Nov. 17, 1925. 1,561,790

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ADJUSTABLE SUPPORT FOR TYMPANI AND THE LIKE

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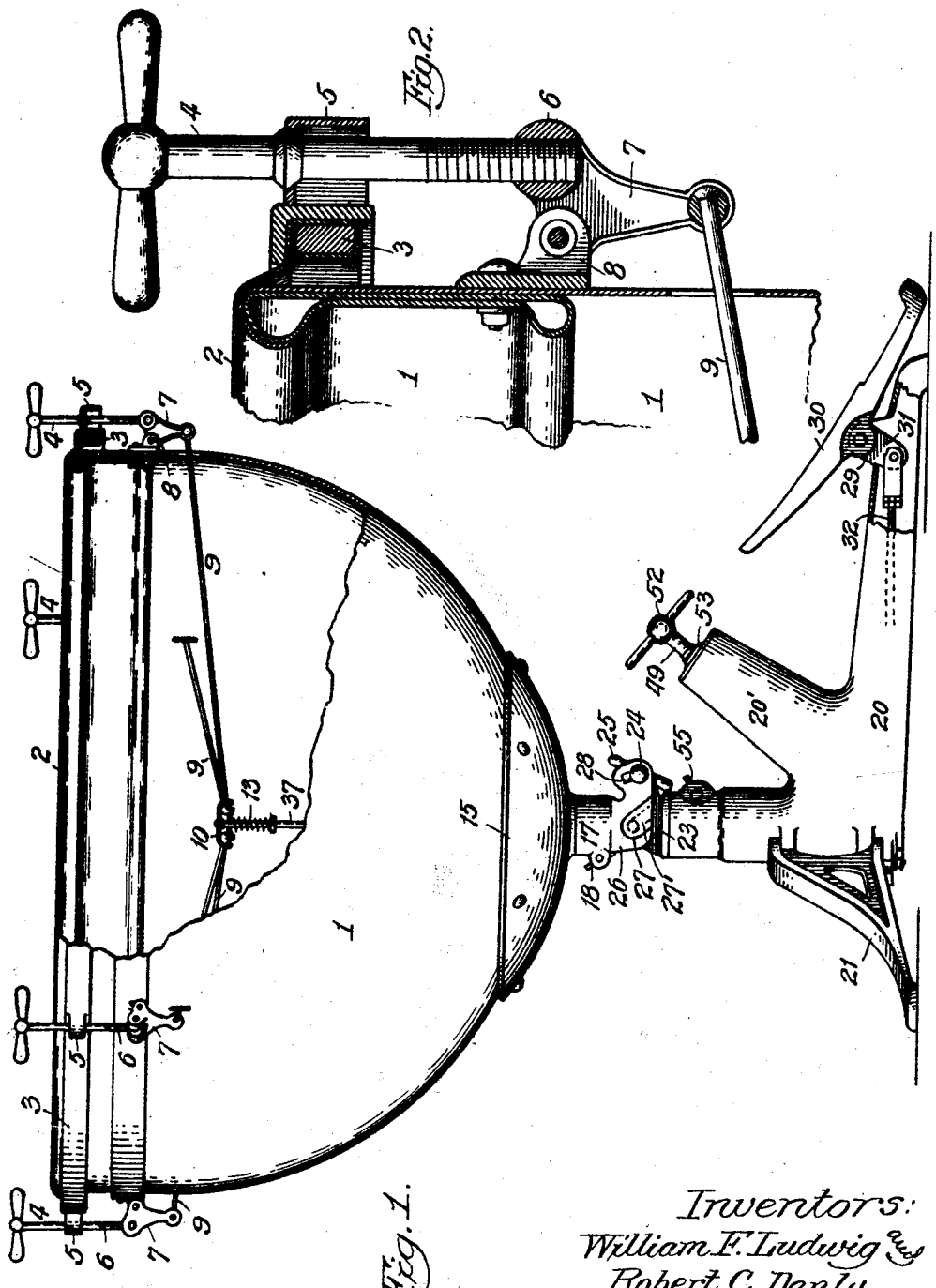


Fig. 2.

Fig. 1.

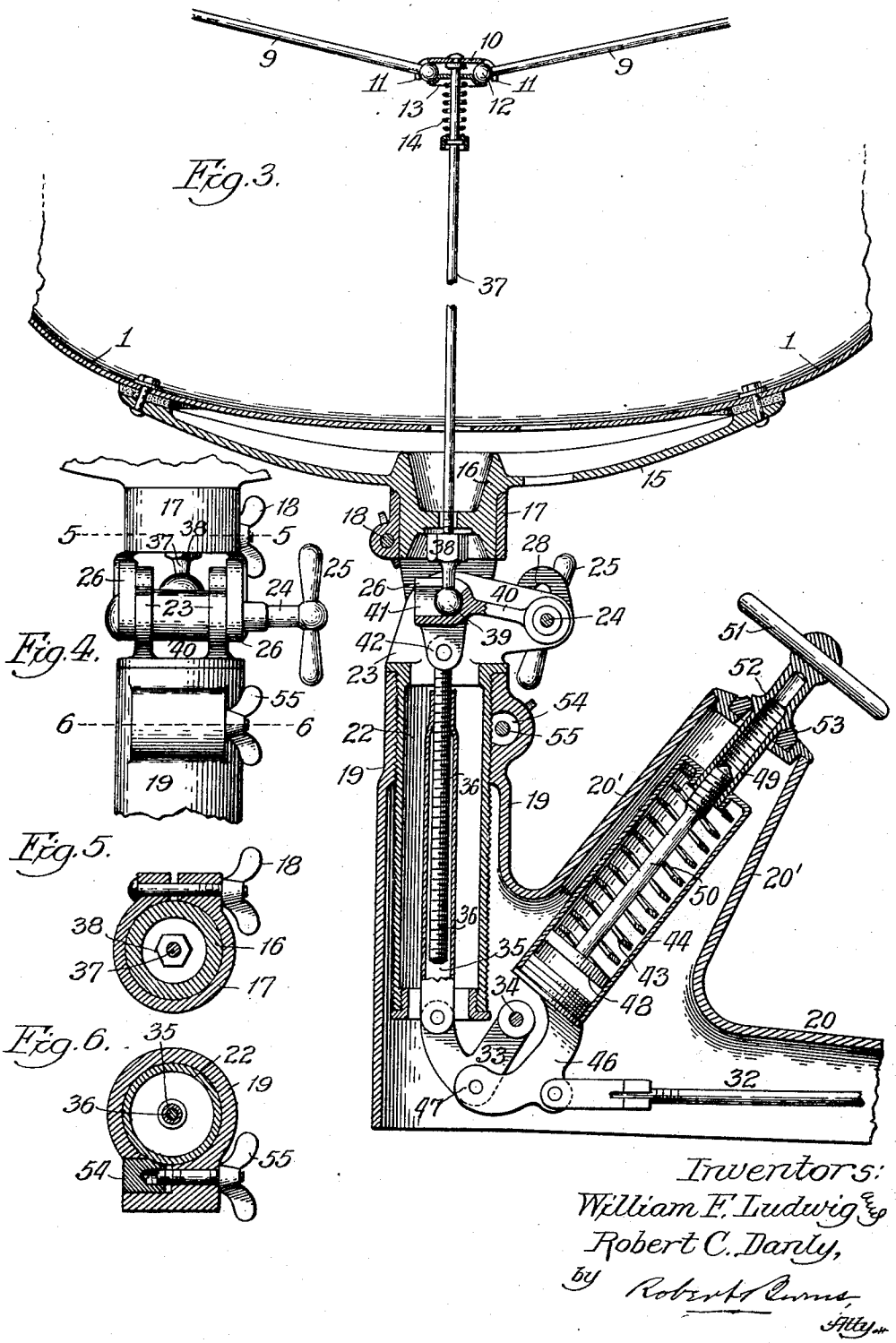
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ADJUSTABLE SUPPORT FOR TYMPANI AND THE LIKE

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UNITED STATES PATENT OFFICE.

WILLIAM F. LUDWIG AND ROBERT C. DANLY, OF CHICAGO, ILLINOIS.

ADJUSTABLE SUPPORT FOR TYMPANI AND THE LIKE.

Application filed January 2, 1925. Serial No. 76.

To all whom it may concern:

Be it known that we, WILLIAM F. LUDWIG and ROBERT C. DANLY, citizens of the United States of America, and residents of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Adjustable Supports for Tympani and the like, of which the following is a specification.

This invention relates to tuning means for the resonant member of kettle drums and like musical instruments, and more especially to that type of the same in which the tuning means is actuated and controlled by the movement of a foot pedal, and the present improvement has for its various objects:—

To provide a structural formation and combination of parts whereby the connecting member of the tuning means intermediate of the pull connections of the drum head and the operating pedal received extension and contraction in an equal degree with a corresponding adjustment of the instrument body on its standard or floor support.

To provide a construction and combination of parts whereby the drum body can be detached from its floor support in a ready and rapid manner, and with which the primary tuning of the resonant head of the drum body is maintained unaltered after such detachment of the parts, all as will hereinafter more fully appear.

In the accompanying drawings:—

Fig. 1 is a side elevation, with parts in section, of a kettle drum and its support to which is applied the preferred form of the invention.

Fig. 2 is an enlarged detail section of the drum head and the immediate parts of the adjusting mechanism.

Fig. 3 is a detail central vertical section of the preferred form of the present drum head tuning or adjusting mechanism.

Fig. 4 is an elevation, transverse to Fig. 1, of the joint between the kettle drum carrying spider and its standard or support.

Fig. 5 is a detail horizontal section on line 5.—5. Fig. 4.

Fig. 6 is a similar view on line 6.—6. Fig. 4.

Like reference numerals indicate like parts in the several views.

In the drawings, the present invention is shown applied to the kettle drum or tympani type of band instruments, in which the shell or body 1, is of a kettle form, the open top of which is closed by a resonating head or skin 2 attached to the usual skin hoop 3, which in turn is provided with a circularly arranged plurality of manually actuated adjusting means by which the drum head or skin 2 is stretched and tuned over the usual rounded rim of the drum shell or body 1 in an ordinary tuning operation on the instrument.

In the construction shown in Figs. 1, and 2, each manual adjusting means, above referred to, comprises a handled screw rod 4, journaled in a bearing ear or lug 5 on the hoop 3, with its screw threaded end having operative engagement in a nut 6 pivoted on one arm of a bell crank lever 7.

The lever 7 is pivoted in bearing ears or lugs 8 secured to the outer face of the drum shell 1, and its arm opposite to that carrying the nut 6 aforesaid, has pivotal and sliding connection to the outer end of one of the plurality of pull rods 9, which extend inwardly through the wall of the drum shell 1 for connection in common to a centrally arranged connecting head 10.

In the preferred construction shown, the inner ends of the pull rods 9 have a spherical form and have engagement with a circular series of open bottom slots in a down turned marginal flange 11 of the connecting head 10 aforesaid, with the spherical rod ends 12, held in place by a follower disk 13 sliding on the vertical operating rod hereinafter described, and yieldingly held to place by a coiled spring 14 encircling said operating rod, as illustrated in Figs. 1 and 3.

On its underside the drum shell 1 has the usual fixed carrying cup or spider 15 formed with a central tubular hub 16 for turning adjustment in a horizontal plane in correspondingly formed split socket or sleeve 17 of the hereinafter described yoke member by which pivotal adjustment of the drum shell 1 in a vertical plane is effected on the standard or floor support, as hereinafter set forth in detail. The split sleeve 17 is provided with a clamping bolt 18 by which the same is clamped around the hub 16, after a horizontal adjustment of the drum shell.

The standard or floor support for the drum shell 1 above referred to, consists of an upright hollow standard 19 and a main horizontal foot 20 integrally formed with

the standard, and extending horizontally from the side of the standard to provide in conjunction with a pair of folding auxiliary feet 21 a substantial support for the instrument and its adjusting mechanism in actual use.

The upper end of the tubular standard 19 is formed with an internal screw thread for engagement with the screw threaded periphery of a hollow post 22, with a view to effect a telescoping adjustment of the post and drum shell. At its respective upper and lower ends the hollow post 22 is provided with the usual out turned flanges or collars to confine adjustments in either direction, while at its upper end said post 22 carries a pair of cheek plates 23 arranged in spaced relation and formed with side extensions to afford bearings for a pivot pin 24 by which the intermediate yoke member heretofore referred to is pivotally mounted on the post 22. Said pivot pin 24 is preferably formed with a screw threaded end for the reception of a wing nut 25, by which the parts are clamped together after the adjustment. In addition said pivot pin 24 provides a bearing for the hereinafter described radius link of the pedal actuated pull connection of the turning mechanism.

The intermediate yoke member heretofore referred to, consists of the upper split sleeve 17 and clamping bolt 18 aforesaid, and a pair of cheek plates 26 depending from the sleeve 17 and having pivotal connection with the cheek plates 23 of the tubular post 22 aforesaid by pivot studs 27 and open sided pivot slots 27′ formed in the cheek plates 26 as shown in Figs. 1, 7 and 8. The cheek plates 26 are formed with segmental slots 28, embracing the pivot pin 24 aforesaid, to have limited movement thereon in an adjustment of the parts in a vertical plane. The construction above described provides for a ready tilting of the drum body 1 to any angle required, and admits of a ready disconnection of the drum body and floor support for packing and transportation.

The foot 20 of the floor support heretofore referred to, is of a hollow open bottom form, and at a point remote from its attachment to the standard 19 is provided with a pair of pivot ears 29 in which an operating foot pedal 30 is mounted midway its length so as to be capable of positive operation from either end from its pivot point. In the construction shown, the pedal 30 carries a depending rock arm 31 operatively connected by a horizontal rod 32 with the angle lever 33 of a motion transmitting mechanism as follows:

The angle lever 33, preferably of a V form is pivotally mounted by a pivot pin 34 in the interior of the foot 20, with its lower end pivotally connected with the horizontal rod 32 by the spring shell bracket 46 hereinafter described.

At an upper end opposite to the one having pivotal connection with the pivot pin 34 the angle lever 33 has pivotal connection with the lower member 35 of an extensible pull member having vertical arrangement in the bore of the hollow post 22 aforesaid. In the construction shown the aforesaid lower member 35 is of a tubular internally screw threaded form adapted for adjustable attachment to a companion externally screw threaded rod 36 having operative connections, now to be described with the connecting head 10 of the tuning mechanism heretofore described.

The pull rod 37 heretofore referred to as extending down from the connecting head 10 of the series of radial pull rods 9 of the upper portion of the tuning mechanism is provided near its lower end with an adjustable stop nut or collar 38 for abutment against a lower side of an orificed web of the hub 16 aforesaid to limit the upper travel of said rod 37. At its extreme lower end the collar 38 is provided with a spherical head 39 adapted for operative engagement with a radius link 40 by which motion in an approximately vertical plane is imposed upon the upper end of the rod 36 above described.

The radius link 40 is pivotally mounted at one end on the pivot pin 24 aforesaid, and at the other end is formed with an open ended tubular socket head 41 for operative engagement with the aforesaid spherical head 39 of the pull rod 37, and with depending pivot ears 42 for pivotal connection with the upper end of the vertical rod 36 aforesaid.

The open end form of the recess in the socket head 41 permits of an easy lateral separation of said head from the spherical head 39 in a disengagement of the upper and lower drum parts for packing and transportation heretofore referred to.

In such disengaging operation, the pivot pin or shaft 24 is first removed from its engagement with the cheek plates 23 and 26, before the socket head 41 is moved laterally out of engagement with the spherical end 39 of the pull rod 37, and also before a like movement of the pivot slots 27′ of the cheek plates 26 out of engagement with the pivot studs 27 of the cheek plates 23.

In the construction above described, the pitch of the screw threads on the tubular member 35 and associated rod 36 are alike to the screw threads on the standard 19 and post 22, so that in the turning of the drum shell 1 to attain vertical adjustment of the same, the vertical members 35 and 36 of the pull connection just described will have a corresponding lengthening or shortening adjustment, to preserve the existing tensioning

or tuning condition of the same, and due to the fact that while the upper screw threaded member 36 has a turning movement with the drum shell 1, the associated lower member 35 is held from rotation by attachment to the angle lever 33 aforesaid.

In the construction shown, a balancing means of the stored energy type, which forms the subject matter of our original application Serial No. 662,400, filed September 13, 1923, is shown in opposed relation to the pulling stress exerted by the resonant or skin head of the instrument in its normal tendency to return to a less tensioned condition and the lowermost tone of the scale required and which prevailed previous to an active operation of said pedal mechanism, and so that such normal return tendency will be counter-balanced and the pedal mechanism will remain in the position at which it may be placed without the use of pawl and ratchet or like mechanism to hold said mechanism at its points of adjustment and which have been found necessary in pedal actuated tuning mechanisms heretofore on the market, and with the added advantage of greater ease in operation.

In the preferred mechanism for attaining the above described function, shown in Fig. 3, of the drawing, a coil spring 43, of a predetermined strength is arranged within a cylindrical casing 44 the upper end or head of which forms an upper abutment for said spring, while the lower end of the casing is provided with a closure head 45 carrying the depending bracket 46 of a **C** form having a pivot eye 47 at its lower end for operative engagement with the lower end of the angle lever 33, so as to move in unison therewith and with the other portions of the pedal actuated mechanism.

Moving in the lower end of the casing 44 is a head 48 forming the lower abutment for the spring 43 aforesaid, and provided with a sectional rod or stem formed by an upper internally screw threaded sleeve 49 having an adjustable screw threaded engagement with a lower screw threaded rod 50 fixedly attached to said piston head 48. In such construction, a manual rotation of the sleeve 49 in one direction or the other will cause an extension or contraction in the length of the connection, with a like increase or decrease in the force of the spring 43. To such end the sleeve 49 is provided with a handle 51 for convenient manual operation.

The casing 44, and associated parts just described are arranged in an upstanding hollow extension 20′ of the horizontal foot 20, of the instrument support, and have pivotal support in said extension by means of a pivot collar 52 fixed on the sleeve 49 and having bearing in a concave seat formed in a closure bushing 53 of said extension. In the described construction the lower part of the casing 44 and its described accessories are adapted to have a vibratory movement simultaneous with the movement of the rod 32 of the pedal actuated mechanism with the parts operating as follows:—

In the normal and inactive position of parts, illustrated in Fig. 3, the stop nut or collar 38 is at holding rest against a web of the hub 16, to maintain the manual tuning mechanism to the position to which it had been adjusted by the hand mechanism and at which position of parts the drum head of the instrument had been tensioned by such mechanism to the lowermost tone of the scale required. It being the universal practice for the player to maintain such adjustment and meet changing conditions of temperature and humidity by means of said hand tuning mechanism. In the position of parts above set forth, the center line of the casing 44 and the pivot axis of the eye 47 of the pivot bracket 46 are in aligned relation with the pivot axis 34 of the angle lever 33, so that the stress of the spring 43 is on a dead line with the axis of the lever 33, and is incapable of exerting a working stress upon and movement of said lever in either direction.

With an operation of the foot pedal 30 to rock the angle lever 33 and effect in turn a downward pull on the described vertical connections of the drum head, the lower pivot connection 47 of the casing 44 moves to the right in Fig. 3, and away from the "dead" line above referred to, and introduces, as such movement progresses, a corresponding increase in the percentage of resilient power or resistance on the part of the spring 43 equal to and adapted to resist and effectively counterbalance the pulling stress on the other arm of the angle lever 33 by the drum head 2 through the intermediate connections heretofore described. The tendency of such pulling stress on the part of the head or membrane 2 is to return the said intermediate connections to a position in which the stop nut or collar 38 of the pull rod 37 is in abutment contact with the under face of a web portion of the hub 16 of the drum shell supporting spider 15 aforesaid, and is adapted to hold the drum head or membrane 2 tensioned through the primary manual adjusting means heretofore described, to the lowermost tone of the scale required. With such counterbalancing effect, the parts of the tuning mechanism are adapted to remain at the point to which they were forced by the foot pedal 30, without any additional fastening means, such as holding pawls and ratches, but requiring positive movement on the part of said pedal in one direction or the other to effect a change in the position to which said parts had been placed.

The vertically adjustable post 22, of the present construction, is provided with any usual means for fastening the same in place after an adjustment, preferably by means of a tangentially arranged wedge block 54 and an operating screw bolt 55 associated with the said post and with the tubular standard 19, as illustrated in Figs. 3, 4 and 6.

Having thus fully described our invention, what we claim and desire to secure by Letters Patent, is:—

1. In a musical instrument, the combination of a main shell, a support, an adjustable connection between said support and said shell, a resonant head and its carrying hoop fitting an end of said shell, hand actuated means for adjusting the resonant head to the lowermost tone of the scale required, a pedal actuated mechanism mounted on said support and operatively connected to said hand actuated means by an adjustable connecting member, and means for effecting simultaneous and co-ordinate adjustment of said connecting member and the adjustable connection between the shell and support.

2. In a musical instrument, the combination of a main shell, a resonant head and its carrying hoop fitting an end of said shell, a support for said shell, an adjustable connection between said support and shell comprising an internally screw threaded tubular standard on said support, a tubular screw threaded post turning in said standard and attached at one end to the main shell, and a pedal actuated mechanism mounted on said support and operatively connected to the resonant head by a connecting member arranged within the tubular post and consisting of a pair of aligned sections connected together by screw threaded formations having a pitch the same as the screw threads of the standard and post aforesaid.

3. In a musical instrument, the combination of a main shell, a resonant head and its carrying hoop fitting an end of said shell, a support for said shell, and adjustable connection between said support and shell comprising an internally screw threaded tubular standard on said support, a tubular screw threaded post turning in said standard and attached at one end to the main shell, and a pedal actuated mechanism mounted on said support and operatively attached to the resonant head, the same comprising a foot pedal mounted on the support, an angle lever pivoted on said support, a rod connection between one arm of the angle lever and foot pedal, a connection between the other arm of said angle lever and the resonant head and consisting of aligned sections attached together by screw thread formations having the same pitch as the screw thread formations between the standard and post aforesaid.

4. In a musical instrument, the combination of a main shell, a resonant head and its carrying hoop fitting an end of said shell, hand actuated means for effecting an adjustment of the resonant head to the lowermost tone of the scale required, a support for said shell, an adjustable connection between said support and shell comprising an internally screw threaded tubular standard on said support, a tubular screw threaded post turning in said standard and attached at one end to the main shell, a foot pedal pivoted on said support, an angle lever pivoted on said support, a connecting rod between one arm of said angle lever and the foot pedal, a connection between the other arm of the angle lever and the aforesaid hand actuated mechanism, said connection having an intermediate member formed by aligned sections attached together by screw threaded formations having the same pitch as the screw thread formations between the standard and the post aforesaid.

Signed at Chicago, Illinois, this 30th day of December 1924.

WILLIAM F. LUDWIG.
ROBERT C. DANLY.