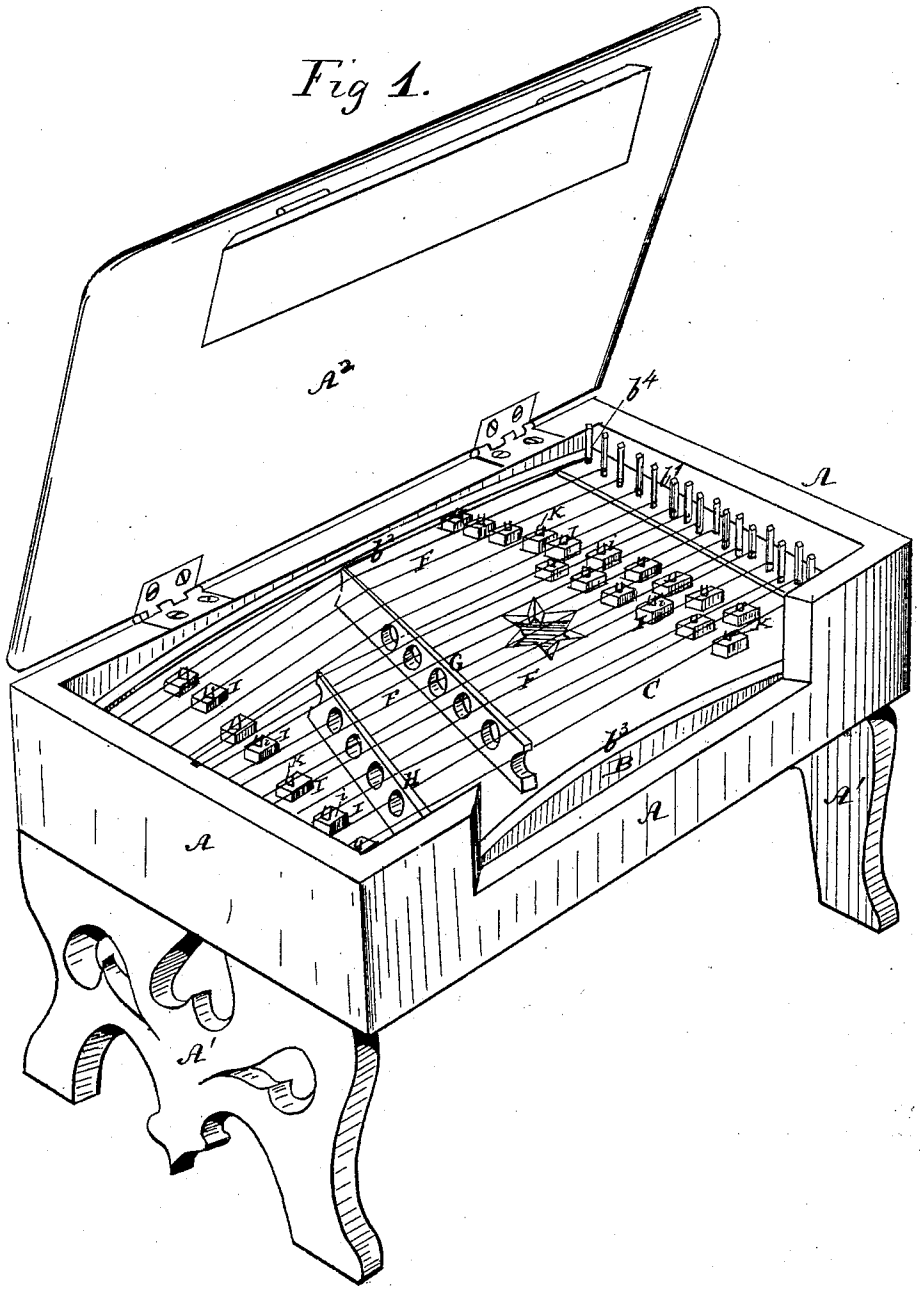
2 Sheets—Sheet 1.

J. A. McKENZIE.

DULCIMERS AND SIMILAR MUSICAL INSTRUMENTS

No. 171,031. Patented Dec. 14, 1875.

Fig 1.



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2 Sheets—Sheet 2.

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Fig 2.

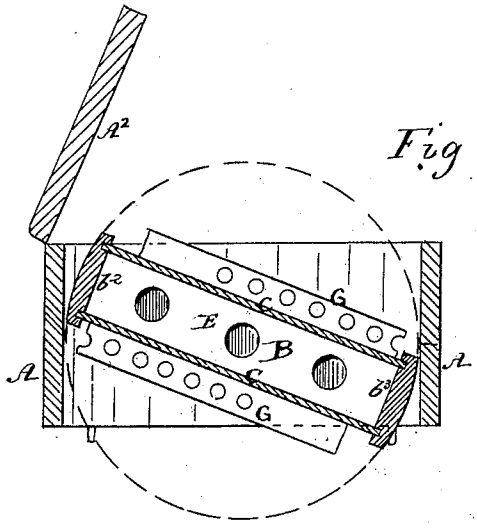


Fig 3.

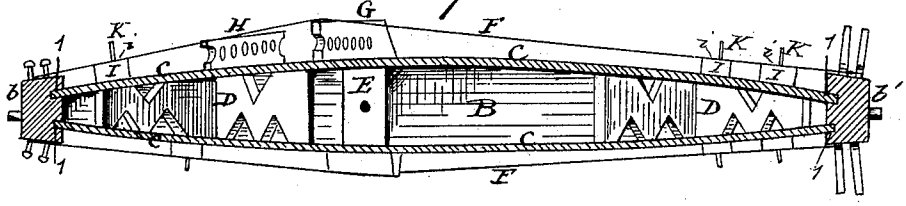
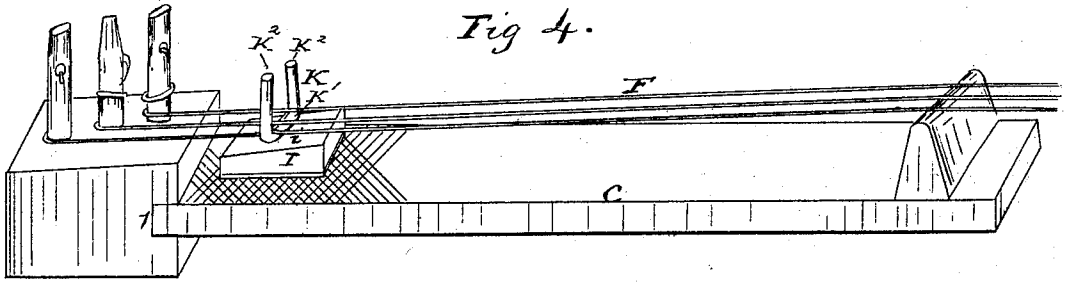


Fig 4.



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UNITED STATES PATENT OFFICE.

JAMES A. McKENZIE, OF MINNEAPOLIS, MINNESOTA.

IMPROVEMENT IN DULCIMERS AND SIMILAR MUSICAL INSTRUMENTS.

Specification forming part of Letters Patent No. **171,031**, dated December 14, 1875; application filed August 31, 1875.

To all whom it may concern:

Be it known that I, JAMES A. McKENZIE, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Piano-Harps; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to an improved musical instrument or piano-harp. According to my invention I employ a reversible box or frame, supported on axes carried by an external case mounted on trusses, legs, or other suitable supports. The reversible frame is, by preference, formed in four parts, which are fitted into each other at the ends, and secured by screws or other suitable means. Grooves are formed in the sides and ends of the frame for the reception of the sides and ends of the sounding-boards, of which there are two, arranged in such manner that the strings applied over such boards may be alternately played upon. This instrument is double-stringed, and each sounding-board is provided, by preference, with the same number of octaves of strings, and is constructed with an additional bass-bridge on the left hand, so that the bass strings are raised above the treble at the left as well as on the right. Adjustable frets, working on inclined fret-blocks, are applied at each end of the instrument, in such manner that by simply sliding the fret of any given string or series of strings on its block by means of the thumb and finger the distance of vibration of string may be shortened or decreased, thereby raising or lowering the sound produced one half-tone, or making a flat natural or a natural sharp.

But that my invention may be fully understood I will describe the same in detail by reference to the accompanying drawings.

Figure 1 represents a perspective view; Fig. 2, a vertical, and Fig. 3 a horizontal, section of a piano-harp constructed according to my invention. Fig. 4 represents an enlarged view of a portion of a sounding-board, showing one of the frets and fret-blocks on a larger scale.

In each of the views similar letters of reference are employed to indicate corresponding parts wherever they occur.

A A represent an external case, which is supported on suitable legs or trusses A^1, and is provided with a folding top or cover, A^2. Within the case is supported a reversible frame, B, composed of four parts, b b^1 b^2 b^3, fitted into each other at the ends b^4, and secured together by screws or other suitable means. This frame is pivoted centrally within the case A, and the parts b b^1 b^2 b^3 are grooved at 1 1 to receive the edges of the sounding-boards C, in such manner as to form an air-tight joint, and avoiding the necessity of employing glue or similar material to hold the parts together, as is customary in constructing instruments of this character. D D and E are stretchers arranged between the sounding-boards, for the purpose of keeping the same apart and giving strength and rigidity to the instrument. The stretchers D D are, by preference, formed X-shaped, while the central one, E, is carried straight across the instrument, and serves as a holding or retaining means, to which the side pieces b^2 b^3 may be connected by screws or other suitable means. F F are the wires or strings, which are arranged double, and at the bass are conducted alternately over the ordinary bridge G, placed on the right hand, and over a supplementary bass-bridge, H, arranged on the left, thereby enabling the bass strings to be raised above the treble at both sides of the instrument, so that the advantages of four strings are obtained on each side of the instrument. I are series of fret-blocks, of which there may be two or more tiers, arranged one in front of the other. These fret-blocks are formed of wood or other suitable material, suitably padded or roughened on their under side, and provided with an inclined or inclined and grooved or notched upper surface, i. Upon the upper surface i of each fret-block I is arranged a fret, K, which is, by preference, formed of metal, with a flat bearing-surface, K^1, for the wire or wires to rest upon, and, having arms or projections K^2, may be readily embraced by the thumb and

finger, and the frets moved backward and forward on the fret-blocks. In tuning the instrument the frets are, by preference, arranged centrally on the blocks, and the blocks and frets adjusted in position, so as to give an approximation of the tone required, when, by moving the frets backward or forward on the blocks, the greatest nicety of adjustment or alteration of tone may be obtained instantly without the trouble of tuning by means of a key, as is the case with ordinary stringed instruments. By arranging the strings in an equal number of octaves on two sounding-boards, on each side of the box or frame, great durability is obtained to the instrument, and it is not liable to warp or twist by reason of the strain of the strings, or by change of weather or climate, and, in addition, great effect is obtained by reason of an instantaneous change from flats to sharps, or vice versa, being obtainable by simply turning the box or case and playing on the strings on the opposite side—an operation which can be performed by an experienced musician so as not to interfere with the performance of a piece of music.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A musical instrument constructed with a frame supporting two sounding-boards and two sets of strings or wires, and arranged to be revolved within a case or frame, substantially as described.

2. A musical instrument constructed with a grooved frame, B, supporting two sets of strings or wires, F F, on opposite sides, the sets of strings or wires being arranged to be played upon alternately, substantially as shown and described.

3. In combination with the sounding-board and strings of a musical instrument, the bridges G and H, all constructed and arranged to operate substantially as described.

4. An adjustable fret-block, *i*, having inclined upper surface I, in combination with the strings, and with an adjustable fret, K, substantially as set forth.

5. In a stringed musical instrument, the combination of the grooved frame B, sounding-board C, and stretchers D D and E, substantially as shown and described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JAMES A. McKENZIE.

Witnesses:
LEVI H. BARTLETT,
R. L. McKENZIE.