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2,221,936

PERIMETER

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FIG. 1

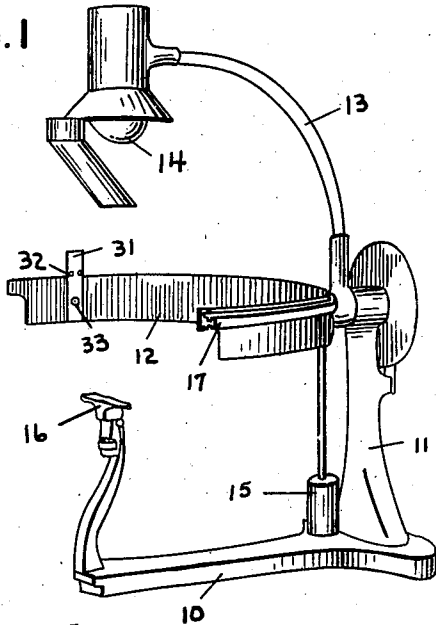


FIG. 2

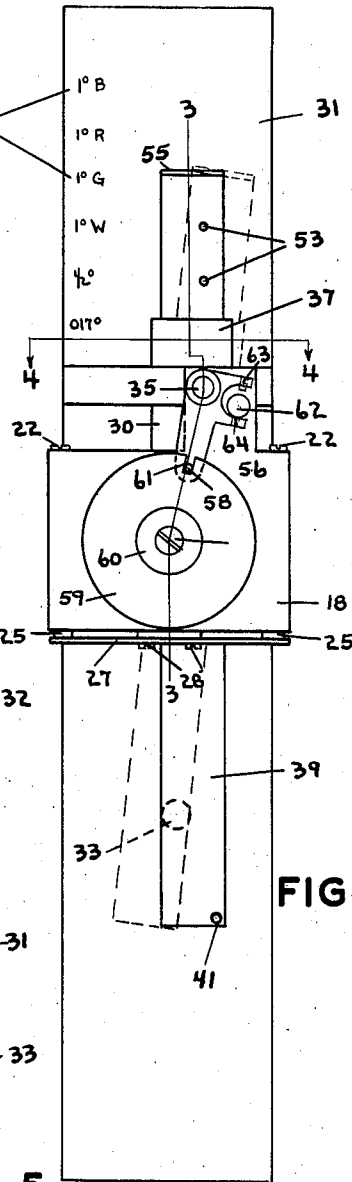


FIG. 5

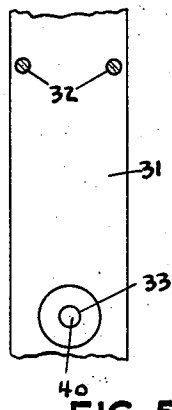


FIG. 3

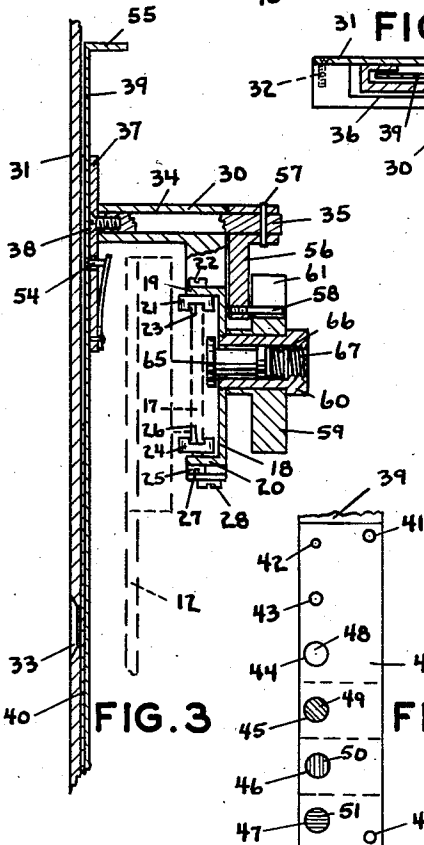
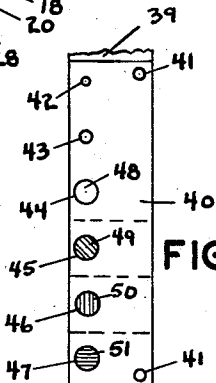


FIG.6



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PERIMETER

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4 Claims. (Cl. 88—20)

The present invention relates to ophthalmic instruments and more particularly to instruments for obtaining color fields, such as perimeters.

One of the objects of the present invention is to provide a new and improved perimeter in which a test stimulus is substituted for a preexposure field. Another object is to provide a perimeter in which the test stimulus is presented without distracting the patient's attention. A further object is to provide a new and improved target for a perimeter. Still another object is to provide a perimeter with a target by which the test stimulus can be presented by means of mechanism out of the patient's view. These and other objects and advantages reside in certain novel features of construction, arrangement and combination of parts as will hereinafter be more fully set forth and pointed out in the appended claims.

Referring to the drawing:

Fig. 1 is a perspective view of a perimeter embodying my invention.

Fig. 2 is a rear elevation of my improved target.

Fig. 3 is a section taken on line 3—3 of Fig. 2.

Fig. 4 is a section taken on line 4—4 of Fig. 2.

Fig. 5 is a front elevation of the target.

Fig. 6 is a fragmentary view of the target strip.

My invention may be applied to a perimeter such as that shown in Fig. 1 wherein 10 designates a base upon one end of which is mounted an upright column 11. The perimeter arc 12 is journaled in the column 11 for rotation about a horizontal axis and a bracket 13 fixed to the arc 12 carries a light source 14 for uniformly illuminating the inside or concave face of the arc 12. A counterweight 15 balances the light source 14 and bracket 13 permitting free rotation of the arc 12. A chin rest 16 is fixed on the other end of the base 10 to support the head of the patient in proper relation to the arc 12. One suitable perimeter to which the present invention may be applied is that described and claimed in Reissue Patent No. 17,987, reissued March 3, 1931, to C. E. Ferree et al.

According to my invention, the arc 12 of the perimeter is provided with a track 17 on its outside or convex surface. A carriage 18 is provided with upper and lower flanges 19 and 20, respectively, which extend over the track 17. Two blocks 21 of suitable material such as fiber are secured at the ends of the upper flange 19 by screws 22 and these blocks 21 each have a groove 23 for engaging the top edge of the track 17. Two similar blocks 24 are mounted on pins 25 which are slidable in holes at each end of the flange 20. These blocks 24 each have a groove 26 for engaging the lower edge of the track 17. A leaf spring

27 is secured to the bottom of the flange 20 by screws 28 and the ends of this spring press up against the pins 25 and cause the blocks 24 to bear against the edge of the track 17. This frictional contact serves to hold the carriage 18 in any selected position on the track 17 regardless of the angular position of the arc 12.

A bracket 30 secured to or formed integrally with the carriage 18 projects forwardly over the arc 12 and a plate 31 is secured at the outer end of this bracket 30 by screws 32. The plate 31 extends down in front of the arc 12 and is preferably painted the same color as the inside or concave surface of the arc 12. I prefer to have both the arc 12 and the plate 31 painted a neutral gray. The plate 31 is formed with an aperture 33 at which the test stimulus is presented in a manner to be presently described.

The bracket 30 is provided with a bore 34 and a shaft 35 is journaled in this bore so that its axis is substantially perpendicular to the plate 31. Adjacent the plate 31, the bracket 30 has a slot or recess 36 to accommodate a guide 37 secured on the end of the shaft 35 by a screw 38. A thin flat strip 39 is slidably mounted in the guide 37 and extends down behind the plate 31 past the aperture 33.

A plate 40 is secured at the lower end of the strip 39 facing the plate 31 by screws 41. This plate 40 is painted substantially the same gray as the plate 31 and arc 12. A series of holes 42, 43, 44, 45, 46 and 47 are formed in the plate 40 along one edge and these holes outline the test stimuli. For example, the holes 42, 43 and 44 may be of such size as to subtend visual angles of 0.17°, 0.5° and 1.0°. A piece of white paper 48 may be secured between the plate 40 and strip 39 to constitute the stimulus. The three holes 45, 46 and 47 may be all of such size as to subtend a visual angle of 1.0°. The actual stimuli consists of three pieces of paper 49, 50 and 51 secured between the plate 40 and strip 39 behind the holes 45, 46 and 47, respectively. These papers 49, 50 and 51 are of different colors, for example, paper 49 may be green, 50 red and 51 blue. Preferably they are all of the same brightness as the gray but at least the red and blue should be of this brightness.

The rear surface of the plate 31 is marked with indicia 52 corresponding to these stimuli and, when the strip 39 is moved in the guide 37 until its top is at a particular index, the corresponding stimulus is alongside but out of alignment with the aperture 33 of the plate 31. For example, when the strip 39 is in the position shown in Fig. 2, the hole 45 backed by the green paper 49 is alongside the aperture 33. The back of the strip 39 is provided with a series of depressions 53 corresponding in number and spacing to the stimuli. A spring click 54 carried by the guide

37 engages in these depressions 53 and holds the strip 39 in a selected position. The top of the strip 39 is bent out as indicated at 55 to form a convenient handle for raising or lowering the strip.

A lever 56 is fixed to the outer end of the shaft 35 by a pin 57. One arm of the lever 56 extends down adjacent the carriage 18 and carries a pin 58. A handwheel 59, rotatably journaled on a sleeve 60 which is threaded into the carriage 18, is provided with radial slot 61 into which the pin 58 projects. Thus, turning the handwheel 59 actuates the lever 56 to rock the shaft 35. The other arm of the lever 56 is bifurcated to receive a stud 62 secured on the bracket 30 and two adjustable screws 63 and 64 extend through the bifurcations of this arm to engage, respectively, the top and bottom of the stud 62. These screws 63 and 64 thus limit the rocking of the shaft 35. In order to provide further friction between the carriage 18 and the track 17, a friction plug 65 is slidably mounted in the sleeve 60 and urged against the rear of the track 17 by a spring 66. The tension on this spring 66 may be varied by a screw 67 threaded in the outer end of the sleeve 60.

In operation, the patient is properly positioned at the perimeter with his chin on the chin rest 16 and directed to look at a fixation mark, not shown, in the center of the arc 12. The handwheel 59 is turned clockwise until the strip 39 occupies the position shown in Fig. 2, that is, until the gray portion of the plate 40 closes the aperture 33 in the plate 31. This gray area provides a preexposure field. The operator moves the carriage 18 around the arc 12 on the track 17 and a counter clockwise turn of the handwheel 59 rocks the shaft 35 and strip 39 to move the selected test stimulus into position behind the aperture 33 in the plate 31. The upper screw 63 has been already adjusted to stop the shaft 35 when the stimulus is positioned concentric with the aperture 33. This position of the strip 39 is shown in dotted lines in Fig. 2.

During the test, the operator's hand is out of sight behind the arc 12 and there is no visible motion to distract the patient and lead to anomalous results. The operator thus has a choice of different test stimuli which may be instantly substituted at the aperture 33 from a point outside of the patient's field of view.

From the foregoing, it will be apparent that I am able to attain the objects of my invention and provide a new and improved perimeter and target. The actual sizes and colors of the test stimuli may, of course, be changed and the sizes, colors, and order recited in the specification are given merely by way of example. Various other modifications can also be made without departing from the spirit of my invention or the scope of the appended claims.

I claim:

1. A target for a perimeter having an arc, said target comprising a carriage adapted to be movably mounted on said arc, a bracket on said carriage, a plate secured on said bracket and adapted to face a patient, said plate being neutral gray and having an aperture therethrough, a shaft rotatably journaled in said bracket with its axis perpendicular to said plate, a guide fixed on one end of said shaft adjacent said plate, a strip slidably mounted in said guide, said strip being neutral gray of the same brightness as said

plate, a plurality of different test objects spaced longitudinally on said strip and positioned normally out of alignment with the aperture in the plate, means for moving said strip longitudinally to select a particular test object, and means for tilting said strip on said shaft to position the selected test object into alignment with said aperture.

2. A target for a perimeter having an arc, said target comprising a carriage adapted to be movably mounted on said arc, a bracket on said carriage, a plate secured on said bracket and extending down in front of said arc, said plate being neutral gray and having an aperture therethrough, a shaft journaled in said bracket with its axis perpendicular to said plate, a guide fixed on the end of said shaft adjacent said plate, a strip slidably mounted in said guide, said strip being neutral gray of the same brightness as said plate and projecting downwardly behind said aperture, a plurality of test objects positioned along one side of said strip, means for sliding said strip to position a particular test object alongside of said aperture, a lever secured on the other end of said shaft, and means for actuating said lever to rock the strip and move the particular test object into position behind said aperture.

3. A target for a perimeter having an arc, said target comprising a carriage adapted to be movably mounted on said arc, a bracket on said carriage, a plate secured on said bracket and extending down in front of said arc, said plate being neutral gray and having an aperture therethrough, a shaft journaled in said bracket with its axis perpendicular to said plate, a guide fixed on the end of said shaft adjacent said plate, a strip slidably mounted in said guide, said strip being neutral gray of the same brightness as said plate and projecting downwardly behind said aperture, a plurality of test objects positioned along one side of said strip, means for sliding said strip to position a particular test object alongside of said aperture, a lever secured on the other end of said shaft, a hand wheel rotatably mounted on the rear of the carriage, means operatively interconnecting the hand wheel and the lever whereby movement of said hand wheel actuates said lever to rock the strip and move the particular test object into position in said aperture and means for stopping said strip when the test object is centered in the aperture.

4. The combination with a perimeter having an arc and a track on the outside of the arc of a carriage movably mounted on said track, a bracket secured on said carriage and extending over said arc, a plate carried by said bracket facing the inside of said arc, said plate having an aperture therethrough, a shaft journaled in said bracket with its axis perpendicular to said plate, a guide secured on said shaft adjacent said plate, a strip slidably mounted in said guide, said strip extending downward past the aperture in said plate, a plurality of different test objects positioned along one side of said strip out of alignment with said aperture, means for sliding said strip in said guide to bring a selected test object alongside of said aperture, means for indicating which test object is alongside the aperture, and means for tilting the strip on the shaft to position the test object behind said aperture.

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