

# The Line Shaft

*The Official Newsletter of the*

**NORTH JERSEY ANTIQUE ENGINE & MACHINE CLUB**

**February 2022**

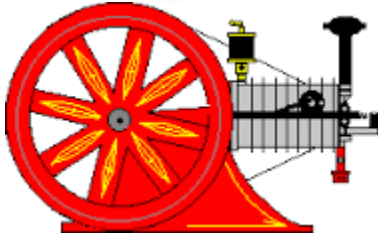


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*Founded on October 15th, 1979 by: Arthur Goble, Fred W. Westbrook, John Snook, Roy Bischoff & Lewis Quince*



**Valentines Day...February 14th 2022**

***Our next meeting will be on March 10th at the Administration Building!***

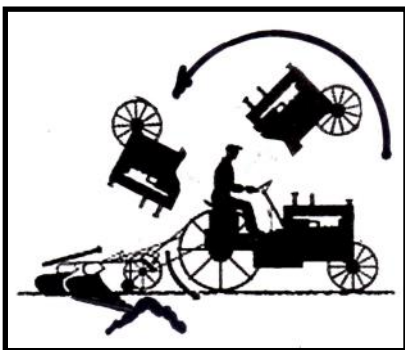
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## Harry Ferguson & the Three-Point Hitch

The Three-Point Hitch is now standard equipment on the majority of new farming tractors...however, this was not always the case. In the 1890s and well into the 20th century, as mechanized traction engines and tractors replaced the draft horse, most rear mounted trailing wheeled implements (plows, blades, rippers, discs, rakes etc.) were also horse era equipment and pulled by a trailing drawbar hitch arrangement. The tractor and the trailing wheeled implements were separate pieces of machinery. With the trailing drawbar hook-up: going backward was impossible, sharp turns were difficult, transportation to another site (even a close-local one) required removal of the trailing implement and a trailer, and the big one...it was extremely dangerous. Also, prior to the three-point hitch, tractors were heavily over-built as; drive wheel traction

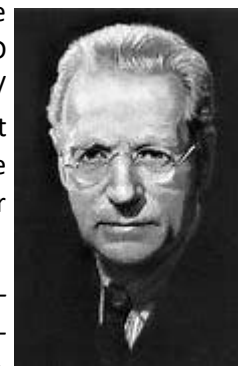


was in "direct proportion" to tractor weight and if the tractor was not heavy, the wheels would spin when doing heavy work. Tractors were not only built heavy, but included counterweights and liquid ballasted tires to increase this weight and further reduce wheel spin. All this overbuild and counterweight add-ons raised the purchase price of the tractor significantly, and caused them to burn additional fuel and increased the "cost" of the work performed. Towing with a drawbar is a good, practical system for many purposes and is still used today...but is highly inefficient and, as mentioned above, particularly dangerous in the farming industry. Why was (is) the drawbar hitch so dangerous? Many

injuries and deaths have occurred when the drawbar towed implement suddenly stopped...the most common occurrence, a plow running into a non-movable rock or large root. Still under full traction, the tractor would "try" to keep going, but couldn't and the front of the tractor would rise up as the tractor began to "revolve" within its "stalled" rear wheels. If the engine was not shut down immediately, it would rotate (flip) backward 180 degrees, damaging the plow and the tractor and...injuring or possibly killing the operator. Note: this problem tends to occur when virgin fields are plowed...once a field has been plowed several times, all obstructions have been removed and/or at least identified and marked to ensure this problem is not a future issue.

### So, where does Harry come in?

Harry Ferguson was born in 1884 in Northern Ireland. It soon became clear that he possessed unusual mechanical prowess and at 18 went to work with his brother in a bicycle and auto repair shop. He took up motorcycle racing and toured Ireland and England and gained considerable notoriety under the name "THE MAD MECHANIC". His interests began to shift to aviation and he built several unsuccessful aircraft w/ equally unsuccessful flight attempts. In 1909, he finally succeeded in getting his small hand-built monoplane aircraft to fly...130 yards (Orville Wright's 1st flight was 120 feet in 1903). In so doing, he achieved the highly publicized status as the first person from the British Isles to build and fly their own hand-built aircraft and the first Irishman to fly an aircraft at all.

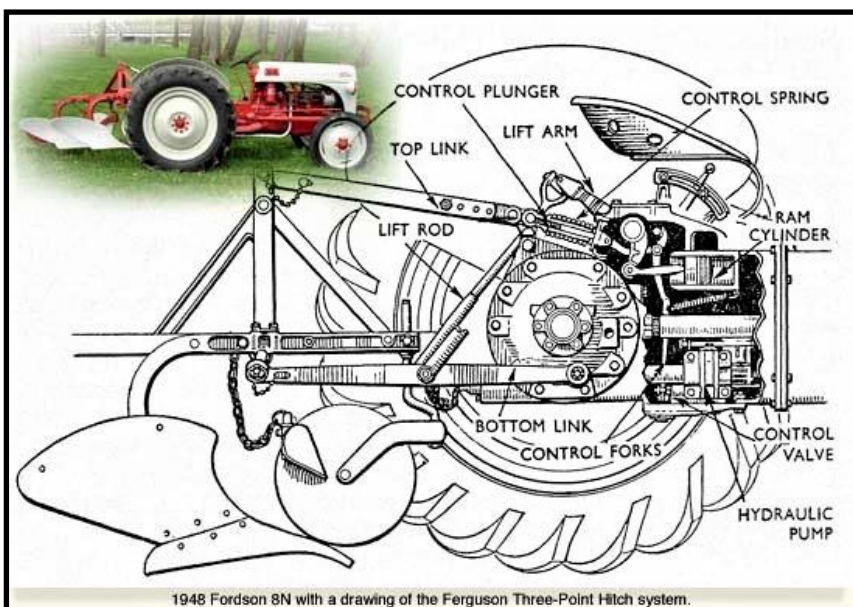


After a falling out with his brother in 1911, he opened *May Street Motors*, a dealership selling *Maxwell*, *Star* and *Vauxhall* cars and the *Overtime Tractor* (a rebranded American *Waterloo Boy Tractor*...see July 2021 newsletter). Now a farm tractor dealer, he noticed the weakness of having the tractor and plough (the British spelling of plow) as separate articulated units and, with the help of engineer Willie Sands, developed a wheel-less 2-point hitch plough for the British EROS TRACTOR...a tractor conversion of the Ford Model T car, that was very popular in Britain in 1916. By 1917 the plough, called the *Belfast Plough*, was in production. By 1920 Harry and Sands had developed a conversion kit to allow their plough to be used on the newest tractor to be imported to Britain, the Fordson Model F. Called the *Duplex Hitch*, it was strictly a mechanical device, but the fact that it prevented the tractor from toppling backward onto the operator was an excellent selling point and Ferguson was firmly in

the plough business. The 3-point hitch grew out of this original design patented in 1928 and, by the early 1930s, included automatic draft control (see box), and eventually went hydraulic. The 3-point hitch gets its name from the 3-points where it attaches the tractor to the implement (disc, plow etc.), forming a triangle or A-shaped attachment. The bottom 2-links do the lifting and the adjustable top link sets the pitch, stabilizes the entire configuration, and transfers the weight and drag force of the implement behind the tractor into a downward force on the traction wheels and shifts part of the load to the front of the tractor ending the “flip” problem. Going forward, new tractors equipped with the 3-point hitch were built lighter and therefore less expensive.

*Draft Control automatically raises the plow as necessary when hard going is encountered, thus preventing the tractor from stalling. The system then returns the plow to its original depth when the hard ground is passed.*

Harry soon realized he should be building his own lightweight tractor and in the early 1930s developed the prototype Black Tractor....aimed at the small farmer. The tractor was manufactured by the DAVID BROWN TRACTOR factory between 1935 and 1937; was originally called the FERGUSON MODEL A TRACTOR, was painted black, had a cast unit-frame, incorporated the 3-point hitch, was fully hydraulic with “draft control” and included a complete line of purpose-built implements to make full use of its advantages. Unfortunately the Fordson was priced much better than the renamed FERGUSON-BROWN TRACTOR and sales were poor. The arrangement w/Brown ended in 1938.



1948 Fordson 8N with a drawing of the Ferguson Three-Point Hitch system.

Harry took the latest version of the Ferguson-Brown Tractor to America. In late 1938 he demonstrated it to Henry Ford at the newly opened Ford Dearborn Proving Grounds. Conversations had been going on with the Ford Company since the early 1920, but had really gotten nowhere. Harry showed Henry his latest patents for improvements to the Ferguson-Brown unit and a HAND SHAKE agreement was struck, which led to the FORD-FERGUSON 9N in 1939. Harry would live to regret the relationship with Ford. Ferguson moved to the USA and by 1942 the 9N was a major player in the market. While it sold for more \$ than its competitors, the overall efficiency and the fact that it would not kill its operator finally caught on and sales were excellent thru the war years. In 1947 Henry Ford’s grandson, now at the

helm of the company, announced the building of the Ford 8N and “cut all ties with Harry”. Harry filed an anti-trust suit against the Ford Motor company for \$250 million for patent infringement and related damages...of which he received a paltry \$9.2 million in 1952.

By the 1950s, the 3-point hitch had been adopted by many equipment manufacturers and was well on its way to becoming an industry standard. Harry meanwhile partnered up with Massey Harris, which turned into another Ford-styled debacle. He dropped out of the partnership in 1954. Also, in the 1950s, the mid-60 year old began getting treatment for mental health issues, including shock-therapy for chronic mental problems he’d had for years.



Never at a loss for new projects, he dabbled in 4-wheel drive/anti-skid brake technology for the automotive sector. He developed the Formula-One FF (Formula-Ferguson) four-wheel drive system. The 4-wheel drive Ferguson Project 99 (P99 Climax) became the 1st and only 4-wheel or all-wheel drive car to win a Formula-One race...the non-championship 1961 Oulton Park Gold Cup. Unfortunately Harry would not see the victory. In October 1960 he took his usual drink of barbiturates to help him get to sleep and died. It is not known if it was an accidental overdose or suicide.

***However...Harry did see the 3-Point Hitch become a stable of the Farm Tractor Industry!***

## NJAE&MC—Upcoming Events

***Next meeting:***  
**March 10th at the Administration Building**  
**It will start at 7PM**

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



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