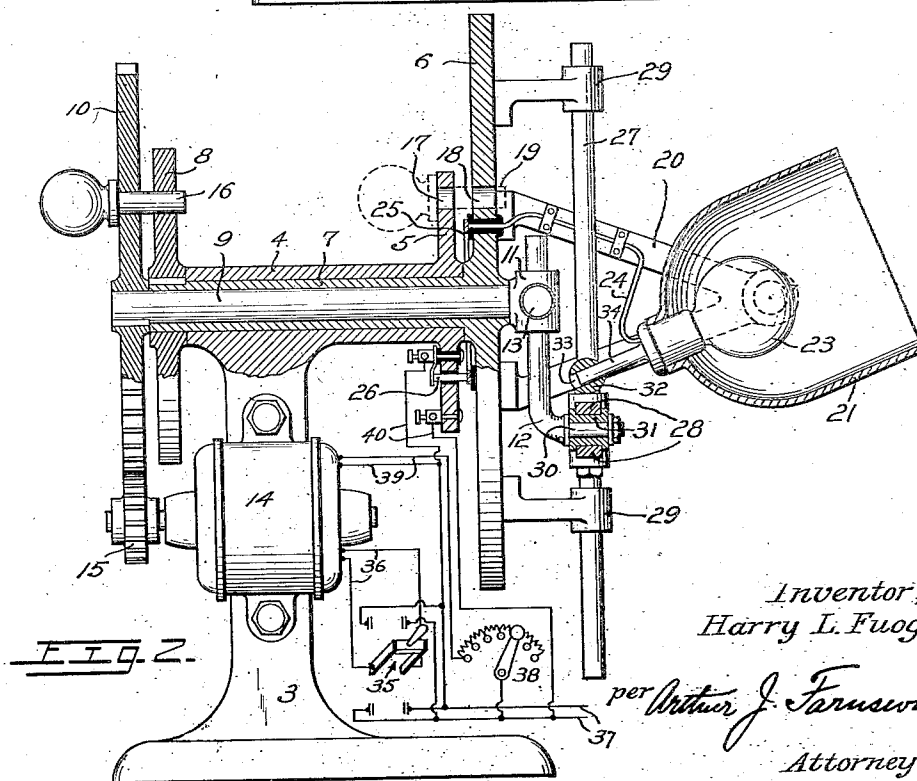
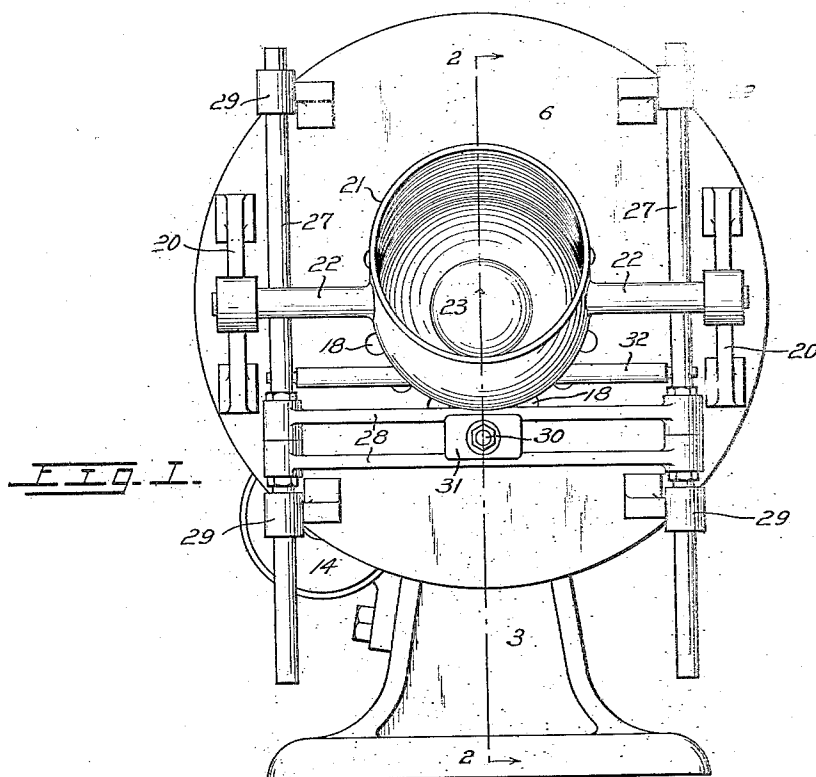


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COORDINATION DEVELOPER
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In this specification, and the accompanying drawing, I shall describe and show a preferred form of my invention, and specifically mention certain of its more important objects. I do not limit myself to the forms disclosed, since various changes and adaptations may be made therein without departing from the essence of my invention as hereinafter claimed; and objects and advantages, other than those specifically mentioned, are included within its scope.

My invention relates to devices for developing and increasing coordination of the human eyes. Its more important objects include; first, to provide an instrument whereby a spot of light may be made to describe circles of variable radius upon a screen perpendicular to the axis of the instrument, and ellipses of variable size and proportions upon a screen inclined to said axis; second, to furnish facilities for reversing the direction of motion of the light spot in any of the above cases; third, to supply means for making the light spot reciprocate in a rectilinear path at any desired angle with respect to the horizon, and with variable amplitudes; fourth, to furnish means for varying the velocity of the light spot when it is moving in any of the aforementioned ways; and, fifth, to accomplish all of the above objects in a simple and relatively inexpensive manner, and by means of a device in which all of the necessary adjustments are convenient to make.

My objects are attained in the manner illustrated in the accompanying drawing, in which—

Figure 1 is a front elevation of my invention, and

Figure 2 is a side elevation of the device with certain parts broken and shown in section on the line 2—2 of Figure 1. This figure also includes a diagram of the electrical connections.

Similar reference numerals refer to similar parts throughout both views.

Before passing to a detailed description of my invention, it is to be noted that a moving spot of light, when traversing prescribed paths at controllable speed and direction, is admittedly one of the best known means for promoting increased functioning of the fusion or coordination center of the brain. The moving light spot commands and holds the attention of the patient and, by following it with the eyes along properly

prescribed paths; the enervated or otherwise defective eye muscles are exercised and stimulated, and may gradually be brought into proper and natural co-action with other binocular movements. The resulting beneficial stimulation and exercise of the visual motor centers of the brain will increase the speed of ocular rotation and fixation, and promote the safety of the patient while on the street or engaged in hazardous occupations.

The embodiment of my invention selected for illustrative purposes comprises a pedestal frame 3 with an elongated horizontal journal bearing 4 at the top, one end of the journal being provided with a circular flange 5. A large circular disk 6, having an integral axial quill 7, is journaled in the frame bearing, and a disk wheel 8 is keyed to the outer extremity of the quill. A shaft 9 is journaled within the quill. At one end of this shaft is a large spur gear 10 adjacent the disk wheel 8. The other end of this shaft carries a crank head 11, with a crank 12 slidably mounted therein so that its throw may be varied at will by means of the thumb screw 13. A motor 14 is mounted upon pedestal 3 and engages spur gear 10 by means of pinion 15.

Spur gear 10 and disk wheel 8 are provided with registrable holes so that a pin 16 may be inserted therein for rotating the disk wheel. A similar hole 17 is provided in flange 5, and a circularly arranged series of holes 18 in disk 6 are adapted to register with it. If pin 16 is in the position shown in Figure 2, the rotation of the motor will rotate disk 6 at the same speed. If the pin removed from this position and inserted through hole 17 and any one of the holes 18 as indicated by dotted line 19, the disk 6 will be locked to the frame and be prevented from revolving. The motor will then only rotate shaft 9 and crank 12.

On the outer face of disk 6 a pair of A frames 20 are mounted, and a projector 21 is rotatably supported on the A frames by means of its trunnions 22. The projector has a parabolic or other suitably shaped interior reflecting surface, for projecting a beam of light outwardly therefrom. An electric lamp 23 at the focus of the reflector serves as the source of light. As illustrated this lamp has one of its terminals grounded to the frame, and the other terminal flexibly connected by a lead 24 to a

slip ring 25 on the back of disk 6. A brush 26, suitably mounted on the frame, contacts with the slip ring for leading current to the lamp.

3 The projector 21 is given any desired angular position, and may also be oscillated in its trunnion bearings, by means of a special slotted cross-head arrangement. This comprises a pair of sliding rods 27, cross-
10 nected by a pair of spaced bars 28. Rods 27 are longitudinally slidable in the four guide bearings 29 mounted upon the face of disk 6. Crank pin 30 rotatably engages a shoe 31, and the latter engages bars 28 and is
15 slidable between them. Rotation of the crank 12 will thus impart a reciprocating motion to this special built up slotted cross-head arrangement, and its travel will depend upon the throw of crank 12. The latter is
20 adjustable by means of thumb screw 13.

A cross shaft 32 is journaled between rods 27. It is enlarged at the center and is transversely drilled at 33 to slidably engage the axial tail shaft 34 of the projector. Thus
25 the projector may be oscillated in its trunnion bearings by the reciprocation of the slotted cross-head, or may be given any desired degree of stationary angularity by properly positioning the cross-head.

30 The wiring diagram of Figure 2 illustrates a convenient and satisfactory method for making the electrical connections of the device. A double pole, double throw, switch 35 has its hinge joints connected to the armature of the motor, by leads 36. The two
35 outer pairs of switch contacts are reverse-connected with respect to each other, to the current supply leads 37. Thus the current in the armature of the motor may be reversed
40 by reversing the switch. The field of the motor is connected to the supply circuit through rheostat 38 and field leads 39, and the rotative speed of the motor is thus adjustable by means of the rheostat. Current
45 for lamp 23 is supplied through leads 40, one of which is shown grounded to the frame of the instrument. Grounding of the circuit is not necessary if it is desired to provide an
50 additional slip ring and brush arrangement, as shown for the other connection of the lamp circuit.

From the above description it will be evident that projector 21 may be given any desired degree of angularity with respect to
55 the axis of the machine by adjusting the effective length of crank 12 by means of thumb screw 13. If the pin 16 is then positioned as shown in Figure 2, the crank and disk 6, and all the parts mounted on the latter, may
60 be revolved in unison by the motor. The beam of light sent out by the projector will then describe a cone, and the spot of light falling upon a screen perpendicular to the axis of the machine will describe a circle.

If the screen is oblique to the axis, the spot
85 of light will describe an ellipse. The speed and direction of motion of the light spot may be varied by the motor controls.

If pin 16 is positioned as shown by dotted
70 line 19, the projector will be given an oscillating movement when the motor is operated. The amplitude of the oscillation will depend upon the throw of crank 12 and the latter is adjustable, as mentioned above, by means
75 of thumb screw 13. The angular position of the oscillations with respect to the horizon may be varied at will, by the selective use of holes 18.

Although I have shown a pedestal type of
80 design in illustrating my invention, it is to be noted that a swivelling or universally mounted bracket may be substituted for the pedestal. When so mounted my device may
85 be given an enlarged field of usefulness, as in treating patients while the eyes are rotated downward in the natural reading position.

I claim as my invention:

1. An ocular exercising device of the
90 character described, comprising; an oscillatory light projector mounted upon a rotatable support; means for continuously oscillating the projector at selective fixed angular
95 positions of the support; and means for continuously rotating the support with the optical axis of the projector in selectively fixed oblique relation to the axis of rotation; both
100 of said axes intersecting the axis of oscillation at right angles at a common point.

2. An ocular exercising device of the character described, comprising; a frame; a
105 rotatable support having a quill journaled in the frame; an oscillatory light projector mounted upon said support; a shaft journaled within said quill having at one end a
110 crank of variable throw adapted for oscillating said projector; means for rotating said shaft independently of the rotatable support; and means for rotating said support and said shaft together.

3. An ocular exercising device of the character described, comprising; a frame; a
115 rotatable support having a quill journaled in the frame; an oscillatory light projector mounted upon said support with its optical axis intersecting the axis of rotation of the
120 support; a shaft journaled within said quill having at one end a crank of variable throw adapted for oscillating said projector; means for independently rotating said shaft, with
125 said rotatable support in selectively fixed angular positions; and means for rotating said support and said shaft together, with the angularity of the optical axis of the projector in selectively fixed relation to the axis of rotation.

HARRY L. FUOG.