

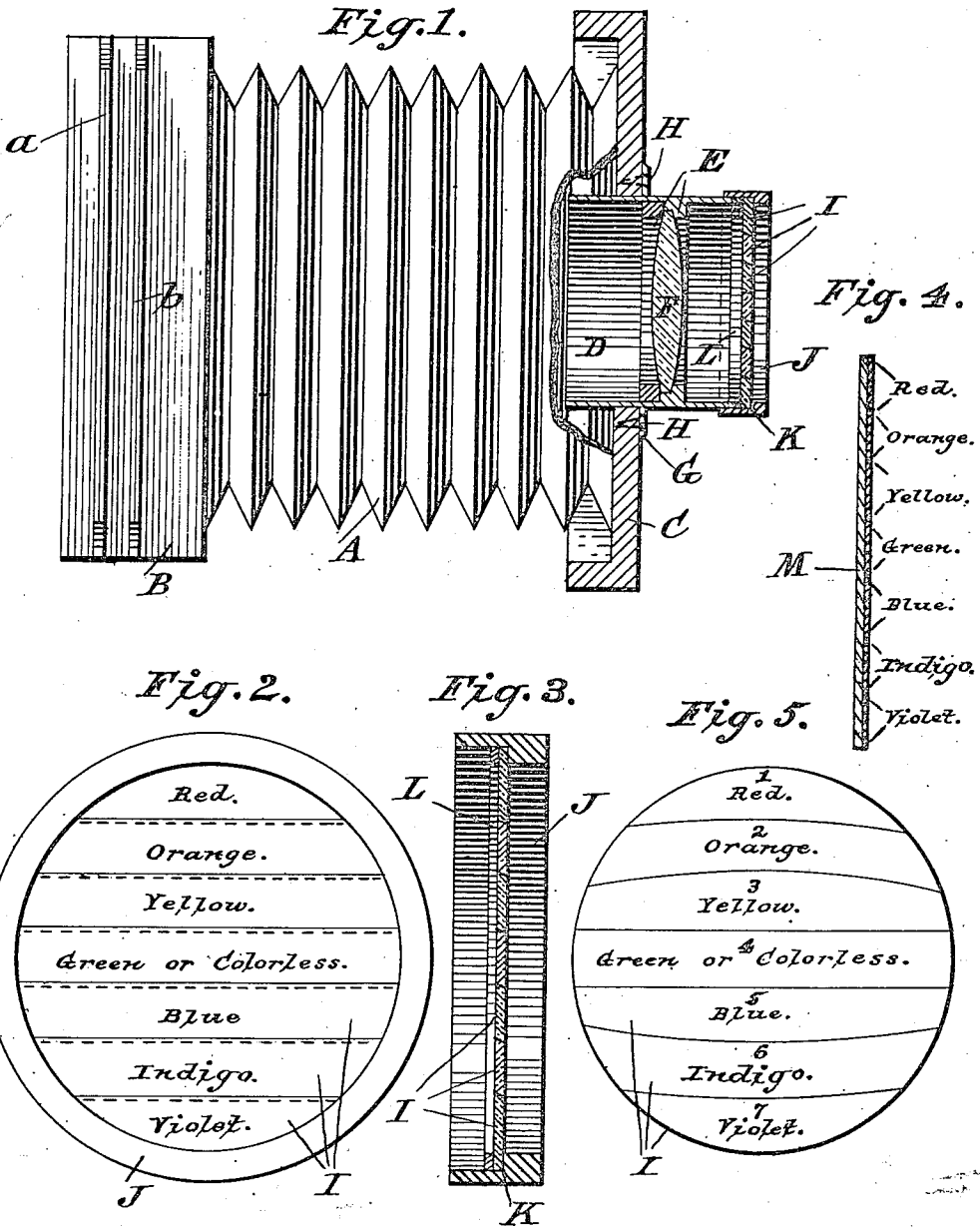
No. 727,524.

PATENTED MAY 5, 1903.

T. WILLSIE.
PHOTOGRAPHIC LIGHT SCREEN.

APPLICATION FILED DEC. 22, 1902.

NO MODEL.



WITNESSES:

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UNITED STATES PATENT OFFICE.

THOMAS WILLISIE, OF IONIA, MICHIGAN.

PHOTOGRAPHIC LIGHT-SCREEN.

SPECIFICATION forming part of Letters Patent No. 727,524, dated May 5, 1903.

Application filed December 22, 1902. Serial No. 136,200. (No model.)

To all whom it may concern:

Be it known that I, THOMAS WILLISIE, a citizen of the United States, residing at Ionia, in the county of Ionia and State of Michigan, have invented certain new and useful Improvements in Photographic Light-Screens; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in photographic ray-filters, and has for its ultimate purpose the production of photographic prints representing more especially landscape views having perfectly-balanced foreground and sky, as well as moving objects contained therein, such as moving trains, landscape effects during high winds, athletic sports, &c. The object of my invention is to provide a ray-filter which is applicable to all kinds of photographic cameras, including those having both fixed focus and focusing-lenses, to produce the above effects on a sensitive plate or negative with a shorter exposure on any lens having my improved ray-filter used in combination therewith than could be produced without it and to produce one which is adapted for use in combination with all makes of photographic plates or films in use at the present time, also one which is simple in its construction and which may be cheaply or economically manufactured and also which may be applied to any of the forms of lens-tubes now in use; and, furthermore, it consists in the construction and arrangement of its parts, which will be more fully hereinafter described, and definitely pointed out in the claims. I attain these objects by means of the device herein described, and illustrated by the accompanying drawings, in which—

Figure 1 illustrates an elevation, partly in section, showing my improved ray-filter as applied to the lens of an ordinary photographic camera. Fig. 2 illustrates an enlarged end view of my improved device in detail, shown as having been detached therefrom. Fig. 3 is a transverse vertical section of the same. Fig. 4 is a transverse vertical section of a modified form of my improved ray-filter in detail, its casing or securing-frame having been removed therefrom. Fig. 5 is a dia-

grammatic view used to illustrate the principle on which my invention is based.

Referring to the drawings, Fig. 1, A indicates the bellows of an ordinary photographic camera.

B is the frame of the box, containing slides *a* and *b*, in which are secured sensitive plates or films commonly used in the photographic art, and C the front portion thereof, to which is secured the bellows or focusing portion A. D is the lens-tube, having the internal frame E, in which the lens F is secured. Said lens-tube D is secured within the front portion C by means of the exterior flange G and screws H.

I indicates my improved ray-filter, which is secured to the outer end of the lens-tube D by means of the circular flanged casing J. The inner edge of said circular flanged casing J is made thinner in order to form a shoulder K, against which the ray-filter bears.

L is an internal ring placed within the circular flanged casing J to hold the ray-filter in position when it is desired at any time to disconnect said ray-filter I from the lens-tube D. It may be removed from the casing J should it be desired to replace the ray-filter with another in case of accident or for any other reason known to the operator.

In the drawings, as above stated, I have shown my improved ray-filter as being attached to the outer end of a lens-tube; but it may also be attached to the inner end thereof as well with equally beneficial results.

Referring to Figs. 1, 2, 3, and 4 of the drawings, it will be seen that my improved ray-filter in its entirety is composed of several strips of transparent material differentially colored, each of one color throughout possessing light-transmitting qualities—such as glass properly shaded, colors incorporated with gelatin on glass, or it may be composed of a single strip of mica or celluloid, as at M, used as a base on which the various colors are arranged one above another, their outer surfaces being parallel with each other and having their edges slightly beveled to overlap each other in order to more perfectly blend the said colors, and when in position at the end of the lens-tube D (shown in Fig. 1) they are arranged horizontally to it on a perpendicular plane therewith.

To illustrate the fast working qualities of my improved ray-filter, it will be necessary to explain, using the diagrammatic Fig. 5. It is a well-known principle that the heat or red rays are nearest the earth. Then follow, in their respective order, the orange, yellow, green, blue, indigo, and violet, the last named being the coldest rays, but possessing the most actinic qualities. The actinic value of said rays varies mathematically as one to eight. The immediate foreground, represented by the red rays or color, (indicated as No. 1,) requires eight times the exposure of that of the sky, (represented by the violet rays or color No. 7.) By filtering with the red or lowest, slowest colored rays, as indicated by No. 1, with the upper very fast violet rays (indicated by said No. 7) the rays are mathematically balanced or qualified, thus making eight the actinic value of the combined result. With the orange rays (indicated by the color No. 2) are blended the indigo rays, as indicated by color No. 6, thereby also making eight the actinic value of the combined result, mathematically considered. The yellow rays (indicated by color No. 3) are blended with the blue rays, (indicated by No. 5,) which also balances the rays, making eight the actinic value of the combined result, mathematically considered. The center color of the spectrum, green, having an actinic value of four, is filtered or mixed with the green color, (indicated by color No. 4,) which, as above described, also makes eight, the actinic value of the combined result, mathematically considered. In other words, by the use of my improved ray-filter in combination with a lens-tube and camera the rays from the upper sky portion are blended with those of the immediate foreground, and the intermediate rays between the upper sky portion and the horizon are blended with the intermediate rays of the foreground, whereby a perfectly-balanced negative is produced, for the reason that the rays of light passing through said ray-filter fall on all parts of the sensitive plate alike. Thus it will be readily seen that this device retards or restricts the upper portion of the spectrum, which is of a higher actinic value, down to its center and accelerates the lower half of the spectrum, which is of lower actinic value, up to its center, thus forming a balanced whole relatively slower than the highest actinic rays and relatively faster than the lower actinic rays, the balance being the intermediate between the high actinic and low actinic values. Hence a speed faster than normal is attained, as hereinafter stated.

I do not wish to limit myself to the exact widths and colors of strips as indicated in the drawings, as I may use shades or tints of the same colors as well; but the strips should be graduated in width from the center up and down, and the shades or tints used should balance each other in the same manner as hereinbefore described.

I have by my improved ray-filter, used in combination with a camera and lens, produced negatives of landscapes which in the print showed very distinct features both in landscape and cloud effects, the details in the foreground being clearly defined even up to the horizon, as well as the clouds in the sky. These were taken on an exposure which was several times faster than the normal.

The sensitive plates were of the various kinds in common use.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A ray-filter for photographic use consisting of transparent colored strips, so arranged as to gradually restrict, actinically, the action of the rays of light of a high actinic value passing through it down to its center, and to gradually accelerate, actinically, the action of the low rays which are of a lower actinic value passing through it up to its center, whereby all the rays of light passing through said ray-filter are perfectly balanced, and fall with equal actinic value on all parts of the sensitive plate.

2. A ray-filter for photographic use consisting of a series of differentially-colored, transparent strips, each of one color throughout, the top strip being of the most restricting color, of low actinic value, representing in use the upper sky portion, each consecutive strip of color being of a gradually higher actinic value downward to its bottom where a tint of the highest actinic value is used representing the immediate foreground portion.

3. A ray-filter for photographic use consisting of a series of differentially-colored strips, each of one color throughout, the top strip being of the most restricting color of low actinic value, each consecutive strip of color being of a gradually higher actinic value, downward to its bottom, in combination with a casing for holding said ray-filter.

4. A ray-filter for photographic use consisting of a series of differentially-colored strips, each of one color throughout, the top strip being of the most restricting color of low actinic value, each consecutive strip of color being of a gradually higher actinic value downward to its bottom, arranged one above another with reference to their actinic light-transmitting qualities, graded from a low actinic value at its top to a high actinic value at its bottom, the whole being adapted to act at one time, in unison, upon a sensitive plate.

5. A ray-filter for photographic use consisting of a series of transparent strips, differentially colored, each of one color throughout, arranged one above another, the top strip being of the most restricting color of low actinic value, each consecutive strip of color being of a higher actinic value downward to its bottom, in combination with a casing and means for holding said ray-filter within said casing.

6. A ray-filter for photographic use consisting of a series of transparent, differentially-

colored strips, each of one color throughout, arranged one above another, the top strip being of a low actinic value, each consecutive strip of color being of a higher actinic value downward to its bottom, the whole outer surfaces being parallel to each other, and adjoining edges beveled thereto, in combination with a casing having a shoulder formed therein, and means for holding said ray-filter against said shoulder.

7. A ray-filter for photographic use composed of a series of transparent, differentially-colored strips, each of one color throughout, the top strip being of the most light-restricting color of low actinic value, each consecutive strip of color being of gradually higher actinic value downward to its bottom, the whole being arranged one above another, horizontally to its perpendicular width, in combination with a casing, and means for holding said ray-filter within said casing.

8. A ray-filter for photographic use composed of a single piece of transparent material forming a base on which a series of transparent, differentially-colored strips, each of one color throughout, are arranged one above another, the top strip representing the upper sky portion being of the lowest actinic value, each consecutive strip of color being of a gradually higher actinic value downward to its bottom where the strip of color is of the highest or accelerating actinic value, representing the immediate foreground portion, the whole being arranged horizontally to its perpendicular width.

9. A ray-filter for photographic use composed of a single piece of transparent material forming a base on which a series of transparent, differentially-colored strips, each of one color throughout, are arranged one above

another, the top strip of color being of the lowest actinic value, each consecutive strip of color being of a gradually higher actinic value downward to its bottom, the whole being arranged horizontally to its perpendicular width, in combination with a casing for holding said ray-filter within said casing.

10. A ray-filter for photographic use composed of a single piece of transparent material forming a base on which a series of transparent, differentially-colored strips, each of one color, are arranged one above another, graded from a strip of low actinic value at its top, each consecutive strip of color being of a higher actinic value downward to its bottom, the whole being arranged horizontally to its perpendicular width, in combination with a casing having a shoulder formed therein, and means for holding said ray-filter against said shoulder.

11. A ray-filter for photographic use consisting of a single piece of transparent material forming a base on which a series of transparent, differentially-colored strips, each of one color, are arranged one above another, with reference to their different actinic light-filtering qualities, graded from a strip of color of low actinic quality at its top, each consecutive strip of color being of a higher actinic value downward to its bottom, their outer surfaces being parallel to each other, and adjoining edges overlapping thereto, in combination with a casing, and means for holding said ray-filter within said casing.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS WILLISIE.

Witnesses:

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MADORA B. WILLISIE.