

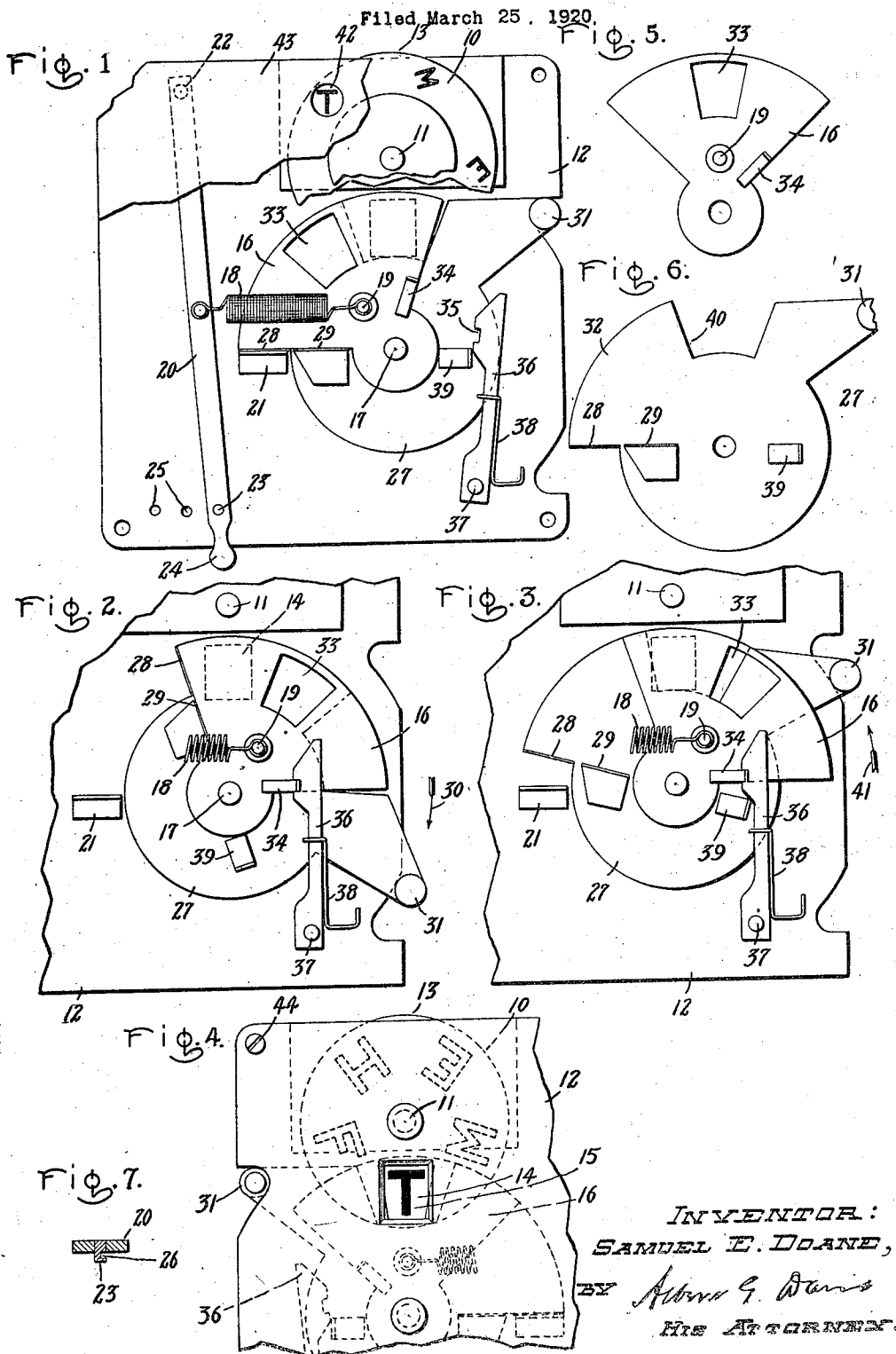
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S. E. DOANE

ILLUMINATION INDICATOR

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INVENTOR:
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UNITED STATES PATENT OFFICE.

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ILLUMINATION INDICATOR.

Application filed March 25, 1920. Serial No. 368,720.

To all whom it may concern:

Be it known that I, SAMUEL EVERETT DOANE, a citizen of the United States, residing at Cleveland, county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Illumination Indicators, of which the following is a specification.

My invention relates to optical devices and more particularly to devices for gauging illumination. As descriptive of its use I have called my device a "visibility meter."

My object is to produce an instrument to demonstrate the effect of an increase of the intensity of illumination upon increasing the speed of vision. It is more or less difficult to explain the value of illumination in a manner comprehensive to the average person. Facts and figures do not mean anything unless the auditor or reader is able to visualize their meaning. As an aid in the explanation of the advantages of illumination, I have prepared what I have called a "visibility meter" which may be made to serve as a gauge of illumination to the average person. Through the use of my visibility meter, I am enabled to show the layman the desirability of higher intensities of illumination by showing the effect upon the speed of vision of an increase from a lower to a much higher intensity of illumination as from 1 foot-candle to 10 foot-candles. To this end I have provided a contrasting design which is presented to view for a small fraction of time first under the low and then under the high intensity of illumination. The greater ease with which the design is recognized under the high intensity of illumination is sufficient to demonstrate the value thereof.

More specifically, I provide a well-known design, figure or alphabetical letter which contrasts with its background as a black letter on a white card board. This black letter is placed directly under an aperture normally covered by a shutter which may be caused to move with various speeds across the aperture to expose the letter to view. In order to increase the flexibility of the instrument, I provide means whereby the letter under the aperture may be readily changed at the will of the operator.

In the accompanying drawing, Fig. 1 is a bottom plan view with the back cover plate broken away; Fig. 2 is a fragmentary

bottom plan view showing the shutter locked in cocked position; Fig. 3 is a fragmentary bottom plan view showing the shutter just before release; Fig. 4 is a fragmentary top plan view of the aperture of the cover plate with the shutter opened to show the letter or other design; Fig. 5 is a plan view of the shutter; Fig. 6 is a plan view of the sector cocking device; and Fig. 7 is a sectional detail showing the spring arm pin.

Referring to the accompanying drawing, the design member 10, for which I prefer to use a white card-board disc, is rotatably pivoted at 11 on the cover plate 12 to extend slightly beyond the edge of the cover plate 12 at 13 so that the disc 10 may be rotated by moving the extending portion 13 (Fig. 4). The cover plate 12 has an aperture 14 placed so that it uncovers a black letter 15 of which there are a number on the surface of the disc 10.

The black letter 15 is normally covered by a shutter 16 (Fig. 5) which is rotatably pivoted to the cover plate 12 at 17 (Figs. 1, 2 and 3). A spring 18 fastened to the pin 19 on the shutter 16 and to the arm 20 tends to hold the shutter against the stop 21 on the cover plate 12. The arm 20 which is pivoted on the cover plate at 22 may be used to adjust the pull exerted by the spring 18 on the shutter 16 by changing the pin 23 near the handle 24 of the arm 20 from one to another of the series of holes 25 in the cover plate. The pin 23 is notched at 26 (Fig. 7) so that when placed in a hole 25 the notch receives the cover plate and the position of the arm 20 can not be accidentally changed.

The cocking sector 27 (Fig. 6), which also is pivoted at 17 (Figs. 1, 2 and 3) between the shutter 16 and the cover plate, engages the shutter 16 by means of the stops 28 and 29 to cause it to move concentrically therewith when pressure in the direction of the arrow 30 (Fig. 2) is applied to the handle 31 of the sector 27. The sector 27 has a segment 32 (see Fig. 6) which registers with the aperture 33 (see Fig. 5) in the shutter 16 to prevent the exposure of the letter 15 through the aperture 14 of the cover plate when the shutter is being cocked. When the sector 27 has been rotated to the position shown in Fig. 2, the stop 34 on the shutter 16 is engaged by the slot 35 in the

arm 36 pivoted on the cover plate at 37 and pressed toward the stop 34 by a spring 38 resting against the arm and fastened to the cover plate.

5 The cocking sector is now returned toward its original position until a stop 39 (Fig. 3) on the cocking sector engages the arm 36 at the projection, which forms a side of the slot 35, and tends to force the arm 36 up-
10 ward to release the shutter 16. A slot 40 (see Fig. 6) in the cocking sector 27 is now registering with the aperture 14 of the cover plate. Continued pressure in the direction of the arrow 41 (Fig. 3) causes the shutter
15 16 to be released, the aperture 33 therein registering with the slot 40 of the cocking sector and the aperture 14 of the cover plate and thus exposing the letter 15 on the disc 10 as shown in Fig. 4. The time of exposure
20 depends upon the tension of the spring 18 which may be adjusted as previously stated. The letter on the disc 10 which is registering with the aperture 14 is indicated on the back of the disc so as to register with an aperture
25 42 (Fig. 1) in the back cover plate 43 which is fastened to the cover plate 12 by the bolts 44 (Fig. 4) and suitably spaced therefrom by washers. It is obvious that the aperture 42 of the back cover plate may be used to
30 cause the registry of a letter on the disc 10 with the aperture 14 of the cover plate.

In operation the desired letter is caused to register with the aperture 14 and a suitable tension is given to the spring 18 of the shutter 16. The shutter 16 is cocked by moving
35 the handle 31 of the cocking sector in the direction of the arrow 30 and the handle 31 returned until the stop 39 engages the arm 36 previous to the release of the shutter 16.
40 The instrument is now ready for use. As the shutter is released and the letter exposed, the recognition of the letter by an observer is dependent upon the amount of light falling upon the letter. Thus it is easy to
45 demonstrate the value of higher intensities in a practical way.

While I have described a specific embodiment of my invention, I do not wish to be

limited thereto as modifications will readily suggest themselves to those skilled in the art. 50

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. In an illumination indicator, the combination of a rotatable disc, a contrasting design on said disc, a shutter normally cov- 55
ering said design and having an aperture therein, a sector for engaging said shutter to bring it into a cocked position and having a slot therein normally registering with said design, a segment on said sector normally 60
registering with said aperture, means for locking said shutter in a cocked position and means for releasing said shutter to expose said design through said aperture for a sub- 65
stantially short time.

2. In an illumination indicator, the combination of a rotatable disc, a contrasting design on said disc, a shutter normally covering said design and having an aperture therein, a sector for engaging said shutter to 70
bring it into a cocked position and having a slot therein normally registering with said design, a segment on said sector normally registering with said aperture, means for locking said shutter in a cocked position and 75
means on said sector for releasing said shutter to expose said design through said aperture for a substantially short time.

3. In an illumination indicator, the combination of a rotatable disc, a contrasting design on said disc, a shutter and having an aperture therein, means for causing said shutter to normally cover said design, a sector for engaging said shutter to bring it into 80
a cocked position and having a slot therein normally registering with said design, a segment on said sector normally registering with said aperture, means for locking said shutter in a cocked position and means for 85
releasing said shutter to expose said design through said aperture for a substantially short time. 90

In witness whereof, I have hereunto set my hand this 23rd day of March, 1920.

SAMUEL EVERETT DOANE.