June 12, 1951 D. SEBOUH 2,556,342

MOUNTING FOR TUNING FORKS

Filed May 5, 1944

FIG. 8.

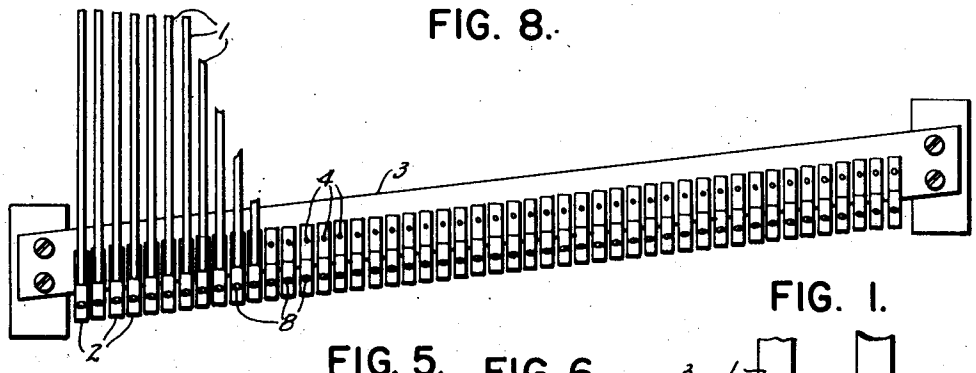


FIG. 1.

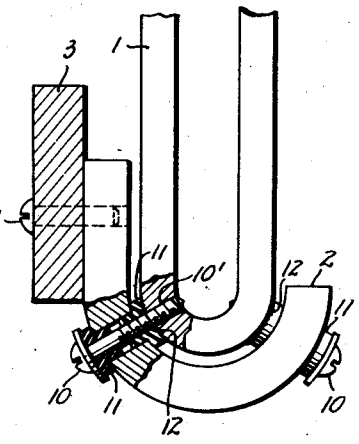


FIG. 5.

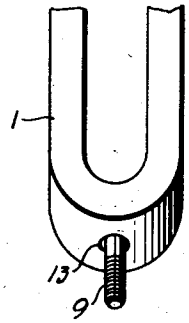


FIG. 6.

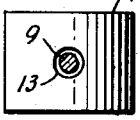


FIG. 4.

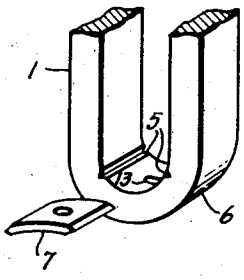


FIG. 7.



FIG. 11.

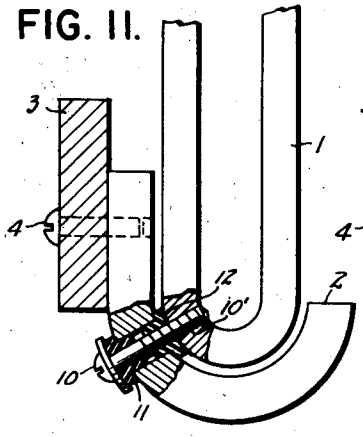


FIG. 2.

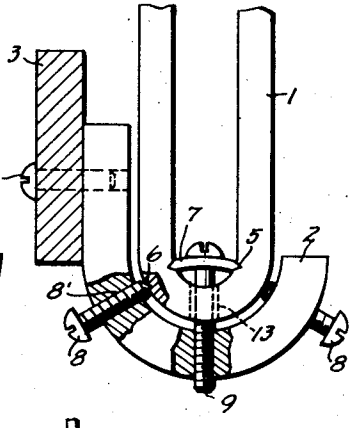


FIG. 3.

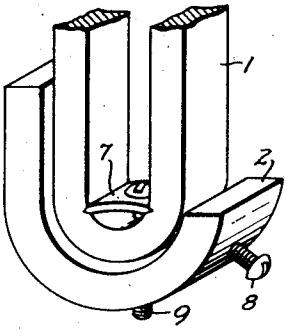


FIG. 9.

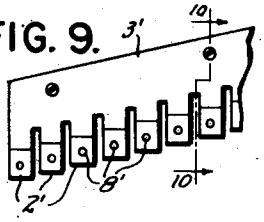
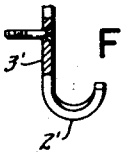


FIG. 10.



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MOUNTING FOR TUNING FORKS

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13 Claims. (Cl. 84—409)

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My invention relates to a method of mounting tuning forks, and more particularly to a mounting for tuning forks adapted for use in musical instruments, and the objects of my invention are first, to effect an economy in construction chiefly by eliminating the fork stem, and second to secure a greater freedom for the vibrating prongs by fastening the forks at their nodal points. In the case of the conventional mounting in which the fork is fastened at its stem the stem's up and down vibratory motion will be impeded and as a result there will be a damping effect on the prongs; whereas by fastening the fork at its nodal points the prongs will vibrate with greater freedom and for a longer period of time.

In the accompanying drawings, forming a part of this specification, are illustrated two of several possible ways of mounting a fork by fastening it at its nodes. Like numerals of reference in the drawings indicate corresponding parts through the several views in which

Fig. 1 is a side elevational view showing, partly in cross section, one of the methods of mounting.

Fig. 2 is a side elevational view showing, partly in cross section, another method of nodal mounting.

Fig. 3 is a view in perspective of Fig. 2.

Fig. 4 is a view in perspective showing the slot and the indentation at the nodes of a fork as used in Fig. 2.

Fig. 5 is a view in perspective showing the set screw protruding from an aperture at the yoke of the fork of Fig. 2.

Fig. 6 is the bottom plan view of the fork of Fig. 5, the set screw being shown in transverse section.

Fig. 7 illustrates a resilient bushing used in the method of mounting shown in Fig. 1.

Fig. 8 is a front elevation showing the mounting of a set of forks as adapted for use in a musical instrument having a range of four octaves.

Fig. 9 is a fragmental front elevation showing a continuous common bracket for tuning forks.

Fig. 10 shows a section on the line 10—10, looking in the direction of the arrows of said line.

Fig. 11 is a side elevation, partly in section, of a modification of the structure of Fig. 1.

Each fork 1 is mounted preferably on an individual frame or bracket 2. Any number of such brackets, each bearing a fork of a different frequency, can be in turn successively mounted on a common bar or rail 3 (Fig. 8) by means of screws 4 with each fork representing a corresponding note in the successive order of the

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musical scale. A set of forks so mounted and adaptable for use in a musical instrument having a range of four octaves is shown in Fig. 8. One continuous common bracket, such as the one partially shown in Fig. 9, may also be used for mounting the forks.

At the node of each prong there is a narrow slot 5 across the width of the inner surface and an indentation 6 at the center of the opposite outer surface. A slightly curved rectangular washer 7 having two of its sides tapered to a thin edge fits firmly between the prongs with each of said edges engaging a slot 5. The washer 7 can be slid into its position between the prongs from either side of the fork as is evident from Fig. 4. With said washer set in place between the two prongs of the fork the latter is ready to be mounted on the bracket 2 (Fig. 2). Said bracket is made here in a shape conforming to that of the yoke of the fork.

Two screws 8, each operating in a threaded hole bored through each side of the bracket 2 can be turned in or out until a position is reached at which the fork can rest on the points of said screws with each of said points engaging an indentation 6 of a prong. The fork is then rigidly fastened to the bracket 2 by a third screw 9 inserted through the washer 7, passing down through the aperture 13 (see also Figs. 5 and 6) at the yoke of the fork and operating in a third threaded hole bored through the bottom of said bracket as shown in Fig. 2. The diameter of the aperture 13 being slightly greater than that of the screw 9 the latter is completely free from the walls of said aperture. The fork contacts the bracket 2 only at the indentations 6 and the slots 5 representing the nodal points of the prongs. Thus the prongs will vibrate with greatest freedom in spite of the rigid mounting.

The purpose of said slots and indentations is to prevent the longitudinal and angular displacement of the fork after it is properly set on its bracket.

In another method of nodal mounting (Fig. 1) the fork may be fastened to the bracket 2 by means of two screws 10 operating in the threaded holes 10' bored through the prongs at the nodes. In this case it is preferable to employ resilient bushings 11 (see also Fig. 7) between the fork and the bracket as shown otherwise the action of the vibrating prongs might be slightly impeded as the area of fixation would slightly exceed the area of the node proper. A small jagged area 12 around the node on the outer surface of each prong is there to provide said bushing with a

firm grip on the fork and thereby to prevent displacement of the latter after it is properly set.

An economy in construction may be effected by eliminating one of the screws **10** and fastening the fork, with satisfactory results, at only one of its two nodes as shown in Fig. 11.

Instead of having the brackets **2** mounted on the bar **3**, by screws **4**, the brackets and screws may be made integral in accordance with Figs. 9 and 10, wherein are shown a plurality of curved mounting brackets **2'** integral with the bar **3'** and provided with the threaded holes **8'** for the reception of the screws.

Having concluded the description of my invention, I claim:

1. A rigid mounting for a tuning fork having a narrow slot across the inner face at the nodal point and an aperture at the center of the yoke, said mounting comprising a mounting bracket having a series of three threaded holes therethrough, and means for fastening the fork at its nodes on said bracket and for preventing the longitudinal and angular displacement of said fork, said means consisting of a slightly curved rectangular washer having two of its sides tapered to a thin edge and snugly fitting between the prongs of the fork with each of said edges engaging said narrow slot cut across the width of the inner surface at the nodal point of a prong, two screws each operating in an end threaded hole of the series and adapted to engage an indentation made in the center across the width of the outer surface at the nodal point of a prong, and a third screw passing through said washer and an aperture at the centre of the yoke of the fork and operating in the third threaded hole bored through said bracket at a point on the latter facing and directly below said aperture.

2. A non-rigid mounting for the tuning fork which comprises a bracket, two apertures in said bracket, a set screw mounted in each of said apertures and adapted to engage a threaded hole bored through the fork at its nodal point, two resilient bushings in each of said apertures adapted for snugly holding said set screw and also for serving as flexible cushions between the fork and the bracket and between the bracket and the head of said set screw, and a jagged area around the node on the outer surface of each prong to provide a firm grip for said bushing on the fork and thereby to prevent angular displacement of said fork.

3. Structure comprising a tuning fork comprising a curved yoke and prongs tangentially joining the yoke, the nodal points of the fork being in the curved yoke near the opposite ends of the yoke; a bracket having a curved part adjacently associated with and spaced from the outer curved face of each yoke concentric with the yoke and provided with holes respectively alined with said nodal points; screws held in each of said holes alined with the nodal points and firmly engaged with said fork at the outer curved face of the yoke at a point radial to the nodal point; and holding means firmly engaging said yoke at the inner curved face of the yoke at points radial to the nodal points and cooperating with the part of the screw at the outer curved face of the yoke to aid in holding the tuning fork in place, whereby the screws may be tightened to rigidly hold said fork in place while allowing freedom of vibration of the prongs and yoke.

4. Structure comprising one or more one-piece tuning forks each comprising a semi-circumferentially curved yoke and prongs tangentially joining the yoke; the nodal points of the fork being in the yoke near and spaced from the opposite ends of the yoke; the ends of said yokes being provided with recesses at the inner and outer curved faces, the recesses at the same end being disposed in a line radial to the nodal points, said structure being adapted to be mounted on a structure comprising a one-piece arcuate bracket having a curved part adapted to be closely adjacently associated with and spaced from the outer curved face of each yoke concentric with the yoke and provided with holes respectively alined with said radial lines; screws held in said holes axially alined with said radial lines and adapted to be firmly engaged in said recesses at the outer curved face of the yoke; holding means for firmly engaging said recesses at the inner curved face of the yoke for cooperating with the part of the screw in the recesses at the outer curved face of the yoke to aid in holding the tuning fork in place; a device carried at least in part by said bracket and engaging a curved face of the yoke adjacent to one of said recesses at each yoke end to cooperate with the screws and said means when the screws are tightened to rigidly hold said fork in place while allowing freedom of vibration of the prongs and yoke; and a bar on which said brackets are rigidly carried.

5. Structure for mounting one or more one-piece tuning forks each comprising a semi-circumferentially curved yoke and prongs tangentially joining the yoke, the nodal points of the fork being in the yoke near and spaced from the opposite ends of the yoke, the ends of said yokes being provided with recesses at the inner and outer curved faces, the recesses at the same end being disposed in a line radial to the nodal points, said structure comprising a one-piece arcuate bracket having a curved part closely adjacently associated with and spaced from the outer curved face of each yoke concentric with the yoke and provided with holes respectively alined with said radial lines; screws held in said holes axially alined with said radial lines and firmly engaged in said recesses at the outer curved face of the yoke; holding means firmly engaging said recesses at the inner curved face of the yoke and cooperating with the part of the screw in the recesses at the outer curved face of the yoke to aid in holding the tuning fork in place; a device carried at least in part by said bracket and engaging a curved face of the yoke adjacent to one of said recesses at each yoke and to cooperate with the screws and said means when the screws are tightened to rigidly hold said fork in place while allowing freedom of vibration of the prongs and yoke; and a bar on which said brackets are rigidly carried.

6. Structure comprising one or more tuning forks each having an arcuate yoke, prongs joining the yoke, nodal points near the end of the yoke, a large radial aperture near the mid-part of the yoke, a transverse slot across the inner face at the nodal point and on the outer face an indentation radially opposite to the mid-point of each slot; said structure being mountable on a structure comprising an arcuate bracket associated with and spaced from the outer curved face of each yoke and provided with threaded holes respectively radial to said indentations and aperture; a bar carrying said brackets; screws in the threaded holes radial to the indentations and having pointed inner ends engaged in said indentations; a washer having beveled opposite side edges engaged in said slots, the washer be-

ing between the edges curved away from the yoke and provided wtih a central opening; a screw passing through said opening and large aperture out of contact with the yoke and having a head engaging the washer and having threaded engagement with the threaded hole of the bracket radial to the large aperture; whereby said screw may be tightened to fixedly secure the fork at nodal points only while allowing freedom of vibration of the prongs and yoke, resulting in freer and longer vibrations.

7. Structure for mounting one or more tuning forks each having an arcuate yoke, prongs joining the yoke, nodal points near the end of the yoke, a large radial aperture near the mid-part of the yoke, a transverse slot across the inner face at the nodal point, and on the outer face an indentation radially opposite to the mid-point of each slot, said structure comprising an arcuate bracket associated with and spaced from the outer curved face of each yoke and provided with threaded holes respectively radial to said indentations and aperture; a bar carrying said brackets; screws in the threaded holes radial to the indentations and having pointed inner ends engaged in said indentations; a washer having beveled opposite side edges engaged in said slots, the washer being, between the edges, curved away from the yoke and provided with a central opening; a screw passing through said opening and large aperture out of contact with the yoke and having a head engaging the washer and having threaded engagement with the threaded hole of the bracket radial to the large aperture; whereby said screw may be tightened to fixedly secure the fork at nodal points only while allowing freedom of vibration of the prongs and yoke, resulting in freer and longer vibrations.

8. Structure comprising one or more tuning forks each having an arcuate yoke, prongs joining the yoke, nodal points near the ends of the yoke and radial threaded holes at the nodal points; an arcuate bracket associated with and spaced from the curved outer face of each fork having a curved part provided with large apertures respectively alined with said threaded holes; screws disposed in the threaded holes and passing through said large apertures out of contact with the bracket and having large heads exterior to and spaced from the bracket; resilient bushings in said apertures holding said screws and having enlarged portions interposed between the bracket and the yoke and heads; the yoke having a jagged area engaging one of said enlarged portions; and a bar carrying said brackets.

9. Structure for mounting one or more tuning forks each having an arcuate yoke, prongs joining the yoke, nodal points near the ends of the yoke and radial threaded holes at the nodal points, said structure comprising an arcuate bracket associated with and spaced from the curved outer face of each fork having a curved part provided with large apertures respectively radial to said threaded holes; screws disposed in the threaded holes and passing through said large apertures out of contact with the bracket and having heads exterior to and spaced from the bracket; resilient bushings in said apertures holding said screws and having enlarged portions adapted to be interposed between the bracket and the yoke and heads; the yoke having a jagged area engaging one of said enlarged portions; a bar carrying said brackets.

10. Structure comprising a tuning fork having a curved yoke and prongs joining the yoke, the nodal points of the fork being near the opposite ends of the yoke; a one-piece bracket adjacently associated with the outer face of the yoke and an adjacent part of the prong and provided with a hole alined with one of said nodal points; a screw held in said hole alined with such point and having a part firmly engaged with the fork adjacent to one face of the yoke; and means carried by the fork and bracket firmly engaging the opposed face of the fork adjacent to the nodal points only and cooperating with said part of the screw adjacent to the nodal point and inner curved face of the fork adjacent to said part to hold the tuning fork in place; said screw and means engaging the fork substantially at opposite sides of the fork in the plane of vibration, to firmly hold the fork; said screw being adapted to be rotated to force said fork against said means to render tighter the engagement of said fork with said means and to compensate for any yielding or wear of said means or wear of said screw after long use.

11. Structure comprising a plurality of tuning forks each having a yoke and prongs joining the yoke the faces of which define two spaced planes, the nodal points of the work being near the opposite ends of the yoke; a one-piece bracket adjacently associated with and spaced from the outer face of each yoke and adjacent part of the prongs in the main plane of the fork and provided with holes respectively alined with said nodal points; a bar on which the brackets are transversely mounted in closely spaced relation; screws held in said holes alined with said points and having a part firmly engaged with the fork adjacent to the one face of the fork; and cooperating means carried by the fork and bracket firmly engaging the opposite face of the fork and cooperating with said part of the screw adjacent to the nodal point and the face of the fork adjacent to said part to hold the tuning fork in place; said bracket screw and means being disposed substantially between said spaced planes and allowing the forks to be closely spaced and engaging the fork substantially at opposite sides of the fork in the plane of vibration, to firmly hold the forks at the nodal points only leaving the yoke free to vibrate between said points; said screws being adapted to be rotated to force said forks against said means to render tighter the engagement of said fork with said means and to compensate for any yielding of said means or wear of said screw after long use.

12. Structure comprising a tuning fork having a semi-circumferentially curved yoke and prongs tangentially joining the yoke, the nodal points of the fork being in the curved yoke near and spaced from the opposite ends of the yoke; a one-piece arcuate bracket having a curved part closely adjacently associated with and spaced from the outer curved face of the yoke concentric with the yoke and provided with holes respectively alined with said nodal points; screws held in said holes alined with said points and having a part firmly engaged with the yoke adjacent to one of the curved faces of the yoke; and means carried by the yoke and bracket firmly engaging the other curved face of the yoke and cooperating with said part of the screw adjacent to the nodal point and the curved face of the yoke adjacent to said part to hold the tuning fork in place; said screw and means engaging the fork substantially at opposite sides of the yoke in the plane of vibration, to firmly hold the fork; said screws being adapted to be rotated to force said yoke against

said means to render tighter the engagement of said yoke with said means and to compensate for any yielding or wear of said means or screw after long use.

13. Structure comprising a tuning fork having a curved yoke and prongs joining the yoke, the nodal points of the fork being near the opposite ends of the yoke; a one-piece bracket adjacently associated with the outer face of the yoke and provided with a hole alined with each of said nodal points; a screw held in each hole alined with such point and having a part firmly engaged with the yoke substantially adjacent to one face of the yoke; and means held by the fork and bracket firmly engaging the opposite face of the fork adjacent to each nodal point and cooperating with said part of the screw adjacent to the adjacent nodal point and inner curved face of the fork adjacent to said part to hold the tuning fork in place; each screw and means engaging the fork substantially at opposite sides of the fork in the plane of vibration, to firmly hold the fork; each screw being adapted to be rotated to force said fork against said means to render tighter the engagement of said fork with said means to compensate for any yielding or wear of said means or wear of said screw after long use.

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