

W. S. HOLLOWAY.
 AUTOHARP AND LIKE INSTRUMENT.
 APPLICATION FILED DEC. 16, 1908.

975,865.

Patented Nov. 15, 1910.

2 SHEETS—SHEET 1.

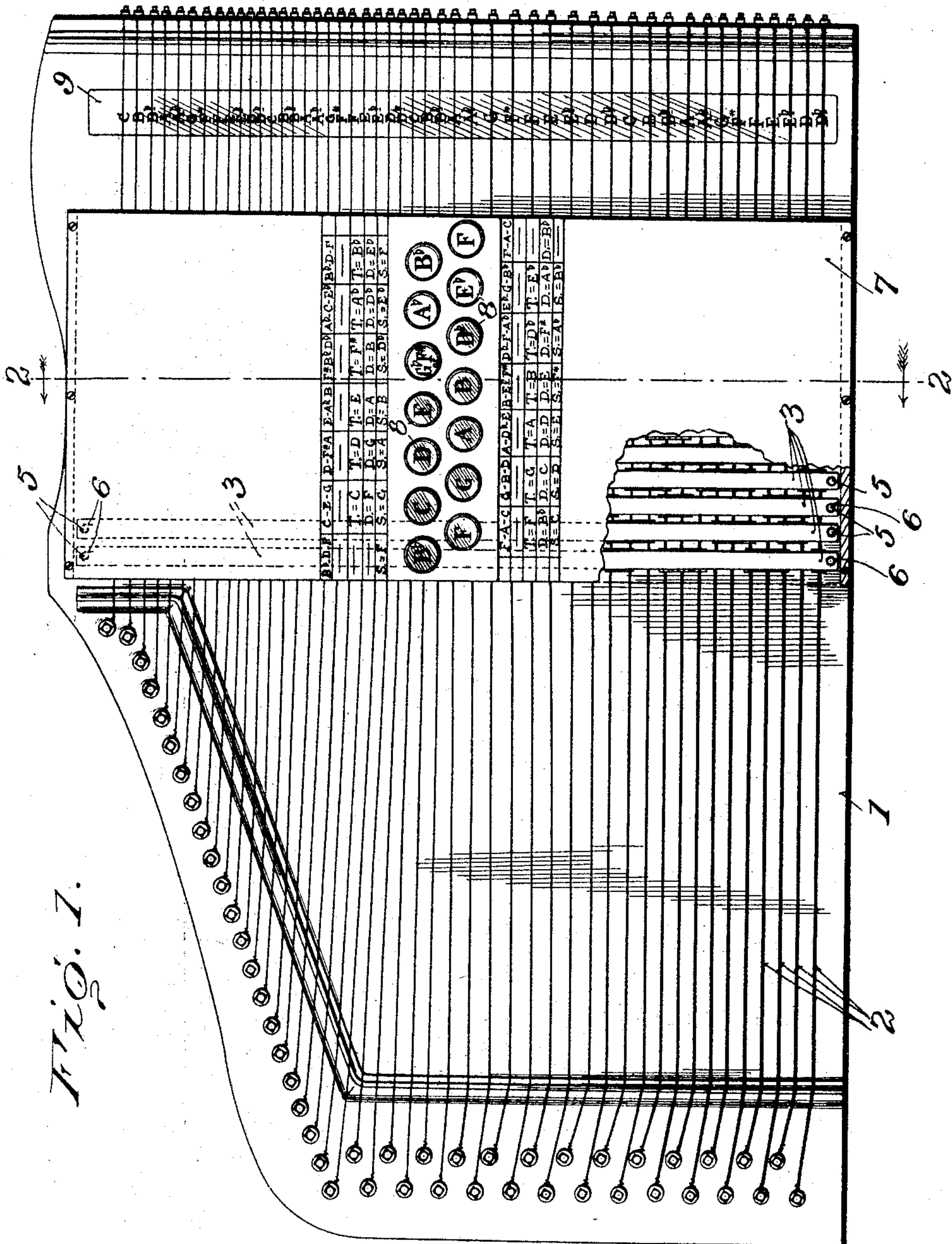


Fig. 1.

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2 SHEETS-SHEET 2.

Fig. 2.

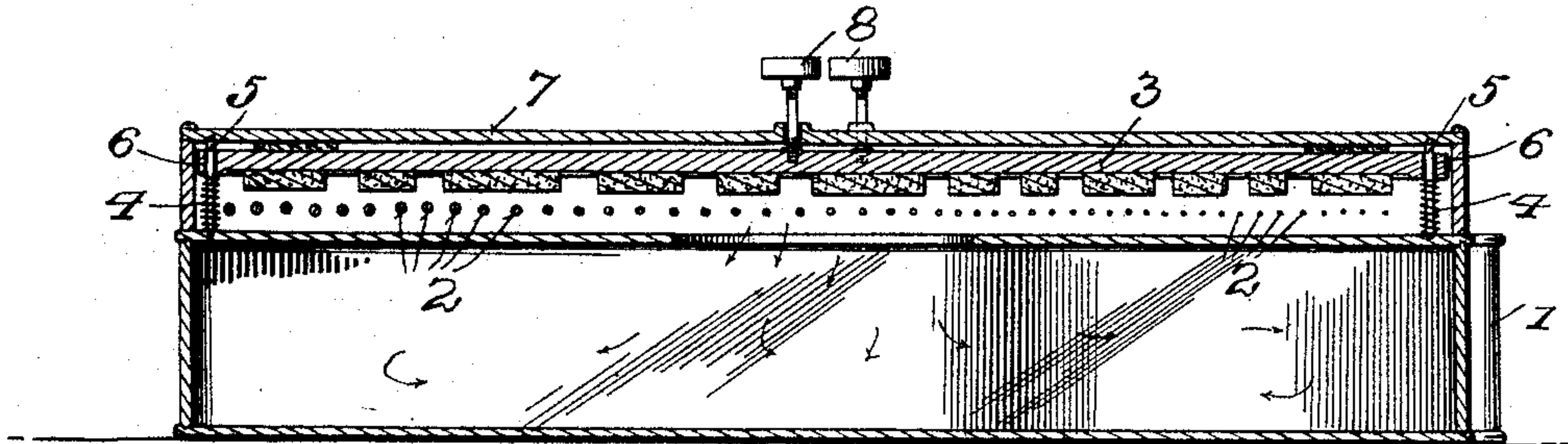
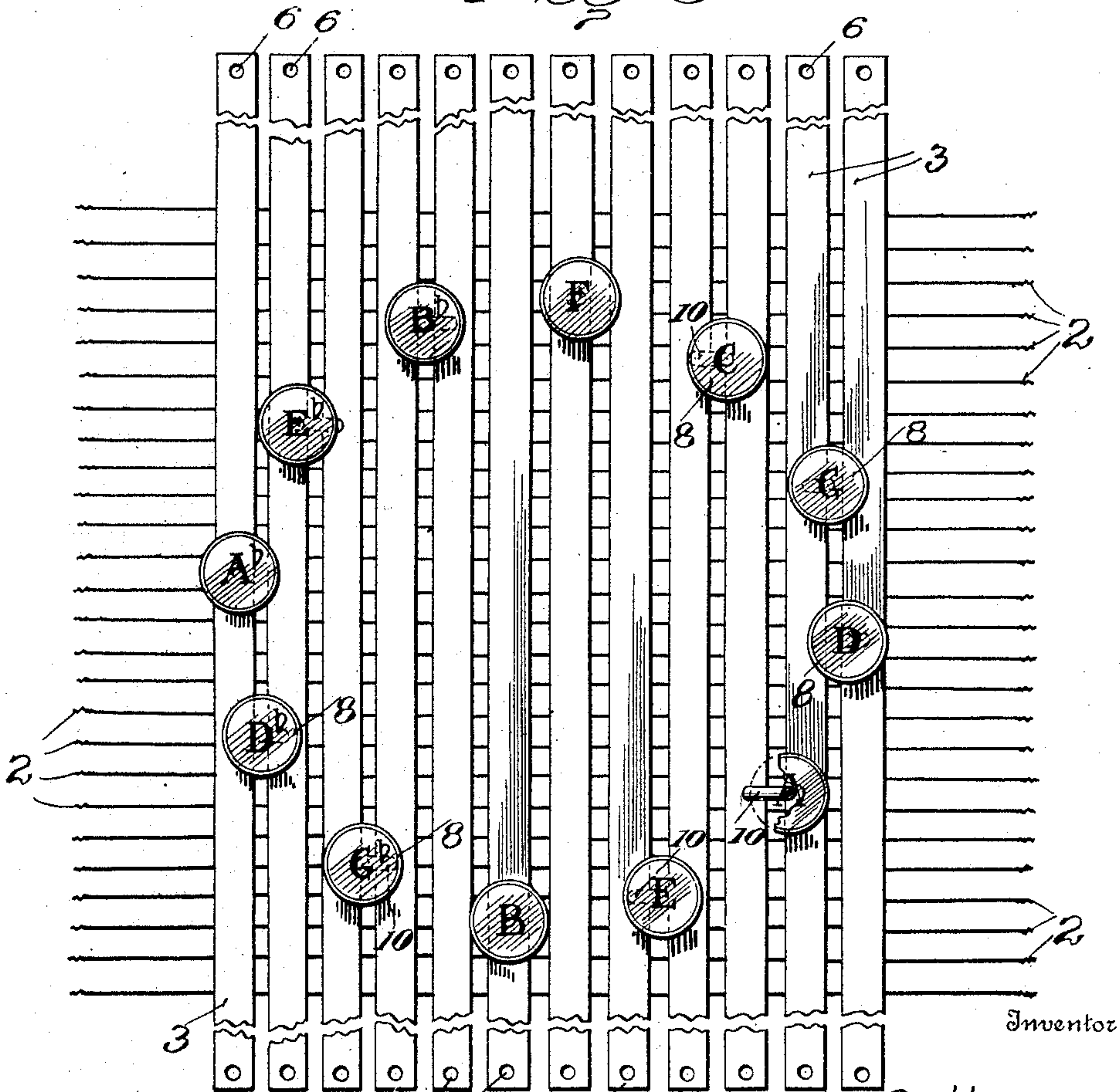


Fig. 3.



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UNITED STATES PATENT OFFICE.

WALTER S. HOLLOWAY, OF FLUSHING, OHIO.

AUTOHARP AND LIKE INSTRUMENT.

975,865.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed December 16, 1908. Serial No. 467,822.

To all whom it may concern:

Be it known that I, WALTER S. HOLLOWAY, of Flushing, county of Belmont, State of Ohio, have invented a new and useful Improvement in Autoharps and Like Instruments, which invention is fully set forth in the following specification.

This invention relates to autoharps, and particularly to those having a plurality of damper-bars arranged in coöperative relation with the strings of the instrument, and adapted, when brought into relation with the strings, to coöperate to produce a chord or arpeggio when the strings are vibrated, as by the hand of the player, or by a plectrum held by the player, or otherwise.

One object of my invention is to minimize the number of, and so combine, the damper-bars (or the finger-pieces or buttons by which they are usually manipulated) that the bars for a number of chords in a number of keys may be so compacted and arranged as not to occupy an impracticable space on the instrument and so as to be easily accessible and convenient to the fingers of the player. Were it proposed to have an autoharp arranged to play three chords in all the major keys or scales (there being twelve) and to provide a separate bar for each chord, there would be required thirty-six damper-bars, and, allowing a spacing sufficient for manipulation, it is readily apparent that the bars would occupy a space impracticable on a harp of such dimensions as to be portable and a space practically greater than is convenient and easily accessible to the fingers of the player, beside involving a multiplicity of parts.

It is a fact that the tones or sounds constituting certain chords in certain keys are the same as or similar to those constituting certain chords in other keys; in fact, for every principal tonic, dominant, or subdominant chord in each of the twelve major keys there is a chord consisting of the same or similar tones or sounds in one or more of the other keys, and I have discovered that with twelve damper-bars I can construct an autoharp in which all the thirty-six principal chords in the major keys can be produced. Moreover, I have discovered that these twelve damper bars may be so arranged that the bars coöperating to produce

the dominant and subdominant chords will always be next to a bar coöperating to produce a tonic chord, one on one side of said tonic bar and the other on the other; and furthermore, that the bars coöperating to produce dominant chords will all be on the same side of the bars coöperating to produce their relative tonics, and the same as to the bars coöperating to produce the subdominant chords. Therefore, to play in any desired key the tonic chord is produced by bringing the damper-bar coöperating to produce that chord into relation with the strings of the instrument and vibrating those strings unaffected by the damper-bar. If the accompaniment shifts to the dominant chord, the adjacent damper-bar on one side is brought into coöperative relation with the strings and the chord produced in the usual manner. When the accompaniment shifts to the subdominant chord, the adjacent damper-bar on the side opposite to that on which is the damper-bar coöperating to produce the dominant chord, is brought into coöperative relation with the strings and the chord produced as before.

I will now proceed to describe a practical embodiment of my invention, though it is to be understood that the inventive idea is capable of receiving a variety of mechanical expressions, that shown in the accompanying drawings being chosen for the purpose of illustration and as representing what is at present considered to be the preferred embodiment.

In said drawings: Figure 1 is a top plan of an autoharp embodying my invention, with parts of the cover over the damper-bars broken away to disclose the underlying construction; Fig. 2 is a transverse section through the autoharp on the line 2—2, Fig. 1; and Fig. 3 is a view illustrating a modified arrangement of the finger-pieces or buttons.

Referring to the drawings, 1 indicates the body of the instrument and 2 the strings stretched across the instrument and secured in the usual or any well-known manner. The strings correspond to and are tuned according to the well-known chromatic scale, and preferably range through two or more octaves. Transverse to and spanning the strings are the damper-bars 3, which are

made of any suitable material, preferably light strips of wood, and provided on the side adapted to be brought into coöperative relation with the strings with pads or cushions, preferably of felt. These pads are so spaced, or notched, as to leave appropriate strings, from which may be produced tones or sounds constituting a determined chord, free to vibrate when the bar is brought into coöperative relation with the strings and the strings are made to sound by the player passing his hand over the strings or otherwise causing them to vibrate. As shown in the embodiment chosen for illustration, the bars are arranged over the strings, have a movement toward and away from them, are normally held away from the strings (compression springs, 4, being preferably employed for this purpose), and are preferably guided at their ends by any suitable means, as for instance, a pin and slot arrangement 5, 6, as shown, or the ends of the bars may project into and be guided in vertical grooves in brackets attached to the body of the instrument. While the position of the damper-bars 3 over the strings is preferred, it is quite obvious that they may be located in other positions and may be brought into coöperative relation with the strings in other ways than by pressing the bars down on the strings. The bars might be placed under the strings and brought into coöperative relation from below, or they might be given a lengthwise motion and brought into coöperative relation with the strings from the side. Indeed, it is immaterial how the bars are brought into relation with the strings.

The bars are preferably inclosed in a casing 7 and are actuated through the medium of finger-pieces or buttons 8 projecting through the top of the casing, though it is apparent that the bars might be, and in some instances would be preferably, actuated by pressure or other force directly thereon. In this class of instruments it is usual to place under the strings a scale indicating the names or sounds of the respective strings, and I have illustrated such a scale in my drawings at 9. I also preferably provide each of the damper-bars with a suitable letter or character indicating the key of the tonic chord which it coöperates to produce, and may or may not also indicate the tones or sounds produced when a damper-bar is brought into operative relation with the strings and the strings are vibrated. In addition to these indicia, on the drawing (though I would not ordinarily do so on instruments), I have indicated opposite each bar not only the key of the tonic chord which it coöperates to produce, but also the corresponding chords of other keys which the bar coöperates to produce.

The bars are placed side by side, and, in order to secure the relationship whereby

those coöperating to produce dominant and subdominant chords are adjoining bars coöperating to produce their relative tonic chord, as heretofore explained, are placed in the order F—C—G—D—A—E—B—Gb—Db—Ab—Eb—Bb. By this arrangement, to play accompaniment in any one of the twelve major keys, it is only necessary to actuate the bar bearing the indication of the key in which it is desired to play, and vibrate the strings, to produce the tonic chord of that key, and to actuate the bar to the one or the other side, and vibrate the strings, to produce the dominant or subdominant chords of that key. It will be observed, however, with the harp constructed as above described, that if it be desired to play in either of the keys at the beginning or end of the series there would be no adjacent bar coöperating to produce either a dominant or a subdominant chord in each of the keys, and the player would have to reach to the opposite end of the series for the desired bar. To obviate this, I add two extra bars, one at each end of the series, the added bar at each end corresponding to the bar at the opposite end of the series, that is, the bar added at the beginning of the series corresponds to the last or twelfth bar of the series, and the bar added at the end of the series corresponds to the bar at the beginning or first bar of the series. As stated before, it is not essential that the series commence with any particular key, so the sequence is retained. The arrangement as described is preferred, however, as it possesses the advantage of having together in one portion of the series the bars designated by the simple letters, as F—C—G—D—A—E—B, and in another portion of the series the bars designated by the letters having the flat-sign joined therewith, as Gb—Db—Ab—Eb—Bb. This greatly assists the player in readily locating the bar coöperating to produce the chord in the key in which he proposes to play.

In Fig. 3 I have shown an arrangement of the finger-pieces or buttons whereby the extra bars at the ends of the series are dispensed with. This consists in arranging them in a circle (or equivalent figure) so that the series shall be continuous, the first and last buttons being contiguous. The buttons are connected to the bars in this instance by the extension pieces or bars 10.

A harp playing in less than the whole number of major keys may be constructed with advantage according to my invention by simply omitting a number of consecutive bars from the series.

While I have described the invention as applied to autoharps, and the damper-bars as simply coöperating to produce chords when they are depressed and the strings are struck by the player, it is quite obvious that

my invention could be applied to musical instruments other than autoharps, and that the damper-bars may be so constructed that when actuated, they will of themselves produce the chords.

What is claimed is:—

1. In an autoharp, the combination with the strings thereof, tuned according to the chromatic scale, of damper-bars cooperating with said strings to produce arpeggios or chords in a plurality of major keys, each damper-bar cooperating to produce a chord composed of tones different from those which another cooperates to produce, said damper-bars being arranged in such relation that those cooperating to produce the dominant and subdominant chords of any one key are adjoining the damper-bar cooperating to produce the tonic chord of that key.

2. In an autoharp, the combination with the strings thereof, tuned according to the chromatic scale, of damper-bars cooperating with said strings to produce arpeggios or chords in a plurality of major keys, each damper-bar cooperating to produce a chord composed of tones different from those which another cooperates to produce, said damper-bars being arranged in such relation that those cooperating to produce the dominant and subdominant chords of any one key are adjoining the damper-bar cooperating to produce the tonic chord of that key, and two extra damper-bars, one at each end of the arrangement, cooperating to produce one a dominant and the other a subdominant chord in the same key as that in which the adjoining damper-bar cooperates to produce a tonic chord.

3. In an autoharp, the combination with the strings thereof, tuned according to the chromatic scale, of damper-bars cooperating with said strings to produce arpeggios or chords in all the major keys, each damper-bar cooperating to produce a chord composed of tones different from those which another cooperates to produce, said damper-bars being arranged in such relation that those cooperating to produce the dominant and subdominant chords of any one key are adjoining the damper-bar cooperating to produce the tonic chord of that key.

4. In an autoharp, the combination with the strings thereof tuned according to the chromatic scale, of damper-bars cooperating with said strings to produce arpeggios or chords in all the major keys, each damper-bar cooperating to produce a chord composed of tones different from those which another cooperates to produce, said damper-bars being arranged in such relation that those cooperating to produce the dominant and subdominant chords of any one key are adjoining the damper-bar cooperating to produce the tonic chord of that key, and two extra damper-bars, one at each end of

the arrangement, one cooperating to produce a dominant and the other a subdominant chord in the same key as that in which the adjoining damper-bar cooperates to produce a tonic chord.

5. In a musical instrument, sound producing means, and finger-pieces or buttons actuating said sound-producing means, arranged in such relation that the pieces operable for dominant and subdominant chords of major keys are adjoining finger-pieces operable for tonic chords of major keys, each finger-piece operable for a tonic chord being also operable with respect to one adjoining finger-piece for a dominant chord and operable with respect to another adjoining finger-piece for a subdominant chord.

6. In an autoharp, the combination with the strings thereof tuned according to the chromatic scale, of damper-bars cooperating with said strings to produce arpeggios or chords in a plurality of the major keys, each damper-bar cooperating to produce a chord composed of tones different from those which another cooperates to produce, said damper-bars being arranged in such relation that those cooperating to produce the dominant and subdominant chords of any one key are adjoining the damper-bar cooperating to produce the tonic chord of that key, all of the damper-bars cooperating to produce the dominant chords being in the same relative position with respect to the damper-bars cooperating to produce the tonic chords, and all of the damper-bars cooperating to produce the subdominant chords being in the same relative position with respect to the damper-bars cooperating to produce the tonic chords.

7. In an autoharp, the combination with the strings thereof tuned according to the chromatic scale, of damper-bars cooperating with said strings to produce arpeggios or chords in a plurality of the major keys, each damper-bar cooperating to produce a chord composed of tones different from those which another cooperates to produce, said damper-bars being arranged in such relation that those cooperating to produce the dominant and subdominant chords of any one key are adjoining the damper-bar cooperating to produce the tonic chord of that key, all of the damper-bars cooperating to produce the dominant chords being in the same relative position with respect to the damper-bars cooperating to produce the tonic chords and all of the damper-bars cooperating to produce the subdominant chords being in the same relative position with respect to the damper-bars cooperating to produce the tonic chords, and two extra damper-bars, one at each end of the arrangement, one cooperating to produce a dominant and the other a subdominant chord in the same key as that in which the adjoining damper-bar cooper-

ates to produce a tonic chord, the extra
damper-bars being also in the same relative
position with respect to the adjoining dam-
per-bars coöperating to produce tonic chords
5 as are the other damper-bars in the series
coöperating to produce dominant and sub-
dominant chords.

In testimony whereof I have signed this
specification in the presence of two subscrib-
ing witnesses.

WALTER S. HOLLOWAY.

Witnesses:

R. D. JUDKINS,

W. E. JUDKINS.