No. 674,028. Patented May 14, 1901.

J. S. STEWART.

MUSICAL INSTRUMENT.

(Application filed July 30, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

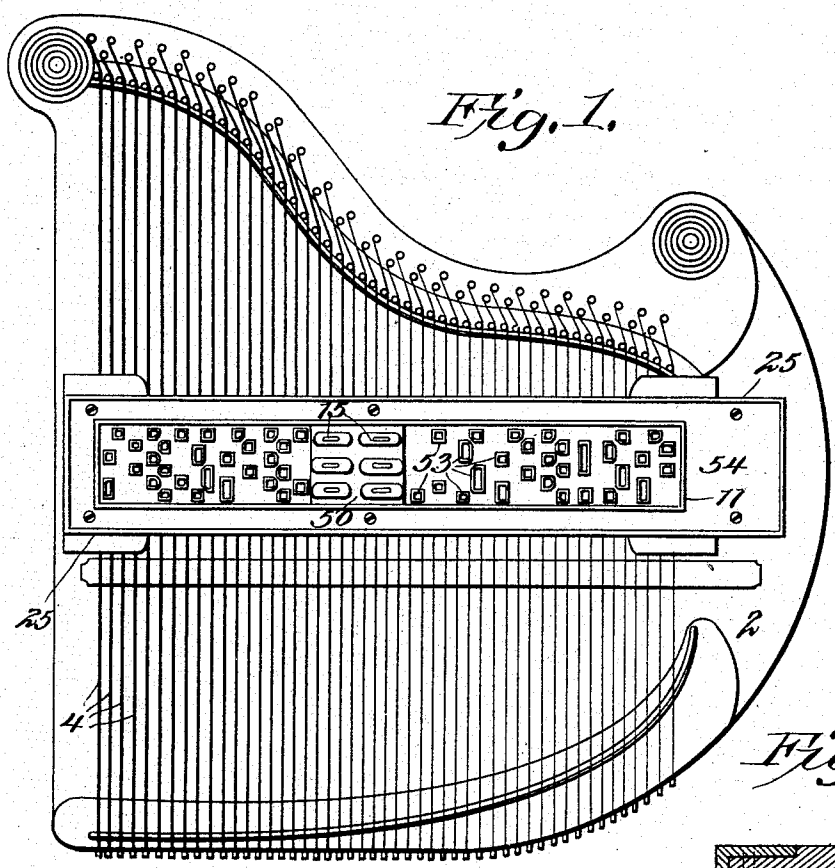


Fig. 7.

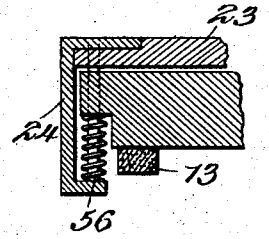


Fig. 5.

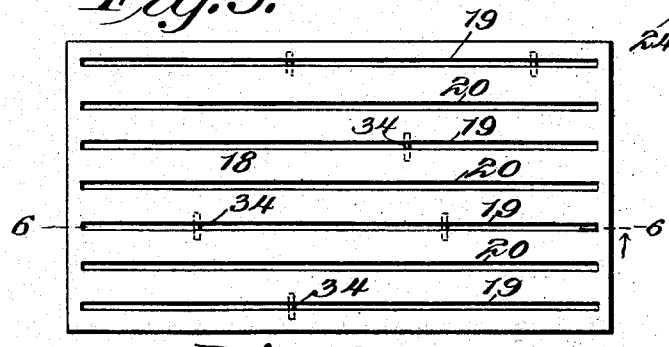
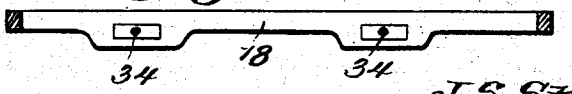


Fig. 6.



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MUSICAL INSTRUMENT.

(Application filed July 30, 1900.)

(No Model.) 2 Sheets—Sheet 2.

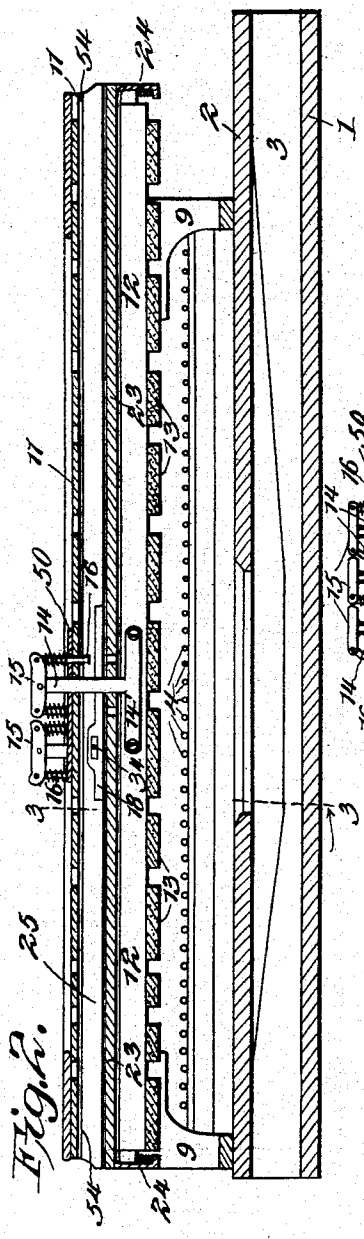

Fig. 2.

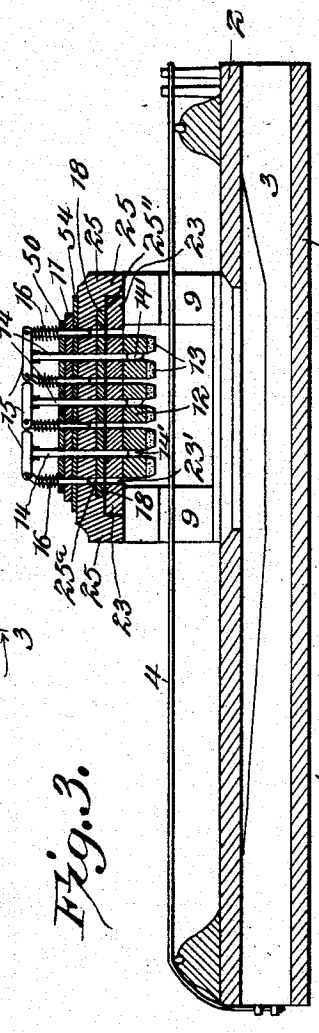

Fig. 3.

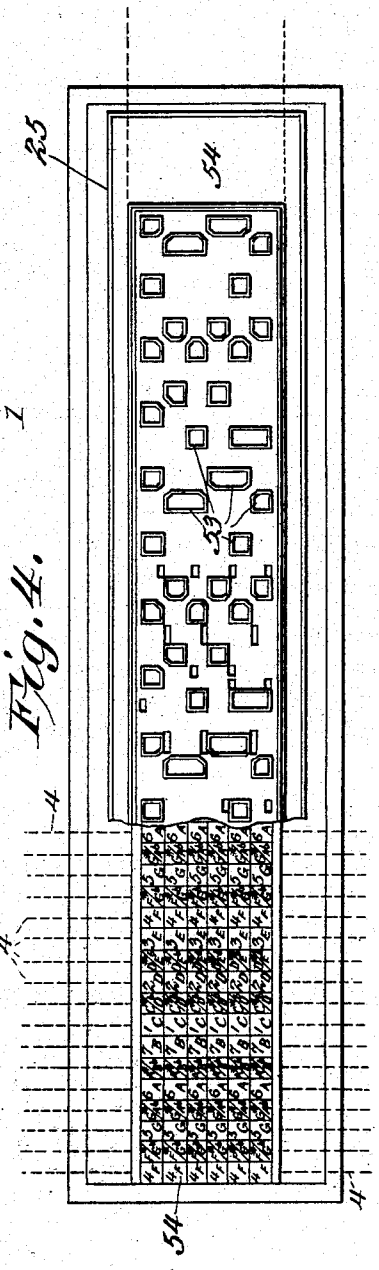

Fig. 4.

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UNITED STATES PATENT OFFICE.

JESSE S. STEWART, OF TYRONE, PENNSYLVANIA.

MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 674,028, dated May 14, 1901.

Application filed July 30, 1900. Serial No. 25,305. (No model.)

To all whom it may concern:

Be it known that I, JESSE S. STEWART, a citizen of the United States, residing at Tyrone, in the county of Blair and State of Pennsylvania, have invented a new and useful Musical Instrument, of which the following is a specification.

This invention relates to musical instruments in general, and more particularly to the class of autoharps wherein a series of keys are provided and which control dampers adapted to rest against selected wires of the instrument to prevent vibration thereof when struck, the remaining wires being free to vibrate to sound a chord. As these instruments have been, they usually include a series of wires stretched over a sounding-board and one or more damper-bars disposed transversely of the strings, a different set of damper-bars being necessary for the chords of each key.

One object of the present invention is to provide a simple and efficient construction wherein a single set of damper-bars may be utilized in the instrument for sounding all of the chords of all keys, a further object of the invention being to so construct and arrange the mechanism that it will be effective in its operation and will not be liable to accidental shifting when in operation.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a top plan view showing the complete instrument. Fig. 2 is a transverse section of the instrument, taken between two of the damper-bars and showing parts in elevation. Fig. 3 is a section on line 3-3 of Fig. 2. Fig. 4 is a plan view showing the shiftable plate that is movable with the shiftable keys, a portion of the plate being broken away to show the plate bearing the key-names whose corresponding strings are open when said names are exposed through the openings of the shiftable plate. Fig. 5 is a plan view of the stop-plate for stopping the carriage at predetermined points to secure the proper chord. Fig. 6 is a section on line 6 6 of Fig. 5. Fig. 7 is a detail sectional view showing the means for holding the damper-bars normally raised.

Referring now to the drawings, the instrument comprises, primarily, a common form of harp, including a base 1, having supports 3, to which is secured a sounding-board 2, across which are stretched strings 4 in the usual manner and provided with means for tuning them. At opposite sides of the strings of the harp and upon the sounding-board are mounted supports 9, and upon these supports is fixed a guide-plate 25, having downwardly-extending legs 25′ at its side edges, which legs are narrower than and rest upon the upper edges of the supports 9, so that between the inner portions of the upper edges of the supports 9 and the under side of the guide-plate 25 there are formed guideways 25″, as shown. In these guideways 25″ are disposed the side edges of a slidable plate 23, having openings 23′ therethrough, and through alternate openings are disposed the stems 14 of keys 15, the lower ends of the stems, which have laterally-extending feet 14′, being attached to the side faces of damper-bars 12, having damping-felts 13 upon their under faces. In the present instance there are shown six keys and seven openings, two key-stems 14 being passed through each of said alternate openings and the outermost openings having no stems therein. The guide-plate 25 has longitudinal slots 25ª therein, through which the stems 14 are passed, the keys 15 being above said plate, as shown. The felts 13 are disposed in the usual manner, so that when a key is depressed its corresponding bar will be depressed to damp certain of the strings by engagement of the felts therewith and to leave the remaining strings open, so that a chord may be struck. Each damper-bar has its dampers differently arranged to form different chords; but by shifting the bars longitudinally the dampers may be brought into positions to form other chords. The slots 25ª permit shifting of the plate 23 to thus vary the positions of the damper-bars relatively to the strings; but there must be provided some means for determining the amount of shifting movement necessary to secure certain definite results and also means for stopping the bars in the proper positions. For these purposes a sheet 54, of preferably white metal or wood veneer, is secured upon the upper face of the plate 25, and upon this plate or veneer is marked the number and the letter of each

string, as shown in Fig. 4 of the drawings, said plate having longitudinal slots therein through which the stems 14 of the keys are passed. Mounted slidably upon the plate or veneer 54 is a plate 11, of metal, in which are formed square or other-shaped openings 53, which lie above the points of the damper-bars that have no felt, and thus indicate the positions of the open portions of the bars relative to the markings upon plate 54 by exposing the markings through the openings of the plate. An additional plate 50 is fixed upon the plate 11 and covers only that portion of plate 11 directly adjacent to the keys, said plate 50 having openings therein to receive the stems 14.

The heads of the keys 15 are pivoted to their stems 14 and are substantially elliptical in shape, and to one end of each head is pivotally connected a rod 16, these rods 16 being passed downwardly through openings in plates 11 and 50 and through the slots of plates 54 and 25. A stop-plate 18 is set into the under face of the plate 25 and has slots 19 and 20 therein, the slots 20 receiving the stems 14, while slots 19 are adapted to receive the rods 16 when the latter are depressed under the influence of the keys when the latter are operated to damp the strings. As shown in Fig. 5 of the drawings, the slots 19 have pins 34 arranged across them at different points, and thus if a key be depressed the rod 16 will be moved downwardly for its lower end to take into a slot 19. If the carriage, including the plates 50, 11, and 23, with their connected parts, be then moved transversely of the instrument, the depressed rod 16 will strike a pin 34 and will stop the carriage at a corresponding point to leave corresponding strings open and form a chord. If the key is depressed after its rod 16 has passed a pin and be then moved away from the pin, the rod will strike the succeeding pin or the end of the slot, and thus stop the carriage.

With this construction it will be thus seen that with the carriage in position to strike a certain chord with a certain key in order to shift to a different chord with that key it is only necessary to first release the key and then shift the carriage and depress the key to stop the carriage in position for the proper chord. Thus with a single damper-bar a number of chords may be produced, and hence with the proper number of dampers all of the possible chords of every key may be formed, the number of damper-bars necessary being only a small fraction of the possible chords.

It will of course be understood that in practice various modifications of the specific construction shown may be made and that any suitable materials and proportions may be used for the various parts without departing from the spirit of the invention.

If desired, before depression of a key such key may be tilted to move the rod 16 into position to strike a pin 34. The carriage may be then shifted until the rod strikes the pin, and the key may be then depressed to engage the damper-bar with the proper strings.

After the bars have been depressed they must return to their normal raised positions, and to secure this return movement angle-irons 24 are connected to the ends of plate 23 and their lower ends lie below their corresponding damper-bars, as shown in Fig. 7, a rod 56 being passed upwardly through the foot of each angle-iron and through the end of the damper-bar and into plate 23 and the upper member or head of the angle-iron, which lies upon or is set into the upper face of plate 23. The lower side of each bar 12 is cut away at its ends and in the resultant recesses, and encircling the rods 56 are helical springs, which by bearing at opposite ends against the bars 12 and the foot of plate 24 hold the bars yieldingly in raised position and free from the strings of the instrument.

What is claimed is—

1. The combination with a stringed instrument of a damper-bar movable into and out of contact with the strings and adjustable transversely of the strings, and means for limiting the movement of the damper-bar transversely of the strings when the bar is moved to engage the strings, said limiting means comprising a member shiftable into and out of operative position independently of the movement of the damper-bar.

2. The combination with a stringed instrument, of a damper-bar movable into and out of contact with the strings of the instrument, said bar being adapted for adjustment transversely of the strings, a stop, and a stop-engaging device carried by the bar, said device being movable with respect to the bar into position for engagement with the stop and being movable with the bar into engagement with the stop.

3. The combination with a stringed instrument of a carriage mounted to slide transversely of the strings, keys movable with the carriage, damper-bars connected with the keys for movement into contact with strings of the instrument, stops, and rods connected with the keys and movable therewith into position to engage the stops when the carriage is moved.

4. The combination with a stringed instrument of a carriage mounted for movement across the strings, damper-bars having dampers to engage strings and leave open other strings, keys connected with the damper-bars for operating them, a fixed plate having symbols corresponding to the strings, and a plate carried by the carriage and having a series of openings for each damper-bar to expose string-symbols corresponding to the open strings.

5. The combination with a stringed instrument of a guide-plate disposed across the strings, a plate carried by the guide-plate and having stops, a carriage slidably mounted with respect to the guide-plate, damper-bars, keys having stems passed through the carriage and connected with the damper-bars, said keys having pivoted heads, and stop-bars piv-

oted to the heads of the keys for movement into operative relation with the stops when the heads of the keys are pivotally moved.

6. The combination with a stringed instrument of a guide-plate disposed across the strings, a plate carried by the guide-plate and having stops, a carriage slidably mounted with respect to the guide-plate, damper-bars, keys connected with the damper-bars, said keys having pivoted heads, stop-bars pivoted to the heads of the keys and adapted for movement with the keys into operative relation to the stops, and means for returning the damper-bars after they are depressed.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JESSE S. STEWART.

Witnesses:
C. O. TEMPLETON,
ALLIE WALKER.