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SCANNING DISK WITH SYNCHRONIZATION DEVICE

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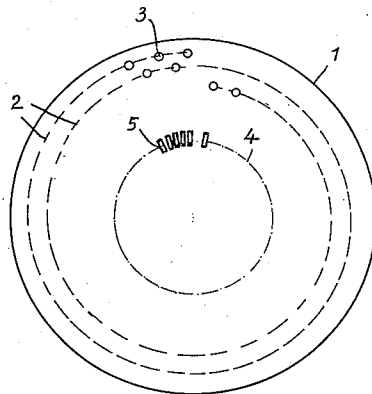


Fig. 1

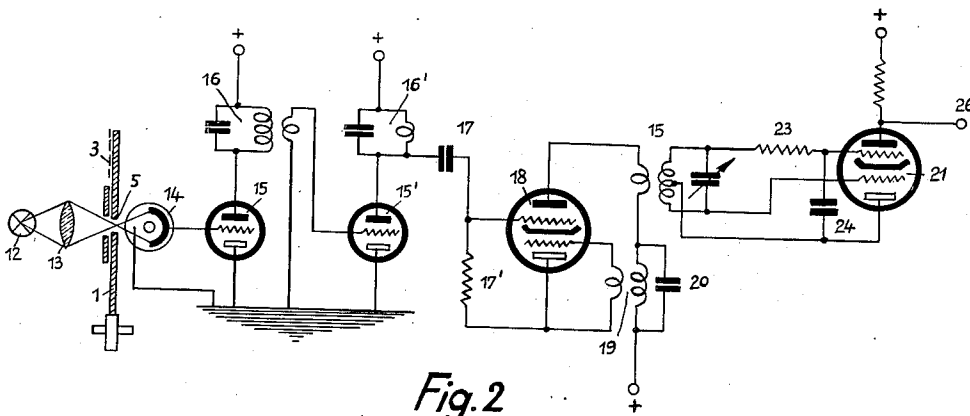


Fig. 2

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SCANNING DISK WITH SYNCHRONIZATION
DEVICE

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4 Claims. (Cl. 178—7.1)

The present invention relates to scanning disks having two or more spirals of scanning apertures, such as e. g. used for interlaced scanning, and a ring of slots for producing synchronizing signals by means of a special photo-cell, the number of slots being equal to that of apertures. The latter condition supposes that never two apertures are on the same radius of the disk.

If the spiral has s turns and, consequently, the disk will describe s revolutions per image whilst a rotating shutter uncovers only one of the turns at once, the number of signals produced by the slots will be s -times greater than the number of apertures, i. e. lines.

It is an object of the invention to reduce the frequency of the signals produced by the slots to the line frequency, i. e. s -times.

It is a further object of the invention to transform these signals into exact and sharp synchronizing impulses.

The invention will be more clearly explained by means of the accompanying drawing, in which

Fig. 1 shows a scanning disk according to the invention and

Fig. 2 circuits for producing synchronizing impulses.

In Fig. 1 the disk 1 is provided for example with a double spiral 2 of scanning apertures 3 and a ring of synchronization slots 4. To each aperture 3 belongs a slot 5, preferably at the same radius of the disk and stamped out at the same position of the dividing machine.

Fig. 2 shows the disk in cross-section. The scanning arrangement is not shown. The light source 12 illuminates by means of a lens 13 through a diaphragm 10 and the synchronizing slots 5 the photo-cell 14. By means of diaphragm 10 the width of the light ray is made to be smaller than the slots in order to avoid that a whirling of the disk alters the quantity of the passing light. The photo-cell 14 acts on the amplifier 15—15' which contains highly selective oscillatory circuits 16—16' sharply tuned to the frequency produced by the slots. A high selection of this kind is advantageous because it prevents faults in divisioning of the slots to appear in the image. The coupling of the amplifier stage is preferably made so that humming or other parasitic interferences are not transferred. The most suitable is an inductive coupling as shown at tube 15 or, as shown at tube 15', a capacitive coupling by way of very small condenser 17 and small leak resistance 17'.

The frequency reducer, according to the invention, is a pentode. To its outer grid 18 the

amplified filtered slot frequency is conducted. The inner grid is back-coupled to the anode. The anode circuit 19/20 is tuned to the reduced frequency (line frequency, in the example half the slot frequency). The anode current of tube 18 is, owing to its flat curve, not capable of being employed as synchronizing impulses. Thus a connection known per se is used in order to convert the sinusoidal oscillations into sharp impulses. The anode circuit of the tube includes the primary of a transformer 15 the secondary of which excites in push-pull the two subsequent grids of a tube 21 so that they oscillate in opposite phase, but with a slight phase shift caused by the time circuit 23/24. Consequently the anode current is not able to pass the tube except when both grids are positive at once, i. e. for the short time of the time constant of 19/20, i. e. in the form of a short impulse. This current impulse is very suited for synchronization purposes.

The problems of the image change synchronization are in this connection of no importance.

I claim:

1. In a television transmitter comprising a scanning disk having a multiple spiral of s , at least two, turns of scanning apertures distributed at equal angles, and a rotating interceptor clearing simultaneously one turn of said spiral only, an arrangement for producing synchronizing impulses comprising a ring of synchronization slots in said disk equal in number to said apertures and also distributed at equal angles, a photo-electric device for producing an impulse by the passing of each slot, and an electric device for reducing s times the frequency of said impulses to the line frequency.

2. In a television transmitter comprising a scanning disk having a multiple spiral of s , at least two, turns of scanning apertures distributed at equal angles, and a rotating interceptor clearing simultaneously one turn of said spiral only, an arrangement for producing synchronizing impulses comprising a ring of synchronization slots in said disk equal in number to said apertures and also distributed at equal angles, a photo-electric device for producing an impulse by the passing of each slot, an amplifier sharply tuned to the frequency of said impulses for amplifying said impulses, an electric device for reducing s times the frequency of said signals to the line frequency, an oscillatory circuit for transforming said impulses into sinusoidal oscillations, and a device for transforming said oscillations into short line synchronization impulses.

3. In a television transmitter comprising a scanning disk having a multiple spiral of s , at least two, turns of scanning apertures distributed at equal angles, and a rotating interceptor clearing simultaneously one turn of said spiral only, 5
an arrangement for producing synchronizing impulses comprising a ring of synchronization slots in said disk equal in number to said apertures and also distributed at equal angles, a photo-electric device for producing an impulse by the 10
passing of each slot, an amplifier sharply tuned to the frequency of said impulses for amplifying said impulses, an electric device for reducing s times the frequency of said signals to the line frequency, an oscillatory circuit for transforming 15
said impulses into sinusoidal oscillations and a

device for transforming said oscillations into short line synchronization impulses, said device comprising an amplifier tube having two grids fed by said impulses with a slight phase difference.

4. In a television transmitter comprising a scanning disk having a multiple spiral of s , at least two, turns of scanning apertures distributed at equal angles an arrangement for producing synchronizing impulses comprising a ring of synchronization slots in said disk equal in number to said apertures and also distributed at equal angles, a photo-electric device for producing an impulse by the passing of each slot, and an electric device for reducing s times the frequency of 15
said impulses to the line frequency.

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