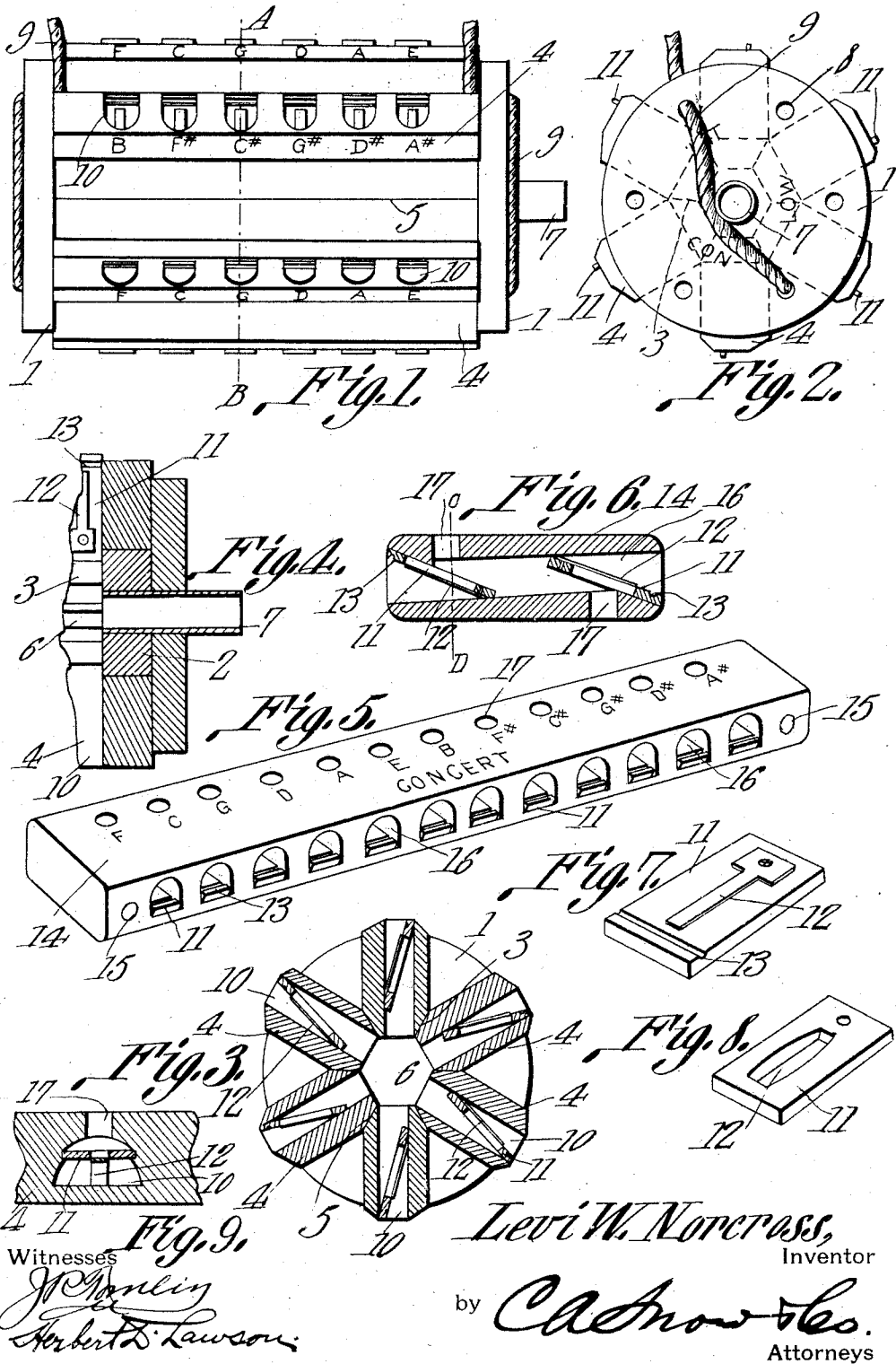


Patented Mar. 21, 1911.



UNITED STATES PATENT OFFICE.

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TUNING INSTRUMENT.

987,159.

Specification of Letters Patent. Patented Mar. 21, 1911.

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To all whom it may concern:

Be it known that I, LEVI W. NORCROSS, a citizen of the United States, residing at Fort Worth, in the county of Tarrant and State of Texas, have invented a new and useful Tuning Instrument, of which the following is a specification.

This invention relates to tuning instruments one of its objects being to provide an instrument of this character which can be readily fastened to the head of the user and which contains a series of reeds by means of which the single tones and the fourths and fifths throughout the octave may be obtained.

A further object is to provide an instrument of this character having reeds which can be readily removed, it thus being possible to raise or lower the pitch of the instrument by substituting different sets of reeds for those in position within the instrument.

A still further object is to so mount the reeds as to leave extensive air spaces above and below the same, thus permitting the reeds to vibrate more freely and produce better tones.

Another object is to provide an instrument having three series of reeds of different pitches grouped therein so that the instrument can be used for tuning a piano or the like to concert, international or low pitch.

With these and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred forms of the invention have been shown.

In said drawings:—Figure 1 is a front elevation of one form of tuning instrument. Fig. 2 is an end elevation thereof. Fig. 3 is a section on line A—B Fig. 1. Fig. 4 is a longitudinal section through one end portion of the instrument shown in Fig. 1. Fig. 5 is a perspective view of another form of instrument. Fig. 6 is a transverse section through the instrument shown in Fig. 5. Fig. 7 is a perspective view of one of the reeds used within the instrument. Fig. 8 is a perspective view showing the opposite face of said reed and its blocks. Fig. 9 is a section on line C—D Fig. 6.

Referring to the figures by characters of

reference, 1 designates heads having polygonal blocks 2 secured to the inner faces thereof and which constitute supports for the reduced ends 3 of bars 4. These bars are arranged radially between the heads and having inner edges beveled longitudinally and in contact throughout their lengths as indicated at 5 so as to form a central compartment 6. One end of this compartment is closed by one of the heads 1 while the other head has a tube 7, preferably formed of brass, extending through it and opening into the compartment. This tube constitutes the outlet for the sound waves produced in the manner hereinafter described. As shown in Fig. 3, preferably six of the bars 4 are interposed between the heads. It will also be seen that openings 8 are formed within the heads and between the ends of the bars, any of these openings being adapted to receive a cord 9 or other device whereby the instrument can be readily fastened to the head of the person using it.

In the form of device shown in Figs. 1, 2 and 3, each of the bars 4 has a series of openings or passages 10, each of which communicates with the central compartment 6. Each opening is substantially semi-cylindrical and has spaced shoulders upon the side walls thereof which constitute seats for the reed having a block 11 and tongue 12. These shoulders hold the block diagonally within the opening so that it extends entirely across the opening 10, one end of the block projecting beyond the outer end of the opening and having a notch 13 extending throughout the width thereof. Preferably six openings are formed in each bar 4 and the said bars are arranged in pairs, the openings in one bar of each pair containing reeds for sounding the tones F, C, G, D, A, and E, while the reeds of the other bar of each pair are adapted to sound the tones B, F#, C#, G#, D#, and A#. The three pairs of bars contain reeds tuned to different pitches. For example, the reeds of one pair are tuned to concert pitch, the reeds of the second pair may be tuned to international pitch and the reeds of the third pair may be tuned to low pitch. The pairs of bars can be indicated upon the heads of the instrument by the data "Con", "Int", and "Low", indicating, respectively, concert pitch, international pitch, and low pitch.

When it is desired to use the instrument for the purpose of tuning a piano or other musical instrument, the cord 9 is threaded through the openings 8 so that when the
 5 cord is attached to the head of the user, the bars 4 belonging to the pitch to which the instrument is to be tuned, will be held in position where they can be conveniently
 10 reached and held by the lips. By providing the tones which have been indicated, a musical instrument can be very readily tuned in fourths and fifths throughout the octave. In tuning in the octave A—A, the first note tuned is A. The next note tuned is
 15 a fourth below. E. (A—E, a fourth). D below, a fifth, is then tuned; then G below (G—D, a fourth) then C below (C—G, a fifth; then F below (C—F, a fourth); then A# below (A#—F, a fifth). The A# above can be obtained from the lower A#. D# below can then be tuned (D#—A#, a fifth); then G#, below (G#—D#, a fourth); then C# (C#—G#, a fifth); then F# (F#—C#, a fourth); and then
 25 B. (B—F#, a fifth). This completes the circuit of the octave. In the octave F—F, C is the first note tuned and the circuit is followed out in fifths and fourths, in practically the same way. The intervals of
 30 fourths and fifths can be obtained by covering two reeds with the mouth.

Instead of providing two bars for each pitch, a single bar may be provided therefor, this structure thus reducing the number
 35 of bars one half but lengthening the instrument. In other words instead of arranging one set of reeds below or parallel with the other set, both sets will be disposed in the same line. This structure is so obvious that
 40 it is not deemed necessary to illustrate it.

In Figs 5 and 6 another form of tuning instrument has been shown, the same being adapted for use in getting either of two pitches, for example, concert pitch and international pitch. This instrument consists
 45 of a flat elongated bar 14 having openings 15 extending through the end portions thereof to receive a cord adapted to hold the bar in position upon the head of the user. Openings 16 extend transversely through the bar at intermediate points, preferably 12 of these openings being provided. Reeds are inserted into both ends of each opening 16, those reeds along one edge of the bar being
 50 tuned to one pitch while the reeds in the opposite ends of the openings 16 are tuned to another pitch. As shown particularly in Fig. 6, the blocks of the reeds are disposed in parallel inclined planes and extend across the openings 16, the two blocks and their tongues being oppositely disposed however, so that in each instance the reed is on that face of its block nearest the adjacent end of the opening 16. An
 65 outlet opening 17 is formed in the bar and

back of each reed so that the sound waves can pass freely from the bar. The characters designating the various reeds are arranged along the upper and lower faces of the bar adjacent the openings 17. It is
 70 to be understood of course that if desired, only one set of reeds can be mounted in the bar, in which event the openings 17 may be dispensed with as the sound waves will be free to pass outwardly through the rear
 75 ends of the openings 16. Of course where only one set of reeds is used the instrument can only be employed for tuning in one pitch but, by having the reeds removable, another set can be substituted therefor for use in tuning in another pitch. The blocks of the reeds are detachably mounted within the openings 16 in the same manner as are the blocks 11 within the openings 10.

It is to be understood that various changes
 85 may be made in the construction and arrangement of the parts without departing from the spirit or sacrificing any of the advantages of the invention as defined in the appended claims. 90

What is claimed is:—

1. A tuning instrument including a bar having passages extending entirely there-through, each passage being of uniform width, a flat reed block mounted within
 95 each passage and engaging opposed walls of the passage, and a reed tongue carried by each of the blocks, said blocks being removable.

2. A tuning instrument including a bar
 100 having passages extending entirely there-through, and flat reed-blocks removably mounted within and engaging the walls of the passages, each opening being of uniform transverse area, and each block being
 105 disposed diagonally within the passage.

3. A tuning instrument including a bar having passages extending entirely there-through, each passage being of uniform cross sectional area, there being inclined
 110 shoulders upon opposite walls of each passage, a reed-block removably mounted upon and supported by the shoulders in each passage, said block being supported diagonally within the passage. 115

4. A tuning instrument including a bar having passages extending entirely there-through, each passage having oppositely disposed diagonal shoulders upon the walls thereof, a reed-block removably mounted
 120 upon the shoulders in each passage, and supported thereby in an inclined position across the passage, each block including a notched end portion for engagement by a finger to withdraw the block. 125

5. A tuning instrument including heads, bars connecting the heads and having passages therein and extending entirely there-through, there being a central compartment
 130 between the bars, an outlet pipe extending

from said compartment and through one of the heads, and reeds mounted within the passages.

6. A tuning instrument including heads, bars interposed between and connecting the heads, said bars meeting in pairs along their inner longitudinal portions and forming a central longitudinal compartment, there being passages within the bars and opening into the compartment, reeds within said passages, and an outlet pipe extending through one of the heads and from the compartment.

7. A tuning instrument including heads, radially disposed bars interposed between and connected to the heads, each bar having reed-receiving passages therein, there being a central longitudinal compartment between the inner edges of the bars with which said passages communicate, and an outlet pipe extending from said compartment and through one of the heads.

8. A tuning instrument including heads, bars interposed therebetween and connected thereto, said bars meeting at their inner longitudinal portions to form a central compartment, reeds removably mounted within the bars, and an outlet pipe extending through one of the heads.

9. A tuning instrument including heads, radially disposed bars interposed therebe-

tween and secured thereto, said bars meeting at their inner longitudinal portions to form a central compartment, said bars having passages therein, reeds removably mounted within the passages, an outlet pipe extending through one of the heads, said pipe opening into the compartment, and attaching means engaging the heads.

10. A tuning instrument including connected radial bars each having straight passages therein opening through opposite faces of the bar, and reeds housed within the passages and extending transversely thereof, said reeds being inclined relative to the passages in which they are located.

11. A tuning instrument including connected bars disposed in radiating planes, each bar having straight passages extending entirely therethrough and opening through opposite faces of the bar, and a reed extending transversely of each passage and inclined relative to the center of the passage.

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

LEVI WATSON NORCROSS.

Witnesses:

R. L. BARTON,
F. G. SMITH.