

Short description of an
Automatic Sound reproducing machine
for indicating the time to telephone subscribers.
Netherlands patent application N^o 69661 ~~Feb.~~

The design of the apparatus is based on the principle of the sound film. One of the objects aimed at by the designers was to embody a means of carrying the variations, in this instance the spoken words, which would not be subject to mechanical wear and thus ensure a long working life.

It may be assumed that the working of the sound film is known. In this case the sound-recording is effected in the usual manner, the latest type of apparatus being employed in order to make certain of an undistorted reproduction. Some difficulty was experienced in obtaining the services of an individual having a suitable voice, the requirements being clearness of diction, absence of any marked local accent and a certain friendliness of intonation. A suitable person was eventually found and it may be remarked that a large number of tests have shown the female voice to be most suitable.

Turning to a description of the actual apparatus, it will be seen on referring to the accompanying illustration that a prominent place is occupied by the drum, to the circumference of which the sound film is attached in parallel strips. Where the strips are to traverse the optical part of the reproduction system the drum is transparent.

The drum is provided with two groups of strips, one of 60 units and one of 24, for the minute and hour registrations respectively. These groups are spaced 180° apart for reasons which will be given later.

Further reference to the illustration will show a pair of rails in front of the drum, on which are mounted two carriers.

The latter are fitted each with an optical system comprising a foto-electric cell, partly visible on the right of the figure, a micro-objective and a source of light. The fotoelectric cell is connected in the usual manner via an amplifier to a loud speaker or telephone, while the drum is rotated at a constant speed. Thus, when a beam of light is projected onto a strip of sound film in way of a transparent portion of the drum, the reproduction

system is brought into operation and the figure recorded on that portion of film is made audible.

Both carriers are provided with a traversing mechanism, the source of power being an electric current impulse, lasting approximately one second, released at intervals of one ~~second~~ ^{minute} by a master clock. ~~with~~ By Each impulse ~~the~~ the left hand carrier ~~is moved~~ over a distance equal to the width of two film strips.

The spacing of the groups of figures referred to above (has been solved in a very simple manner and) will now be described.

Beginning at the left hand side of the drum, the minute group begins with 0, followed by 59, 1, 58, 2, 57, 3 and so on, ending with 28, 33, 29, 32, 30 and 31.

The hour group is treated in the same manner: 1, 24, 2, 23 etc.

The sequence of operations for the minute selector is as follows. Beginning with zero, it is clear that this figure will be repeated once during each revolution of the drum. At the end of a minute the traversing mechanism comes into operation and moves the carrier past 59 to a position opposite 1, where it remains during a further minute. This operation is repeated until the carrier reaches 30. At the end of the minute the carrier moves through only one space to 31. At the appropriate moment the carrier is again brought into motion but this time in the reverse direction, the latter being effected by a change over switch also controlled by the master clock. The sequence is now repeated until the carrier has returned to zero, when a circuit which operates the hour selector is closed, advancing the latter one ~~step~~ ^{step} of two spaces $\frac{1}{2}$.

The working of the hour selector is as described above except that the carrier advances one step every 60 minutes.