June 7, 1966 P. A. GIANELLA 3,255,295

PORTABLE MUSICAL INSTRUMENT

Filed Sept. 25, 1963 2 Sheets-Sheet 1

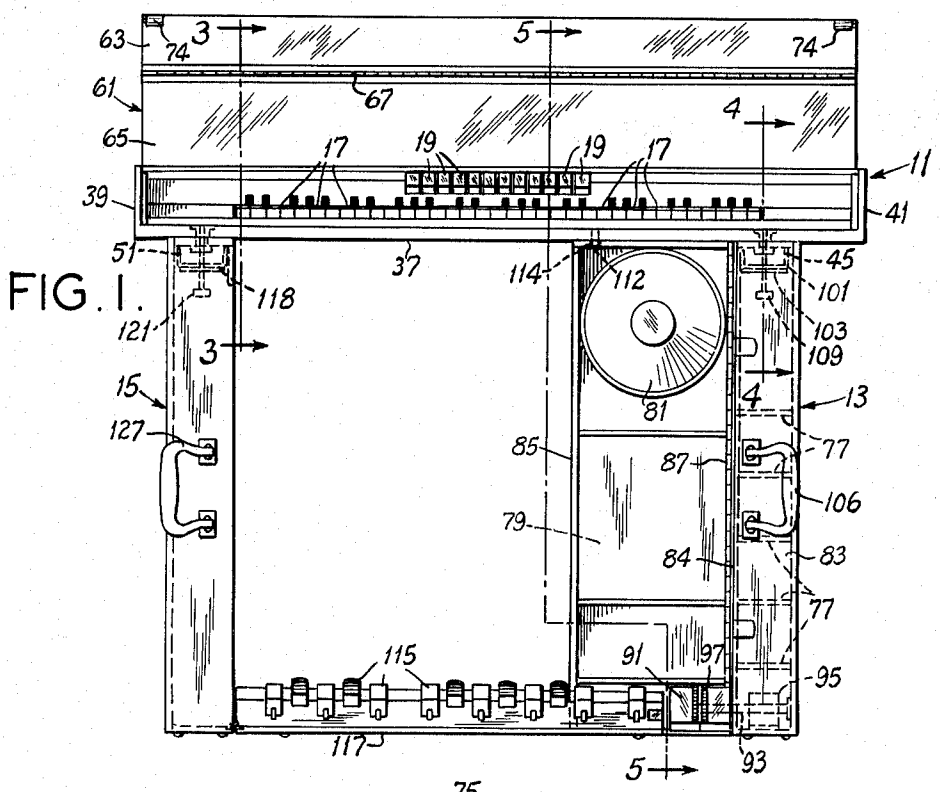


FIG. 1.

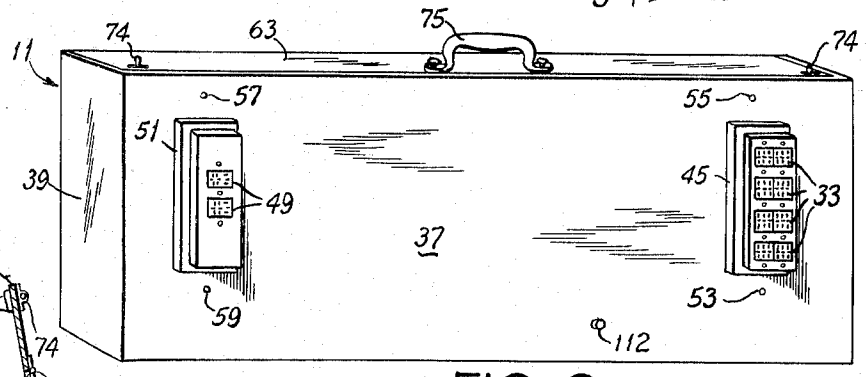


FIG. 2.

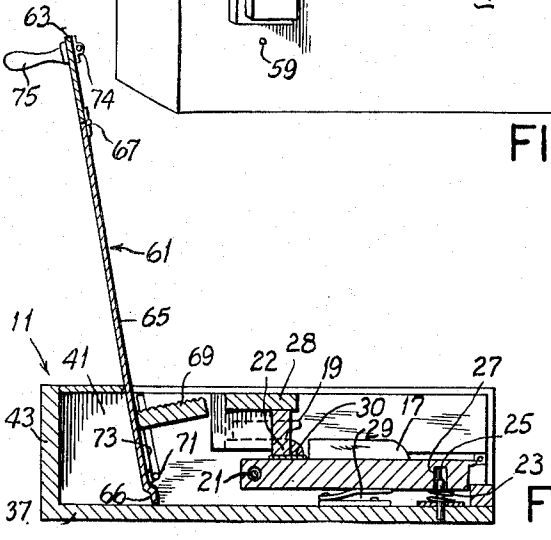


FIG. 3.

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FIG. 4.

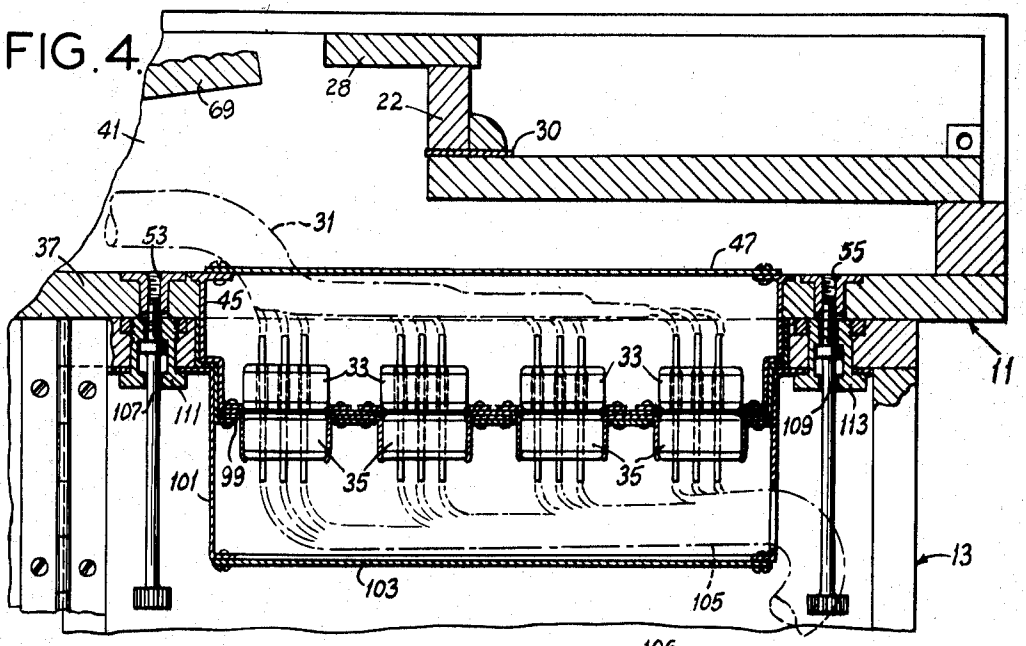


FIG. 6.

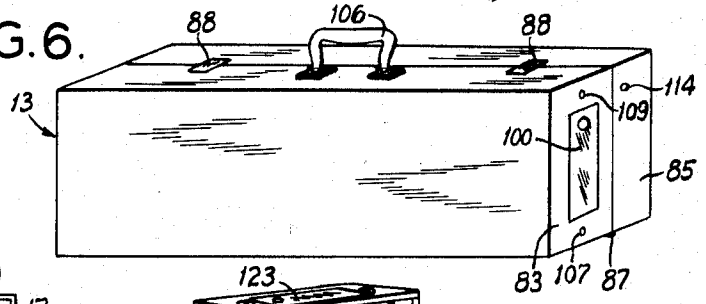


FIG. 5.

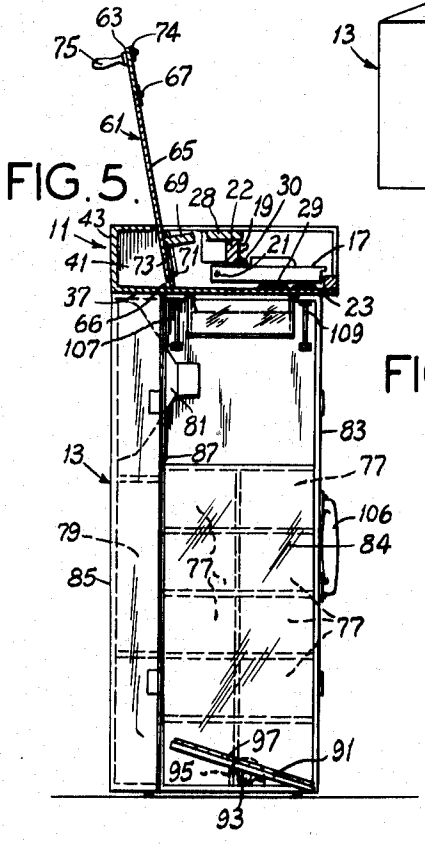
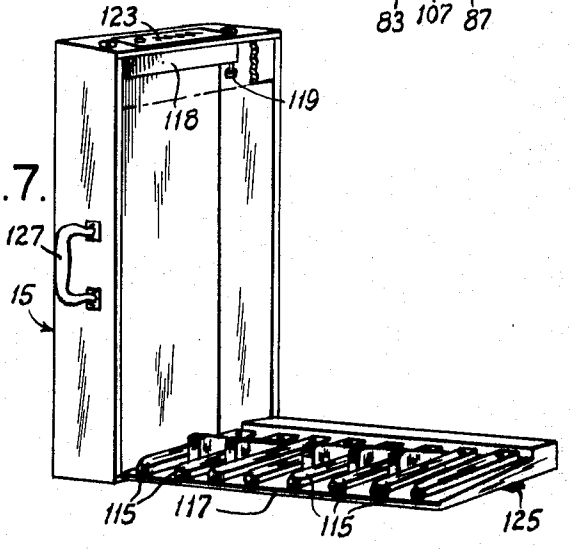


FIG. 7.



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PORTABLE MUSICAL INSTRUMENT

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7 Claims. (Cl. 84—1.17)

This invention relates to musical instruments, and more particularly to portable electronic musical instruments such as electronic organs, pianos, and the like.

Among the several objects of this invention may be noted the provision of a portable electronic musical instrument having at least two separable components which may be easily carried from place to place; the provision of such an instrument which has increased physical stability when set up or arranged in its playing position; the provision of a musical instrument of the class described wherein each of two separable components includes electronic elements which are required to be selectively interconnected, and wherein this interconnection is effected without a potentially troublesome multiconductor cable such as employed in prior-art instruments of this type; and the provision of a portable musical instrument which is relatively inexpensive, easy to assemble, rugged in construction, and reliable in operation. Other objects and features will be in part apparent and in part pointed out hereinafter.

Essentially the invention relates to a portable musical instrument having a first unit including a first group of electrical components selectively actuable by a plurality of keys and a second unit having a second group of electrical components. When set up in playing position, the first unit is disposed in a generally horizontal attitude, while the second unit assumes a generally vertical attitude adjacent one end of the first unit and provides a physical support for the first unit. Means are provided adjacent the other end of the first unit to provide a support therefor. The first unit includes a first set of plug-in type electrical contacts interconnected with the first group of electrical components, and the second unit includes a second set of plug-in type electrical contacts adapted to mate with the first set, the second set of contacts being interconnected with the second group of electrical components. The first and second sets of electrical components are adapted for direct plug-in connection to selectively interconnect the first and second groups of electrical components when the second unit is positioned in supporting relationship with respect to the first unit.

The invention accordingly comprises the constructions hereinafter described, the scope of the invention being indicated in the following claims.

In the accompanying drawings, in which one of various possible embodiments of the invention is illustrated,

FIG. 1 is a front view illustrating a portable electronic organ having various separate parts or units interconnected to provide an operable musical instrument;

FIG. 2 is a view of the keyboard console unit of the FIG. 1 organ shown with various parts in their closed position;

FIG. 3 is a cross sectional view of the keyboard console in its operable position, the view being taken on line 3—3 of FIG. 1;

FIG. 4 is a cross section taken on line 4—4 of FIG. 1 illustrating the plug-in type interconnection between two of the separable units;

FIG. 5 is a cross section taken on line 5—5 of FIG. 1;

FIG. 6 is a view of a second part or component of the FIG. 1 organ; and

FIG. 7 is a view of the foot-pedal component of the FIG. 1 organ.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

Referring now to the drawings, and more particularly to FIG. 1, a portable organ constructed according to this invention comprises three separable units or components indicated respectively by reference numerals **11**, **13** and **15**. These are shown in the positions they assume when the portable organ is set up to be played.

Unit **11** comprises a keyboard console which includes a number of piano-type keys **17**, along with a plurality of tone tabs indicated at **19**. As shown in FIG. 3, each of the individual keys, both the sharps and flats, is carried on and pivoted about an elongate rod indicated at **21** which extends axially of the console **11**. Each of the keys is biased upwardly against a stop **22** by a spring, such as shown for example at **23**, which encircles and is held in place by a post **25** secured to the bottom of console **11**. This post is received in a recess **27** in a respective key. Stop **22** is secured within unit **11** by a cross brace **28**, the stop being provided with a felt pad or liner **30**. A microswitch such as indicated at **29** is provided for each key and positioned thereunder, whereby it is actuated to its closed position by depression of a respective key. A similar switch (not shown) is provided for each of the tone tabs **19**.

Each of the individual microswitches associated with the keys **17** and tone tabs **19** is interconnected by means of individual conductors of a multiconductor cable (outlined at **31** in FIG. 4) with individual terminals of a set of plug-in type electrical contacts or receptacles indicated at reference numeral **33**. Contacts **33** constitute the female portions of mating electrical contacts, the male portions of which are shown at **35** and included in unit **13** described hereinafter.

Console **11** has a bottom wall **37**, side or end walls **39** and **41**, and a back wall **43**. Receptacles **33** are secured, for example by small rivets, to a mounting plate or frame **45**, the latter in turn being secured to bottom wall **37**. A cover plate **47** is screwed to the upper portion of frame **45** to enclose contacts **33**. An opening is provided in plate **47** through which is passed cable **31**.

At the end of console **11** opposite contacts **33**, i.e. at the end of unit **11** adjacent side walls **39**, a similar set of contacts or receptacles **49** are held in place by a frame **51** in a manner identical to the illustrated in FIG. 4. Contacts **49** constitute that female half of mating electrical contacts, the male portions of which are included within unit **15** described below. As explained more thoroughly hereinafter, the individual terminals of contacts **49** are interconnected through cable **31** with terminals of contacts **33**. This provides a means of interconnecting electrical components within unit **13** with components included in unit **15**. Four T nuts **53**, **55**, **57** and **59** are mounted in the bottom wall **37**, as explained below in connection with FIG. 4, to facilitate joining of the three separable units.

Console **11** includes a hinged cover **61** having an upper portion **63** secured to a lower portion **65** by a hinge **67**. Portion **65** has an offset **66** along its lower edge, and carries a music rack or platform **69** which extends normal to the cover **61**. A rod or bar **71** is carried by cover **61** and the ends of this rod project into recesses or elongate guides **73** in the side walls **39** and **41**. The arrangement is such that cover **61** may be moved upward in its plane until rod **71** is adjacent the upper edge of recess **73**; thereafter cover **61** may be rotated about rod **71** to a closed position wherein portion **65** provides a top cover for the console and portion **63** provides a front cover therefor. Recesses are provided in side walls **39** to receive the edges of cover **61**. A pair of catches **74** provided at opposite sides of portion **63** serves to secure cover **61** in its closed position. A detachable carrying handle **75** is secured to portion **63** to facilitate carrying of unit **11** when cover **61** is in its closed position.

Unit 13 of the organ includes the electronic sound producing components of the system. These include a plurality of tone generators outlined at 77, an amplifier shown at 79, and a speaker system which includes at least one speaker shown at 81. Essentially, unit 13 comprises two portions or halves 83 and 85 hingably secured by a hinge 87. These halves are adapted to be closed one upon the other as shown in FIG. 6, and a pair of catches 88 is provided to hold the two portions in their closed position. Portion 83 houses the tone generators 77 while portion 85 provides an enclosure for speaker 81 and amplifier 79. A protective shield 84 serves to enclose the tone generators. A similar shield may be provided to enclose amplifier 79.

A volume control pedal 91 is secured to and rotatable about a shaft 93. The latter is adapted, for example, to rotate the slider of a volume-controlling potentiometer within a volume control unit 95. Pedal 91 is provided with a hinge 97 which permits one side of the pedal (the left side as viewed in FIG. 1) to be folded on the other side whereby the pedal may be fitted in a recess in portion 85 when unit 13 is in its closed position.

Receptacles 35 are secured to a frame or plate 99 which is fitted through an opening in the upper wall of portion 83 of unit 13. A second frame 101 having a removable cover plate 103 is affixed, for example by welding, to frame 99 to enclose contacts 35. The individual conductors of a multiconductor cable outlined at 105 are connected to respective terminals of receptacles 35. Cable 105 is carried through an opening in frame 101 and serves to interconnect the respective terminals of contacts 35 with the terminals of the tone generators, amplifier, etc. Since the electrical and electronic components of portable electronic organs are well known, and since the present invention does not relate to the electrical details of these components, the interconnections of the various components with the terminals of receptacles 35 have not been specifically illustrated in the interest of clarity.

As shown in FIG. 4, contacts 33 are adapted for direct plug-in connection with contacts 35. To properly align these mating contacts, frame 99 has an offset therein which registers with the offset in frame 43. A snap-in cover plate 100 (FIG. 6) is provided to protect the male prongs of receptacles 35 when unit 11 is in its separated or closed position.

Unit 13 is provided with a pair of screws 107 and 109 which are adapted to be screwed into T nuts 53 and 55 respectively (see FIG. 4). These screws are held axially captive by a pair of fittings (see 111 and 113), each having a chamber therein which receives an enlarged portion of the shaft of a respective screw. A small post or stud 112 projects from the bottom wall of console 11 and is adapted to be received in a recess 114 in the top wall of portion 85. A carrying handle 106 facilitates carrying of unit 13.

Unit 15 comprises a foot pedal console which houses a plurality of pedals indicated at 115. These pedals are carried by a side wall 117 of unit 15 which is hingably secured to and adapted to open out of a case formed by the remaining walls of unit 15 (see FIG. 7). Each of the pedals 115 has a switch associated therewith (similar to switch 29 for example), and each of these switches is selectively connected by the conductors of a multiconductor cable (not shown) with terminals of a plurality of contacts mounted in the top wall of unit 15 (as viewed in FIG. 7). These contacts are held in place by a frame 118 and are adapted to plug into receptacles 49 in a manner similar to the connection shown in FIG. 4. Two screws 119 and 121, identical to screws 107 and 109, are adapted to be screwed into T nuts 57 and 59 respectively. A snap-in cover 123 is provided to protect the male prongs of the contacts held by frame 118. A catch 125 is provided to secure side walls 117 in its closed position. A carrying handle 127 adds to the portability of unit 15.

As outlined above, each of the three separable units may be placed in its closed condition whereby the organ may be easily and conveniently transported from place to place.

To assemble the organ, i.e., to set it up in its playing or operable condition, each of the units is opened and the three units are plugged together. More specifically, unit 13 is unfolded and snap-in cover 100 removed. The opened unit 13 is then disposed vertically to provide an L-shaped support for the right side of console 11 (as viewed in FIG. 1). Unit 15 is then opened to its L-shaped configuration and arranged to provide support for the left side of the console, cover 123 being removed. The console is placed on units 13 and 15 with the contacts 35 being received in receptacles 33; the contacts of unit 15 being received in receptacles 49; and stud 112 being received in opening 114. The registering offsets in the various frames which support the contacts serve to guide the contacts into engagement. Screws 107, 109, 119 and 121 are then threaded into nuts 53, 55, 57 and 59 respectively to draw the units together to form a rigid organ having improved structural integrity. The direct plug-in connections between units 15 and 11, and between units 13 and 11, provide appropriate interconnection between the switches associated with pedals 115, keys 17 and tone tabs 19 with the various tone generators and other electronic components in unit 13.

In addition to providing a more portable instrument which has added stability after being assembled, the direct plug-in interconnection between the three units obviates the need for a troublesome multiconductor cable employed in typical prior-art instruments of this type having spaced components or units. Also, the integrity of the electrical connection is enhanced by the direct plug-in feature.

It may be desired in the interest of low cost and increased portability to eliminate the footpedal unit 15. In such a case, support for the left side of the console 11 could be provided by a pair of detachable legs received in appropriate sockets in the bottom wall 37. It would be preferred that space for these legs be provided within console 11. Even though the resulting organ would be somewhat less rigid than the preferred unit illustrated herein, the support afforded by unit 13 would insure increased physical stability.

While the present invention has been disclosed as embodied in a portable organ, it will be understood that the inventive features described above may be empolyed in other types of portable musical instruments as well, for example in electronic pianos or other instruments wherein one separable component may be employed physically to support a second component, and wherein each component includes electrical elements which are required to be selectively interconnected.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As various changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A portable electrical musical instrument having a first unit including a first group of electrical components selectively actuable by a plurality of keys and a second unit having a second group of electrical components, said first unit being disposed in a generally horizontal attitude, said second unit assuming a generally vertical attitude adjacent one end of said first unit and providing a support for said first unit, support means adjacent the other end of said first unit providing a support therefore, said first unit including a first set of plug-in type electrical contacts interconnected with said

first group of electrical components, said second unit including a second set of plug-in type electrical contacts adapted to mate with said first set, said second set of contacts being interconnected with the second group of electrical components, said first and second sets of electrical contacts being adapted for direct plug-in connection to selectively interconnect said first and second groups of electrical components when said second unit is positioned in supporting relationship with respect to said first unit, said second unit including first and second portions hingably secured to one another, said second unit when positioned in supporting relationship with respect to said first unit forming a generally L-shaped support for said first unit.

2. A portable musical instrument as set forth in claim 1 wherein said second group of electrical components comprises a plurality of switches selectively actuable by a plurality of foot pedals, and wherein said plurality of foot pedals is carried by a member hingably secured to a vertically disposed portion of said third unit which provides support for said first unit.

3. A portable electrical musical instrument having a first unit including a first group of electrical components selectively actuable by a plurality of keys and a second unit having a second group of electrical components, said first unit being disposed in a generally horizontal attitude, said second unit assuming a generally vertical attitude adjacent one end of said first unit and providing a support for said first unit, support means adjacent the other end of said first unit providing a support therefor, said first unit including a first set of plug-in type electrical contacts interconnected with said first group of electrical components, said second unit including a second set of plug-in type electrical contacts adapted to mate with said first set, said second set of contacts being interconnected with the second group of electrical components, said first and second sets of electrical contacts being adapted for direct plug-in connection to selectively interconnect said first and second groups of electrical components when said second unit is positioned in supporting relationship with respect to said first unit, said first unit including a member having a first and a second position, and adapted in said first position to provide a closure for said first unit and in said second position to provide a supporting rack.

4. A portable musical instrument having a first unit including a first group of electrical components selectively actuable by a plurality of keys and a second unit having a second group of electrical components, said first unit being disposed in a generally horizontal attitude, said second unit assuming a generally vertical attitude adjacent one end of said first unit and providing a support for said first unit, support means adjacent the other end of said first unit providing a support therefor, said first unit including a first set of plug-in type electrical contacts interconnected with said first group of electrical components, said second unit including a second set of plug-in type electrical contacts adapted to mate with said first set, said second set of contacts being interconnected with the second group of electrical components, said first and second sets of electrical contacts being adapted for direct plug-in connection to selectively interconnect said first and second groups of electrical components when said second unit is positioned in supporting relationship with respect to said first unit, said second unit further including a volume control pedal, said pedal having a first portion hingably secured to a second portion whereby said first portion may be fooled over said second portion to permit closing of said second unit.

5. A portable electronic organ comprising a console unit having a plurality of switches, a plurality of piano-type keys and a plurality of tone tabs, said switches being selectively actuable by said keys and said tabs, a second unit having a plurality of tone generators, said console unit being disposed in a generally horizontal attitude, said second unit assuming a generally vertical attitude adjacent one end of said console unit and providing a generally L-shaped support therefor, said first unit including a first set of plug-in type electrical contacts interconnected with said switches, said second unit including a second set of plug-in type electrical contacts adapted to mate with said first set, said second set of contacts being interconnected with said tone generators, said first and second sets of electrical contacts being adapted for direct plug-in connection to selectively interconnect said switches with said tone generators when said second unit is positioned in supporting relationship with respect to said console unit, a foot-pedal unit having a first portion positioned adjacent the other end of said console unit and providing a support therefor, a second portion hingably secured to said first portion and carrying a plurality of foot pedals, a plurality of switches selectively actuable by said foot pedals, and plug-in type connector means for interconnecting the switches of said foot-pedal unit with said tone generator.

6. A portable organ as set forth in claim 5, further including means drawing said console unit, said second unit and said foot-pedal unit together to form a structurally rigid assembly.

7. A portable organ as set forth in claim 6 wherein said console includes a member having a first and a second position, and adapted in said first position to provide a closure for said first unit and in said second position to provide a supporting rack.

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