Subject: Re: Acoustic Lever
Posted by Earl Geddes on Tue, 03 May 2005 16:37:32 GMT
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Thanks WayneThe Acoustic Lever has been seen before as what was called an "augmented Passive Radiator". It basically has two cones, one larger than the other. As an electrical circuit element it is a transformer and as a mechanical device it would be a lever. It takes in a pressure and volume velocity and outputs a pressure, but with a larger volume velocity than the input (assuming that the output is the larger cone). So it is a volume velocity amplifying device, or impedance matching, whichever you prefer. In the form where all of the sound is forced to go through the lever, it is patented. The prior art all used the lever as a parallel element to a direct radiator.A lever can produce 6 dB (or more) enhanced acoustic pressure than the same driver in any other enclosure configuration. It takes a little more cabinet volume to do this than a closed box, but nothing like the volume required for a LF horn.You wrote:My hunch is that it would be best used in bass subsystems, because of its mass. In that regard, it seems like a relatively small area radiator could be coupled to a much larger radiating lever membrane, on the order of areas similar to a basshorn. That might provide the efficiencies of a horn, but without the peaks from being undersized as basshorns almost always are. It has very intriquing possibilities.You are right on the money here. The concept is low frequency limited and does work best for a woofer or sub because it is enherently band limited - more so than the horn. As a transformer it transforms as the ratio of the areas of the input and output cones. A horn is also a transformer, but it does so as the square root of the input and output areas. For small ratios the two work pretty much the same, but for a ratio of 2:1 or more the lever is much more efficient than the horn. This is one of the reasons that I often state that I can see no advantage to a LF horn. Levers work a lot better.You wrote:Might be worth asking Eminence to build one, since they are setup to do it. Then again, maybe you can get a better deal through your contacts at B&C. But either way, I'd love to see tests of a few samples made with various size primary and secondary diaphragms.Anybody will make levers for me - if you pay them!! but nobody seems to be willing to build a lever without a great deal of front money. Finding someone to make the levers is not a problem, but making a business case for doing so is.The problem goes like this. I am now convinced that in small rooms the LF problem is best solved by many small inexpensive lower output woofers placed arround the room. Levers are hard to make small so they favor the single larger woofer approach - not what I recommend. In a large venue, like Pro sound, the lever is ideal, but no one has yet shown an interest in building one for this application and I am not in that business.When I was at Visteon we built lots of prototypes and this work was all published, mostly in SAE. The bottom line was that it all works as claimed The catch 22 is that no one wants to make a lever product without consumer demand and consumers don't demand what they don't know exists. I am much more interested in my Summa Loudspeakers at the moment to divert attention rom this project to build some levers just for demo's.I have always offered to help anyone pursue this, but no one has come forth.