

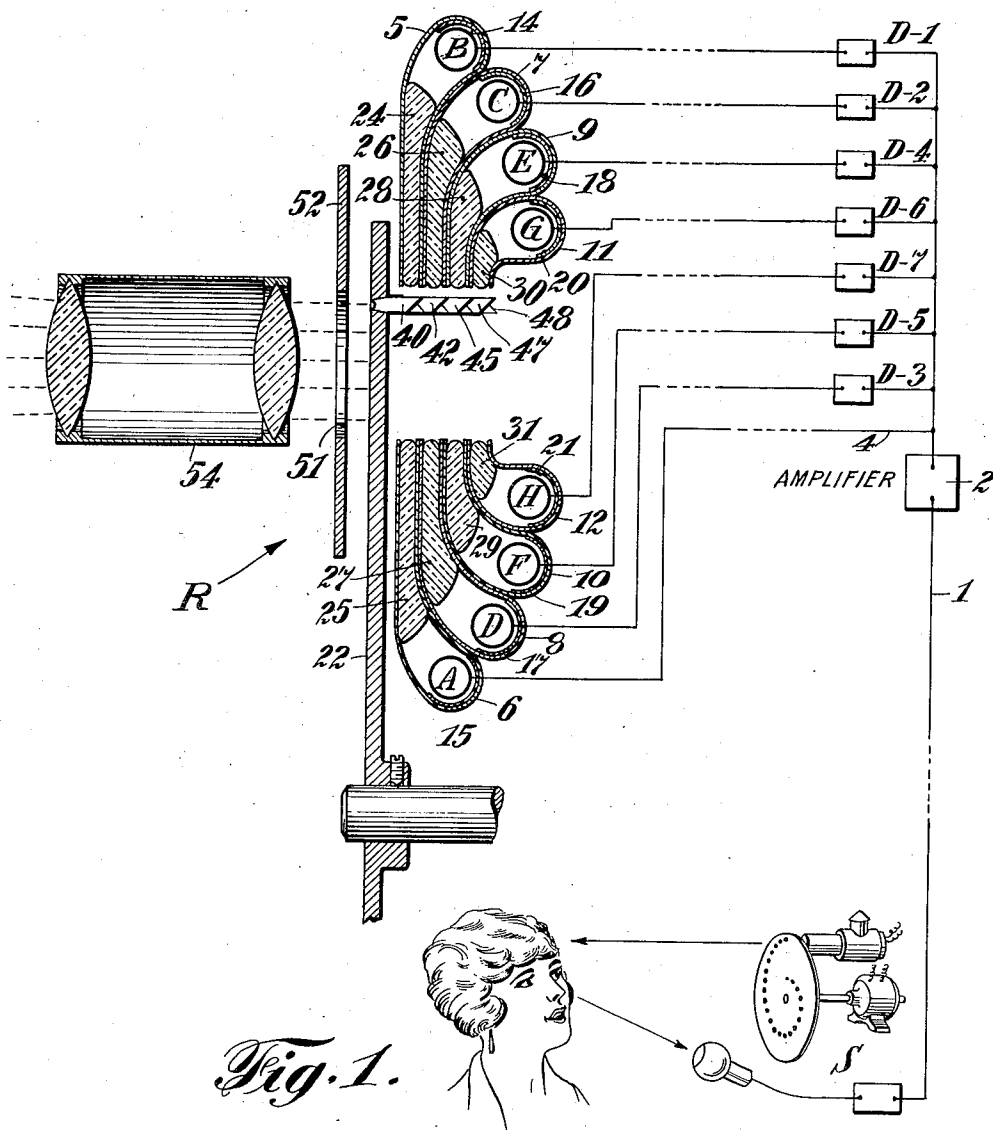
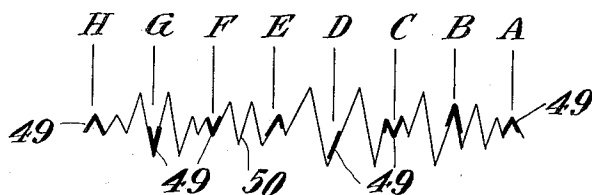
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TELEVISION RECEIVER

2,050,463

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2 Sheets-Sheet 1



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2 Sheets-Sheet 2

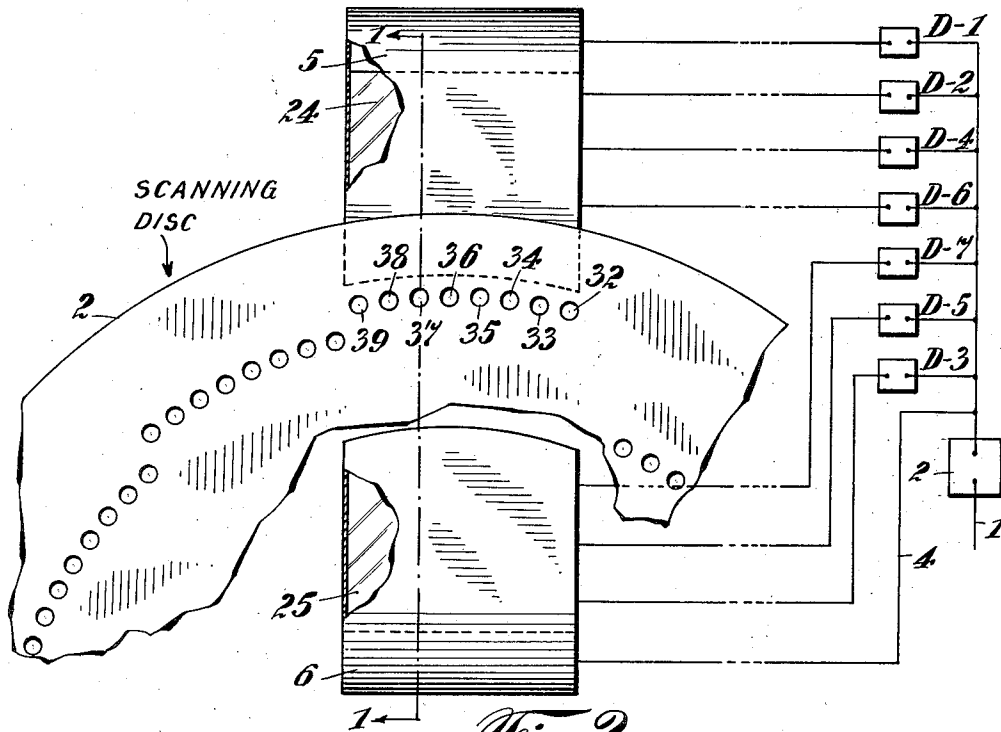
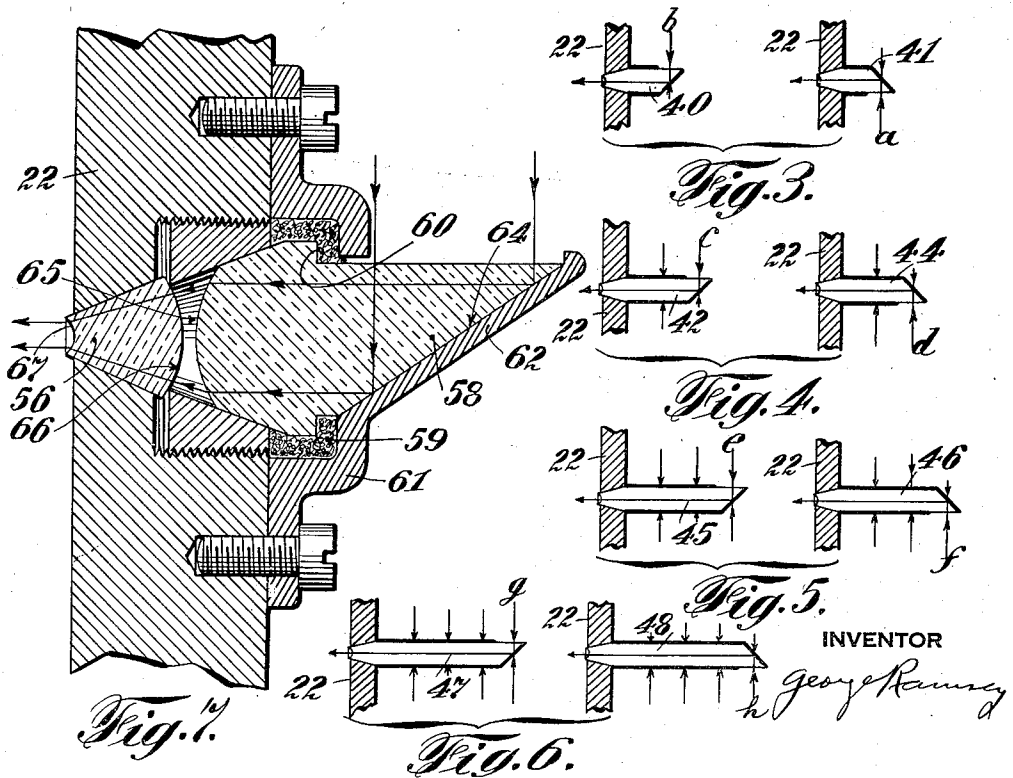


Fig. 2.



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TELEVISION RECEIVER

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3 Claims. (Cl. 178—6)

The present invention relates broadly to television and more especially to a receiving apparatus for use with television.

One of the difficulties with the present receiving systems of television is to be able to produce sufficient controlled light in order that the television image may be discernible and particularly where it is desired to project the television image upon a screen.

The present invention overcomes the difficulties of the known art by providing a multiple of controlled light areas, each of which is controlled in such manner that each of the controlled light areas undergoes the same series of intensity changes during successive intervals. For example, assuming there are ten controlled light areas, each of these areas will undergo exactly the same variations in intensity, preferably spaced at equal time intervals, so that the same intensity wave is repeated ten times.

A convenient source of controlled areas, is a plurality of controlled light sources, or lamps capable of high speed control. The synthesizing mechanism may comprise a disc, similar to a scanning disc at the sending station, on which are provided means located at suitable intervals to properly receive synchronized light impulses from the light sources so that the synthesized light wave is repeated as many times as there are sources of light. If there are ten light sources, then the synthesizing wave is repeated ten times.

The invention may be embodied in various forms but for the purpose of illustration, the preferred form comprises a reception circuit over which the signals from the sending station are received. This reception circuit may be any type of circuit available for the transmission of energy, for example, it may be either wire or radio. The received impulses control sources of illumination, as for example, gas filled lamps of which a neon tube lamp is one form. A plurality of such lamps are arranged so that the beams of light therefrom are available to the synthesizing member during a single line scanning cycle at the sending station. The incoming wave after being suitably amplified is transmitted to the control mechanism for one lamp; a second circuit, a branch of the original circuit comprises a delay circuit and is connected to the second lamp; likewise a third circuit, a fourth circuit, etc., up to the limit of the number of lamps. In each case (except as to the first lamp) there is provided in each branch circuit a delay circuit that correspondingly, progressively, delays the incoming wave. The result is that as the first lamp finishes a scanning cycle, the last lamp, for example, is just beginning the same cycle. In the present embodiment of the invention, the synthesizing disc preferably carries a plurality of small openings for each scanning line arranged in series on the arc of the

circle traced by the leading opening for the particular scanning or synthesizing line. These openings may be provided with lenses or reflectors so constructed that the reflector associated with the first opening receives light only from the first lamp. The reflector for the second opening receives light from the second lamp and so on throughout the series. In this way, it will be observed that as the scanning disc rotates, each reflector cooperating with its respective lamp will trace a path of varying light exactly like its predecessor, so that the total amount of light available for each synthesizing operation at the receiving station is multiplied by as many times as there are openings and sources of controlled light.

The disclosure herewith is illustrative and is not to be considered in the limiting sense in view of the fact that the present invention may be embodied in constructions and carried out by steps which differ from those herewith disclosed without departing from the spirit of the invention.

Fig. 1 is a diagrammatic view on line 1—1 of Fig. 2 illustrating a portion of the construction for carrying out the present invention.

Fig. 2 is a front view of a part of the construction shown in Fig. 1 and illustrating an edge broken from a synthesizing disc.

Figs. 3 to 6 illustrate reflectors and light rays from their respective lamps.

Fig. 7 illustrates in section a preferred form of reflector and light gatherer.

Fig. 8 is a diagrammatic view illustrating the progressive action of the various controlled light areas on the light intensity wave.

Referring now to the drawings and more especially to Figs. 1 and 2, the sending apparatus S scans an object and sends out signals in the form of electrical waves over a channel 1, which may be of any well known type, such as a line, or radio channel. These signals, which vary as to the light and shade of the object being scanned, are received at the receiving station R and are led to the incoming circuit which is connected with a suitable amplifier 2, and a branch 4 leads to operating control devices (not shown) for a lamp A, which are well known in the art. Another branch of the circuit from the amplifier 2 leads to a delay circuit D—1 and from there through suitable devices to lamp B. Branches of the circuit from the amplifier 2 likewise pass to delay circuits D—2, D—3, D—4, D—5, D—6, and D—7, each of which delay circuits is respectively connected to lamps C, D, E, F, G, and H. For the purpose of illustration, eight lamps are shown although more or less may be used as is desired. Preferably, these lamps are mounted in light tight casings indicated in Fig. 1 by the numerals 5 to 12 inclusive. Each of these casings is provided with a reflector indicated by the reference numerals 14 to 21 inclusive, and each casing con-

nects with an optical means to deliver the light from its respective lamp in a plane parallel to the synthesizing disc 22. The specific optical means provided in the present case are slabs of fused quartz designated by reference numerals 24 to 31 inclusive. The slabs of quartz are separated by light tight partitions in such manner that the light from one lamp does not in any way affect or interfere with the beam of light from the adjacent lamp. Preferably, though not necessarily, the lamps are arranged on each side of the picture area zone.

Reference may now be made to the details illustrated in Figs. 2 to 6 inclusive. Referring to Fig. 2, the openings 32 to 39 inclusive in the scanning disc are each provided with a reflector or other optical means for collecting the light from a specific lamp for each particular opening. This group represents only one scanning line. It is, of course, to be understood that each scanning line is equipped with the same number and kind of optical means. In the preferred form, this optical means comprises a quartz reflector. The quartz reflector is supported within a shield so as to admit only light from a predetermined lamp to a specific reflector. In Fig. 3, shielded quartz reflectors 40 and 41 are adapted to receive the light rays *a* and *b* from the lamps A and B. The quartz reflectors 42 and 44 illustrated in Fig. 4 receive and transmit the rays *c* and *b* from the lamps C and D. The shielded reflectors 45 and 46 in Fig. 5 receive and transmit the light rays *e* and *f* from the lamps E and F while the shielded reflectors 47 and 48 in Fig. 6 receive and transmit the light rays *g* and *h* from the lamps G and H. In this way, it will be observed that the opening 32 in the scanning disc 22 transmits light only from the lamp A, etc., so that other succeeding openings transmit only the light from their associated lamps. The slabs of quartz are of such length as to transmit the light variation taking place during one complete scanning operation.

The transmission of the light from the various lamps may be illustrated, as shown in Fig. 8, by showing the location of the light from the various lamps on the same light wave intensity curve at a given instant when the lamp A is finishing a scanning line cycle and the lamp H is beginning the same line cycle. The heavy dark spots 49 on the wave curve 50 of Fig. 8 illustrate this point. The length of the wave curve 50 shown in Fig. 8 illustrates the progression of the various lights from each particular lamp over the particular single line wave curve due to the rotation of the scanning disc 22.

In view of the amount of light which the present system may provide, the rays are sufficient in magnitude to be easily projected through a framing opening 51 in the plate 52, and a projecting lens 54 on to a suitable screen (not shown) thereby producing an enlarged television image of substantial brilliancy.

Fig. 7 illustrates a preferred form of optical reflecting means carried by the disc 22 to receive light from one of the lamps. The disc 22 is preferably provided with a conical opening into which a conical sided lens 56 is held by a lens screw ring 57. Preferably, the inner portion of the ring 57 is likewise conical to receive the inner end of a reflector lens 58. This reflector lens preferably

is supported by a gasket 59 resting on a shoulder 60 of the lens through the pressure produced by the ring 61, which preferably carries a shield 62. The outer end of the reflector lens 58 is ground to provide a reflecting surface 64 adapted to receive the light from one of the control lamps. The forward end of the member 58 is ground to comprise a lens surface 65 to bend the light rays and concentrate the same in the form of a cone. These light rays strike the lens surface 66 of the conical lens 56 and are further bent inwardly in the form of a cone to comprise a highly concentrated beam of light which emerges from the lens face 67 as substantially parallel rays, thereby making a very strong light concentration in an area substantially equivalent to the size of the scanning opening at the sending station. The lens surfaces 65, 66, and 67 may if desired be replaced by individual concentration lens. These intense beams are multiplied as many times as the lamps and reflectors are provided so that with ten lamps and ten reflectors, each scanning wave received is multiplied by ten times so far as intensity of light is concerned. This provides ample light for projection purposes. Preferably, though not necessarily, the optical material used is fused quartz.

By the foregoing, it will be observed that a single wave is received on the receiving circuit, and that (except for one branch) this wave is divided in the delay circuits which are suitably amplified and used to control sources of light so that each light source undergoes exactly the same cycle but in step by step sequence. To this end, it is preferable that the delay circuits shall be distortionless.

It is to be understood that the disclosure herewith is more or less diagrammatic as to electrical and mechanical elements, etc., which are well known to those skilled in the art, and to this end, a single line on the drawings has been used to indicate an electrical cable of several circuits, and other parts have been likewise simplified; also such well known parts as synchronized motors, etc., have been omitted in order to more clearly disclose the novel inventions.

I claim:

1. A television receiver comprising a television disc, means to receive television signals in a single channel, a plurality of light transmitting points arranged in an arc on said disc for each scanning line of the image, the length of said arc being substantially equal to the length of said scanning line, means to illuminate each point as it passes a predetermined spot on the image with the same relative intensity as the illumination of each preceding point when passing the same spot.

2. In a television apparatus, a disc, a plurality of prisms mounted in groups arranged in arcs on said disc, the reflecting faces of said prisms being selectively positioned to be effective only as to light rays in predetermined zones, and optical means to retain said rays within said zones.

3. In a television apparatus, a disc, a plurality of reflectors mounted in groups arranged in arcs on said disc, means to concentrate light rays from each said reflector and direct the same through an opening provided in said disc, and optical devices to transmit light rays from a single source to a single reflector in each arc.

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