PUBLISHED
MAY 25, 1943.
BY A. P. C.

R. HELL
RECORDING SPINDLES
Filed Nov. 23, 1940

Serial No.
366,933

Fig. 1

Fig. 2

Fig. 3

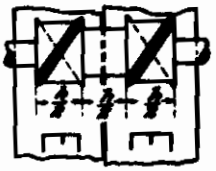

Fig. 4

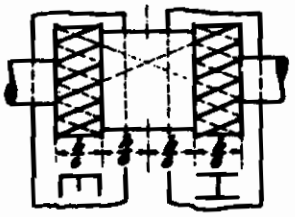

Fig. 5

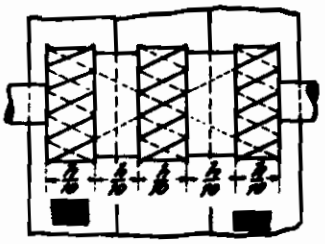

Fig. 6

Inventor:
Rudolph Hell
By Richardson & Thew
Atty's

Published May 25, 1943

Serial No. 366,933

ALIEN PROPERTY CUSTODIAN

RECORDING SPINDLES

Rudolf Hell, Berlin-Dahlem, Germany; vested in the Alien Property Custodian

Application filed November 23, 1940

The present invention relates to recording spindles known as Meyer spirals which serve for the facsimile transmission of characters, Morse signals or other signals.

To completely record at least a character on the receiving tape in the case of differences in synchronism between the signal transmitter and the spindle, the spindle is so designed that each image point of a character is scanned two times simultaneously and recorded. In this case the distance between two image points simultaneously recorded is equal to the length of a scanning line for a character. The lines or characters simultaneously recorded are therefore separated from one another a very small distance which may be varied to a slight extent only by subdividing the field of image. The lines recorded are arranged close to one another.

According to the invention the distance between two points recorded simultaneously is made in contradistinction to the known arrangements of this character greater than the length of a scanning line for a character. In this manner the individual records may be more easily separated and may be again utilized separately. This is not only advantageous in the case of a multiple record of a character but also in the case of the simultaneously recording of different characters by a spindle and separate magnet systems. The latter may then be easily arranged close to one another.

The distance between two spindle points which scan simultaneously may be attained according to the invention by arranging a plurality of spindles of the known type. The distance between the lines recorded may then be adjusted at will with the aid of intermediate members arranged between the individual spindles.

However, if the distance between two spindle points which scan simultaneously is made two or several times greater than the length of a scanning line of a character, a spindle may be employed with one or more threads which scan simultaneously and which are in part ground out in rings. The spindle serving to simultaneously record any number of characters may then be made of one piece, all threads being ground throughout their length and the rings ground out subsequently. A particular adjustment of the spindle threads to the same phase and a subsequent over-grinding as is necessary when employing a plurality of separate spindles owing to the great accuracy required in maintaining the diameter of the spindle (± 0.002 mm) are avoided.

Further details of the invention will be explained by reference to the accompanying drawings. Figs. 1 to 4 show the simultaneous record of two, Fig. 5 of three and Fig. 6 of four characters or Morse signals, in which h denotes the pitch.

In Fig. 1 is shown an embodiment in which two separate spindles are employed having each a thread which record simultaneously. The spindles are so arranged in spaced relation on an axis that the lines are recorded in the center of both halves of the tape separated by perforations. Instead of a receiving tape with perforations, a particular receiving tape may be allotted also to each line and all tapes may be driven by a common transport roller, irrespective of whether the arrangement serves for the simultaneous record of one or several characters. At all events the width of the paper tape can be chosen in such a manner that in the case of perforated tapes the lines recorded lie in the center of the tapes or tape widths allotted thereto.

Figs. 2 to 6 show further instances of the invention for spindles made of one piece and whose threads are at first ground throughout the entire length and then again ground out in rings. In Figs. 2, 3, 5 and 6 the distance between two spindle points which scan simultaneously is equal to two times and in Fig. 4 equal to three times the length of a scanning line for a character.

While in Figs. 1, 2 and 6 the spindles are single threaded and scan simultaneously lines of the pitch h during one complete rotation, the other figures show multiple threaded spindles, i. e., Fig. 3 a double-threaded spindle which scans a line during half a rotation. Three half threads are produced on the spindle, of which the central half thread is ground out.

In Fig. 4 is shown a sextuple threaded spindle. The length of the spindle amounts to $\frac{4}{6}$ of the pitch. In the center $\frac{2}{6}$ of the pitch is ground out.

In Fig. 5 the spindle length amounts to $\frac{5}{10}$ of the pitch, of which $\frac{5}{10}$ is ground out. Ten lines are simultaneously scanned during each rotation (spindle with ten threads).

In order to render legible a character on each tape in the case of fluctuations in synchronism, a double recording may be employed as shown in Fig. 6. Transmitter and receiver are preferably driven by synchronous motors. In this case the number of threads of the recording spindle may be so chosen that the spindle revolves with the same speed as the driving motor, only coupling members being necessary with the aid of which the phase is adjusted at the beginning of the transmission.

RUDOLPH HELL.