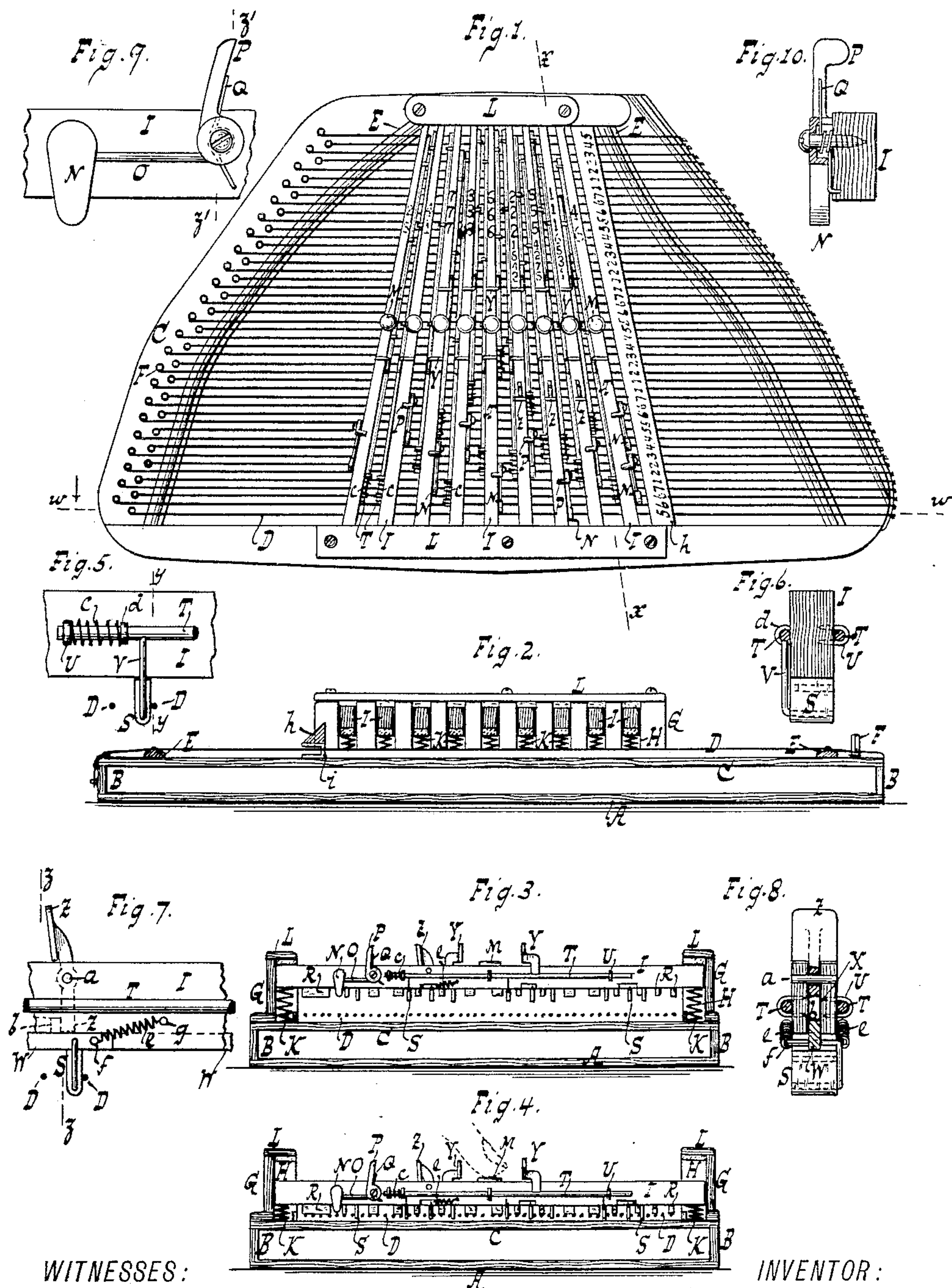


(No Model.)

C. F. ZIMMERMANN.
AUTOHARP.

No. 583,162.

Patented May 25, 1897.



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AUTOHARP.

SPECIFICATION forming part of Letters Patent No. 583,162, dated May 25, 1897.

Application filed September 13, 1895. Serial No. 562,425. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. ZIMMERMANN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Autoharps, of which the following is a specification.

This invention relates to an improvement in harps or citherns; and the invention consists in the novel features pointed out in the following specification and claims and illustrated in the annexed drawings, in which—

Figure 1 is a plan view of the harp. Fig. 2 is a section along *ww*, Fig. 1. Fig. 3 is a section along *xx*, Fig. 1. Fig. 4 is a view similar to Fig. 3 with parts in a different position than in Fig. 3. Fig. 5 is a detail side elevation of a damper. Fig. 6 is a section along *yy*, Fig. 5. Fig. 7 is a detail side elevation of another damper. Fig. 8 is a section along *zz*, Fig. 7. Fig. 9 is a detail side elevation of a hammer. Fig. 10 is a section along *z'z'*, Fig. 9.

The harp or cithern, as well known, consists of a base A, sides B, and top or sounding board C, having the strings D stretched over a bridge or bridges E and secured to tuning-pins F in any suitable way. From the sounding-board C rise the standards or up-
rights G, readily formed by suitable strips of wood glued or secured in place. In the standards G are grooves or channels H, forming guides for the bars I, arranged transversely across the strings.

The bars or manuals I are held away from the strings by springs K, the standards G having tops or covering-strips L, screwed or fastened in place to prevent the springs K throwing the bars I out of the guides. By cushioning the under or contact faces of the covers L the bars I will not make a noise when striking or flying upward. A finger-button M on each bar L forms a convenient rest for the finger depressing the bar, as seen in Fig. 4.

The depression of a bar brings it near enough to the strings to enable the hammer N, when actuated, to strike a string. Said hammer or hammer-head N is supported by bell-crank lever O P, suitably fulcrumed on

the bar and pressed by a spring Q, which latter tends to throw the hammer-head toward a string. The lever-arm P projects or is in position to be moved by the thumb or a finger to actuate the hammer-head. The bar I is also shown with dampers R, which when the bar is depressed will damp or, as the technical expression is, "cut out" certain strings. The dampers R are shown fixed to the lower edge of the bar I and press on the strings to be cut or deadened by said dampers, Fig. 4. In addition to the fixed dampers R there are movable dampers S, which when the bar is depressed will project between the strings D, as seen in Figs. 4, 5, and 7. Some of these movable dampers S are carried by a movable rod T on one side of bar I and others by a similar rod T on the other side of said bar.

The rods or slides T are guided in eyes or supports U at the sides of the bar I and support their dampers S by suitable fingers or depending connections V, Figs. 5 and 6. Still others of the movable dampers S are carried by movable rod or slide W, Figs. 7 and 8, guided in a slot or way X, Fig. 8, in the bar I.

To the rods T are connected finger-pieces or triggers Y for sliding or moving said rods to bring their respective dampers into contact with the strings to be cut or deadened thereby. The rod W is actuated by a finger-lever or trigger Z, Figs. 7 and 8, suitably fulcrumed at *a* in bar I and engaging a shoulder *b* on rod W, so as to slide or actuate the latter.

Suitable springs are provided for restoring the rods T W to their starting-points on the release of the triggers Y Z. In Fig. 5 a restoring-spring *c* for a rod T is shown braced between a guide or eye V and a shoulder *d* on the rod T. In Fig. 7 a restoring-spring *e* for rod W is connected to a pin or lug *f* on the latter and to a pin or lug *g* on bar I. To give an even pull to rod W two springs *e*, Fig. 8, one located on each side, may be provided. An indicator-bar *h* extends across the strings D, being supported above the same by legs or arms *i*, Fig. 2, resting on the sounding-board C. The indicator-bar carries numbers, each number indicating a string or the note of that string. Thus the numbers "1," "2," "3," "4," "5," "6," "7," "1" will indicate an oc-

tave, so that a piece of music written in numbers instead of notes can be played by a person not familiar with musical notation by simply following the numbers on the indicator-bar.

5 Said bar *h* may have its notation further amplified by dotted numbers to indicate, for example, sharps. Or by placing a dotted number preceding and one succeeding a like full number the full number can be made to indicate a note, the preceding like dotted number the flat, and the succeeding like dotted number the sharp of said note. Also by indicating on each of the bars *I*, for example, the notes or numbers not cut out by the dampers

15 of said bar a guide is obtained as to the bar to be actuated. For example, in Fig. 1 the bar *I* on the extreme right has the number "4" and dotted "6," which may indicate that all the strings except those designated on bar

20 *I* by the number "4" and dotted "6" will be cut or deadened by the depression of said bar, while the strings designated by "4" and dotted "6" will be left uncut or undamped, so as to speak or sound when struck or vibrated.

25 A convenient way of arranging the bars *I* is to cause the hammer of said bar to strike a tone or note and to cause the dampers of said bar to cut or deaden all the other tones or notes except those required to form a chord

30 with the note struck by said hammer. The instrument can then be readily played by using the left hand for depressing the bar *I* and actuating its hammer and triggers *Y Z*, while the fingers of the right hand being

35 passed over the strings *D* will cause a sounding of the uncut or undamped strings, or of those strings which are in harmony with the string struck by the hammer. A bar *I* might also be supplied with two hammers instead

40 of one, as seen in the case of the bar *I* at the extreme right in Fig. 1, which hammers can be arranged to strike or sound two notes which are in harmony with one another.

The number of bars *I* can of course be varied. If the instrument is to be made in cheap style, as, for example, a toy, or in simple form for teaching a beginner, one bar *I* may answer, the number of bars *I* increasing with the elaborateness of the instrument.

50 With regard to the rods *T* it may be noted that a convenient arrangement is to make the rod *T* on one side of bar *I* slidable against the resistance of its spring in a direction opposite to that of the rod *T* on the other

55 side of bar *I*, so that the triggers *Y* of these bars can be seized, for example, between thumb and index and simply pressed toward one another to actuate the rods *T* with their dampers.

60 It may be noted that the indicator-bar, as also the damper-bar, instead of having numbers, might be provided with letters or other characters to designate the various notes or strings.

65 Instead of having but one or two hammers on a bar or manual one or more of the bars

or manuals can be provided with a greater number of hammers. If, for example, a bar is provided with three hammers properly placed, said three hammers can be used, for

70 example, to execute an accompaniment in a waltz or similar movement. More than three hammers suitably placed on a bar or manual can serve to execute appropriate movements or chords.

75 What I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a harp, of a bar or manual arranged transversely across the strings thereof, movably connected to the

80 harp, and provided with a hammer or sounder (one or more) movable independently of the bar or manual, the lower surface of said bar or manual being arranged in a plane parallel to the plane of the strings and being made to

85 maintain such parallelism during the movement of the bar or manual, substantially as described.

2. The combination with a harp, of a movable bar or manual arranged transversely

90 across the strings thereof and provided with a hammer or sounder (one or more) and with dampers to silence or cut out certain strings when the bar or manual is moved, the lower surface of said bar or manual being arranged

95 in a plane parallel to the plane of the strings and being made to maintain such parallelism during the movement of the bar or manual, substantially as described.

3. The combination with a harp of a bar or

100 manual provided with a hammer (one or more) adapted to strike a bass or fundamental note and with dampers adapted to silence or cut out the notes not harmonizing with said note struck by the hammer substantially as de-

105 scribed.

4. The combination with a harp provided with guides of a movable spring-supported bar or manual in the guides provided with a hammer (one or more) and a series of dam-

110 pers substantially as described.

5. The combination with a harp of a bar or manual provided with a hammer (one or more) and with fixed and movable dampers sub-

115 stantially as described.

6. The combination with a harp of a bar or manual provided with a hammer (one or more) and with fixed dampers said bar having a channel or guide formed in said bar, a slide or movable rod in said guide and dampers

120 secured to said movable rod substantially as described.

7. The combination with a harp of a bar or manual provided with a hammer (one or more) and with fixed dampers, a slide or movable

125 rod secured to the bar and dampers secured to said movable rod substantially as described.

8. The combination with a harp of a bar or manual provided with a hammer (one or more)

130 and with fixed dampers substantially as described.

9. The combination with a harp of a bar or manual provided with a hammer (one or more) and with movable dampers substantially as described.

5 10. The combination with a harp of a damper-bar or manual and an indicator-bar placed across the strings, said indicator-bar being provided with numbers or characters for designating said strings and said damper-bar being also provided with numbers or characters and having a hammer (one or more) for sounding a string or strings not cut out substantially as described.

15 11. The combination with a harp, of a bar or manual arranged transversely across the strings thereof and provided with a hammer or sounder, (one or more) which swings par-

allel to the longitudinal direction of the bar or manual and transversely to the strings, substantially as described.

20 12. The combination with a harp, of a movable bar or manual arranged transversely across the strings thereof and provided with a hammer, (one or more,) and with dampers to silence or cut out certain strings when the bar is moved, substantially as described.

25 In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES F. ZIMMERMANN.

Witnesses:

RUDOLF DOLGE,
ALDIS J. GERY.