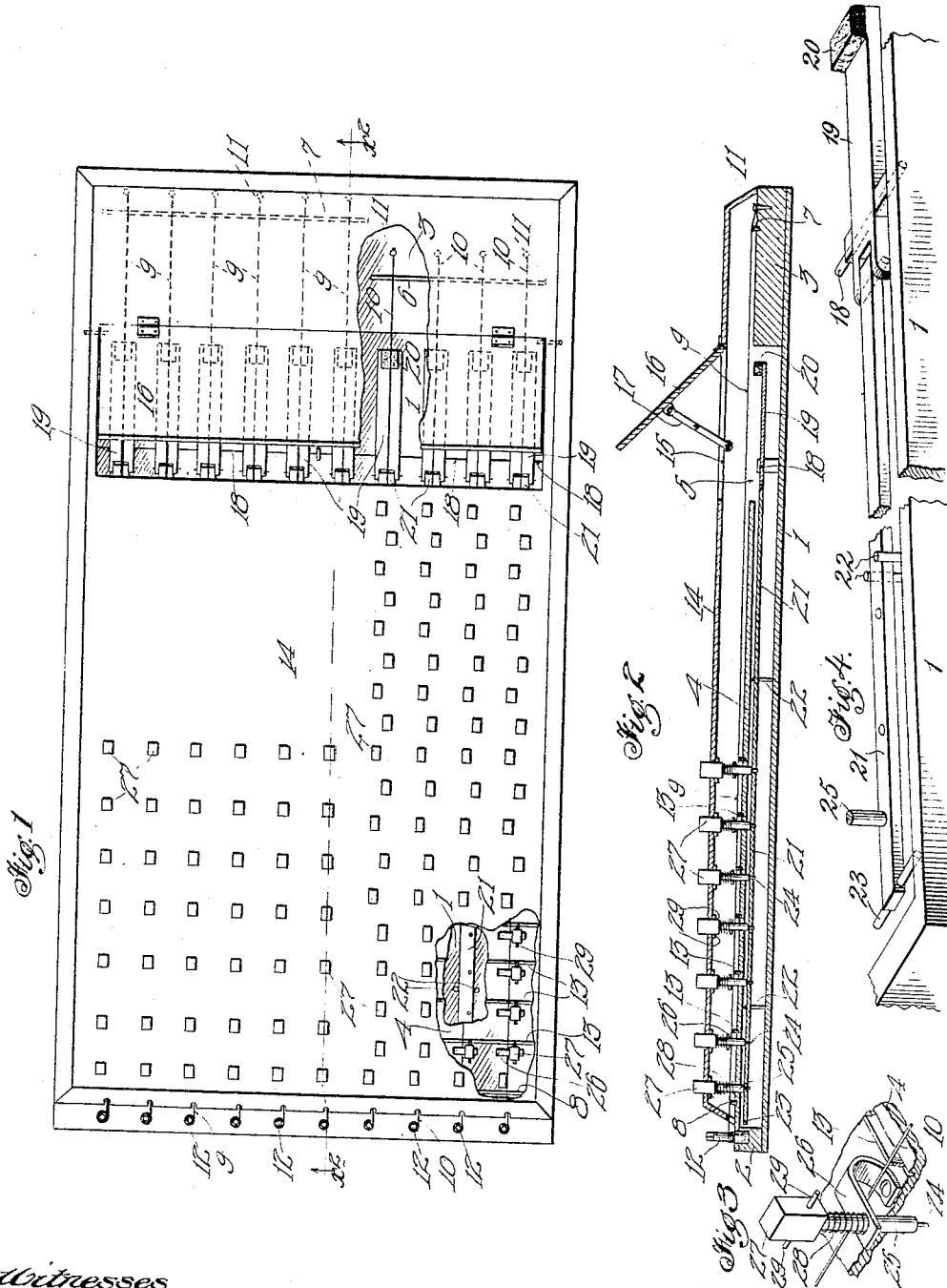


No. 823,625.

PATENTED JUNE 19, 1906.

O. H. NEWMAN.
MUSICAL INSTRUMENT.
APPLICATION FILED AUG. 23, 1904.



Witnesses
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UNITED STATES PATENT OFFICE.

OSCAR H. NEWMAN, OF ORACLE, ARIZONA TERRITORY.

MUSICAL INSTRUMENT.

No. 823,625.

Specification of Letters Patent.

Patented June 19, 1906.

Application filed August 23, 1904. Serial No. 221,886.

To all whom it may concern:

Be it known that I, OSCAR H. NEWMAN, a citizen of the United States, residing at Oracle, in the county of Pinal, Territory of Arizona, have invented a new Musical Instrument, of which the following is a specification.

My invention relates to a musical instrument; and the object of the invention is to provide a musical instrument operated by keys in which each note is made by pressing its respective key and to provide for securing several notes from each string, thereby producing an instrument having an extended range of several octaves with relatively few strings.

The accompanying drawings illustrate the invention, and referring thereto Figure 1 is a plan view of the instrument with portions of the top broken away to show underlying features. Fig. 2 is a section on line $x^2 x^2$, Fig. 1. Fig. 3 is an enlarged detail in perspective of a key and adjacent parts. Fig. 4 is a perspective of the hammer and key levers.

1 designates the base-board, to one end of which is attached a tail-block 2 and to the other end of which is attached a head-block 3. A fret-board 4, the end of which is attached to the tail-block 2, extends parallel with the base-board 1 toward the head-block 3, but does not meet the latter, leaving a space 5.

Head-bridges 6 and 7 are arranged on the head-block 3, while a tail-bridge 8 is arranged above the tail-block 2. Stretched across the head-bridge 7 and tail-bridge 8 are six bass-strings 9, and stretched across the head-bridge 6 and tail-bridge 8 are four treble-strings 10, the ends of the strings being fastened to the head-block 3 by pins 11, all of the strings at their other ends being fastened to tuning-screws 12 in the tail-block 2.

Arranged on the fret-board 4 are frets 13, against which the strings are adapted to be pressed to change the pitch or tone of the strings when vibrated. Above the fret-board and strings is an outer board 14, having an opening or sound-hole 15, which may be closed by a hinged lid 16, the lid being supported when opened at any desired angle by friction toggle-links 17.

Extending across the instrument above the bottom board 1 is a wire 18, to which is pivoted a series of hammer-bars 19, the end of each hammer-bar having a hammer 20, which is adapted to strike against the string to vibrate the same. Pivoted to the short

arm of each hammer-bar 19 is a key-bar 21, each key-bar being guided to swing in a vertical plane by pins 22, which extend up from the base-board 1. Each key-bar is pivoted to a wire 23, which extends across the instrument. Each key-bar 21 is provided with perforations, each perforation receiving a pin 24, which is carried by a stem 25. A series of key-stems 25 is provided adjacent to each key-bar 21 and adjacent to the corresponding string. The lower end of the stem 25 is obviously guided by the pin 24, which engages in the key-bar, while the intermediate portion of the stem 25 is guided by a fret-spring 26, the stem 25 loosely passing therethrough. Said spring 26 is in the form of a V spring or arm whose lower part is attached to the fret-board and whose upper part extends over the string and serves, when depressed, to engage the string with the fret.

The upper end of each stem 25 is provided with a key 27, which extends loosely through the top plate 14, there being a compression-spring 28 arranged between the key 27 and the fret-spring 26 to hold the key 27 and stem 25 normally suspended, the upward movement of the key 27 being limited by stop-pins 29, projecting from either side thereof.

The fret-springs 26 are so arranged that the strings 10 freely pass underneath the same, as shown in Fig. 3, and each fret-spring 26 is arranged immediately behind its adjacent fret 13. The spring 28 is stronger than the fret-spring 26, so that when the key 27 is pressed down the spring 26 will first be depressed and will stop the string back of the fret 13, so that the string will vibrate between that fret and the bridge 6 or 7, while further downward movement of the key in turn brings the lower end of the stem 25 against the key-bar 21, and as the latter swings upon its pivot 23 it tilts the hammer-bar 19, causing the hammer 20 to strike against the under side of the string, the string vibrating in response, and as soon as the pressure upon the key 27 is released the spring 26 moves up and frees the string 10 and the spring 28 expands and restores the key to original position. It will be understood that on depression of the key the hammer is thrown against the string, but immediately leaves the same by reason of its weight, leaving the string free to vibrate.

It is obvious that the strings and keys can be arranged in any desired manner, and I do

not limit myself to the particular arrangement of keys and strings herein shown, and it is obvious that other variations and changes may be made in the present embodiment without departing from the spirit of the invention.

What I claim is—

1. A musical instrument comprising strings, frets therefor, a fret-arm for each fret cooperating with the fret to control the pitch of the strings, a series of keys for each string and movable to engage and operate the respective fret-arms, and hammer means for each string engaged and operated by all of the corresponding series of keys.
2. A musical instrument comprising strings, frets therefor, a key for each fret of each string, fret means operated by the keys to engage the strings with the frets, and hammer means for each string having an operating-bar extending into proximity to all the keys corresponding to that string, to operate the hammer by the operation of any one of the keys of said string.
3. A musical instrument comprising strings, frets therefor, a fret spring-arm adjacent to each fret, movable to engage the string on the fret, a key for each fret, operating the corresponding fret spring-arm and a hammer for each string provided with operating means extending adjacent to the keys and operated thereby.
4. A musical instrument comprising strings, frets therefor, a fret spring-arm adjacent to

each fret movable to engage the string on the fret, a key for each fret provided with a spring interposed between it and said arm to operate the arm and permit further movement of the key, a hammer for each string and a hammer-operating bar extending adjacent to the keys to be operated by any one of the keys for the corresponding string.

5. A musical instrument comprising strings, frets therefor, a fret spring-arm adjacent to each fret, a key-stem movable in said arm and carrying a key, a spring in said stem engaging said key and arm to operate the arm from the key, a key-bar extending adjacent to and operated by the key-stems and a hammer for each string operated by the key-bar corresponding to that string.

6. A musical instrument comprising a series of strings, a pivoted hammer for each string, a key-bar for each string pivoted to the hammer-bar and provided with perforations, a series of keys for each string, each key having a stem with a pin which lies in a perforation in the key-bar, an element with frets under the strings, and means operated by each key for pressing the associated string against the adjacent fret.

In testimony whereof I have signed my name to this specification in the presence of subscribing witnesses.

OSCAR H. NEWMAN.

Witnesses:

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W. L. PALMER.