A. J. STRANDBERG & K. BREVA.

HARP.

APPLICATION FILED MAR. 13, 1914.

1,210,015. Patented Dec. 26, 1916.

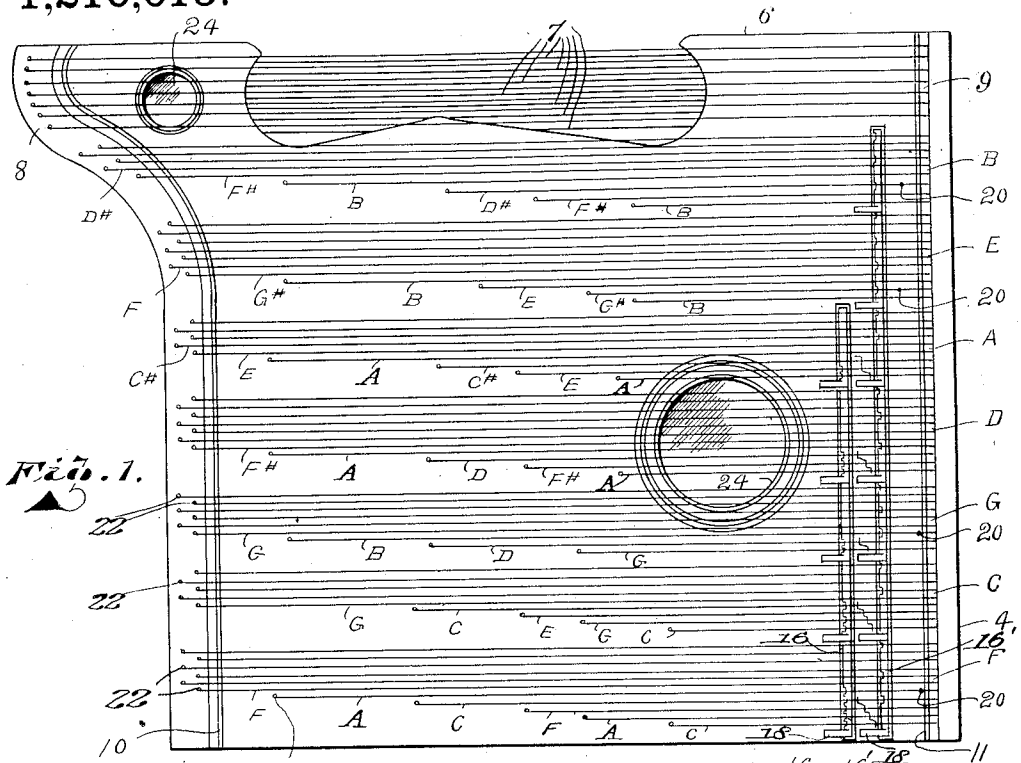
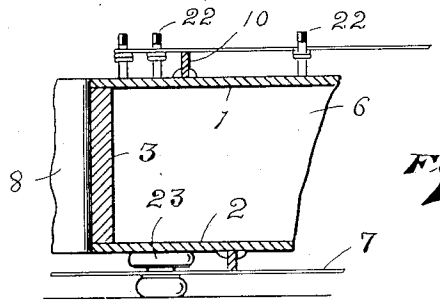


Fig. 1.



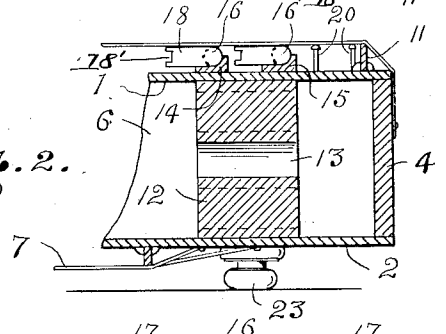


Fig. 2.

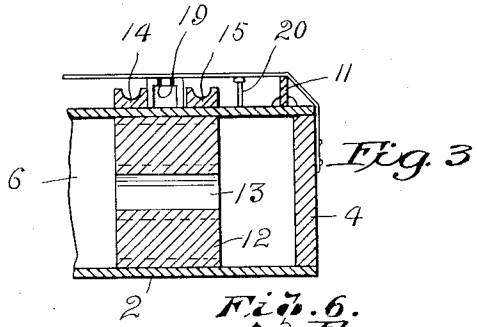


Fig. 3

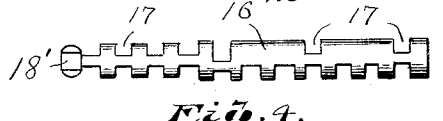


Fig. 4.

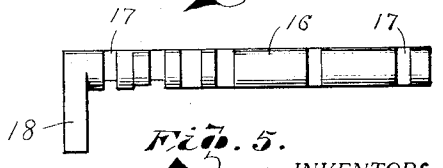


Fig. 5.

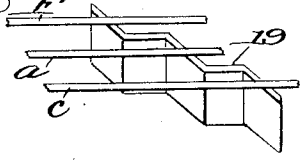


Fig. 6.

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HARP.

1,210,015. Specification of Letters Patent. Patented Dec. 26, 1916.

Application filed March 13, 1914. Serial No. 824,483.

To all whom it may concern:

Be it known that we, ADOLPH J. STRANDBERG, subject of the King of Sweden, and KNUTE BREVA, subject of the King of Norway, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Harps, of which the following is a specification, reference being had therein to the accompanying drawing.

Our invention relates to improvements in harps.

An object of our present invention is to produce such an instrument which has certain auxiliary attachments whereby the scope of the instrument may be considerably increased by tuning the instrument to various keys.

In the accompanying drawings: Figure 1 is a top plan view of our improved harp. Fig. 2 is an enlarged fragmental vertical section through the body portion of the harp. Fig. 3 is a similar section with the adjustable tone changing elements removed. Fig. 4 is a side elevation of one of the adjustable tone changing elements. Fig. 5 is a side elevation of Fig. 4 taken at right angles thereto. Fig. 6 is a perspective view of a preferred form of intermediate support or strut for the strings.

Referring now to the drawings in which like reference numerals designate similar parts, the sound box of the instrument comprises the top wall 1, the bottom wall 2, the end walls 3 and 4 and the side walls 5 and 6. The side wall 6 is somewhat cut away in a curved form both for convenience, and also for the better access of sound waves to the auxiliary sympathetic strings 7 which are placed upon the under side of the box. The corner 8 of the sound box is extended longitudinally to form a curved portion which provides a longer reach for the auxiliary strings 7, and a group of bass strings 9 for the purpose of improving the tone of these strings.

A bridge or rest 10 is formed upon the top 1 of the sound box and adjacent the end wall 3 over which the strings are stretched in a manner common to such instruments. A similar bridge 11 is formed adjacent the end wall 4 for the same purpose.

In the instrument illustrated in the drawings, there are shown seven groups of strings besides the bass strings 9 and these seven groups or series are indicated as follows: F—C—G—D—A—E and B. F has eleven strings, C nine, G nine, D eleven, A nine, E eleven and B nine.

A partition wall 12 is placed within the sound box and spaced a short distance from the end wall 4, it being rigidly fixed to the top and bottom walls of the box, and having a plurality of holes 13 therethrough. Directly above the partition 12 and fixed upon the top 1 of the box are two bed pieces 14 and 15 which are of the same material as the box and semicircularly concave upon their uppermost face to form trough-shaped members for the reception of the tone changing mechanism. These mechanisms comprise a plurality of cylindrically shaped rods 16 and 16′, which are designed to snugly rest within the concaved surface of the bed pieces and beneath the strings of the instrument. The tone changing mechanisms or elements in the different groups of strings abut each other end to end. There are two tone changing elements for each one of the groups F—C—G—D and A and one for each of the groups E and B.

We will not here describe each and every notch necessary for the proper changing of the pitch of all of the strings on the entire instrument, as it is considered unnecessary. There are formed upon each rod 16 and 16′ notches 17 to correspond to the requirements of each string engaging the tone changing element. As the drawings indicate, said notches are of varied depths diametrically and located longitudinally of the said elements, but are so arranged that when the crank arms 18 of the two rods 16 and 16′ are down forward parallel with the top of the sound box, as shown in Fig. 1, all of the strings in the group affected are tuned to give a major scale. When the rod 16′ in the bed 15 is turned with the crank arm 18 up vertically, then all the strings in the group affected are tuned to give a minor scale, and when this crank is turned down backward, the strings become inharmonious. Again, when the cranks of both elements under one group of strings are turned up vertically, the group is still inharmonious, but when the crank arm 18 of the rod 16′ in the bed 15 is turned down backward and the one in the bed 14 left standing, then the strings in the group thus affected are tuned to give a major chord of a tonic a semitone higher than before. When both rods 16 and 16′ are turned down backward with their crank arms parallel with

the top of the sound box the group thus affected are tuned to give a minor chord of a tonic a semitone higher than before. Thus the notches 17 in the tone changing elements may be formed in different radial positions to accommodate the different strings in alinement therewith, there being just three different positions of each rod 16 and 16′ which affect the tone of the various strings. The notches are cut upon their cylindrical rods in various radial positions, that is to say, some rods have notches upon three sides and no two of the twelve rods are notched alike. Taking the C group of strings as an example, there are four different scales to be had in this group by adjustment of the tone changing elements irrespective of the bass strings 9. The four scales above mentioned are as follows: In the chord of C major there is C, G and E; in the chord of C minor there is C, G and E flat; in the chord of C sharp there is C sharp, G sharp and F; in the chord of C sharp minor there is C sharp G sharp and E.

It is found that for the most convenient and perfect adjustment of certain strings in certain groups, for instance, C—A—F and C strings in F group; C—G—E and C in C group; G and D and B in G group; A—F and D in D group, and A—E and C in A group; fixed rests on bridges 19 are essential intermediate the bed pieces 14 and 15, and which may or may not engage the string above them according to the adjustment of the rods 16 and 16′. These bridges may be formed in any convenient manner to properly support the strings and give them the desired pitch. A number of such bridges 19 may be formed of a single piece of metal as shown in Figs. 1 and 6 or of a solid block with slight elevations upon it as shown in Fig. 3. We find that a similar support is necessary intermediate the bed piece 15 and the bridge 11 for the A string in the F group; B string in G group; G string in E group; and D string in B group, and such supports are indicated by the numeral 20 and are of any desired construction to properly support the strings. In some cases it may not be necessary to make use of such auxiliary supports, but in practice we have found them to be convenient.

It will be noted that E group and B group require but one tone changing rod 16′ apiece as this is found ample for the adjustment in such groups.

Tuning pins 22 are arranged as desired to suit requirements. Suitable legs 23 are also provided for the support of the instrument and these may be arranged upon the bottom board 2 as may be required. Notches 18′ are formed in the ends of the crank arms 18 for convenience of manipulation as the finger nail will readily catch in said notch for the purpose of turning the crank.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A musical instrument of the character described comprising a sound box, a plurality of strings drawn taut across one surface thereof, two parallel trough-shaped members arranged on the sounding board and adjacent one edge thereof, revoluble pitch changing elements mounted within the trough-shaped members and beneath the strings, whereby the said strings are engaged or disengaged for the purpose of changing the key thereof.

2. A musical instrument of the character described comprising a sound box, a plurality of strings drawn taut across one surface thereof, two parallel trough-shaped members arranged on the upper face of the sound box and beneath the strings, one of the said members longer than the other, revoluble key changing elements within the said trough-shaped members, the said members adapted to be moved to occupy three different positions for changing the key of the strings.

3. A musical instrument of the character described, comprising a sound box, a plurality of strings drawn taut across one surface thereof, a plurality of horizontal revoluble rods mounted upon the box and positioned intermediate the strings and the box, said rods mounted to assume three different positions whereby the strings are engaged or disengaged by the rods at will.

4. A musical instrument of the character described, comprising a sound box, a plurality of strings drawn taut across one surface thereof and arranged in groups, a plurality of horizontal revoluble pitch-changing rods for each group of strings, the pitch-changing rods being mounted upon the box intermediate the strings and the latter and each of said rods being mounted to assume three different positions, whereby the strings are engaged or disengaged by the rods for the purpose of changing the key thereof.

5. A musical instrument, comprising a sound box, a plurality of strings drawn taut across one surface thereof, and resting upon fixed bridges one adjacent each end of the box, a plurality of horizontal revoluble bridges having a plurality of differently arranged notches thereon, said bridges mounted upon the box intermediate the fixed bridges and engaging the strings in such a manner that the key thereof may be modified by adjustment of the revoluble bridges.

6. A musical instrument of the character described, comprising a sound box, a plurality of strings drawn taut across one surface thereof, two parallel trough-shaped members arranged on the upper face of the sound box and beneath the strings, revoluble key changing members mounted within the

trough-shaped members, and a partition wall within the sound box and arranged directly below and parallel with the said trough-shaped members, the said partition having a plurality of openings therethrough.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

ADOLPH J. STRANDBERG.
KNUTE BREVA.

Witnesses:
S. GEO. STEVENS,
W. H. DENHAM.