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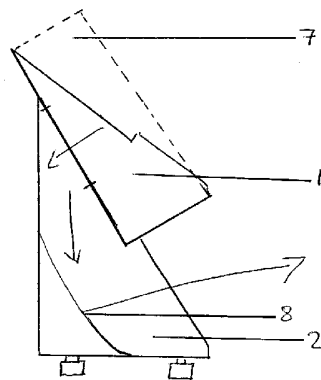
(52) UK CL (Edition X ):  
**H4X X3**  
**H4J JBA J30F J33E J33K**  
**U1S S1942**

(56) Documents Cited:  
**WO 2001/078476 A1** **US 6520282 B1**  
**US 2589319 A** **US 2577528 A**

(58) Field of Search:  
UK CL (Edition X ) **H4J, H4X**  
INT CL<sup>7</sup> **H04R**  
Other: **WPI, EPODOC**

(54) Abstract Title: **Amplifier case forms passive acoustic resonator/horn**

(57) A protective case for a musical amplifier, e.g. a combination amplifier for use with a guitar, transforms into an amplifier stand and folded horn. The horn projects sound generated from the back of the loudspeaker via the folded horn arrangement in a focussed direction - normally forwards of the amplifier - to complement the sound generated from the front of the said speaker.  
This arrangement allows both the amplifier and passive resonator to be transported without taking up too much space.

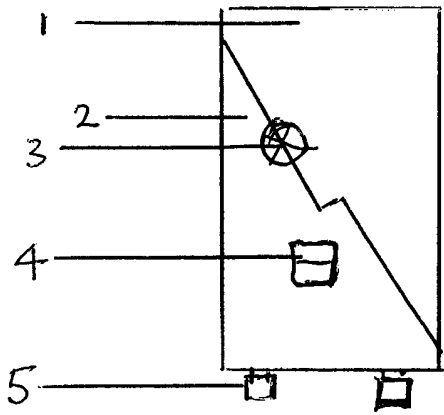


Legend

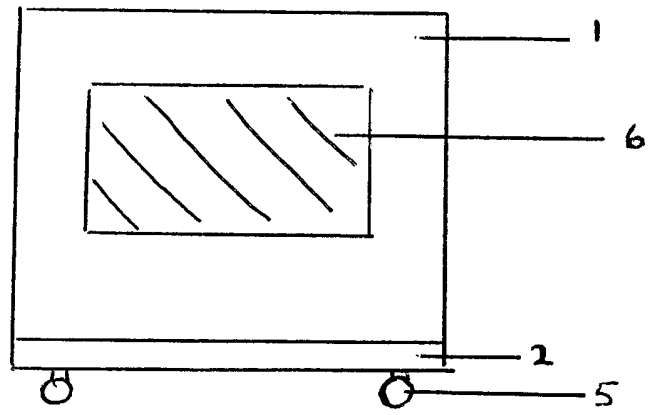
1. top of case/resonator
2. bottom of case/resonator
3. fastening
4. handle
5. wheels
6. Acoustically transparent grid
7. Amplifier
8. baffle board (removable)

Figure 3 showing principles of passive resonator cabinet.  
Arrows show what happens to sound generated from the back of loudspeakers.

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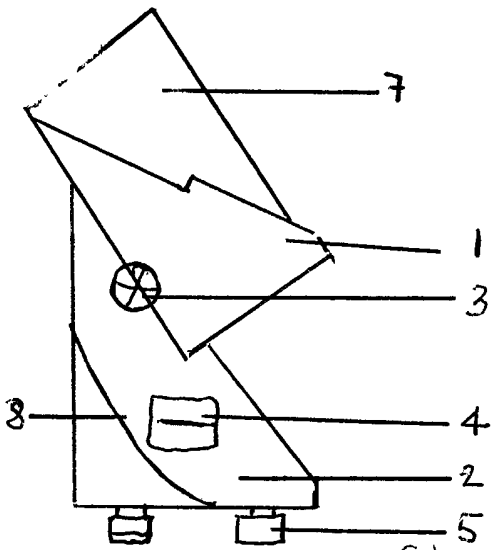
side profile



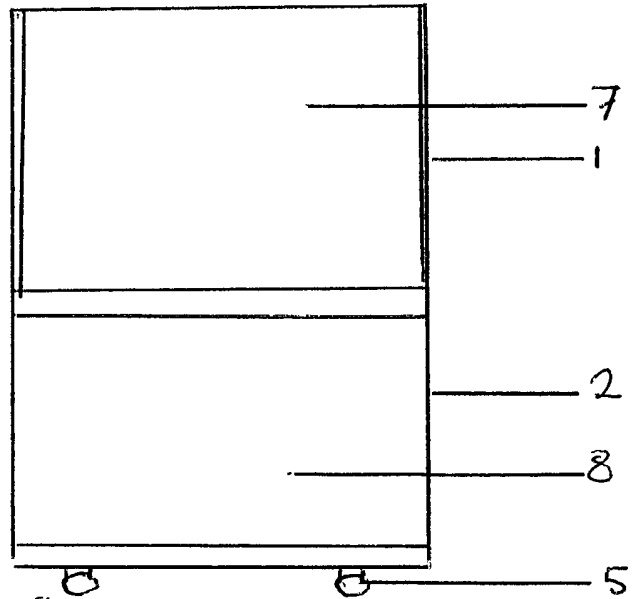
front profile

Figure 1

Resonator/case in case mode  
Amplifier contained within.



side profile



front profile

Figure 2 resonator/case

in stand/resonator mode  
Amplifier shown as "7"

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Legend

1. top of case/resonator
2. bottom of case/resonator
3. fastening
4. handle
5. wheels
6. Acoustically transparent grid
7. Amplifier
8. baffle board (removable)

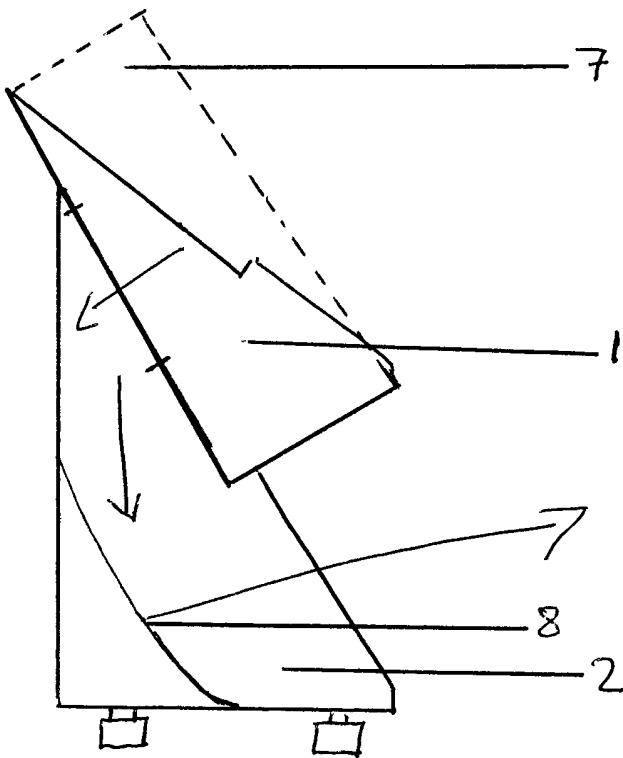


Figure 3 showing principles of passive resonator cabinet.

Arrows show what happens to sound generated from the back of loudspeakers.

## **Passive Acoustic Resonator/Case**

This invention relates to a case, which converts to an amplifier stand/folded horn.

Most combination guitar amplifiers have open backed enclosures, which contain speakers connected to an amplifier. As a result of this design a large part of the sound generated from the back of the loudspeaker is lost to the surroundings behind the enclosure.

To overcome this, the present invention proposes a case for the combination amplifier, which converts to provide a stand for the said amplifier, incorporating a baffle-driven folded horn, which directs and passively amplifies the sound generated from the back of the loudspeaker in a forward direction.

The immediate advantage of this is that all the sound produced by the speaker is projected forwards in a focused manner...the tuned baffle and the nature of the cabinet also cause an alteration to the sound produced so that it is biased towards the lower end of the sound spectrum. Therefore, the resultant sound is both louder, and deeper than that produced by the amplifier alone. Another advantage is that this device is a very efficient way of packing amplifier and resonator for transport and storage.

The invention will now be described solely by way of example and with reference to the accompanying drawings in which:

Figure 1 shows a possible design for the case arranged for the transportation of the combination amplifier contained therein.

Figure 2 shows the case rearranged to provide support for the combination amplifier as an amp stand, and as a passive resonator.

Figure 3 shows the principle by which the resonator operates.

Figure 1 shows the case/resonator in case mode, side and front profiles. The combination amplifier is contained securely within the case. The case is clamped with fasteners, and may be moved easily on the wheels. The interior of the case is lined with foam to provide further protection for the amplifier whilst in transit.

Figure 2 shows the rearrangement of the case to the passive resonator mode. The top piece of the case contains a second fastening, which allows it to be clamped into this position. At this point the baffle board is fitted to the bottom part of the case and the amplifier placed on the stand in a position as shown. The opening at the back of the amplifier lines up with an opening at the back of the stand. This opening may contain an acoustically transparent material, which will allow all the sound coming from the back of the loudspeaker to be channelled into the main body of the resonator case. This sound is then focused by the baffle board, shown in figs 2 and 3, and projected forwards and through the opening provided underneath the amplifier.

The cabinet has three basic functions:

1. It is a case to protect the amplifier contained from physical damage whilst in transit; it also makes transportation easier since it has wheels.
2. By virtue of the design, the cabinet transforms into a stand for the said amplifier when in use on stage.
3. The nature of the design allows the sound produced by the back of the loudspeaker to be focused and projected (usually forward) by the incorporated baffle.

The materials from which the cabinet are constructed play an important part in the resultant sound; birch ply and pine both have particularly desirable acoustic properties.

The baffle board may be constructed from thin flexible wood, or polymeric material with desirable properties - a thin ply or fibreglass composite would work well. The cabinet should also incorporate lockable wheels, handles and secure locking devices to facilitate transport.

**Claims**

1. A folding case which will protect a combination amplifier during transit, and transform by virtue of design to provide a stand for the said amplifier, which incorporates a folded horn to project sound generated from the back of the loudspeaker in a focused direction.
2. A folding case according to claim 1, in which the case is made from wood with desirable sound projection properties.
3. A folding case according to claim 1, in which the case is made from a polymeric/composite material with good projection properties.
4. A folding case according to claim 1, which maximises space with relation to packing, and transportation.
5. A folding case according to claim 1, which incorporates a baffle to project and focus the sound within the cabinet.



INVESTOR IN PEOPLE

Application No: GB0409219.3

Examiner: Peter Easterfield

Claims searched: 1 to 5

Date of search: 30 June 2005

### Patents Act 1977: Search Report under Section 17

#### Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
Y	1-5	WO 01/78476 A1 (SMITH et al) see figs 1 & 2
Y	1-5	US 6520282 B1 (HADZIC et al) see figs 5 & 6
Y	1-5	US 2589319 A (ALBRECHT) see fig 1
Y	1-5	US 2577528 A (KENNEDY) see fig 2

#### Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application

#### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>X</sup> :

H4J; H4X

Worldwide search of patent documents classified in the following areas of the IPC<sup>07</sup>

H04R

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC