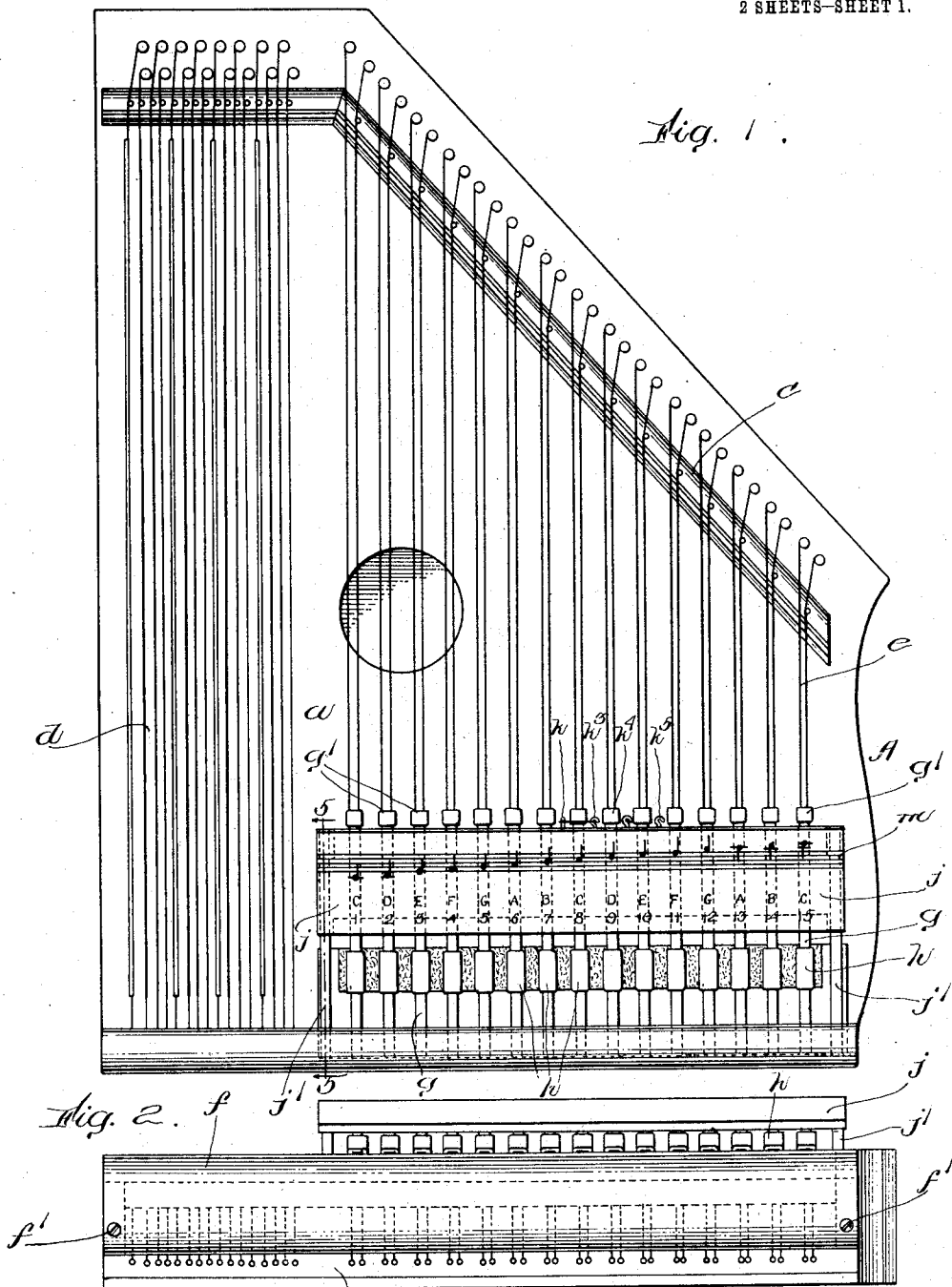


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 PLAYING ATTACHMENT FOR STRINGED MUSICAL INSTRUMENTS.
 APPLICATION FILED JAN. 18, 1912.

1,044,553.

Patented Nov. 19, 1912.
 2 SHEETS—SHEET 1.



Witnesses:
 A. L. Tolson
 W. P. D.

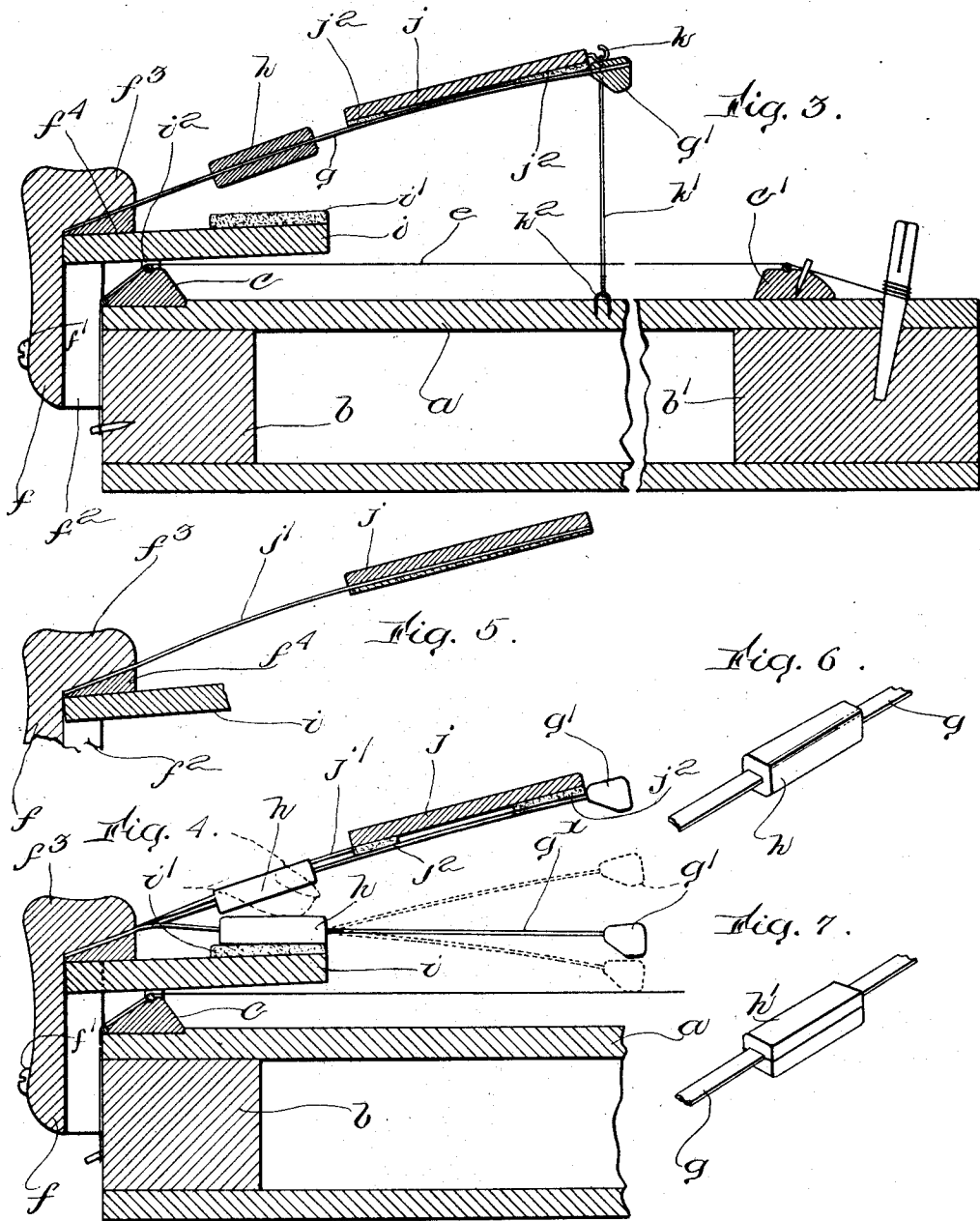
Inventor:
 Henry C. Marx
 By Elmer B. Dumbay, Attorney

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Witnesses:
A. L. Folsom
W. S. Dot

Inventor:
Henry C. Marx
By George Brown, Secretary
Atty.

UNITED STATES PATENT OFFICE.

HENRY C. MARX, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE PHONOHARP COMPANY, OF EAST BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

PLAYING ATTACHMENT FOR STRINGED MUSICAL INSTRUMENTS.

1,044,553.

Specification of Letters Patent.

Patented Nov. 19, 1912.

Application filed January 18, 1912. Serial No. 671,875.

To all whom it may concern:

Be it known that I, HENRY C. MARX, a citizen of the United States, and resident of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Playing Attachments for Stringed Musical Instruments, of which the following is a specification.

This invention relates to citherns or other stringed instruments of a similar nature, and has for its object to provide an attachment therefor comprising spring strikers or hammers which may be manually operated to produce the effect of a mandolin.

On the accompanying drawings, which illustrate one embodiment of the invention,—Figure 1 represents a plan view of a musical instrument equipped with the invention. Fig. 2 represents an end elevation of the same. Fig. 3 represents an enlarged longitudinal section through the instrument. Fig. 4 is a side elevation illustrating the operation of one of the spring strikers or hammers. Fig. 5 shows the stop bar in section, being in effect a section on the line 5—5 of Fig. 1. Fig. 6 represents the finger-piece on one of the spring hammers. Fig. 7 illustrates another form of finger-piece.

The instrument is a cithern or mandolin harp and the body or sounding box thereof is indicated at A and is shown as having a sounding board *a* with thick end walls *b b'*. The bridges, which are supported upon the sounding board, are indicated at *c c'*. Arranged over the sounding board are the strings *d* which are conveniently grouped into chords for manipulation with the left hand, and the open scale of melody strings *e* are arranged on the other side of the sounding board. The latter strings *e* may be arranged in pairs and tuned in unison as in a mandolin, and the strings of each pair are arranged relatively close together so that they may be struck by a single hammer or striker.

The attachment is designed to be secured to any one of numerous instruments upon the market without changing their construction or requiring a special construction for its being secured thereto. The attachment consists of a support which is shown as comprising an elongated block *f* secured to the end bar *b* by screws *f'* or other fastenings. Between its ends the block is provided with

a cavity *f²* on its inner side next the end *b* so as to not engage the strings or their attaching pins. The block *f* has at its upper edge a lateral flange *f³* which projects a short distance over the body of the instrument as illustrated in Fig. 3. The under face of the flange *f³* is inclined to the horizontal and against it in the present embodiment of the invention are secured the ends of a plurality of spring hammers *g*, by means of a bar or strip *f⁴* which may be glued or otherwise secured in place. This strip extends into the cavity *f²* before referred to. Any other suitable means for attaching the ends of the spring hammers to the block may be employed. Each of the spring hammers *g* consists of an elongated strip of spring steel or other equivalent metal having at its free end a head or striker *g'*. This head or striker may be made of any suitable material according to the character of the sound to be produced, but I preferably make it of lead and cast it upon the end of the spring strip as shown in Fig. 3. The free portions of these spring hammers all normally lie in a plane at an inclination to the strings of substantially thirty degrees so that the heads *g'* are fairly remote from the strings and may be moved through relatively long arcs. One spring hammer is arranged above each pair of melody strings as shown in Fig. 1. At a point relatively close to the fixed end of the strip, I attach to each spring hammer what I term a finger-piece *h*. This finger-piece serves an important function to be explained. It is elongated as shown in Fig. 3 and may be formed of lead cast on the strip, as illustrated in Fig. 6, or it may be made of pieces of wood or other substantially non-resilient material suitably fastened on the strip, as shown in Fig. 7 and indicated at *h'*.

Below the hammers and above the strings and spaced therefrom there is provided what I term rest which consists of a flat bar *i* arranged transversely of the strings and rigidly attached at its outer edge to the block *f*. This rest underlies the finger-pieces *h* and is provided with a strip or layer of felt *i'* directly under the finger-pieces so as to be engaged thereby when the finger-pieces are depressed to operate the hammers, as will be explained. This rest is held by small blocks *i²* above the bridge *c* so as not to engage the strings which pass

thereover, said blocks resting upon the bridge on either side of the scale of melody strings *e*. By reason of this construction and arrangement of parts, it will be seen that the finger-pieces, which are carried by the hammers, are all exposed for manipulation so that the operator may actuate any one of the hammers by means of his finger, as illustrated in Fig. 4. In that figure, one of the hammers is indicated at *g*^{*} in a depressed position and in a state of rest, and it will be noted that the head *g*^{*} is some little distance from the string with which it coöperates. When the hammer is sharply depressed by the engagement of the finger with the finger-piece until the finger-piece engages the rest *i* (or the felt *i*['] thereon), the head will be caused to vibrate, as indicated in dotted lines, so that the head will rapidly impinge upon the strings and produce a prolonged trill, and it will further be noted that the vibration of the strip terminates at the non-resilient finger-piece, the node of the vibration occurring at the end of the finger-piece. Should it be desired to produce a single clear note instead of a trill, the finger-piece may be depressed until it engages the rest and at once released before the head can strike the string a second time, as will be readily understood. By virtue of the normal position of each hammer at an inclination to the strings, it will be seen that the head will be moved through a relatively long distance before the finger-piece engages the rest whereby it will gather momentum sufficient to cause it to vibrate for a considerable length of time and impinge upon the string or strings at the end of each vibration so long as the finger-piece is held in engagement with the rest.

It is desirable that the vibration of the springs should be stopped as soon as they are released, so I provide what I term a stop, arranged transversely of the hammers and above their free ends, as shown upon the drawings. This stop is illustrated as consisting of a flat bar or plate *j*, attached at its ends in any suitable way to flexible metallic strips *j*['] which may be secured by the attaching strip *f*⁺ to the block *f* in the same manner that the hammers are secured. The flexible strips *j*['] are preferably considerably stiffer than the spring strips of the hammers *g*, and they are slightly bent as indicated in Fig. 5 so that their tendency is to raise the bar or plate *j* away from the strings. To the under side of the plate is secured one or more strips of felt *j*² to cushion the hammers when they are released. The heads *g*['] may lie beyond the outer edge of the plate *j* as shown in Fig. 3 if desired. The stop is adjustable toward and from the strings to permit of a variation of the distance through which the hammers are moved (so that I am able to produce a tone modu-

lated in volume), and also to provide for packing an instrument, having the attachment thereon, in a relatively shallow box or case. Midway between its ends, as shown in Fig. 1, the stop is provided with a hook *k* from which a flexible string *k*['] extends to a staple or attaching device *k*² secured to the sounding board between two adjacent pairs of strings. This cord, when the instrument is in use, will normally hold the stop in the position shown in Fig. 3. It will be observed, however, that there are other hooks *k*³ *k*⁴ *k*⁵ at the edge of the stop, over which the body portion of the string *k* may be looped so as to shorten its effective length and thus draw the stop and the entire set of hammers close to the strings so as to lie almost in parallelism therewith. By looping the body of the string over one or the other of the hooks *k*³ *k*⁴ or *k*⁵, the distance between the stop and the strings may be varied as desired.

In use, the player or operator operates the groups of chords in the usual manner and depresses the finger-pieces of the various hammers in the order desired, causing each hammer to strike a single blow or a plurality of blows as he may wish.

The stop may serve another purpose. As shown in Fig. 1, there may be drawn thereon a staff *m* having notes corresponding to those of the strings which are immediately therebeneath. Each of the notes is indicated by its letter or character and is also indicated by a number. In the present instance, the melody strings are tuned to the key of C in a diatonic scale, there being two octaves, but it is evident that sufficient strings and hammers may be provided for a chromatic scale.

It is evident that the rigid or non-flexible finger-pieces may completely inclose the spring strips to which they are secured and by which they are carried, or that they may be located entirely either on the upper sides or lower sides thereof, although they preferably project both above and below the said spring strips so that they may be engaged by the fingers of the player and also may engage the rest when they are depressed so that the springs will not vibrate against the rest.

From the foregoing description, taken in connection with the drawings, it will be seen that the attachment possesses features of advantage which are of importance. In the practical manufacture and distribution of instruments of this general character, it is essential that they should be capable of being packed in as small a box or case as possible. I have, as previously indicated, so devised my attachment that its addition to the instrument does not necessitate a box or case any, or materially, deeper than those employed for citherns of the same size.

When the instrument is packed, the spring hammers are depressed into close proximity to the strings, by means of the stop, which is itself mounted upon springs, and the stop is held down by the cord *k'* as previously described. The stop itself is an added feature of my attachment, as it is engaged immediately upon the release of each spring hammer to hold the latter against vibration, and it also prevents the hammers from vibrating when the instrument is being transported. I regard the elongated finger-pieces as highly desirable in that they define with accuracy the nodes of vibration of the spring hammers, the importance of which will be recognized by those skilled in this art. Further, the location and construction of the springs permit the heads of the spring hammers to be struck against the strings with the desired force, although the whole body of hammers may be drawn toward the strings, so as to shorten the arc of movement and thus effect a modulation which is often desirable. The finger-pieces are relatively close to the fixed ends of the spring hammers, and the spring strips are substantially straight, *i. e.*, without return bends, so called, so that there is substantially no lateral or sidewise movement of the hammers, in consequence of which the heads impinge accurately upon their respective strings.

What I claim is:—

1. The combination with a stringed musical instrument; of a support secured to the instrument and arranged crosswise of the strings; a series of springs each having one end fastened to the support and a head or striker fastened on or near the other end, a finger piece attached to and carried by each spring relatively near its fixed end; a rest under the springs and directly below the finger-pieces thereon but spaced therefrom, and a stop above the free ends of the springs to arrest the vibration of the springs when the latter are released.

2. The combination with a stringed musical instrument, of a playing attachment therefor comprising a support secured to the instrument crosswise to the said strings, a series of spring hammers arranged lengthwise of said strings and lying at an angle thereto, each of said hammers consisting of a spring strip having one end secured to said support and its other end provided with a head or striker, a stop bar arranged crosswise of said hammers and normally engaged by the free ends thereof, a rest bar located between said hammers and said strings and extending crosswise of said strings, and exposed non-resilient finger-pieces carried by said hammers and attached thereto relatively near the fixed ends thereof, said finger-pieces being adapted to engage said rest when they are depressed.

3. The combination with a stringed musical instrument, of a playing attachment therefor comprising a support secured to the instrument crosswise to the said strings, a series of spring hammers attached to said support and projecting therefrom above said strings, a rest below said hammers and above said strings, a stop bar for the free ends of said hammers located thereabove, and means for adjustably mounting said stop bar whereby it may be moved toward and from said strings.

4. The combination with a stringed musical instrument, of a playing attachment therefor comprising a support secured to the instrument crosswise to the said strings, a series of spring hammers attached to said support and projecting therefrom above said strings, a rest below said hammers and above said strings, a stop bar for said hammers located above the free ends thereof, and means for yieldingly supporting said stop bar.

5. The combination with a stringed musical instrument, of a playing attachment therefor comprising a support secured to the instrument crosswise to the said strings, a series of spring hammers attached to said support and projecting therefrom above said strings, a rest below said hammers and above said strings, a stop bar for said hammers located thereabove, springs connected to said support for yieldingly supporting said stop bar, and means for adjustably connecting said stop bar to the body of said instrument.

6. The combination with a stringed musical instrument, of a playing attachment therefor comprising a support secured to the instrument crosswise to the said strings, a series of spring hammers each consisting of a spring strip attached at one end to said support and provided at its free end with a head or striker, a rest consisting of a bar attached to said support and projecting over said strings, an exposed finger-piece on and carried by each hammer and located above said rest, and a stop bar arranged beyond said finger-pieces to be engaged by the free ends of said spring hammers to hold them against vibration when they are released by the player.

7. The combination with a stringed musical instrument, of a playing attachment therefor, comprising a rest bar extending crosswise of the strings but spaced therefrom, a series of hammers, each hammer having a rigid piece, a flexible spring strip movable with and projecting from the end of said rigid piece, and a head or striker on the free end of said spring strip, said rest bar being located in a space between said rigid pieces and said strings so as to be engaged by said rigid pieces when the latter are actuated, and means for movably attaching said hammers to said instrument, where-

by when said rigid pieces are moved into engagement with and are arrested by said rest bar, the said heads are caused to vibrate from the ends of said rigid pieces and im-

5 pinge upon said strings.

8. The combination with a stringed musical instrument, of a playing attachment therefor, comprising a rest extending cross-
10 wise of the strings, a support attached to the body of said instrument and to which said rest is secured, a series of vibratory spring hammers secured to said support with their free ends projecting beyond said
15 rest, and exposed to be moved into engagement with said rest to cause their free ends to vibrate, and a stop bar parallel with but beyond said rest to be engaged by the free
20 ends of said hammers when said hammers are released and thus to hold the same normally from vibration.

9. The combination with a stringed musical instrument, of a playing attachment therefor, comprising a block, means for at-
25 taching said block to only one end of said instrument crosswise of the strings, a rest bar secured to said block and projecting over and across said strings, a series of vibratory spring hammers extending longitu-

dinally of the strings each having one end attached to said block and having a head on 30 its free end, a stop bar arranged crosswise of said hammers normally to engage the free ends thereof, and means attached to said block for supporting said stop bar.

10. The combination with a stringed musical instrument having a body and a series of 35 strings, of a playing attachment therefor, comprising a series of vibratory spring hammers arranged at an angle to the strings each having a head on its free end rela- 40 tively remote from said strings, means for attaching the other ends of said hammers to the body of said instrument, a rest between the hammers and strings to be engaged by said hammers when the latter are actuated, 45 and a stop bar transverse to said hammers for engaging and holding the free ends of said hammers against vibration, said stop bar having on its hammer-engaged face a
50 layer of cushioning material.

In testimony whereof I have affixed my signature, in presence of two witnesses.

HENRY C. MARX.

Witnesses:

MARCUS B. MAY,
P. W. PEZZETTI.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."