

Feb. 13, 1934.

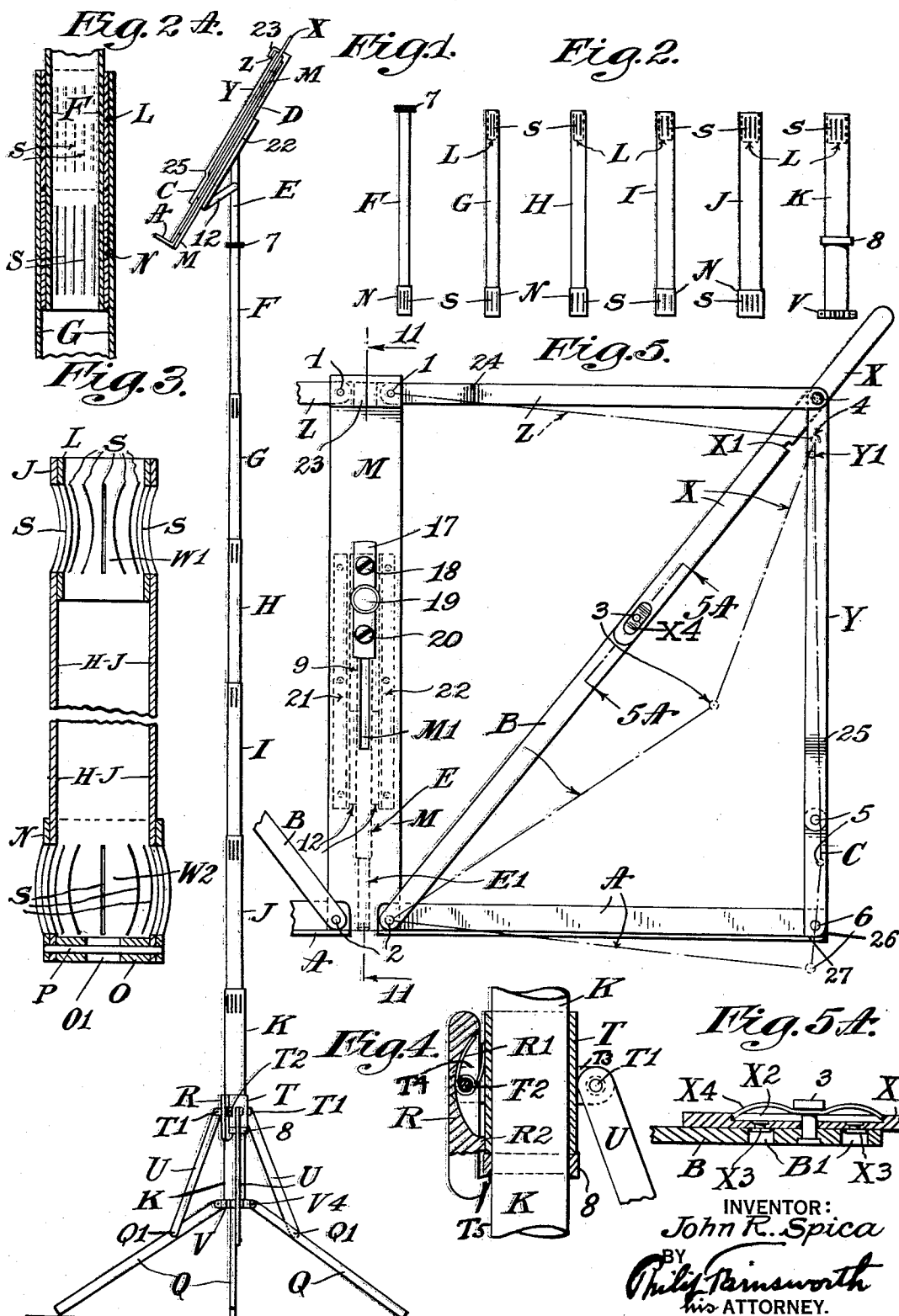
J. R. SPICA

1,946,644

MUSIC STAND

Filed April 1, 1927

2 Sheets-Sheet 1



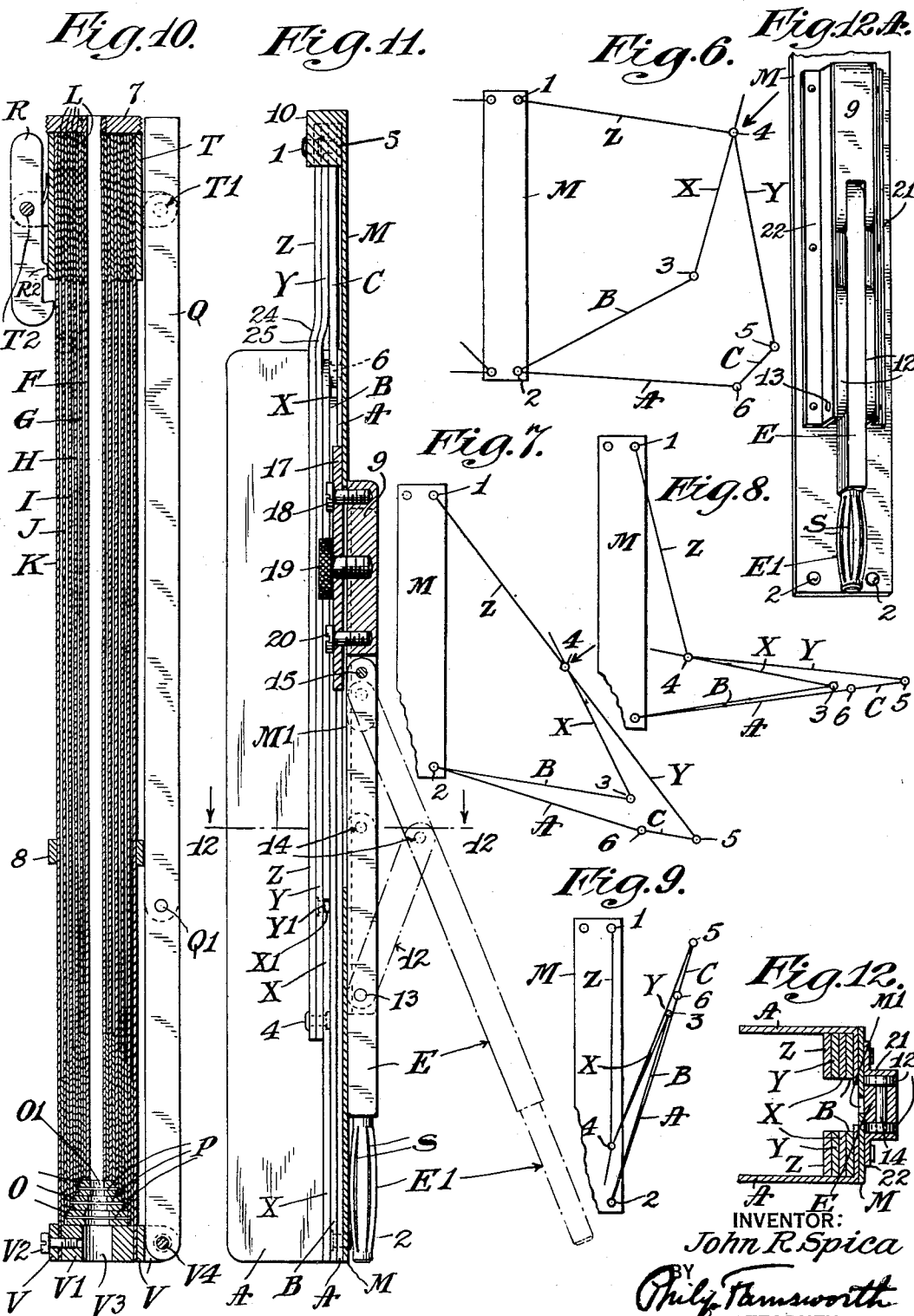
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MUSIC STAND

John R. Spica, Brooklyn, N. Y.

Application April 1, 1927. Serial No. 180,114

13 Claims. (Cl. 45—121)

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 drawings.

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) collapses 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.

Of the drawings,

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 a view showing the front of the right-hand half of the desk shown generally at the top of Fig. 1;

Fig. 5A is a detail partly in section at 5A—5A of Fig. 5 showing the master lock or lock joint of the desk which is shown at 3 in the center of Fig. 5;

Figs. 6—9 are diagrammatic views illustrating

the movements of the parts of the desk of Fig. 5 in being collapsed;

Fig. 10 is an elevation partly in section showing the collapsed condition of the vertical telescopic standard shown in Figs. 1, 2, 2A, and 3.

Fig. 11 is an edge view of the desk of Fig. 5, partly in elevation, showing the collapsed state thereof;

Fig. 12 is a section at 12—12 of Fig. 11, and

Fig. 12A is a rear elevation of a portion of the central desk member M of Fig. 5 showing the parts combined therewith for cooperation with the vertical standard of Fig. 1 and for adjusting the inclination of the desk.

The compactness of my stand when collapsed is well illustrated in Figs. 10 and 11 which are to actual scale, except that for clearness, Fig. 10 shows slightly heavier tubing. These views show the two collapsed elements (standard and desk) side by side, but in carrying the two, the collapsed standard at the left (Fig. 10) is placed inside the leaves, one of which is shown at Fig. 11, so that the assemblies of Figs. 10 and 11 are closely associated together constituting the above described portable structure less than ten inches long and about one inch and a half wide.

Altho the various features thruout the stand cooperate with one another in operation and use, yet for purposes of convenience and description the vertical standard of Fig. 1 will be described first, with the aid of Figs. 1—4 and 10; and thereafter will be described the construction of the desk at the top of Fig. 1 with the aid of Figs. 5—9 and 11—12A.

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. 10.

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. The top construction of section K is like the top construc-

tion 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 may be 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 for 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 portion 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 entire 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 sec-

tion 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 of 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 out-sprung 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 of 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. 10, 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. 10, 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. 10, 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 in 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 suc-

cessive 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. 10) is applied around the outside lower end of section K, to support the legs (Fig. 1). Three screws V2 (Fig. 10) 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 shown in 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 at 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). This section E of Fig. 1 is shown at E in Fig. 11. The lower end at E1 is solid but slotted 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. Figs. 11 and 12A show in full lines the collapsed position of E—E1, Fig. 11 shows its open position in dotted lines, by a construction to be described hereinafter in connection with the compact construction of the desk shown in Fig. 11. The metal portions between slots S in solid end E1 of E (Figs. 11 and 12A) 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 yet permit vertical adjustment. Fig. 11 shows the bulging portion exaggerated to illustrate the structure. 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. 10 shows the collapsed positions of the legs or tripod which are shown extended at the bottom of Fig. 1. Fig. 10 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. 10), serve as vents for air upon collapse of the telescopic standard to the compact form shown in Fig. 10,—it being understood that the telescopic tubes fit fairly tightly in one another 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 10. 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 T. 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 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. 10 top. In collapsing the legs from the positions shown in Fig. 1 to those shown in Fig. 10, 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. 10, right). Also sleeve T is slid upwardly toward the top of the collapsed standard (Fig. 10) 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. 10) and holds hook T5 from frictional engagement with section K or any other part. Fig. 10 shows the resulting space preventing frictional sliding engagement of hook T5 with section K.

Referring to the compact collapsibility of the entire stand as a whole including the desk or rack, Figs. 10 and 11 show the fact that the above described construction of the standard is such that it permits a sufficient number of telescoping sections to cause the collapsed standard (Fig. 10) to occupy no more linear space than the collapsed desk (Fig. 11), so that both can be carried by the musician conveniently in a single case of uniformly short length; and such that notwithstanding the increased number of sections there is no reduction of the resistance of the standard to heavy weights of music on the desk,—all this without undesirable, projecting set-screws or complicated constructions for holding the standard stiffly in its expanded condition.

The desk D of Fig. 1, including the top section E1 of the standard, is constructed so as to be collapsible into the same high order of compactness as is the rest of the standard of which the parts are shown in Figs. 2 and 10. The desk consists of three main portions, a central portion M (Fig. 5) and collapsible portions at its left and right, Fig. 5 showing the complete right-hand portion, but only a part of the duplicate left-hand portion.

The mechanism permitting adjustment of inclination of desk D of Fig. 1 is provided on the central portion M of Figs. 5, 11-12A in such wise as not to interfere with the compact collapsing of the collapsible portions or wings to the left and right of central portion M. As shown in Figs. 5 and 11, each of the two wings is provided at its bottom with a shelf A attached to central portion M so that when the wings are open a long shelf A, A is provided for the music book; and when the desk is collapsed as shown in Fig. 11 there is provided a space between the two shelves A, A for the reception of the standard-assembly of Fig. 10, so that the two assemblies of Figs. 10 and 11, each compact of itself, can be combined together so as to occupy minimum space for carriage as in a coat-pocket if desired. The sectional view in Fig. 12 shows said arrangement of shelves or plates A, A, and also illustrates the desk assembly in its collapsed form of Fig. 11.

First will be described the construction of the duplicate wings on opposite sides of central portion M (Fig. 5); and then will be described the angle-adjusting mechanism mounted on portion M (Figs. 5, 11-12A) which is designed for compactness and to permit the proper collapsing action of the wings.

The construction and operation of the duplicate collapsing wings is illustrated clearly, in successive steps of operation, by Figs. 5-9, which illustrate the parts in their successive positions of operation,—these figures (to save space) illustrating only the right-hand wing and the central portion M. Each wing is collapsed independently of the other. Fig. 5 shows the structure and Figs. 6-9 are diagrammatic. Fig. 5 is about one-fourth scale. Fig. 5 illustrates in full lines the structure and service condition of the desk; and by the dot and dash lines Fig. 5 indicates the first operation of collapsing. In order to move the parts into the dot-and-dash line position, the user clasps his hand around parts X and Y of one wing and draws them together. The positions of the parts indicated by dot-and-dash lines in Fig. 5 are approximately the same positions as those illustrated diagrammatically in Fig. 6. But even Fig. 6, in order to illustrate clearly without overlapping parts, does not yet show the positions to which the parts are brought by said first operation of grasping with the hand as above specified; for the final result of such grasping is to bring the parts in positions corresponding to the passing of part X (Fig. 6) behind part Y. Referring to Fig. 6 and assuming that the parts are in the last specified position, the next operation by the user in collapsing a wing of the desk is to apply pressure on the pivot 4 as indicated by the arrow in Fig. 6. Such pressure is continued to be applied until the parts assume the positions shown in Fig. 8. Fig. 7 shows the position of the parts while pressure is being applied as in Fig. 6, but with the parts in position intermediate those of Figs. 6 and 8. The third and last operation of the user in collapsing a desk-wing is to grasp the parts shown horizontally at the right of Fig. 8 and fold them upwardly in an anti-clockwise direction toward the central portion M, as indicated in Fig. 9 which illustrates the parts in positions intermediate those of Fig. 8 and their final collapsed positions as shown in Figs. 11 and 12. Altho Fig. 11 is a side view, yet Fig. 12 shows both wings collapsed. In this final collapsed position, all the parts constituting one wing are grouped close together parallel to one another (save for shelf A) and parallel to

and alongside central portion M adjacent one edge thereof. That is, one wing (the right-hand wing) is folded up in front of the right-hand portion of M in Fig. 5; and the left-hand wing is folded up in front of the left-hand portion of the front of the face of M in Fig. 5. And both wings fold up against the desk-tipping adjustment 17, 19, etc., shown at the central portion of M in Fig. 5. In Fig. 11 the structure is cut away and omits showing of the right-hand wing shown in Fig. 5, so that in Fig. 11 the section is taken thru the center of central portion M as indicated at 11-11 in Fig. 5, looking in the direction of the arrows; and the folded parts in Fig. 11 are those of the left-hand wing.

The top of central part M is bent over as shown at 10 in Fig. 11. To the depending portion of 10 are riveted at 1, the left and right-hand members Z of the desk (Fig. 5). Between said two pivots 1 is a block or stop 23 (Fig. 5) which acts as a stop for the folding parts of the wing in their compact collapsed positions. Said folding parts lie against said stop 23 and between (top Fig. 11) the main portion of M and the depending part of its turned-over portion 10; so that the ends of the folding parts lie in a sort of pocket at the top of M.

The construction for the above wing-collapsing is very simple and is shown in Fig. 5 where the parts are shaped as shown and pivoted at the points illustrated, so that they take the successive positions indicated in the above figures upon the above described three simple manipulations of the user for each wing.

In Fig. 5 at the upper right-hand corner, the slot X1 cooperates with the pin Y1 on the back of member Y. The pin Y1 has the important function of assisting in the expansion of the parts when they are opened up from the collapsed position of Figs. 11 and 12. X1 and Y1 are shown in Fig. 11 where the parts of the left-hand wing are compactly assembled in front of central portion M. In extending the wing to open it, the user grasps the shelf A and simply pulls all the parts open, away from their compact collapsed positions. I find that the pin Y1 is useful and indispensable in permitting the initial unfolding. This initial unfolding operation brings the parts substantially to the position shown in Fig. 8. The next unfolding operation may consist in grasping point 4 of Fig. 8 and pulling outwardly away from M, to substantially the positions of Fig. 6. And finally a pressing inwardly toward M at points 3 and 5 will bring the parts to fully open positions shown in full lines in Fig. 5.

The lower part of member C (as shown at the lower right of Fig. 5) has an edge shape permitting proper functioning of my folding wing mechanism. That is, to permit movement from open to closed position, the right-hand corner 26 of member C is rounded as shown, and its bottom edge at 27 is at right angles with C, itself. Thus when the parts are unfolded from Fig. 11 to the position shown at full lines in Fig. 5, the square end 27 abuts against shelf A, thereby stopping entirely the unfolding movements of sections C and Y in the desired open position of the wing. And conversely in folding from the position of Fig. 5 to that of Fig. 11, the curved corner 26 of C permits the initial act of folding indicated in dot-and-dash lines in Fig. 5 and in diagram in Fig. 6. The member C remains in its open position of Fig. 5 until the commencement of the second folding operation indicated by the arrow in Fig. 6. Lock 3 (Fig. 5) may have any desired details of con-

struction (such as illustrated in Fig. 5A) which will execute the function of holding members B and X in alinement with one another in the open position of the wing (and thereby holding all the parts of the wing rigidly in their extended positions) until the forcible initiation of the first folding operation above described and consisting in grasping X and Y and pulling them together, thereby releasing the lock. Such initial folding operation automatically overcomes the effect of the spring X4 shown in Fig. 5A.

The construction of the preferred form of lock between members B and X of Fig. 5 is shown in detail in Fig. 5A. Desk-members B and X are pivoted together at 3. X is recessed at X2 to receive a spring X4 (Fig. 5) held under the head of 3. B is formed with two circular perforations B1 which receive slight projections X3 from X. Spring X4 always keeps B and X together. B and X can be moved readily from their extended positions (Fig. 5) because projections X3 are curved at their peripheries so that they can leave holes B1 readily when X and Y are drawn together, by the force of the grasping action against spring X4. In the reverse operation, when B and X are brought in alinement (Fig. 5), projections X3 are forced by spring X4 into holes B1 so as to lock the parts until future forcible movement of B and X which removes projections X3 from holes B1.

It is to be noted that altho the top right-hand end of member X in Fig. 5 projects, in the open position of the wing, above and outside of the wing rectangle, yet when the wing is folded (Fig. 11) such extended end of member X lies within the vertical height of central part M and at the bottom thereof so as to participate in the compact folding of the structure. Such upward extension of member X at the top in Fig. 5 has the useful function in the open position of the desk of providing a higher supporting means for the sheets or books of music on the desk.

The utility is to be noted of the bends indicated at 24 and 25 in Figs. 5 and 11. These bends cause members Z and Y below the bends in Fig. 11 to be spaced from the front of member B so as to provide room for member X to lie between B and Y; bends 24 and 25 being formed in Z and Y so that as shown in Fig. 11, Z and Y fit together at such bends. All this construction contributes to compactness in respect particularly of the width across the top of the parts in Fig. 11, in combination with the relative arrangement of the parts of the extended wing shown in Fig. 5.

The folded positions of the parts shown in Figs. 11 and 12 and the desk-tilting construction Fig. 12A are such as to cooperate and not interfere with one another; and as above described the folding wings on opposite sides of M, fold toward one another in front of M and engage against the front sliding member 17 and screw 19 of Fig. 5. The parts 17 and 9 slide up and down. Part 17 is in front of M, Fig. 5. Part 9 is on the rear of M, Fig. 12A. Part 17 is secured to 9 by screws 18 and 20, passing thru slot M1 in M. The rear slide 9 (Fig. 12A) has frictional engagement with the back of M; and the front slide 17 has frictional engagement with the front surface of M (Fig. 11). The adjustment of screws 18 and 20 controls such frictional engagement, so that the adjustment of the angle of the desk may be under any desired conditions of friction. To the lower

end of sliding back member 9 is pivoted the top section E (Figs. 1 and 12A) of the telescopic standard; and (Fig. 11) a pair of arms 12 is pivoted at 14 to member E and at 13 to parts of central portion M (angles 21—22), so that as sliding members 17 and 9 move in frictional engagement with M, the angle of the desk relative to vertical member E is changed as desired. As shown in Fig. 5 (dotted lines), Fig. 12 and Fig. 12A, rear sliding member 9 has frictional engagement at its sides with two angle guide members 21 and 22 which are riveted to the back of M. As shown in Figs. 5 and 11 the frictional tilting adjustment may be locked at any desired angle by way of the knurled screw 19 by tightly clamping front slide 17 and rear slide 9 against M. Screw 19 also has the important function of acting as a stop for the parts of the two wings of the desk when they are folded into compact form on opposite edges of front slide 17 and screw 19.

I particularly point out and distinctly claim the part, improvement, or combination which I claim as my invention or discovery, as follows:—

1. A collapsible music stand comprising a standard of telescopically collapsible tubular metal sections, and a collapsible and tilting music-desk having a vertical leg constituting the topmost section of said standard and supporting the desk; said desk in relation to said vertical leg comprising a central portion and two collapsible wings pivotally secured to said central portion; means for tilting the desk, toward which means said wings move in their collapsing movement, said means being mounted on said central portion to slide thereof in a direction generally at right angles to the collapsing movements of the wing and to be held frictionally in any position to which it has been slid; arms pivoted at their upper ends to said vertical desk-leg intermediate the ends of the latter; and pivoted connections between said sliding means and the other ends of said arms and between said sliding means and the upper end of said vertical leg, whereby the movement of said frictional sliding means varies the angle of the desk relative to the vertical standard including the desk-leg.

2. A music stand comprising a central portion with collapsible wings, each of said wings comprising a member A pivoted at one end to the bottom of said central portion and a member Z pivoted at one end to the top of said central portion, a member Y pivoted to the opposite end of member Z and a member C pivoted to the opposite end of member A, said members Y and C being pivoted to each other, a member B pivoted at one end to said bottom of said central portion, and a member X pivoted to said members Z and Y at their pivotal point, said members B and X being pivoted to each other.

3. A music stand substantially as specified in claim 2, the length of the members Z and A being equal, the added lengths of the members C and Y being equal to the length of said central portion.

4. A music stand substantially as specified in claim 2, the length of the members Z and A being equal, the added lengths of the members C and Y being equal to the length of said central portion, the added lengths of members B and X being equal to the square root of the sum of the squares of the lengths of said central portion and member Z.

5. A music stand substantially as specified by claim 2, said member A having a shelf portion,

and said member C being provided with a square corner at one end thereof coacting with said shelf portion to limit pivotal movement thereof relatively to member A in one direction.

5 6. A music stand substantially as specified by claim 2, the ends of said members B and X pivoted to each other being provided with spring means for releasably retaining said members B and X in alignment.

10 7. A music stand substantially as specified by claim 2, the members X and Y having coacting means for limiting relative pivotal movement of said members in one direction.

15 8. A music stand substantially as specified by claim 2, the member X having a notch medially the ends thereof, the member Y having a pin adapted to engage said member X at said notch to limit relative pivotal movement of the members X and Y in one direction.

20 9. A music stand comprising a music desk and a tubular standard therefor, the desk having a central portion and collapsible wings attached thereto, means slidable on said central portion, a leg pivoted to said slidable means and a member
25 pivoted to said central portion and said leg, said leg constituting the top of the standard.

10. A foldable sheet supporting rack, comprising, a central strip, a sheet rest strip having one end pivotally connected to the lower end of said
30 central strip, an upper strip pivotally connected to the upper end of said central strip, a sectional side strip connecting the outer ends of said sheet rest strip and said upper strip, the sections of said side strip being of unequal length and pivotally joined toward the lower end of said side
35 strip, and a sectional diagonal brace strip having its ends pivotally attached to the central strip and to the connection of said side strip and said upper strip, said sectional diagonal brace strip
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including sections of equal length pivotally joined.

11. A supporting rack of the class described comprising opposite foldable sides separated by a connecting central portion, each of said sides
80 having, when opened, top and bottom laterally extending members, a multi-sectioned vertical side member and a multi-sectioned diagonal member, said vertical and diagonal members being pivotally connected to both of said laterally
85 extending members and adapted when collapsed to lie substantially parallel therewith.

12. A supporting rack of the class described comprising opposite foldable sides separated by a connecting central portion, each of said sides
90 having, when opened, top and bottom laterally extending members, a multi-sectioned vertical side member and a multi-sectioned diagonal member, said vertical and diagonal members being pivotally connected to both of said laterally
95 extending members and adapted when collapsed to lie substantially parallel therewith, and in combination therewith, means for supporting said rack at the back of said central portion.

13. A supporting rack of the class described
100 comprising opposite foldable sides separated by a connecting central portion, each of said sides having, when opened, top and bottom laterally extending members, a multi-sectioned vertical side member and a multi-sectioned diagonal
105 member, said vertical and diagonal members being pivotally connected to both of said laterally extending members and adapted when collapsed to lie substantially parallel therewith, and in combination therewith, means for supporting said
110 rack at the back of said central portion, said back supporting means adjustable for varying the angle of said rack to the support therefor.

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