

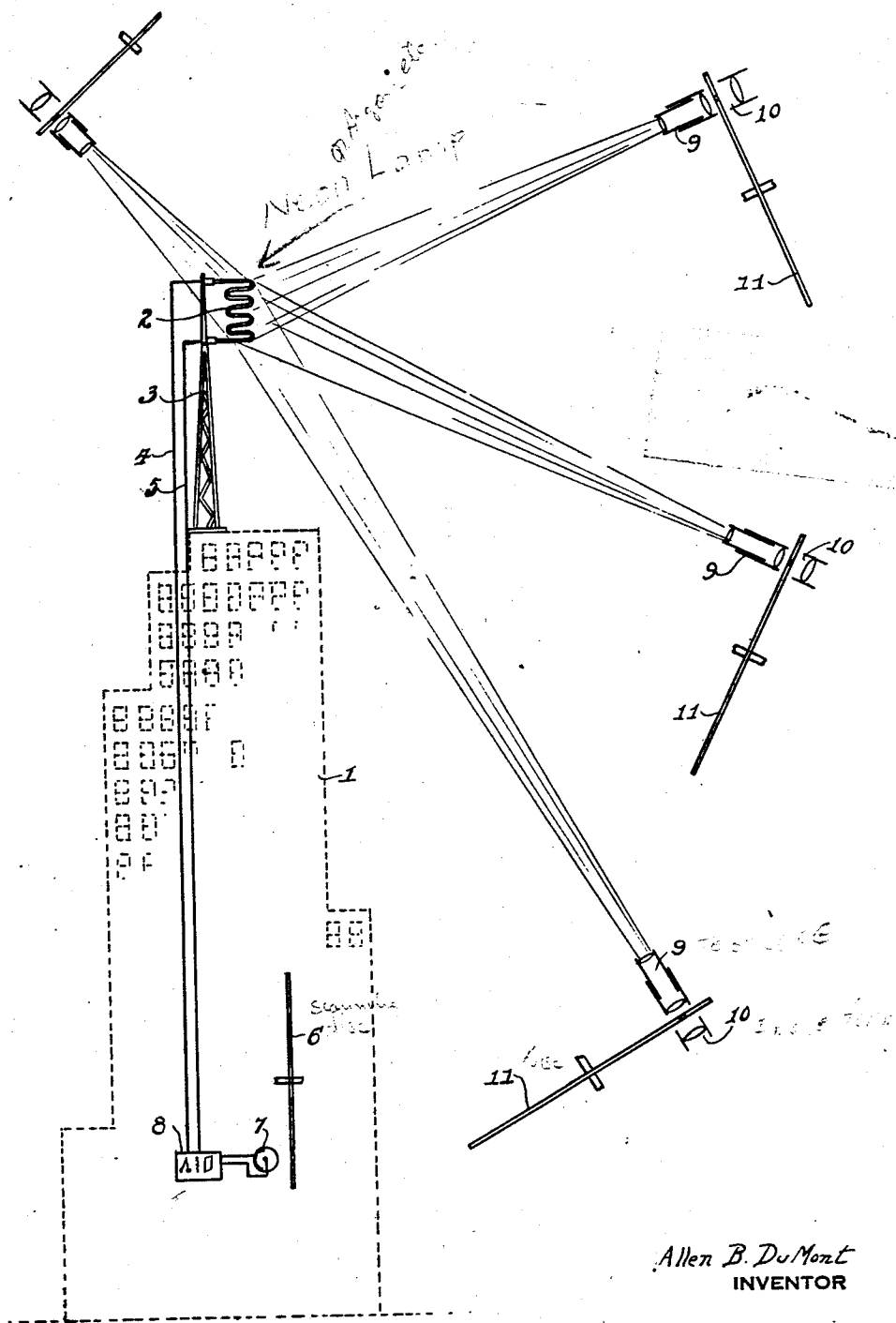
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TELEVISION SYSTEM

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TELEVISION SYSTEM

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This invention relates to electro-optical systems, and with particularity to a direct vision television system.

An object of the invention is to provide a method of television without using electrical transmission channels.

Another object of the invention is to provide what may be termed a direct television producing system.

A feature of the invention relates to the employment of a high powered light source which is capable of being viewed over very long distances, said light source being modulated in accordance with television signals.

Other features and advantages not specifically enumerated will be apparent after a consideration of the following detail descriptions and the appended claims.

Heretofore in television systems it has been the customary practice to translate the shade values of the subject or object into corresponding modulated currents and these currents have been transmitted over wire or radio channels to distant points at which the image is to be reproduced. The present invention contemplates a television system wherein the television images may be reproduced from the television signals at distant points without employing wire or radio channels.

In accordance with the present invention it is proposed to employ a high-powered light source such as a water cooled neon lamp or a lamp such as an aerial beacon lamp. It is a well known fact that these high-powered lamps are capable of being seen over great distances. In some cases the lamps are visible over a distance of fifteen to twenty-five miles. Advantage is taken of this fact, in accordance with the present invention, to enable images to be integrated from the light impulses, whereby the images may be broadcast and reproduced by direct vision, at such distances as would be impossible without utilizing the present invention.

Accordingly in the drawing the numeral 1 represents a suitable location for the television broadcast station such as a tall building or other convenient location for what may be termed a television beacon, capable of being viewed throughout a wide range. In the drawing this beacon is represented schematically in the form of a coiled tube 2, which is preferably water cooled so as to enable the said tube to be operated at high current densities. For example, the tube 2 may have a filling of neon or other ionizable gas, which is capable of varying its intensity without

substantial inertia effects. It is to be understood, however, that the particular type of lamp shown in the drawing is merely schematic, and that any other high intensity high-powered inertialless lamp may be employed. The lamp 2 is mounted on a suitable support or tower 3 on top of the building 1, and the electrodes of said lamp are connected by wires 4 and 5 to any well known form of television transmitter within the building. The transmitter is represented schematically in the drawing by the rotatable scanning disc 6, such as shown in Patent 1,679,086 granted to C. F. Jenkins on July 31, 1928, and a light sensitive cell 7, the output of which is connected to a suitable amplifying device 8. In accordance with well known television principles, as the device 6 rotates, the subject or object whose image is to be reproduced at a distance, has its elemental areas tested for shade and translated into corresponding photo-electric currents from the device 7. These currents after suitable amplification are impressed upon the lamp 2, which therefore varies in brilliancy in accordance with the shade characteristics of the image to be transmitted.

It will be understood that the lamp 2 may have a biasing source for maintaining it continually illuminated even though no signals are being received from the device 7, so that the lamp remains at all times lit, but has its brilliancy varied in accordance with the television impulses.

Since the lamp 2 is preferably of an extremely high powered type, it is capable of being seen at very great distances, and in order to reproduce the images it is necessary to employ a telescope in conjunction with a television scanning device. For example, the drawing shows apparatus for reproducing the images at four widely separated points which may be miles distant from the broadcasting television lamp 2. For the purpose of reproducing the image the telescope or light collecting device 9 at each distant locality is trained upon the distant television beacon 2 until the scanning field of the associated scanning device 11 appears to be uniformly illuminated. The observer then views the disc through an adjustable optical system 10 until the image appears in proper form. It will be understood, of course, that the scanning device 11 used in conjunction with the optical members 9 and 10 is substantially, or at least optically, the same as the scanning device 6 at the broadcast station. That is to say, the member 11 must have the same number of scanning elements as the member 6, and must rotate in

synchronism therewith. Any well known method of synchronism may be employed.

By this system, therefore, the usual wire or radio channels are eliminated, thus eliminating the usual modulating and carrier apparatus at the transmitting station, and completely eliminating at the radio receiving station, radio pick-up and amplifying equipment ordinarily employed in present television systems using wire or radio transmission.

As an example of one particular use to which the invention may be put, may be mentioned airplane direction. The lamp 2 may be situated at an airport and its intensity may be varied so as to produce a letter, or design, characteristic of the location of the airport. For example, the television scanner 6 may produce, in conjunction with the cell 7, currents corresponding to the letter A, which, for example, may designate the airport. In other words, the lamp 2 will have its brilliancy varied the same as if the letter A were being transmitted by ordinary television methods. The airplane would be equipped with a telescope or optical system similar to the members 9 and 10 of the drawing, and also with a rotatable scanner 11. This scanner 11 may be provided with a local speed control device which is designed to rotate said scanner 11 at the same speed as the scanner 6. The pilot, therefore, will train his telescope with the scanner 11 therein upon the lamp 2, and will notice the reproduction of the characteristic design or letter of the airport, and will immediately be apprised of his location.

It will be understood, of course, that in this use it is not necessary to employ television scanning apparatus to modulate the light source 2, for example, a single record may be made which produces currents that would be the same as if the television scanner had been employed, these currents being representative of the characteristic mark or designation of the airport. In this system of course, preferably all the airports will be designed to transmit distinct letters or signs and will be operated at a single frequency, and there will be no interference since reliance is not placed upon radio transmission between the broadcasting station and the airport.

It will be further understood, of course, that the invention is not to be limited to the particular use above described, but is capable of use in any system where intelligence is to be transmitted over a great distance without the use of radio or wire transmission channels.

By the expressions "television scanning device" is meant herein a device which is capable of analyzing an area to be reproduced, in successive elemental portions, or a device which is capable of integrating an area to be reproduced in ele-

mental portions such, for example, as disclosed in Jenkins Patent No. 1,679,086. By the term "television reproducer" is meant herein a device or combination of devices for reproducing an image or an object or other visual representations at a distance.

What is claimed is:

1. The method of producing and receiving television images which comprises broadcasting a modulated high powered light capable of being seen throughout a wide area, optically producing images directly of said light at widely separated points and telescopically viewing said light images at said widely separated points through individual television scanning devices.

2. The method according to claim 1 in which the light is stationary and has its intensity modulated in accordance with shade characteristics of a visual representation to be broadcast.

3. In a system for broadcasting intelligence, the combination of a high-powered light, means for optically producing a direct image of said light at a distant point, means for modulating said light in accordance with the intelligence to be transmitted, and means for telescopically viewing said light directly at a distance including a television scanning device.

4. In a system for transmitting intelligence to a distance, employing light waves for transmission, the combination of a broadcasting television light beacon and a plurality of distantly located television scanning devices, means for modulating said beacon, and telescope means associated with each scanning device for collecting light from said beacon and projecting it upon the associated scanning device in the form of a uniform light field.

5. In a message transmission system the combination of a television beacon, means for modulating said beacon, a plurality of individual television scanning devices located at a distance from said beacon, and telescope means associated with each scanning device for training the light from said beacon upon the associated scanning device in the form of a uniform light field.

6. In a system for broadcasting messages, the combination of a high powered gaseous conduction lamp, means for modulating the light of said lamp with message signals, means for supporting said lamp at a high elevation above the earth, a plurality of individual television scanning devices adapted to be trained upon said lamp to reproduce the messages at distant points by direct television, and means associated with each scanner for projecting thereupon a direct image of the light from said lamp.

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