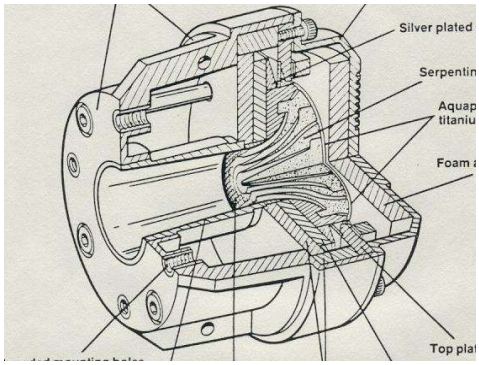
James Bullough Lansing ⑲ A mystery about [375] Vol.3

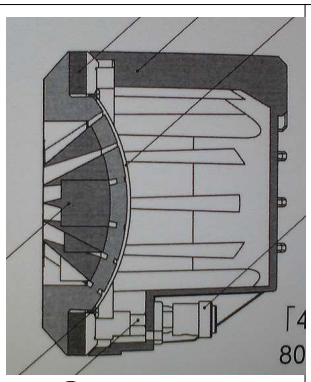
The compression driver's phase equalizer, or fencing plug, is an important component that causes air vibrations generated by diaphragm vibrations to flow through the slits to the horn, but there are several types of shapes.

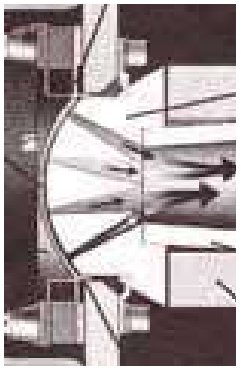
Typical examples are (1) Exponential (curved section) slit, (2) Conical (straight section) slit, (3) Radial (radiation) Shape) slit, ④ hole slit, ⑤ coherent wave slit.

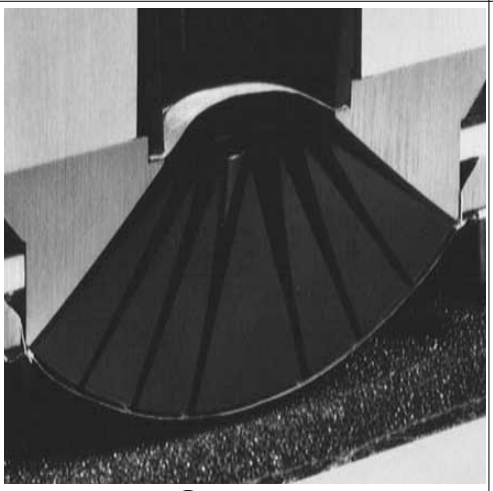


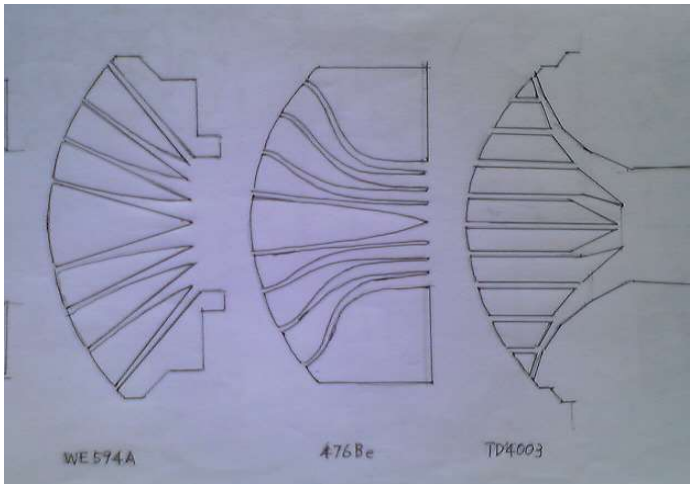
⑤ JBL 475Nd


① JBL LE85

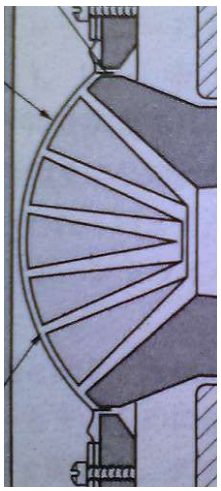

② JBL 435Be


② ALTEC 802


① JBL 375



① WE594A ⑤ JBL 476Be ? TAD TD 4003


② Lansing 284

Among them, [WE594A] that first used multiple rings was the exponential slit of ①, but [284] developed a year later was the conical slit of ②. Actually, this time, I would like to talk about these two relationships and [375] and the new driver.

When Jim Lansing designed [Lansing-284], he had most of the information about [WE594A] at hand. Rather, he was familiar with it because it was his own design. He knew the structure and the work, and even the flaws. On top of that, he was listening to the distortion at the Knickerbocker Hotel, so He should have been working on an improvement plan for [WE594A], and it seems that part of it had already been discussed with Dr. Blackburn.

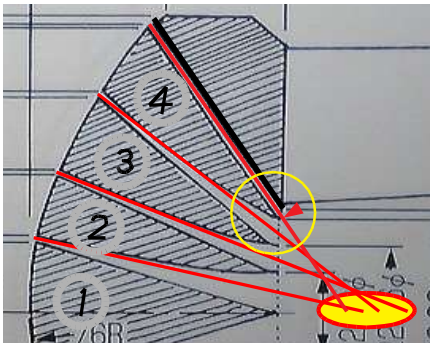
Upon entering the Shaller project, he conducted various experiments to remove distortion and reduced the diaphragm diameter to 2.84 inches. Up to this point, anyone can understand. However, the problem was that I changed the phasing plug that affects the sound. At the time, the reason for developing [Lansing-284] at the Schaller Project in a short period of time was to make it in time for the box office of the movie industry. At that point, Lansing might not have perfected the shape of the phasing plug in his head. Therefore, it may have been a conical slit of ② that is easy to cut. Still, compared to [WE594A], I think that he was satisfied that he was able to significantly improve the divided vibration and extend the high range by downsizing.

Another idea is that Lansing sells the prototype of [WE594A], so we may have dared to avoid the curved section in view of WE's patenting.

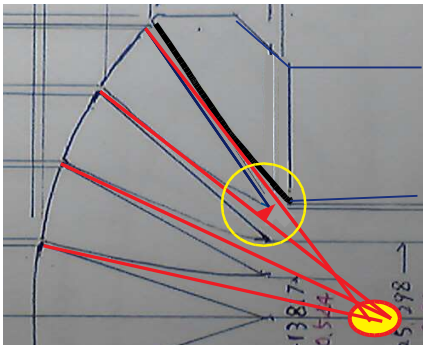
Initially, I evaluated only the improvements in [284]. However, Lansing chose conical slits such as [284] and [601] as an evolution system from [WE594A], but later adopted exponential slits [375] and [D175]. It seems that Lansing still emphasized the exponential slit, or wanted to improve it. From [WE594A], you can see from

the ″mysterious sketch″ that you have been focusing on trying to improve distortion in addition to making it smaller. In a sense, [WE594A] has been completed, but
what does it mean to improve it further? Let's take a closer look.

Although it overlaps, it is an important place, so I would like to expand the slit diagram and reconsider.



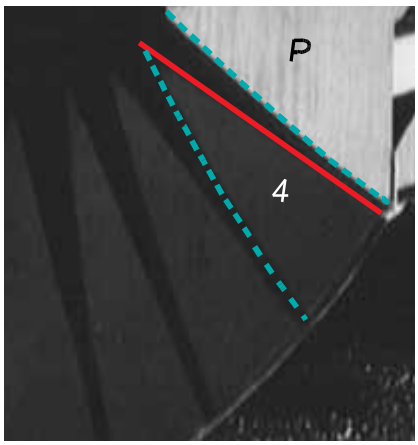
[WE594A]slit airflow


Im praved slit [375]

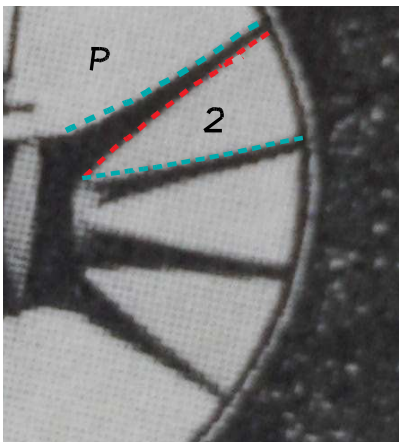
In [WE594A], the focus of the air flow of each slit passing through the slit was scattered and not concentrated, but the point improved by Lansing in the sketch is that the pole piece inner wall cross section (black line) was changed from a straight line to a curve The focal point of the airflow that has passed through the outermost peripheral slit moves to the back of the throat, approaches the other airflow, and gathers at almost one place. This is an improvement in JBL [375]. The yellow ring is aligned with the tip of the 4th plug so that the airflow centerlines of both can be compared.

Looking at the figure above, I think that it is more doubtful why the cross section of the inner wall of the pole piece of [WE594A] was made straight unlike the other surfaces. Since the curvature of each plug and the position of the tip of each plug were clearly specified in the ″mystery sketch,″ I drew the drawing accordingly. Then, the 2nd, 3rd and 4th plugs were also slightly different, and the focus of the air flow was gathered from [WE594A] as shown in the above figure. The quadruple slits now have the same shape.

The first figure in this article is an enlargement of each figure drawn from the text of the Lansing study, and it was revealed that the cross-section of JBL LE85 was enlarged to make it difficult to understand in a small figure. According to it, [WE594A] and [375] have the same exponential slit, but one side is conical (straight line). However, [LE85] is curved on both sides. This is a big discovery! In other words, isn't this the ultimate slit that Lansing reached last?



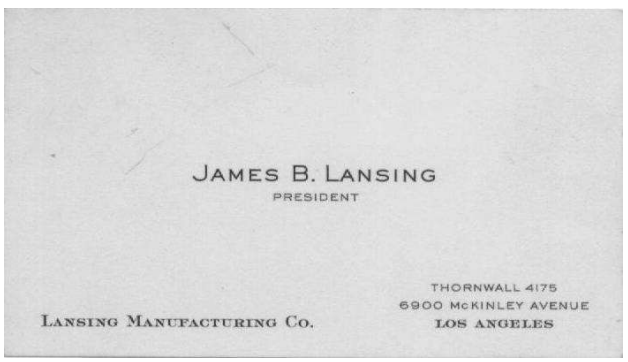
JBL-[375]Cut model



JBL-[LE85]Cut moder

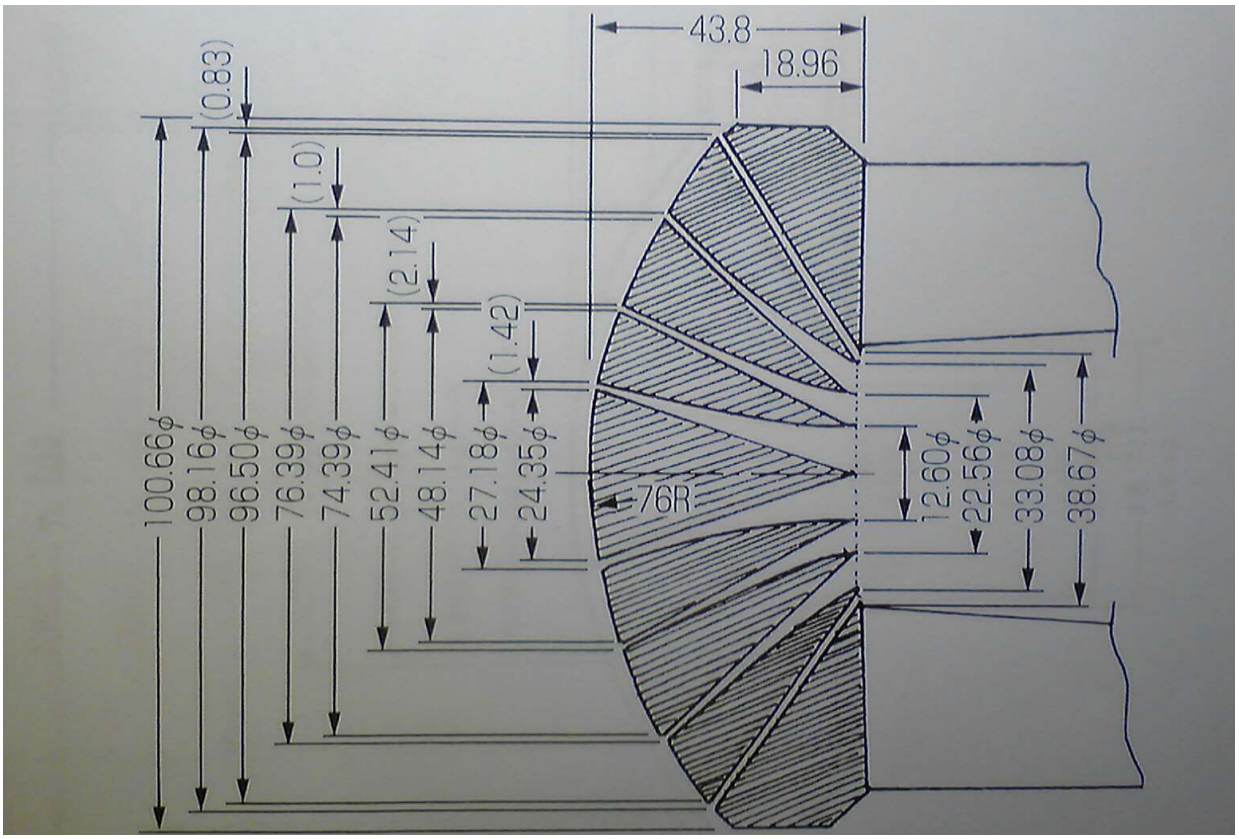
[LE85] has almost no photograph showing the inside of the plug. Only the 1975 JBL catalog final page ″horn driver cross section″ I tried to expand strongly. Then, the pole piece side of the 2nd plug on the right was clearly a (red dotted line) curve, compared to the 4th plug red straight line (the tip of the Japanese sword) on [375] on the left. The slit cross section was curved on both sides. So this was Lansing's answer. I wondered if he could leave [D175] at the end with something superior, but that was the answer.

Lansing seems to have judged the good or bad by listening to the music by directly turning the ideas that grew in his head into actual things, rather than drawing calculations and blueprints. In other words, I left the slit-shaped [D175] that grew up listening to music. He said it was the best compression driver. It's been 22 years in his life since he founded the Lansing Manufacturing Company in 1926. Therefore, ″you will be punished if you think that 375 is best″. There is no other driver like this in the world. It is generally thought that the more slits the airflow can send to the slot faster, but it seems different. According to one theory, the smaller the number of compression driver rings, the better the phase. Therefore, [WE555] is said to have good sound. Also, the smaller the diameter of the diaphragm, the less susceptible it is to split vibrations, and the [LE85] diaphragm is44.45 mm (1 3/4 inch) and can reproduce well up to about 20,000 Hz. He often says that the sound is better when the tweeter is attached to the driver that extends the high range than when the tweeter is attached to the driver that does not grow in the high range. ..

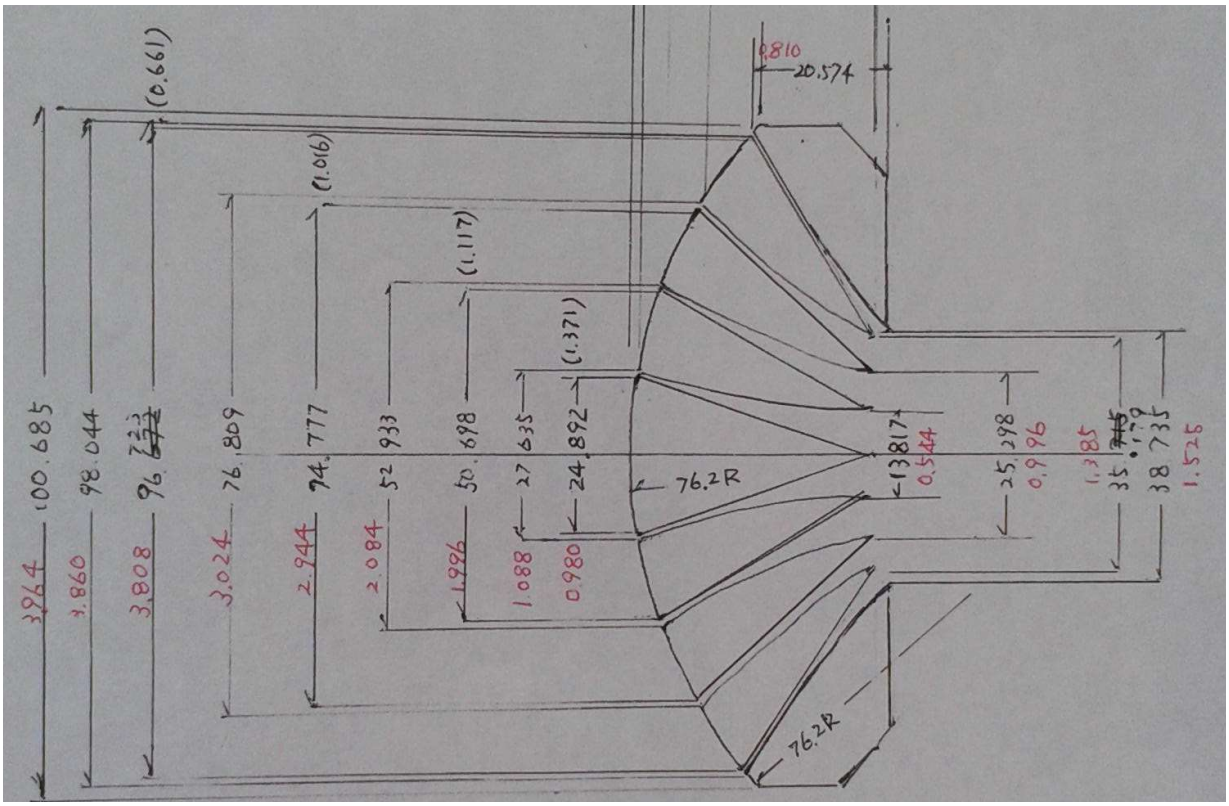

JAMES B. LANSING
PRESIDENT
LANSING MANUFACTURING CO.
THORNWALL 4175
6900 McKINLEY AVENUE
LOS ANGELES

The growth of the low range can be compensated by the ability of the woofer and the power of the amplifier like Tal-lo (Barrel speaker unit on Concorde Sakuma-san).

For me, I feel like I finally came up with the answer. The man who died under the skies of California when I was 11. He smiles for me in my heart now.



[Cross-sectional view of [WE-594A] written by Kinoshita]



[Driver cross section taken from Lansing memo. The unit is millimeter. The red letters are the inches left by Lansing.]