

FORD'S WAY
“GAS TANK PRODUCTION”
PART 1
A Historical View of
Model A/AA Production Practices
1928-1931
BY
STEVE PLUCKER
WALLA WALLA, WASHINGTON

This is the sixth of a series of articles that were published in Ford Motor Companies “Ford News” which was a series of publications that came out twice a month on about the 1st and the 15th of each month through March 1931. Starting with the April 1931 edition, the Ford News was published once every month thereafter. Issues were sent to Ford dealers throughout the world and could be made available for a subscription price of fifty cents a year or about \$0.02 for each copy and \$0.04 starting with the April 1931 issue. In addition to this, special binders to store copies of the Ford News were offered and could have been had for \$1.25 each.

The following article is a combination of articles which were written about the Model A/AA gas tank, which by the way were the same tank. The issues of Ford News, for which this article was written, came from January 15, 1928, March 15, 1928, October 15, 1928, November 1, 1928 and March 1, 1929. Excerpts and pictures from the 1929 Ford Industries booklet were also used. Other information from the January 1, 1928 and October 1, 1928 Parts Price List (PPL) and Murray Fahnestock’s book “Know The Ford---Why The Fuel System Is Always Effective”.

On May 24, 1927, Patent Number 1,629,493 was issued to Henry Ford and the Ford Motor Company under Automobile Body Construction for a gas tank.

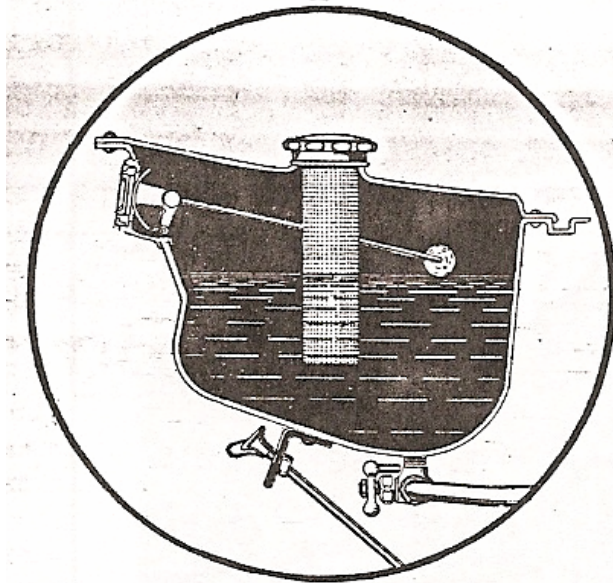
From the beginning of production in late 1927 through 1931, the Model A/AA gas tank went through a series of name changes. A-9002: Gas Tank Assembly; Cowl and Tank Assembly; Cowl Assembly; and Cowl Tank Assembly. Along with this there were about four different types of tanks: A-9002-A (28-29); A-9002-B (30); A-9002-C (30-31) and A-9002-E (31). Tank A-9002-A was divided into two types when the 1930 model tank, A-9002-B appeared. They were A-9002-A1, which was the original A-9002-A, and A-9002-A2 which was identical to the latter except it had the twist-on 1930 style gas cap utilizing the A-9020 Gas Tank Filler Screen with tabs rather than the screw-in type gas cap and filler screen. This tank was specifically used for AA Truck cabs and A commercial cabs up through June of 1930 when the new cabs were released for production which then utilized the A-9002-C tanks. There may have been an A-9002-D tank in April of 1931 but if it was ever produced, it was short lived. For complete tank descriptions and changes to specific parts related to it, please refer to the MARC/MAFCA Restoration Guidelines and Judging Standards.

The tank was constructed of "heavy pressed steel which was 0.049 to 0.051 inches thick or 16 gauge steel. The tank forms the top part of the cowl section and is composed of only two pieces of pressed steel, with a single welded seam extending around the tank".

The tank itself was "terne plated" which, according to the world wide web's WIKIPEDIA--The Free Encyclopedia, terne plating was described as "an alloy coating of tin and lead used to cover steel, in the ratio of 20% tin and 80% lead. Terne is used to coat sheet steel to inhibit corrosion. It is one of the cheapest alloys suitable for this, and the tin content is kept at a minimum while still adhering to a hot-dipped iron sheet, to minimize the cost". However, we all know what happens after 80 years...rust in the gas tank. Terne plating also helped in a more effective "seam weld" when the two halves were welded together.

From the January 15, 1928 issue of Ford News, the Ford Motor Company first mentioned "Why the Model A (Gas Tank) Is Superior". "Safe, simple, efficient, enduring---these are the outstanding qualities of the gasoline tank of the Model A Ford car".

Why the Model A Is Superior



"A fine-meshed circular sieve (A-9020: Gas Tank Filler Screen Assembly) extends downward from the inlet opening of the tank, effectually eliminating all danger of fire from flames nearby, precisely as the famous Davy lamp has eliminated the hazard of gas explosions in coal mines. Many earnest experimental attempts to set fire to the gasoline within the tank through the sieve have failed without exception. Another safety feature of the tank is its strength. It has successfully withstood an internal air pressure of ninety (90) pounds".

"Built of terne plate, a rustproof form of steel, and fabricated by the seam resistance welding method, the tank is integral with the cowl of the car and provides a steady supply of fuel to the engine by gravity, the simplest and most dependable method. Simplicity and dependability, too, mark the gage, the indicator of which is connected directly with the float. Internal baffle plates prevent the gasoline from splashing".

"The sieve which protects the fuel from external flame also filters it as it enters. Minute particles which do manage to escape through the sieve into the tank are removed by a gasoline filter (A-9155: Sediment Bulb Assembly) between the tank and the carburetor".

A few months later Ford wrote in the March 15, 1928 issue of Ford News that the new problems had been solved in the welding of the fuel tank.

"Producing the Model A fuel tank involved the conquest of two peculiar difficult problems in electrical resistance welding. One of these problems was that of making a seam weld which would be absolutely water-tight throughout its considerable length; the other was that of welding terne plate, which is a steel plate that is coated with a lead alloy. That these problems have been taken thoroughly in hand is evidenced by the fact that by February the fuel department was able to make 2,500 of the new tanks a day".

"A seam weld is actually a series of spot welds with overlapping edges (by means of which the two pieces of steel are momentarily melted together, making the seam the strongest part of the Ford fuel tank). The fuel tank of the Model A is made of two sections, an upper and a lower, and the weld necessary to secure these together is longer (120 inches) than any line which could be drawn around the tank in a single plane".

"Each of the spot welds in this long seam weld had to connect perfectly with those on either side, or the tank could not be used"

"Ford experimental engineers found that, with standard seam welding equipment, momentary peaks and depressions occurred in the current flow, causing alternate spots of burned stock and stock insufficiently welded, and consequently not tight. With terne plate as the material selected for fuel tank purposes, the problem became intensified, since terne plate burns more easily than uncoated metal---it will burn if its surface is rough or if it is uneven or if it is dirty, or for any of several other causes".

"Beginning with extra careful treatment and inspection of stock, the engineers worked their way through the problem. The standard seam-welding machine was virtually redesigned. The current transformer was enlarged; the arms from which the copper welding discs extended were shortened; Ford type electrodes, which give superior current efficiency, were installed; and a Ford type interrupter, which cuts the welding current 360 times a minute as a minimum, and thus prevents burning of stock under all ordinary circumstances, was put in place of the less efficient standard unit for that purpose; (and) the bearing in which the welding spindle ran was altered".

"By these and other measures, the problem of making a welded, rustproof fuel tank for the new car was solved. At present ten seam-welding machines containing the Ford improvements are being used for fabricating the Model A (and AA) tanks".

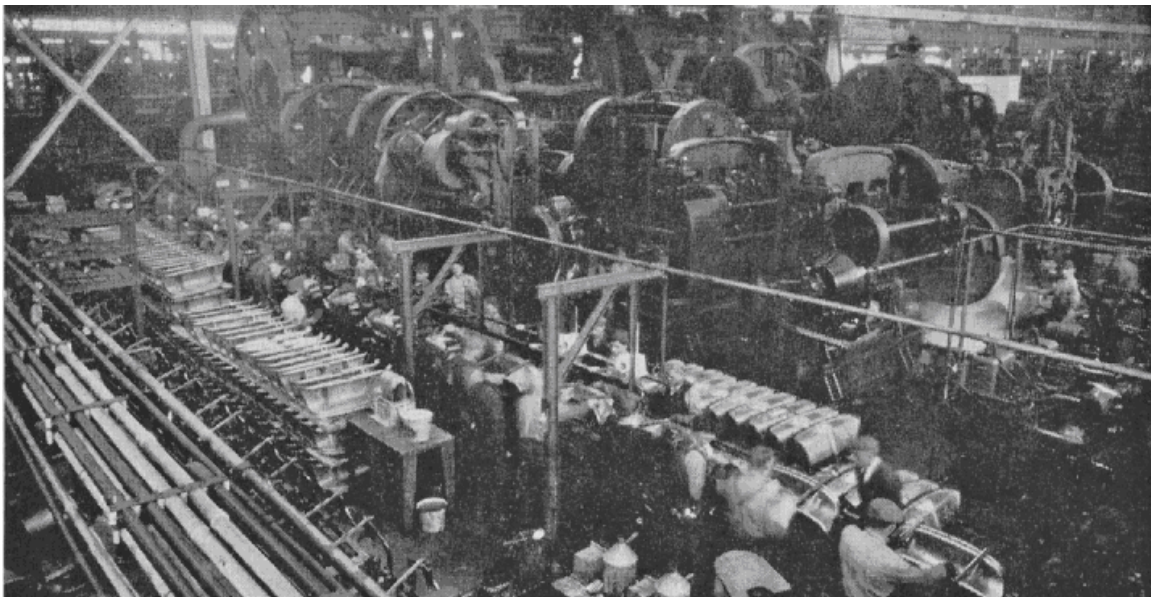
"Forty-four power presses are required to form each Model A gasoline tank assembly and prepare it for the seam-welding operation, as well as much other equipment. Ten presses blank and form the bottom; six prepare the top; sixteen are required for the speedometer cable housing and other fixtures; two form the splash plate; three rivet fixtures to the tank; one clips top and bottom together in position for welding; six punch holes and restrike the form".

"The fixtures which form part of the fuel tank assembly include inlet and outlet flanges, steering gear support, choke rod support and housing for the speedometer cable".

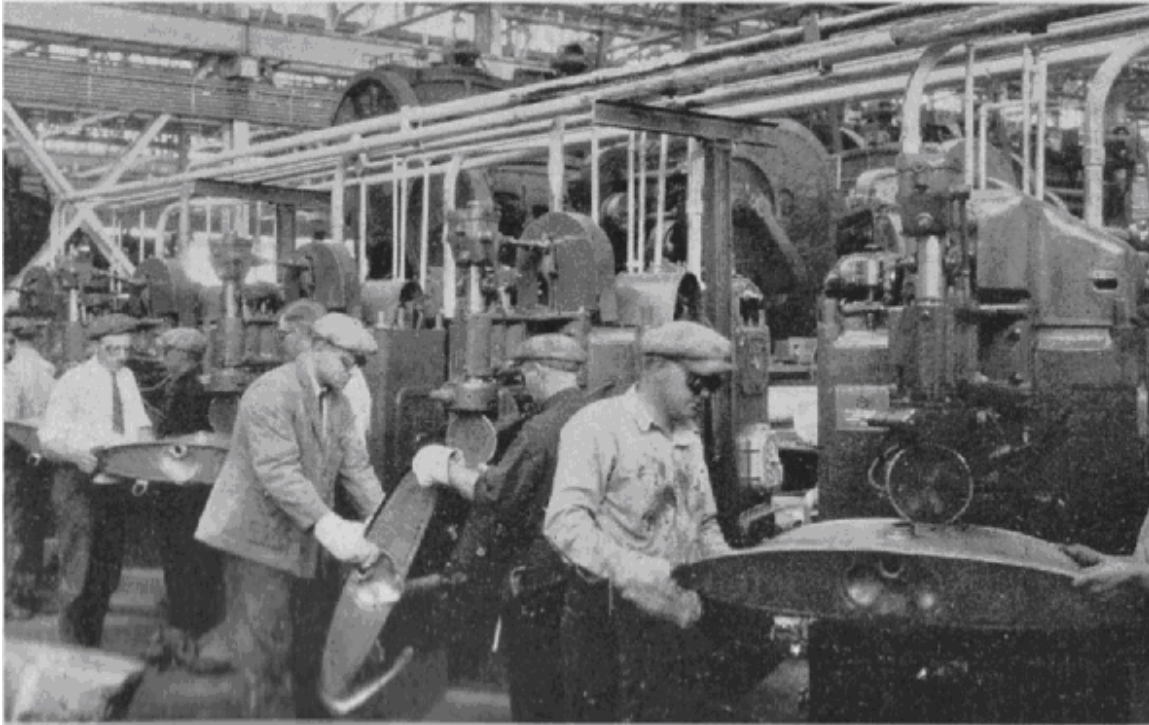
According to Murray Fahnestock, the assembly went as follows: The two halves were pressed into shape followed by stamping out an opening for the gasoline inlet and the filler flange for the cap was installed. The steering column bracket was then riveted to the lower part of the tank in which the rivets were tinned to prevent corrosion. This was followed by welding the ignition cable support and inserting and soldering the two baffle plates to prevent surging and splashing of the gasoline. Other items that were attached were the D-nuts for the instrument panel assembly, flange for the connection of the gas gauge, choke rod connection, and shut-off valve outlet flange.

The front, top part of the firewall (A-35327: Dash Upper Assembly) was also welded to the front of the tank along with the two hood support rod brackets which were riveted.

To continue the March 15, 1928 Ford News article, *"When the two sections of the tank have been clipped together in position for welding, and the work on holes and restriking is completed, they are further secured by spot welds placed at intervals. They are then washed in a strong alkaline solution and placed on a conveyor"*.



"On this they are carried past workmen who add the retaining quality of solder to that of the rivets which secure the fixtures to the tank. From this operation they pass to the welding machines".



“After being seam welded, (which took but four minutes per tank at a rate of 30 inches per minute, which ended up to be 120 inches long, and following the addition of the Dash Upper Assembly) all Model A (and AA) tanks are given three tests under water with an air pressure of fifteen pounds”. According to Mr. Fahnestock, the tank also went through two other similar air and water tests during the finishing operations, one of those coming **after** the gasoline gauge had been installed. It is not immediately known as to **when** the gas gauge was installed on the tank but it is thought to have been installed **after** the painting of the newly assembled body.

At this point in the production of the tank, there comes some controversy and one of the most interesting concepts concerning the “date” on the lower left front portion of that part of the 1928-1929 tank assembly which forms the upper part of the firewall (A-35327: Dash Upper Assembly). This “date”, which is stamped there, may be right side up, such as “7 6 28”, upside down, or not there at all. The size of these numbers were.....

The questions are, just **when** did the stamping process start and end; **where** (besides on the tank) was the date stamped; and **why** was it put there in the first place. Some claim it was put there on the day the body was assembled, but was it? Maybe, maybe not. Over the course of the past four years, I have been collecting these dates in conjunction with engine/frame numbers on various original Model A’s. The research data from which I have gathered indicates vehicles with dates on the tank which were stamped **before** engine stamping; vehicles with dates on the tank which were stamped **the same day** as engine stamping; and vehicles with dates on the tank which were stamped **after** engine stamping.

Of the many original Model A and AA vehicles, which many of you were so kind in submitting data, there were only two known vehicles which have given us some great clues. These cars originated from the Louisville and Los Angeles assembly plants where they not only stamped the assembly plant code and body number on the subfloor cross sill, but also stamped the month and year the body was produced. With that, and knowing when the engine and gas tank were stamped, might give us some clues as to what happened.

The first is a 1929 Tudor Sedan. The gas tank was stamped on January 20, 1929, and the engine was stamped at Dearborn on February 9, 1929 making the tank stamped 19 days BEFORE the engine stamping date. The body has an assembly plant code of LE 13885 2-29 which stands for the Louisville, KY Ford assembly plant. The 2-29 designation was the month and year the body was assembled and stamped at Louisville...February 1929. It took about 1 week or so to get the parts sent from Dearborn to Louisville by train thus the February stamping date on the body.

The second is a 1929 Standard Coupe. The engine was stamped at Dearborn on August 22, 1929 and the gas tank was stamped on August 23, 1929, 1 day AFTER the engine stamping date. The body has an assembly plant code of LA 9574 9-29 which stands for the Los Angeles, CA Ford assembly plant. The 9-29 designation was the month and year the body was assembled and stamped at Los Angeles...September 1929. It took about 3 weeks or so to get the parts sent from Dearborn to Los Angeles by ship thus the September stamping date on the body.

Yes, there are all sorts of other variables. The tank could of sat around for a number of days; the engine could of sat around for a number of days; the individual assembly plants, or just Dearborn, could have had a special machine which stamped the dates before or after the assembly to the vehicle; or the tank could have been changed at some point during the past 80 plus years since the original assembly of the vehicle thus giving us a different date as was originally was there or no date at all.

Other possibilites could have been that A-35327: Dash Upper Assembly could have got stamped before or after assembly to the tank. Or once the tank was complete and before assembly to the body, it got stamped. Or the tank was stamped after the assembly to the body and before painting. Who knows for sure?

The one thing we do know is that the date was on the tank prior to the painting of the body for which many a tank has proven that fact.

To date, there has been no known Ford data, no known absolute proof that has been found indicating that Ford stamped the gas tank on the date that the body was assembled or anything else as far as that goes.

Again, thoughts as to **why** they were they stamped; **when** did the stamping of dates on the tank start and end; and **where** was it done are still questions to be answered.

As to **why** it was done, again, there is no known Ford data, that I know of, telling us just **why** the tanks were stamped in the first place. We can only guess.

As far as **when** the dating originally started and ended, or in what sequence, that is a good question also. The earliest date for which I have collected is May 31, 1928 and the latest is August 23, 1929. I am almost sure that there might be earlier and later dates out there. If so, I would like to know.

In an other independent study by Roger Kauffman, our prestigous Technical Chairman, as he has recorded some early tanks with the dates on them. One of which is a car that has "10 12 27" stamped on the tank and has an engine number of A390, which was stamped on November 7, 1927 and was one of twenty-two stamped engines sent to the finial assembly line at Fordson (the Rouge) on that day also. Three other dated tanks for which he has seen are a December 1927; an early January 1928 and a March 1928.

As far as **where** were they stamped, specifcily at Dearborn or elsewhere, that to remains a big question.

If anyone knows the answers to these three questions and can come up with positive proof as to **why**, **when** and **where**, these tanks were stamped, I, along with quite a few other people in this hobby would like to know. I am sure that stuck away in some obscure file at The Henry Ford/Benson Ford Research Center in Dearborn are the answers.

Once the tank was complete, it was then sent on to be assembled onto the Model A/AA body at The Rouge (or put on a train or ship) followed by the painting of the body itself unless the tanks were shipped to the various assembly plants throughout the USA and abroad, then they were installed and painted there. Since Ford's policy at the time was to "manufacture near the source of supply and assemble near the point of distribution", and since the tank had to go through a series of complex steps to manufacture, I doubt very much that the tank was built anywhere else besides the Fordson plant in Dearborn.

With the tank on the finished painted body, and at some point during the assembly, the gas gauge, (A-9300: Gas Gauge Assembly) was attached to the tank. According to the October 15, 1928 issue of Ford News, "*One of the most convenient and useful attachments on your new Ford car or truck is the gasoline gauge on the dashboard. By glancing at it you may learn without leaving your seat behind the driver's wheel how much fuel is in the tank*".

"The measure of fuel supply is disclosed to you through a round glass eye which is really a magnifying lens. Behind this lens you may read a dial that shows "F" when the tank is full, $\frac{3}{4}$, $\frac{1}{2}$ or $\frac{1}{4}$ when the tank is slowly emptying, and "0" when it is almost empty. Yet few Ford owners have any conception of the actual instrument which thus keeps track of the gasoline".

"In addition to the glass lens and the dial seen on the instrument board, the gauge includes a number of other parts which extend back to form a connection with the gasoline tank. In assembling these, care must be taken to see that the dial will record accurately and the gauge operate properly. This is done in the gasoline gauge department of the Highland Park plant".

"Assembly begins with an inspection of the outer shell casting (A-9319: Gasoline Gauge Frame Body) as it arrives in the department. Into this shell or frame, after it has passed inspection, a girl operator inserts a cork gasket (A-9321: Gas Gauge Frame Gasket) which has been wet with orange shellac. The lens (A-9323: Gas Gauge Glass) is then dropped into the center and above it a dry gasket (A-9324: Gas Gauge Glass Gasket) is placed forming a secure resting place for the "bull's-eye".

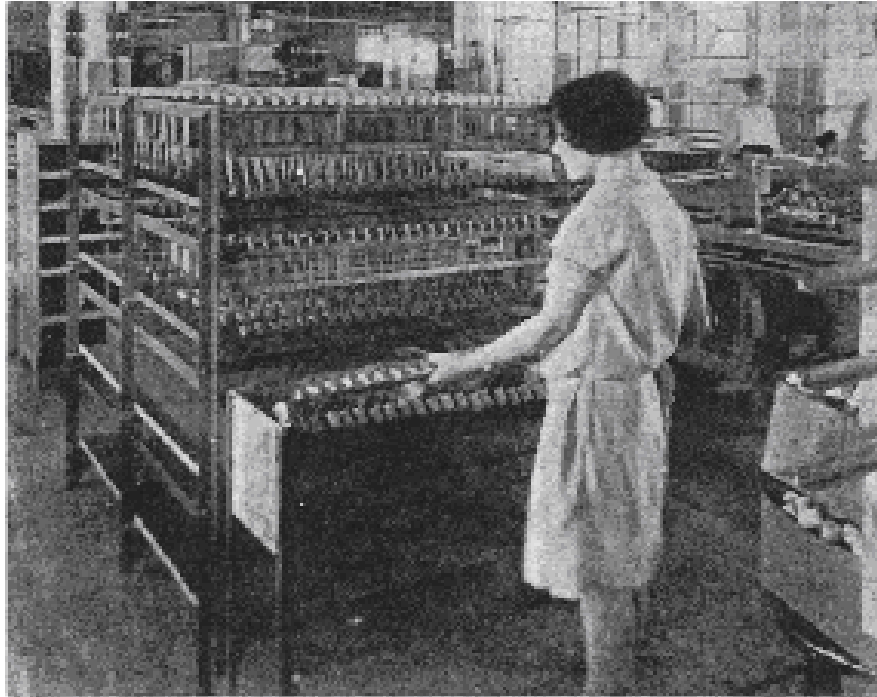
"The next part assembled is the black disc or shield (A-9325: Gas Gauge Shield) that outlines the lens as you look at it on the dashboard. This bears two white lines, one to show on either side of the lens, so that when the dial letter or numeral reaches a point midway between, it is ready for reading. After the shield is in place, the brightly nickeled cover nut (A-9326: Gas Gauge Cover) resembling somewhat a circle superimposed on a pointed star, is ready to be mounted, thus completing the assembly of the "face" of the gauge".

"Formerly, this was performed by girl operators who had to assemble the cover nut and screw it into place by hand, a slow process. It is now accomplished on Ford-designed machines which have effected a great saving in the time used. Each of the machines turns out at present 1,500 gauges daily, and an even higher number may be reached. In addition, a smaller percentage of the gauges are discarded in the assembly owing to worn screw threads".

*"The lens, with shield and frame, is now ready to be coupled to that portion of the gauge (A-9312: Gas Gauge Dial, Float and Rod Assembly) which extends back into the gasoline tank. This latter section includes the dial proper, as well as the float rod. When the dial reaches the assembly line, it has already been embossed with its letters and numerals. To make these black, the entire dial face is painted (**with black pyroxylin lacquer**), and after the face is wiped off, the paint within the impressions remains. This operation is repeated and the dial is then polished to a shining nickel, ready to be swung on its pivotal axis behind the glass lens*".

“Extending back from the dial through the pivot on which it swings is a slender steel rod, on the far end of which is a cork float (A-9314: Gas Gauge Float). The rod is so balanced that the cork rises or lowers on the surface of the gasoline, the dial on the other end moves up or down behind the lens. It somewhat resembles a seesaw, with the cork float on one end and the dial on the other”.

“The cork is dipped in a formula of glue, glycerin and water to obtain a coating which will protect it against becoming gasoline logged, as wood becomes water-logged. It is given two coats of this mixture and a third of formaldehyde. Between dippings it is dried on a Ford-designed rack”.



It might be noted here that the earlier gas gauge assemblies were quite different in construction than the later assemblies in the area of the dial indicator and the outer shell casting otherwise known as Gasoline Gauge Frame Body. The earlier assemblies were off-set where the later ones were straight on. Not sure as to when this change was made, however the later assemblies appear to be much more stronger than the earlier assemblies, especially when comparing the dial indicators and the Gasoline Gauge Frame Body and their connection to each other. The later assemblies were attached together with a brass pin (A-9316: Gas Gauge Dial Pin). For further information, please refer to the MARC/MAFCA Restoration Guidelines and Judging Standards for a further breakdown of when other changes were made to the assembly itself.

To continue the October 15, 1928 Ford News article: *“Another Ford-designed fixture which is used in the gasoline gauge assembly is that which tests gauges against leakage. This test was formerly made by three workers whereas now is done by one. The gauge is submerged in water, and compressed air (is) forced up from below. Should any escape past the lens in the gauge, it can be instantly detected and the gauge returned for inspection and correction. After this water test, the moisture is blown off the gauge by compressed air, in order to avoid rust”.*

"The final inspection includes the lining up of the gauge—rod, float and lens—in a tester, and adjusting it until the letter "F" will occupy the center of the bull's-eye when the float shows that the tank is full. It is also examined as to appearance and assembly and finally packed for shipment (to the various assembly plants)".

The assembly was designed so that when the dial pressed against the glass, the motion of the dial (due to changes in the level of the fuel in the tank) caused the dial to act as a "wiper" so as to always keep the inside of the glass clean. **Note: due to today's gasoline formulations, it is wise to use the "neoprene" type gas gauge float other than the original "cork" type float when restoring the gas gauge itself.**

Once the gas gauge assembly was installed in the newly painted tank, it was then followed by (A-9330: Gas Gauge to Flange Nut) with **not** the mention of a special washer. This special washer was not mentioned in the PPL's until the March 1, 1930 edition. This washer was described as being (A-22442: 1-19/32 (.01 x 1-25/32) Plain Washer—Brass) and only one (1) was mentioned but two (2) have been seen in all original assemblies.

Special wrenches...

The 28-29 gas tank had a capacity of 10 gallons where as the 30-31 gas tank had a capacity of slightly over 11 gallons. The gasoline gauge was also adjusted so that when the "0" or zero mark appeared, there was still one-half gallon of gasoline in the tank.

Ford News liked testimonials from their customers about their product. There were a few times where there was a fire and the car or truck was destroyed. However, Ford made a point in those situations to inform the public of the durability of the gas tank thus indicating that the tank *"went through the fire unscathed. It did not explode, neither did it leak. After the fire was finally extinguished, it still held its original amount of fuel"*. Another testimonial showed that after the fire *"There were four gallons of gasoline in the tank, and although the tank was bulged from the terrific heat, the gasoline did not add any fuel to the flames. After the fire had been extinguished, those present declared it to be a striking example of the strength and safety of the fuel tank"*.

Part 2, which will be under a special title, will be looking at the evolution of the tank itself and related parts throughout the Model A/AA years.

Thanks to Terry Burtz, Roger Kauffman, Marcella Morrow, Deron Shady, David Sturges, Vince Falter, Chet Wojcik, The Ford Archives and to all of you who have submitted gas tank dates over the past few years.

If you have any additional information that you can contribute to this article, please Email me at steve@plucks329s.org.