

Classic farm crawlers: Part 1

By Ian M. Johnston, The Tractor Historian

Track laying or crawler tractors have been in existence for well over a century. Indeed during the Crimean War in 1854 the British army used a cumbersome steam-powered heavy artillery tractor which was equipped with track laying wheels, invented by American James Boydell.

But it was the Stockton Wheel Company of California of 1890 that established the precedent for all future crawler tractors, when it was awarded a patent for a design of crawler tracks which could be used for propelling steam driven traction engines. Despite only eight of the track type steamers being built, the Stockton patent — the initiative of Benjamin Holt the firm's principal — became the genesis of today's giant Caterpillar conglomerate.

In this article, some of the more interesting crawlers that evolved during the classic tractor era, are examined.

1938 HANOMAG K50

The Hanomag K50 crawler tractor was imported into Australia in limited numbers during the 1930s, by Demco Machinery Co. Pty. Ltd. Hanomag was a long-established German manufacturer of steam and diesel locomotives, cars, trucks and tractors. The integrity of design of the K50 was representative of the very best Teutonic engineering based upon years of heavy industry experience.

The massively rugged long stroke four cylinder diesel engine, used in the K50, produced its 50 hp at a relaxed 1300 rpm. The diesel injection equipment was Hanomag's own design, and used in all its tractors of the period. Adjustment could be made to the injection pump calibration in the field by the tractor driver. This required no elaborate testing equipment or any particular skills. The injector nozzles were water cooled.

The steering of the K50 was controlled by a conventional steering wheel which engaged mechanical brakes acting on the differential. The



This 1910 60 hp Holt No. 1547 is a development of the firm's steam crawler patent of 1890. The four cylinder petrol engine had an exposed clutch and flywheel and was lubricated by a Maddison Kipp metering type oiler. It also featured high tension ignition and fly ball governor. (Photo I.M.J. taken at Reynold's Alberta Museum, Wetaskiwin, Canada).



The 1938 Hanomag K50 owned and restored by Peter Desch, of Kandos, NSW, is but one of 15 Hanomag tractors in his collection. This constitutes possibly the largest collection of classic Hanomags outside Germany. (Photo I.M.J.)

single drive plate clutch was coupled to a three forward and one reverse speed gearbox.

Opinion: *Driving a crawler tractor of 1930s vintage is usually a fairly rugged experience, often necessitating a visit to the local chiropractor the next day. But not when operating a Hanomag! I realise this will be hard to believe, but the Hanomag K50 (see photo this page) is so delightfully smooth to operate that I actually drove the unit on a four hour tractor trek in rough mountain country, for the sheer enjoyment of it.*

The steering worked to perfection with only a slight twist required of the steering wheel to change direction. The clutch, gear selection and brakes could not be lighter and more positive if they were hydraulically controlled. Even the driving position was such that I imagined 10 hours in the saddle dragging a plough would be no hardship.

During the 1930s the Hanomag design engineers certainly knew a thing or two!

1952 DAVID BROWN 30 TRACKMASTER

David Brown Tractors Ltd. was encouraged to enter the crawler field when, in 1941, the British Air Ministry requested the firm accept a contract to produce 185 track-laying "airfield" tractors. These were to be based upon the agricultural wheeled model VAK 1 (the forerunner of the Cropmaster).

By way of interest, in typical bureaucratic style, the Air Ministry decided later that it did not in fact require crawler tractors after all. This followed complaints from RAF Wing Commanders about the damage the crawler tracks were creating to runways. The Ministry paid David Brown to take back and convert the units into wheel tractors, which were eminently more suited to towing aircraft and other airfield duties.

A batch of around 100 crawlers was then produced for the Royal Engineers. These were powered by 40 hp Dorman diesel engines and designated the DB 4. A few performed sterling service during the Normandy landings when they hauled armament and supplies up the beaches, that had been unloaded from landing barges.

The David Brown 30 Trackmaster was released to farmers in 1950 and was in essence a track version of the popular Cropmaster. It was available with a choice of a 38 hp petrol/kero or



This meticulously restored 1952 David Brown 30T is the proud possession of L. Laing of Tasmania. The attractive streamlined appearance was typical of all David Brown tractors of the period. (Photo I.M.J.)



This 1922 Cletrac W (12-20) is one of the many rare tractors owned by the Booleroo Steam and Traction Preservation Society Inc. of SA. The tractor was originally delivered to a remote station property west of Ceduna. (Photo I.M.J.)



diesel engine, as used in the Cropmaster series. A six speed transmission and lever operated differential steering were provided.

Opinion: All David Brown tractors of the immediate post war period were reliable and well tested machines. (The exception to this was the DB 900 produced between 1955 and 1957) The 30 Trackmaster — later designated the 30 T — was very suited to small farm applications where no more was demanded of it than would be expected from its wheeled equivalent the Cropmaster.

The trouble was (and is) that some farmers imagine that because they are in control of a crawler tractor they can tackle any job, including rearranging the mountains at the rear of the property. Accordingly quite a number of poor little 30 Trackmasters had whopping big dozer blades bolted on, some weighing nearly as much as the bare tractor.

The result was the 30 Trackmaster earned a reputation for being “too light” or “under powered,” which was quite unjustified.

In actual fact the 30 Trackmaster was an excellent little crawler if left alone to do the job for which it was intended. The petrol/kero powered version had a more aggressive feel than the diesel, but you had to put up with a carburettor, spark plugs and things — so the diesel was definitely the way to go.

In 1952 David Brown introduced the six cylinder 50 hp Trackmaster Diesel 50.

1922 CLETRAC W

Cletrac was the name given to its range of crawler tractors by The Cleveland Tractor Co. of Cleveland, Ohio.

The Model W had a long production run from 1919 to 1932, during which time 17,215 were sold to farmers around the world. Up until the mid 1920s a Weidely four cylinder ohv petrol/kero engine of 20 belt hp was used and subsequently replaced by a Cletrac engine of similar specifications. Only one forward and reverse gear were provided.

An interesting feature was the belt pulley mounted directly to the front of the crankshaft and thus running at right angles to the tractor. The track gear supported by three lower and one upper rollers was comparatively modern for the



The 1936 Caterpillar 22 was a functional and reliable tractor capable of work beyond the



The 1948 Fordson Roadless Half Track pictured has been restored by the author and is part of his Chelmsford Classic Tractor Collection. (Photo I.M.J.)

era and would today be considered as conventional.

The Cletrac W held the distinction for being the first crawler tractor ever tested at the acclaimed Nebraska tractor test facility, where it was noted that the W could easily climb a 45 degree incline without slippage.

Opinion: *The Cletrac W was an outstanding performer and despite having only one forward gear could still achieve a 1734 lbs drawbar pull — roughly equivalent to half its own weight.*

The fact that so many Cletrac examples remain in existence today is an indication of their popularity and how well they were put together.

The right angled front mounted belt pulley theoretically was a good idea as the belt hp was equivalent to the brake hp. In other words there was no friction of gearing loss as it was driven directly off the crankshaft. However — can you imagine the operator, on his own, lining up the belt pulley with the pulley to be driven which, if attached to a baler or a threshing mill, could be 20 metres or so distant?

In summary the Cletrac W was as rough as guts to drive — but in 1922 all lightweight crawlers fell into this category.

1936 CATERPILLAR 22

By 1936 the Caterpillar Tractor Co. of Peoria, Illinois, was emerging as the dominant and possibly most respected manufacturer of crawler tractors in the US, despite fierce competition from International, Cletrac and Allis Chalmers.

The Caterpillar 22 confusingly was almost identical to the Caterpillar Model R2. However the 22 was fitted with 10" grouser plates as distinct to the 13" grousers on the R2.

The two tractors shared a common Caterpillar manufactured four cylinder ohv petrol/kero engine which had a bore and stroke of 4 x 5 inches and developed 29 hp at 1250 rpm. Three forward and one reverse gears were provided. With an all up weight of just under three tons the 22 could achieve a worthy drawbar pull of 4534 lbs at two miles per hour.

Opinion: *Caterpillar was advantaged by being solely a manufacturer of track-laying tractors. Its entire design team was able to focus all its energies on the development of the crawler*

concept without the distraction of having to turn their attention to the various challenges relating to wheel tractors. Additionally, the Caterpillar engineers (by the 1930s) could draw upon nearly half a century of crawler tractor experiences.

Consequently, from around 1930 every individual model of a Caterpillar tractor was a well conceived and well tested machine.

The 22 did everything right and an operator did not have to be concerned that his tractor might "conk out" while in the middle of a job — unlike some tractors of the period!

Had I been a purchasing officer for a construction firm in the 1930s and had received an instruction to purchase a crawler tractor fitted with a bulldozer blade, I would certainly have specified a Caterpillar. But a farmer wishing to utilise a crawler for purely agricultural purposes might have given consideration to a lesser priced tractor with perhaps more localised back-up service.

1948 FORDSON MAJOR ROADLESS

The Dagenham (Essex, UK) built Fordson E27N Major was the top selling tractor in Australia during the late 1940s and early 1950s. Only the Ferguson eventually achieved a greater number of units sold.

The Fordson was cheap but reasonably reliable, had an enormous amount of character and was certainly cantankerous. Its 32 hp engine was an outdated side valve splash lubricated unit conceived in 1917. Power was provided to a three forward and one reverse speed gearbox via a multiple wet plate clutch.

Roadless Traction Ltd. of Hounslow, UK, provided the bolt on track assembly and the tractor could be purchased with the half tracks as original equipment or an after sales item.

No special turning clutches or brakes were utilised and the steering of the half track tractor was accomplished simply by means of the conventional steering wheel steering the front two wheels.

An optional, but considerably more expensive, a Perkins P6 diesel engine was offered as an alternative to the petrol/kero side valve unit. This effectively increased the horsepower from 32 to 40 hp.

Opinion: *The E27N half track was reasonably easy to drive and surprisingly the tracks did not have any bias effect on the normal steering by means of the front wheels.*

About half the E27N Majors sold were not fitted with a starter motor. Cranking the tractor into life on a cold morning was not always a good beginning to a cheerful day. If the magneto spark had not been retarded the result could be a broken thumb or a severely strained wrist, caused by the crank handle kicking ferociously back at the speed of light. Also, if any kerosene had been left in the carburettor the previous evening, then all the winding in the world would fail to start the engine until the carburettor and fuel lines were thoroughly drained and recharged with petrol.

Despite all the potential problems, the Fordson Major Roadless was the logical choice for a farmer with steep country, who could not justify the capital outlay for a considerably more expensive conventional crawler. Parts for the Fordson were cheap and Fordson service was available in every country town.

Classic Farm Crawlers will be continued in the next edition of The Australian Cotton Grower.