

Nov. 18, 1947.

H. M. CARSCALLEN ET AL

2,430,862

SCOPE

Filed July 7, 1945

2 Sheets-Sheet 1

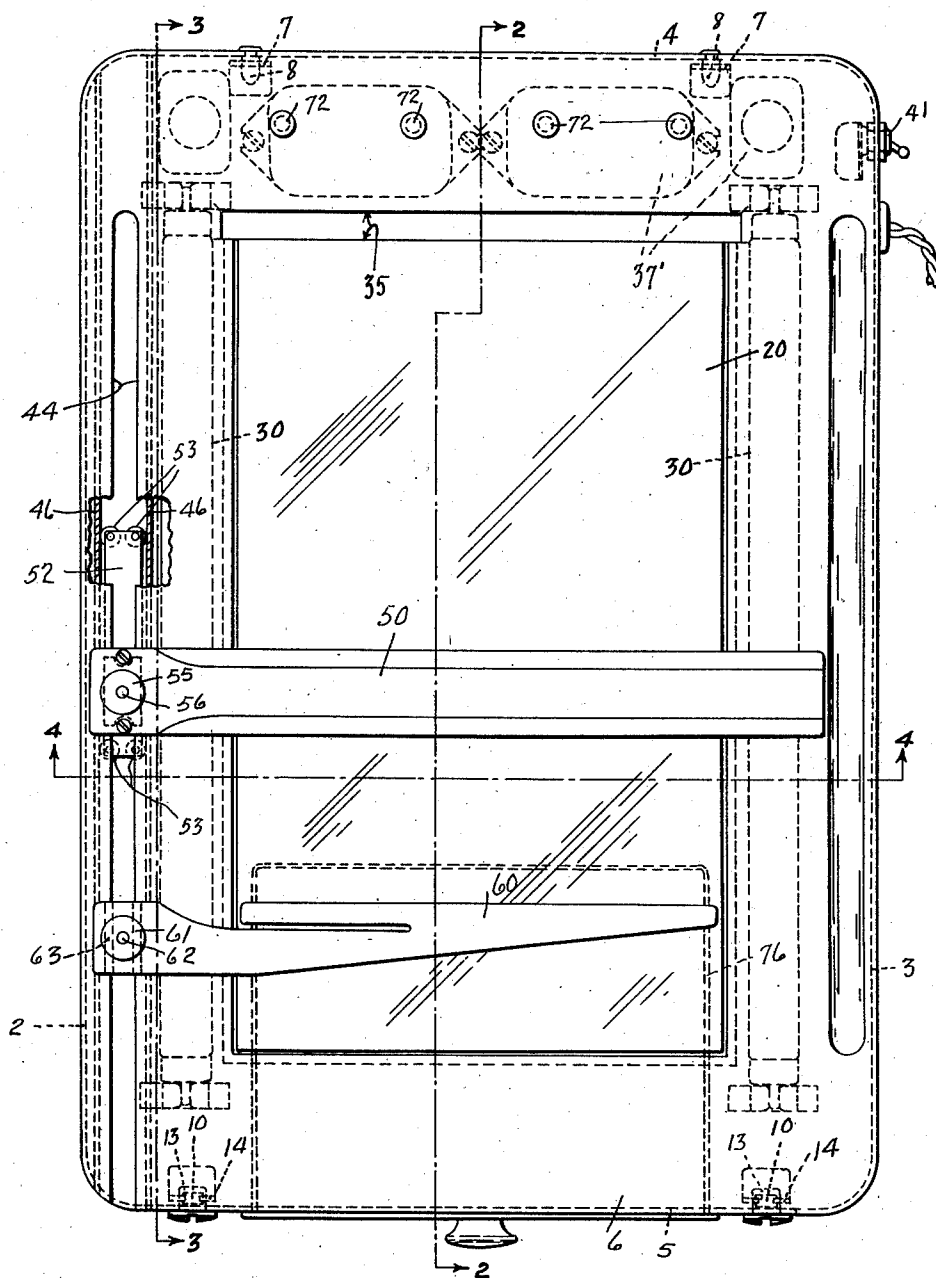


Fig. 1.

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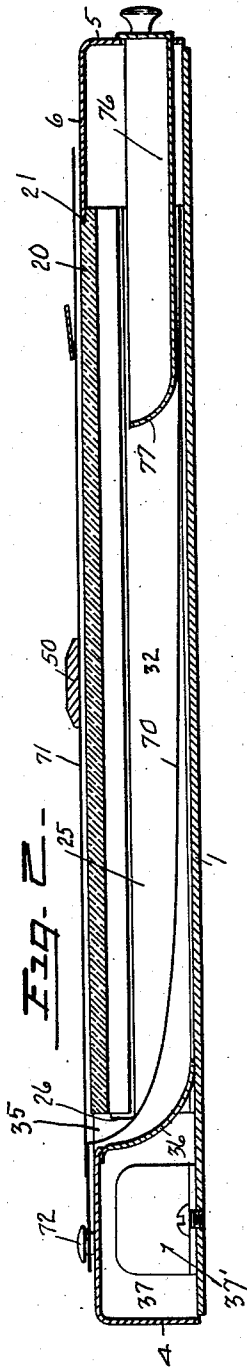


FIG. 3.

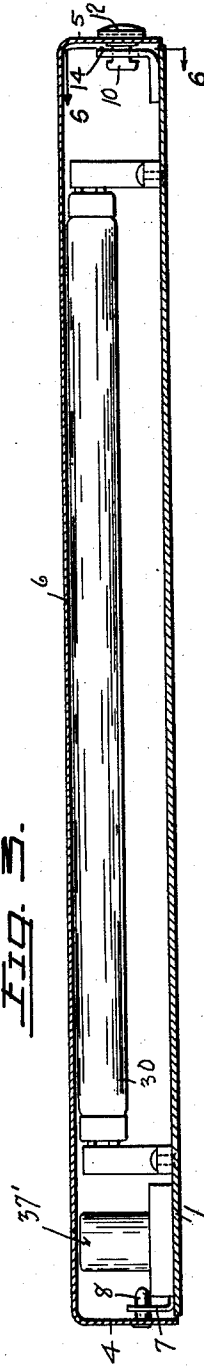


FIG. 4.

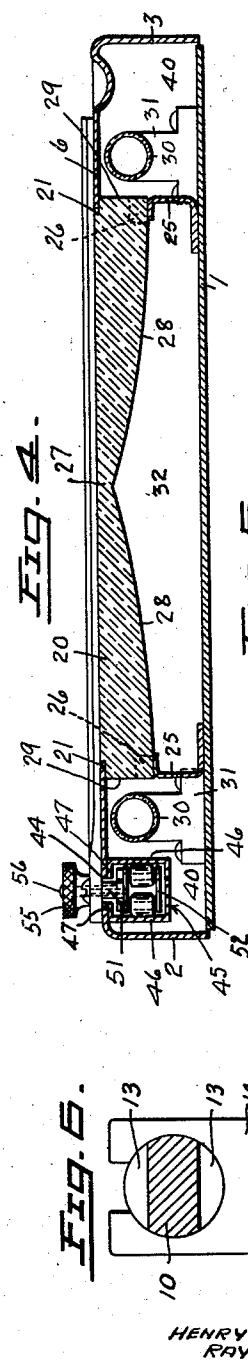


FIG. 5.

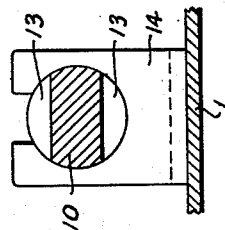
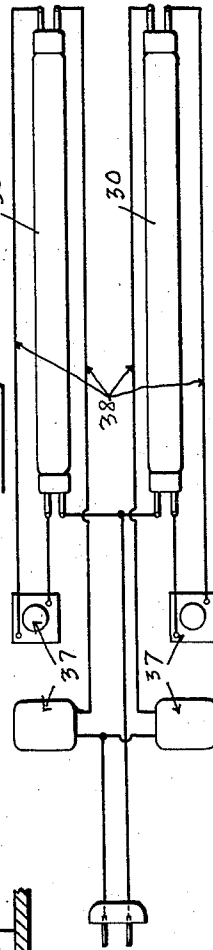


FIG. 5.



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2,430,862

SCOPE

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12 Claims. (Cl. 45—131)

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This invention relates to scopes, such as are employed in the photographic, printing, drafting and stencil industries, etc., where an illuminated surface is desired for examining negatives, prints, drawings, stencils and the like that are placed on such surface or for doing work on the material that is placed on said surface.

One of the objects of the invention is the provision of a compact, simple scope for the purposes above described that has a more efficient, durable, uniform and cooler illuminated surface than heretofore has been provided.

Another object of the invention is the provision of a scope adapted to produce a relatively cool white illuminated surface free from objectionable spotty light areas and which scope is adapted to accommodate the backing sheet of a conventional stencil while the latter is on the illuminated surface and without distorting the said backing sheet.

A still further object of the invention is the provision of a scope having a working top that comprises a sheet of light transmitting material having a working surface and which sheet is illuminated through one or more edges thereof and is formed for emission of the light rays through the working surface.

Other objects and advantages will appear in the drawings and in the description.

In the drawings,

Fig. 1 is a plan view of a scope that is illustrative of the invention, the top of the scope being partly broken away and in section to show interior structure.

Fig. 2 is a sectional view taken along line 2—2 of Fig. 1, a stencil sheet with its backing sheet being shown diagrammatically in position on the scope, the same being spaced from the adjacent parts of the scope for clarity.

Fig. 3 is a sectional view taken along line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken along line 4—4 of Fig. 1.

Fig. 5 is a schematic view of the fluorescent lamp bulbs in a circuit.

Fig. 6 is an enlarged fragmentary sectional view of one of the locking keys taken along line 6—6 of Fig. 3.

The particular scope illustrated is adapted for use in practically any industry where an illuminated surface is desired including the stencil industry in which the conventional stencil comprises a backing sheet of fairly heavy opaque material. Such backing sheet is rectangular and elongated and one edge of a rectangular wax coated tissue forming the stencil sheet is secured to one end of the backing sheet. The backing sheet and stencil may be placed in a typewriter for cutting the desired printing through the wax

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on the stencil sheet or else a stylus may be used for cutting through the wax to produce the desired writing, lettering, picture, design, etc.

In making the stencil for printing a scope is frequently used to observe the work on the sheet or to do certain work on said sheet or to make alterations or corrections on the sheet. In doing this the backing sheet has heretofore been awkward to handle and frequently the stencil sheet or backing sheet have been mutilated or separated from each other with the result of appreciable loss in time and material. Therefore, as above stated, this scope is designed to take care of the backing sheet where the scope is used in connection with making of stencils.

In detail the scope illustrated in the drawings comprises a housing having a bottom wall 1, opposed side walls 2, 3, opposed end walls 4, 5 and a top wall 6.

The top wall 6, side walls 2, 3 and end walls 4, 5 are preferably integrally formed and removable as a unit from the bottom wall 1.

The top and bottom walls are rectangular and elongated and the end and side walls are relatively narrow. Merely as an example, in a housing in which the top and bottom walls are respectively about 12 x 18 inches in size, the height of the side walls from the top to the bottom sides of the top and bottom walls may be only about 1½ inches and by the structure employed herein a substantial increase in the dimensions of the top and bottom walls may occur without any necessity for increasing the height of the side and end walls. From this it will be seen that a scope of relatively large size will be relatively thin.

The bottom wall has a pair of apertured lugs 7 secured thereto along its end edge that is adjacent end wall 4 and said end wall has pins 8 secured thereto. The lugs 7 project upwardly from the bottom wall and pins 8 project laterally and inwardly from end wall 4 to extend through the apertures in said lugs. In this manner the lugs and pins function to support the end of the housing on the bottom wall and to position the housing properly on said bottom wall as well as removably securing said housing and bottom wall together.

The end wall 5 that is opposite end wall 4 carries a pair of rotary locking keys 10 that extend through end wall 5. The heads 12 of said keys are outside wall 5 and are slotted for turning by a screw driver or any similar blade or instrument. The ends of the keys projecting inside the housing may be cylindrical with grooves 13 (Fig. 1) formed in opposite sides thereof.

Upstanding lugs 14 are secured to bottom wall 1 along the end edge thereof that is adjacent wall 5, said lugs being formed with upwardly opening slots that are enlarged at their lower ends like

keyhole slots. The sides of such slots above the enlarged lower ends of said slots are adapted to be received in the grooves in the sides of the keys 10 for downward sliding of the pins until they reach the enlarged lower ends of said grooves after which the keys may be turned a quarter of a turn to prevent the upward movement of the keys, thereby locking the top, side and end walls of the housing to the bottom wall.

The top wall 6 is formed with an opening therein that is preferably rectangular and elongated longitudinally of said top wall. This opening is for a sheet 20 of light transmitting material preferably transparent material such as one of the clear plastic materials or glass.

Preferably the upper side of sheet 20 is flat and the marginal portions thereof along its longitudinal edges and the end edge adjacent wall 5 are rabbeted as at 21 to receive therein the marginal portions of the top wall 6 around the corresponding edges of the opening for said sheet 20 whereby the upper surfaces of the sheet 20 and of the top wall 6 are coplanar and any material laid on the top of the scope will be level and fully supported for lying flat.

The bottom wall 1 carries a pair of oppositely opening channel strips 25 that are parallel and secured to bottom 1 below the opposite longitudinally extending edges of the sheet 20 (Fig. 4). The sheet 20 is supported along its opposite longitudinally extending marginal portions on strip 25 and upstanding projections 26 may be at the ends of said strips that are remote from wall 5 (Figs. 2, 4) for holding sheet 20 from movement toward the end wall 4 for a reason that will later be explained. Of course the fact that the marginal portions of top wall 6 are in the rabbeted upper edges of the sheet 20 coacts with the projections 26 to hold sheet 20 stationary even though said sheet may, if desired, be cemented to the strips 25.

The sheet 20 is preferably relatively thin at 27 along a central line extending longitudinally of said sheet and from this central line the sheet becomes progressively thicker in directions oppositely outwardly thereof toward the side walls 2, 3 (Fig. 4). This progressively increasing thickness is such that the lower surfaces 28 at opposite sides of the central line 27 follows a curve that is preferably parabolic or somewhat similar to such curve and surfaces 28 are perfectly symmetrical at opposite sides of said central line 27.

Said surfaces 28 are coated with a light colored (preferably white) coating of flat opaque paint, lacquer or the like that is visible from above the top flat surface of the sheet. Thus the coating is of light reflecting material and color but preferably not silvered.

Along each of the thick side edges 29 of the sheet 20 and preferably disposed within the projected confines of said edges is an elongated fluorescent lamp tube 30 extending from end to end of said edges. These tubes are relatively close to said edges 29 and are supported at their ends by brackets 31 secured to bottom 1.

It is pertinent to note that the said tubes are separated from the space 32 (Figs. 2, 4) that is below the sheet 20 by the channel strips 25, thus the latter function as partitions as well as supports for the sheet 20.

The end edge of sheet 20 that is adjacent the end wall 4 is spaced from the edge of the opening that is in top wall 6 and across which sheet 20

extends, thus providing a slot 35 between said end edge of sheet 20 and the edge of said opening that is adjacent and parallel thereto.

Extending downwardly from the edge of the top 6 that defines one edge of slot 35 (Figs. 1, 2) is a curved guide member 36 of sheet material. The concavely curved side of said guide member generally faces the end of sheet 20 that is adjacent thereto and the bottom edge of said member extends below said end of sheet 20 and on bottom 1.

Between the member 36 and end wall 4 is a space 37 (Fig. 2) that is separated from space 32 by member 36 and in this space are the conventional electrical accessories 37' necessary for starting the fluorescent lamps. The wires 38 (Fig. 5) that provide the electrical circuit in which the lamps and said accessories are disposed extend in the spaces 40 (Fig. 4) in which the lamps 30 are positioned and in space 37.

Any suitable switch 41 may be provided (Fig. 1) in one of the side walls or elsewhere for turning the lights on and off and the electrical circuit may be connected with any suitable source of power for lighting the lamps.

As best seen in Figs. 1 and 4 the top wall 6 along the side wall 2 may be formed with a slot 44 parallel with said wall 2 and between said wall and the lamp 30.

Below slot 44 is an upwardly opening channel strip 45 the sides 46 of which are secured to the under side of top wall 6. These sides 46 are preferably spaced slightly from the edges of slot 44 and intumed marginal portions 47 on said sides extend to the edges of said slot.

Extending across the top of sheet 20 from said slot and at right angles to the length of said sheet is a straight edge or ruler-like member 50 (Fig. 1). One end of said member 50 extends over slot 44 and is secured to a block 51 that extends through said slot to an elongated carriage 52 (Fig. 1) that is in said channel 45 and that has rollers 53 at its opposite ends engaging opposite sides 46 of said channel for holding said member 50 firmly at right angles to the length of sheet 20 at all times. An upstanding knurled nut 55 may be threaded onto a post 56 extending upwardly from said carriage 52 for frictionally securing the said carriage to the edges of slot 44 and to the intumed marginal portions 47 of sides 46 upon rotation of said nut. Also the nut may function as a handle for moving the carriage 52 in said channel and thereby moving the member 50 over sheet 20.

A hold down strip 60 may also be extended across the sheet 20 from slot 44 and this strip may likewise have a thumb nut 61 (Fig. 1) on a post 62 that extends through the said strip 60 and into channel strip 45. The end of said post in said channel may carry a plate 63 adapted to be drawn into frictional engagement with the intumed marginal portions 47 of the sides 46 when the nut 61 is turned in one direction so as to releasably hold strip 60 against movement.

Where the scope is used for general purposes the lamp tubes 30 are energized and the light rays from said tubes will pass into the sheet 20 through edges 29 and will be reflected through the upper flat surface of said sheet. The light colored coating of surfaces 28 will be brightly illuminated. Of course some of the direct rays from the tubes 30 may pass directly through the sheet 20 without reflection from the surfaces 28 but most of the rays and practically all of those near the center 27 of the sheet will be reflected rays.

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By reason of the curved surfaces 28 and by the arrangement described the illumination over the entire upper surface of the sheet 20 as viewed from above said surface is brilliant and uniform without being glaring. Also the fluorescent lamps provide a relatively cool white light and there is practically no heating of sheet 20 nor the space 32 below said sheet. The slot 35 permits any heat that may be in spaces 40 to pass out of the latter into the atmosphere, although there is no objectionable heat created.

This substantially non-heating of sheet 20 is quite important in that the scope is for use with photographic film or wax coated stencils and other materials that must be kept relatively cool to prevent injury thereto.

When the scope is used for stencils as indicated in Fig. 2 the backing sheet 70 of the stencil may be slipped through slot 35 into space 32 while the wax coated stencil 71 may be positioned over the sheet 20. A plurality of buttons 72 on the top wall 6 over space 37 and projecting upwardly from said wall may be engaged in the conventional openings provided in the end marginal portion of the backing sheet 70 for holding the stencil in correct position over sheet 20. The ruler 50 and hold down member 60 are indicated in Fig. 2 as elevated above sheet 20 in order to clearly show stencil 71. Actually the stencil 71 would be flat on sheet 20 and the ruler 50 and member 60 would be against such stencil.

If desired, a drawer 75 having a curved inner end 77 may slidably extend through end wall 5 (Fig. 2) into the housing and spaced above bottom 1 to permit the backing sheet 70 to pass thereunder. Such drawer may be used for holding any instruments or materials for use in connection with the industry in which the scope is used.

It is pertinent to note that the space 32 is also substantially free from heat from the lamps 30 by reason of the channel strips or partitions 25.

The use of fluorescent lamp tubes is quite important apart from the relatively cool light they produce because of the uniformity and thickness of the source of illumination. Whereas filaments produce fine lines of light, the gas in the fluorescent lamps is like a thick rod of light. Thus the surfaces 28 receive rays of light from wide bands substantially extending across the edges 29 of sheet 20 instead of fine filaments.

We claim:

1. A scope comprising a sheet of light transmitting material and a source of relatively cool uniform illumination extending along one edge thereof, one side of said sheet being flat to provide a working surface, the thickness of said sheet along said one edge being uniform, and the said sheet being uniformly progressively thinner in a direction away from said one edge for a predetermined distance, the side of said sheet opposite said flat side being covered with a flat, unsilvered light reflecting coating, and a housing extending from said one edge around said source of illumination substantially confining its rays against escape except through said one edge of said sheet for reflection through said flat working side.

2. A scope comprising a sheet of light transmitting material and a source of relatively cool uniform illumination extending along one edge thereof, one side of said sheet being flat to provide a working surface, the thickness of said sheet along said one edge being uniform, and the said sheet being uniformly progressively thinner in a direction away from said one edge for a predetermined distance, the side of said sheet

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opposite said flat side being covered with a flat, unsilvered light reflecting coating, and a housing extending from said one edge around said source of illumination substantially confining its rays against escape except through said one edge of said sheet for reflection through said flat working side, said source of illumination being a tubular fluorescent lamp bulb, said bulb being equally spaced from said one edge along its entire length and extending substantially the full length of said one edge in relatively close proximity thereto.

3. A scope comprising a sheet of light transmitting material and a source of relatively cool uniform illumination extending along one edge thereof, one side of said sheet being flat to provide a working surface, the thickness of said sheet along said one edge being uniform, and the said sheet being uniformly progressively thinner in a direction away from said one edge for a predetermined distance, the side of said sheet opposite said flat side being covered with a flat, unsilvered light reflecting coating, and a housing extending from said one edge around said source of illumination substantially confining its rays against escape except through said one edge of said sheet for reflection through said flat working side, said source of illumination being a tubular fluorescent lamp bulb, said bulb being disposed substantially within the projected confines of said edge and relatively close to the latter.

4. A scope comprising a rectangular sheet of light transmitting material and a source of relatively cool uniform illumination extending closely along one edge thereof parallel with said edge and disposed substantially within the projected confines thereof, one side of said sheet being flat providing a working surface and the opposite side being curved in a direction toward said working surface from said one edge whereby the rays of light from said source will be reflected from said opposite side through said flat surface, and a light unsilvered coating covering said curved side for viewing through said flat surface.

5. A scope comprising a rectangular sheet of light transmitting material and a source of relatively cool uniform illumination extending closely along one edge thereof parallel with said edge and disposed substantially within the projected confines thereof, one side of said sheet being flat providing a working surface and the opposite side being curved in a direction toward said working surface from said one edge whereby the rays of light from said source will be reflected from said opposite side through said flat surface, and a light unsilvered coating covering said curved side for viewing through said flat surface, a housing enclosing said source and provided with a rectangular opening in one side thereof, said sheet being secured within said housing with its said flat surface substantially coplanar with the edges of said opening.

6. A scope comprising a rectangular sheet of light transmitting material and a source of relatively cool uniform illumination extending closely along one edge thereof parallel with said edge and disposed substantially within the projected confines thereof, one side of said sheet being flat providing a working surface and the opposite side being curved in a direction toward said working surface from said one edge whereby the rays of light from said source will be reflected from said opposite side through said flat surface, and a light unsilvered coating covering said curved side for viewing through said flat surface, a housing enclosing said source of illumination and pro-

vided with a rectangular opening in one side thereof, said sheet being secured within said housing with its said flat surface substantially coplanar with the edges of said opening, a slot in the housing along one of the edges of said sheet, a bottom wall in said housing spaced below the curved side of said sheet, and guide means adjacent said slot for guiding a sheet of paper into the space between said sheet of light transmitting material and said bottom wall whereby the backing sheet of a stencil sheet may be positioned between said sheet of light transmitting material and said bottom wall when the stencil sheet is on said flat surface.

7. A scope comprising a substantially rectangular housing having a top wall, a bottom wall and side walls, said side walls being relatively narrow relative to said top and bottom walls, a rectangular opening formed in said top wall and a sheet of light transmitting material extending across said opening, said sheet having a flat working surface substantially coplanar with said top wall, said sheet being relatively thin along a central line equally spaced between two of its opposite edges and being progressively thicker from said line to said opposite edges whereby said opposite edges are relatively thick, a source of uniform illumination within said housing and extending along each of said opposite edges substantially within the projected confines thereof and substantially from end to end of said opposite edges.

8. A scope comprising a substantially rectangular housing having a top wall, a bottom wall and side walls, said side walls being relatively narrow relative to said top and bottom walls, a rectangular opening formed in said top wall and a sheet of light transmitting material extending across said opening, said sheet having a flat working surface substantially coplanar with said top wall, said sheet being relatively thin along a central line equally spaced between two of its opposite edges and being progressively thicker from said line to said opposite edges whereby said opposite edges are relatively thick, a source of uniform illumination within said housing and extending along each of said opposite edges substantially within the projected confines thereof and substantially from end to end of said opposite edges. the surface of said sheet opposite said flat side being uniformly curved from said line to said two opposite edges, and a coating of opaque light colored flat paint covering said curved surfaces so extending from said line to said two edges.

9. A scope comprising a substantially rectangular housing having a top wall, a bottom wall and side walls, said side walls being relatively narrow relative to said top and bottom walls, a rectangular opening formed in said top wall and a sheet of light transmitting material extending across said opening, said sheet having a flat working surface substantially coplanar with said top wall, said sheet being relatively thin along a central line equally spaced between two of its opposite edges and being progressively thicker from said line to said opposite edges whereby said opposite edges are relatively thick, a source of uniform illumination within said housing and extending along each of said opposite edges substantially within the projected confines thereof and substantially from end to end of said opposite edges, means for supporting said sheet spaced above said bottom wall, a slot along one edge of said sheet extending substantially between said opposite edges communicating with the space between said bottom wall and said sheet whereby the backing

sheet of a stencil sheet may be positioned between said sheet of light transmitting material and said bottom wall when said stencil sheet is on said flat surface of said sheet of light transmitting material.

10. A scope comprising a rectangular sheet of light transmitting material and a source of uniform illumination extending along two opposite edges thereof, one side of said sheet being flat to provide a working surface and the opposite side of said sheet being uniformly curved from each of said two opposite edges to the center of said sheet in a direction convergently relative to said flat side from said two edges, the said source of illumination along each of said two edges being substantially disposed within the projected confines of said edges, and means confining the light rays from each of said sources against escape except through the said two edges of said sheet.

11. A scope comprising a rectangular sheet of light transmitting material and a source of uniform illumination extending along two opposite edges thereof, one side of said sheet being flat to provide a working surface and the opposite side of said sheet being uniformly curved from each of said two opposite edges to the center of said sheet in a direction convergently relative to said flat side from said two edges, the said source of illumination along each of said two edges being substantially disposed within the projected confines of said edges, and means confining the light rays from each of said sources against escape except through the said two edges of said sheet, the curve of each half of the surface opposite said flat surface being substantially parabolic, and an opaque relatively light colored coating of material covering said side of said sheet opposite said flat side for viewing of the light color of said coating through said flat side.

12. A scope comprising a rectangular sheet of light transmitting material and a source of uniform illumination extending along two opposite edges thereof, one side of said sheet being flat to provide a working surface and the opposite side of said sheet being uniformly curved from each of said two opposite edges to the center of said sheet in a direction convergently relative to said flat side from said two edges, the said source of illumination along each of said two edges being substantially disposed within the projected confines of said edges, and means confining the light rays from each of said sources against escape except through the said two edges of said sheet, said sheet being of transparent material, the said source of illumination along each of said edges being a tube of neon gas.

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