July 17, 1934. J. R. SPICA 1,966,566

MUSIC STAND

Original Filed April 1, 1927

Fig. 1.

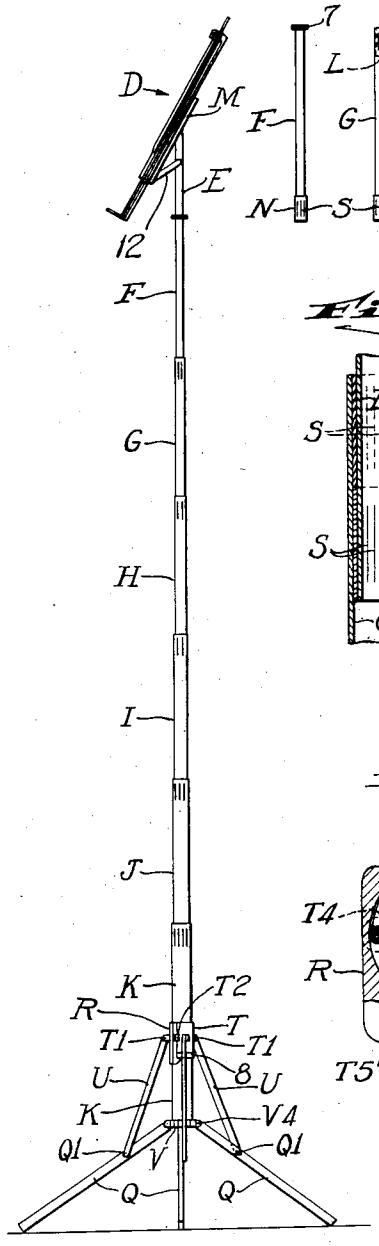


Fig. 2.

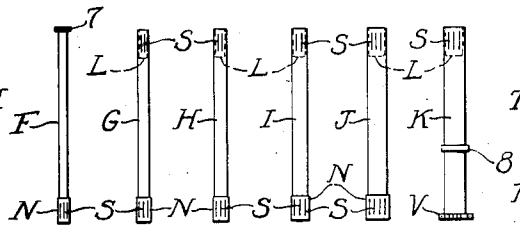


Fig. 2A.

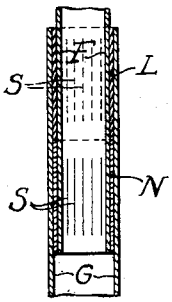


Fig. 3.

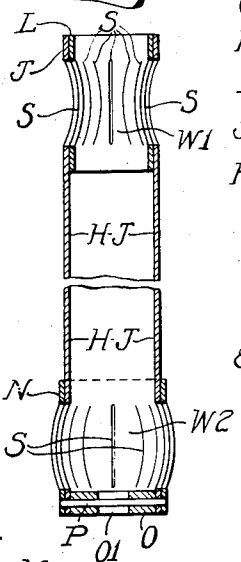
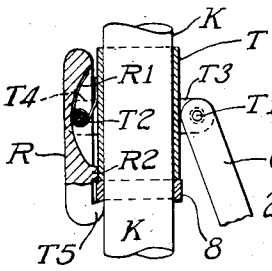


Fig. 4.



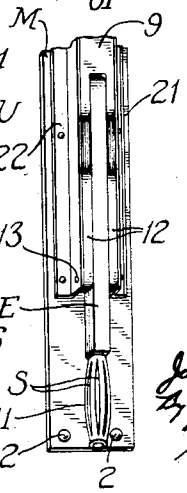


Fig. 5.

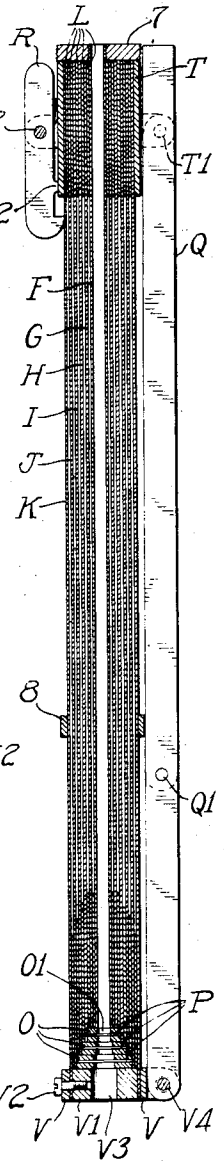


Fig. 6

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UNITED STATES PATENT OFFICE

1,966,566

MUSIC STAND

John R. Spica, Brooklyn, N. Y.

Original application April 1, 1927, Serial No. 180,114. Divided and this application March 16, 1932, Serial No. 599,184

4 Claims. (Cl. 248—43)

This invention relates to music stands particularly of the collapsible portable type.

The object of the invention is to provide a most compact form of such type without detracting from the other desirable properties including ease of setting up and rigidity when set up.

The invention consists of the features of construction substantially as shown in the drawing.

In the present invention the stand in its collapsed condition not only occupies much less space than those heretofore made, but presents other improvements in combination contributing to other desired features in addition to compactness.

First, the stand hereof (the vertical telescopic standard and the inclined desk) collapse into two lengths of less than ten inches each; and each of the two collapsed elements is only about two-thirds of the thickness heretofore. Heretofore such two elements in collapsed condition have fitted around one another so as to reduce the total width, but in the case of my more compact stand units their total width when placed together for carriage is only about one inch and one half, so that the entire stand collapsed for carriage occupies a space of only about ten inches by one inch and a half. Furthermore, as will be seen, my stand has the following advantages additional to compactness i. e. ease of operation to open and close, attractive in appearance, and all the moving parts operate by friction; also the legs permissively are of unusually short length.

Certain features shown, described and claimed in this application, are shown and described, but not claimed, in my co-pending application, Serial No. 180,114, filed April 1st. 1927, of which application the present application forms a division.

Of the drawing,

Fig. 1 is an elevation showing the entire stand set up ready for use;

Fig. 2 illustrates in elevation separately the several sections of the vertical telescopic standard;

Fig. 2A is a vertical section showing the assembly of two sections F and G of Fig. 2;

Fig. 3 is a vertical section showing the construction of one of the section-lengths of Fig. 2;

Fig. 4 is a detail partly in section showing the construction whereby the vertical standard is connected to the tripod or legs;

Fig. 5 is an elevation partly in section showing the collapsed condition of the vertical telescopic standard shown in Figs. 1, 2, 2A, and 3.

Fig. 6 is a detail view showing the manner in which the top section of the standard is connected to the desk.

Pursuant to the general object of compactness without detracting from operative rigidity in use, the specific object as to the vertical standard has been to reduce the length of each section and at the same time increase the rigidity of the extended standard and all by means of a simple structure to keep down the production cost and to permit the greatest ease of operation. Thus the standard of Fig. 1 comprises a larger number of telescoping sections than heretofore with necessary rigidity, the legs being connected to fixture V of the lowermost section K (Fig. 1) preferably by the construction clearly illustrated. Fig. 2 illustrates six telescopic sections including the bottom one K (Fig. 1) at the right (Fig. 2), all in addition to the top section E (Fig. 1) which is adjustably connected to the top desk D (Fig. 1) in a manner to be more fully described later in connection with such desk. This seventh or top telescopic section E (Fig. 1) enters down into the inside of the top hollow section F of Figs. 1 and 2; and all the sections F—K of Fig. 1 are hollow and are of increscent diameter successively from the top of the standard to the bottom thereof, so that each upper section telescopes down into the lower section.

At the top of the topmost hollow section F is a knurled collar 7 (Fig. 2) which serves as a handle for the musician to pull out the sections of the vertical standard from their collapsed or telescoping positions; and said collar 7 also serves as a stop for section F resting against the tops of all the sections G—K in the collapsed condition, as shown at the top of Fig. 5.

At the bottom of the telescopic standard i. e. at the bottom of the lowermost section K, Figs. 1 and 2, is a fixture V to which the legs Q are pivoted. Also at 8 is a collar on the lowermost section K which is employed for the purpose of locking the legs in their open position.

The frictional construction of top tube F and bottom tube K is similar in having the frictional construction only at one end; but the frictional construction of all the intermediate sections G—J is characterized by having the frictional construction at both the top and bottom of each tubular section as now will be described. However, the frictional construction at the bottom of

top tube F and at the top of bottom tube K are alike and are like the frictional construction at both top and bottom of tubes G—J, all as illustrated in detail in Fig. 3 which illustrates, for example, section J which has the frictional construction at both top and bottom like all sections G—J. Section G differs from sections H—J in that it lacks the stop ring O and pin P of Fig. 3, as will be described. Before describing the frictional construction the fact may be noted that its duplication at top and bottom of each and all the intermediate sections G—J permits practical rigidity in service while also permitting a sufficiently large number of tube sections to produce the desired linear compactness when collapsed. All this goes to ease of setting up into operating condition from the collapsed condition and vice versa, because the specific character of the frictional means is such as to exclude friction screws which are obviously objectionable both for ease and quickness of operation and for lack of compactness. My frictional construction without screws provides linear rigidity sufficient to sustain very heavy music books on the desk, without any requirement of adjusting screws and with the resulting compactness upon collapsing. All the musician has to do in operating the vertical standard is to grasp the bottom section K with the left hand and with the fingers of the right hand grasp the collar 7 of top section F and either pull or push, according as it is desired to set up or to collapse this vertical standard. The frictional construction to be described, permits ease of such operations and also permits the weight of the heaviest book on the top desk, usually employed. The only operation in setting up or collapsing the standard, in addition to the telescopic operation above referred to, is the collapsing or extension of the legs by means of the construction shown at the bottom of Fig. 1 and in Fig. 4.

The frictional construction will be understood most readily from Fig. 3 wherein the tube J is shown as broken midway to save space. Fig. 3 is of nearly double scale for the purpose of clearness. Each of sections G, H, I and J of Fig. 2 has the same frictional construction as Fig. 3 and section J of Fig. 2. The top construction of section K is like the top construction of sections G—J; and the bottom construction of section F is like the bottom construction of sections G—J.

The top construction of sections G—J is illustrated in Fig. 3 wherein the section J itself is provided with a plurality of slits S near the top of the section but not extending to said top. The vertical slits S preferably extend in a horizontal annular series entirely around the tube. Inside the top of each of sections G—K is a very thin short tube or band L which is soldered or otherwise attached to the top of the inner wall of its section. Band L is slotted at S similarly to the wall of the section. Preferably circular band L first is soldered in place to the inside of the section before the section is slotted, and then the slits S are formed simultaneously both thru section and the band L, so that the slits in the band register with those in the section. These slits are made readily by means of a circular saw. All parts disclosed are of metal and the tubular sections of the telescopic standard are preferably of brass. The slits S are about one inch long but are very narrow being only about one-sixty-fourth of an inch wide. As shown, while they extend nearly to the ends of the tubular sections, they do not extend thru to the ends.

The construction at the bottoms of sections F—J includes a band N similar to L but located outside of each section; and the bottom slits S, like those at the top, extend thru both the tubular section and the exterior bottom band.

The tubing of the telescopic sections has a thin wall, being what is known as 24 gauge tubing, the wall being about twenty thousandths of an inch thick. This tubing is sufficiently strong and is preferable for lightness and compactness. After the slits S are produced, the metal walls of the double tubing (tubular sections plus inner top bands L and lower bottom bands N) are bent into bulging form (inwardly at the top section L and outwardly at the bottom section N) so as to constitute a plurality of integral springs out of the metal between the slits S around the peripheries of the tubes. Fig. 3 shows the bulging portions exaggerated, to more clearly illustrate the structure. The material and the thickness of the metal wall are such that when such portions are bent into bulging form, they will remain in their bow-spring condition permanently so as to constitute a permanent frictional contact. The bands L and N not only serve as stops to prevent the standard-sections from being pulled entirely apart from one another, but they serve the very important purpose of strengthening the walls of the tube sections (which are thin for lightness of the entime standard) so as to provide ample strength for the integral springs and therefore the tightest frictional grips.

A section G (Figs. 2 and 2A) is like the section shown in Fig. 3 and as thus far described, save that it lacks stop ring O and pin P of Fig. 3 to be described later.

The assembly of the two top sections F and G is made first and as indicated in Fig. 2A, top collar 7 of section F not having yet been screwed on the top of F and therefore not being shown in Fig. 2A. The upper end of F is inserted thru the bottom opening of section G, and out thru the top of G. The diameters of sections F and G and on top band L of section G are such that the integral spring portions between slits S (dotted in Fig. 2A) bear inwardly against the outer wall of topmost section F. The integral spring portions between slits S (full lines in Fig. 2A) at the bottom of section F bear outwardly against the inner wall of section G. In Fig. 2A the two sections F and G are shown in their fully extended relations, i. e., the top end of band N fixed to the outer wall of the lower end tube F (Fig. 2) is in position abutting the bottom end of band L (Fig. 2A) which is fixed to the inner wall of the upper end of tube G (Fig. 2).

After the completion of the initial assembly of Fig. 2A, such assembly is in turn assembled with tube H of Figs. 2 and 3 as follows. Section G with section F inside (Fig. 2A) is pushed up thru tube H (Fig. 2, which thus far lacks stop ring O of Fig. 3) so that the slitted and outsprung bottom of G (Fig. 2), including N, bears against the interior wall of H. The passage of G (and F) up thru H is stopped when the outside bottom band N and G abuts against the lower end of band L inside the top of section H (as in the case of F and G in Fig. 2A).

Now, with sections F, G and H assembled together, and with F and G inside of H, and with

the lower end of H yet open, the stop ring O at bottom of (Fig. 3) is put in place inside the lower end of H as shown, by means of the steel pin P which is inserted loosely thru the walls of ring O and the opposite walls of H and its bottom outside band N, which previously have been perforated to receive the pin.

As shown in Fig. 5, the pins P for the successive sections are held in place by the inner walls of successively lower sections; thus, the pin P of a section H (Figs. 2 and 3) is held in place by the inner wall of the next section below H, i. e., section I when I, of inner diameter larger than H, is placed around H. Ring O acts as a stop for section G inside H, preventing G from falling down out of H, not merely at this stage of the assembly but thruout the service of the stand. (See collapsed condition in Fig. 5 at bottom.)

Collar 7 is not screwed on the top of F until the completion of the entire assembly including bottom section K; because F must pass up thru all sections G—K successively, as such sections are added to section F; but eventually collar 7 serves as a stop to prevent the lower end of section F from passing below and out of the lower end of G; so that top collar 7 serves in lieu of a bottom stop O on the lower end of G. This is the reason why only sections H—K of Fig. 2 are provided with bottom stop rings O as shown in Fig. 3; the ring O for section K lacks pin P and is held in place with screws V2, as shown at the bottom of Fig. 5, section K being different from sections H—J shown in Fig. 3 in that K lacks the slits S near its bottom; and section G being different from sections H—J of Fig. 3 is lacking bottom stop-ring O.

The relation of stops O to slits S and their cooperation therewith are as follows. Each of sections H, I, J and K is provided with one of such stops O. No stop O is needed for F when collar 7 is provided at the top of F. The primary function of stops O is to hold the sections of each adjacent pair (G—H, H—I, I—J, and J—K) in assembly with one another, as follows. Take sections G—H for example. Stop ring O at the bottom of H (Fig. 3) by constituting a stop for G inside of H, not only holds G from falling down out of its assembly with H, but holds G in position so that G and H always have engagement with one another at two of the integral friction-spring constructions i. e. the one at the bottom of G and the separate one at the top of H. (It will be understood that only one of the two spring friction constructions at the opposite ends of each section is visible from the exterior of the completed assembly, because the lower frictional construction of a given section is always inside the larger tubular section next below it.)

These two locations of frictional engagement between two adjacent sections are close together when the two adjacent sections are extended from one another (as in Fig. 2A) so that the top of the outer band N at the bottom of the upper section abuts against the bottom of the inside band L at the top of the lower adjacent section. But such two locations of frictional engagement of two adjacent sections become separated from one another as the two adjacent sections are telescoped together. However, such separating movement of the two frictional engagements is checked by stop O at the bottom of a section H—K before the lower frictional construction of the upper section can pass downwardly out of its frictional engagement with the interior wall of the lower section. Thus the two adjacent sections always have two frictional engagements with one another, this being useful in permitting adjustment of the top desk D (Fig. 1) to any height desired by the individual musician without affecting the frictional resistance of any part of the telescopic standard to the gravity of the music book on the desk. Such construction is useful further in that after the vertical standard has been collapsed and when it is desired to extend it for service, the outside bottom bands N are inside the lower ends of adjacent tubes below, so that upon extension there is no liability of the top edge of an outside band N of one section abutting against or being stopped by the lower edge of an outside band N of another section, as would be the case if stops O or equivalents were not provided and if therefore the lower end of an upper section were allowed to project down and out of the lower end of an adjacent section below it. Another advantage of stops O is that they constitute insurance against the possibility, under certain conditions that one or more top sections, in the operation of collapsing the vertical standard, would drop violently to the bottom of the entire standard and possibly be injured. But the principal importance of stops O is in connection with the plurality of annular series of vertical slits S at top and bottom of sections G—J (Fig. 2) whereby two adjacent cooperating sections always have two portions functioning in frictional engagement with one another thereby permitting a linearly stiff standard sustaining maximum weight of music books on desk D notwithstanding the extra plurality of sections which thereby permit increased compactness. Also, of course, irrespective of the matter of compactness, my new frictional joints are useful in preventing premature collapsing of a standard by the weight of as heavy music books as may be desired to be carried by desk D.

While the stops O may be soldered or fused permanently inside the lower ends of the tubular sections, etc., yet I prefer a demountable construction with rings O and loose pins P for the following reasons. In course of long usage the frictional engaging surfaces of integral spring portions W1—W2 will wear slightly so as to impair the linear rigidity of the standard; and in such a case the pins P and rings O readily may be removed permitting the disassembly of the sections and a new operation of springing inwardly the top spring portions W1 and springing outwardly the bottom spring portions W2.

The completion of the assembly by the successive addition of sections I, J and K of Figs. 1 and 2, to the above described assembly of sections F, G and H, is made pursuant to the above described assembly of section H with the assembly in Fig. 2A of sections F and G. After section K, of largest internal diameter, is put in place around section J, the lowest stop V1 (similar to upper stop O) is put in place inside K. Also fixture V (Fig. 5) is applied around the outside lower end of section K, to support the legs (Fig. 1). Three screws V2 (Fig. 5) hold ring V1 and fixture V2 to tube K. In the manufacture of tube K prior to assembly (Fig. 2) a metal ring 8 is fixed (as by solder or other fusing) around K in approximately the location

of Fig. 2, right. After such completion of the assembling of the entire vertical standard, the collar 7 is screwed on the top of top section F (Fig. 1). Also the tripod construction is connected to the lower portion of section K in the manner shown in the bottom of Fig. 1 and in Fig. 4, the sleeve T being slidable up and down around section K, and locked in place as shown. The standard thereupon is completed by the insertion of the standard-section E (Fig. 1) of desk D inside the hollow section F (Fig. 1). The lower end at E1 is solid but slotted as at S, and this slotted portion E1 is the portion which is inserted in section F of Fig. 1 and in Fig. 1 is concealed inside F. The metal portions between slots S in solid and E1 of E are sprung outwardly (similarly to metal W2 at the bottoms of sections F—J of Fig. 2) so as to provide sufficient friction between E and F (Fig. 1) but permit vertical adjustment. Part E1, being solid, provides stronger integral friction springs than W1, W2 of Fig. 3, and therefore permits sufficiently rigid engagement of E and F without slitting the top of F. Portion E adjacent E1 acts as a stop abutting against nut 7 of section F. The above construction is useful in obviating need of a set-screw and yet providing rigidity.

Fig. 5 shows the collapsed positions of the legs or tripod which are shown extended at the bottom of Fig. 1. Fig. 5, also illustrates the collapsed positions of the telescopic standard of Figs. 1–4. Here all the tubular sections F—K of Figs. 1 and 2 are telescoped together; the inner top bands L of each section being all grouped together at the top of the compact assembly, and the outside bottom bands N being all grouped together at the bottom of this assembly, as are also the various stops O. It will be understood that the central passages O1 and V3 thru the stops O and V1 for sections H—K of Fig. 2 (all as shown grouped at the bottom of Fig. 5) serve as vents for air upon collapse of the telescopic standard to the compact form shown in Fig. 5, it being understood that the telescopic tubes fit fairly tightly in one another (the outer surface of an inner tube between reenforcing bands against the inner surface of an outer tube between bands) and that the lower end slits S of the tubes of smaller diameter are located in and enclosed by the tubes of larger diameter so that the slits themselves cannot serve as air vents.

The construction of the supporting means for the legs or tripod is shown in detail in Fig. 4, with reference to Figs. 1 and 5. Legs Q themselves are pivoted at their upper ends at V4 (Fig. 1) to collar V fixed on standard-section K, Fig. 2. The legs are braced by members U (Figs. 1–4) pivoted at their lower ends at Q1 to the legs Q intermediate their ends, and at their upper ends at T1 to integral projections T3 from casting T formed as a sleeve sliding on standard-section K. Sleeve T is locked in position relative to section K by the following mechanism to hold the assembly in the operation positions shown in Fig. 1. A catch R (brass casting) is pivoted at T2 to an integral projection T4 of sleeve K. Catch R is formed at its lower end with a hook T5 as shown, adapted to engage under collar 8 (Fig. 4) fixed to standard-section K (Fig. 2), to hold the legs in their extended positions of Fig. 1. A spring R1 holds hook T5 under collar 8; the catch R being machined out to form a recess for the spring so that the latter is housed between catch R and sleeve T, the pivot T2 of said catch being so close to sleeve T that catch R itself lies closely adjacent to said sleeve to form the housing for spring R1. This compact structure is useful in that it constitutes a minimum of projection from the side of the collapsed assembly, see Fig. 5 top. In collapsing the legs from the positions shown in Fig. 1 to those shown in Fig. 5, the user presses inwardly the top part of catch R (Fig. 4), to withdraw the hook T5 from under collar 8, and then grasps legs Q (Fig. 1) and folds them upwardly around the standard, this being done after the standard has been collapsed. In this operation the braces U first are spaced apart and then drawn together close to standard-section K (see Fig. 5) right. Also sleeve T is slid upwardly toward the top of the collapsed standard (Fig. 5) and toward top nut 7 on top standard section F (Fig. 2, left). As sleeve T is slid upwardly (by the collapsing of the legs), the outer wall of standard-section K is exposed toward the hook T5, and after the hook has risen above fixed collar 8, the hook would engage section K and become worn by repeated sliding thereon, save for the construction disclosed, which includes an integral projection R2 from catch R which abuts against sliding sleeve T (Fig. 5) and holds hook T5 from frictional engagement with section K or any other part. Fig. 5 shows the resulting space preventing frictional sliding engagement of hook T5 with section K.

The desk D generally comprises a central member M and collapsible wings, and is more fully described in my co-pending application, Serial No. 180,114, filed April 1st, 1927. Attached to the rear of the member M are a pair of parallel guide members 21 and 22 between which there is slidably mounted in any suitable manner a member 9 adapted to be attached to the member M in various adjusted positions, as for example, by means of set screws or the like (not shown). The member E is pivoted at the upper end thereof to the member 9. A pair of links or arms 12 disposed on opposite sides of the member E are pivoted to said member E at the upper ends thereof and to the guides 21 and 22 at the lower ends thereof, as at 13. Thus, the angle of the desk may be adjusted by merely tilting the same and holding the member E in upright position. The lower end E' of the member E is substantially cylindrical and slotted as at S and the portions between the slots are bowed outwardly to provide a strong frictional engagement with the upper end of the tubular member F.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

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

1. In a music stand, a collapsible standard comprising a plurality of tubular metal telescoping sections, the tubular sections of the standard intermediate the top and bottom sections being formed with two horizontal substantially an-

nular series of narrow vertical slits respectively near the ends of the sections, said slits extending nearly but not quite to said ends; the metal portions of a given tube between the vertical slits of the horizontal series at one end being bent radially in one direction to constitute integral springs engaging a telescoping tube adjacent that end of said given tube, and the metal portions of the tube between the vertical slits of the horizontal series at the other end of said given tube being bent radially in the opposite direction to constitute integral springs engaging a tube adjacent that end of said given tube.

2. In a music stand, a collapsible standard comprising a plurality of tubular telescoping sections having thin metal walls for lightness; the tubular sections of the standard intermediate the top and bottom sections being provided with two short thin metal bands respectively secured to the ends of the tubular section and reenforcing the thin wall of said tube, the band at one end of a given tube being secured to the inner wall thereof, and the band at the other end of the tube being secured to the outer wall thereof; each band and its adjacent thin wall of the tube being formed with a horizontal substantially annular series of vertical slits extending nearly but not quite to the end of the tube and band, said slits in the band registering with the slits in the tube; the metal portions of the short thin band on one end of the given tube, and also the adjacent thin metal wall of the tube adjacent said band, being slightly bent radially outwardly between the slits to constitute integral springs, made strong by the band, for frictionally engaging the inner surface of the wall of a tubular section telescoping outside that end of the given tube; and the metal portions of the short thin band on the other end of the given tube, and the thin metal wall of the tube adjacent said band, being slightly bent radially inwardly between the slits to constitute integral springs, made strong by the band, for frictionally engaging the outer surface of the wall of a tubular section telescoping inside that end of the given tube; the ends of said short bands constituting stops for adjacent tubular sections in extending the standard.

3. In a music stand, a collapsible standard including a plurality of telescoping metal sections each provided with a band secured to the inner surface at one end and with a band secured to the outer surface at the other end, said bands serving as stops preventing the sections from being pulled apart on extension of the standard; said bands of each of such sections and the adjacent tubular section itself being formed with a plurality of slits, and the metal between the slits being slightly bent radially into resilient frictional engagement with adjacent sections, whereby each pair of such adjacent sections is provided with two linearly separated frictional contacts; and stops maintaining such two frictional contacts upon collapsing of the standard.

4. In a telescoping standard for a music stand, the combination of a tubular section therefor, and a second tubular section having an end portion fitting into an end portion of said first section, said first section being slitted adjacent said last mentioned end portion, said slitted portion of said first section being bowed inwardly to frictionally engage the said second tube, said second tube being slitted adjacent the end thereof fitting into said first tube, said slitted portion of said second section being bowed outwardly to frictionally engage said first tube.

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