

Oct. 14, 1941.

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2,259,268

DRUM

Filed April 1, 1939

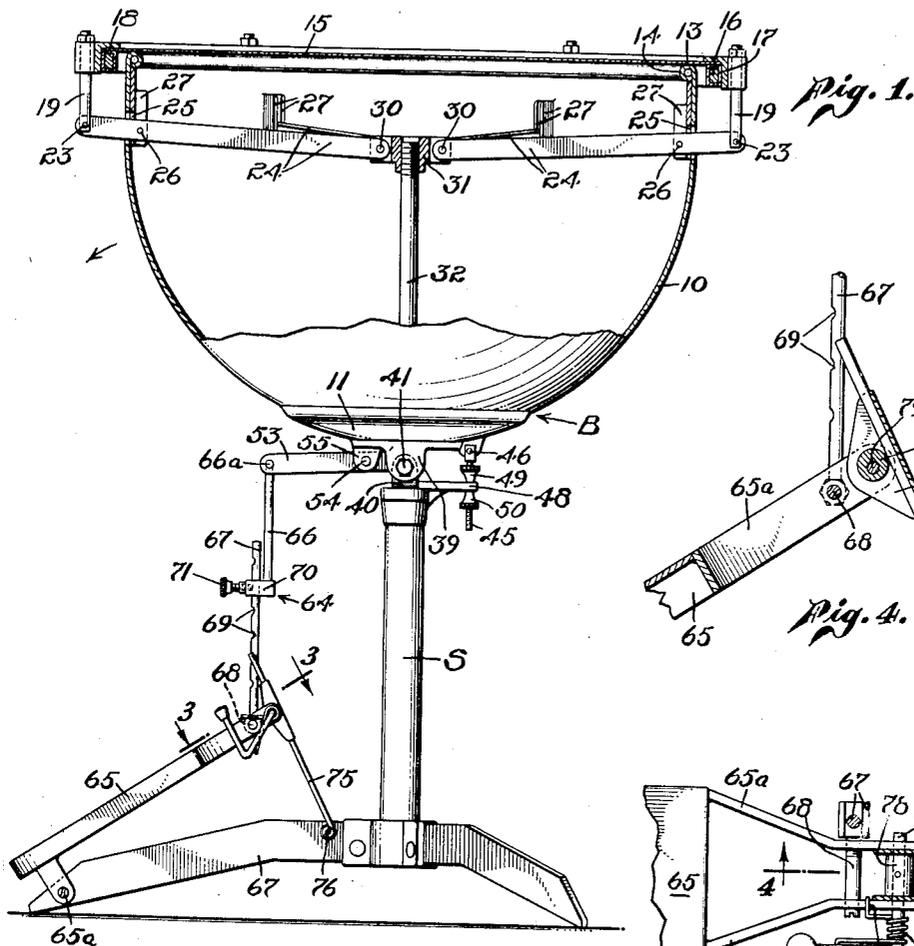


Fig. 1.

Fig. 4.

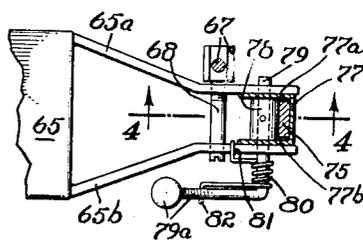


Fig. 3.

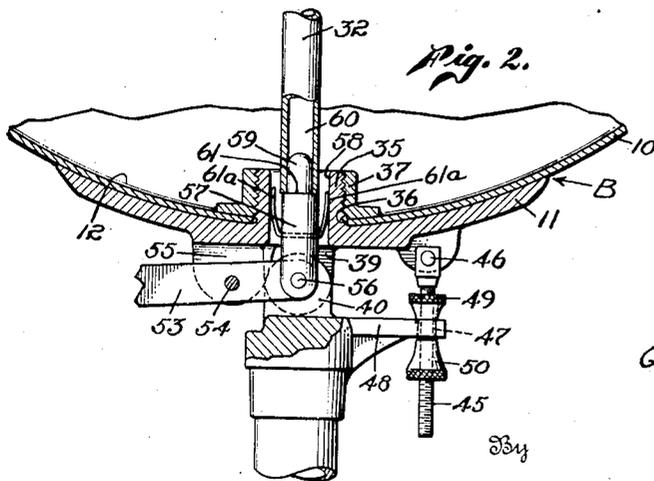


Fig. 2.

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# UNITED STATES PATENT OFFICE

2,259,268

## DRUM

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Application April 1, 1939, Serial No. 265,437

10 Claims. (Cl. 84-419)

This invention relates to improvements in drums, particularly kettle drums and the like, and has for an object the provision of improved means for varying the tension of the drum head.

Another object of the invention is to provide improved mechanism for varying the tension of the drum head irrespective of the position of adjustment of the drum upon its support.

A further object of the invention involves the provision of improved means for adjusting the tension of the drum head and for maintaining said tensioning means in adjusted position.

Another object of the invention is to provide a drum having operating mechanism which can be readily assembled and dismantled.

Still another object of the invention is to provide drum head tensioning means, some of which are contained within and carried by the drum body for removal therewith as a unit from operative association with the remainder of the tensioning means.

This invention possesses many other advantages and has other objects which may be made more easily apparent from a consideration of one embodiment of the invention. For this purpose there is shown a form in the drawing accompanying and forming part of the present specification. This form will now be described in detail, illustrating the general principles of the invention; but it is to be understood that this detailed description is not to be taken in a limiting sense, since the scope of the invention is best defined by the appended claims.

In the drawing:

Figure 1 is a sectional-elevation view of a drum structure embodying the present invention.

Figure 2 is a fragmentary vertical section showing certain portions of the invention on an enlarged scale.

Figure 3 is a section on an enlarged scale, taken as indicated by line 3-3 of Figure 1; and,

Figure 4 is a section on an enlarged scale, taken as indicated by line 4-4 of Figure 3.

Referring with more particularity to the drawing, the present invention is shown as being applied to a drum of the kettle or tympani type. The drum body, generally designated B, includes a shell 10, which may be spherical in contour or of a kettle form, and a saucer-like member 11 providing a seat 12 receiving the lower portion of the drum shell. The upper end of the drum shell 10 is formed with a rounded annular rim 13 defining the drum opening 14. This opening is closed by a resonant head 15 bearing against the annular rim 13 as shown clearest in Figure 1.

The drum head may be formed of any one of the well-known materials or substances possessing the desired resonating characteristics.

The marginal portions of the resonating head or skin 15 are held between a pair of cooperative annular clamping rings or members 16 and 17 surrounding the upper end of the drum shell. The outer ring 17 is provided with a flange 18 extending inwardly over the ring 16 in bearing relation with the head 15. The tautness or tension in the drum head may be varied through the combined movement of the cooperative clamping rings 16 and 17 axially of the drum body. Downward movement of these rings will stretch the head 15 over the annular rim 13 to increase its tautness.

Some of the instrumentalities for effecting movement of the clamping rings are supported by, and contained within, the drum shell 10. They include a plurality of members 19 fixedly secured to, and depending from, the outer ring 17 at circumferentially spaced intervals. The lower ends of these members are pivotally connected by pins 23 to lever members 24 extending through slots 25 in the shell portion 10 of the drum body. Each of the levers 24 is fulcrumed by a pin 26 between a pair of lugs 27 secured to the interior of the shell at opposite sides of the openings 25. The inner extremities of the lever members 24 are pivotally connected by pins 30 to a ring or spider member 31 which threadedly receives the upper end of an operating rod 32 extending between said spider and the lower portion of the drum body (Figures 1 and 2). In the form shown, the rod 32 is maintained centrally or coaxially of the drum shell through its connection with the spider 31.

Upward movement of the rod 32 will move the levers 24 about their fulcrums 26 to urge the members 19 and the associated clamping rings 16 and 17 downwardly, stretching the drum head over the annular rim 13 whereby to increase its tautness. Conversely, movement of the rod 32 downwardly will effect a movement of these parts upwardly to reduce the tension of the drum head.

The drum shell 10 and tension varying instrumentalities carried thereby are all removable as a unit from the seat 12 of the saucer-like member or support 11. This is accomplished by providing the member 11 with an externally threaded portion 35 extending into the shell interior through an opening 36 in the bottom of the shell and receivable in an internally threaded nut or boss 37 secured to the inner side of the shell.

Thus, the shell and its associated tension varying instrumentalities may be removed from or mounted on the seat 12 of the member 11 through rotation of the shell 10, made possible by the threaded connection between the nut or member 37 secured thereto and the extension 35 on the member 11.

For convenience in playing the instrument, it is sometimes desirable to position the drum body so that its playing head is inclined. In the form of the invention shown in the drawing, this is accomplished by providing a pivotal connection between the member 11 of the drum body and a supporting member or standard S mounting said drum body. The pivotal connection is shown as including a pair of spaced lugs 39 depending from the lower side of the member 11 and receiving therebetween a pair of upwardly extending spaced lugs 40 on the upper end of the supporting standard S. Pivot bolts 41 pass through adjacent lugs 39 and 40 whereby to form a pivotal mounting for the drum body to permit its angular adjustment.

Means is provided for adjusting the drum angularly and positively maintaining it in adjusted position. This means includes a threaded rod 45 pivotally connected by a pin 46 to the member 11, to one side of the pivotal connection between said member and the standard S. This rod 45 extends downwardly through an opening 47 in an arm 48 extending outwardly from the upper end of the standard S. A pair of thumb screws 49 and 50 are threadedly secured to the rod 45 on opposite sides of the arm 48. When the upper thumb screw 49 is rotated downwardly on the rod 45, its engagement with the upper surface of the arm 48 moves the rod upwardly through the opening 47 and causes a tilting of the drum body about the axis of the pivotal connection and in the direction of the arrow (Figure 1). The lower thumb screw 50 can be correspondingly adjusted upwardly into engagement with the lower surface of the arm 48 to form a stop and positively hold the rod and drum body in their adjusted positions. Obviously, reverse rotation of the thumb screws will permit movement of the rod and drum body toward normal position where the drum head is horizontally disposed.

The means for operating the tension varying instrumentalities mounted on and contained within the drum shell, includes a lever 53 fulcrumed by a pin 54 between a pair of lugs 55 depending from the member 11. The inner end of the lever 53 extends between the spaced lugs 40 on the standard S and is pivotally connected by a pin 56 to the lower end of a pilot pin or rod 57 which extends upwardly through an opening 58 in the saucer-like member or support 11. The upper end of said rod or pin is provided with a reduced portion 59 which is adapted to extend into a pocket or hollow end 60 of the rod 32 when the drum shell is mounted on the seat 12 of the member 11. A shoulder 61 defined by the reduced end 59 is adapted to abut the lower end of the rod 32 and lift the same upon upward movement of the pin 57, to operate the head tensioning instrumentalities in a tension increasing direction. This latter movement of the pin 57 and other head tensioning instrumentalities is effected upon downward movement of the outer end of the lever 53 to which the pin 57 is pivotally connected. Movement of the various tensioning instrumentalities in a tensioning increasing direction is opposed by the tension developed in the drum head, so that said instrumentalities are

urged in a tension decreasing direction upon release of pressure on the outer end of the lever 53. Obviously, the end of rod 32 is maintained in abutment with the shoulder 61 on the pin 57 which is urged downwardly, causing upward movement of the outer end of the lever 53. Movement of the tensioning instrumentalities in a tension decreasing direction is assisted by the action of gravity on the rod 32 and the portions of the levers 24 extending into the drum shell 10.

Assurance is had that the reduced end 59 of the pin 57 will be maintained in proper alignment for entrance into the hollow or pocketed end 60 of the rod 32, by providing centering elements between the pin 57 and the walls of its confining opening 58. In the present form, these centering elements include up-turned ends 61a of spring wires, or the like, passing through and secured in the pin 57.

The means for actuating the lever 53 includes an operating member which may be in the form of a foot pedal 65, or lever, pivotally connected at one end as at 65a to one leg 67 of the standard S, its other end being connected with the lever 53 through the linkage 64. It is preferable to provide adjustable linkage between the lever 53 and foot pedal 65 in order to compensate for angular adjustment of the drum. Accordingly, the linkage is made in two sections 66 and 67, the section 67 being pivotally connected at one end to the foot pedal 65 through a pivot bolt 68 and having recesses 69 at spaced intervals along its length. The other section 66 is pivotally connected at one end as at 66a, to the outer extremity of the lever 53, and carries at its lower end an element 70 telescoping over the link section 67 and having an adjustable set screw 71 engageable with the recesses 69 in the link member 67 for holding the link members against relative longitudinal movement.

It will be obvious how the tension in the drum head 15 may be varied at will through the application of varying degrees of pressure on the operating member or pedal 65, since these members are interconnected through the linkage 64, lever 53, pin 57, rod 32, levers 24, members 19, and cooperative clamping rings 16 and 17.

An important aspect of the invention comprises means for maintaining the various adjusted tensions in the drum head. This is accomplished by the provision of instrumentalities for automatically locking the foot pedal 65 in adjusted position. Such means includes a rod or strap 75 pivotally connected at its lower end as at 76 to the leg 67 of the support S, and extending upwardly between a guide or stirrup element 77 and a cooperative cam 78 carried at the upper end of the foot pedal 65. The cam 78 is in the form of a sleeve eccentrically fixed on a shaft 79 revolvably mounted in opposed sides 65a and 65b of the pedal. Said shaft also provides a pivotal mounting for the sides 77a and 77b of the stirrup 77 so as to permit self adjustment between the stirrup and the strap 75 when the pedal 65 is adjusted to different angular positions. The cam 78 is normally urged into clamping relation with the strap 75 by a coil spring 80 having one of its ends 81 acting against the upper edge of the pedal side 65b, and its other end 82 acting against the underside of an operating element 79a secured to and extending upwardly from the shaft 79. This latter member preferably extends slightly above the foot engaging surface of the pedal so that it may be conveniently depressed by the foot of the operator to relieve the clamp-

ing action of the cam and permit angular adjustment of the pedal.

I claim:

1. In a drum, a drum body, supporting means pivotally mounting said body, a drum head for the drum body, means for varying the tension of said head comprising an operating rod, means connecting said rod to said drum head, a lever fulcrumed on said body, means connecting said lever to said rod, a manually operable lever mounted on said supporting means, and an adjustable link connecting said lever to said manually operable lever.

2. In a drum, a drum body, supporting means pivotally mounting said body, a drum head for the drum body, means for varying the tension of said head comprising an operating rod, means connecting said rod to said drum head, a lever fulcrumed on said body, means connecting one end of said lever to said rod, a manually operable lever mounted on said supporting means, and a linkage connecting said levers, said linkage including relatively slideable elements movable longitudinally with respect to each other whereby to adjust the effective length of said linkage.

3. In a drum, a drum body, supporting means pivotally mounting said body, a drum head for the drum body, means for varying the tension of said head comprising a lever fulcrumed on said body, means connecting said lever to the drum head, a pedal, a support for said pedal, a link connecting said pedal and lever, a rod mounted for pivotal movement on said support and slideably related with said pedal, cam means rotatably carried by said pedal and having means clamping said rod thereto, and an arm fixed to said cam means, said arm being adjacent said pedal to permit convenient control of said pedal and cam means by the foot of an operator.

4. In a drum, a drum body, supporting means pivotally mounting said body, a drum head for the drum body, means for varying the tension of said head comprising an operating rod, means connecting said rod to said drum head, a lever fulcrumed on said body, means connecting one end of said lever to said rod, a manually operable lever mounted on said supporting means, a link connecting the other end of said lever to said manually operable lever, and means for varying the length of said link.

5. In a drum, a drum body, a drum head for said drum body, means for varying the tension of said drum head comprising an operating rod, means connecting said rod to the drum head, a lever, supporting means pivotally mounting said lever, means connecting said lever to said operating rod, means connecting said lever to the drum head, a rod pivoted to the supporting means, and clamping means adjustably connecting said lever to said rod, whereby said lever can be maintained in different positions of adjustment.

6. In a drum, a drum body, a drum head for said drum body, means for varying the tension of said drum head comprising an operating rod, means connecting said rod to the drum head, a

lever, supporting means pivotally mounting said lever, means connecting said lever to said operating rod, means connecting said lever to the drum head, a manually operated lever, a link connecting said first mentioned lever to said manually operated lever, means pivotally supporting said manually operated lever, a rod pivoted to the supporting means, and clamping means adjustably connecting said manually operated lever to said rod, to maintain it in different positions of adjustment.

7. In a drum, a drum body, a drum head for said drum body, means for varying the tension of said drum head comprising a lever, supporting means pivotally mounting said lever, means connecting said lever to the drum head, a manually operated lever, a link connecting said first mentioned lever to said manually operated lever, means supporting said manually operated lever, a rod carried by said last mentioned supporting means slideably related with said manually operated lever, and a clamp carried by said manually operated lever and engageable with said rod for securing the rod and manually operated lever together.

8. The combination as defined in claim 7 wherein said clamp includes a rotatable cam carried by said manually operated lever and engageable with said rod for clamping it to said lever.

9. A drum which comprises a drum shell, a support carrying said shell having a threaded extension, a threaded portion on said shell for receiving said threaded extension, for securing said shell to the support, a drum head on said shell, a rod having a bore therein in said shell, means operative upon movement of said rod away from the support to increase the tension of the drum head, a second rod extending into the extension, spring means centering said second rod within said extension, means piloting said second mentioned rod within the bore of the first mentioned rod, said rods having corresponding parts to transmit pushing forces from one rod to another, and operating means on said support for moving said second mentioned rod in a direction away from the support to actuate said first mentioned rod, to increase the tension of the drum head.

10. A drum, which comprises a drum shell, a support carrying said shell, means for detachably securing said shell to said support, a drum head on said shell, means for varying the tension of said head including a rod within the shell, means operative upon movement of said rod away from the support to increase the tension of the drum head, a second rod carried by said support and detachably abutting said first mentioned rod, an operating means on said support moving said second mentioned rod in a direction away from the support and maintaining it in position, to actuate said first mentioned rod to increase and maintain the tension of the drum head.

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