

## Max Pommer and the Oldest Known Hennebique-Construction in Germany: A Printer's Shop at Leipzig

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**ABSTRACT:** The oldest known multi-storey Building in Germany with a full reinforced concrete frame on the Hennebique system is a wing of a printing house erected 1898 by Max Pommer at Leipzig. Until 2005 a granary at Strasbourg erected in 1899 was thought to be the oldest Hennebique-construction in the then German Reich. To the well-known pioneers of concrete constructions such as Züblin and Wayss & Freytag, who worked together on the Strasbourg example, we have to add Max Pommer, who changed from architect to building contractor and also had an impact on social reforms. Already by 1899 he had erected five more buildings with Hennebique-construction. While these are mostly renovated and in use, the oldest example is decaying and threatened with destruction.

### LEIPZIG AND ITS IMPORTANT CONCRETE BUILDINGS

Leipzig, the biggest town in Saxony and till the Second World War one of the leading centres of commerce and industry in Germany, holds some interesting examples of concrete architecture of different types. Exposed concrete is a main feature of the Betonhalle (erected by Wilhelm Kreis for the International Building Fair 1913 as counterpart to Bruno Taut's famous "Monument of Iron") and of the Industriepalast (erected by Anton Kämpfer 1911/12 as multi-functional complex for production and commerce). From 1929 till 1976 the world record for the widest span massive dome was held by the Großmarkthalle (erected 1928/29 by Hubert Ritter and Franz Dischinger for a wholesale grocery market) with its two Zeiss-Dywidag-shells of 75 m span and 6 000 m<sup>2</sup> covered space each. But let us look now at another example.



Figure 1: The 1898 erected wing of the printer's shop C. G. Röder, on the right photograph to the right together with the wings of 1903/04; the elevator fills the gap of the destroyed older wings; (photo: author).

**THE OLDEST KNOWN HENNEBIQUE-CONSTRUCTION IN GERMANY**

The by now oldest known multi-storeyed construction in reinforced concrete following Hennebique's patents in Germany was erected 1898. The firm of C. G. Röder, specialized in printing musical scores, was founded in 1846 and boomed from 1863 on with its use of lithographic high-speed printing machines. Between 1873 and 1890 the firm's premises had developed to a four-wing complex in traditional construction, i.e. brickwalls and brick-vaulting supported by cast-iron and steel columns and steel beams.

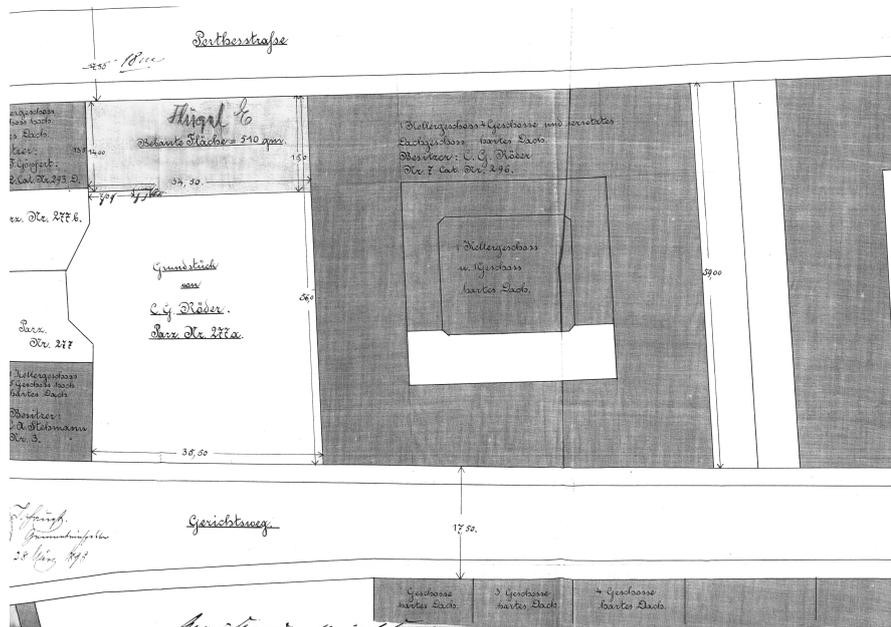


Figure 2: Plan of C. G. Röder's printing shop. The quadrangle in the centre are the wings already existing, "Flügel E" at the upper left is the Hennebique-wing of 1898. Later on Pommer built wings at the Gerichtsweg and connecting this to Flügel E to form another rectangle, its courtyard was roofed and used also for printing; (Bauakte, p. 104).

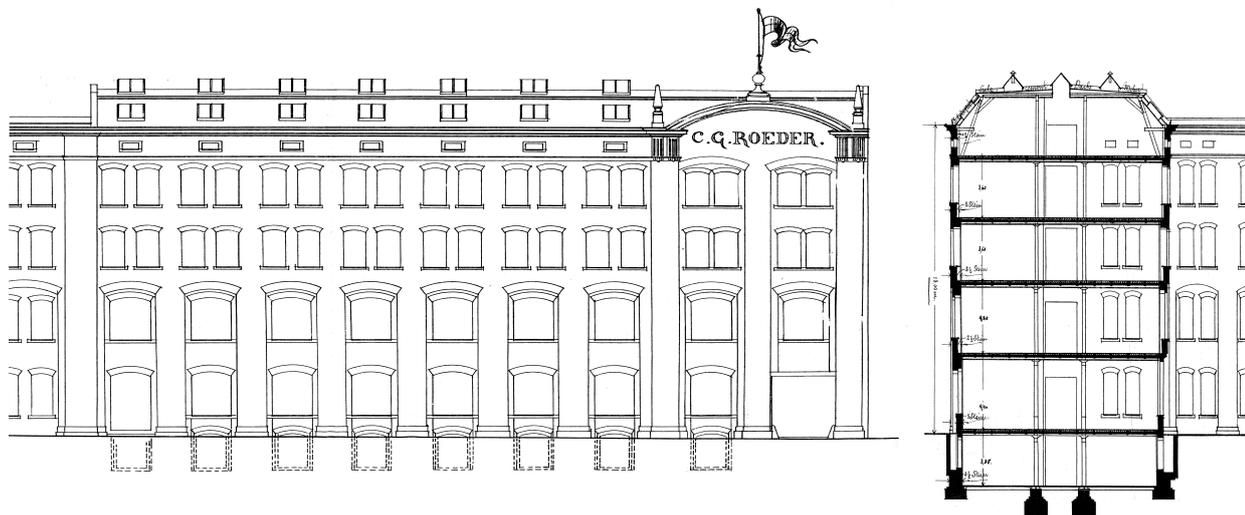


Figure 3: First design for the façade and cross-section, showing a traditional construction, submitted in February 1898; (Bauakte, p. 99)

Max Pommer applied for a building licence for another wing along the Perthesstraße on 28<sup>th</sup> February 1898. Only with a set of changed plans on 26<sup>th</sup> April did he write about his intention to use the system Hennebique. The building licence was issued on 7<sup>th</sup> of May. On 24<sup>th</sup> September the bare brickwork and the ceilings were approved by the building authority, and the finished building on 23<sup>rd</sup> December (Bauakte, p. 98–158). Work in the new wing commenced on 7<sup>th</sup> January 1899.

Max Pommer repeated the design of the façades and the dimensional system of measurements from the older wings partly designed by himself in the previous years. The only ornamentation of the plain plastered façades was a little gable above the yard-gate (now missing) and the brick-arches crowning the windows.

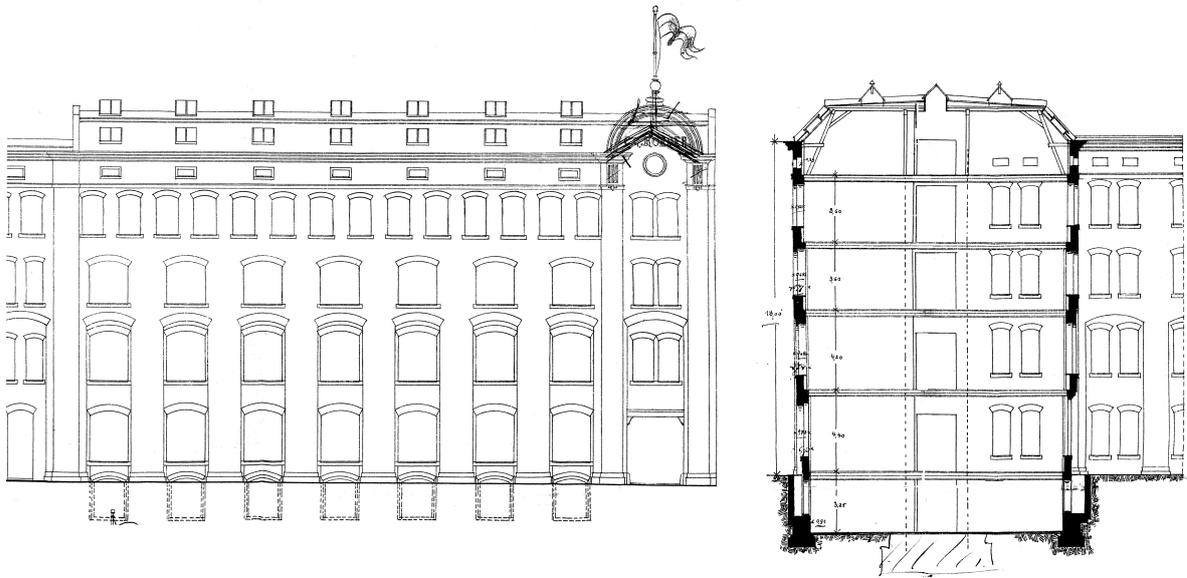


Figure 4: Executed design for the façade and cross-section showing no details of the Hennebique-construction, submitted in April 1898; (Bauakte, p. 120)

The drawings show no details of the construction. The wooden framework of the roof is shown in its correct measurements, while the columns of the Hennebique-system are symbolized by little crosses in the plans and the section shows no distinct beams and girders and only hatched lines for the columns.

Precise drawings including reinforcement plans followed only in August together with the static calculation of eleven pages. These drawings are not in the style of Max Pommer and the calculation is not signed (as was usual in Leipzig at this time). A load-bearing experiment took place in the same month; apart from Max Pommer, plus Pierre Bastine as member of the building authority, it was appraised by two members of the bureau Martenstein & Josseaux from Offenbach. We can deduce that this bureau set up the static calculation in its role as the main licensee of François Hennebique in Germany.

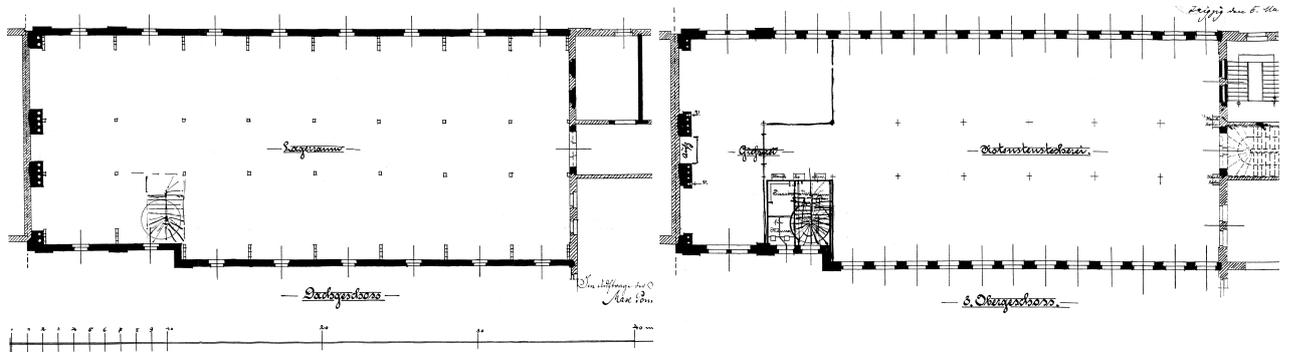


Figure 5: Groundplans of the attic storey and the third storey, submitted by Max Pommer in April 1898, showing the details of the roof construction but only crosses instead of the Hennebique-columns; (Bauakte, p. 119)

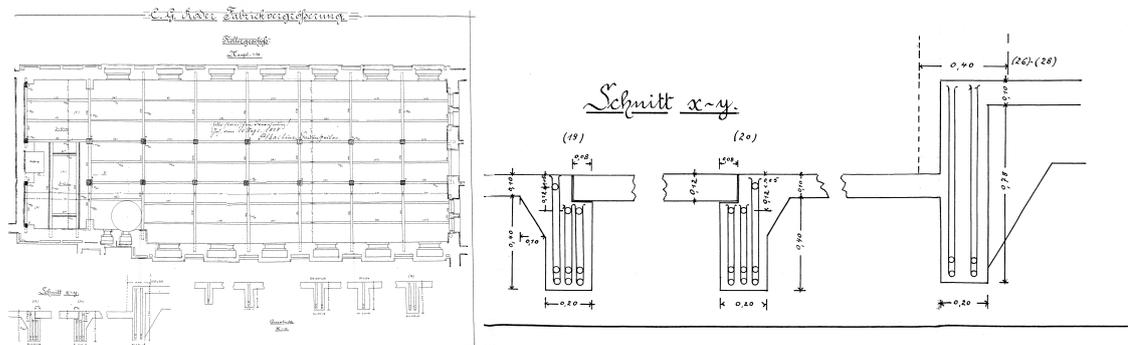


Figure 6: Reinforcement plan of the cellar ceiling with detail showing the reinforcement, drawn by Martenstein & Josseaux; (Bauakte, p. 143)

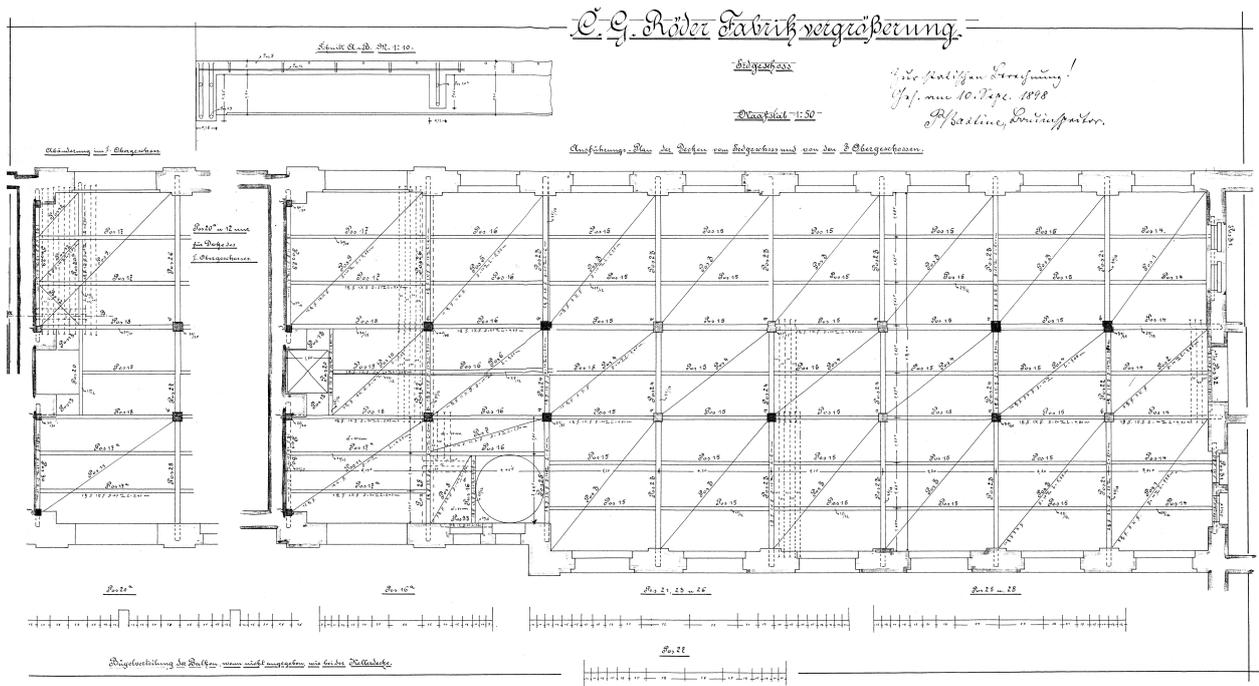


Figure 7: Reinforcement plan of the ground floor ceiling drawn by Martenstein & Josseaux; (Bauakte, p. 144)

Pierre Bastine concluded that the static calculation at several places was "barely sufficient" ("knapp", "sehr knapp", Bauakte, p. 139). In these cases the tensile load of the reinforcement bars exceeded  $\sigma_E = 800 \text{ kg/cm}^2$ , for example in some trusses up to  $848 \text{ kg/cm}^2$ , in some ceiling areas up to  $882 \text{ kg/cm}^2$  and in some main trusses up to  $896 \text{ kg/cm}^2$ . The load-bearing experiments did not convince him either, so he ordered that the printing machines be installed on steel beams spreading the load on several trusses. Max Pommer was so dissatisfied with this verdict that he organised a second load-bearing experiment in October 1898. Now the truss with the heaviest load remained only 0.2 mm deformed after ending the loading, with the intended machine weight multiplied by 2.28 to take into account not only a security margin but also the moving forces of the machines. Bastine now allowed the installation of the machines without any additional steel beams. The building authority received the static calculation only at the beginning of September 1898 for thorough examination, though the columns and ceilings in reinforced concrete were executed during the months of May to August. Several admonitions to deliver the static calculation and to allow the testing of the first executed ceilings above the cellar were fruitless. The building authority was used to such late information about the static calculation and did not stop the building works. Nevertheless one can only hope that Pommer already knew the static calculation in May to use the right number of reinforcement bars.



Figure 8: The interior of the first floor as it is today; (photo: author)

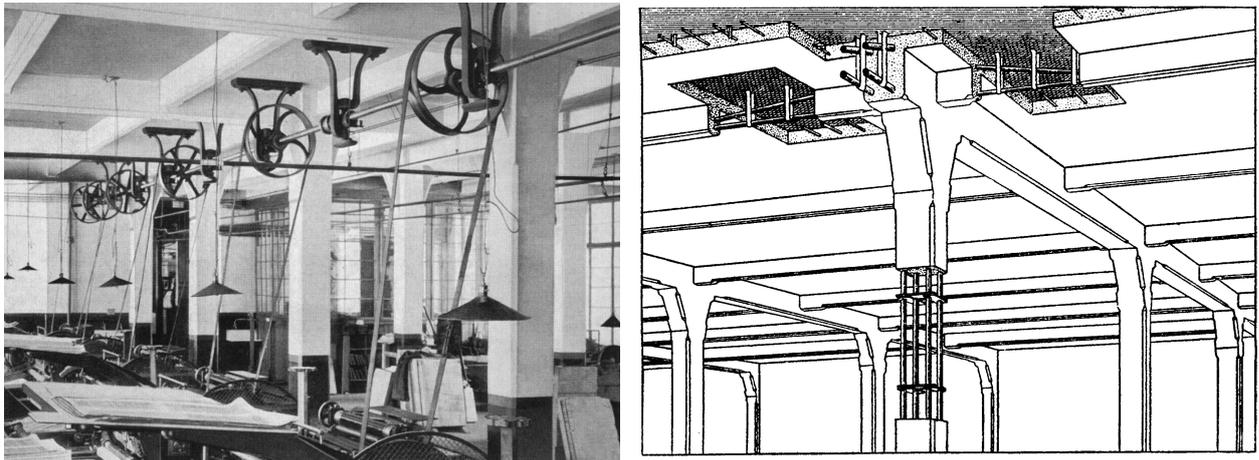


Figure 9: The interior with printing machines driven by a transmission and Hennebique's drawing showing the details of reinforcement with the bars of sheet-iron present only in early executions; (Adam 1998, p. 33, 32)

Areas of damaged fabric show that the connection between the reinforcement bars of the columns was effected by perforated stripes of sheet-iron and that the binding of the reinforcement bars in the trusses was also done with bended stripes of sheet-iron as shown in the patent drawings of Hennebique. Very soon they were to be replaced by bent bars and binding with wire. So this early example is an important document in the development of Hennebique's construction.

While the walls were erected by the renowned firm of Eduard Steyer, Pommer could not find a firm for the execution of the Hennebique-construction. So he decided to do it himself, and the year 1898 was always regarded as the foundation year of his construction firm which still exists with its specialization in concrete construction. In the same year of 1898 he got the licence to execute Hennebique-constructions in Saxony. Max Pommer must have been unhappy with the arguments with the building authority arising out of the wrong static calculation and its late delivery. Early in 1900 he paid a visit to Paris for Pierre Bastine to learn the calculation of reinforced concrete constructions at Hennebique's office. And in the summer of 1900 his son Max was sent to Paris to work with Hennebique for five months.

### MAX POMMER (1847–1915)

Born at Chemnitz 4<sup>th</sup> April 1847 the eldest son of a merchant, Max Pommer had a difficult upbringing after the early death of his father. Apprenticed as carpenter and pupil of a school of architecture he studied at the Hannover Polytechnic with the then famous Conrad Wilhelm Hase. In the following years he travelled as an overseer and worked in the office of Gustav Müller at Leipzig. In 1879 he set up as an independent architect in Leipzig and in 1898 he started his construction firm with the licence to use the Hennebique-system in Saxony. From 1884 he had also been member of the town council (Stadtverordneter) and member of its board of economy and board of building. In 1903 he was named honorary alderman (Stadtrat). With the increasing importance of his construction firm he closed his architectural office in 1912. He died on 5<sup>th</sup> July 1915.



Figure 10: Max Pommer, 1847–1915 at around 1914; (Family archive Pommer, Leipzig)

Max Pommer's architectural work is impressive for its diversity. Except for churches (he was overseer for the renovation of the Abdinghof church at Paderborn in the 1870s) he designed every type of building: the splendid villa and the simple workers housing, the factory and the office and the implementation of a shop in an existing building, the tomb monument and small changes of a building. The stylistic language of his villas is the Neo-Renaissance; more powerful details of Mannerism or Baroque are used only as accents. Typical of his designs is a clear distinction of single forms by a clear distance between them to give them separate emphasis, and an emphasis for the building's corners with ashlar stonework. His expertise in the historical orders of antiquity and the Renaissance is brilliant. His architectural language was unmistakably influenced by prototypes from Italy and France. He must have known them only by drawings, because his participation in the German-French War of 1870/71 surely left him no time for sightseeing, and his first journey to Italy apart from his honeymoon in Venice in 1875 took place only in March 1898 immediately after his decision to use Hennebique-construction for the Röder-building. His grand tenement-houses use the same formal language on a lower level; much simpler are the working class houses and, of course, the factory buildings. Most of them have plastered façades, adorned only with brick arches at the windows. The brick-façade of the paper warehouse of Sieler & Vogel is unusually ornate, one of his five Hennebique-buildings of 1899 situated at the noble Goldschmidtstraße next to the villa of the owner, whose representational ideas may have induced such a design. After 1900 some of the buildings designed by his practice depart from the conventions of Neo-Renaissance and show a more modern approach: Max Pommer was perhaps less involved here because of his other commitments.

During the booming development of Leipzig around the turn of the 20<sup>th</sup> century it was quite usual for the roles of architect, building contractor and building artisan to be less distinctly divided than is usual today. Often individuals were working in several fields at the same time, and combined planning, investment and construction to maximise their profits. So it was not unusual that Max Pommer created his own firm for building construction even after having built his own house and a workers housing project in a similar way. What was atypical was the concentration of this firm on Hennebique-constructions. Only some years later others were to follow this way, e.g. Rudolf Wolle who executed several bridges in the Möller-construction and was later on to build (together with Max Pommer and Dyckerhoff & Widmann) the concrete-constructions of Leipzig main station.

Max Pommer was also influential in the field of social reform (Adam 1998). Since the 1870s he had been befriended by Hermann Meyer, owner of the editing firm Bibliographisches Institut. When Meyer decided to create a foundation for cheap workers accommodation he asked Max Pommer not only to design the houses and execute the first complex of them but discussed with him details concerning the amount of rent and the administration. In Leipzig at this time several small initiatives followed examples from England of workers housing combined with an educative approach to better not only the living conditions but also the habits of the working classes. Of all these only Meyer's foundation is still working today, with roundabout 2 500 flats and it is quite possible that Pommer's influence gave it a solid working base. His engagement in the social question led him also to write a petition to chancellor Bismarck, whom he venerated though he did not share his social ideas.

This short summary shows a personality of high effectiveness and will to succeed, and he must have been of a winning manner. Max Pommer comes to life in the chronicle of his family which he began to write while forced by illness to stay at home in 1906 (Pommer 1906). It shows the features of his character behind his achievements: personal courage, a positive attitude to life and his surroundings, openness to new ways. This must have been combined with a friendly temperament ensuring him sympathy also in more difficult phases of his life; his friendship with the rather exacting Hermann Meyer and his long-term engagement in the town-council and as honorary alderman are the best proofs of it. Once convinced employers stayed with him, which was very untypical for this time. Short trips in later years with his own car ended with joy: "seen a lot of interesting things" ("viel Interessantes gesehen", Pommer 1906, 100). Partaking in the war against France and the distinction of the Iron Cross influenced his political attitude as a loyal servant of the monarchy, only occasionally qualified by a few critical remarks.

His openness to innovation was certainly one reason for him to try the new construction of Hennebique. The chronicle of his family gives no details how he learned about this. However it offers a small hint. He notes at the end of the year 1897 work on the design of the new wing for the Röder building. At the end of February 1898 an illness forced him to stay at home for ten days and only three days later he proposed to Röder to use reinforced concrete for the new wing. Because he uses the formulation "armirter Beton" which was not already in use one can deduce that he had employed the time of his illness by reading the Hennebique periodical "Béton armé". The chronicle was written only 1906 when "Eisenbeton" was the most common name for this type of construction, but Pommer must have been using a diary of the time as is visible at several instants. He did not know then how his life would change with this decision. When he signed the contract with Martenstein & Josseaux on 13<sup>th</sup> June 1898 according the licence to execute Hennebique-constructions in Saxony he annotated in the chronicle: "A very important step towards my future" ("Ein sehr bedeutsamer Schritt für meine Zukunft", Pommer 1906, 55).



Figure 11: Two Hennebique-buildings designed and executed by Max Pommer in 1899: the house of Robert Gruner in the city-center of Leipzig and the paper warehouse of Sieler & Vogel in Leipzig's elegant Goldschmidtstraße; (photo: author)

### THE ACTUAL STATE OF THE BUILDING

The history of the building since its erection can be quickly told. Around 1903/04 Max Pommer added two wings forming another rectangle north of the existing quadrangle. The courtyard was completely roofed. The heaviest air-raid of the Second World War on the night of 4<sup>th</sup> December 1943 almost completely destroyed the older wings while the three wings in Hennebique-construction remained with only slight damage. The oldest wing lost its roof, which was replaced with a low construction now derelict. Production ceased in 1990, since when the owner has shown no interest in preserving and re-using the building. A proposal to demolish it has been stopped at the last minute, but its future is still uncertain. The hope is to quickly find a more sensitive owner who wants to preserve and re-use this oldest Hennebique-construction in Germany.

### CONCLUSION

The oldest extant German multi-storeyed building with full Hennebique-system is an important part of constructional history in Germany. Its reinforcement shows the early connection of the longitudinal rods with blades, later to be replaced by bent rods and binding with wire. Despite its importance it is endangered by an insensitive owner and it is threatened with destruction by decay or demolition.

The Hennebique-pioneer of Germany, Max Pommer was an architect by training, founder of a building firm which still exists, and a social reformer with a remarkable influence on social housing in Leipzig.

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