

## An early electric clock called Fuldensia and its developer Ferdinand Schneider

### The clock

In principle, the movement of the Fuldensia clock has the same function as the Kienzle-Electric. The clock has a winding motor coupled to the striking mechanism. When the clock strikes, the small electric motor is switched on (3 volts) and drives the striking mechanism. At the same time, a small mainspring on the minute wheel is wound so that the clock can run.

There was no maker's mark on either the case or the movement, only an embossed "59" on the movement and a written "59" on the case. Ivo Creutzfeldt was involved with these clocks around the year 2000, so most of the information comes from him. He was kind enough to share his information with me. Based on his research and illustrations of other clocks, this clock is a Fuldensia.

Ivo had discovered that the Fuldensia was invented by Ferdinand Schneider. The invention was protected by several patents. It can be seen that it is a rake striking mechanism in which the pulley on the striking mechanism's wind gear is driven by a coil spring band, thus reversing the striking mechanism to a mechanical striking mechanism. However, not only the striking train, but also the mainspring of the going train is wound at the same time as the striking train is released every half hour. If the clock has run down completely, e.g. if the battery is flat, it has to strike several times so that the barrel on the minute wheel has a certain power reserve. Only then does the clock run and strike continuously and wind the going train again and again when the striking mechanism is operated.

The picture shows the power flow in the gear train. It is transmitted via the wind arrester gear (1), the starting wheel (2), the scoop wheel (3) and the lifting nail wheel (4) via an intermediate wheel (5) to the barrel (6), which sits on the minute wheel, shown here with red arrows. The pawl (6a) prevents the striking mechanism from turning backwards and keeps the going train spring wound up. From the mainspring barrel, the movement continues conventionally to the escapement wheel (8), shown here in green. To prevent the mainspring from being destroyed during continuous striking, it has a drag spring at the end of the spring, as in an automatic barrel.

Ferdinand Schneider from Fulda applied for a patent for the Fuldensia principle, which was granted on 15 May 1908 with patent specification no. 211867 in class 83b. A further patent with the principle of power transmission on spring clocks with sliding spring clutch and positive gear connection between going and striking train was granted in patent specification 229670 in class 83 b on 9 August 1908.

This clock was clearly built according to patent CH 47146, which is dated 30 January 1909.

If you compare the dial side of the clock with the illustration from the patent, you quickly realise that they match very closely, in fact everything except the outer shape of the lever 34. A comparison of a mechanical movement with this clock shows that the Fuldensia was made from a raw movement by Gustav Becker, with modifications to some of the striking levers and the addition of an electric motor. See a comparison in the image of the two movements side by side.

### The inventor

Ferdinand Schneider (1866 - 1955), the inventor from Fulda, not only developed electric clocks. He was also involved in wireless telegraphy and radio control of sea mines. Clocks were only a peripheral field for this technically adept man.

## **The company**

The Mitteldeutsche Uhrenfabrik in Wolfhagen near Kassel was founded in 1907, initially to produce mechanical clocks driven by springs or weights. At the beginning of 1910, Ferdinand Schneider acquired a stake in the Mitteldeutsche Uhrenfabrik by contributing capital in the form of a 30000 Mark investment and his patents for the electric Fuldensia clock. Not much is known about this small company, and the local historical society can only tell us that in 1911 they were looking for 2 apprentices "with a good school education to learn watchmaking and precision mechanics". The Mitteldeutsche Uhrenfabrik did not exist for very long and went bankrupt in 1916.

## **The developer**

August Ferdinand Thiesen (1871 - 1953) is well known among electric clock enthusiasts because he wrote three standard works on electric clocks:

Volume I: The individual electric clocks, Berlin 1936

Volume II: The synchronised clocks, Berlin 1937

Volume III: The master and slave clocks, Berlin 1939

A. F. Thiesen was very interested in electric clocks, which is how he came to be involved with the Fuldensia clock. He became a partner in the Mitteldeutsche Uhrenfabrik in Wolfhagen and further developed the clock to make it reliable.

In the article "Neue elektrische Einzeluhr mit Rechenschlagwerk" from 1910 (Deutsche Uhrmacherzeitung 1910 No. 2), Ferdinand Thiesen presents the clock from Mitteldeutsche Uhrenfabrik GmbH in Wolfhagen. At this time, he was already employed by this company. The fine drawing of the movement makes the function very clear, and the article describes it very precisely over almost 2 pages. The central lever and major change compared to the mechanical movement is the lever "S", which switches the current on and off by touching the contact at "K" with the spring "f2".

The drawing matches the real movement, even down to the shape of the hands. Based on this picture, it was possible to reconstruct the lever "S" and the original wiring of movement no. 59.

## **The further development of the Fuldensia into the "Kienzle Electric"**

However, the principle of winding a movement using an electrically operated striking mechanism was not dead after the bankruptcy of the Mitteldeutsche Uhrenfabrik: there are several patents and finished clock designs that continued to pursue the idea. The best-known variants of this principle are the clocks from Telavox and the "Kienzle Electric". All these clocks had the characteristic that they had strike several times before the movements themselves would run.

Kienzle in Schwenningen co-operated with the inventor of the Fuldensia, Ferdinand Schneider, to further develop the clock. In the mid-1920s, Kienzle presented the "Kienzle-Electric", a much further developed Fuldensia. The "Kienzle-Electric" was available with a bim-bam striking mechanism and - with relatively few modifications - also as a Westminster striking mechanism clock.