



2-Octave miniature Organ

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PART 2

THE completed keyboard is mounted in a tilted position as in Fig. 9b on a hardboard base that fits into the top of the organ. This base also carries the circuit board and battery etc. The piece of hardboard is cut as in Fig. 9a and the keyboard mounted as in Fig. 9b so that the keys themselves are

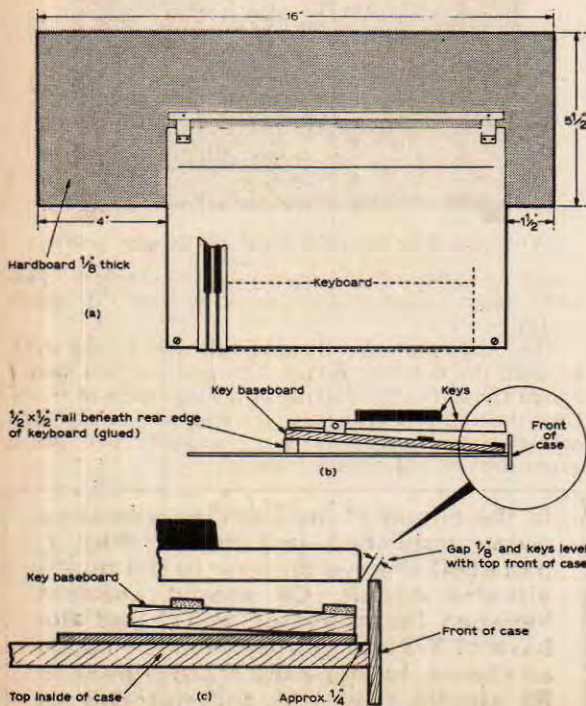
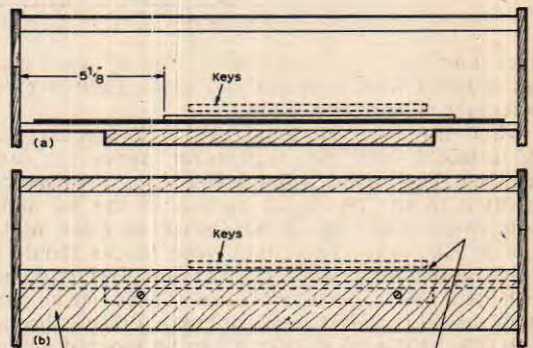


Fig. 9: Details of the keyboard mounting.



Upper front panel $2\frac{1}{2}$ " deep made from $\frac{1}{8}$ " hardboard. (secure panel so that lower edges of keys are about $\frac{1}{8}$ " above top of panel)

Fig. 10: A front view of the keyboard mounting and the siting of the upper front panel.

level. It is important that when the completed keyboard is fitted in the top of the case that the front of the keys are aligned with the top of the upper front panel as shown in Fig. 9c and also in Fig. 10 so that when a key is depressed the top does not come below the upper edge of the panel. When the keyboard has been correctly aligned it can be secured in the organ cabinet.

The lid of the organ is made up as shown in Fig. 11 and in the photo. Appropriate dimensions for the lid are best derived from the inside measurements of the top of the case and the height of the keys but the lid must be made so that the centre portion drops directly behind the black keys. The whole of the lid is hinged on the rail at the rear of the cabinet. Figure 11 also shows more detail concerned with the expression pedal system. Ensure that when the lid is closed down it does not foul the keys and that all the keys can be depressed and will return to their rest position.

At this stage the painting might well be done but first the keyboard and the main front panel should be removed. If a music stand is to be included this should be fitted and can be made from a piece of hardboard about 12 x 7in. attached to the lid by a

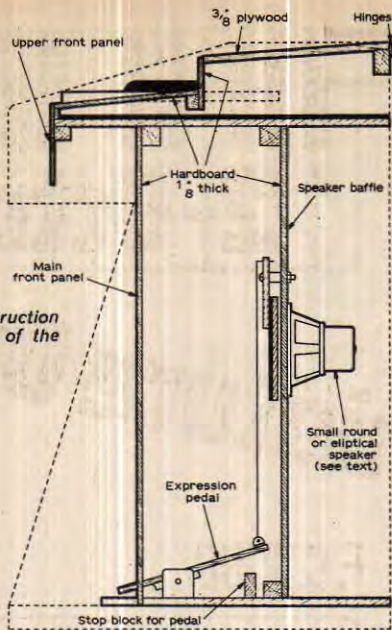


Fig. 11: The lid construction and a cut-away view of the expression pedal.



A view of the keyboard with the lid raised.

short length of $\frac{1}{2} \times \frac{1}{2}$ in. batten. The original organ was finished with a bright red gloss paint over an undercoat of emulsion paint.

When the decor is complete the loudspeaker can be installed and the expression pedal (if used) adjusted. The on/off, vibrato and voice switches can be fitted to the left hand portion of the lid and a back cover made up of hardboard to close in the rear of the organ. Two small wood blocks should be fitted inside, one either side of the keyboard, and flush with the upper front panel. These act as stops when the lid is closed down and take a screw through each side of the lid so that it can be secured against opening by small hands. These blocks are just visible in the photograph.

The component board is mounted just behind the key contact frame as shown last month — and allows for convenient short connections between the tuning pre-sets and the key contact wires. A rear view of the completed organ with the circuit board in position is shown.

TUNING

First adjust all the pre-sets, including PR1, to midway travel and set S1, the vibrato switch, and S2, the voice switch, so that both are open. Tuning is best done with a piano and should be commenced with the pre-set for the F key (No. 25) at midway. Now tune the F note to pitch at 698.4Hz with PR1, the initial pitch control. The remainder of the pre-sets from E No. 24 down to F No. 1 at 174.6Hz can now all be tuned one after the other.

The vibrato should produce a pleasant pitch variation, not too pronounced, at about 6 to 8Hz. The intensity of the vibrato can be increased by reducing R14 to 100k Ω or decreased by making R14 about 150k Ω . The vibrato frequency can be altered by slightly increasing or decreasing the value of R2. With the voice switch S2 closed, the tone should be flutelike and somewhat softer.

The expression pedal will reduce the sound level somewhat but if moved up and down quickly whilst



A rear view of the completed project with the back removed.

a note is sustained will produce a pronounced "wah-wah" effect which will no doubt intrigue the junior player.

The organ will stay in good tune for a long time, or until the battery voltage falls and the two octave range allows for the playing of a wide range of tunes. Like the author's grandson who has become the final owner of the prototype, any youngster will get a great deal of enjoyment from it.

In the circuit of the 2-octave miniature organ published last month (Fig. 1, page 594) there is an error in the multi-vibrator circuit. C6 should connect between the collector of Tr2 and the base of Tr3 and not between the bases as shown. In Fig. 2 the resistor next to R1 should read R14 and not R13 as shown.