame 32 for holding a book or sheet music. Frame 32 may conveniently be of a foldable type which can be adjusted to accommodate various size books or sheets to be supported.

Referring to FIGURES 1, 3 and 4, the mechanism of the page turner is seen to be located principally within the space formed by the legs 24 and 26 of the U-shaped base 22 and comprises a second U-shaped member 34 mounted centrally within base 22 with the legs 35 and 37 thereof coextensive in part with legs 24 and 26. A shaft 40 having bearings 36 is journalled in the legs of member 34 and extends therebetween. Member 34 is secured to web 28 by means of bolts 38 and the like. Member 34 is positioned such that shaft 40 is inclined slightly to the left of the vertical for the purpose to be explained as the description progresses. A first arm 42, which for the sake of convenience shall be called the page turning arm, is attached to shaft 40 as by welding and the like and which, when in the position shown in FIGURE 4, is substantially parallel with the planes of legs 24 and 26. An extension 44 is hingedly connected as at 45 to arm 42 for movement in a substantially vertical plane. Arm 42 further has a vertical pin 46 depending therefrom adjacent the hinge. Extension 44 is biased downwardly by means of a spring 48 connected between extension 44 and pin 46. Leg 26 of base 22 is provided with an arcuate shaped cam 50 having a camming surface 52, FIGURE 3. When arm 42 is in the position shown in FIGURE 4, the extension 44, resting on top of cam 50 and to the lower end of camming surface 52, is in substantial alignment with arm 42. Arm 42 is further normally biased into the position of FIGURE 4 by means of a spring 54 connected between pin 46 of arm 42 and lug 56 on base 22. An actuating arm 58 is secured to shaft 40 as by welding and the like. An operating cable 60 is attached between arm 58 and foot actuator 62, FIGURE 1, and enclosed within a flexible sheath 64. On depressing foot actuator 62, shaft 40 and attached arm 42 are rotated to the left against the bias of spring 54 and extension 44 is cammed upwardly against spring 48 and about the hinged connection to arm 42 by camming surface 52 of cam 50 to a position as shown in FIGURE 5.

Intermediate arms 42 and 58, there is attached to shaft 40, as by welding and the like, pick-up arm 66. Arm 66 is positioned substantially perpendicular to shaft 40. Arm 66 is provided with a double bend adjacent the end thereof as at 67 and 68 to provide an offset portion 70. Rotatably mounted on offset portion 70 is a pick-up means in the form of a cylindrical roller 72, the surface of which is covered with a tacky material 74. It is to be understood that element 72 may be of a shape other than a cylinder, i.e., semi-cylindrical, oval, rectangular, spiral,

etc. The tacky material 74 may be in the shape of a tube which is slipped over roller 72 or may be a coated tape wrapped thereon. Roller 72 may conveniently be made of a resilient material such as rubber or other well known elastomer. Roller 72 may be retained on the offset portion 70 by means of retaining washers 75 and 76. It will be seen that when sleeve 40 and attached arms 42, 66 and 58 are biased completely to the right in FIGURE 4, the offset portion 70 of arm 66 is positioned above leg 26 of base 22 and roller 72 rests against the lower right portion of frame 32 which may be provided with a pad 78 of resilient material. Shaft 40 is so inclined that as the shaft and arm 66 are rotated to the left, roller 72 follows a downwardly inclined path. A page bulging element 80 is slidably attached to the right forward edge of leg 26 of base 22. Bulge element 80 is provided with a vertical portion 81 substantially in alignment with the right portion of frame 32 and spaced therefrom, having the edge 83 thereof, nearest shaft 40, bent outwardly away from frame 32.

As seen in FIGURES 4 and 6, there is provided a page retainer to the left of base 22 which is mounted within a sleeve 82 attached to the underside of leg 26 of base 22. The page retainer comprises a rod 84 mounted for rotary movement within sleeve 82. Sleeve 82 is positioned such that the axis of rotation of rod 84 is parallel with the plane of web 28 of base 22. Rod 84 is provided at one end with a 90° bend to form an actuating arm or finger 86 and further at the other end with another 90° bend to form a retaining arm or finger 88. The length of retaining arm 88 is sufficient to extend beyond the forward edge of leg 26 of base 22 and an extension of arm 88 is provided with an arcuate portion 90 having a radius at least as great as the distance from the axis of rotation of rod 84 to the forward edge of leg 26. Actuating arm 86 is biased toward leg 26 by means of a spring 92 attached therebetween and leg 26. Arm 86 and arm 88 are angularly displaced from each other about the axis of rotation of rod 84 by a small amount such that when arm 88 is parallel with the plane of leg 26, arm 86 is inclined downwardly at an acute angle with the plane of leg 26 and is in the path of travel of arm 66.

In operation, a book or sheets of music are placed on the page turner and the frame 32 is adjusted to provide proper support. Bulge element 80 is adjusted along leg 26 to position same in front of the right edge of the page to be turned. Foot lever 62 is depressed slightly which through cable 90 and arm 58 rotates shaft 40 and attached pick-up arm 66. Lever 62 is released whereupon roller 72 strikes the page to be turned and the tacky material 74 on the surface of roller 72 adheres to the page. As foot lever 62 is again depressed, rotating shaft 40 and attached arms 66 and 42, the page follows roller 72. As the edge of the page is pulled past bulge element 80, a curve is imparted to the page between roller 72 and element 80. This curve or bulge prevents pages behind the page to be turned from following. As arm 66 progresses to the left carrying the page, extension 44 of arm 42 engages the inclined portion 52 of cam 50 and is deflected upwardly behind the page to provide positive carry-over of the page. As the arms approach the left of the page turner, arm 66 engages actuating arm 86, retracting curved portion 90 of the page retainer against spring 92 to a position below leg 26 of base 22, permitting the page to pass thereover. On releasing foot lever 62, arm 66 is urged to its original position by spring 54, releasing actuating arm 86, permitting the curved portion 90 of the page retainer to engage and hold the page in turned position. The holding of the page by the page retainer may be sufficient to cause the tacky material 74 of roller 72 to release the page, however, it will be noted that the path of travel of arm 66 due to the inclination of shaft 40 will cause the roller to be directed downwardly as arm 66 approaches the left of the page turner and roller 72 will roll off the edge of the page or nearly so when arm 66 is in the left hand position. An important purpose is served by the rolling action of roller 72 in that a new surface of tacky material 74 will be presented to pick up each page to be turned.

As arms 66 and 42 are returned to their original positions by the bias of spring 54, extension 44 rides down the inclined portion 52 of cam 50 and is returned to the aligned position with arm 42 by spring 48 in position for turning the next page when lever 62 is depressed.

It will be understood that the roller may be of different shapes although the cylindrical shape is to be preferred. For example, the roller may be elliptical, semi-spherical, semi-cylindrical, of generally spiral or involute cross section or of rectangular cross section. It will be further noted that in certain embodiments of the invention that it may not be necessary that arm 66 follow a downwardly inclined path progressing from right to left, however, it is to be preferred when a cylindrical roller is used. In using the pick-up means as shown in FIGURES 8 and 9, the center of gravity thereof is preferably below the point of attachment to portion 70 of arm 66.

Although the above-described embodiment discloses the invention as applied to the turning of sheets of music on a music stand, it is to be understood that the invention may also be employed wherever it is desired to turn or move a page or sheet of material.

While there have been described what at present are considered to be the preferred embodiments of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention. It is aimed, therefore, in the appended claims to cover all such changes and modifications which fall within the true spirit and scope of the invention.

What is claimed is:

1. A page turner comprising a base, page supporting means attached to said base extending in a plane substantially normal to said base, actuating means, a first arm pivotally mounted on said base for arcuate movement in a plane substantially normal to the page supporting means, pick-up means mounted on one extremity of said first arm for rotary movement, a layer of tacky material on said pick-up means adapted to releasably adhere to a page, a second arm pivotally mounted on said base for arcuate movement in a plane substantially normal to said page supporting means, an extension arm hingedly connected to the free end of said second arm for movement in a plane substantially normal to the plane defined by the pivotal movement of said second arm, cam means mounted on said base in position to engage said extension arm and effect movement thereof at least during predetermined portions of the arcuate movement of said second arm, means biasing said extension arm into engagement with said cam means and means operatively interconnecting said actuating means and said first and second arms.

2. A page turner according to claim 1, wherein the pick-up means comprises a cylinder mounted for rotation about the axis of rotation of said cylinder.

3. A page turner as set forth in claim 1 including page bulging means mounted on said base adjacent one extremity thereof, said page bulging means being adapted to be selectively positioned along the length of the base and a page retaining means mounted adjacent the opposite extremity of said base.

4. A page turner according to claim 3, wherein the page bulging means is comprised of an upstanding leg positioned in forwardly spaced substantially parallel relation to the page supporting frame and being adjustably positioned along the base so as to contain the lower outer extremity of a page to be turned within the space between the frame and the page bulging means.

5. A page turner according to claim 3, wherein the page retaining means comprises an upwardly extending finger and a downwardly extending finger mounted for

conjoint rotatary movement on the base, means normally biasing the upwardly extending finger toward the frame and the downwardly extending finger being positioned within the path of arcuate movement of the first arm which coacts with said downwardly extending finger to retract said upwardly extending finger from a normally page restraining position adjacent the frame.

6. A page turner comprising a base, a page supporting frame attached to said base, actuating means, a first arm mounted on said base for inclined arcuate movement, pick-up means mounted adjacent the free end of said first arm for rotary movement, a layer of tacky material on said pick-up means, said tacky material being adapted to releasably adhere to a page to be turned, a second arm mounted on said base for conjoint movement with said first arm, an extension arm hingedly connected to said second arm for hinged movement substantially normal to the plane defined by the arcuate movement of said second arm, cam means mounted on said base in position

to engage said second arm and effect movement thereof, means biasing said extension arm into engagement with said cam means, bias means biasing said first and second arms into position to pick up a page, page bulging means mounted on said base in forwardly spaced parallel relation to said frame adjacent the normal resting position of said first and second arms, page retaining means mounted on said base and positioned adjacent the extremity of arcuate movement of said first and second arms and means operatively interconnecting said actuating means with said first and second arms to impart arcuate movement thereto.

References Cited in the file of this patent

UNITED STATES PATENTS

229,839	Ranson et al.	July 30, 1880
1,846,097	Fritz	Feb. 23, 1932