

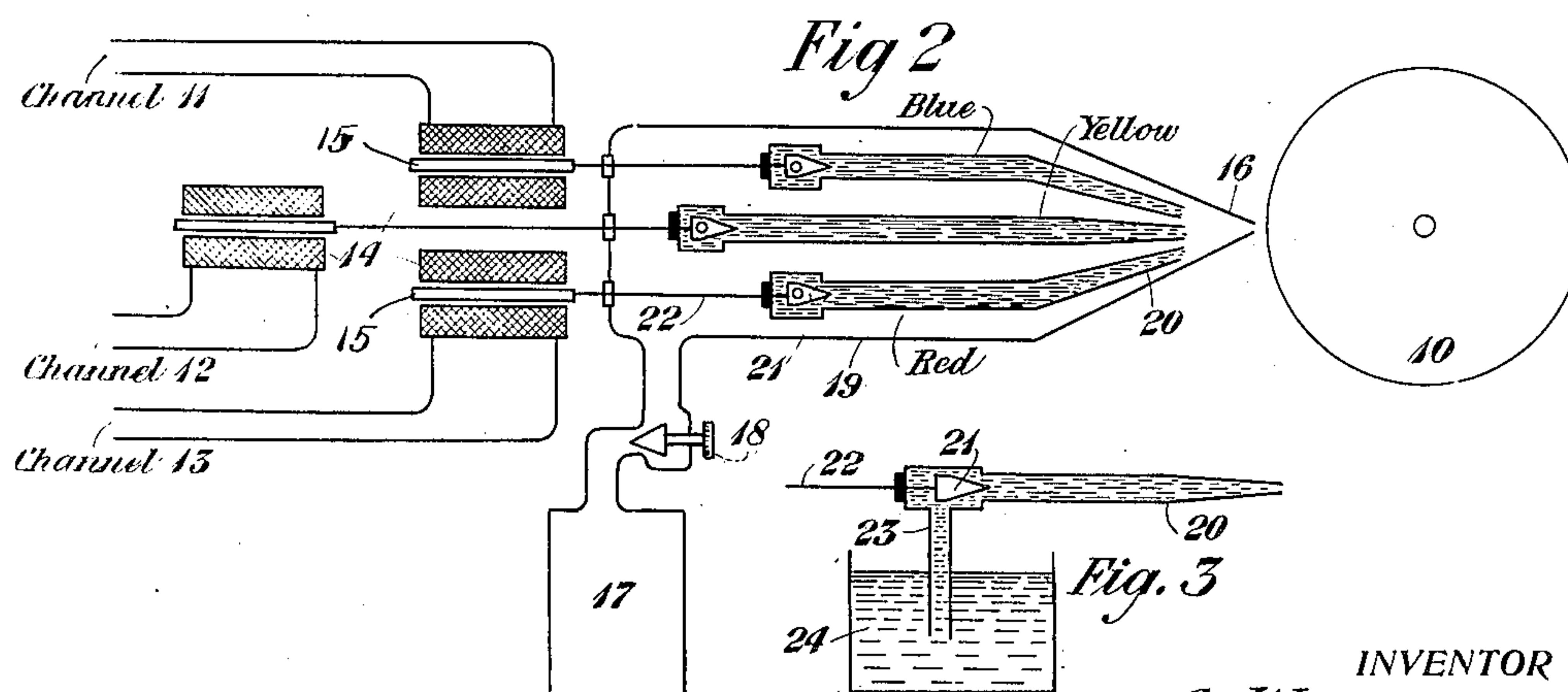
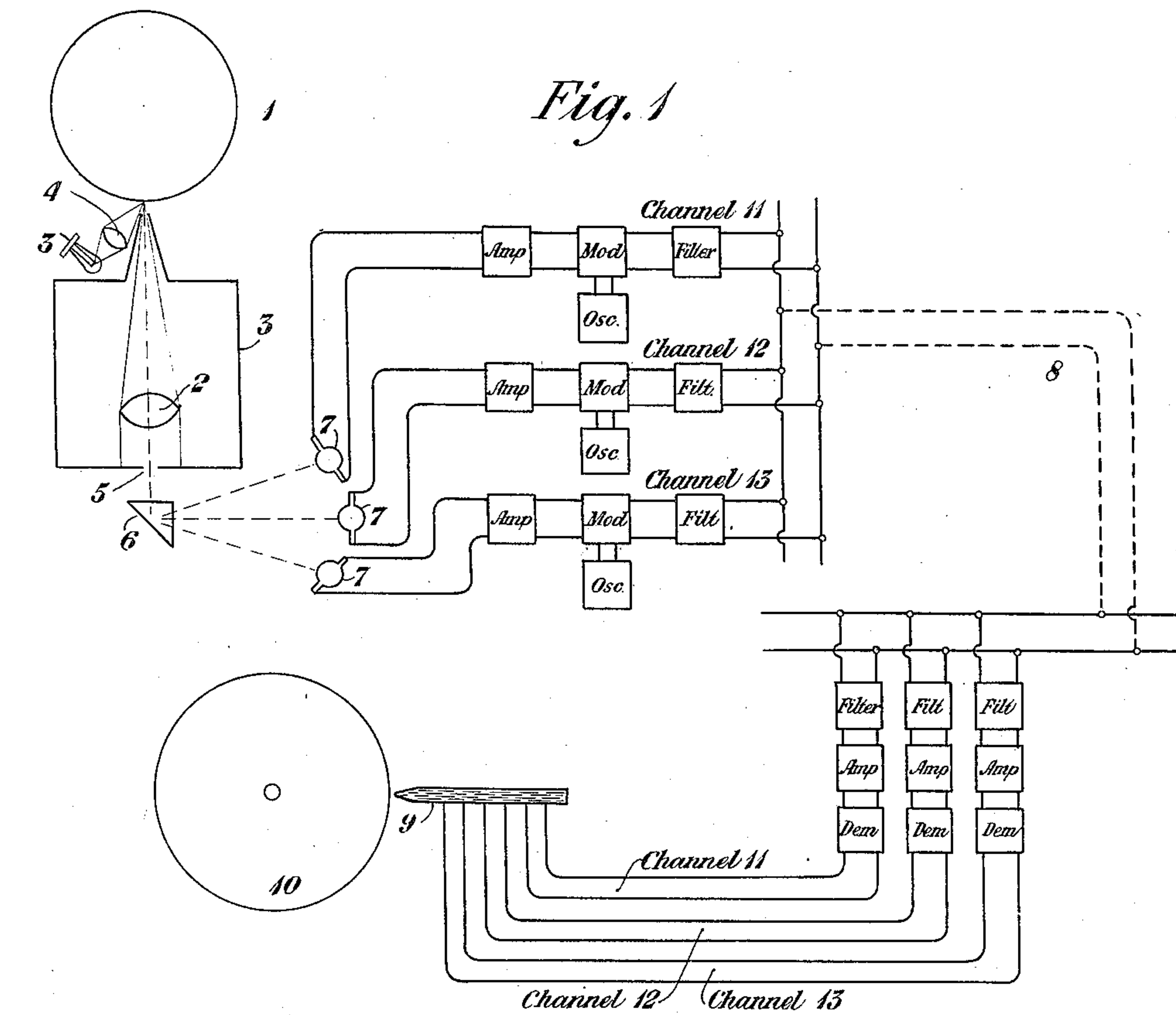
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APPARATUS AND METHOD FOR TRANSMITTING PICTURES

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APPARATUS AND METHOD FOR TRANSMITTING PICTURES.

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An object of my invention is to provide new and improved methods and suitable apparatus for producing a picture or image by means of electric current transmitted from the point or station where the picture to be reproduced or the object is located; and particularly for producing the picture or image in color. Another object of my invention is to provide for analyzing a picture into component colors at a transmitting station, transmitting corresponding electric currents in suitable respective carrier current channels, and from those currents at the receiving station reproducing the picture in corresponding colors. These and various other objects of my invention will be made apparent in connection with the following disclosure of one specific embodiment, which is presented by way of example. It will be understood that the invention is defined in the appended claims and that the following description relates to the particular embodiment chosen to illustrate it.

Referring to the drawings, Figure 1 is a symbolic diagram of the system; Fig. 2 is a diagram of the recording apparatus at the receiving station; and Fig. 3 is a detail of this apparatus.

Referring to Fig. 1, the colored picture 1 is wrapped upon the drum placed before an opening in the box 33. Light from lamp 3 is focused by lens 4 to illuminate an element of the picture. The colored light from the element goes to lens 2 and thence in parallel rays through a small opening 5 to the analyzing prism 6, so that its three principal color components fall, respectively, on the three photoelectric cells 7. These colors may properly be blue, yellow and red.

Corresponding to the intensity of each of these primary colors falling on its respective photoelectric cell 7, the current through that cell 7 will vary in intensity and will be amplified and will then be applied to modulate the current from a high frequency oscillation generator, and the output will pass through a suitable band filter to the line 8. Thus, as determined by each of the three photoelectric cells 7, three modulated carrier currents of different carrier frequencies will be put through the three channels 11, 12 and 13 on the line 8.

At the receiving station the respective three bands of modulated carrier current will be separated into corresponding channels 11, 12

and 13 by means of the filters shown. By respective amplifiers and demodulators, the current in these channels will take the form of direct or low frequency currents varying in intensity with the intensity of the light at the respective photoelectric cells 7. These three variable currents are applied at the apparatus 9 which is shown in detail in Fig. 2.

A sheet of white paper is wrapped on the receiving drum 10 and this is rotated in synchronism with the drum at the sending end; the synchronizing apparatus is not shown in the drawings.

One method by which the drums may be synchronized is disclosed in British Patent 242,694 granted February 4, 1926.

The received currents in the channels indicated as 11, 12 and 13 in Fig. 2 come to the respective solenoids 14, whose cores 15 are connected by the plungers 22 with the respective needle valves 21. The nozzle 16 is directed all the time on a point of the receiving surface corresponding to the point of the picture 1 from which the ray of light passes through the opening 5 to the prism 6. A blast of air from the source 17 controlled by the valve 18 passes through the casing 19 and the nozzle 16 and is projected against this point of the receiving surface. In the casing 19 and just within the nozzle 16 are inner nozzles 20, each controlled by one of the needle valves 21 and drawing inks of respectively different colors by the tubes 23 from the tanks 24.

The blast of air from the source 17 through the nozzle 16 draws ink from the nozzles 20 by ejector action. The ink supply is governed by the valves 21 controlled by the solenoids 14. There are three of the inner nozzles 20 and through them inks of the respective primary colors, blue, yellow and red, are supplied. It will be seen that when the point of the picture 1 that is scanned is of one of these colors only, then only the corresponding one of the photoelectric cells 7 will be excited and accordingly, only the corresponding one of the valves 21 will be opened and ink of only that color will be thrown on the picture receiving surface on the drum 10. For certain mixed colors, as well as for pure colors, the reproduction will correspond to the original, and approximately the colors in the received picture as a whole will correspond with those in the transmitted picture.

I claim:

1. The method of transmitting and pro-

ducing an image in colors, which consists in analyzing successive elements of a picture or object into colors, transmitting electric currents in respective channels modulated to correspond to the intensity of the respective colors, and at the receiving end selecting and applying substances of the corresponding colors on an image receiving surface by means of the currents in the respective channels.

2. The method of transmitting and producing an image in colors, which consists in analyzing successive elements of a picture or object into colors, transmitting electric currents in respective channels modulated to correspond to the intensity of the respective colors, and at the receiving end applying marking substances of the respective colors to an image receiving surface in accordance with the currents in the respective channels.

3. The method of transmitting and producing an image in colors, which consists in analyzing successive elements of a picture or object into colors, transmitting electric currents in respective channels modulated to correspond to the intensity of the respective colors, and at the receiving end applying to a receiving surface respectively colored marking substances by means of an air-brush controlled by the currents in the respective channels.

4. Apparatus for producing an image by received electric currents corresponding to the component colors of its successive elements, consisting of a receiving surface, an air-brush relatively to which the receiving surface is moved, and a plurality of electromagnetic means selectively controlled by the received electric currents for governing the operation of the said air-brush.

5. In an electrical image producing system, means to analyze successive elements of a picture or object into primary colors, respective photoelectric cells governed thereby, respective carrier current generating and transmitting means adapted for modulation of those currents by the currents through the photoelectric cells, electromagnetic means at the receiving station to be actuated in accordance with the received carrier currents, an air-brush supplied with marking substances of the respective colors controlled by said electromagnetic means, and a relatively movable receiving surface to which the said air-brush is directed.

6. In an electrical image producing system, means to analyze the elements of a picture or object into their primary colors, means to send carrier currents modulated in accordance with the intensity of these colors, a receiving surface at the receiving end, means to apply substances of the primary colors at successive points thereof, and respective means to govern the application of these sub-

stances controlled by the received modulated carrier currents.

7. The method of transmitting and producing an image in colors, which consists in analyzing the elements of a picture or object into colors, transmitting carrier currents modulated in accordance with the analyzed colors, and at the receiving end producing the image in its original colors by the application of coloring materials under control of the received modulated currents.

8. In an image transmission system, means for analyzing elements of a picture or object into their component colors, a plurality of light sensitive means each controlled by an analyzed color, a carrier current for each light sensitive means, said carrier currents being adapted for modulation under control of the associated light sensitive means, a receiving station, a plurality of devices at the receiving station selectively actuated by the modulated carrier currents, an air brush supplied with marking substances corresponding to the analyzed colors and adapted to be controlled by the selectively operable devices, and a movable receiving surface to which said air brush is directed.

9. In an image transmission system, means for analyzing elements of a picture or object into their component colors, a plurality of light sensitive means selectively controlled by the component colors, carrier current generating means for each of the component colors, means for modulating said carrier currents under control of the associated light sensitive means, a receiving station, a plurality of devices at said station selectively actuated by the modulated carrier currents, an air brush for producing an image of said picture or object, said air brush being governed by the selectively operable devices.

10. In an image transmission system, means for analyzing elements of a picture or object into their component colors, a plurality of light sensitive means selectively controlled by the component colors, carrier current generating means for each color, means for modulating each carrier current under control of the light sensitive means, a line, means for applying the modulated carrier currents simultaneously to said line, a receiving station, a plurality of devices at said station for receiving said carrier currents and selectively operable thereby, a receiving surface, and an air brush for producing an image of said picture or object on said surface, said air brush being governed by the selectively operable devices.

11. In an image transmission system, means for analyzing elements of a picture or object into component colors, a plurality of light sensitive means selectively controlled by the component colors, carrier current generating means, means for modulating

each carrier current under control of the associated light sensitive means, a receiving station, a plurality of devices at said station for receiving said carrier currents and selectively operable thereby, a receiving surface, and an air brush supplied with marking substances corresponding to the analyzed colors for producing an image of said picture or object on said surface, said air brush being governed by the selectively operable devices.

12. The method of modifying the light absorbing properties of a receiving surface to produce an image thereon which comprises the steps of producing a plurality of streams of fluid of different characteristics, combining said streams to form a single modified stream, directing said last mentioned stream to said surface, and controlling at least one of said streams in accordance with variations in an electric current.

13. The method of electrically producing an image of a picture or object which comprises producing a plurality of streams of liquid of different characteristics, combining said streams to form a single modified stream, directing said last mentioned stream to the image receiving surface, and controlling at least one of said streams in accordance with the variations in the received image currents.

14. The method of producing an image which comprises coating a surface with a mixture of materials having different light absorbing properties by producing a stream of fluid, supplying said materials in desired

amounts to said stream under the control of electric currents, and applying said stream to said surface in the form of a spray.

15. The method of producing an image which comprises applying to a surface a mixture of substances having different light absorbing properties under the control of electric signaling currents by ejecting a stream of gas or vapor upon said surface, and supplying said materials in desired amounts to said stream under the control of said currents.

16. The method of supplying to a surface a plurality of materials of different primary colors, respectively, to form an image on said surface, which comprises ejecting gas or vapor in the form of a stream upon said surface and supplying said materials in varying amounts to said stream under the control of electric currents.

17. Means for applying materials of different light absorbing properties to a surface in accordance with variations in electric current, to produce an image on said surface, comprising a gas or vapor ejector, separate means for supplying said materials to the gas or vapor stream within said ejector, valves for controlling the amounts of materials supplied, and electrical means for controlling said valves.

In testimony whereof, I have signed my name to this specification this 13th day of December 1923.

ALLAN WEAVER.