

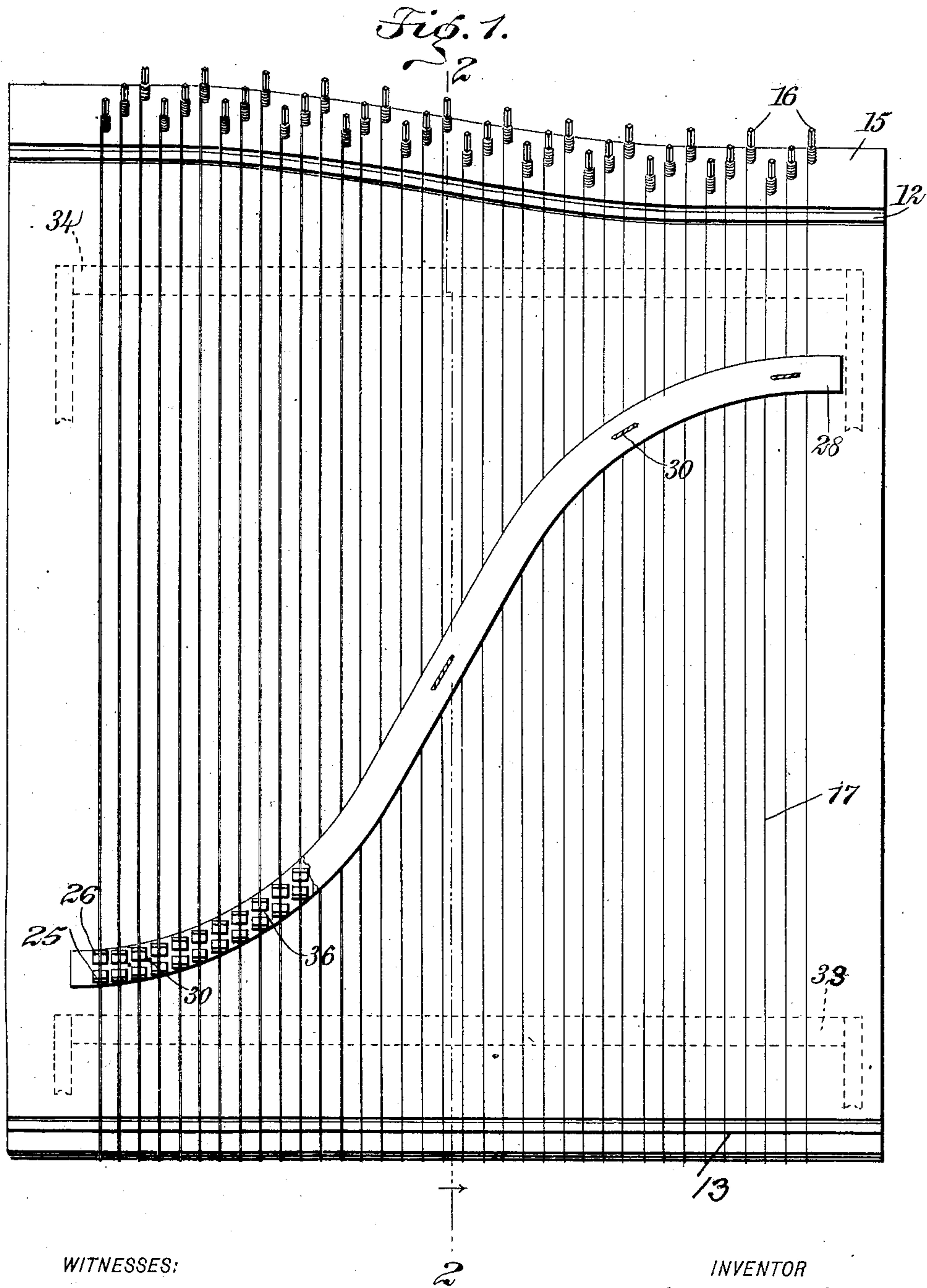
No. 888,372.

PATENTED MAY 19, 1908.

C. S. WEBER.
STRINGED MUSICAL INSTRUMENT.

APPLICATION FILED AUG. 22, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

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A. E. Fay

INVENTOR

Charles S. Weber

BY

M. M. M.

ATTORNEYS

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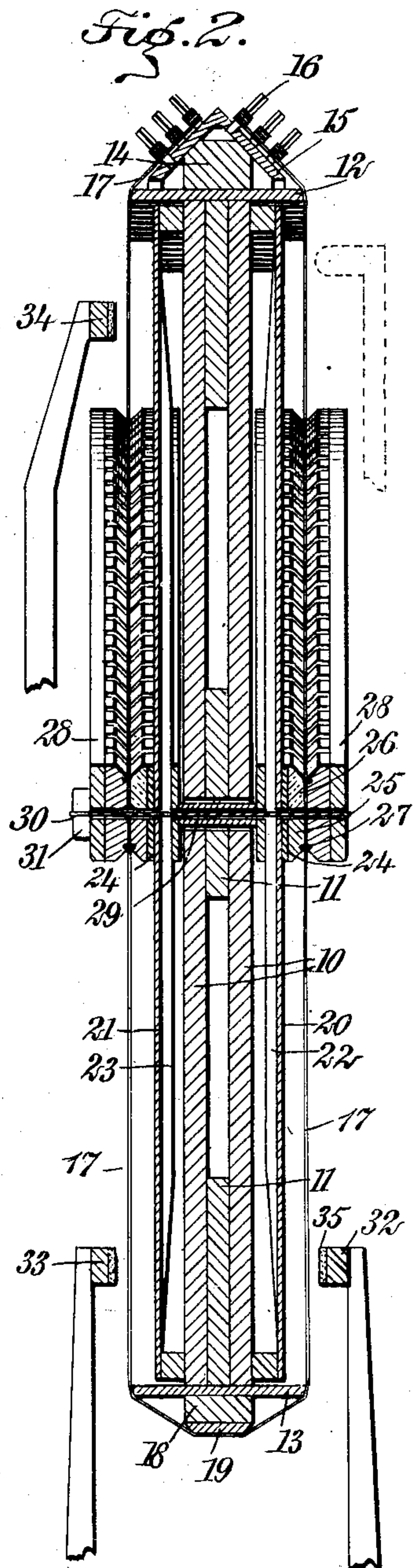
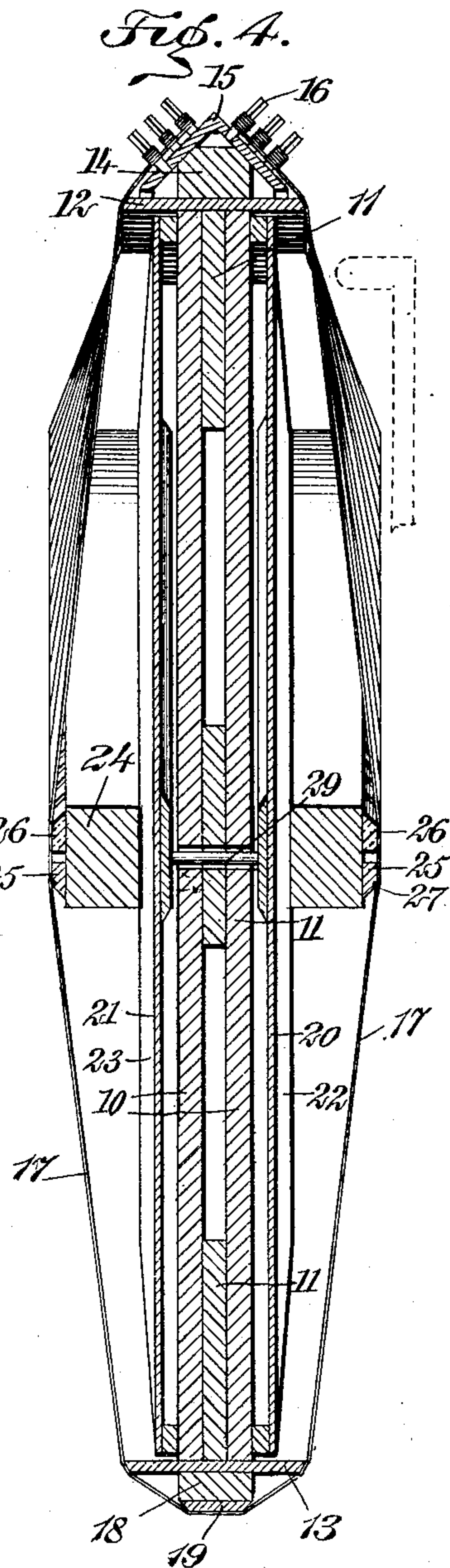
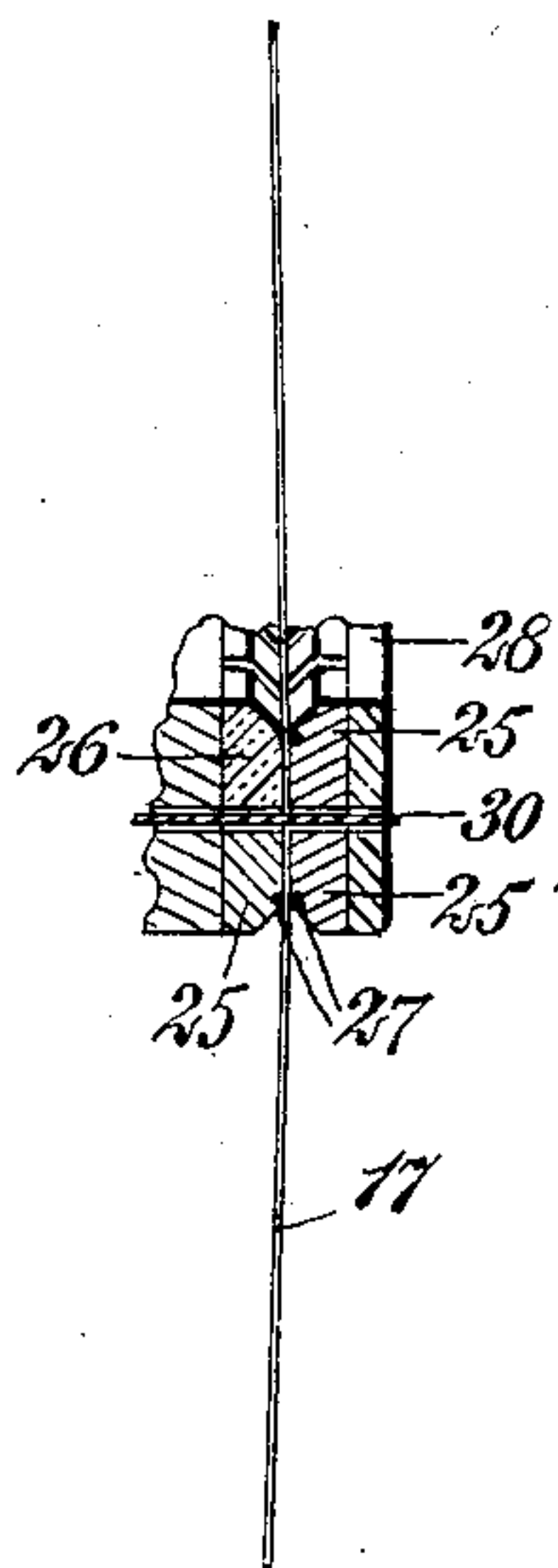


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES S. WEBER, OF NEW YORK, N. Y.

STRINGED MUSICAL INSTRUMENT.

No. 888,372.

Specification of Letters Patent.

Patented May 19, 1908.

Application filed August 22, 1905. Serial No. 275,203.

To all whom it may concern:

Be it known that I, CHARLES S. WEBER, a citizen of the United States, and a resident of the city of New York, borough of the Bronx, in the county and State of New York, have invented a new and Improved Stringed Musical Instrument, of which the following is a full, clear, and exact description.

My invention has for its principal object the provision of means for increasing the tone of stringed musical instruments by means of a second set of strings which are placed on the supporting frame on the opposite side to that occupied by the usual set. This second set of strings furnishes two series of sympathetic strings, one of them being of the same length as the corresponding strings of the main set.

A further object of the invention is to provide for counteracting the bending strain on the supporting frame which is caused by the main set of strings. This object is accomplished by the additional set mentioned above.

Further objects of the invention will appear below. They comprise improvements in several features relating to the supporting of the strings of musical instruments of this character.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a front view of the supporting frame and strings of a musical instrument, showing certain of my improvements; Fig. 2 is a sectional view of the same, on the line 2—2 of Fig. 1; Fig. 3 is a sectional view of a detail shown in Fig. 2; and Fig. 4 is a sectional view similar to Fig. 2, showing a modification which comes within the scope of my invention.

I have shown the supporting frame as consisting of a pair of plates or boards 10, separated from each other by cross plates 11. Two of these cross plates are preferably located at the upper and lower edges of the plates 10. On both ends of the frame are located top and bottom bridge plates 12 and 13, and above the top one is located a bar 14, surmounted by a wrest cap 15 or any equivalent construction. This angle iron is provided with perforations for the reception

of pins 16 which are adapted to hold the ends of wires 17. Below the bottom bridge plate 13 is a bar 18, surmounted by a bearing plate 19 for the wires. The wires pass from one set of pins 16 on one side of the angle bar, across the edge of the bridge plate 12 and down to a bridge which is shaped in the usual manner to the corresponding edge of the bridge plate 13. The upper sections of the wires between the bridge and bridge plate 12 form the usual set of strings which receive the primary impulse on musical instruments of this character.

The wires extending below the bridge to the bridge plate 13 form a sympathetic section which will produce harmonics and tend to strengthen the tone of the instrument. After the wires pass below the bridge plate 13 they extend around the plate 19 to the other edge of the bridge plate 13 and up to a second bridge on the rear of the supporting frame. They can pass freely around the plate 19 or be secured to it. From this they extend again upwardly to the rear edge of the plate 12 and to the pins 16 which are mounted on the rear side of the angle plate. In this way the strings form two additional sympathetic sections, the upper one being of the same shape and quality as the main section on the front.

I have referred to the bridges above, and I will now describe my preferred construction therefor: First, I will state the supporting frame is provided with two sounding boards 20 and 21 upon opposite sides thereof, said sounding boards having ribs 22 and 23 between them and the supporting frame. Separated from the sounding boards by plates 24 is a series of string supports 25 and 26. Those numbered 25 are shown as being formed of wood, and in order to protect their edges against the cutting action of the wires, and more especially to provide a solid support to allow for a clear tone, I have embedded a wire 27 in the bearing edge of each of the wooden string supports. The string supports numbered 26 are formed of glass, and while they may be supplied with wire, I have not so shown them, for the reason that it is not necessary in this case. It will be understood that as the wire 27 is flexible and rests against the wood at practically all points, it does not produce the metallic

tone which would be produced by a rigid piece of metal at this point. I have shown three wooden sections and one glass one in each part of the bridge; but it will be understood that they can all be of one material, if desired.

The main part of each bridge is formed of two string supports, and when it is desired that the strings be given very little deflection with respect to the sounding boards, or none, I provide a cover plate for the bridge, consisting of another pair of string supports similar to those below and registering therewith. The cover plates are surmounted by plates 28. All of these parts are perforated, and a bridge post 29, which extends through the supporting frame, is also perforated to allow the binders 30 to pass through from one plate 28 to the other. These binders may be provided with buttons 31 to hold their ends, and are adapted to be passed through the perforations in the parts separating the cover plates, so as to securely hold all parts in position on the supporting frame. The pressure thus brought to bear against both ends of the bridge posts enables them to transmit the vibrations from the primary to the secondary set of strings, the effect produced in the latter being greatest when the corresponding notes in both sets are tuned to unison, a condition which at the same time serves to perfectly balance the pull of both sets.

In order to prevent the sounding of any one or more of the sympathetic sections, I have shown a series of dampers 32, 33 and 34, one for each of the sympathetic sections. These dampers are provided with a felt strip 35 which can be brought into contact with the strings to deaden their tone and destroy their effect. As shown in Fig. 1, the string supports are spaced apart, and in the spaces between them are placed felt strips 36 to deaden the sound of the short portion of the string which is contained between the bearing edges of the two string supports, in order to prevent the piercing tone which must be produced by the vibration of this short string. It will, of course, be noticed that the form illustrated is that of an upright piano, and I have therefore referred to the upper and lower string rests. In a grand instrument, the space would occur between the front and rear supports. It will also be noticed that the dampening action of the felt is caused by the fact that it extends beyond the edges of the supports and engages the wires. Although I prefer to use felt, I am aware that, on account of the shortness of the waves produced by these wires the waves would be unable to subsist even if soft wood were substituted for the felt.

Independently of the effect of the sympathetic sections of the strings the construc-

tion above described affords considerable mechanical strength in proportion to the weight of the parts. If the strings of the main section were rigidly connected with the bridge or were continued to the edge of the plate 13 and there secured, a strong bending tension of the supporting frame would be effected, but as the strings are passed entirely around the frame and secured at their opposite ends to the same plate upon which the upper ends of the main set are secured the bending tension is neutralized.

In the form of the invention shown in Fig. 4, all of the advantages set forth above are obtained. In this form these strings may be given a comparatively great deflection relatively to the sounding boards which enables me to place the latter with their ribs extending outwardly from the supporting frame. The sounding boards are thus placed closely together and the bridge plates 12 and 13 can be made comparatively narrow. Therefore, a thinner construction can be obtained, resulting in economy and space in material and weight. When this increased deflection is used the cover plate 28 and the outside string supports are not necessary and they are therefore omitted.

It will be understood that although I have shown the supporting frame in a particular form, a casting could be substituted for it, and in that case it could be made even thinner and take up less room than is the case with the construction shown. I also prefer to make the sounding board and ribs pertaining to the sympathetic sets of strings on the rear lighter than the corresponding pieces on the other side. As to the sympathetic sets of strings, it will be noticed that although I have made one section of them of the same length as the main section of strings and corresponding with them, there is no necessity to control the length of the strings in the other set, as owing to the multiplicity of strings thus made available by use of the three additional sets all the sympathetic unisons that may be desired will be readily obtained.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. A musical instrument having a supporting frame, a pair of bridge plates located at opposite edges of the said frame, each bridge plate having bearing edges on both sides of said frame, a wrest cap connected with one of said bridge plates, and a plurality of wires secured at their opposite ends to said wrest cap and bearing on the edges of both of said bridge plates, said wires passing around the one of said bridge plates opposite to the one on which is located the wrest cap.

2. A musical instrument having a sup-

porting frame, a pair of bridge plates located
at opposite edges of said frame, one of said
bridge plates being straight, the other being
curved, and a wrest cap mounted upon said
5 curved bridge plate and having a curvature
conforming to that of said bridge plate.

In testimony whereof I have signed my

name to this specification in the presence
of two subscribing witnesses.

CHARLES S. WEBER.

Witnesses:

ALBERT E. FAY,
EVERARD B. MARSHALL.