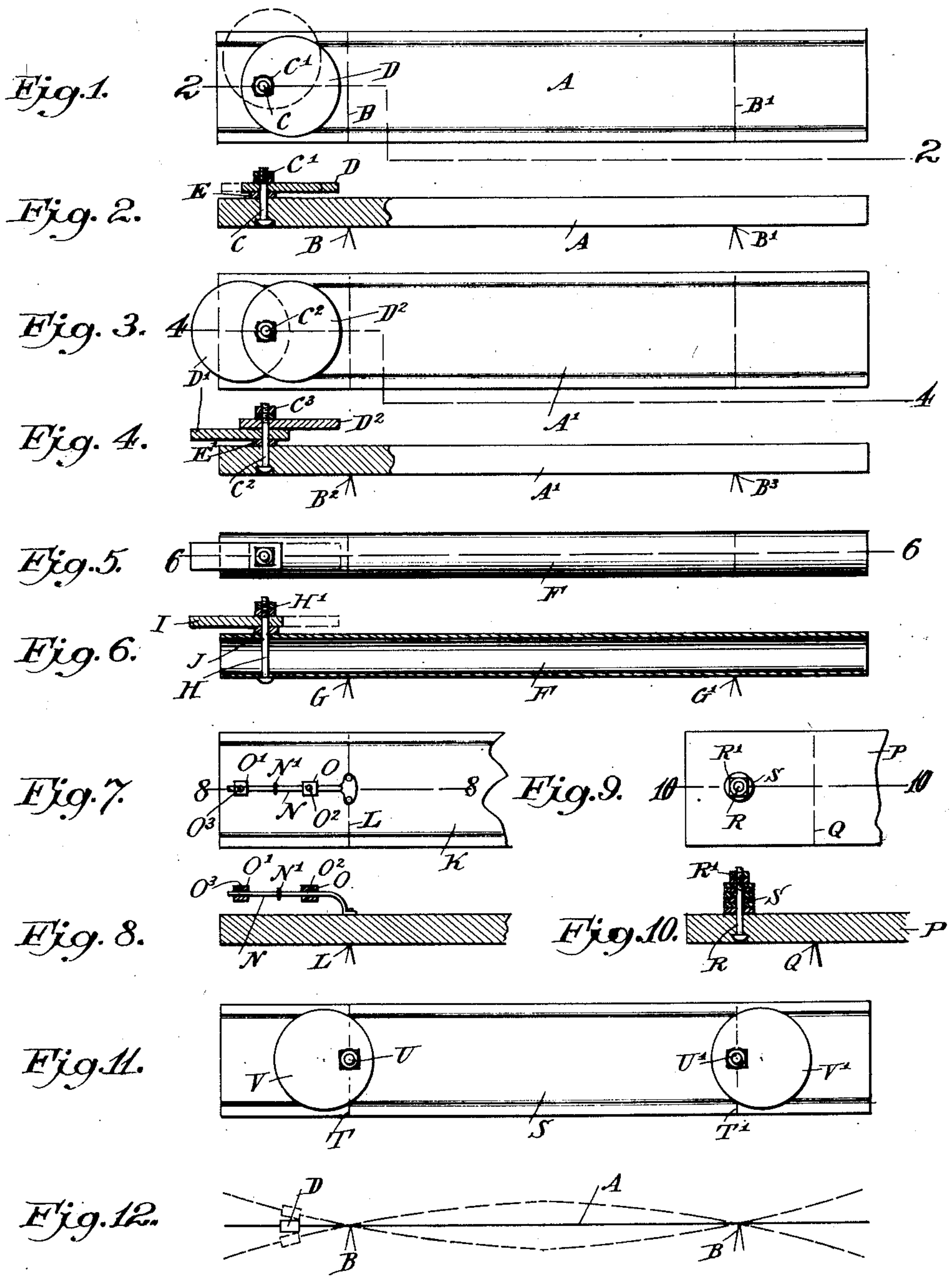
P. T. YOUNG.

MEANS FOR TUNING SOUND PRODUCING BARS OR TUBES.

APPLICATION FILED FEB. 16, 1914.

1,140,932. Patented May 25, 1915.



WITNESSES

INVENTOR

Fig.13.  W Paul Thomas Young

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

PAUL THOMAS YOUNG, OF LOS ANGELES, CALIFORNIA.

MEANS FOR TUNING SOUND-PRODUCING BARS OR TUBES.

1,140,932. Specification of Letters Patent. Patented May 25, 1915.

Application filed February 16, 1914. Serial No. 818,928.

To all whom it may concern:

Be it known that I, PAUL THOMAS YOUNG, a citizen of the United States, and a resident of Los Angeles, in the county of Los Angeles and State of California, have invented a new and Improved Means for Tuning Sound-Producing Bars or Tubes, of which the following is a full, clear, and exact description.

The invention relates to musical instruments of the percussion type, such as xylophones, marimbas, glockenspiele, tubular chimes, musical tubes, tuning forks and the like.

The object of the invention is to provide a new and improved means for tuning sound-producing elements of musical instruments of the type referred to, and arranged to permit the player to quickly and accurately adjust the sound-producing elements to either concert or international pitch.

In order to accomplish the desired result use is made of means for varying the moment of the mass of the sound-producing elements.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of a sound producing element in the form of a bar provided with the tuning means; Fig. 2 is a sectional side elevation of the same on the line 2—2 of Fig. 1; Fig. 3 is a plan view of a modified form of the tuning means as applied to a sound-producing element in the form of a bar; Fig. 4 is a sectional side elevation of the same on the line 4—4 of Fig. 3; Fig. 5 is a plan view of another modified form of the tuning means as applied to a sound-producing element in the form of a tube; Fig. 6 is a sectional side elevation of the same on the line 6—6 of Fig. 5; Fig. 7 is a plan view of another modified form of the tuning means as applied to a sound-producing element in the form of a bar, only part of which is shown; Fig. 8 is a sectional side elevation of the same on the line 8—8 of Fig. 7; Fig. 9 is a plan view of another modified form of the tuning means as applied to a sound-producing element in the form of a bar, only part of which is shown; Fig. 10 is a sectional side elevation of the same on the line 10—10 of Fig. 9; Fig. 11 is a plan view of another modified form of the tuning means as applied to a sound-producing element in the form of a bar; Fig. 12 is a diagrammatic view of a sound-producing element provided with the tuning means; and Fig. 13 is a perspective view of a supplemental tuning element for changing the pitch of the sound-producing element from concert pitch to international pitch.

It is well known that in musical instruments of the type referred to, the vibrating sound-producing elements, of steel, wood, glass or other suitable material, it being assumed that the element is of uniform cross section, has two nodal points which are approximately located from each end of the element a distance corresponding to that of one-fifth of the total length of the element. It is also well known that the pitch of the sound-producing element depends upon the density, length and thickness of the element and the distribution of the mass, and the last-named factor heretofore unused for tuning purposes is now relied upon to produce the desired result.

As shown in Fig. 1, the sound-producing element is in the form of a bar A which when in use will be supported so as to produce two nodal points B, B′, and on the end of the bar adjacent the nodal point B is arranged a vertically-disposed pivot C on which is eccentrically mounted a tuning element in the form of a disk D to permit of swinging the disk D on its pivot C with a view to locate the center of gravity of the disk D nearer to or farther from the nodal point B. It is evident that on the player shifting the disk D and sounding the bar A the desired pitch is eventually reached in a very simple manner and without resorting to cutting, sawing or filing the bar, as heretofore practised. It is understood that after the disk D has been adjusted to produce the desired result, it is securely fastened in place on the pivot C between a washer E and nuts C′ screwing on the upper end of the pivot. When the disk D is in the position shown in full lines in Figs. 1 and 2, the bar A when sounded emits a high-pitched sound, and when the said disk is turned on its pivot C, say to the position shown in dotted lines in Figs. 1 and 2, then the bar A when sounded emits a low-pitched sound.

In the modified form shown in Figs. 3 and 4, the bar A′ has the nodal points B^2, B^3 and the end of the bar A′ adjacent the nodal point B^2 is provided with a pivot C^2

on which are mounted to turn eccentrically and independently one of the other the disks D′ and D². The disk D′ is designed to change the pitch from a high pitch to a low pitch by rotating the disk D′ through an arc of 180°, while the other disk D² is designed for tuning the bar by a partial rotation of the disk. It is understood that the disks D′ and D² are interposed between a washer E′ and nuts C³ screwing on the upper end of the pivot C² to hold the disks D′, D² in the adjusted position.

In the modified form shown in Figs. 5 and 6, the sound-producing element F is in the form of a tube having the nodal points G and G′, and on the end of the tube F adjacent the nodal point G is arranged a pivot H on which is mounted to turn a tuning element I in the form of a short bar held between a washer J and nuts H′ screwing on the upper end of the pivot H. When the nuts H′ are loosened the tuning element I can be swung around to any desired position until the bar F when sounded emits the sound of the desired pitch.

In the modified form shown in Figs. 7 and 8, the sound-producing element is in the form of a bar K having the usual nodal points L, of which only one is shown, and on the top of this bar K directly opposite the nodal point L is secured an outwardly-extending bar N, on which are mounted to slide tuning elements in the form of weights O, O′ adapted to be fastened in place on the bar by set screws O², O³. The bar N is provided at the middle of its length with a collar N′ to limit the lengthwise movement of the weights O and O′ on the bar N. The weight O is for changing the pitch of the sound-producing element from concert pitch to international pitch while the weight O is held adjustably on the outer end of the bar N for tuning.

In the modified form shown in Figs. 9 and 10, the sound-producing element P is in the form of a bar having nodal points, of which the nodal point Q only is shown, and on the end of the bar adjacent the nodal point Q is held a bolt R, on which is mounted a tuning element in the form of a series of weights S in the form of disks and held in place by nuts R′, screwing on the upper end of the bolt R. The number of the weights S can be increased or diminished to vary the mass of the tuning element with a view to produce a desired pitch when sounding the bar P.

In the modified form shown in Fig. 11, the sound-producing element S is in the form of a bar having the nodal points T and T′, and on the said bar are held vertically-disposed pivots U, U′, the centers of which coincide with the nodal points T and T′. On the pivots U and U′ are eccentrically mounted the tuning elements V and V′, preferably in the form of disks similar to the disks D, D′ and D² above mentioned. It is understood that after the disks V and V′ are adjusted they are fastened in place the same as above described relative to the disk D.

In Fig. 13 is shown a supplemental tuning element W in the form of a cylinder adapted to be placed on a pivot such as the pivot R and fastened thereto by the nuts R′, the tuning element W being of such a mass that when the element is used the pitch of the sound-producing element is changed from concert pitch to international pitch.

Although I have shown and described several forms of tuning elements, it is evident that I do not limit myself to the same as the form of tuning element and its application on the sound-producing element can be varied without deviating from the spirit of my invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A sound producing bar of the class described provided with an arm secured thereto opposite a nodal point thereof, and an adjustable weight on said arm.

2. A sound-producing bar of the class described provided with an arm on one end of said bar, and weights held adjustably on the said arm.

3. A sound-producing bar of the class described provided with an arm secured thereto opposite a nodal point thereof and extending approximately to the end of said bar, and weights held adjustably on the said arm, the latter being arranged on opposite sides of the center of length of said arm.

4. A sound-producing bar of the class described provided with an arm on one end of said bar, weights held adjustably on the said arm, the latter having a collar intermediate its length and the said weights being arranged on opposite sides of the collar, and means for fastening the weights in place on the arm.

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

PAUL THOMAS YOUNG.

Witnesses:
HAZEL DOZIER,
LILIAN M. CASHION.