

(No Model.)

2 Sheets—Sheet 1.

J. A. WESER.
MUSICAL INSTRUMENT.

No. 570,582.

Patented Nov. 3, 1896.

FIG. 1.

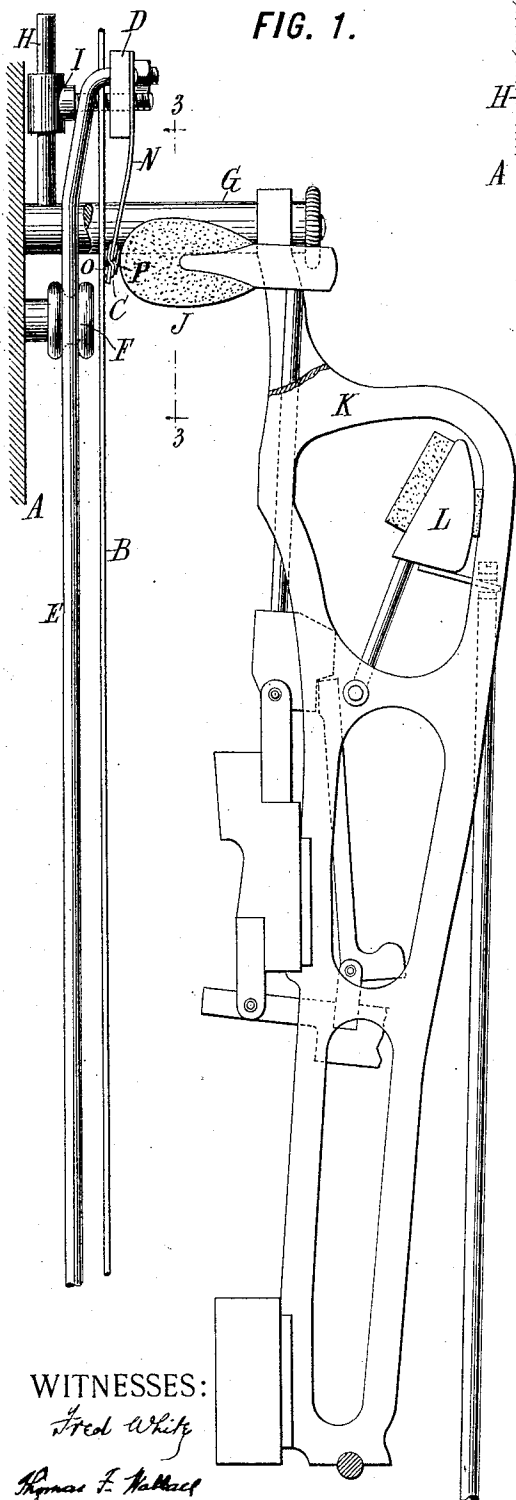
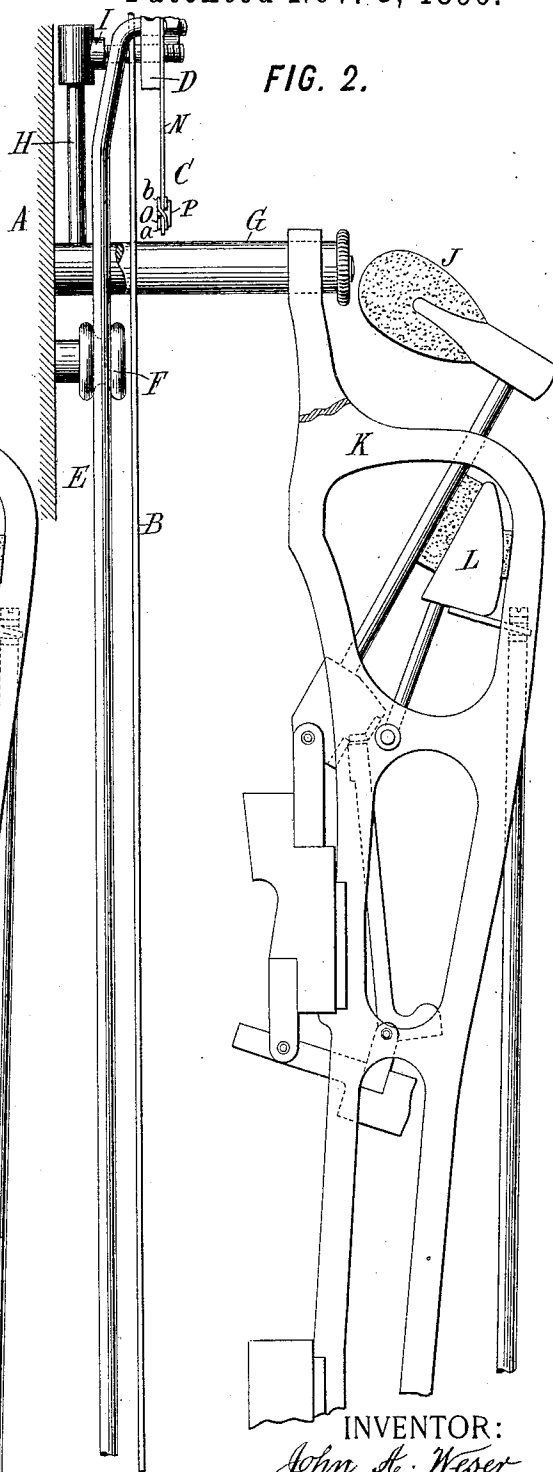


FIG. 2.



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FIG. 3.

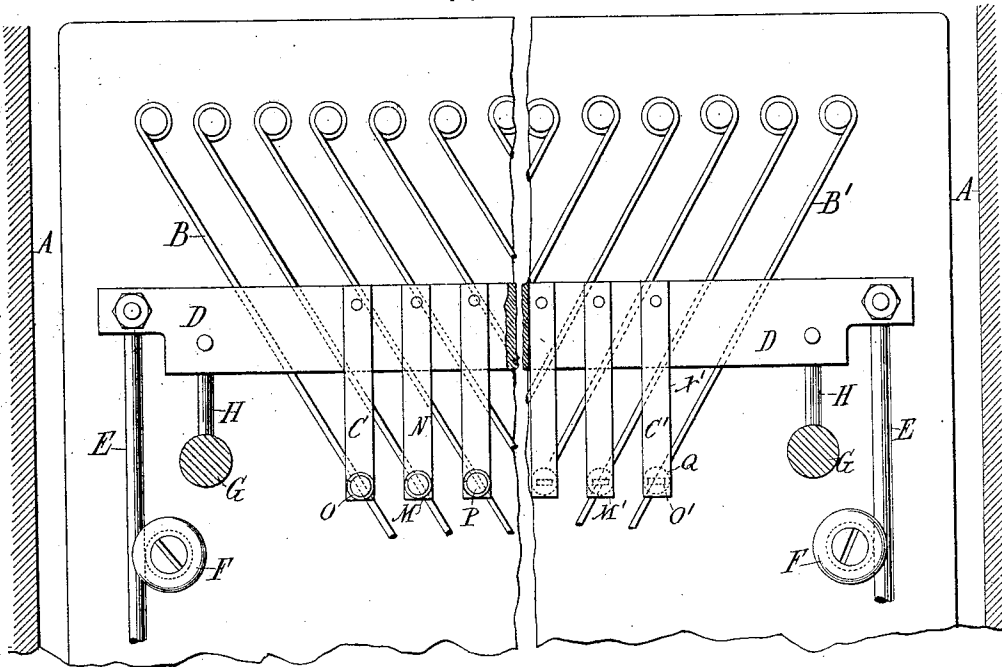


FIG. 13. FIG. 14.

FIG. 4. FIG. 5. FIG. 6.

FIG. 7. FIG. 8. FIG. 9

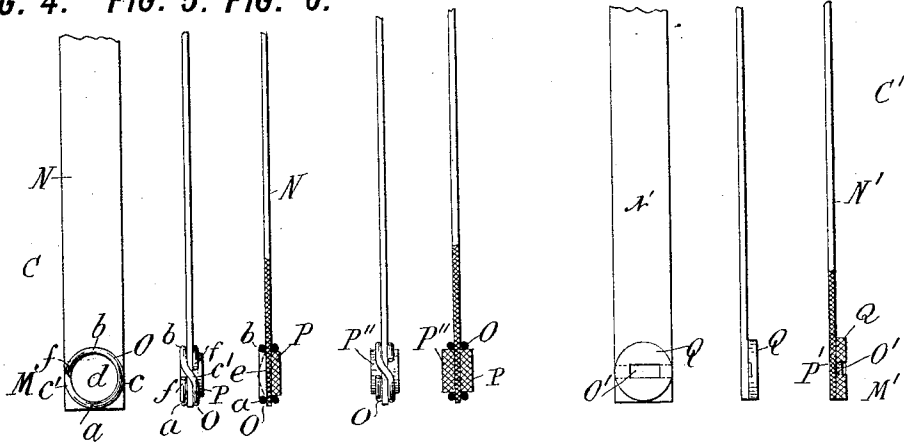


FIG. 10. FIG. 11. FIG. 12.

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MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 570,582, dated November 3, 1896.

Application filed May 21, 1896. Serial No. 592,410. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. WESER, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Musical Instruments, of which the following is a specification.

This invention relates to string instruments, such as pianofortes, and to harmonic devices therefor.

Heretofore in pianofortes, either with or without the well-known tone-modifying mechanism, such as the damper-lifter, the movable hammer-rest, and the muffler, it has been customary to use additional harmonic devices in the form of strikers movable into the path of the hammers to be driven by the latter against the strings to produce peculiar effects, and also vibrators movable into vibratory proximity to the strings and vibrated therewith to produce distinctive tonic effects. Various devices, either resonant or metallic or non-resonant, as felt, have been employed in this connection, the object being to increase the scope of the instrument and permit modifications of the tone to correspond to the requirements of the composition being executed, or to develop effects resembling those obtainable from other musical instruments or simultaneously obtainable from a number of different instruments.

My present invention aims to provide an improved device or attachment for string instruments which can be advantageously used either as a striker or vibrator and which is especially advantageous for the former purpose, and an attachment of this character which shall be more effective in use to create the desired tonic effect than have been those heretofore employed and which will not impair the striking-faces of the hammers when used therewith.

To this end in carrying out my present invention in its preferred form as adapted for a striker for pianofortes I provide a striker consisting of resonant or metallic and non-resonant cushioning or felt portions opposing the metallic portions of the striker to the strings to contact therewith at two separated points, and disposing the felt portion to contact with the strings at one or more points, preferably intermediate of the metallic points

on the string side of the striker, and to receive the major portion of the blow from the hammer on the hammer side of the striker, and I preferably form the striker of substantially annular form and of elastic metal under tension, as, for example, of a double coil or convolution of spring metal, the axis of which is at right angles or approximately so to the strings, inserting the felt between the convolutions of this coil to obtain the desired torsional strain thereon and to connect the parts together, and inclosing an additional felt pad within the coil at the hammer side thereof.

I also provide certain other features of improvement, which will be hereinafter more fully set forth.

In the accompanying drawings, which illustrate certain adaptations of my present improvements, Figure 1 is a fragmentary vertical section of a pianoforte, showing the strings and action and the preferred form of my improved attachment in the act of striking the string. Fig. 2 is a similar view showing the attachment raised to the inactive position and the hammer retracted. Fig. 3 is a fragmentary vertical section showing the strings and attachment in front elevation, the latter being in the depressed or active position, the view being cut on the line 3 3 in Fig. 1. Fig. 4 is a view of the string-face of the preferred form of attachment shown as employed for the base-strings. Fig. 5 is an edge view thereof, and Fig. 6 is a vertical section thereof. Fig. 7 is a view of the string-face of the preferred form of attachment shown as employed for the treble-strings of the instrument. Fig. 8 is an edge view thereof, and Fig. 9 is a vertical section thereof. Fig. 10 is a front elevation of the metallic portion of the striker shown in Fig. 4, and Fig. 11 is a side elevation thereof. Fig. 12 is a horizontal section of the striker shown in Fig. 7. Fig. 13 is an edge view of a modified form of striker, and Fig. 14 is a vertical section thereof.

Referring to the drawings, let A represent a musical instrument; B and B', the bass and treble strings thereof; C and C', the strikers thereof; D, a striker-bar or movable frame carrying the strikers; E, the side bars of this frame; F, guides for these bars; G, action-

posts; II, guide-pins thereon; I, guides connecting the striker-frame to these pins; J, the hammers; K, the action-frame, and L the hammer-rest. In their general features these 5 parts are of well-known construction and operation, the parts shown being taken as examples, for which any other known or suitable parts may be substituted.

As usual in pianofortes, the strikers C C' 10 are pendent objects movable into and out of the path of the hammers and arranged when in that path to be struck by the corresponding hammer and thereby moved against the corresponding string to give the desired effect 15 from the latter. When the strikers are removed from the path of the hammers, they are inactive, and the instrument can be used independently of them. They can be moved into and out of action at will by raising or 20 lowering their frame or rail D, as usual, and they can be, as an attachment, removed from or applied to the instrument by disconnecting or connecting their rail D to the rods E or in any other suitable manner, as heretofore. 25

According to my present invention the striker itself is provided with various features of improvement, and the character of striker is preferably also varied for different portions 30 of the instrument.

The preferred construction of striker is shown in detail in Figs. 4, 5, 6, 10, and 11, and at the left-hand side of Fig. 3, and is shown in the active and inactive positions in 35 Figs. 1 and 2. In this construction the striker consists of an active portion M and a supporting portion N. The supporting portion is preferably non-resonant, and consists of a strip of felt or other suitable material extending 40 from the top to the bottom of the striker and attached near its upper end to the rail D. The striking portion is preferably formed of a resonant member O of substantially annular contour, having two striking points *a* and 45 *b* and intermediate connecting portions *c* and *c'*, within which portions is a hollow or space *d*, within which is located some suitable cushioning or non-resonant material, preferably the face *e* of the strip N. The part O 50 is shown as an elastic spiral wire, between the convolutions of which the lower end of the strip N is grasped, so that the spiral is under elastic tension proportioned to the thickness of the strip and its convolutions 55 on each side of the latter are substantially parallel, being joined by the angular portion *c'* of the wire, near which the end of each convolution is a free end *f*. If desired, the striker may be used as thus described with either 60 face toward the strings and the other toward the hammers, but I prefer to employ an additional cushion P at the hammer side of the striker, preferably constructing this cushion of a flat disk of felt fitting within the space 65 *d* in the wire, glued to the strip N, and projecting outwardly slightly beyond the wire. This cushion receives the blow from the ham-

mer and saves the felted face thereof from direct or violent contact with the hard or metallic part of the striker, while it also suffices 70 to bulge the face *e* of the strip outwardly toward the strings under the pressure of the hammer-blow, and thus gives a muffling or dampening effect on the action of the striker against the strings. This bulging is indicated 75 in dotted lines in Fig. 6.

The striker as thus constructed acts on the strings with the effect of having two striking-points which, when its hammer-face is arranged nearly in direct line with the blow of 80 the hammer and as it is moved by the latter toward the strings, will assume an inclined position by reason of either the action of the hammer on it or the swing of the pendent strip N, so that the one striking-point will 85 first touch the strings, as shown in Fig. 1, the other will then be almost simultaneously thrown against the strings, and instantly the force of the hammer against the pad P will cause the felt face *e* to bulge inwardly into 90 contact with the strings. Immediately the rebound of the hammer will permit the return of the striker, but during the peculiar combination and nature of contacts incident to its action on the strings the striker as thus 95 constructed will have produced an effect most peculiar and satisfactory for an attachment of this kind and well suited to production of tone-effects in imitation of other instruments. 100

The striker described has been used most successfully for producing not only imitations of mandolins, citherns, and guitars, but also for producing imitations of the harp and of violin-tuning, the imitations being so true as 105 to be very effective. If desired, the strikers of this character may be used throughout all or any portions of the instrument, but I prefer to vary the striker for different portions of the instrument and to employ, for example, 110 the form shown in Figs. 7, 8, 9, and 12 and at the right hand in Fig. 3 for the treble or a part of the treble strings. In this form the striker lettered C' consists of a strip N' of felt and a striking portion M', the latter 115 having a metallic or resonant striker O' and a non-resonant or cushion striker Q. The striker O' is a narrow bent metal plate having an outwardly-bent striking-face *g* and inwardly-bent ends *h*, which latter pass through 120 the cushion Q and are flush with the inner face thereof, both being there connected to the strip N' by being glued thereto. The cushion Q is shown as a disk of felt having a slight hollow *i* in its outer side, at which point 125 the striker O' is exposed. In this construction the hammer strikes the rear face P' of the strip, and in swinging the striker toward the string the cushion contacts first at bottom with the string, then at top therewith, 130 and then as the cushion is compressed the metal piece O' strikes the string. The point at which the metal piece shall strike the string will be determined by the outward adjust-

ment of this piece toward the outer face of the cushion.

When different constructions of strikers are employed, they will be differentiated according to the instrument with which they are used or the results desired.

Figs. 13 and 14 show a construction of striker designed to give a double-striking and peculiarly-cushioned effect. In this construction, which in other respects is identical with that shown in Figs. 4, 5, and 6, another pad of felt P'' is located within the cavity *d* at the string side of the coil O, so that this pad will first strike the strings or will exert its damper effect earlier than would be the case if the adjacent face of the strip were relied on.

The improved strikers can be arranged in any suitable manner for attachment to an instrument and can be applied thereto to be operated as strikers in the path of the hammers or to be operated as any other harmonic provision by bringing them into suitable relation to the strings.

It will be seen that my invention provides improvements which can be readily and advantageously availed of, and it will be understood that the invention is not limited to the particular details of construction, arrangement, or use herein set forth as comprising its preferred form, since it may be availed of according to such modifications as circumstances or the judgment of those skilled in the art may dictate without departing from the spirit of the invention.

What I claim is—

1. For string instruments, a harmonic device consisting of a flexible support and a striker having a plurality of resonant striking portions carried thereby for contacting with the strings of an instrument, and an integral connecting part uniting said striking portions.

2. A harmonic device for string instruments consisting of a support and a ring-like striker carried on and with its flat side toward said support, having separated resonant striking portions and an intermediate non-resonant portion for contacting with the strings of an instrument.

3. A harmonic device for string instruments consisting of a swinging support, and a ring-like striker, having a plurality of striking portions spaced apart, and connected together by an integral part, for contacting with the strings of an instrument, said portions disposed to successively contact with such strings when moved thereagainst.

4. A harmonic device for string instruments having an annular swinging striker, having its axis coincident with its direction of swing and a flat striking portion for contacting with the strings of the instrument.

5. A harmonic device for string instruments having an elastic ring-like striker, having its axis at right angles to the strings, and having a striking portion of resonant material for contacting with the strings of such instrument.

6. A harmonic device for string instruments comprising the combination with the strings of the instrument, of a convolution of spring-wire in proximity to such strings, and means supporting the wire in position to strike the strings of such instrument.

7. A harmonic device for string instruments consisting of two convolutions of wire and a support therefor passing between said convolutions.

8. A harmonic device for string instruments consisting of two convolutions of spring-wire and a flexible support compressed between said convolutions.

9. A harmonic device for string instruments consisting of a resonant striking portion and a support therefor, said striking portion having two separated points for contacting with the strings of an instrument, an intervening part connecting and integral with said points, and an intermediate space between said points.

10. A harmonic device for string instruments consisting of a resonant part having projecting points for contacting with the strings of an instrument, an intervening part connecting and integral with said points, a depression between said points, a non-resonant portion between said points for contacting with the strings, and means for supporting said parts.

11. A harmonic device for string instruments consisting of a flexible strip having on one face in the path of the hammer a plurality of hard striking portions separated and spaced apart and permitting said strip to flex between them, adapted to contact with the strings, and having on its other face a soft cushioning portion between said striking portions and adapted to receive the blow from the hammer, and thereby to bend said strip outwardly between said striking portion and against the strings.

12. A striker for pianofortes consisting of a felt strip, a metal ring thereon, with its axis angular to the longitudinal extension of the strip, and a cushioning-pad thereon.

13. A striker for pianofortes consisting of a flexible strip suspended in front of the strings and having on its face adjacent thereto two striking portions, the one annular and surrounding an axis angular to the longitudinal extension of said strip, and the other within said annular portion, one of said portions being resonant and the other non-resonant.

14. In pianofortes and the like, a harmonic device suspended opposite the strings of the instrument and consisting of a plurality of ring-like objects contacting with the strings to modify the tones produced thereby, said objects differentiated in construction for different strings of the instrument.

15. In pianofortes and the like, the strings, a striker-rail, and means for moving it, in combination with a plurality of strikers C and C' carried by said rail opposite the strings, the striker C acting against certain of the strings

and having resonant portions first striking
the latter and non-resonant portions subse-
quently contacting therewith, and the strikers
C' acting against other of the strings and hav-
5 ing each a non-resonant portion first striking
the strings and a resonant portion subse-
quently acting against the latter.

In witness whereof I have hereunto signed
my name in the presence of two subscribing
witnesses.

JOHN A. WESER.

Witnesses:

GEORGE H. FRASER,
THOMAS F. WALLACE.