

The Line Shaft

The Official Newsletter of the

NORTH JERSEY ANTIQUE ENGINE & MACHINE CLUB

March 2022

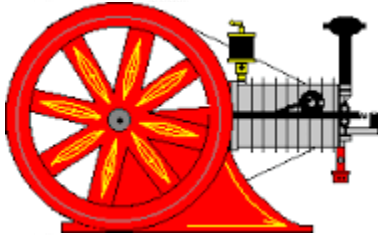


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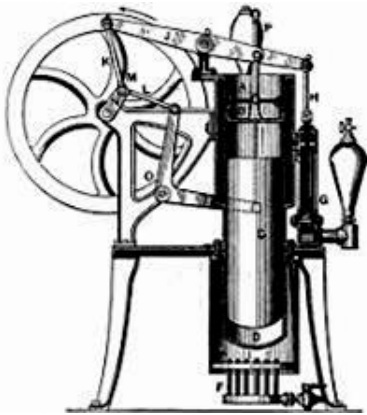
Sec/acting: Mary Hendershot
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Founded on October 15th, 1979 by: Arthur Goble, Fred W. Westbrook, John Snook, Roy Bischoff & Lewis Quince

March

In like a lion & out like a Lamb!

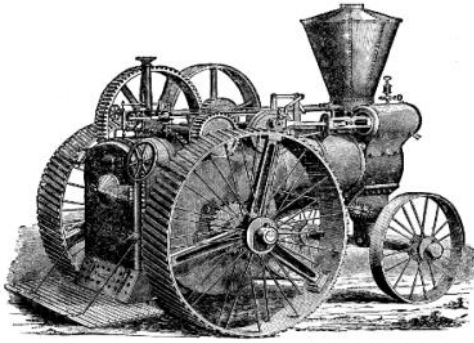


Our next meeting will be on TUESDAY MARCH 8th at the Administration Building!

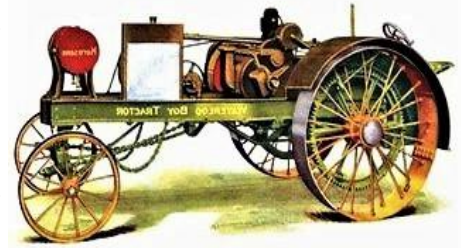
Our Web Address: njaemc.org

67 Branchville Lawson Rd., Newton NJ 07860

Rubber Tires for Farm Tractors...a long process!



In the 1890s, the original Farm Tractors were developed as junior cousins to the larger TRACTION ENGINES. As such, they had similar drive systems, including STEEL WHEELS...the technology of the time.



Some historical background on rubber and tires in general:

In 1839 Charles Goodyear, a self-taught chemist/engineer discovered the chemical formula and process needed to manufacture a pliable, temperature-resistant, waterproof and moldable rubber. Called VULCANIZATION, it was named after Vulcan...the Roman GOD of Fire. The process mixed white-lead and sulfur into the natural rubber (called India-Rubber at the time) with high heat and made it weather resistant (India Rubber could not stand either high or low temperatures) and waterproof, removed some of its elasticity, made it resistant to abrasion, and generally stronger. He received a US patent in 1844, died in 1860 and when the *Goodyear Tire & Rubber Company* was founded in 1898, it was named after him. The pneumatic (inflatable) vulcanized rubber tire was invented in 1845 by Englishman Robert Thomson for use on carriages and it rode smoothly and worked reasonably well, but was so expensive it flopped. In 1888 John Dunlop of Scotland developed the 1st practical glued-on pneumatic tire...for bicycles, which were all-the-rage at the end of the 19th century. The Michelin Brothers developed the first “easily removable” (non-glued) pneumatic tire for bicycles and automobiles in the mid-1890s, but were only marginally successful...a durability problem. In 1906, the Michelins invented the removable rim. In 1910, the *B.F. Goodrich Company* added carbon to the rubber, which GREATLY improved its durability and ultraviolet resistance, and finally Phillip Strauss invented the tube type tire in 1911...and the rubber tire for vehicles became a true success.

So why shift to rubber tires in the Farming industry?

The lugged steel wheels worked fine, had good traction (they thought) in the field and were all the farmer of the early part of the 20th century knew...why change. Farming changed: farms got both bigger and smaller during the 1920's with a need for the farmer to transport his equipment to more remote farm fields...and declining horsepower finally made the shift from the field to a technical specification. The steel wheels rode poorly over hard packed roadways, did “serious” damage to the expanding network of “tarred” rural roads, and vibrated the tractor to pieces at higher speeds. If you did drive a tractor to a remote location, it was done slowly and took forever. It became important for wheels to perform both in the field and on the road...and the tire's over-the-road performance became essential.

An early attempt: in 1918 International Harvester claimed to be the first OEM to install rubber tires on a production tractor, but they were solid rubber tires in the front and rubber blocks attached to the lugs on the standard steel rear wheels...close, but no cigar.

Rubber tires were now being used on cars, trucks and aircraft and had been “hand fitted” to tractors for decades, none working very well. It would seem easy enough to install a set of heavy truck tires or aircraft landing tires, but the tractors wheel torque was the problem...the tires worked fine under light load, but spun on the rim when the going got tough and the tractors torque took charge. The rubber tires of these early decades were just not up to the challenge. As the 1930's arrived, the balloon tire as we know it, was about to appear.

Companies with names like Goodyear, Michelin, Goodrich, Timken, Dunlop and Firestone were working on the problems. Soon angled/crossed cotton fibers were added to the tread area and later the sidewall and better gluing agents were developed...and the "Bias Ply" tire was born. The Michelin Brothers stepped-up again and fused rubber sheathed embedded steel wire into the bead of the tire and solved the tire/rim bonding issue that had plagued earlier designs. In the early 1930's Firestone is credited with combining the wide foot-print and "low-pressure" pneumatic balloon tire, to the now familiar "chevron" tread design. Thru the many trial-and-error attempts with retro-fit tires, a full line of additional PLUSES were discovered for the rubber tire. These

would include substantially higher fuel economy, greater drawbar pull, better floatation on mushy ground, higher working speeds and better operator comfort...all of which got the job done faster, better and importantly...cheaper!

The Original Equipment Manufacturers and buyers of tractors were still skeptical and the bulk of these early will-fit rubber tires were installed as an after-market retro-fit item on existing tractors. They were pioneered by the B.F. Goodrich Co. and came in a kit,

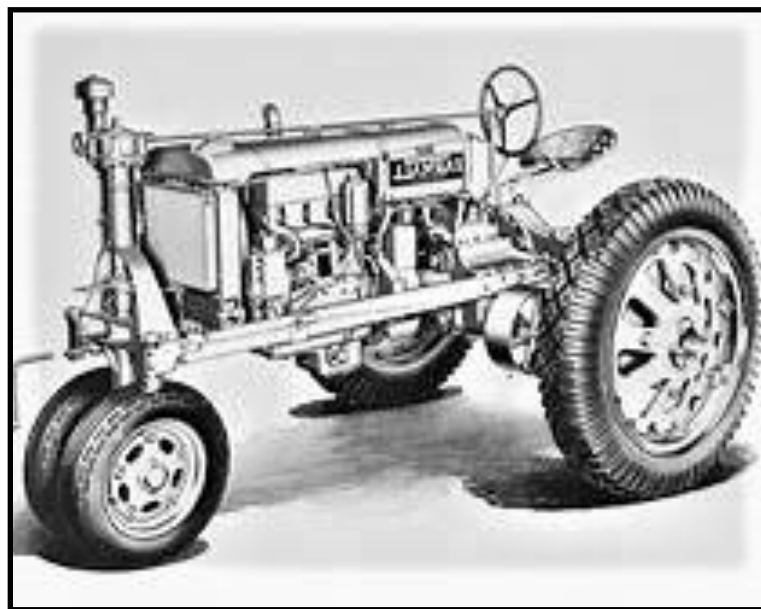
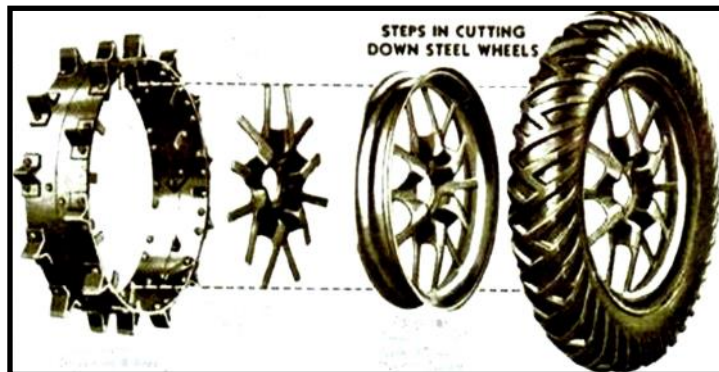
which included the tire & a weld-on rim. These were installed by local blacksmith shops who specialized in this.

The OEM's finally get involved:

In 1932, at the Height of the Depression, Allis Chalmers began limited production of rubber tired tractors...BUT...leading the charge was the father and son team of Harvey and Leonard Firestone. In 1932 they had (3) Allis Chalmers tractors modified for hi-speed. These tractors were naturally fitted with the latest Firestone Tractor Tires. They then hired Frank Brisko, AB Jenkins and Barney Oldfield, all celebrity race drivers of the time, to engage in tractor exhibitions and races at County Fairs and AG Events. It is estimated that these machines were seen by about 1-million people in 1933 alone...and a lot of these people were farmers. Jenkins eventually took one of the tractors to the *Bonneville Salt Flats* and in 1935 set a "Well Publicized" land-speed record of 68 miles-per-hour in a one-mile course...and was jokingly called: "The Worlds Fastest Farmer"!

In 1934 the NEBRASKA TRACTOR TEST SITE ran the first "official" test of a pneumatic tired tractor, using an Allis Chalmers WC with a factory installed set of pneumatic tires. It achieved 8.18 horsepower hours of work per gallon of fuel vs. 5.62 horsepower hours with steel wheels. Their official statement was: **better traction equals better fuel economy and power...and more work completed for the same effort!**

In 1935 the Firestone Tire & Rubber Company began a "major" campaign promoting rubber tires on tractors and, by 1937, 42% of the NEW tractors sold in America had rubber tires. By 1939 this had risen to 85% and by 1940 to 95% from all sources, including new tractors and the many after-market retro-fit conversions. The steel wheel had become an antique curiosity!



NJAE&MC—Upcoming Events

Next meeting:

March 8th at the Administration Building

This is a TUESDAY!

It will start at 7PM

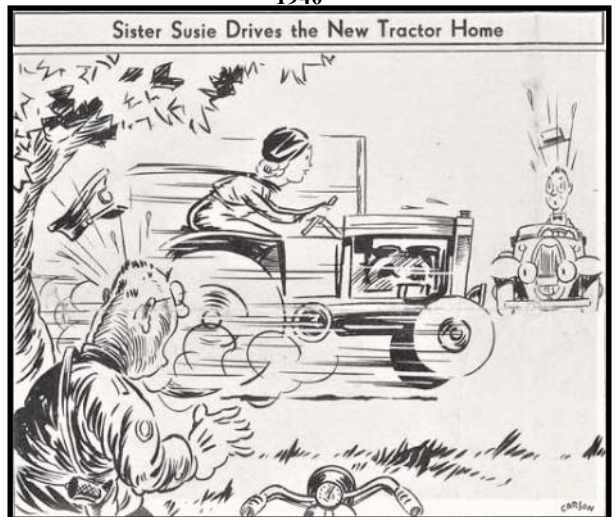


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***Dues are due
for 2022!***



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