REGISTRATORE AUDIO MAGNETICO A NASTRO DI ACCIAIO

LORENZ 1935 Stahltonbandmaschines

Velocità nastro 2m/sec risposta in frequenza 70-5500 Hz. Usato anche sui mezzi mobili. Peso circa 150Kg.

Tratto da
The History of Magnetic Recording in the United States, 1888-1978
http://smartech.gatech.edu/bitstream/1853/24235/3/morton_david_l_199512_phd_438003.pdf pagina 272 e seguenti

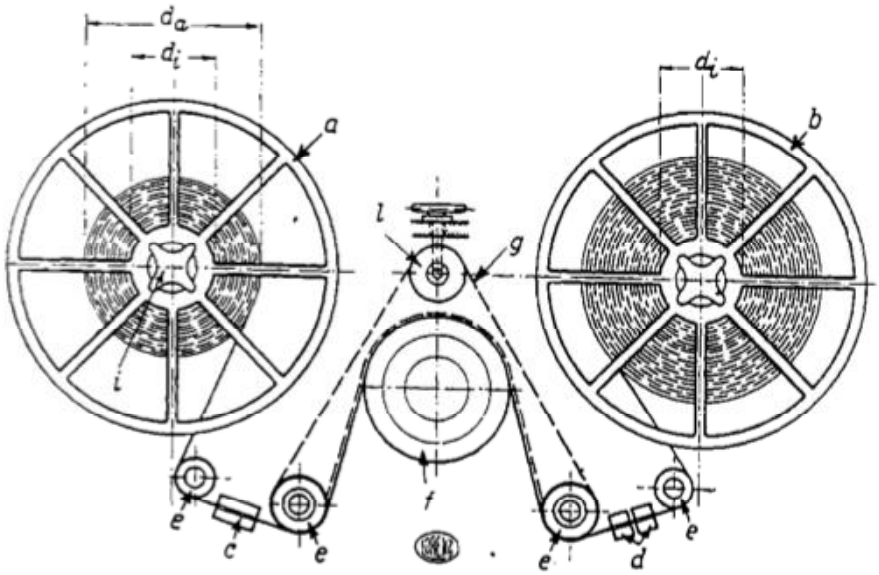


Figure 5.4: The C. Lorenz Co., "Stahtonbandmaschine"

The Stahtonbandmaschine was used in regular service for broadcasting by the RRG and other European broadcasters in the late 1930s before being displaced by the AEG Magnetophone. This diagram shows the general layout of the recorder's tape transport. One indication of the problems associated with the use of solid steel tape is the heavy-duty friction drive between the two reels. A fiber belt around l-e-e keeps the steel tape pressed against idler f, creating the relatively large amount of friction necessary to pull the tape from supply reel a at a constant speed. From "The Magnetic Recording of Sound," The Wireless Engineer 13 (April 1936): 176.



Gruppo testine magnetiche e testina singola prima della pulizia



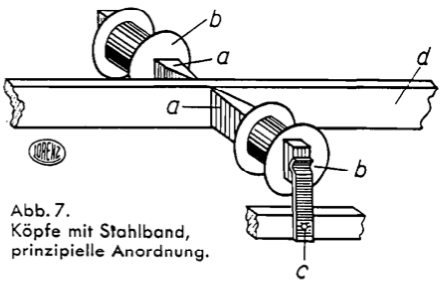


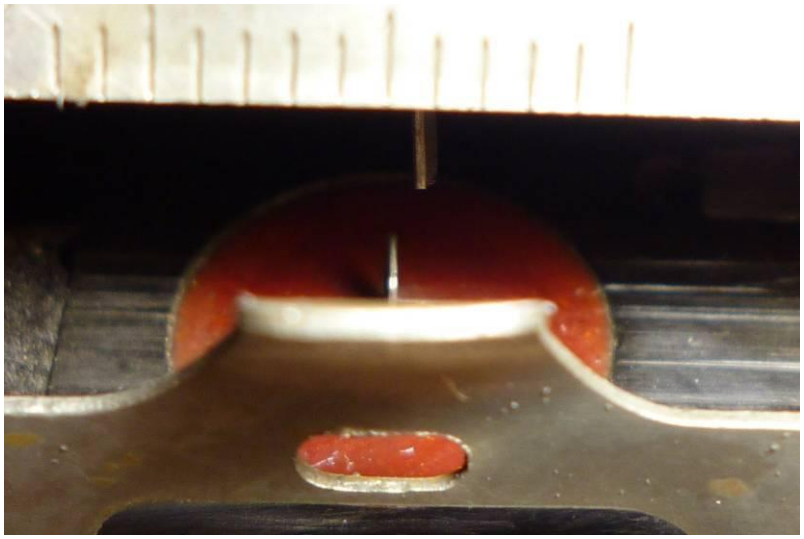
Abb. 7.
Köpfe mit Stahlband,
prinzipielle Anordnung.

Figure 1.8: Recording Electromagnet Pole-Pieces and Recording Tape.

An example of the way an electromagnet might be arranged in relation to the recording medium for magnetic recording. In this example, the tips ("pole-pieces) of the core are placed on opposite sides of a steel tape. From "Die Neue Stahlton-Bandmaschine," Lorenz Berichte, April/May 1937, p. 55.



Traferro magnetico, particolare di una testina magnetica



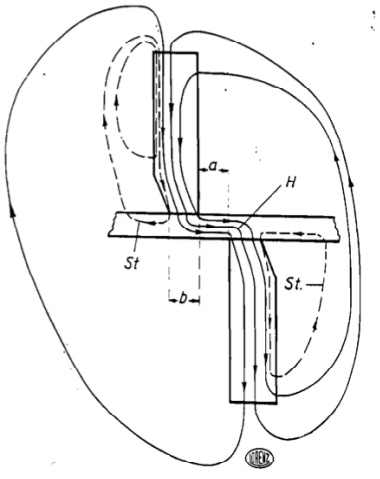


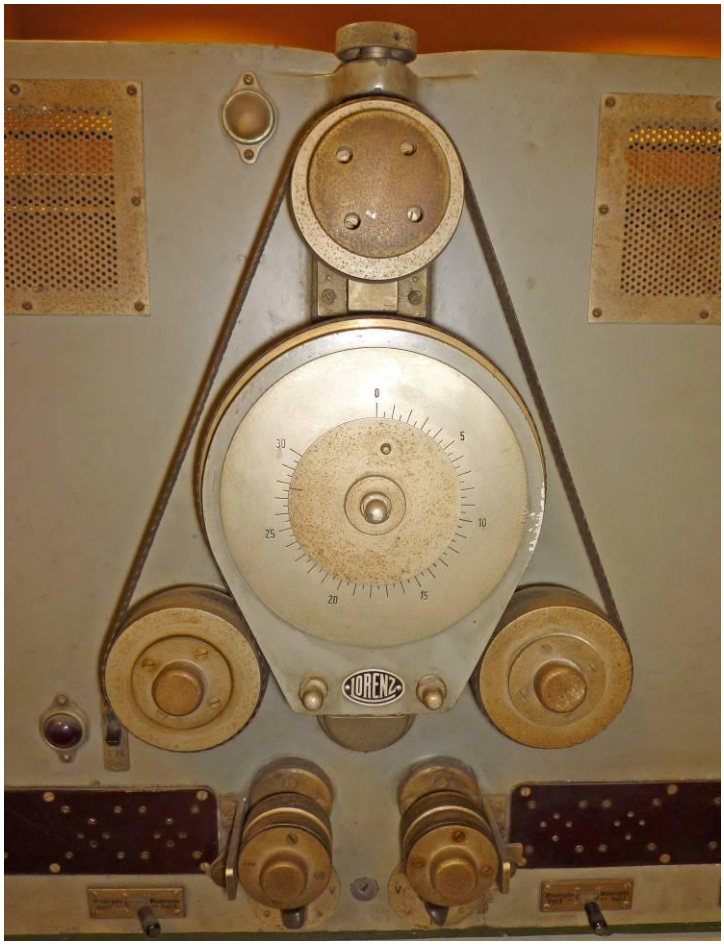
Figure 1.9: Magnetic Flux Through Recording Electromagnet and Medium.

Diagram showing the path of magnetic flux through the recording electromagnet pole-pieces and steel medium, for the equipment described in Figure Eight. From "Die Neue Stahlton-Bandmaschine," Lorenz Berichte, April/May 1937, p. 55.

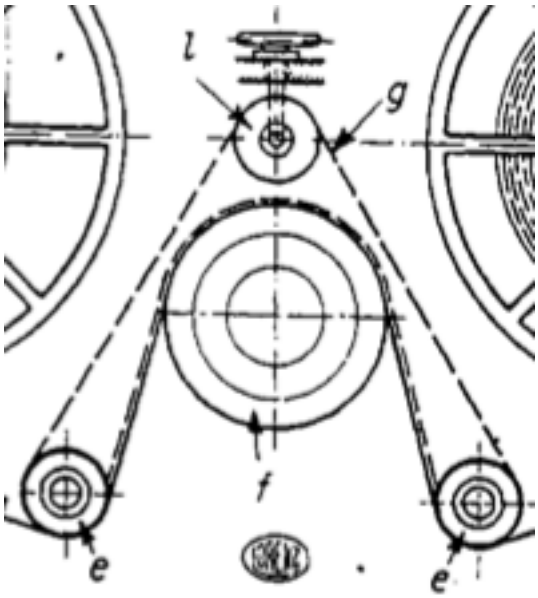
European Developments in Wire Recording. 1920-1945
The events that had acted to marginalize magnetic recording to obscurity in the United States from the 1920s and 1940s were not repeated in Europe. In England and Germany, Valdemar Poulsen's invention was the subject of both intensive study and successful commercialization. While limited mainly to industrial uses, such as centralized telephone recording or radio broadcasting, the magnetic recorder faced little of the opposition that its promoters confronted in the United States. By the end of World War II, magnetic recording was a central feature of telephone systems and radio stations across the Western part of the continent. The use of magnetic recording in Europe had its ups and downs during the 1920s before finding lasting success in the early 1930s. German firms pushing wire recorders for dictation and telephone recording purposes were particularly active in the 1920s, adapting the vacuum tube amplifier for use with magnetic recording early in the decade. The first magnetic recording system to meet with commercial success was that designed by a German inventor named Curt Stille. An independent researcher who was also a clever businessman, Stille obtained several German patents for his recorders and set about commercializing them through a series of patent holding companies in the early 1920s.

… The C. Lorenz recorder represented vast technical improvements over earlier types, though it still depended on the special Swedish steel. Begun was instrumental in the design of a second machine using steel tape, modelled on the Blattnerphone. The severe problems associated with driving the heavy steel tape at a constant speed past the recording/replaying heads were addressed by a powerful new transport, but still retained the special imported tape. From 1936 until the early 1940s, Stahltonbandmaschines were placed in German radio stations, in portable sound recording trucks, and in public address broadcasting systems. The latter is a form of communication not usually undertaken by American networks, involving simply broadcasting with loudspeakers and amplifiers. The Reichs Runkfunk Gesselschaft [RRG] recorded and rebroadcast commentary in this fashion on the events of the 1936 **Olympic** games for the benefit of people who could not attend.

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Guida ,rullo nastro, cinghia di trasmissione



Il registratore magnetico per audiofrequenza è costituito fondamentalmente da un sistema di 3 circuiti elettromagnetici detti "testine" allineati secondo una direzione di scorrimento (da sinistra verso destra) di un nastro magnetico che si sposta a velocità costante in contatto con esse. Le 3 testine sono concettualmente simili tra di loro ma hanno caratteristiche dipendenti dalle funzioni che svolgono e che vengono quì esaminate secondo l'ordine di intervento determinato dalla direzione del nastro.

Cancellazione

Il nastro magnetico prima di ricevere il processo di registrazione deve essere accuratamente smagnetizzato. La testina di cancellazione viene alimentata da una corrente sinusoidale ad alta frequenza che produce un campo alternativo di saturazione che si riduce progressivamente come il nastro lascia il traferro della testina

Registrazione

Il processo di registrazione avviene nel circuito magnetico formato dalla testina di registrazione e dal tratto di nastro magnetico. La testina è un trasduttore elettromagnetico formato da un nucleo magnetico di ferro dolce, un traferro e un avvolgimento attorno al nucleo. Se facciamo scorrere un nastro magnetico davanti al traferro si viene a creare un campo magnetico in corrispondenza. Il nastro in uscita mantiene la "magnetizzazione residua" sotto forma di una serie di magnetini polarizzati sul nastro. La variazione del segnale in funzione del tempo viene registrata come una variazione di magnetizzazione in funzione delle distanze dei punti di inversione del campo lungo la traccia di registrazione.

Riproduzione

Il processo di riproduzione avviene nel circuito nastro-testina di lettura. Il flusso magnetico generato dal nastro entra in un bordo del traferro,passa attraverso il nucleo e ritorna nel nastro attraverso l'atro bordo del traferro. La bobina della testina produce una tensione in uscita proporzionale al campo magnetico presente nel traferro.



Gruppo motore trifase, riduttore di velocità,giunto e cinghie di trasmissione, accoppiamenti frizionati ai supporti per le bobine.