United States Patent

Diesbach

[15] 3,637,172

[45] Jan. 25, 1972

[54] MUSIC STAND

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[73] Assignee: **Krauth & Benninghofen, Inc.**, Hamilton, Ohio

[22] Filed: **Jan. 29, 1970**

[21] Appl. No.: **6,917**

Related U.S. Application Data

[62] Division of Ser. No. 789,180, Jan. 6, 1968, abandoned.

[52] **U.S. Cl.** **248/460**, 287/20

[51] **Int. Cl.** **A47b 97/04**

[58] **Field of Search** ..... 248/411, 413, 414, 457, 460; 287/20, 23, DIG. 8, 101

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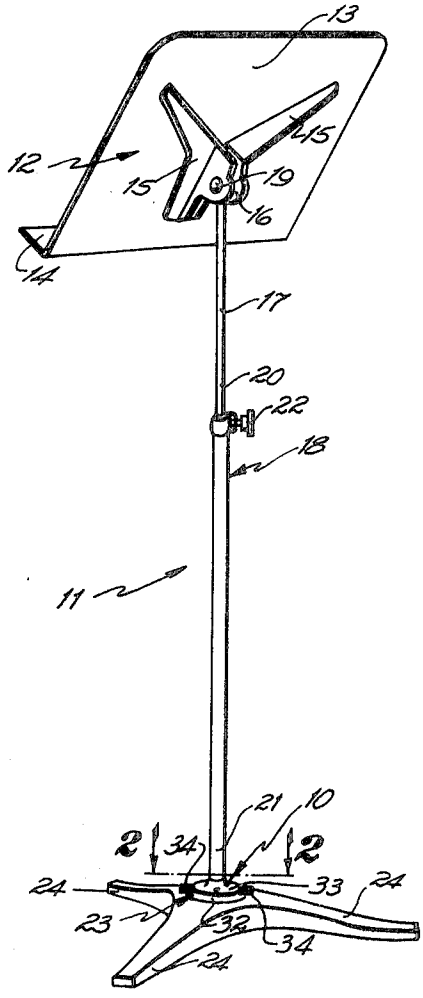
Primary Examiner—William H. Schultz

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[57] **ABSTRACT**

A music stand having quick release lock for engaging a tubular support member to a plate base member where the plate base member is disposed substantially perpendicular to the tubular support member comprising, in preferred form, (*a*) a circular hole in the plate member in which the tubular member is received, the hole being sized to provide slip fit when the plate member and tubular member are assembled and the hole having a first center that establishes a center axis perpendicular to the plate member, (*b*) at least two pins mounted to the plate on opposite sides of the hole, the pins being disposed on a circle having a second center with that second center being offset a small distance relative to the first center, (*c*) a lock ring rotatable relative to the plate member having a pair of opposed arcuate slots engaged with the pins, the arcuate slots having a common third center which lies on the same center axis as the second center, and (*d*) a hole in the lock ring that establishes a fourth center, the fourth center being offset the same small distance relative to the third center as the second center is offset from the first center so that as the lock ring is rotated relative to the plate member the fourth center can move from a release position where the fourth center also lies on the same center axis as the first center to a lock position where the fourth center is offset relative to the center axis of the first center.

3 Claims, 5 Drawing Figures



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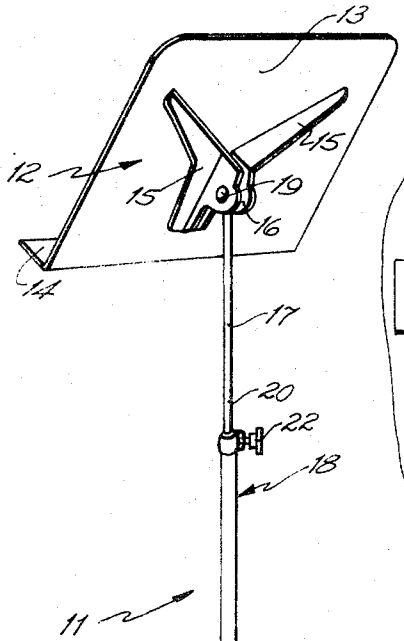


Fig. 1

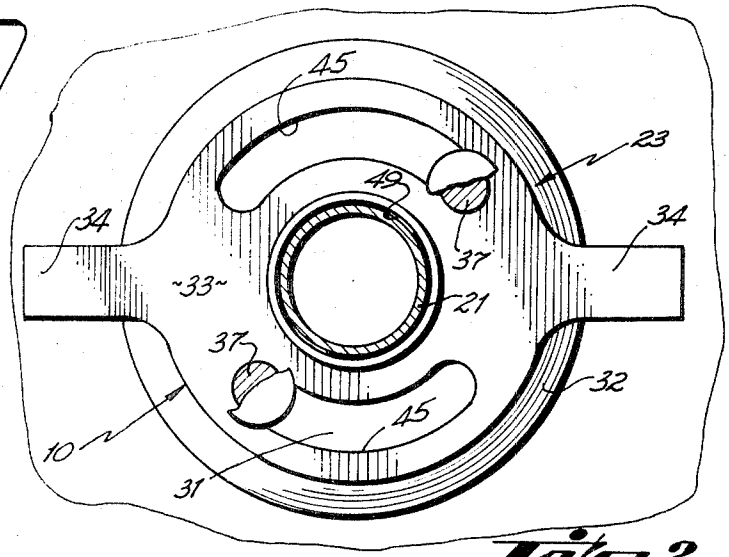


Fig. 2

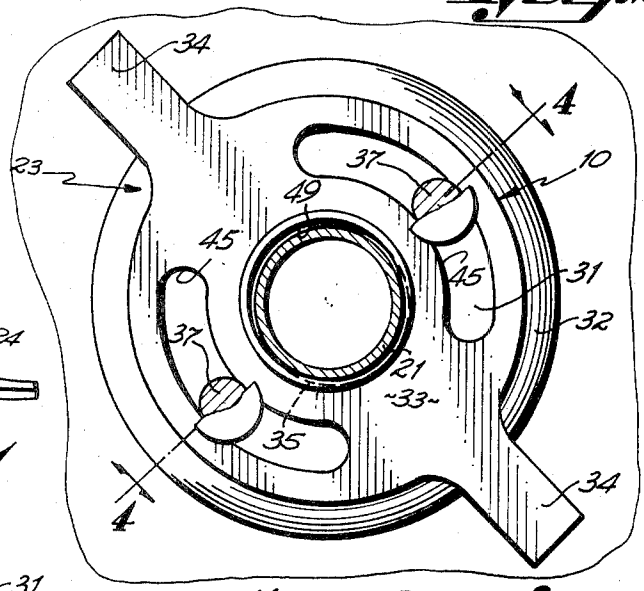


Fig. 3

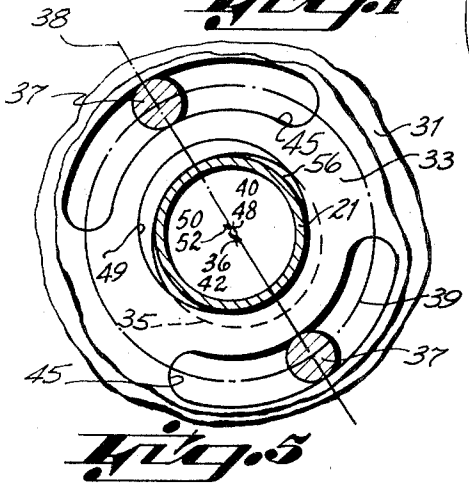


Fig. 5

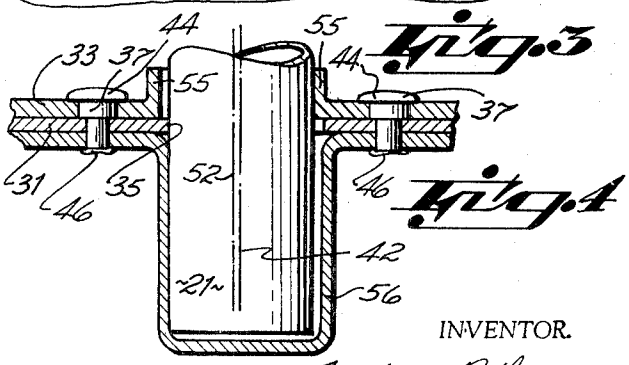


Fig. 4

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MUSIC STAND

This application is a divisional application of pending U.S. Ser. No. 789,180, filed Jan. 6, 1968 now abandoned.

This invention relates to locks. More particularly, this invention relates to a quick release lock for a music stand adapted to positively engage a tubular support member with a plate base member when the plate base member is disposed substantially perpendicular to the tubular support member.

There are numerous end uses for a quick release lock of the type adapted to join together a tubular member and a plate member wherein the plate member is positioned substantially perpendicular to the axis of the tubular member. One common use of such a lock is in the area of music stands. A music stand generally comprises a desk pivotally connected to a tubular support member at one end and a base connected to the tubular support member at is other end. The tubular support is vertically positioned during use and may be made vertically adjustable in a telescoping type action. The desk usually is capable of being angled relative to the vertical to present the music at the desired attitude preferred by the musician. The base is generally either of the plate type or of the collapsing tripod type. By the plate type is meant a base that is relatively flat even though it may take any number of desired shapes, for example, trifooted, quadrafooted, circular, or the like.

It is most desirable in the case of music stands to provide a structure which is readily collapsible into a sufficiently small or compact space so that the stand can be easily transported from one location to another. The pivotable desk on the music stand permits the desk to be pivoted into a position where the desk's back is substantially parallel to the axis of the tubular support member. Also, the tubular support member, because of its telescoping type construction, can be compressed together into a length almost one-half that of its extended most length.

It is additionally desirable that the base of the music stand be removable or adjustable so that the plane of the base can be positioned parallel to the axis of the tubular support member and parallel to the plane of the desk's back. Numerous means have been provided to accomplish this result and, as mentioned above, such means include collapsible tripod-type legs. However, in the case of plate-type bases, as that term is used in this application, the means known to the prior art are relatively complex making them expensive to manufacture or difficult to operate, and/or of questionable service life. One type of such means for plate-type bases involves threading the bottom of the tubular support member and threading the base so the two parts can be assembled for use or disassembled for storage. Another type of such means for plate-type bases includes a trigger-type ratchet mechanism mounted to the base that is adapted to cooperate with teeth on the support post when it is assembled with the base. baseplate cooperating 40.

Therefore, it has been one objective of this invention to provide a quick release lock which permits a tubular member to be positively engaged with a plate member when the plate member is disposed substantially perpendicular to the tubular member.

It has been another objective of this invention to provide a quick release lock that positively relates a tubular member to a plate member, the members being disposed substantially perpendicular to one another, wherein the connection so formed prevents wobbling, wiggling, tipping, slipping, and other undesirable problems which are normally associated with the releasable connection of a tubular member to a plate member.

It has been still another objective of this invention to provide a music stand incorporating the quick release lock of this invention.

These objectives have been attained by providing a quick release lock comprising, in preferred form, (a) a circular hole in the plate member in which the tubular member is received, the hole being sized to provide slip fit when the plate member and tubular member are assembled and the hole having a first center that establishes a center axis perpendicular to the plate

member, (b) at least two pins mounted to the plate on opposite sides of the hole, the pins being disposed on a circle having a second center with that second center being offset a small distance relative to the first center, (c) a lockring rotatable relative to the plate member having a pair of opposed arcuate slots engaged with the pins, the arcuate slots having a common third center which lies on the same center axis as the second center, and (d) a hole in the lockring that establishes a fourth center, the fourth center being offset the same small distance relative to the third center as the second center is offset from the first center so that as the lockring is rotated relative to the plate member the fourth center can move from a release position where the fourth center also lies on the same center axis as the first center to a lock position where the fourth center is offset relative to the center axis of the first center.

Other objectives and advantages of the invention will be more apparent from the following detailed description taken in conjunction with the drawings in which:

FIG. 1 is a perspective view illustrating the quick release lock of this invention in conjunction with a music stand;

FIG. 2 is a cross-sectional view taken along lines 2—2 of FIG. 1 illustrating the lock in the unlocked position;

FIG. 3 is a view similar to FIG. 2 illustrating the lock in the locked position;

FIG. 4 is a cross-sectional view taken along lines 4—4 of FIG. 3; and

FIG. 5 is an enlarged view of the lock with the relation of the lockring relative to the baseplate and tubular member overemphasized for illustrative purposes.

As is more particularly illustrated in FIG. 1, the quick release lock 10 of this invention has been found to be particularly useful in conjunction with a music stand 11. The usual music stand 11 includes a music desk 12 having a back 13 and a lip 14 disposed at the lower end thereof. The desk's back 13 is provided with angulated reinforcers 15 that cooperate to define a channel 16 within which the top 17 of a tubular support 18 is pivotally mounted by pivot pin 19. The tubular support 18 includes a top half 20 telescopingly received in a bottom half 21, the two halves being held at the desired height by thumbscrew 22. The tubular support 18 is retained in fixed engagement with the stand's base or plate member 23 by the quick release lock 10. The stand's base or plate member is illustrated as one having three feet 24 and being substantially perpendicular to the axis of the tubular member 21.

The quick release lock 10 is particularly illustrated in FIGS. 2–5 with FIG. 2 illustrating the lock in the open or unlocked position whereat the tubular member 21 may be engaged with or disengaged from the plate member 23 by a simple sliding motion exercised by hand, that is a slip fit. FIG. 3 illustrates the lock 10 in the locking position whereat the tubular member 21 is positively engaged with the plate member 23 and cannot be removed therefrom.

As illustrated in FIGS. 2 and 4, the quick release lock 10 intimately involves the plate member 23 which, in the case of the music stand 11, includes the three feet 24 emanating from the center of the base. The plate member 23 includes a raised central or steppelike portion 31 that is formed out of and is integral with the general plane of the plate member. The steppe 31 is supported above the plate member 23 by sloping sidewalls 32. A lockring 33 rests on, that is, is supported on, the steppe 31 and is movable relative to both the plate member 23 and the tubular member 21. The lockring 33 provides finger tabs 34 on opposite sides thereof which extend out over the wall 32. Thus, the steppe 31 of the baseplate 31 combination with the tabs 34 on the lockring 33 permits the lockring to be easily rotated when grasped by a person's fingers when it is desired to move the lockring from the release position to the lock position and vice versa.

The baseplate 23 provides a circular hole 35 into which the tubular member 21 is received. The circular hole 35 is of a diameter just a little greater than the diameter of the tubular member 21, for example, on the order of one thirty-second

inch, so that an easy slip fit is available between the tubular member **21** and the plate member **23** when the two are either being assembled or disassembled. Also, the first center **36** established by the hole **35** gives rise to a center axis **42** perpendicular to the plate member **23**.

Two pins or leaders **37** are positively and immobily mounted to the plate member **23**, as at **46**, on opposite sides of the plate's hole **35**, the pins being disposed on the circumference of and on the same diameter **38** of circle **39** which presents a second center **40**. The leaders or pins **37** are mounted so that the second center **40** is offset a small distance from the axis **42** and the first center **36**. The pins **37**, because they are in the form of rivets in this embodiment, also function to hold the lockring **33** in operating engagement with the plate member **23** by means of heads **44** extending over the sides of tracks or arcuate slots **45** provided in the lockring.

The lockring **33**, as noted, is provided with two tracks or arcuate slots **45** positioned on the same circle **39** and located on opposed sides of that circle's center **40**. The width of the tracks or slots **45** is preferably just slightly greater than the diameter of the leaders or pins **37** so the lockring **33** can be easily rotated about and guided by the pins within the slots. The arcuate slots **45** have a common third center point **48** which, when the lockring **33** is positively engaged with the plate member **23** by means of the pins **37**, lies on the same axis as the second center **40**. Thus, no matter what the point in rotation of the lockring **33** relative to the base plate **23**, as guided by and permitted by the length of the arcuate slots **45** cooperting with the pins **37**, the center **48** of the arcuate slots **45** cooperation with the pins **37**, the center always remains on the axis of center **40**

A hole **49** is also provided in the lockring **33**, that hole establishing a fourth center **50**. The lockring hole **49** is preferably of the same diameter as the baseplate hole **35**, that is, just a little greater than the diameter of the tubular member such as on the order of one thirty-second inch, so that an easy slip fit is also available between the tubular member **21** and the lockring **33** when the tubular member is being assembled with or disassembled from the plate member **23**. A collar **55** is provided around the lockring hole **49** and integral with the lockring **33** for reinforcing purposes. Also, the collar **55** aids in preventing the lockring **33** from damaging the tubular member **21** when the quick release lock is repeatedly moved to the locking position. However, and most importantly, the center **50** of the lockring hole **49** is slightly offset relative to the third center **48** by approximately the same distance as the center **36** and **40** are offset so that as the lockring **33** is rotated relative to the plate member **23** the fourth center can move from a tubular member **21** release position, see FIG. **2**, whereat the fourth center **50** also lies on the center axis **42**, to the lock position of FIGS. **3** and **4**, whereat the vertical axis **52** on which the fourth center **50** lies is offset relative to the stationary center axis **42** on which the first center **36** always lies.

As is particularly illustrated in FIG. **4**, when a music stand **11** is involved it is preferred that a tubular socket cup **56** be interconnected with the steppe **31** by means of the pins **37** on the side thereof opposite to that side on which the lockring **33** rests. The inside diameter of the cup **56** is equal to the diameter of the lockring hole **49** and the plate member hole **35**, and the axis of the cup is superimposed on the center axis **42**. Thus, the tubular member **21** of the music stand **11** can be easily received with and supported by the plate member **23** so that the tubular member is substantially perpendicular to the plate member when the plate member hole **35** and the lockring hole **49** are superimposed exactly, as illustrated in FIG. **2**.

In operation, and as is particularly illustrated in FIG. **5** in combination with FIGS. **2–4**, as the lockring **33** is rotated and guided from its furthermost counterclockwise position determined by arcuate slots **45** (see FIG. **2**), which is the release position, to an intermediate position where the pins **37** are intermediate the length of the slots **45** which is the lock position (see FIG. **3**) the center **50** of lockring hole **49** is moved relative to the center axis **42** of the plate member hole **35** so that the lockring forces the tubular member **21** received within the cup **56** (and, therefore, through the plate member hole **35**) against the side of that hole **35** and side of that cup. Thus, the lockring **33** positively grips, by use of frictional force, the tubular member **21** and the plate member **23** together. In the case of music stands, such a quick release lock has been found to provide good support and rigidity to the music desk.

Having described my invention and the preferred embodiment thereof in complete detail, what I desire to claim and protect by Letters Patent is:

1. A music stand comprising:

a music desk having a back and a lip positioned at the bottom of said back;

a vertical support pivotally mounted at the top end to the back of said music desk, said support comprising top half adapted to be telescoped into a bottom half for varying the height of said music desk relative to the bottom end of said support;

height adjustment means mounted to cooperate with said two halves for maintaining the telescoped position of said two halves relative one to the other as desired;

a base for the music stand including a plate member having structure defining a first hole in said plate member, said first hole being sized to receive the bottom end of said vertical support in easy slip fit when said plate member and said vertical support are assembled, and said first hole having a first center that establishes a center axis perpendicular to said plate member; and

means for locking said vertical support to said base and for vertically locating and orienting said support relative to said base comprising:

a socket cup having a cylindrical wall and mounted to said plate member on the underside thereof, said socket cup having a diameter substantially equal to and being concentric with the hole in said plate member, and said socket cup being adapted to receive the bottom end of said vertical support to locate same vertically and to support same in a substantially vertical orientation relative to the said music stand's base,

a lockring member rotatably mounted to said base's plate member, said lockring having structure defining a second hole that establishes a second center that can lie on the center axis, and said second hole also being sized to receive the bottom end of said vertical support in easy slip fit relation, one of said plate and lockring members having structure defining at least two arcuate slots therein lying on the circumference of a first circle, the other of said plate and locking members having at least two pins fixed thereto and lying on second circle having a diameter equal to the diameter of said first circle, and the centers of the first and second holes being offset from the centers of the first and second circles by approximately the same distance,

said plate and lockring members being interconnected by said pins with said pins being positioned in said slots such that the centers of the first and second circles coincide, and

said lockring member being rotatable on said plate member between a release position where the centers of the first and second holes coincide such that said vertical support can be easily withdrawn from assembly with said base, and a lock position where the centers of the first and second holes are offset from each other such that said vertical support can be easily locked against the walls of said socket cup to vertically locate and orient said support in assembly with said base.

2. A music stand as set forth in claim **1** further comprising:

a collar integral with said lockring and disposed about the hole in said lockring.

3. A music stand as set forth in claim **1** including:

a steppe mounted to and raised out of the general plane of said plate member, said lockring resting on said steppe, and

at least one finger tab integral with said lockring and extending over the walls of said steppe.

* * * * *