May 10, 1932. R. SCHMOOK 1,857,745

PICTURE TELEGRAPH APPARATUS

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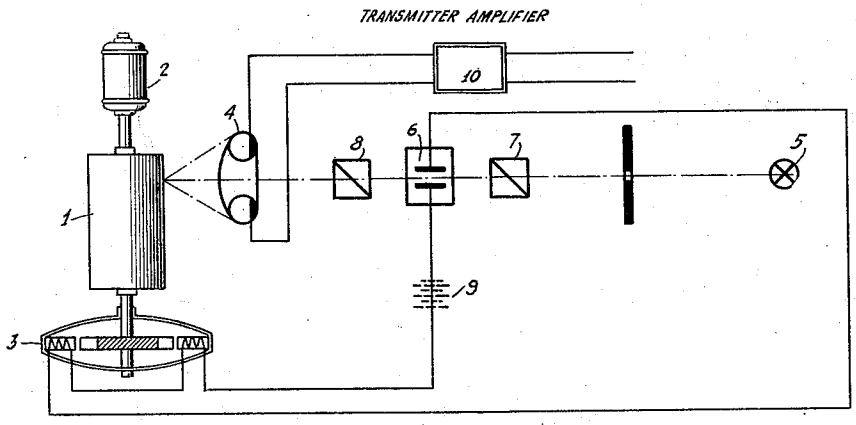

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UNITED STATES PATENT OFFICE

RUDOLF SCHMOOK, OF BERLIN-CHARLOTTENBURG, GERMANY, ASSIGNOR TO SIEMENS & HALSKE AKTIENGESELLSCHAFT, OF SIEMENSSTADT, NEAR BERLIN, GERMANY, A CORPORATION OF GERMANY

PICTURE TELEGRAPH APPARATUS

Application filed September 27, 1930, Serial No. 484,810, and in Germany August 10, 1929.

The present invention relates to a system and apparatus for transmitting pictures, motion picture films, images or other likenesses, and is particularly directed to a method and means for introducing a tone or carrier frequency into the light translating element used for converting varying intensities of light and shadow on elemental areas of the transmitted subject into proportionately varied electrical impulses.

Arrangements known in the prior art for picture telegraphy produce the carrier frequency through the modulation of a constant light ray by means of a perforated disk or an oscillograph controlled by alternating current. The perforated disk method has the disadvantage that minimum errors in the spacing of the perforated disk or of the toothed drive result in very disturbing errors in the pictures and that when operating several transmitting channels an exchange of the perforated disk becomes necessary. The modulation by means of an oscillator loop is limited to frequencies below 10,000.

On the other hand it is possible to produce the carrier frequency by causing an alternating current potential to influence a Kerr cell. In this case the alternating current potential is produced by an alternating current machine coupled with the picture drum, so that in this manner the Kerr cell chops the scanning luminous ray. In the known case the alternating current machine is used exclusively for the control of the Kerr cell.

According to the invention a considerable simplification of the installation is accomplished by taking the control frequency for the Kerr cell from a phonic wheel existing in the apparatus, for instance, one provided for synchronizing purposes, which takes place after the multiplication. This measure applies to special cases wherein the synchronizing frequency is lower than the carrier frequency. If it is for instance desired to synchronize with a synchronizing frequency of 600 cycles, it is necessary to increase this frequency for the purpose of controlling the Kerr cell, in fact to at least double the same since otherwise the carrier frequency becomes too low. In a particularly simple manner the doubling of the control frequency may be accomplished by operating the Kerr cell without the customary direct current biasing potential with the result that there is insured the double frequency of the control frequency.

The invention has been illustrated by the accompanying drawing which shows one embodiment by way of example of the invention.

Referring now to the drawing, numeral 1 indicates the picture drum which is driven by motor 2. The phonic wheel or alternating current generator 3 is coupled with the drive for the picture drum. In the path between photo cell 4 and light source 5 is disposed a Kerr cell 6 provided with the usual optical system including a polarizer 7 and an analyzer 8. The Kerr cell 6 receives its control potential without biasing from the phonic wheel or alternating current generator 3. The light of the cell 5, modulated in the double frequency of the control frequency impinges diffusely from the picture on to the photo cell which modulates the brightness of the picture points in accordance with the thus produced carrier frequency current. This modulated carrier frequency current is then sent in the usual manner to the transmitting amplifier 10.

Other modifications and changes may suggest themselves to those skilled in the art to which the invention relates and I, therefore, believe myself to be entitled to make and use any and all of such modifications as fall fairly within the spirit and scope of the hereinafter appended claim; wherein I claim:

In combination, a light source for illuminating a record surface for transmission, a photoelectric element for converting the light intensities upon elemental areas of the record surface into electrical impulses of proportionate strength, an electrostatic light valve interposed between said light source and said record surface for interrupting the supply of light upon said surface at a predetermined frequency and producing thereby an alternating current output from the photo cell, and generator means integral with

the record carrying surface for producing in accordance with the rate of transmission of the record subject a progressive rise and fall of potential upon the electrostatic light valve for regulating the frequency of light interruption thereby.

In testimony whereof I affix my signature.

RUDOLF SCHMOOK.