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DEVICE TO AID DRAWING OF TRUE PERSPECTIVE VIEWS

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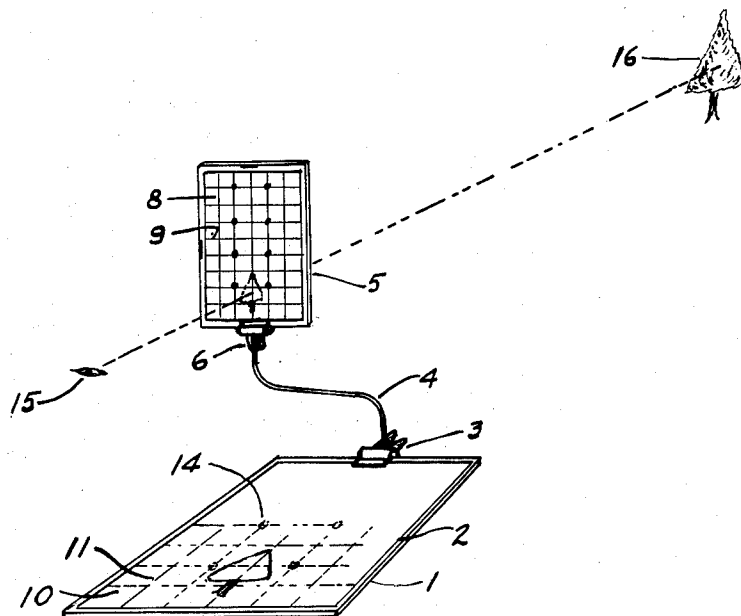


FIG. 1

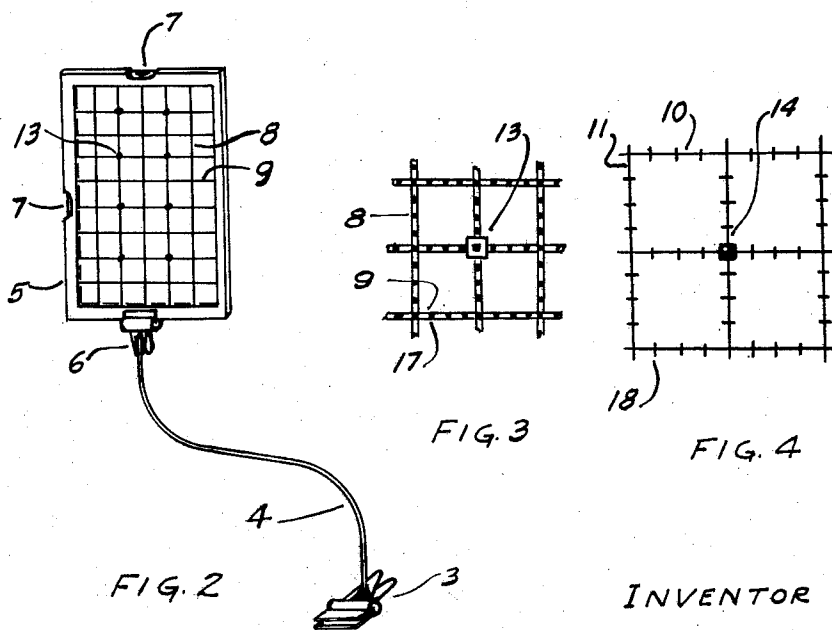


FIG. 3

FIG. 4

FIG. 2

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DEVICE TO AID DRAWING OF TRUE PERSPECTIVE VIEWS

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This invention of apparatus and method has the purpose of facilitating drawing of true perspective views of indoor and outdoor scenes and objects on a surface. This is accomplished by viewing the scene in a viewing device, and transferring the lines of the scene by means of a system of reference lines in the viewer to corresponding proportionally spaced reference lines previously drawn on the flat surface. The theory of the method is old, but the refinements used to facilitate rapid and accurate drawing are the substance of this invention.

In sketching a scenic or other view on paper, talent, practice, and understanding of the theory of perspective drawing are necessary if good art is to result. In the work of novice artists poor pictures are often made because perspective lacks proportion, even though color, shading and other qualities of the picture may be good. The device and method described in these specifications enables even the beginner to make true perspective pictures formerly requiring talent or much practice.

In the drawings, FIG. 1 is an assembly of an artist's sketch board with the scene viewer clipped on and in position for use. FIG. 2 is an enlarged assembly view of the viewer, and of the adjustable arm holding the viewer. FIGS. 3 and 4 are arrangements of indicia which are used in the practice of the method.

Referring to FIG. 1, part 1 is the artist's sketch board with pre-ruled drawing paper 2 in place. Part 3 is a spring clip of conventional construction equivalent to the heavy spring clips used to hold sheaves of paper together. Part 4 is an arm which is adjustable in three dimensions to position viewer 5 horizontally and vertically to suit the artist. Part 6 is another spring clip secured to the arm 4, and clipped adjustably and detachably to viewer 5.

In FIG. 2, parts 3, 6, 4, and 5 are the spring clips, adjustable arm, and viewer frame respectively. Parts 8 and 9 are vertical and horizontal wires or strands secured to frame 5. Parts 7 are spirit level glasses secured to frame 5. Wires 8 and 9 are shown uniformly spaced in both directions, but uniformity though convenient is not essential to the practice of the method.

In FIG. 1 the drawing sheet 2 is ruled with horizontal and vertical lines 10 and 11. These are the same in number as 8 and 9 in FIG. 2 and spaced proportional to the ratio of the drawing sheet dimensions and the viewing frame inside dimensions.

FIG. 3 is an enlarged view of the wires 8 and 9 in FIG. 2. At 13 a metal or tab of other material is attached, and at 17 typical painted dots are shown on the wires.

FIG. 4 is an enlarged view of ruled lines on sheet 2 of FIG. 1. At 10 and 11 solid ruled lines are shown, 18 indicates spaced cross dashes, and 14 a ruled square corresponding to tab 13 in FIG. 3. The paper is ruled in this manner with pencil or other type of lines which are readily erasable.

When in use the artist places the sketch board, with viewer 5 affixed, on a table or in his lap, and moves the viewer forward or backward and vertically or horizontally until the outer frame outlines the portion of the scene he will draw. This scene is identified at two points on the viewer frame, for example the lower left hand corner and the lower right hand corner, by objects in the scene which appear adjacent to these corners. The corner points and the identified objects in combination function as benchmarks, as no matter how often the artist moves his

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head or the sketch board the focus of the viewer can be returned to the original scene by lining up the aforesaid corner points with the benchmark objects in the scene.

With the viewing frame positioned on the scene, the artist next can sketch any object in the scene. In FIG. 1 the eye 15 perceives a tree 16 whose outline crosses at several points the grid lines 8 and 9 of the viewer. By noting the relative distances of these crossing points between lines, and the location of the base, top, and width of the tree in the grid areas of the viewer, the artist then can mark the corresponding points on the corresponding grid lines and in the corresponding grid areas on the paper. With these points located, the tree is easily sketched to scale.

Roads and horizon lines can be located easily to perspective scale, and key points of complex curves and shadings common in natural scenes can be readily located in the viewer grid and transferred to paper accurately. All of this can be done without knowledge or estimate of vanishing points on the horizon line as is commonly practiced in perspective drawing. In a scenic view location of vanishing points is a complex study.

A typical viewer 5 has inside frame dimensions $4\frac{1}{2}'' \times 6\frac{3}{4}''$ with wires spaced $\frac{3}{4}''$ apart in each direction, providing a grid 6 spaces by 9 spaces. When used with a $12'' \times 18''$ standard drawing sheet, the sheet is pre-ruled with pencil in each direction with lines at $2''$ centers, forming a grid 6 squares wide by 9 squares long, matching in number the $\frac{3}{4}''$ grid squares on the viewer.

Normally the scene is viewed through the frame with one eye closed. When the eye is about $12''$ from the viewer frame, a scene 20 feet distant is about $7\frac{1}{2}''$ feet by $11\frac{1}{4}''$ feet in size. If 400 feet distant a scene 150 feet by 225 feet can be shown on a $12'' \times 18''$ sheet with the eye $12''$ from the viewer.

Dimensions of the scene are changed by moving the viewer closer or further from the eye in the artist's normal and convenient head position. Larger scenes can be made also by drawing sections in sequence. For example, a scene 20 feet distant and 15 feet wide by $11\frac{1}{4}''$ feet high can be drawn in two successive adjacent positions of the viewer. In this case the drawing paper is ruled in two halves, each half containing a grid proportional in size and with the same number of squares as those on the viewer grid. The viewer can be positioned either horizontally or vertically.

I have found that plain wires in the viewer, even though painted, blend into the scene being viewed and are difficult to distinguish. Also, I have experienced difficulty in quickly locating the proper line and square on the paper corresponding to those in the viewer. To eliminate such difficulty, therefore, I have provided a system of matching indicia on the viewer wires and on the pre-ruled paper. I contemplate the use of such matching indicia as one of the features of this invention.

Indicia may take any of several forms. In one form I paint the wires with an orange or other color luminescent type of paint so that the wire can be easily distinguished from the background scene. Such paint may be applied uniformly over the wires but preferably it is applied to the wire to form a sequence of dots with unpainted spaces or contrasting painted spaces between. For example, in FIG. 3 dots 17 are painted in some equal division of the space between wires, such as four dots per wire spacing. A point on an object being viewed may appear anywhere in a space on the grid, and the position of this point is estimated from adjacent wires by observing its position relative to the dots painted on the wire in each direction. As the drawing paper as in FIG. 4 is pre-ruled with cross dashes 18 at a corresponding spacing, the point can be located thereon in the same way.

I have found that counting wire space locations from

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the side or bottom of the grid is awkward and subject to error, and use the better method of providing intermediate locating points for the squares. In one form these are square metal tabs 13 attached to wire intersections as shown in FIG. 2. The drawing paper is ruled at corresponding intersection points 14 in the same manner. The eye can quickly identify the zone in which the object appears in the viewer by reference to the tabs which are nearby in all cases. The tabs can be numbered if desired.

The assembly shown in FIG. 2 represents but one possible mechanical arrangement of this invention. The adjustable arm is of a material such as soft copper, which is easily bent by hand but rigid when only the light weight of the viewer is supported. This arm can be of sections of a stiff material, also, and for adjustability provided with locking bolts or pins at the joints. The grid wires may be lines formed in other equivalent manner, as on glass for example. Attachment of the FIG. 2 assembly may be made at any edge of an artist's sketch board, to the side of an artist's easel, or to other fixed objects adjacent to the drawing to be made. Adjustment of focal distances may be made by bending the adjustable arm or by sliding the attaching clip along the edge of the sketch board. All of the foregoing variations fall within the scope and spirit of this invention.

The FIG. 2 arrangement is preferred as this design favors low cost manufacture. The arm, for example, consists of a 10" to 20" length of $\frac{1}{8}$ " soft copper tubing, with a standard spring clip secured to each end.

The viewer frame in FIG. 2 is preferably constructed of stamped aluminum, and the grid of $\frac{3}{4}$ " square aluminum mesh with wire size of about $\frac{1}{32}$ ". The frame of the grid is recessed at two sides to receive spirit level glass tubes 7, which are held in place by pressing the frame metal around the ends of the glass tubes. Leveling of the viewer is desirable as topography has variable slopes, and the point at which the drawing is being made may be sloping, but not observably so unless a level glass is provided.

The paper may be pre-ruled by the artist, but this invention contemplates the use of purchased paper which has been pre-ruled on one side only. These sheets are now a standard article, but unruled, in artist supply stores. The invention enables the artist to purchase the sheets already ruled at a cost increment negligible in comparison with the value of his time used to rule paper.

Many artists photograph a scene and transfer it to paper by ruling the photograph and the paper in a corre-

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sponding manner. My invention simplifies this procedure by making photography unnecessary. In effect, I provide a method intermediate between photography and tracing.

I claim:

1. Apparatus for facilitating drawing of true perspective views comprising a viewing element and adjustable support means therefor, said viewing element comprising a frame having an opening therein and two sets of mutually perpendicular strands secured at their ends to the frame and spanning the opening therein, said adjustable support means comprising an elongated member of non-resilient bendable material of a strength sufficient in any configuration to support said frame, said elongated member having a clip secured to one end thereof for detachably mounting the frame thereon and having means secured to the other end for detachably mounting the member on any stationary object.

2. Apparatus according to claim 1 wherein said elongated member is a copper tube.

3. Apparatus according to claim 1 including a spirit level glass secured to said frame.

4. Apparatus according to claim 1 wherein the mutually perpendicular strands are filaments having luminous paint thereon, whereby in use the strands may be readily distinguished from the background view.

5. In an apparatus for facilitating drawing of true perspective views of the type including a viewing grid for dividing the scene to be drawn into a plurality of segments, a drawing sheet having lines thereon dividing the sheet into a like number of similar segments and a support for the drawing sheet, the improvement comprising an elongated member of a non-resilient bendable material of a strength sufficient in any configuration to support the viewing grid, means secured to one end of said member for detachably mounting the grid thereon and means secured to the other end of the elongated member for detachably mounting the member on the support for the drawing sheet.

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