M. A. CLARK.

HARP.

APPLICATION FILED JUNE 17, 1911.

1,005,157. Patented Oct. 10, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

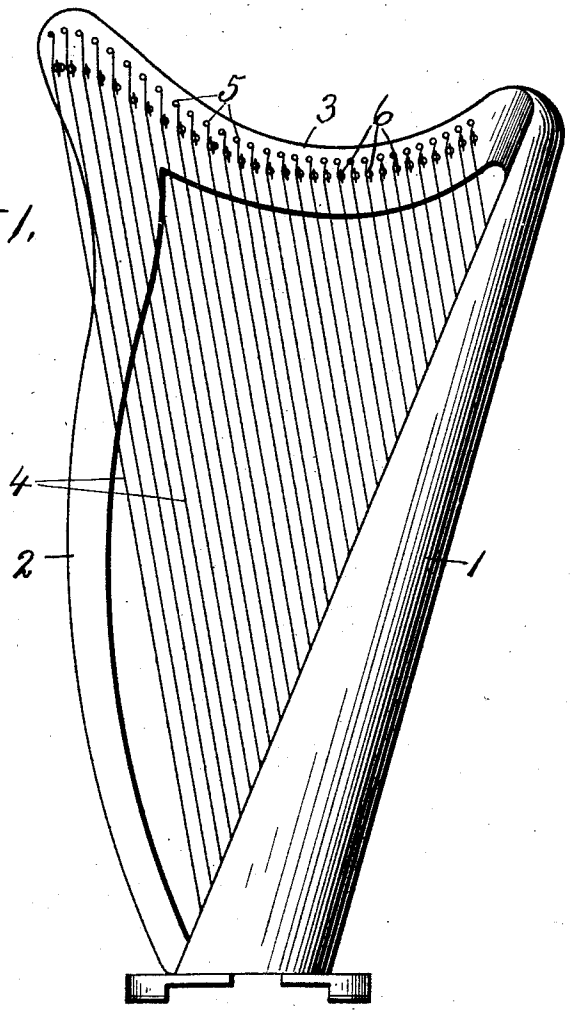
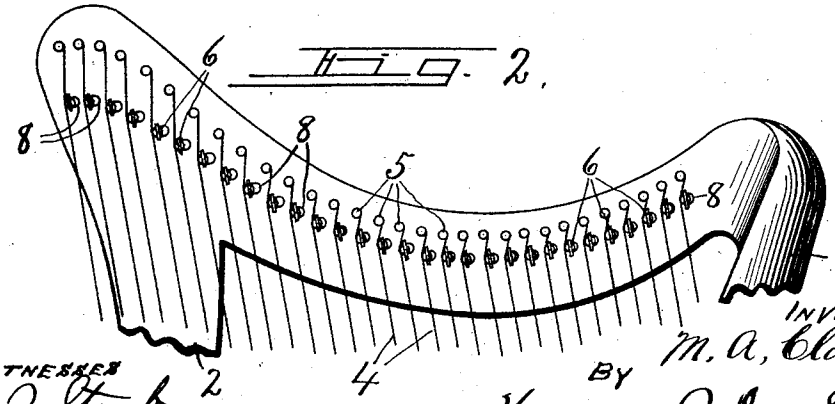


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3,

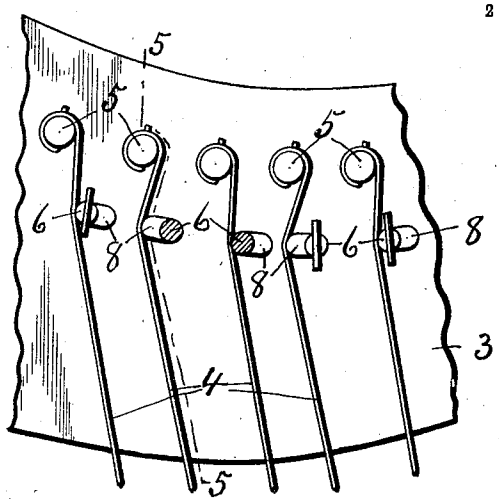


Fig. 4

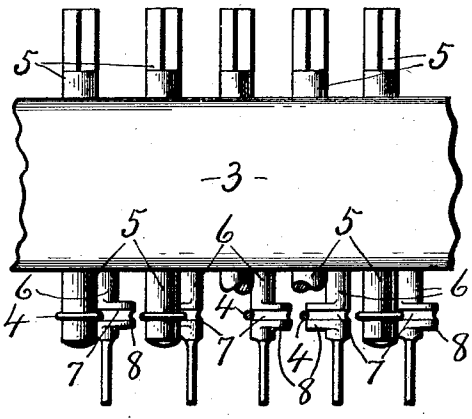


Fig. 5,

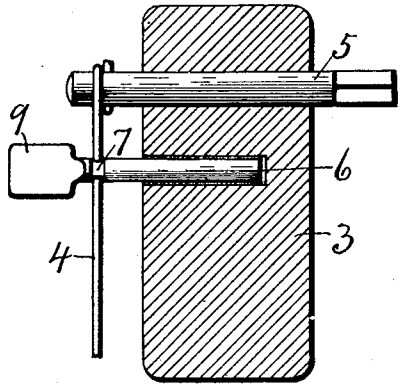
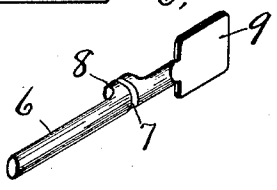


Fig. 6,



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UNITED STATES PATENT OFFICE.

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HARP.

1,005,157. Specification of Letters Patent. Patented Oct. 10, 1911.

Application filed June 17, 1911. Serial No. 633,817.

To all whom it may concern:

Be it known that I, MELVILLE A. CLARK, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Harps, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in harps of the class set forth in my pending application #630,278 filed May 31, 1911 and refers more particularly to means for varying the tension or pitch of the strings.

The main object is to provide simple means controlled at will for varying the pitch of any one or more of the strings independently of the tuning pins and also for varying the vibratory length of the strings. In other words, I have sought to provide means whereby one or all of the strings may be "sharped" or raised a half tone and still preserve the full length of vibration of each string.

Other objects and uses relating to specific parts of the string tensioning means will be brought out in the following description:

In the drawings—Figure 1 is a side elevation of a harp embodying the various features of my invention. Fig. 2 is an enlarged side elevation of the upper portion or neck of the harp showing more particularly the relative projections of the cams on the bridge pins. Fig. 3 is a still further enlarged face view of a portion of the neck of the harp and adjacent portions of the strings and tuning pins showing also the adjacent bridge pins and cams partly in section. Fig. 4 is a top plan of the mechanism shown in Fig. 3. Fig. 5 is a transverse sectional view through the neck of the harp taken on line 5—5, Fig. 3. Fig. 6 is a perspective view of one of the bridge pins.

This harp comprises an upright hollow body —1—, a pillar —2— diverging upwardly from the base of the body —1—, and a neck —3— connecting the upper end of the pillar to the hollow body, all of such parts being rigidly united to each other to form an open substantially triangular string frame for supporting a series of strings —4—. The inner side of the hollow body —1— is preferably flat and tapered from bottom to top to form a suitable sounding board to which the lower ends of the strings are attached. These strings extend upwardly and diagonally from the sounding board or inner side of the hollow body —2— and are attached to individual tuning pins —5— which are passed transversely through corresponding apertures in the neck —3— and extend from a point in proximity to the upper end of the inner face of the sounding board to a point in close proximity to the extreme opposite end of the neck beyond the adjacent end of the pillar —2— so as to permit the use of a relatively large number of strings on a comparatively small frame. The upper ends of the longer strings, therefore, extend across one side of the upper end of the pillar but are spaced a sufficient distance apart therefrom laterally to permit free vibration of the strings without liability of coming in contact with either the pillar or neck of the frame and for this purpose the neck and upper end of the pillar are offset laterally to one side of the center of the sounding board in the manner set forth in my pending application previously referred to and not necessary to herein illustrate or describe for the reason that it forms no part of my present invention.

A series of bridge pins —6— are rotatingly mounted in the neck —3— directly under and in close proximity to their respective tuning pins —5— so as to bear against the adjacent portions of the corresponding strings —4—. Each string is, therefore, provided with a separate rotarily adjustable bridge pin and each bridge pin is provided with a transverse groove —7— and a lateral projection or cam —8— for receiving and engaging the adjacent portion of the corresponding string —4—. The projections —8— vary according to the length of the strings. That is, those for the longer strings are greater than those for the intermediate and shorter strings and are carefully gaged or sized to vary or raise the pitch one-half tone from the normal or natural tone of the corresponding strings when adjusted to their tensioning positions. This difference of projection or throw of the cam or projections is more clearly illustrated in Fig. 2 in which it will be observed that the strings are divided into sets of ten each and that the cams for the first set of longer strings, in this instance ten are of substantially the same throw or projection, while those for the next or intermediate set are of slightly less throw, and those for the remaining shorter set are of still less throw or pro-

jection, but the main object is to gage the amount of throw to correspond to that which may be necessary to raise the pitch of the string one-half tone from its normal pitch. The groove —7— in each of the bridge pins preferably extends around and across the face of the cam —8— for the purpose of holding the string against sliding movement upon the pin and the entire set of grooves collectively enable the strings to be brought to and held in the same plane irrespective of the adjustment of the tuning pins. Each bridge pin may, therefore, be rotarily adjusted independently of the corresponding tuning pin to throw its cam into and out of contact with the adjacent string, and for this purpose I have provided the pins with suitable hand pieces —9— by which they may be manipulated.

In normal position the strings rest in the groove —7— on the side of the pin opposite to the projections —8— in which position the strings are tuned by the adjustment of the tuning pins —5— in the usual manner and when it is desired to sharp any one or more of the strings, the corresponding bridge pins —6— may be rotarily adjusted by means of their hand pieces —9— to bring their cams —8— into contact with the adjacent portions of the strings, thereby increasing the tension of said strings to give the desired pitch. It is now clear that in either position of adjustment of the bridge pins, the vibratory length of the strings remain substantially the same which is an important feature of the invention in that the instrument maintains the maximum volume of tone under varying conditions of its strings, and while I have shown rotarily adjustable bridge pins having cam surfaces as taking the place of the bridge pins which are commonly employed in connection with tuning pins, I do not wish to limit myself to this substitution but rather to the employment of string tensioning means having cams or projections thereon by which the pitch of the strings may be changed or raised one-half tone.

What I claim is:

1. In a harp, a bridge-pin adjustable relatively to its string for varying the pitch.

2. In a harp, a bridge-pin adjustable rotarily and provided with a cam for engaging the corresponding string to vary the pitch.

3. In a harp, a plurality of bridge-pins having cams of different throw for engaging and varying the pitch of their corresponding strings.

4. In a harp, a string-frame, strings and tuning pins in combination with cams rotarily adjustable at will into and out of contact with their corresponding strings to vary their pitch.

5. In a harp, a string-frame, strings and tuning-pins, in combination with bridge-pins rotatingly mounted on the frame and provided with cams for engaging and varying the pitch of their respective strings.

In witness whereof I have hereunto set my hand on this 29th day of May, 1911.

MELVILLE A. CLARK.

Witnesses:
H. E. CHASE,
E. F. SPEARING.