May 24, 1932. A. F. GODEFROY 1,859,824

TELEVISION APPARATUS

Filed April 6, 1931

Fig. 1

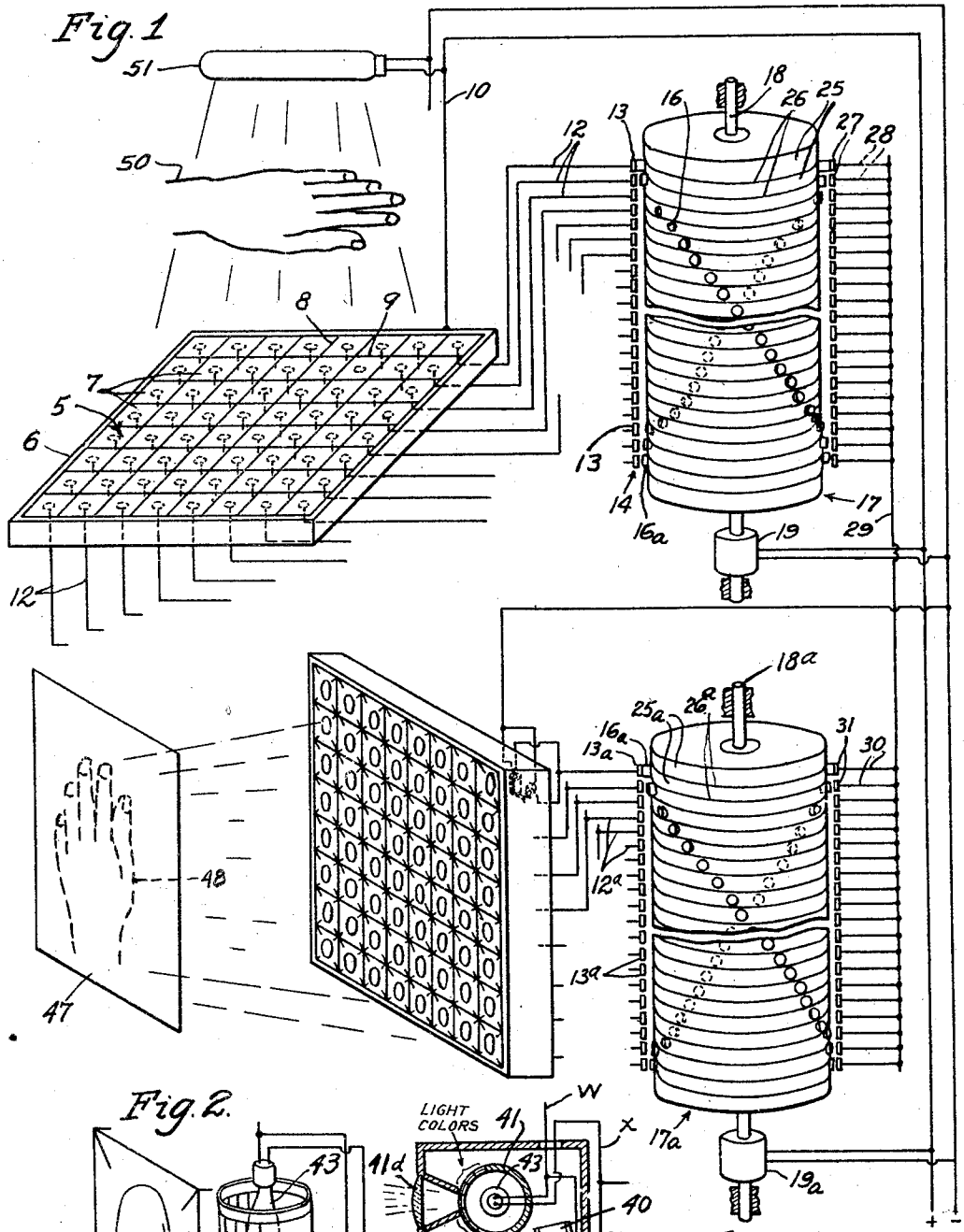


Fig. 2.

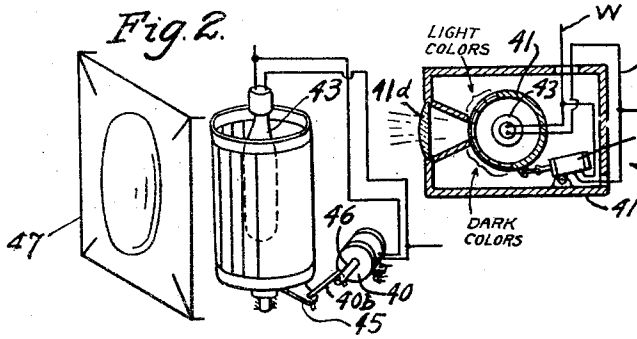


Fig. 3.

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TELEVISION APPARATUS

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This invention relates to an improved television apparatus which is adapted not only to transfer the outlines of objects being transmitted but is also adapted to reproduce colors at the receiving end of the conductor.

An object of the invention is to simplify apparatus of this character thus making it possible to transmit a satisfactory picture over a single line wire, or wireless means.

Another object of the invention is to produce an improved rotary contact carrying element which is combined with stationary contacts in such a manner as to accurately and satisfactorily transmit the colors and image outline of objects which are being produced at the transmitting end of the apparatus.

A still further object of the invention is so to simplify and reduce the cost of apparatus of the kind to which the invention pertains as to render the cost thereof within the reach of the general public so that the same may be operated in conjunction with the telephone equipment of private residences as well as in more public locations.

Other objects, advantages and features of invention may hereinafter appear.

Referring to the accompanying drawings which illustrate what is at present deemed to be a preferred embodiment of the invention,

Fig. 1 is a perspective diagrammatic view of the complete apparatus.

Fig. 2 is a perspective detail illustrating one of the solenoids and parts which cooperate therewith.

Fig. 3 is a longitudinal mid-section of the casing which contains the parts shown in Fig. 3, a portion of the construction within the casing also being sectioned.

Referring in detail to the drawings, the selenium composite member is of a checkerboard character comprising an outer frame 6 which encloses a composite translucent plate 5 made up of a large number of small areas 7 which are separated from each other by the conducting strips 8 which extend in one direction and the intersecting conducting strips 9 which extend in a direction at right angles to said strips 8. By means of a wire 10, current is supplied to all the individual areas 7 of the plate 5, through frame 6 and the conductors 8 and 9.

Each of said areas 7 is, by means of a separate wire, connected with a terminal 13 of the row 14 of terminals. With said row 14 of terminals cooperates the spiral rows of terminals 16 and 16*a* which are placed upon the cylinder 17, said cylinder being supported upon a shaft 18 for rapid rotation by means of a motor 19.

Each of the terminals 16 is connected with a corresponding conducting zone 25 of the cylinder 17, said zones 25 being insulated from each other by strips of insulating material 26. Opposite to each zone 25 is placed a brush contact member 27 which is furnished with a branch wire 28 which leads to a line wire 29. Said line wire 29 is provided at the transmission end of the apparatus with a series of branch wires 30 which lead to the contact brushes 31.

In order to contract the view of the apparatus shown in Fig. 1, the contact-carrying cylinders 17 and 17*a* have their central portions broken away, it being understood that each of these cylinders is of sufficient length to provide upon the same a number of conducting zones as great as the number of individual transmitting areas 7 with which the selenium plate 5 is provided. In the upper portion of Fig. 1 only a few of the wires 12 are shown, but in practice there will be one of said wires provided to connect each of the terminals 13 with an area 7 of the plate 5. Likewise the branch wires 28 are only a few of them shown, while in the lower portion of the view the number of branch wires 30 and 12*a* shown is small in comparison to the number required to operate the apparatus.

Each of the contact brushes 31 is connected with a zone 25*a* which corresponds to the zone 25 first described, said zones 25*a* being separated by insulating strips 26*a* and each of them being provided with a contact 16*a*. Said contacts 16*a* are arranged in a spiral row upon the cylinder 17*a* which is rapidly rotated by means of a shaft 18*a* driven by the motor 19*a*, the motors 19 and 19*a* being synchronized by means of an alternating current to rotate the

cylinders 17 and 17*a* in perfect unison with each other.

With the contacts 16*a* cooperate the series of stationary contacts 13*a* which in turn are individually provided with one of the wires 12*a*. Said wires 12*a* each of them lead to a solenoid 40, these solenoids being arranged in bank formation as shown. Each solenoid 40 is operatively related to a cylinder 41 which is made up of a series of more or less transparent color glass plates 42 which makes up the wall of said cylinder. Within said cylinder is placed a lamp 43 which will project light in varying color and strength through the side of the cylinder 41 toward the observer according to the color of the plate 42 which is directed toward the screen 47.

Said cylinder 41 is provided with an operating crank 45 which is operatively connected with the arm 46 of the core of the solenoid 40. These rotatable cylinders 41 are located in bank formation as shown and thereby cooperate to reproduce at the receiving end of the apparatus, the outline and to a considerable extent color of the object being televisioned.

Said screen 47 is placed in proper relation to the cylinders 41 which are operated by the solenoids and when the apparatus is placed in operation, the image 48 of the object being televisioned will be thrown upon said screen, being thereby reproduced as to outline, and also performing a reproduction of any movements which it may be executing.

The preferred construction of the individual receiving elements is shown in Figs. 2 and 3, wherein each composite glass cylinder is turnably mounted within a casing 41*c* and one end of said casing is provided with a projecting lens 41*d* which is positioned to receive the ray of light transmitted through the cylinder 41 by means of the lamp 43 therein.

Said cylinder 41 is shown provided with a radially operating arm 45 to which the armature 46 of the solenoid 40 is connected by means of a link 40*b*. The lamp 43 is supplied with current by means of the wires *w* and *x*. The wire *x* places said lamp in series with the solenoid thus causing said lamp 43 to function only when the solenoid 40 is energized.

Returning to the sending end of the apparatus, in the upper portion of Fig. 1 is shown a human hand 50 which is selected as an example of an object to be televisioned to the receiving end of the line. Above said hand is shown a sufficiently powerful X-ray or other lamp 51, which is positioned to cast a shadow of the hand upon the selenium plate 5. By means of said lamp the outline of the hand is projected upon said plate, some of the squares 7 receiving a darker shadow than others, and the color of the hand, whether of a more or less red character, having an effect upon the density of the shadow cast upon the plate. The areas 7 of the plate 51 which receive heavy shadows will transmit the least electric current through the wires 12. The result will be that, when the cylinders 17 and 17*a* are synchronized and placed into rapid rotation, the impulses transmitted from the areas 7 of the sending end of the apparatus to the solenoids of the corresponding areas 7*a* of the receiving end of the apparatus will correspond, to produce at the receiving end of the apparatus a picture corresponding to the outline and color of the object being televisioned.

The result will be that the solenoids which are electrically connected with the darkest areas at the transmitting end of the apparatus will be operated the least distance and the solenoids which are connected with the more fully lighted areas at the transmitting end will be moved the farthest. Each solenoid when moved a short distance will bring one of the lighter colored strips of glass which make up the cylinder into register with the ray of light which is thrown upon the screen, and when the solenoid receives more current from a less shaded or less darkened area at the transmitting end, the armature of such solenoid will move farther and bring a lighter or less densely colored strip of the cylinder which it controls into alinement with the ray of light which is thrown upon the screen at that point.

In Fig. 3 is shown in detail the construction of one of the composite light transmitting cylinders 41 each of which is illuminated by one of the lamps 43. The portion of the side wall of this cylinder which the solenoid which is connected therewith is capable of moving across the light area, is divided into different colored plates or strips 42 of transparent material, the colors of which progressively increase in penetrability from the least penetrable color which is black to the most penetrable color which is white. The succession of these colors relative to penetrability is graphically indicated upon Fig. 3 and therefore need not be described in detail.

I claim:

1. In a television apparatus, a multiplicity of receiving elements each of which comprises a solenoid having an armature which is operated variable distances according to the strength of the current supplied thereto, an internally illuminated cylinder, means to support said cylinder to rotate about its axis, and means to pivotally connect the armature of said solenoid with said cylinder in radially spaced relation to the axis of rotation of said cylinder, said cylinder having side walls surrounding its axis of rotation and consisting of differently colored glass areas, the intensity of the colors of said areas increasing and diminishing circumferentially of said cylinder.

2. In a televison apparatus comprising, at

the transmitting end, a composite selenium plate made up of individual insulated light-transmitting areas, and at the receiving end a multiplicity of reproducing elements which are each individually connectable electrically with the individual areas of said plate; a rapidly rotatable cylinder at each end of the apparatus; and means to rotate said cylinders rapidly and synchronously, and a single line wire connecting said cylinders, each of said cylinders being provided with contact making and breaking means whereby said light transmitting areas are successively and individually placed in circuit through said line wire with the corresponding individual reproducing elements at the receiving end of the line, each of said receiving elements comprising a solenoid having an armature which is operated variable distances according to the strength of the current supplied thereto, and an internally illuminated cylinder turnable by said solenoid, said cylinder having side walls surrounding its axis of rotation and consisting of differently colored glass areas, the intensity of the colors of said areas increasing and diminishing circumferentially of said cylinder.

In testimony whereof I hereunto affix my signature.

ALEXANDRE F. GODEFROY.