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ACTINIC RAY CHARTING DEVICE

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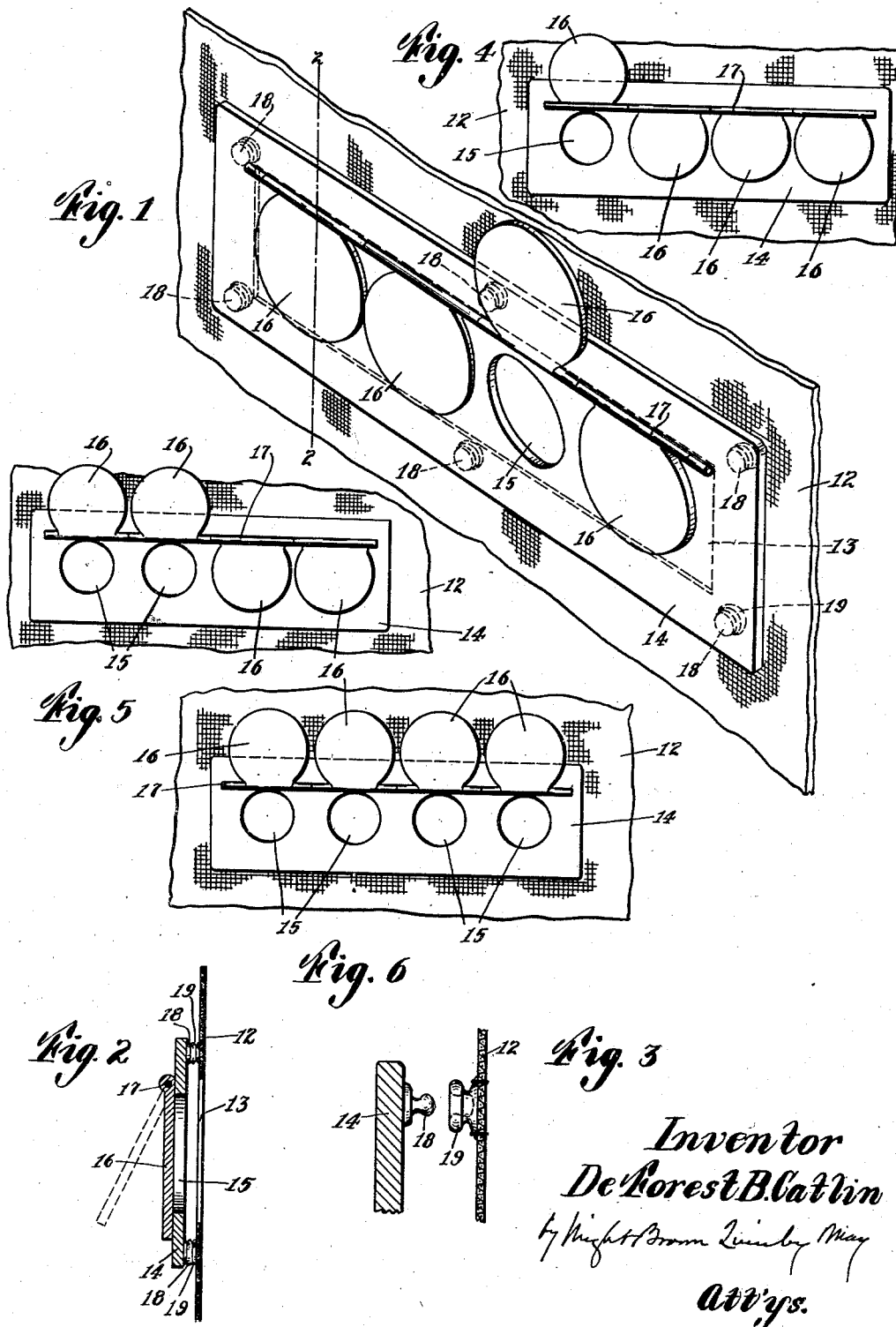


Fig. 3

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Att'ys.

## UNITED STATES PATENT OFFICE.

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## ACTINIC-RAY CHARTING DEVICE.

Application filed January 7, 1925. Serial No. 1,133.

*To all whom it may concern:*

Be it known that I, DE FOREST B. CATLIN, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Actinic-Ray Charting Devices, of which the following is a specification.

The object of the invention is to provide a charting device for actinic treatment of the skin enabling a physician to ascertain the resistance of the skin, in any given case, to the action of energy applied thereto, by ultra-violet or other actinic rays, without liability of serious injury to the skin by excessive exposure to such energy. There is a considerable variation to this resistance. The skin of a blond patient will show an erythema in about one-third of the time required to show the same degree of erythema in a patient of the brunette type.

There are three degrees of erythema (commonly known as sunburn), these being first a slight reddening of the skin; second, a pronounced reddening to the point of desquamation, (commonly known as peeling of the skin); and third, blistering, which is painful and dangerous.

The skin of a child shows an erythema more quickly than that of an adult. In all cases of lowered normal resistance, due to pathological conditions, either organic or systemic, the patient's skin tolerance is appreciably lowered.

A physician in ascertaining the exact amount of dosage by actinic rays, has to experiment with varying doses. This experimentation usually requires three or four treatments, and involves the possibility of giving a severe sunburn, when that degree of erythema is not intended or desired.

My invention enables a physician to make on the skin of a patient, and without liability of injury thereto, a chart which will indicate the amount of energy and the distance between the ray projector and the skin required during subsequent treatment in any individual case to produce the desired result.

The invention is embodied in a charting device, adapted to be applied to a surface of the human body, and comprising first, a major intercepting screen, adapted to intercept actinic rays directed against said surface, said screen being provided with a

plurality of relatively small openings each adapted to expose a limited portion of the body surface; and secondly, a plurality of minor intercepting screens, movably connected with the major screen and each adapted to cover or expose one of said openings, so that when the device is used as hereinafter described, a dosage chart is formed on the body portions coinciding with said openings.

Of the accompanying drawings forming a part of this specification,—

Figure 1 is a perspective view, showing the preferred construction of a device embodying the invention.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is an enlargement of portions of Figure 2, showing the elements of the major screen separated from each other.

Figures 4, 5 and 6 are front elevations, illustrating the use of the device.

The same reference characters indicate the same parts in all of the figures.

In the embodiment shown by the drawings, the major intercepting screen constituting an element of my improved charting device, includes a flexible sheet 12, of any suitable material and area, and adapted to conform to a body surface on which it is laid, and to intercept ultra-violet, or other actinic rays, a close textured textile fabric being preferred.

In the sheet 12 is formed a relatively large opening 13, indicated by dotted lines in Figure 1.

Said major screen also includes a rigid intercepting plate 14, which may be of metal, having a plurality of relatively small openings or windows 15, and means separably connecting the plate with the sheet 12, so that the margin of the plate overlaps the edges of the sheet opening 13, and the plate openings 15 register with the opening 13, as shown by Figures 1 and 2. Said means, in this instance, includes ordinary snap fasteners, comprising stud members 18, secured to the plate 14, and socket member 19, secured to the sheet 12. The separability of the sheet from the plate, permits the convenient washing and sterilization of the sheet independently.

The minor intercepting screens are, in this instance, metal plates 16, connected by hinges 17 to the plate, and each adapted to cover or expose one of the openings 15. The device

may be used to form a chart on the skin, by locating the device on a body portion, with the sheet 12 contacting with the skin, the device being interposed between the body and a violet-ray lamp, or other instrumentality employed to project actinic rays toward the body portion covered by the device, and the minor screens 16 being closed.

10 The lamp is located at a predetermined distance from the device, and maintained at said distance, and projects light rays continuously during the following experimentation. The first minor screen 16, or that at one end of the series, is opened first, as  
15 shown by Figure 4, until an exposure of (for example) one minute is made through the first opening 15. The second screen 16 is then opened, (the first remaining open) and an exposure of another minute is made through the second opening. While the  
20 first and second screens 16 remain open, the third screen is opened and an exposure of another minute is made through the third opening. While the first, second and third  
25 screens 16 remain open, the fourth screen is opened, and an exposure of another minute is made through the fourth opening. It is obvious that there may be any desired number of openings 15, and minor screens 16,  
30 four being a sufficient number in most cases. After the exposure through the last opening, all the screens 16 are closed.

35 It will now be seen that the skin area behind the first opening is exposed, in the example described, four minutes, the next three minutes, and the last one minute, and that the skin is thus provided with a tolerance chart.

40 The amount of actinic energy required to produce a general tonic effect on the patient, without showing any noticeable or extreme reaction on the skin, is called a sedative dosage. My device used in the manner described, protects the patient from possible  
45 injury, and enables the physician to avoid the production of an injurious erythema

when only a sedative dosage is desired, and to avoid liability of a suit for damages.

I am not limited to the construction of the device shown by the drawings, and may 50 variously modify the same to provide a major intercepting screen, adapted to be applied to a surface of the human body, and provided with a plurality of independent openings, each adapted to expose a 55 limited portion of said surface, and a corresponding plurality of minor intercepting screens, movably connected with the major screen, and each adapted to cover and expose one of said openings. 60

I claim:

1. A charting device for actinic treatment of the skin comprising a major intercepting screen, adapted to be applied to a surface of the human body, and provided with a 65 plurality of independent openings each adapted to expose a limited portion of said surface, and a corresponding plurality of minor intercepting screens, movably connected with the major screen, and each 70 adapted to cover or expose one of said openings.

2. A charting device for actinic treatment of the skin comprising a major intercepting screen composed of a flexible sheet, adapted 75 to conform to a surface of the human body and having a relatively large opening, a rigid intercepting plate having a plurality of smaller openings, and means separably connecting the plate with the sheet, so that 80 the margin of the plate overlaps the edges of the sheet opening and the plate openings register with the sheet opening; and minor intercepting screens of rigid material, hinged to the plate and adapted either to 85 cover or expose the plate openings, the separability of the sheet and plate permitting independent sterilization of the sheet.

In testimony whereof I have affixed my signature.

DE FOREST B. CATLIN.