



AMI

ARS MECHANICA

FN HERSTAL - BROWNING

DRIVING INNOVATION

HERSTAL *group*  
FN HERSTAL - BROWNING



## Marching towards diversification

### THE JOURNEY UNDER GERMAN CONTROL

Completion of the manufacture of Mauser rifles to the satisfaction of the Belgian Army, the successful cartridge manufacturing immediately afterwards, as well as the industrial and commercial proactivity of its managers on the international markets could not fail to attract the attention and then whet the appetite of those who were becoming competitors of FN.

"The Germans in Herstal",<sup>25</sup> "German invasion",<sup>26</sup> "New meal for the ogre"<sup>27</sup> – the Belgian newspapers sounded the alarm at the end of 1895. FN came under the control of the Berlin-based arms manufacturer Ludwig Loewe & Co. which, after long negotiations conducted on the Belgian side by Henri Pieper, bought up the company's shares. For a few days, *Le Soir* spoke of the 'Fabrique nationale (?)', with a question mark after the adjective 'national'.

In 1890, Loewe had already tried unsuccessfully to become the main shareholder of FN. The attempt failed, with FN curtly refusing the proposal on the grounds that "the Belgian Government and public opinion would certainly be dissatisfied".<sup>28</sup> The events of 1896 underlined how relevant this analysis was, as we see it through the eyes of newspapers of the time. Loewe, however, was determined to create a European arms giant, of which FN would be one of the jewels.

Did the Loewe company – which was 'Prussian', as the press<sup>29</sup> liked to remind everyone – seek to destabilise FN a few years later, in 1894? Or did it only want to enforce its commercial rights, which was a legitimate aspiration? We can only point to a coincidence or an overlapping of dates between the end of the order for 150,000 Mauser rifles for the Belgian Army (December 1894) and the fact that Paul Mauser and Ludwig Loewe set the Chilean deal in motion (also in December 1894).

Chile had announced, in December 1894, that it wanted to buy 60,000 Mauser rifles (the Spanish 1893 Model) from FN. For FN, this model was a straightforward

improvement of the Mauser 1889, for which it had acquired the licence. For the German side though, this rifle was a new model to which Belgium had no right. Paul Mauser wrote to FN on 11 December 1894: "You are manufacturing rifles for which you have no patents. Stop manufacturing within three days..." This was followed by recourse to arbitration, which would soon emerge as being unfavourable to FN. Although this arbitration's ruling was not delivered until January 1896, FN made a series of decisions in the first few months of 1895 to protect its existence as far as possible. An attempt at a settlement was made by the Belgian Minister of Industry in the summer of 1895. This ended in failure, as the claims made by Loewe – notably through its lawyer Victor Fris, a senator from Leuven – proved unacceptable to FN.

Rumours and denials, lawsuits and resignations, attempts to revoke patents and accusations with sometimes anti-Semitic<sup>30</sup> overtones against Ludwig Loewe followed one another. In early 1896, the German group took a majority stake in the capital of FN. The Managing Director, Jules Chantraine, was "called to other duties", resigned and a number of directors<sup>31</sup> and shareholders from the former factory made way for a new Board and a new General Assembly.

On 6 February 1896, the press announced the formation of the new Board of Directors. Baron Charles del Marmol, President of the Banque liégeoise, was appointed as its head. Léopold Vapart, industrialist; Georges de Laveleye, Director of the *Moniteur des Intérêts matériels*; while Jules Dallemagne, industrialist and Henri Pieper represented the Belgian side. Isidor Loewe and Alexis Riese, its Production Manager, represented the German side.

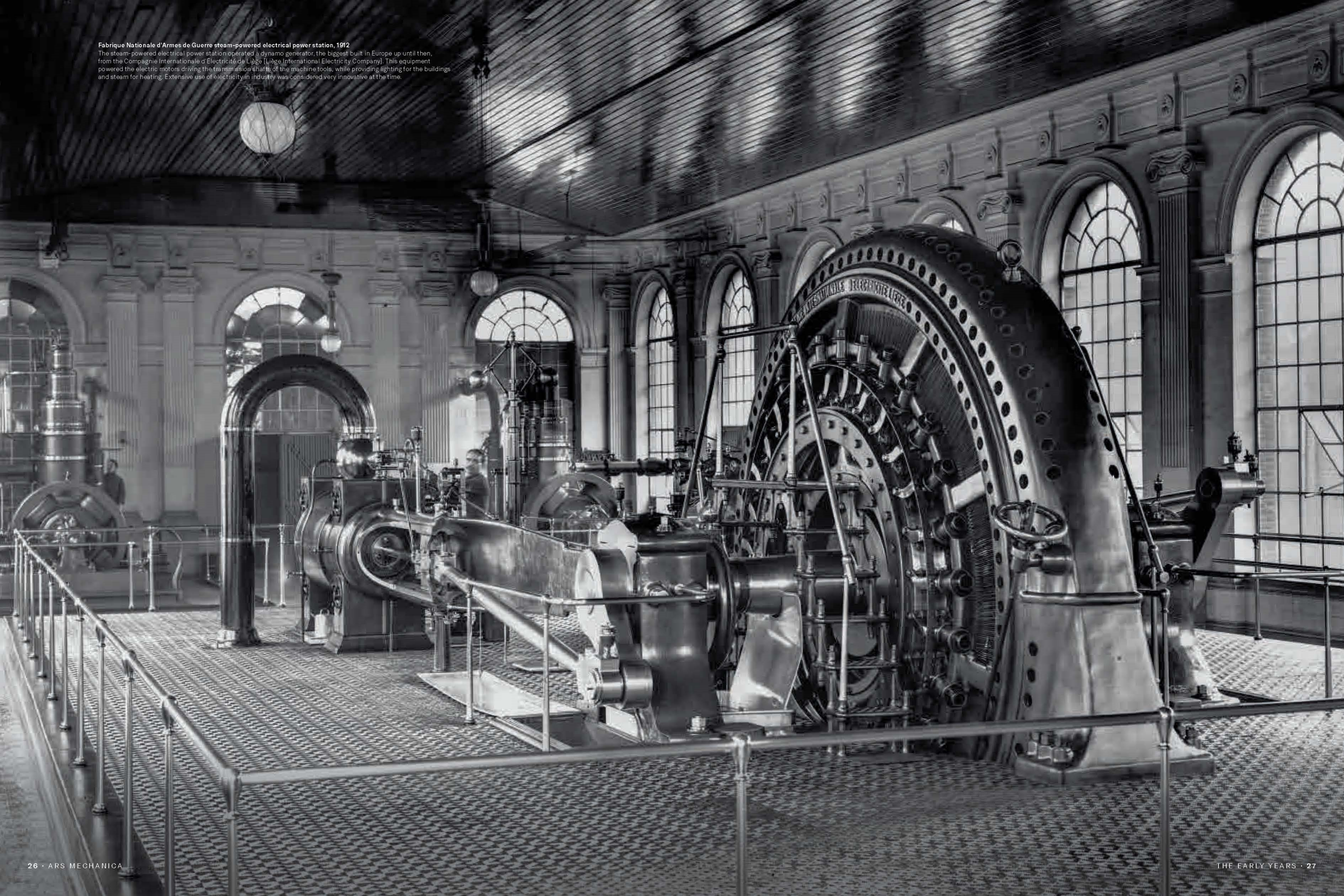


Émile Berchmans, *Fabrique Nationale d'Armes de Guerre Herstal-Liège*, lithography produced in Liège by Auguste Bénard, around 1900  
Émile Berchmans called on mythology to highlight the quality of new mechanical productions. A mother-goddess, with her attributes – a sheaf of plants and a horn of plenty filled with spare parts – holds a bicycle fork in her right hand instead of her traditional scythe.



**Fabrique Nationale d'Armes de Guerre steam-powered electrical power station, 1912**

The steam-powered electrical power station operated a dynamo generator, the biggest built in Europe up until then, from the Compagnie Internationale d'Electricité de Liège (Liège International Electricity Company). This equipment powered the electric motors driving the transmission shafts of the machine tools, while providing lighting for the buildings and steam for heating. Extensive use of electricity in industry was considered very innovative at the time.



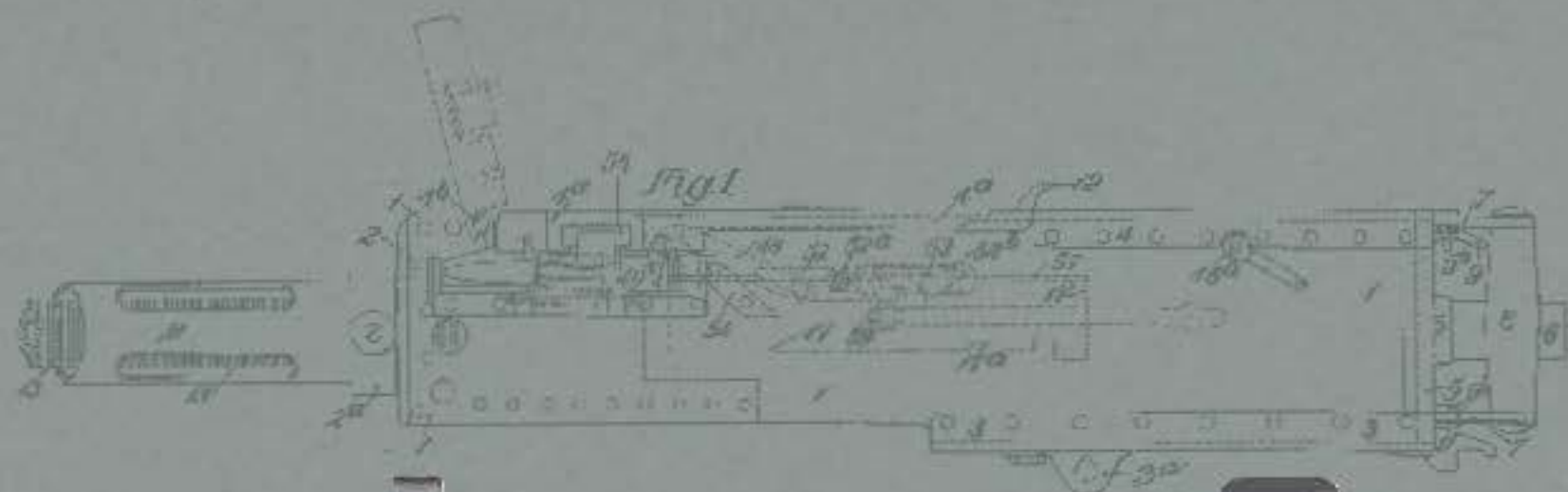


# FN-BROWNING Heavy Machine Gun M2 HB-QCB Model

**System**  
Automatic machine gun, operating by a short recoil of the barrel

M2 or M3 detachable link belt  
Feed mechanism

Chromed barrel  
or resistant alloy



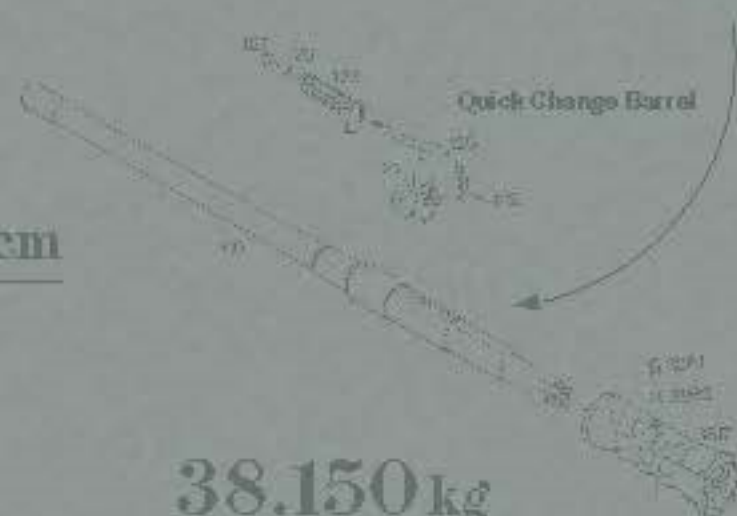
**114.3 cm**

Barrel length

**165.6 cm**

Overall length

Quick Change Barrel



**485 / 635 rpm**

Firing rate

**38.150 kg**

Weight

**916 m/s**

Muzzle velocity



**12.7 × 99 mm NATO**

Calibre

## Heavy Machine Gun, FN-Browning, M2 HB-QCB Model

In 1921, John Moses Browning developed a .50 calibre machine gun, with short barrel recoil, cooled by water or by air, to meet the US Army's request for a heavy machine gun with armour-piercing capabilities. Based on the design of the .30 calibre machine gun of his invention, this machine gun nevertheless had to be able to absorb five times more energy, which called for the addition of a buffer. In the 1930s, the gun was further developed and fitted with a heavy barrel, to enable sustained firing. This led to the new name: M2 HB (Heavy Barrel).

Its firepower gave the US forces a considerable advantage during the Second World War, forging the machine

gun's reputation, nicknamed 'Ma Deuce' by soldiers. Sales of .50 machine guns started in Herstal in the 1930s. After the war, the MAG became more popular than its predecessor, but there was renewed interest in the M2 HB in the 1970s. FN then modified the aviation type .50 that it had bought in order to adapt them to the army's needs. The aim was to reduce its weight, improve its firing rate and its durability, but above all to include the possibility of quickly changing its barrel. In 1978, FN bought the rights to develop, produce and sell the Quick Change Barrel (QCB) system developed by Mack Gwinn Jr, a former member of the US special forces in Vietnam, who developed various technologies to improve the operation of several guns. The Quick Change Barrel

(QCB) system made it easier to replace a barrel which had overheated during long periods of sustained firing. Supported by this technological advance and improvements made, FN was able to supply .50 machine guns in different versions: army (with tripod), for mounting on vehicles or mounting on aircraft and helicopters.

*Le Journal de la FN* [FN's newspaper] from October 1978 ran the headline 'The return of the .50' and highlighted the commercial dimension of this evolution:

*For FN and the Security and Defence Development division in particular, the relaunch of the .50 means an expansion in the range of weapons available, the possibility to reach new clients, a contribution to maintaining employment levels, an increase in turnover and also the*

*prospect of selling ammunition of this calibre that FN has in fact never stopped producing.*

Forty years on, the company's commercial success speaks volumes. The strength of FN was already, back then and today still is, its constant eagerness to adapt its arms production to the new strategies and changing nature of combat, as well as to incorporate or invent new approaches and new technologies.





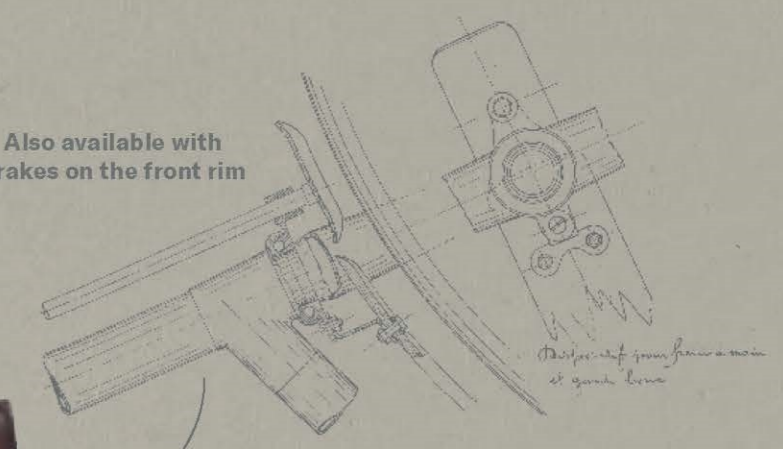
# FN Chainless Bicycle Military Model 1914

Bracket modèle 1698.

Patent de S. A.

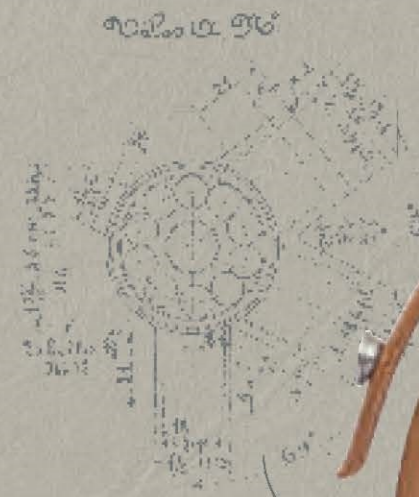


Also available with  
brakes on the front rim



**System**  
Drive shaft transmission

Mudguard made  
of wood



**50 / 60 / 65 cm**

Length of frames

**70 cm**

Diameter of wheels

Bronze spokes, steel rims,  
black enamel

Back-pedal braking



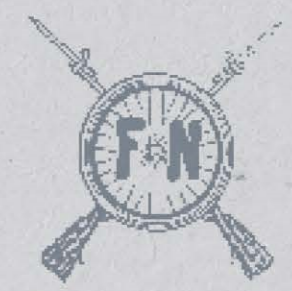
**560 to 620 cm**

Gearing

In 1898, FN developed its own **chainless system**, or **acaténe**, bicycle, with a shaft-drive. The replacement of the chain by bevel gears was a major development for bicycles. The design of the drive system helped to distribute the forces more efficiently. The force applied to the pedals was transmitted by the cranks, the axle and the drive sprocket to a 17-tooth bevel gear, which was

itself attached to one end of a ball-bearing shaft. This shaft had an intermediate sprocket cog of 26 teeth at the other end, driving the 24-tooth bevel gear on the rear hub. This robust system was also designed to address fouling due to mud and dust. In 1913, the weight of the FN chainless bicycles was reduced by using sprockets made of highly resilient chrome-nickel steel, with almost no

wear. The advantages of this kind of steel were already well known in the automobile sector. For the frames, FN did away with the annealing - the heat treatment of the forged piece - which impaired the metal's primary qualities.







### THE MAUSER MODEL 1889

The Belgian government was undecided as to which repeating rifle it would choose to equip its army with, as was the French government, incidentally. So it ran a succession of comparative tests over several months. Decision-makers hesitated between the Nagant, the Pieper-Mannlicher, the Schulhof and the Marga. Both the results of these tests and the rankings were regularly published in the newspapers, which sometimes contradicted one another. At the end of 1888, other rifles entered the fray, with variations being introduced. There was the Mannlicher by the Manufacture de l'État and the one manufactured in Steyr in Austria, the Pieper with a cylindrical-conical magazine and the Pieper with a modified Mannlicher magazine. New models also emerged: the Mauser with a Mannlicher or Engh type magazine from the Manufacture liégeoise d'Armes à feu and so on. New tests were carried out in July 1889 in Beverloo. The Mauser, the Nagant and the Mannlicher were still in the race.

On 23 October 1889, the official decision was finally taken. It would be the Mauser Model 1889, a 7.65 mm calibre rifle, firing a rimless grooved cartridge. A report by General Pontus justified the decision of the King, who, in Article 2 of his royal decree, announced that "all the necessary measures will be taken so that the standard rifle is promptly delivered to the National Factory of Weapons of War in Liège, which has been called on to manufacture the new armament".

The decision was widely reported in the press. It was no great surprise that the most hostile reaction to this decision came from *Le Peuple, Organe quotidien de la démocratie socialiste* [*Le Peuple, the daily newspaper of the Socialist Democracy Party*]: "The Mauser repeating rifle, of foreign invention, has been officially adopted by the Belgian government", it wrote, adding that

Mr Vandersmissen<sup>4</sup> is "a mercenary who will have carried out this business without worrying about comments and criticism".<sup>5</sup> *La Réforme, Organe quotidien de la Démocratie libérale* [*La Réforme, the daily newspaper of the Liberal Democracy Party*] also expressed concern, in an ironic tone, that a foreign firearm had been chosen: "Yesterday, newspapers from Antwerp said that the Mauser rifle, which has been adopted for our army, is a Belgian rifle... because the patent was bought by a Belgian."<sup>6</sup>

The choice of a foreign model was not just a source of concern for the country's independence. Other voices expressed their views too: the Cercle des Intérêts matériels de la Province de Liège [an association of small arms manufacturers that were rivals of FN] organised a meeting on Sunday 17 November 1889 at 11.30am to protest against this choice and the conditions under which it was made. The meeting, which was held in the Royal Hall of the Renommée, was designed mainly to protest against the favouritism that had been supposedly given to the arms manufacturers who had set up FN, but also against the fact that the factory was going to have to equip itself with German machines to manufacture the Mauser. They even considered sending a 'protest committee' to the King to call on him to withdraw the decree of 23 October. A press campaign was organised. The headline of the 17 November edition of *La Réforme* ran as follows: "A new scandal. The manufacture of Mauser rifles - The National Factory of Weapons of War - A twenty million Belgian franc deal in hard cash - Protest by the Liège arms manufacturers."<sup>7</sup> The body of the article regretted the supposed lack of fair competition.

These strong criticisms, often relayed to the Chamber of Representatives, continued to be made until at least February 1890. Then they were replaced by another concern: when would infantry soldiers be equipped with the new Mauser rifle?

### TIGHT DEADLINES

It was not until September 1890 that the Mauser Model was handed over to FN<sup>8</sup> and the first three rifles were only assembled in Herstal in December of the following year. One of them was to be offered to the Minister of War, General Pontus, on 6 January 1892.

The rifles competing to equip the Belgian Army:  
Pieper-Mannlicher repeating rifle, 8×50 mm calibre  
Schulhof repeating rifle, 8 mm calibre  
Marga repeating rifle, 7.5 mm calibre  
Nagant repeating rifle, 8 mm calibre  
Mauser 1889 repeating rifle, 7.65×53 mm calibre



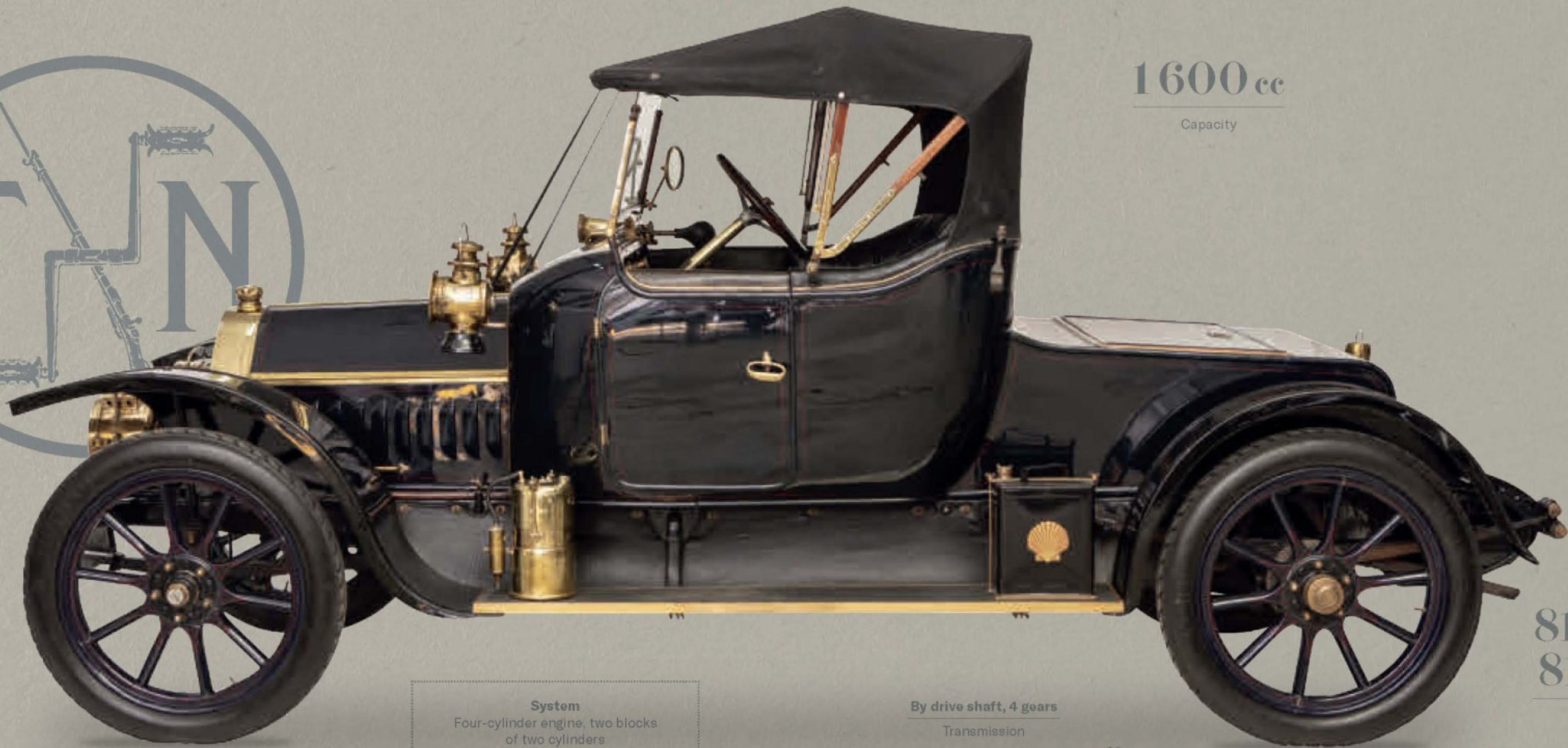
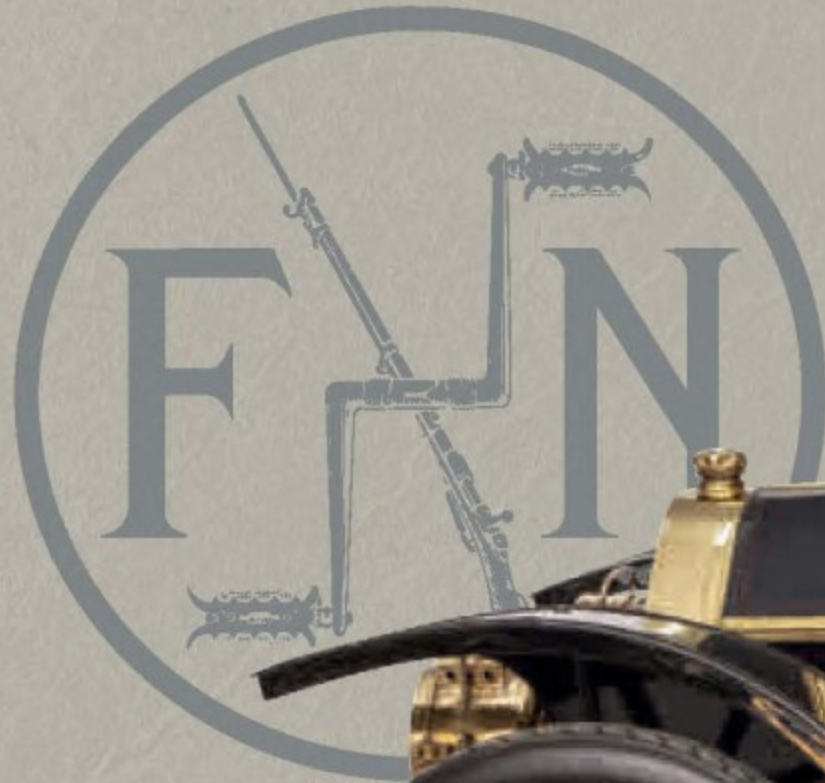
# FN Car 1600 Model

1600 cc

Capacity

12 hp

Power



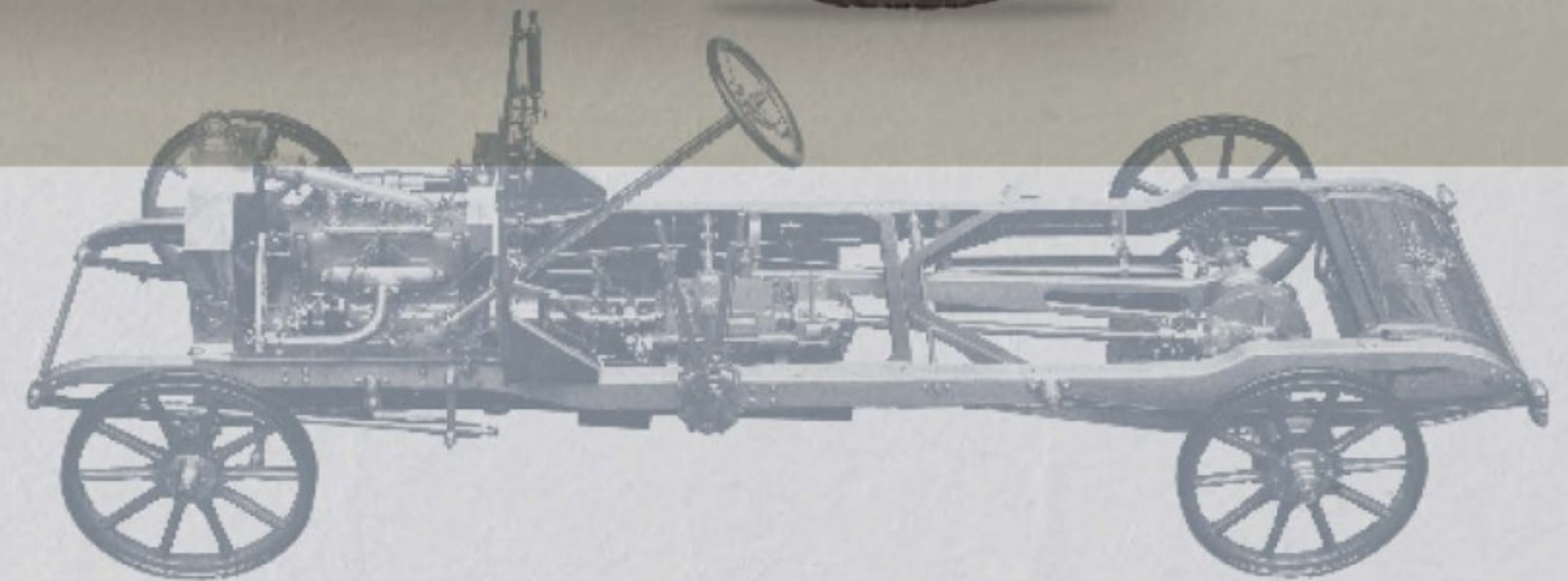
**System**  
Four-cylinder engine, two blocks  
of two cylinders

**By drive shaft, 4 gears**  
Transmission

815 × 105  
810 × 90

Tyres

Between 1911 and 1912, FN produced a new car with a smoother suspension thanks to a system of shackle springs. It was a practical system that would be used for over half a century. The car also had four gears and a reverse gear, a sliding shaft drive system and a fuel tank located at the back. Around 500 cars of this type were sold, making the car a major success for the time.







Gloster Meteor aircraft, 1951

In 1948, Belgium and the Netherlands purchased British Gloster Meteor jet aircraft. This technological leap forward was achieved thanks to Fabrique Nationale d'Armes de Guerre, which was tasked with producing the Derwent V turbojet engines, under licence from Rolls-Royce Aero Engines.

## Starting over again: the power of mechanisation

From 1945 onwards, FN made it clear that its future "would inevitably lie within the field of mechanised products that are its strength".<sup>146</sup>

Mechanisation was indeed the path to a return of optimism at Herstal. The front page headline of *La Meuse* on 12 November 1949 ran: "FN is going to build jet engines" and continued: "The Rolls Royce Company has announced, with the British government's approval, that it has granted licences to the Belgian government for the manufacture of 'Derwent' jet engines and for these engines to be constructed by FN in Belgium. Belgian engineers have done traineeships at Rolls Royce factories in Derby [...]. At first, the engines will be constructed using individual parts supplied by the Derby factories, but over time they will be fully constructed by FN."

On 10 June 1948, manufacture of these engines was mentioned to the Board for the first time, though in very guarded terms. In the chapter on 'Ongoing business', after reference was made to FN's hopes in relation to motorcycles, trucks, firearms and cartridges, it was

simply noted that "the Belgian Air Force's purchasing services were insistent that we start the manufacture, based on 200 per year, from a total of 1,000 Derwent Rolls-Royce jet plane engines".

In September that year, the Managing Director noted the proposal that had been made to FN by Belgian and Dutch Air Force authorities to manufacture 760 Rolls-Royce Derwent V engines over a period from 1950 to 1952 and for a sum of almost one billion Belgian francs. It was immediately made clear that it would be impossible to offer the Belgian government prices that were as low as those of the British manufacturer. That was because the production levels were lower, the investment was considerable and the training period was fairly long.

On the same day, signalling a new optimistic outlook, a decision was made to call an extraordinary General Assembly to extend FN's corporate term by 30 years and to triple the company's capital (from 105 million to 315 million Belgian francs) without issuing any new shares.



The star driver René Milhoux, wearing aerodynamic tails, on the streamlined FN 500, preparing for the world speed record at Bonheiden, 17 April 1934  
René Milhoux died in 2003. He notched up over 300 victories on Belgian motorcycles, making him one of the 20th century's greatest motorcycle riders.







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LA FORCE D'INNOVER

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