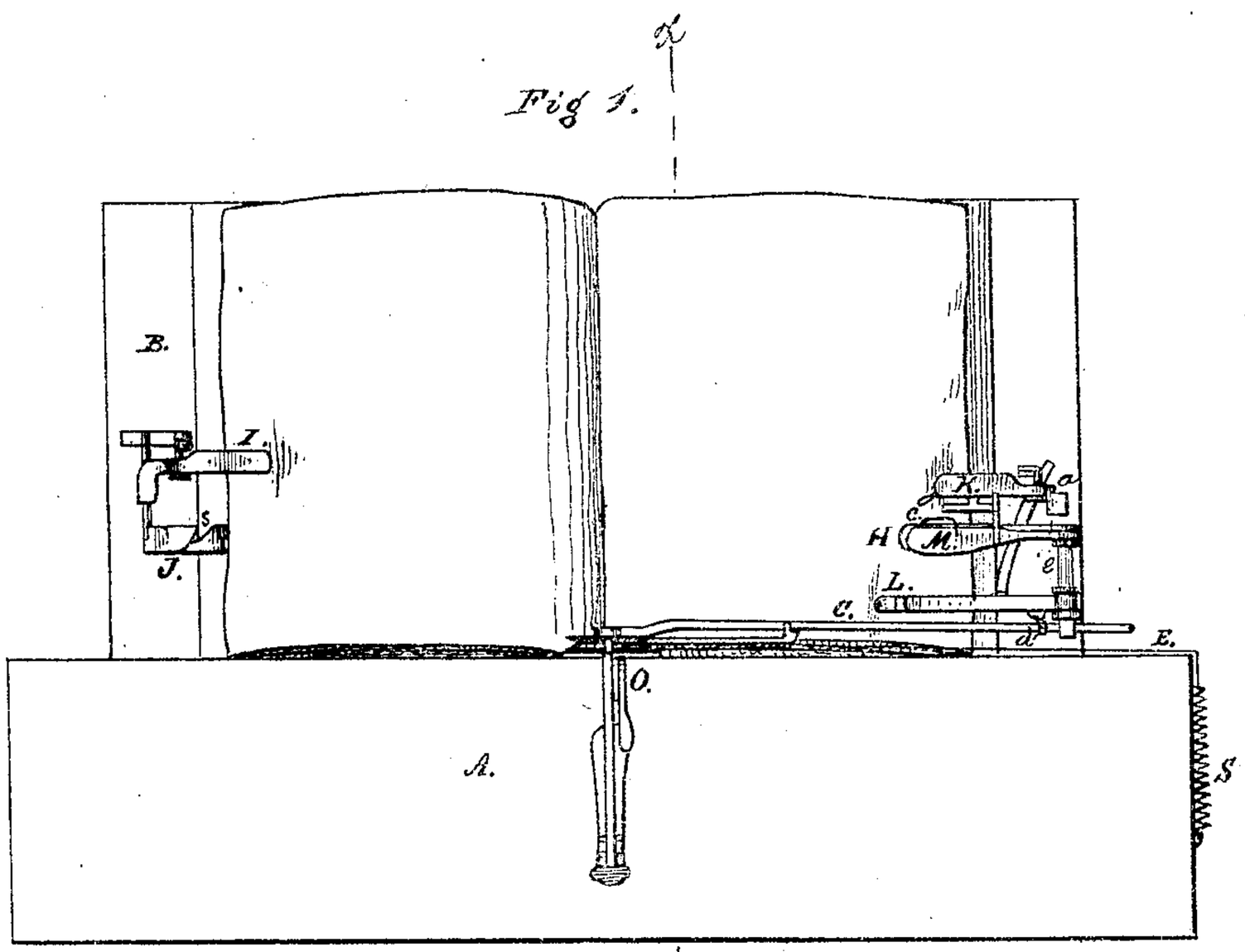
ROBERT J. STUART.

Improvement in Apparatus for Turning the Leaves of Music Books, &c.

No. 124,172. Patented Feb. 27, 1872.

Fig 1.



x

Fig 2.

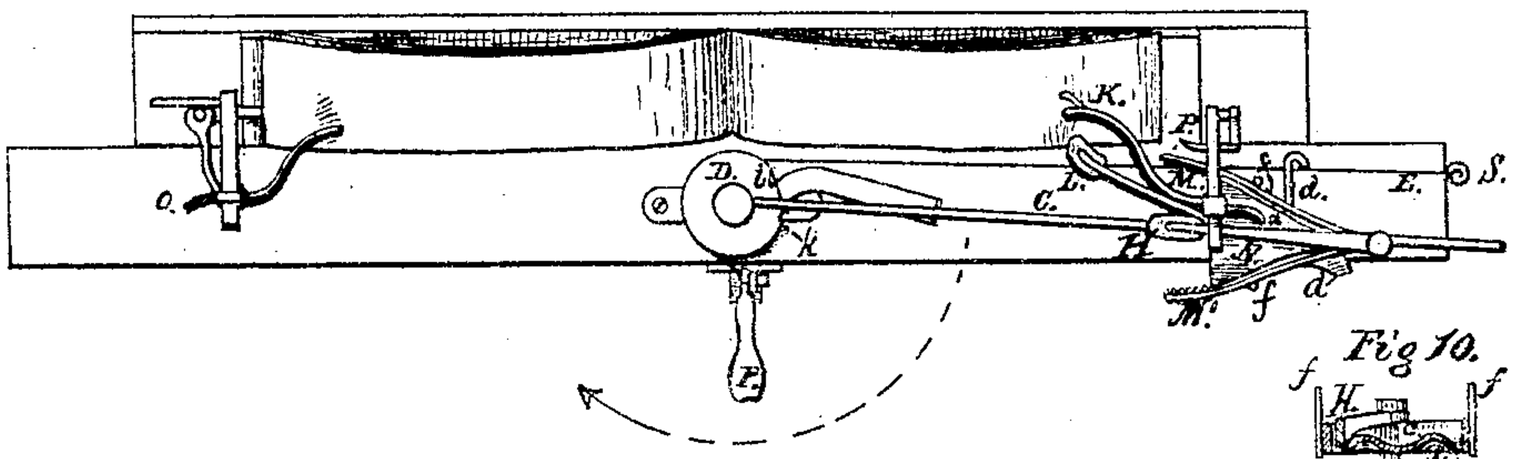


Fig 10.

Fig 3.

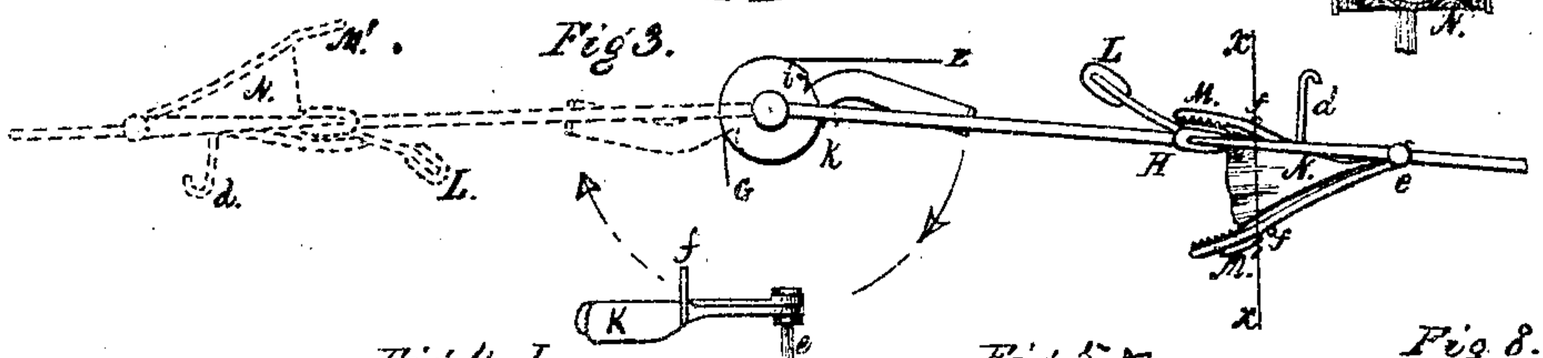


Fig 4. L.

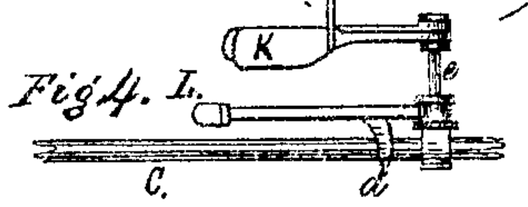


Fig 5.

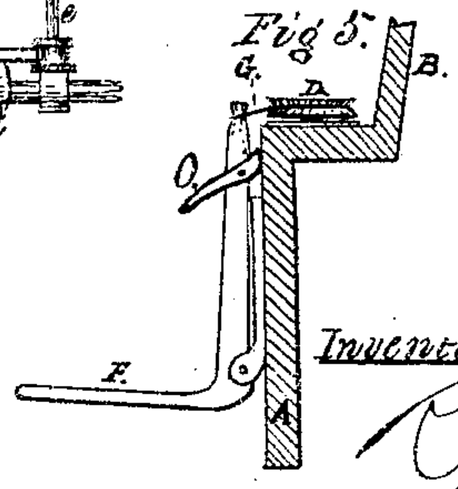


Fig 8.

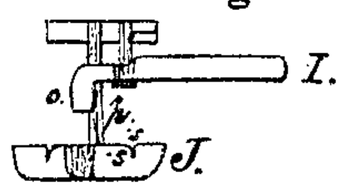


Fig 7.

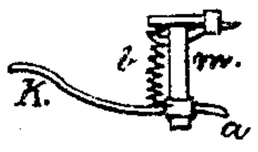


Fig 6.

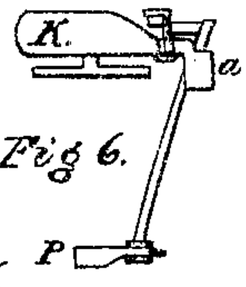
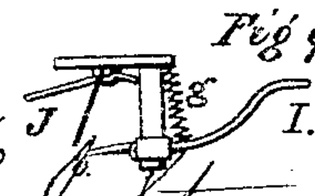


Fig 9.



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UNITED STATES PATENT OFFICE.

ROBERT J. STUART, OF YONKERS, NEW YORK.

IMPROVEMENT IN APPARATUS FOR TURNING THE LEAVES OF MUSIC, BOOKS, &c.

Specification forming part of Letters Patent No. 124,172, dated February 27, 1872.

Specification describing certain Improvements in Apparatus for Turning the Leaves of Music, Books, &c., invented by ROBERT J. STUART, of Yonkers, in the county of Westchester and State of New York.

My invention relates to devices for turning the leaves of books, sheets of paper, &c.; and consists in a novel construction and arrangement of parts for turning the leaves or sheets automatically in a more perfect manner than has been done heretofore.

Figure 1 of the drawing shows my invention as applied to the desk of a piano or organ to turn the music. Fig. 2 is a top view of Fig. 1. Fig. 3 is a view of the leaf-turning arm detached. Fig. 4 is an elevation in detail of the leaf-grasping mechanism on the end of the turning-arm. Fig. 5 is a vertical section through the line *x x*, Fig. 1. Figs. 6 and 7, 8 and 9, are views in detail of the leaf-holding fingers. Fig. 10 is a vertical section through the line *y y*, Fig. 3.

General Description.

A represents a portion of the case of a piano, and B the desk for holding the music. C represents an arm formed of a metal rod, and pivoted to the case at D so that it will turn freely. The center, on which this arm turns, is formed of a circular plate with a groove in its circumference to receive the cord or wire E, and with a pin projecting from its under side and turning in a suitable bearing in the case A. The motions upon this center are given to the arm C in one direction by the cord or wire E attached at one end to the plate D at the point *i*, and at the other to the spring S, and in the other direction by the wire G, secured at one end to the end of the lever F and to the plate D at the point *k*. The motion forward or in the direction of the arrows, Figs 2 and 3, is given by the spring S, and the return motion is given by the lever F. Upon the end of the arm C is secured the leaf-grasping mechanism, consisting of the jaws M M, the finger H, and the separating lever L. These parts separate the leaf to be turned and grasp it as the arm C is thrown against the sheet by the lever F and its cords, so that, as the arm is thrown forward by the spring S and cord E, the sheet is carried over with it. The leaf-separating mechanism consists of the lever L, armed at the end with a pad of rubber or other suitable substance, and pivoted upon the short vertical rod *e* so that it turns freely. It is held in the position shown in the Figs. 2 and 3 by a light spring, and is provided with a small projecting finger, *d*. As the arm C turns to take the sheet or leaf, the lever L is pressed against the leaf and causes it to bend and raise itself from the one beneath, this operation being similar to the action of the hand of a person in turning the leaves of a large book. The leaf-grasping and holding mechanism is composed of the jaws M M secured to the sides of the curved triangular plate N, and meeting together at the rod *c*, to which they are pivoted so as to turn freely. These jaws vibrate on either side of the fixed finger H, secured upon the top of the rod *e*, so that, when one is in contact with the elastic pad on the end of the finger H, the other is held at a distance from it. The curved plate N, Fig. 10, against which the under edge of the finger H presses, holds the jaws in the required positions by its shape and causes the finger H to occupy at times different positions with respect to the jaws M M′—for instance, as the arm C approaches the leaf to be turned, as shown in Fig. 2, the finger H will be held in the central depression in the plate between the two jaws; but, as the arm continues to move against the leaf, the jaw M in striking against the book will be pressed against the pad on the end of the finger H, as shown in Fig. 3, and in the same manner for the other side—the action of the jaws in striking against the book or leaves of music as the arm C turns causing them to be alternately thrown toward and away from the pad of the finger H. The desk upon which the books or sheets are supported has a leaf-holding device on each side, formed of the fingers I K, which act to hold the leaves down in place and take them from the leaf-turning mechanism, Fig. 3. The right-hand finger K, shown in detail in the front view, Fig. 6, and the top view, Fig. 7, is pivoted to the projecting arm *m*, and held against the leaves by the action of the spring *b*. This finger has also a second finger, P, secured on the end of a spring attached to the arm *m*, which presses upon the leaf at or near the corner beneath the large finger K. The other holding-finger I is made of similar form

and held against the leaf by the spring *g*. The construction of this finger is shown in the detail side and top view, Figs. 8 and 9.

The several parts, being thus constructed and arranged, will act to turn the leaves or sheets in the following manner: The book or music is laid upon the desk and held open at the proper place by I K P, the arm C being in position on the left side of the desk, with its jaws at equal distances apart from the pad of the finger H. The depression of the lever F will then draw the arm C back and throw it against the right-hand side of the book and cause the pad L to rub against the top leaf and draw its edge from beneath the finger K. The continued movement of the arm C brings the jaw M against the book, and at the same time causes the projecting pin *d*, secured to the lever L, to strike against the desk B and raise the lever L from the leaf. This action allows the edge of the leaf to spring back and between the jaw M and the pad H, so that, as the jaw M strikes the book, it will be closed against the pad and grasp the leaf. In the movement of the arm C toward the leaf to be turned, the finger K is slightly raised by the pin *f* striking against the projecting leaf *a* of the finger, in order to permit the leaf to be easily drawn from beneath it by the rubbing-lever L. As the arm C and its grasping mechanism assume this position with the leaf thus seized, as shown in Fig. 3, the reaction of the spring S throws the arm C forward in the direction of the arrows, Figs. 2 and 3, and turns the leaf. While this movement of the arm continues, the side of jaw M′ strikes against the left side of the book or the desk, and throws the finger H into the depression in the center of the plate N and releases the leaf or sheet; at the same time that the finger I is raised by the action of the pin *f* on the side of the jaw M in striking against the projecting leaf O. The arm C then remains in this position until it is turned by the depression of the lever F to take another leaf or sheet. The jaw M′, in striking against the hinged plate J as the arm C turns to carry the sheet, causes the end of the curved spring wire *c*, secured to the side of the jaw, (see Figs. 1 and 3,) to pass through the notch *s* in the hinged plate J and pass behind it, so that, upon the retraction of the arm C by its spring, the plate will be slightly raised to allow the leaf turned to slip beneath it.

The arrangement of the parts also enables the leaves or sheets to be turned back again by the arm C, and in doing this they act as follows: The length of the cord G allows the arm C to be thrown forward only a certain distance in turning the leaf or sheet, so that the jaw M′ strikes the desk hard enough to cause the jaw M to release the edge of the leaf or sheet, but not enough to close the jaw M′ upon the pad H; but, by depressing the small key O upon the side of the lever F, the upper end of the lever can approach nearly to the plate D and give an additional motion to the arm C, thereby causing the jaw M′ to strike against the metal plate J under the leaves, and thus slide under the leaves or shut and close upon them, so that the jaw M′ and pad H grasp the leaves or sheets between them and carry them over as the arm C is turned by the depression of the lever E.

My invention, as thus constructed, will act to turn the leaves of a book or sheets of music automatically in a perfect manner.

It may also be used to feed paper to printing-presses; and I design to use it for this purpose, as the operation of rubbing back the paper and presenting it to the grasping-jaws or fingers is substantially the same as in turning the leaves of books, &c.

I claim as my invention—

1. The combination, with the rubbing-finger L, of the griping-jaws M M′ and finger H for seizing and holding the sheets during the process of turning the leaves or sheets, constructed and operated substantially as above described.

2. The combination, with the rubbing-finger L, griping jaws M M′ and finger H of the arm C and spring S, and its connection with the arm for turning the leaves or sheets, constructed and operated substantially as above described.

3. The combination, with the rubbing-finger L, griping-jaws M M′, and finger H, arm C, and spring, or equivalent therefor, of the key F for operating the arm C, constructed and operating substantially as above described.

4. The mechanism for holding the leaves after being turned, consisting of the spring-fingers I, K, and P, constructed and operating substantially as above described.

5. The combination, with the jaw M′, of the curved spring *c* for raising the hinged plate J, constructed and operating in the manner described and specified.

6. A machine for turning sheets of paper composed of the following elements—namely, a rubbing mechanism to separate the sheets or leaves of paper, a griping mechanism for seizing and holding the sheets of paper, and a turning mechanism for turning the sheets of paper, co-operating together, and constructed and operating substantially in the manner above described.

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Witnesses:

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