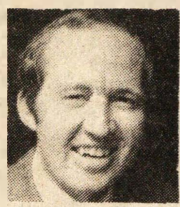


Eoinings:

## Patented Eagle Wings

By Eoin Young



LOS ANGELES—Dan Gurney has lodged a patent application to cover the design of the wing developed for his USAC Eagle. The wing is for sale to other car builders at around \$1200. Does Dan really think he can prevent other builders from adapting the principle for designs of their own? "I guess we couldn't really do much about anyone who copied it except ask for some reasonable payment for use of the principle. We've really done it as a means of recouping development costs and in case it could have an application outside racing." Here Gurney is referring to possible use of his patented flap in the aircraft industry and although he doesn't mention it, the patent is also to deter other builders from doing complete copies of his car.

I doubted that Dan could do much

**The Gurney men heard of Dr. Liebeck's theories about airfoil design and soon had him working in the AAR Eagle shop.**

about patenting the full-width flap about half an inch high on the trailing edge of the wing which has been used on several other cars in USAC and Formula 1. Dan says he knows that his Eagle was first with the flap, that other flaps came later and could be infringing his patent if it comes through. How long has the patent application been lodged? Six months? A year? Two years? Gurney just grins his grin, makes no comment and admits to being evasive on this point. In fact the flap was used for the first time at the Phoenix race in March, 1972.

Dr. Bob Liebeck, senior engineer in aerodynamics research at McDonnell Douglas Aircraft, is the man responsible for the downsweeping curves of the new Eagle wing which is affectionately known within the Gurney organization as the "banana wing." The wing curves sharply down from a high leading edge, with an attached upcurving flap some 6 inches deep that has the small "Gurney flap" along its trailing edge. Liebeck, 35, says the design for the new Eagle wing actually came as an extrapolation of his Ph.D. thesis in 1967 on a high-lift single-piece wing for aircraft which he worked out with computer assistance. The Gurney men got to hear of his work in the area of high-lift/low-drag wings and he was soon working on the design of the 2-piece, modified NACA section wing as used on the current customer Eagles.

"We checked the flap in the Douglas wind tunnel and found that it produced a lot more downforce with no increase in drag," says Liebeck. But if you tip the wing upside down it produces a lot more lift with no extra drag and this is the part that appeals to the men at McDonnell Douglas. Amazingly enough, it's never been used before on an aircraft!

Another feature of the "banana wing" is that its high leading edge projects up into higher, cleaner air making it more efficient. Since the height of the trailing edge of the wing is fixed by regulation at 32 inches from the ground, the normal means of increasing

downforce has been to tip the leading edge of the wing but this also increases drag significantly, so Liebeck's design is quite an advance in this area.

And there's more to come. His aircraft wing design has a lift/drag ratio of 400-500, while most L/D wing ratios are around 110-120 with 200 being regarded as good by comparison. So look out for even more dramatic improvements on race car wings, negating the USAC move to clip the wing-widths and reduce downforce.

It has been mentioned down pit lane that Gurney should really be paying royalties to a gentleman named Göttingen who developed a similar wing on gliders in 1920 when the German air force were forbidden to use powered aircraft and trained instead in sail planes. "I know the wing looks similar to Göttingen's principle, but when you get right down to it there's really no detail resemblance at all. If it's got to have a name, it's a Liebeck wing," says Dr. Bob.

THERE WAS EMBARRASSMENT all round when the Parnelli SuperTeam arrived at Ontario with Eagle rear suspension grafted on to the back of the Viceroy Specials at the request of the drivers after the cars had become progressively more difficult to drive during the season. Al Unser had to smack walls at Pocono and Milwaukee before deciding the car was at fault. Mario Andretti was with him in the move for instant improvement and the adoption of the Eagle rear end. That was only the start of the unrest and probably the least important part. Maurice Phillippe, designer of the still-successful Lotus 72 with Colin Chapman, was unchuffed about the whole deal because his design had been so openly doubted, and because only a few weeks before he had been talking design with Gurney and saying as how it was always his principle to innovate, never to copy. You would have thought Gurney would have been pleased that Al and Mario believed his Eagle suspension good enough to use on the Viceroy. But Dan was upset because most of the suspension parts used on the grating job came from Grant King whose Kingfish this season has been a carbon of the current Eagle just as the 1972 Kingfish was a copy of the M16 McLaren.

It probably wasn't losing the cash from sale of parts that irked Gurney so much as the fact that it brought the whole Chinese Eagle thing out into the open. Privately Dan is madder'n hell about King's copy, but publicly he doesn't want to be quoted on the subject. Even so Deke Houlgate dragged Gurney by the heels into the pages of the L.A. Examiner along with quotes from Canadian-born Chinese car-builder King who said that he built these copies because he plain couldn't afford the \$40,000 Gurney was asking for his Eagles. Gurney replied "I didn't start with any silver spoon in my mouth. I understand that King is saying that he's just a poor boy and that makes it okay. I guess you could say that about robbing a bank."

Great Scott:

## H. Ford Calls the Shots

By Jeff Scott



Without doubt, the supercharged combination of Henry II and Lee Iacocca are the most enlightening, forthright newsmakers on the automotive scene today. These guys could sell hibachis in the Sahara or air conditioners to Aleutians.

At the yearly Ford national press conference, where the company spends a bundle bringing several hundred newsmen from all over the country and Europe to ostensibly spread the gospel about their 1974 product line, perhaps all of 10% of the 90 minute press session is taken up with the product pitch.

The majority of questions zero in on the general state of the automotive arts: safety, smog, government regulations and restriction. Unlike their more establishment-minded, cautious competitors, Ford and Iacocca bluntly call the shots on just about any tough topic tossed at them. It all results in a delightfully candid, informative and often amusing press affair well worth attending.

HF II (as the company insiders refer to the august Chairman) makes it known to all that he has no use for air bags. His current stand:

"Airbags are still in the air. (laughter) We think that if you don't have a seat and shoulder harness, the air bags are no good. We feel the system that is required for the '74 cars will save just as many lives as air bags. We don't see what air bags are going to do unless they want to go to a much more costly system than just the air bag alone. In their present state, we don't feel that air bags will prove anything. Therefore we have opposed them. We don't think they have been developed to a point where they will be useful without some kind of a belt system to keep you in place, otherwise you are floating all around the seat. You can be anywhere when the bag goes off."

Ford also makes it clear there will be no Wankel powered cars coming out of his place "as long as I'm around," which

have 3 or more kids in the family and 3/4rds have only one car. It prompted a Senator at our hearings in Washington to say, 'count me out on those little cars. I've got 8 kids. I'd need 3 Hondas in tandem to drive them.' So not everybody can go to a small car because of the nature of being a one car owner. They need size. Some want size because they feel its inherently safer to have 4 to 5000 pounds of mass around them. You get all kinds of reasons. We do a lot of research on this. So big cars are not going to go out because of bigness per se. They want efficient packages. They need big trunks. The retirees especially want a four-door with a big trunk. The traveling salesmen all want big cars. There are 42,000 miles of American road systems, unmatched anywhere in the world, and people can run 2000 miles with a stop light and most of those people want a big car. You are not going to change everybody's habits and plo p them into a small car. Take the recreational vehicle market. You seldom see a Pinto pulling a trailer.

What about the mileage sticker for the '74 cars? Iacocca: "We've got mixed emotions about that. We are not against giving a customer more information, but its got to be accurate. We want to make sure when we give them the approximate mileage per gallon, we don't confuse or mislead them. We don't think that taking an EPA test, a cold test, a cold start test, is the answer. We don't want to say to a guy, you will get 14mpg. You can't high-ball or low-ball. That's a test. We don't agree with the test. We think the consumer is entitled to a fuel range at least. The EPA test is all city driving. So, you have got to assume that nobody's using our 42,000 miles of turnpike system. There are also variables as to whether the air conditioner is on or off. We want, in short, a better system of mileage evaluation than what is now offered."

Finally, while in a post meeting conversation with Henry Ford, the future of the sleek Pantera was raised. He was pessimistic about it lasting in the American market after 1974. The company had a tough time certifying the 351 Cleveland engine for '74 as it was. The damage factors and meeting the clean air demands in 1975 will be very

**Ford says he gets negative vibes from the Mazda. He also says that the car's TV mileage claims are exaggerated . . .**

will be a good many years. He says that to build 400,000 such engines for the anticipated Mustang II demand would cost the company \$500,000,000 for tooling and licensing fees. Ford says he's had negative vibes from different parts of the country about Mazdas. Also that Mazda's TV mileage claims are exaggerated. So friends, don't look for a Ford Wankel in the near future, if at all.

Now it was Lee Iacocca's turn at bat. He comes on just as hard as his boss. What of the future of the small car market? Iacocca: "We think it may rise to 47 or 50% of the total market. That's why we hope for about 400,000 sales for the Mustang II in '74."

Would this mean that big cars are on their way out? Iacocca: "Not at all. Everybody looks upon big cars as wasteful and inefficient. Not so. Note that 22 million people in this country

tough, even though the cars are selling well. Ford says that he might might continue the Pantera in Europe if the sales demands warrant it. So, this might be a tip to get what may be the last of the real high performance cars left on the market before all "super cars" become dodo birds in 1975.

In all, the Dynamic Duo think that 1974 will be a strong sales year, not necessarily better than 1973, but just as good.

From this observer's post, I would like to see Henry Ford II become a general spokesman for the auto industry, much in the manner that Frank Stanton of CBS performed for the broadcast industry. Neither man will take any crap from some publicity seeking congressman. Each lays it on the line with a refreshing candor, which God knows, we can use these days.