Aug. 4, 1936. J. EGGERT ET AL 2,049,694

PHOTOGRAPHIC PRINTING

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Fig. 1

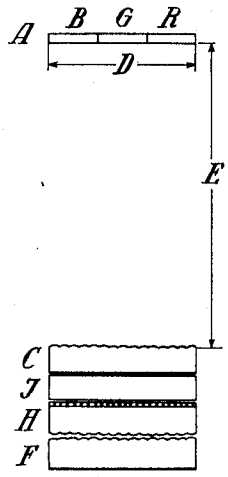


Fig. 2

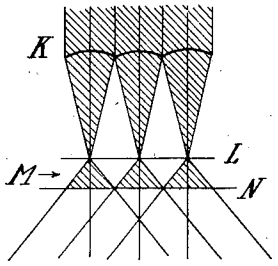


Fig. 4

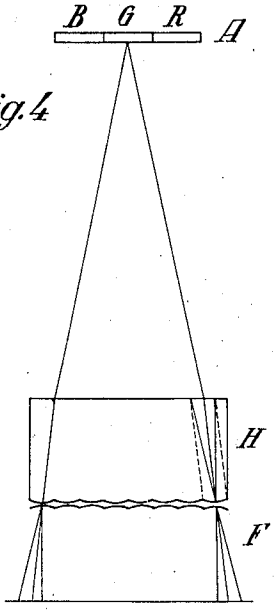
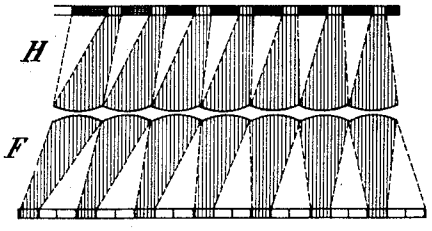


Fig. 3



Inventors:
John Eggert,
Gerd Heymer,

By Attorneys
Potter, Pierce & Schiffler

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Fig.5

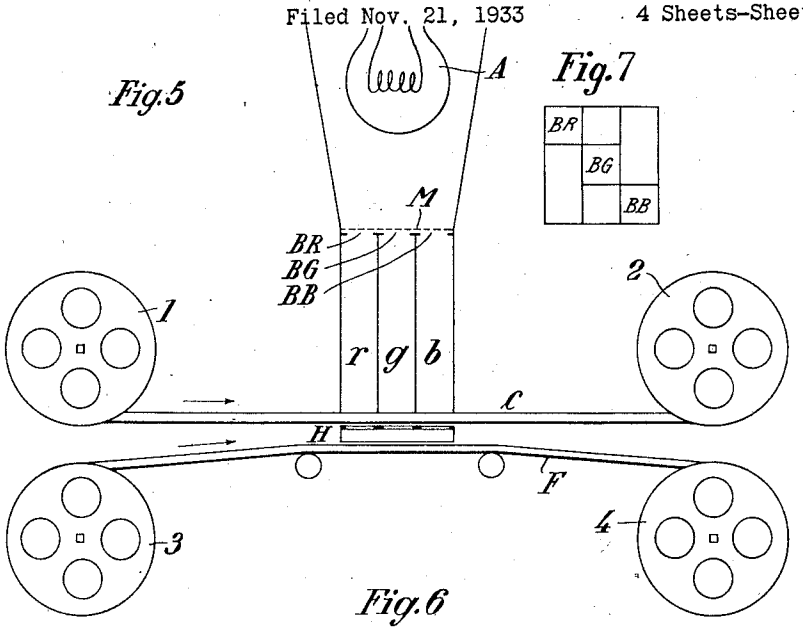
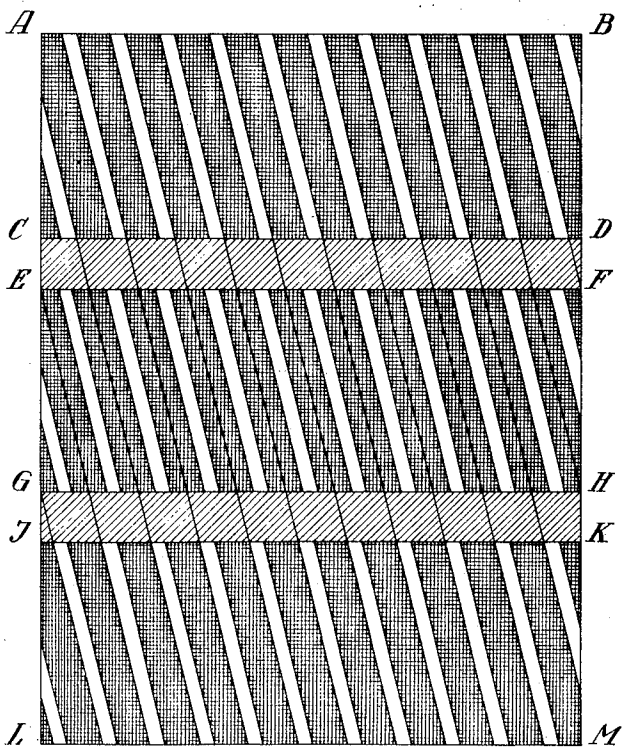


Fig.7

Fig.6



Inventors:
John Eggert,
Gerd Hagner,

By Attorneys
Potter, Pierce & Scheffler

PHOTOGRAPHIC PRINTING

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Fig. 8

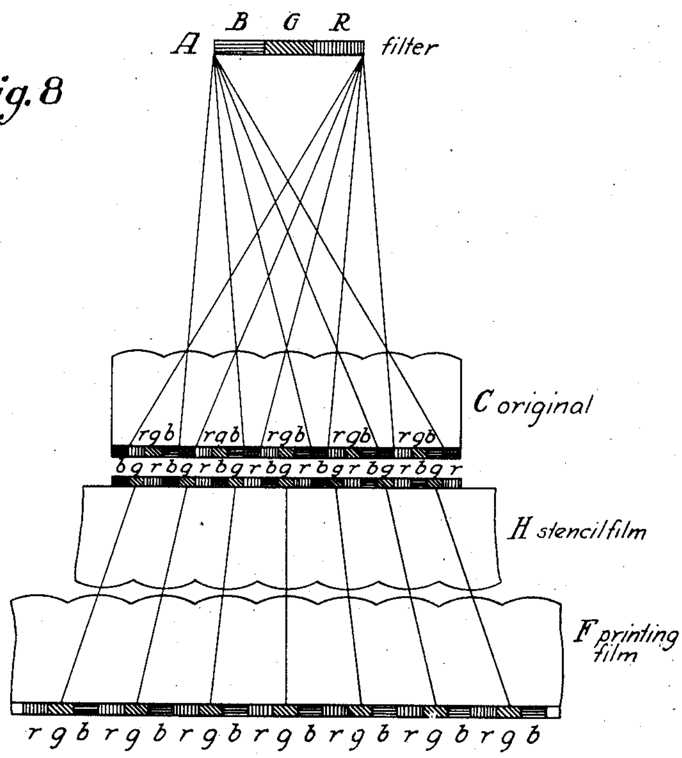


Fig. 10

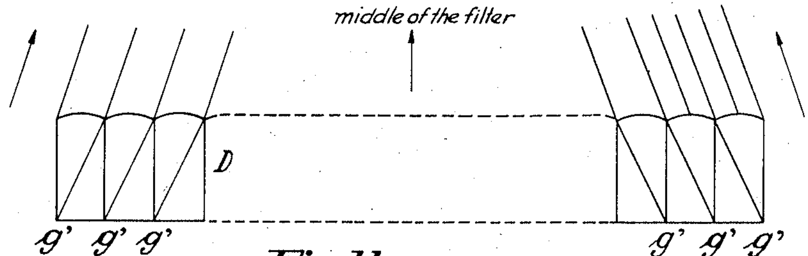
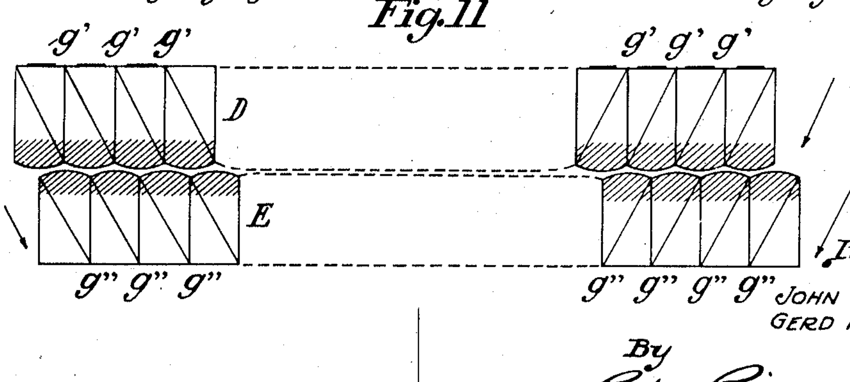


Fig. 11



Inventors:
JOHN EGGERT
GERD HEYMER

By Potter, Pierce & Scheffler,
Attorneys.

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PHOTOGRAPHIC PRINTING

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Fig. 9

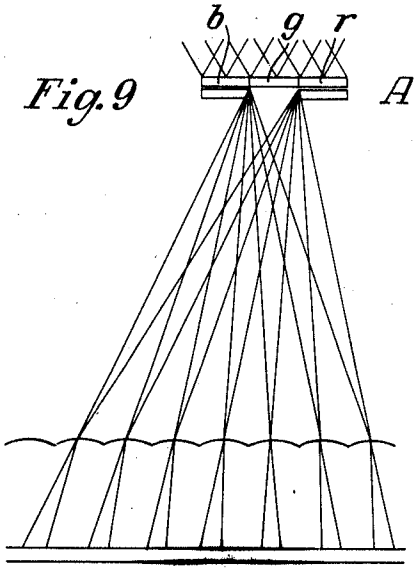


Fig. 12

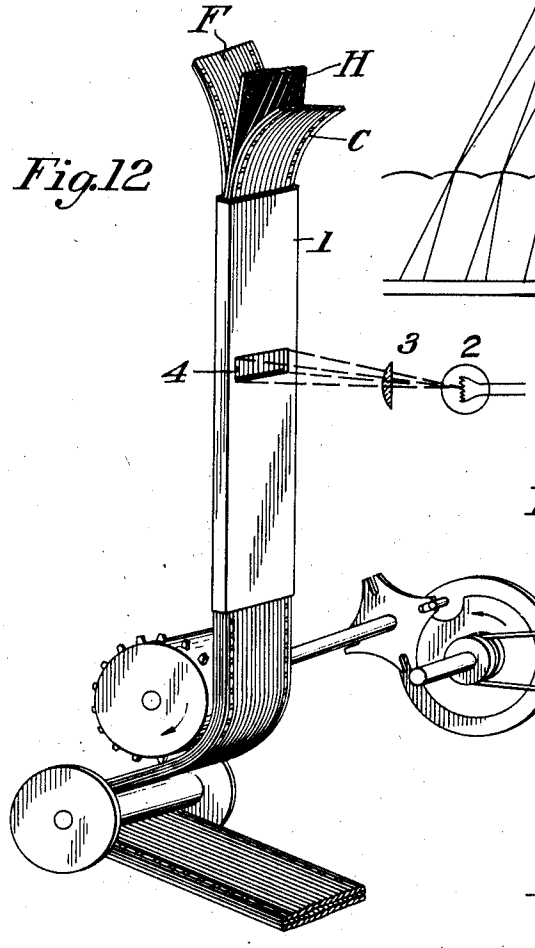
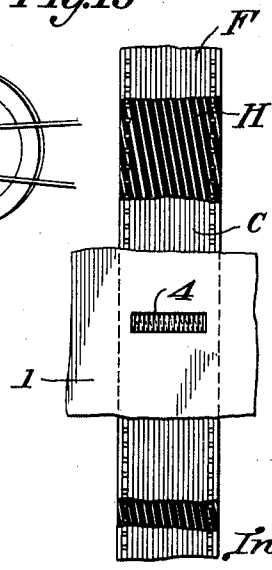


Fig. 13



Inventors
JOHN EGGERT
GERD HEYMER

By Potter, Prince & Schaffhausen
Attorneys.

Patented Aug. 4, 1936 2,049,694

UNITED STATES PATENT OFFICE

2,049,694

PHOTOGRAPHIC PRINTING

John Eggert, Leipzig-Gohlis, and Gerd Heymer, Wolfen, Kreis Bitterfeld, Germany, assignors to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany

Application November 21, 1933, Serial No. 699,048
In Germany November 25, 1932

14 Claims. (Cl. 95—75)

My present invention relates to photographic printing and more particularly to printing of pictures registered on lenticular film.

One of its objects is to provide a process of printing a lenticular film onto another lenticular film. Another object is an arrangement for printing according to the process of the invention. Further objects will be seen from the detailed specification following hereafter.

Reference is made to the accompanying drawings in which

Fig. 1 shows an arrangement for printing according to this invention,

Fig. 2 shows the trace of the light of the light rays through the lenticular film and an intermediate layer,

Fig. 3 shows the trace of the light rays through a stencil film on a lenticular film to be printed on,

Fig. 4 shows the light emanating from the source of light and passing through the margin of the stencil film on the lenticular film to be printed on,

Fig. 5 shows a slit printing machine for contact printing according to this invention while printing simultaneously three partial color pictures recorded on lenticular film,

Fig. 6 shows a "stencil film" for simultaneously printing three partial color pictures,

Fig. 7 shows the slit of the slit printing machine shown in Fig. 5 from below,

Fig. 8 shows printing according to this invention with the aid of a multi-color stencil film,

Figs. 9 to 11 illustrate the production of the stencil film, and

Figs. 12 and 13 illustrate a modification for printing according to this invention.

It has already been proposed to print a lenticular film in contact onto another lenticular film. The processes hitherto in use were associated with certain difficulties. Since, during the printing operation the two films must be arranged with the embossed sides facing each other, the print obtained will have its right and left sides inverted, when compared with those of the original. If furthermore, intaking the original, the filter image, which must be projected with the film was placed at a definite distance in front of the original, it will in printing be placed at the same distance behind the print; theoretically speaking, the filter ought to be in front of the emulsion side of the film, additional means being necessary to bring it in front of the film.

These drawbacks are overcome by the process according to the present invention by which the pictures, taken on a photographic material provided with a system of microscopic refractive lens elements, are printed in contact without lateral inversion in such a manner that the print may be projected with a filter position that agrees with or differs from that of the original. From an original taken under definite conditions on a lenticular film, the present invention allows of producing a lenticular print for any desired position of the projection filter.

According to the printing process described in the present invention, a light-controlling element as hereinafter defined is interposed between the original and the print.

When printing a lenticular film onto another lenticular film, the original film is illuminated, for instance through the embossed side, and between the original and the printing film arranged with the embossed side facing the original film, there is interposed a light-controlling element capable of controlling the light rays emanating from the illuminated original in a manner characteristic for the trace of the rays of a partial color picture in projection of a print of the original. This light-controlling element may take the form of a film having suitably disposed transparent and opaque areas, and hereinafter referred to as a "stencil film".

This "stencil film" may, for instance, be a lenticular film produced according to the process described in the co-pending application Ser. No. 667,925 filed April 25, 1933 by Gerd Heymer, one of the inventors of the present application containing in its photographic layer a system of light-permeable and light-impermeable zones running parallel to the lenticular elements. There is at first prepared for each color sensation an intermediate film by exposing a lenticular film to a source of diffused light through an optical system equal in function to that used during reproduction and through the corresponding color area of the multi-color filter, and printing this intermediate film in contact onto the "stencil film" with their lenticular sides facing each other.

The production of the intermediate film is as follows:

Referring to Fig. 9, A designates a uniformly illuminated white plane, the three parts *b*, *g*, and *r* of which are equal in size to the areas of the three-color filter or their virtual images used when projecting a lenticular film and arranged at the same distance from the film as the three color-filter or its virtual image is arranged in projection, the succession of the filter areas being blue, green, red. The areas *b* and *r* of the white plane are masked so that only the light of the

white plane, corresponding with the green area of the multi-color filter, strikes the film. When developing the lenticular film, consisting of the support B and the emulsion layer C, there will be produced in the emulsion layer alternating black and transparent stripes. If the development is effected according to the reversal method the transparent stripes fill the space which would be occupied by the green sensation in taking the film through the usual multi-color filter. The film thus obtained will be referred to hereinafter as the intermediate film. This intermediate film cannot be used as a "stencil film" in the printing process for the following reasons.

By inspecting the "intermediate film" it will be easily seen that the middle line of the strips which is in the middle of the film lies exactly under the central line of the co-ordinate lenticular element, but by inspecting the position of the transparent stripes near the margin of the film it will be apparent that the middle line of the transparent stripes does not lie under the central line of the co-ordinate lenticular element, but is displaced towards the margin. This is shown in Fig. 10. The arrow in the middle of this figure points towards the middle of that area of the illuminating device corresponding with the green area of the multi-color filter used in projection. The illuminating device could not be represented, as it is too far off; it may be of the kind as diagrammatically represented in Fig. 9. D designates the lenticular film and *g'* the middle lines of the transparent areas which are displaced towards the margin of the film.

When printing this intermediate film is printed onto another lenticular film with the lenticular elements in contact, there will also be formed on the latter film after reversal development alternating blackened and transparent stripes of which each pair of stripes composed of one transparent stripe and one blackened stripe is coordinate with one lenticular element, the transparent stripes being a real image of the transparent stripes of the "intermediate film". The distribution of the transparent stripes and the blackened stripes is such that the middle line of the transparent stripe of the middle at the film lies under the central line of the lenticular element, but that of the transparent stripes at the margin of the film is displaced towards the middle of the film. These relations are shown in Fig. 3. In this figure D designates the "intermediate film" with the stripes *g'*. In contact with this "intermediate film" and facing the same with its lenticular elements there is arranged the "stencil film" E. When the films are illuminated from the side of the intermediate film by diffused light, i. e. an uniformly illuminated white plane, the middles of the transparent stripes are printed in the manner as indicated in Fig. 11, and it is seen that the middles of the transparent stripes, which in the "intermediate film" are displaced towards the margin, have been displaced towards the middle of the "stencil film". By inspection of the two films arranged in contact it will be apparent that, while all the light rays emanating from the transparent stripes of the "intermediate film" cut each other in a point opposite the lenticulated surface of this film, i. e. the middle of the green area of the multi-color filter (indicated in the figure by an arrow), the corresponding light rays of the print, the "stencil film" diverge and their backward extensions beyond the emulsion layer cut each other in a point, which occupies the same position with relation to the print or "stencil film" as to the "intermediate film" with the difference that this point is situated opposite the emulsion layer of the print or "stencil film" and opposite the lenticular surface of the "intermediate film".

Since each partial picture requires a definite position of the light-permeable areas with respect to the lenticular embossing on the "stencil film", it is necessary that each partial color picture is printed with a "stencil film" specially prepared for it. It is, however, also possible to print the partial color pictures in one operation when using a single "stencil film" which, in successive sections of the required length has the position of the transparent and opaque stripes with relation to the lenticular elements changed in a manner characteristic for each partial picture. For avoiding streakiness, the lenticular embossing of the intermediate "stencil film" and, in consequence, the light-permeable zones are arranged at an angle with respect to the embossing of the original film which is smaller than 90° but affords at least a displacement corresponding with the breadth of one lenticular element. In contra-distinction with the processes of printing in contact, hitherto known according to which the embossings of the original and the printing film are arranged at an angle in the present invention, the embossings of the original and of the printing film run parallel to one another, whereas the embossing of the "stencil film" forms an angle with these latter. Streakiness can also be avoided by arranging between the original film and the "stencil film" an intermediate layer of a suitable material. The thickness of this intermediate layer depends on the breadth of a lenticular element and the thickness of the original. In any case it must be chosen so that the light is evenly distributed therein instead of being thrown to the layer in the form of stripes.

Instead of a lenticular "stencil film" there may also be employed a film which on both surfaces has an emulsion layer provided with parallel light-permeable and light-impermeable zones, which allow the light to pass in a direction that is characteristical for each partial picture. When using an original provided with a line screen it is arranged at the place of the original film having a system of lenticular elements. In this case the source of light may be placed in any desired position, a filter corresponding with the partial color sensation to be printed being interposed between the source of light and the film.

The accompanying drawings serve to explain more fully the process according to this invention.

Fig. 1 is a diagram of the arrangement of the films in the printing operation when using a lenticular "stencil film" and an intermediate layer. A is a filter or diaphragm which has a breadth D equal to that of the multi-color filter or its virtual image in taking the original film C, and is arranged at a distance E in front of the film C equal to that in taking the original. The different color strips (blue, green and red) or the diaphragm apertures corresponding therewith are marked B, G and R. In printing there is generally used a diaphragm with an aperture as above defined illuminated by a diffuse source of light. This source of light illuminates the original film through the microscopic lens elements, the extension of the source of light being as narrow as possible in direction of the lenticulations, or for the same purpose a cylinder lens being arranged immediately in front of the film C with

its axis at right angles to the lens elements of the film and in the focus of which the source of light is arranged, so that the light falls upon the film C in the plane vertical to the paper plane and parallel to the refractive lens elements. If for the source of light there is substituted a color filter, the picture on the film, when viewed from the layer side of the original C, would appear in its actual colors. In printing, however, care must be taken that the original receives light only from the place corresponding with that which in taking of the picture was occupied by filter of the "color" that corresponds with that of the "stencil film" which was arranged between the original and the print. F is the printing film, the embossed side of which likewise faces the source of light. Between the original film C and the printing film F there are arranged the "stencil film" H and an intermediate layer I made of transparent material. The thickness of the intermediate layer depends on the breadth of a lens element of the original, and its thickness.

In Fig. 2 this dependence is explained more fully. K are some lenticular elements in the middle of the picture field, the light arriving from the filter and falling upon these lens elements, being practically parallel. The path of the rays, in this figure, is drawn for the reproduction of the middle of the green filter-stripe. In the light sensitive layer there is formed a linear picture of the middle of the green filter strip. The rays emerge from the layer on its other side and deviate from their original direction according to the refraction index of the following layer. In Fig. 2 the layer M, which corresponds with the layer I of Fig. 1 is supposed to have a refraction index inferior to that of the material constituting the support of the original film. From the punctiform pictures of the object in the layer L the rays are again diverged, and there exists a plane N in which the marginal rays of the bundle just cut each other, so that every point of the space beneath N is now penetrated by rays which have contributed to the reproduction of the points in the layer L. The arrangement of this intermediate layer serves to overcome the moiré effect on the printed film.

The lenticular "stencil film" H, for instance, is obtained by first preparing for a color sensation an intermediate film, by illuminating a lenticular film with the aid of a source of diffused light and an optical system equal in function to that used for the reproduction through that color area of the multi-color filter which belongs to the respective color sensation, and printing this intermediate film in contact on to the "stencil film" with their embossed sides facing each other. The "stencil film" can be said to represent a partial color picture of a white surface. Thus, for instance, below the lenticular elements of such a film all those strips are completely transparent which correspond to the exposure through a red filter strip, whereas the strips corresponding with the remaining filter strips are blackened. When printing such a "stencil film" on to another film, the print obtained will again show the transparent strips which correspond with the red color zone of the filter but with the difference that the inclination of the main rays towards the edges of the picture field of the print belongs to a filter picture, which lies respectively as much before or behind the print, as it lies respectively behind or before the original "stencil film".

Fig. 3 is a diagram of the path of the rays in the "stencil film" H and in the printing film F. The "stencil film" is made according to the process above referred to.

In Fig. 4 A is the filter or its virtual image with the color strips blue, green and red for the objective with which the print is to be projected. It is necessary that the "stencil film" H should be prepared with the same objective. If the print is to be projected in its true colors the partial pictures must at the margins of the picture field be so much displaced towards the axis of the lenticular elements that the rays from the middle of the green filter strip hit the middle of the projector green filter at F. In the following, these rays will briefly be called green-middle rays. In order that the rays arriving on the print are suitably inclined towards the marginal zone thereof, the "stencil film" is prepared in such a manner that its green-middle-rays meet at the same distance behind the "stencil film" that is to say on its emulsioned side, as they are to meet in front of this side for the print. When printing with a "stencil film" the different layers are arranged as represented in Fig. 1. The source of light is masked with the exception of the opening of the filter strip that corresponds with the color of the "stencil film." If, for instance, the illumination is effected through the opening R (the "stencil film" being destined for printing the red color sensation), the emulsion layer of the original will only allow those rays to pass which belong to the red color sensation. These rays merge into one another in the space created by the intermediate layer I and are projected on the "stencil film" H over the whole breadth of its surface. Of the rays belonging to the red color sensation, the "stencil film" allows to arrive at the print only those which belong to the angle leading to the red strip of the projection filter. For the preparation of the other partial color pictures a corresponding "stencil film" is employed and the exposure is made through a corresponding opening of the source of light. Each picture, therefore, must be printed with three different "stencil films" and with three confederate filter openings. The arrangement according to Fig. 1 is merely given to show the position of the opening of the source of light confederate with the respective color sensation, the trace of rays depending on the geometrically optical conditions. The openings of the source of light which correspond to the respective filter areas, therefore, need not be covered with colored glasses.

In order to avoid the disadvantage of printing three times for the production of a three color picture, the "stencil film" can be exchanged for a film which, in place of the bright zones corresponding with the different color sensations, has zones dyed in the actual colors. In this case, printing is effected in a manner similar to that indicated in Fig. 1, with the exception that in this case the multi-color filter A with the color areas blue, green and red is inserted before the source of light, so that a single illumination suffices. A "stencil film" as aforesaid can be obtained according to one of the known processes of photographically preparing colored line screens.

Such an arrangement is shown in Fig. 8. In this Fig. 8 A is a multi-color filter arranged at a distance from the original film C corresponding with that of the multi-color filter during exposure and having the breadth of its filter strips corresponding with those of the exposure filter. The original film C faces with its lenticular elements

the filter A. The lenticular stencil film H is arranged with its layer side in contact with the original film C. The printing film F is arranged in contact with the stencil film H, the lenticular elements of the two films facing each other. The Fig. 8 clearly shows that when using a stencil film with colored zones only one exposure is necessary for printing all partial color pictures.

Instead of the intermediate layer I, which serves to avoid streakiness, there may also be used another arrangement in which the original and the "stencil film" having their layer sides in contact are passed through the printing machine in such a manner that the light emitted from any point in the emulsion layer of a line perpendicular to the lenticular elements of the original film is projected in the breadth of one lenticular element on any point in the emulsion layer of a line perpendicular to the lenticular elements of the "stencil film." For this purpose, the "stencil film" must be displaced to such an extent, while printing one picture frame, that the displacement in the direction perpendicular to the lenticular elements amounts to at least the breadth of one lenticular element. In this procedure either the picture film, that is to say the original film and the printing film, may be left stationary while displacing the "stencil film" between them by the breadth of one lens element in the direction perpendicular to that of the lenticular elements and illuminating the picture frame during this operation, or the lenses of the "stencil film" are so inclined towards the lenses of the picture film that, when displacing the "stencil film" in the direction of the cylindrical lenses by a certain amount this displacement corresponds with the displacement in a direction perpendicular to the lenticular elements by the breadth of one lens element.

An arrangement for printing in this manner is shown in Figs. 12 and 13. Through the picture gate 1 provided with the gate aperture 4 there are passed in contact the original film C, the "stencil film" H and the printing film F. The films may be advanced intermittently as shown by means of one of the usual Geneva devices. The lenticular elements of the "stencil film" H have such an inclination with relation to those of the original film C that when advancing the films by the height of one picture the lenticular elements of the "stencil film" H have been displaced by the breadth of one element with relation to those of the original film. The lenticular elements of the printing film F are parallel to those of the original film C. The films are illuminated by means of a lamp 2 through a lens or lenses 3.

A further possibility of avoiding streakiness in printing resides in the use of a so-called slit-printing machine, in which the original and the printing film are not advanced intermittently but continuously at a constant speed and in the same direction, past a slit through which exposure is effected. When operating according to this method, the picture films may be guided parallel to each other and the lenticular embossing of the "stencil film" may be inclined towards that of the original film, so that the displacement of the "stencil film" from the upper edge of the slit to the lower edge corresponds with at least the breadth of one lenticular element. The "stencil film" may, however, be arranged so that its embossings extend in the direction of the gate aperture. In this case, however, the picture films, while passing the gate aperture, must be inclined with respect to the "stencil film", but must be parallel to one another. Moreover, it is possible that the printing film, instead of lying parallel to the original film may be parallel to the "stencil film". The displacement of the lenticular screen of the "stencil film" with respect to that of the original film must in all cases amount to at least the breadth of one lenticular element of the original film. The inclination of the films according to this invention may be such that the displacement amounts to more than the breadth of one lenticular element, without detriment to the sharpness of the picture, provided that the screen of the "stencil film" is not appreciably larger than that of the original film.

Fig. 5 represents diagrammatically a slit printing machine suitable for printing in the aforesaid manner. The original film C passes from the take-off roller 1 to the take-up roller 2 and the printing film correspondingly passes from the take-off roller 3 to the take-up roller 4. The light from the source A passes through the diaphragms B*r*, B*g* and B*b*, arranged in steps, as shown in Fig. 7, and through the slits *r*, *g*, and *b*, and falls on the original film C. Between the original film C and the printing film F is located the "stencil film" H. For printing originals having a line screen the required light filters are inserted in the slits of the printing machine.

Fig. 6 shows diagrammatically a "stencil film" for simultaneously printing three partial color pictures. In this figure the area ABCD designates the portion lying below *r* (Fig. 5), which serves for the transfer of the red color sensation. Accordingly the green and the blue sensation are printed under the areas EFGH and IKLM. The three slits are disposed so as immediately to succeed each other and their height, in direction of the film travel, is as low as possible, in order that any possible displacement of the three partial pictures which would be perceptible by the presence of colored outlines in the projection of the finished picture, is eliminated as much as possible.

The procedure for obtaining a "stencil film" provided on both sides with alternating parallel transparent and opaque stripes may be as follows: On a film provided on one or both sides with a light sensitive emulsion layer having a great dissolving power, that is to say an emulsion with a small size of grain, there is photographed a line screen so that the breadth of the transparent stripes alternating with the blackened stripes is less than half the breadth of the blackened stripes, and the breadth of a transparent stripe plus a blackened stripe is about equal to the breadth of a lenticular element of a lenticular "stencil film". If the film is coated on both sides with an emulsion layer the emulsion layer to which the screen is not applied must be protected against exposure and the action of the photographic treating liquids, while producing the screen on the other emulsion layer. If there is used a film which is coated only on one side, the film is coated with an emulsion layer on the other side after the screen has been applied on the first side. Now, the screen is projected on the second emulsion layer by means of a punctiform source of light so that the respective position of the transparent stripes corresponds with the respective position of the transparent stripes of a lenticular "stencil film" and the middle of the confederate lenticular elements. For this purpose the punctiform source of light is arranged in front of the screen at the distance and

in the position of the optical centers of the filter strips of the multi-color filter in projecting the print.

What we claim is:

1. In combination, a lenticular film having in its emulsion layer an original, a source of light facing the lenticular elements of said original and arranged with relation to said original under the optical conditions characteristical for one of the partial color pictures in exposure, a lenticular "stencil film" having in its emulsion layer behind each lenticular element blackened and transparent strips which cause a direction of the light falling on the "stencil film" in a manner characteristical for the trace of the rays of said partial color picture in projection, arranged with its lenticular elements facing the emulsion layer of said original, and a lenticular printing film arranged with its lenticular elements facing the emulsion layer of said original.

2. In combination, a lenticular film having in its emulsion layer an original, a source of light facing the lenticular elements of said original and arranged with relation to said original under the optical conditions characteristical for one of the partial color pictures in exposure, a lenticular "stencil film" having in its emulsion layer behind each lenticular element transparent and blackened areas which cause a direction of the light falling on the "stencil film" in a manner characteristic for the trace of the rays of said partial color picture in projection, arranged with its lenticular elements facing the emulsion layer of said original, and a lenticular printing film arranged with its lenticular elements facing the emulsion layer of said original, and said "stencil film" having an inclination to each other on the length of one picture of at least the breadth of one lenticular element but less than 90°.

3. In combination, a lenticular film having in its emulsion layer an original, a source of light facing the lenticular elements of said original and arranged with relation to said original under the optical conditions characteristical for one of the partial color pictures in exposure, a smooth "stencil film" bearing on each face blackened and transparent stripes which together cause a direction of the light falling on the "stencil film" in a manner characteristic for the trace of the rays of said partial color picture in projection, and a lenticular printing film arranged with its lenticular elements facing the emulsion layer of said original.

4. In combination, a lenticular film having in its emulsion layer an original, a source of light facing the lenticular elements of said original, a multi-color filter arranged with relation to the original under the same optical conditions as in exposure and illuminated by said source of light, a lenticular "stencil film" having behind each lenticular element stripes of the fundamental colors which cause a direction of the light falling on the "stencil film" in a manner characteristic for the trace of the rays of the partial color picture in projection, and a lenticular printing film arranged with its lenticular elements facing the emulsion layer of said original.

5. A process of printing an original on a lenticular film upon another lenticular film which comprises arranging in contact a lenticular film to be printed for projection and a "stencil film" having strips of different light permeability which cause a direction of the light falling on the "stencil film" in a manner characteristical for the trace of the rays of a partial color picture in projection with their layer sides facing each other, placing a lenticular film bearing a light-sensitive layer with its lenticular elements in contact with said "stencil film" and exposing said films through the original film under the optical conditions characteristical for the partial color picture to be printed.

6. A process of printing an original on a lenticular film upon another lenticular film which comprises arranging in contact a lenticular film to be printed for projection and a "stencil film" having in its emulsion layer behind each lenticular element blackened and transparent strips which cause a direction of the light falling on the "stencil film" in a manner characteristical for the trace of the rays of a partial color picture in projection, with their layer sides facing each other, placing a lenticular film bearing a light sensitive layer with its lenticular elements in contact with said "stencil film", and exposing said films through the original film under the optical conditions characteristical for the partial color picture to be printed.

7. A process of printing an original on a lenticular film upon another lenticular film which comprises arranging in contact a lenticular film to be printed for projection and a "stencil film" having blackened and transparent strips which cause a direction of the light falling on the "stencil film" in a manner characteristical for the trace of the rays of a partial color picture in projection with their layer sides facing each other, placing a lenticular film bearing a light sensitive layer with its lenticular elements in contact with said "stencil film", and exposing said films through the original film under the optical conditions characteristical for the partial color picture to be printed.

8. A process of printing an original on a lenticular film upon another lenticular film which comprises arranging in contact a lenticular film to be printed for projection in contact with a transparent sheet having such a thickness that the pencils of light projected by the lenticular elements touch each other on the surface of said sheet remote from said original film, placing a "stencil film" having strips of different light permeability which cause a direction of the light falling on the "stencil film" in a manner characteristical for the trace of the rays of a partial color picture in projection, in contact with said sheet, placing a lenticular film bearing a light sensitive emulsion layer with its lenticular elements in contact with said "stencil film", and exposing said films through the original film under the optical conditions characteristical for the partial color picture to be printed.

9. A process of printing an original on a lenticular film upon another lenticular film which comprises arranging in contact a lenticular film to be printed for projection and a lenticular "stencil film" having its lenticular elements inclined with relation to those of said original by at least the breadth of one lenticular element but less than 90° on the height of one picture and having in its emulsion layer behind each lenticular element blackened and transparent strips which cause a direction of the light falling on the "stencil film" in a manner characteristical for the trace of the rays of a partial color picture in projection with their layer sides facing each other, placing a lenticular film bearing a light sensitive layer with its lenticular elements in contact with said "stencil film", and exposing

said films through the original film under the optical conditions characteristical for the partial color picture to be printed.

10. A process of printing an original on a lenticular film upon another lenticular film which comprises arranging in contact a lenticular film to be printed for projection and a smooth "stencil film" having on both sides blackened and transparent strips which together cause a direction of the light falling on the "stencil film" in a manner characteristical for the trace of the rays of a partial color picture in projection, with their layer sides facing each other, placing a lenticular film, bearing a light sensitive layer with its lenticular elements in contact with said "stencil film", and exposing said films through the original film under the optical conditions characteristical for the partial color picture to be printed.

11. A process of printing an original on a lenticular film upon another lenticular film which comprises arranging in contact a lenticular film to be printed for projection and a lenticular stencil film having behind each lenticular element in its emulsion layer strips colored in the fundamental colors which strips cause a direction of the light falling on the "stencil film" in a manner characteristical for the trace of the rays of the partial color pictures in projection, with their layer sides facing each other, placing a lenticular film bearing a light sensitive emulsion layer with its lenticular elements in contact with the lenticular elements of said "stencil film", and exposing said films through the original film and a multi-color filter equal to the exposure filter and arranged under the same optical conditions as prevailed in exposure.

12. In combination, a lenticular film having in its emulsion layer an original, a source of light facing the lenticular elements of said original and arranged with relation to said original under the optical conditions characteristical for one of the partial color pictures in exposure, a "stencil film" having strips of different light permeability which cause a direction of the light falling on the "stencil film" in a manner characteristical for the trace of the rays of said partial color picture in projection arranged with its lenticular elements facing the emulsion layer of said original, and a lenticular printing film arranged with its lenticular elements facing the emulsion layer of said original.

13. In combination, a lenticular film having in its emulsion layer an original, a source of light facing the lenticular elements of said original and arranged with relation to said original under the optical conditions characteristical for one of the partial color pictures in exposure, a transparent sheet in contact with said original, said transparent sheet having such a thickness that the pencils of light projected by the lenticular elements touch each other on the surface of said sheet remote from said original film, a "stencil film" having strips of different light permeability which cause a direction of the light falling on the "stencil film" in a manner characteristical for the trace of the rays of a partial color picture in projection, placed with its emulsion layer in contact with said transparent sheet, and a lenticular film bearing a light sensitive emulsion layer arranged with its lenticular elements in contact with said "stencil film".

14. An apparatus for printing a lenticular film on another lenticular film in contact which comprises a source of light, means to cause the original and the printing film to travel synchronously and in printing arrangements past said source of light, a "stencil film" having strips of different light permeability which cause a direction of the light falling on the "stencil film" in a manner characteristical for the trace of the rays of a partial color picture, interposed between said two films, diaphragms arranged between said films and said source of light, said diaphragms corresponding each with a color area of the exposure filter and being arranged in steps to correspond with the respective areas of the "stencil film".

JOHN EGGERT.
GERD HEYMER.