June 13, 1944. G. E. FROELICH 2,351,031

DRAFTSMAN'S TRACING BOARD

Filed March 6, 1942 2 Sheets-Sheet 1

Fig. 1

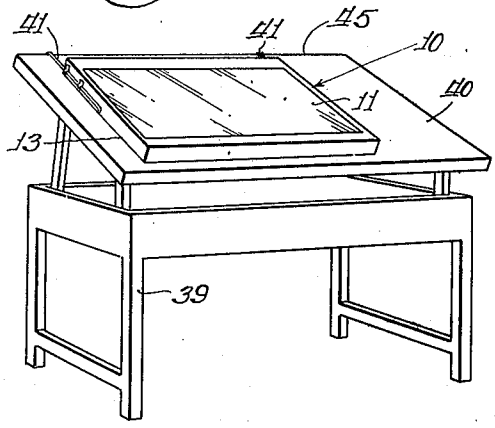


Fig. 4

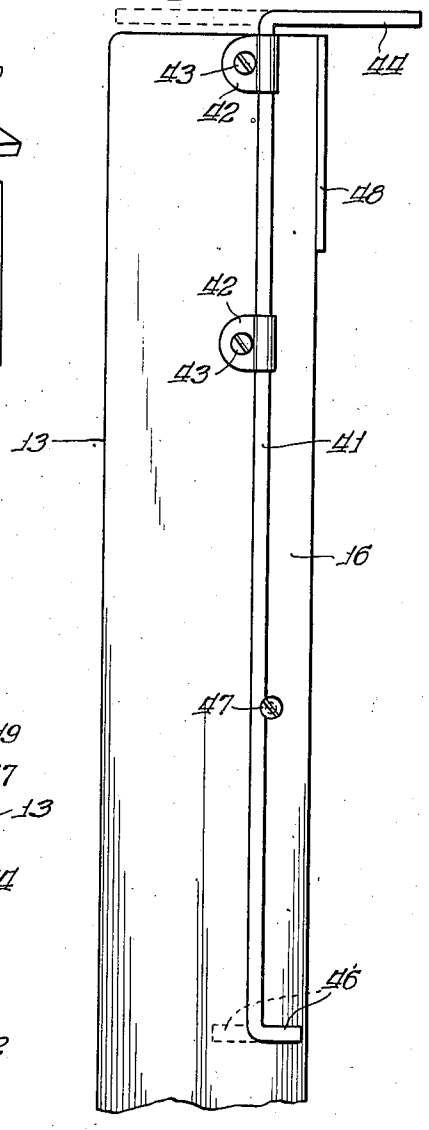
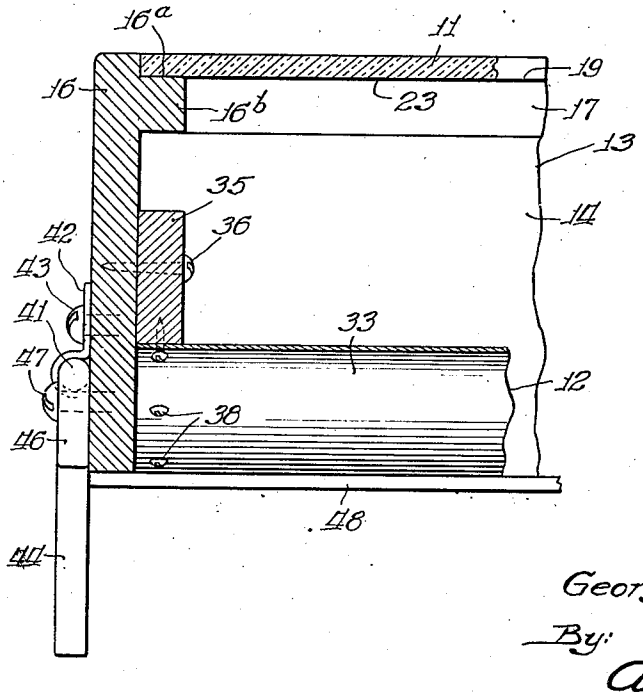


Fig. 5



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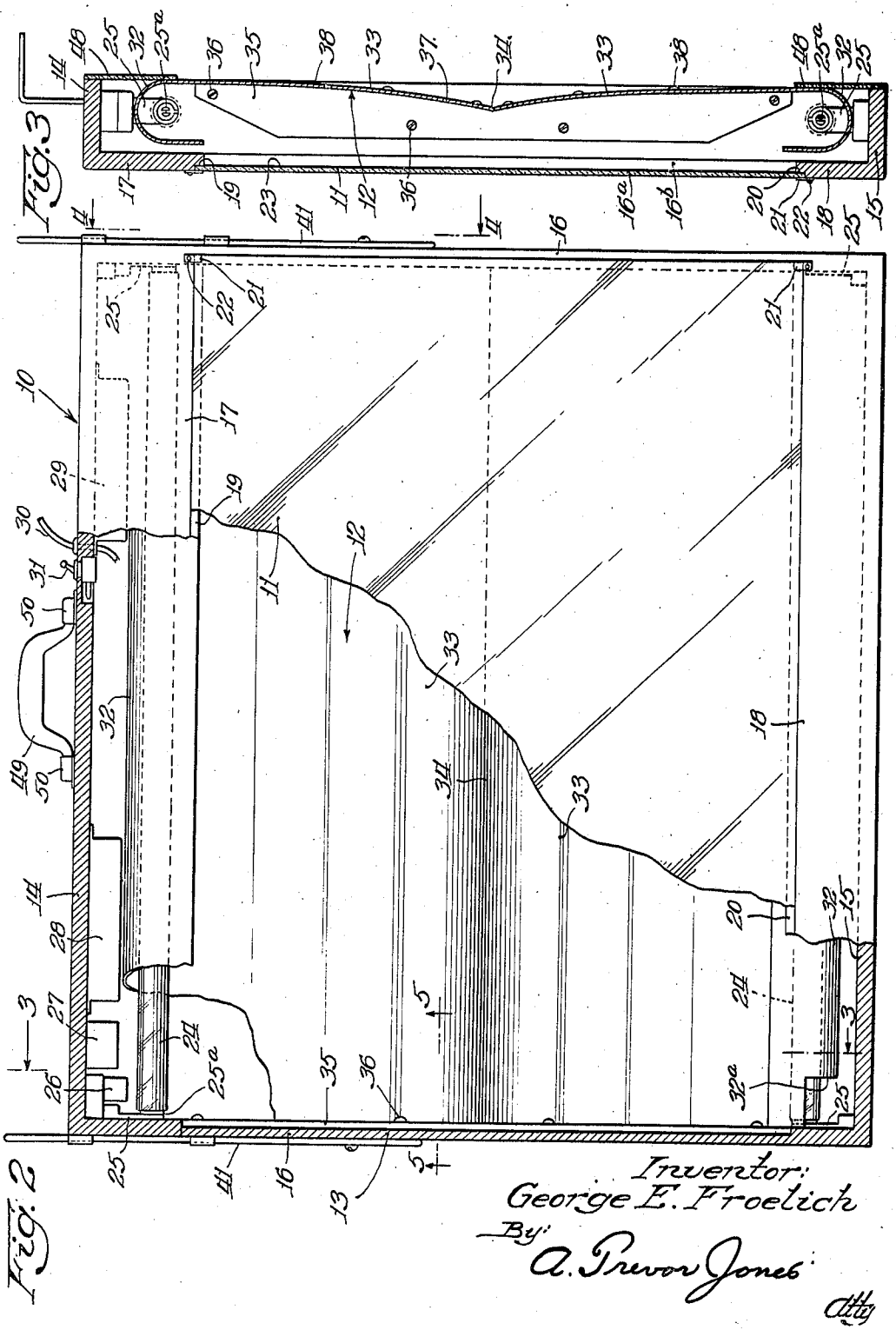


Fig. 3

Fig. 2

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UNITED STATES PATENT OFFICE

2,351,031

DRAFTSMAN'S TRACING BOARD

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Application March 6, 1942, Serial No. 433,615

5 Claims. (Cl. 45—131.2)

This invention relates to a tracing board for use by engineers and draftsmen for tracing mechanical drawings from the original usually heavy paper sheets to transparent tracing cloth or the like.

The invention aims, among other objects, to provide a relatively large shallow board for this purpose adapted to house therewithin fluorescent tube lighting means and a reflector element about the lighting means including a plurality of curved surfaces having different radii, whereby to enhance the diffusion of light through the translucent top panel of the board, while minimizing the sapce occupied.

In one aspect, the tracing board of the present invention is markedly adapted to portable form and to be readily moved about by the draftsman to suit his convenience and to be placed, when desired, upon a conventional inclined drafting table for quick and handy use.

These and other objects and advantages will be apparent from the following description, taken together with the accompanying drawings, in which—

Figure 1 is a perspective view of a conventional drafting table with the tracing board of the present invention associated therewith;

Figure 2 is an enlarged plan view of the tracing board with parts broken away for convenience of description;

Figure 3 is a section taken on the line 3—3 of Fig. 2 but with the lamp tubes removed;

Figure 4 is a fragmentary side elevational view of the tracing board further enlarged and taken on the line 4—4 of Fig. 2; and

Figure 5 is a still further enlarged fragmentary section taken on the line 5—5 of Fig. 2.

Referring in detail to the illustrative construction shown in the drawings, and turning first to Figs. 2 and 3, the tracing board of the present invention, indicated as a whole by the numeral 10, is in the form of a relatively large, shallow casing made up of a flat translucent top panel member 11, a reflector element 12 therebeneath, and a frame 13 for these parts, which may be of wood, suitably jointed, as need not be here specifically described.

The frame 13 comprises a rear wall 14, a forward wall 15 and a pair of side walls 16. The rear wall 14 and forward wall 15 are extended horizontally toward each other in overhanging portions 17 and 18 respectively and are rabbeted at their adjacent edges as at 19 and 20 to receive the translucent panel 11 flush with the top surface of the frame members 17 and 18 and also with the side members 16. The side walls 16 may also be rabbeted for this purpose as at 16*a* in their overhanging portions 16*b*. Small flat metal clips 21 at each corner of the translucent panel, secured as by screws 22 to the frame, hold the panel 11 in place. The translucent panel is desirably a relatively thick crystal glass sheet having its under surface 23 sand blasted to aid in the diffusion of light directed therethrough, as presently further referred to, in more particular detail.

Along both the rear and forward inner margins of the frame 13 and under the overhanging auxiliary top panels 17 and 18 of the frame are located a pair of fluorescent lamp tubes 24 mounted on the usual metal brackets 25 therefor at each corner of the frame. The rear-most of the tubes 24 is conveniently spaced slightly farther from the frame rear wall 14 than is the forward tube 24 from the forward frame wall 15, so as to provide space between the wall 14 and its adjacent tube 24 for the usual electrical starting and ballast devices for the tubes which may be housed as in metal boxes 26, 27, 28 and 29.

Since these starting and ballast devices are conventional they need not be here described, it being sufficient to say that the wiring (not shown) for the tube sockets 25*a* for the two tubes 24 respectively may be in parallel, with the usual inductance, and bi-metallic switch contacts, as well as the usual inductance and capacitance for one of the tubes, the greater part of which may be enclosed within the boxes 26, 27, 28 and 29. The rear wall 14 may carry a lead-in conductor cord 30, for plugging in to the usual wall electrical outlet or the like for A. C. current, and a main switch 31 for the board circuit is also mounted on this rear wall. The wires for the forward fluorescent tube may be run along the side walls 16 of the casing just beneath the overhanging walls 16*b*. The tubes 24 may contain the usual vapor and have a fluorescent chemical coating on their inner surface by which the waves of electrical energy sent through the tubes are converted into visible light, as is well known in the art. By the electrical devices generally indicated, one of the lamps 24 balances the other electrically, so as to produce, to the eye, a steady light, and by means of the arrangement here shown, the light is originated along both the rear and forward margins of the board, so as to provide enhanced distribution of the light to all parts of the board.

Further in accordance with the present invention, a reflector element 12 for the lamps 24 is uniquely provided. This reflector element may

advantageously be initially formed from sheet metal, subsequently finished with white enamel throughout. It is bent to shape as here illustrated to provide a pair of somewhat semi-cylindrical portions **32** at its rear and forward margins respectively. These somewhat semi-cylindrical portions are disposed one about each of the lamp tubes **24** with the interiors of the portions **32** in opposed relation, and their lower ends are continued as at **33** toward each other, in shallow, trough-like form, to meet angularly as at **34** along a medial line extending across the board parallel with the top panel **11** and spaced therebelow. The ends of the reflector cylindrical portions are serviceably notched as at **32a** to prevent interference with the mounting brackets **25** for the lamps.

The formation as just described of the reflector element **12** is advantageously effected by providing, on each of the inner faces of the side walls **16** of the board, an offset cleat **35** which may be also of wood and secured to the side wall **16** as by screws **36**. The lower edges of the cleats **35** are serviceably shaped as at **37** to conform to the contour of the trough-like portions **33** of the reflector element which latter are secured to these lower edges of the cleats as by screws **38**, thus maintaining the reflector element in its desired shape.

The arrangement of the reflector element, here shown and described, desirably produces a plurality of curved reflector surfaces having different radii, the radius of the cylindrical portion **32** differing materially from the radius of the trough-like portion **33** and thus an enhanced number of the rays of light from each lamp **24** are controlled and directed to a useful purpose through the translucent panel **11**. Furthermore, the lamps and curved surfaces being in pairs, rays of light from one pair, which might otherwise be lost, are caught and usefully directed by the other pair, all while at the same time maintaining the board and its contents within a relatively shallow or short vertical distance.

An important result of the shallow dimensions of the board of the present invention is that it may be placed on top of an ordinary drafting table as indicated in Fig. 1, which table may have the usual base **39** and a slanting adjustable top **40**, as is well known in the art. In order to hold the board of the present invention on the slanting top **40**, particularly when this top may be somewhat acutely slanted, hanger means are here provided and which are shown in the form of a pair of adjustable rods **41** carried by the board along the outer faces of its side walls **16** and adjacent the rear margin of the board.

A rod **41**, as best shown in Fig. 4, is slidingly clamped to the side wall **16** as by a pair of clamping brackets **42**, having somewhat cylindrical portions providing bearings for the rod. By loosening and then tightening the screws **43**, the rod **41** may be adjusted longitudinally with respect to the board so as to suit different sizes, or widths, of table tops **40**. The rods **41** at their rearward ends have downturned terminations **44** which extend below the lower surface of the board to hook over the rear edge **45** of the table top **40**. At their other ends, the rods **41** may also be downturned as at **46** (but without projecting below the lower surface of the board) so as to engage a stop screw **47** to limit retraction of the rods and thus prevent accidental removal from the board. When not in use the stop rod **41** may be rotated to the position shown in broken lines in Fig. 4 to avoid interference with other objects.

Adjacent its rear and forward lower face margins, the board may carry thin strips **48** of fibre composition or other non-metallic material so as to slightly elevate the reflector from the table top **40** and prevent scratching of the table top thereby, while affording a smooth and stable rest surface for the board.

The board **10** may advantageously be provided with a handle **49** of leather or the like secured as by clamp-sockets **50** to the rear edge of the board and elongated in the direction of this edge so that the board may be conveniently carried about to be placed upon or removed from the table top **40**. Also, when not in use, the board may be stood on edge, along its forward wall **15**, with the handle uppermost, so as to occupy a minimum of space and at the same time be readily grasped when desired.

So constructed and arranged, the board of the present invention effects a maximum of efficiency with a minimum of construction and maintenance expense. Since the boards are relatively inexpensive and require a minimum of space for storage, a drafting room can have several of them on hand, and if a draftsman has intervals of time available between other work, he can readily place one of the tracing boards here disclosed on his drafting table and use the time to work on new tracings without leaving his table while doing so, thereby increasing the productive work of the drafting room.

Such changes may be made as fall within the scope of the following claims without departing from the invention.

Having described my invention, I claim:

1. A draftsman's tracing board comprising, in combination, a relatively large shallow casing, a flat translucent top panel therefor, lighting means within the casing, said lighting means including a pair of fluorescent tubes arranged along the rear and forward inner margins of the casing, and a reflector element about the lighting means embodying a somewhat semi-cylindrical portion about each tube, the interiors of the semi-cylindrical portions being in opposed relation and their lower ends being continued toward each other in shallow trough-like form to meet angularly along a medial line extending across the board parallel with the top panel and spaced therebelow whereby to enhance the distribution of light through the said top while minimizing the space occupied by the board.

2. A draftman's tracing board comprising, in combination, a casing, a flat translucent top panel therefor, lighting means within the casing arranged along opposite inner walls of the casing, and a reflector element about the lighting means embodying a somewhat semi-cylindrical portion about each light, the interiors of the semi-cylindrical portions being in opposed relation and their lower ends being continued toward each other in trough-like form to meet angularly along a medial line extending across the board parallel with the top panel and spaced therebelow whereby to enhance the distribution of light through the said top while minimizing the space occupied by the board, wherein the board carries on each of the inner faces of the said walls an element having its lower edge conformed to the contour of the reflector portions and to which the reflector portions are secured to maintain the said relationship of the latter.

3. A draftsman's tracing board comprising, in

combination, a relatively large shallow casing of generally rectangular dimensions throughout, a flat translucent top panel therefor, lighting means within the casing, said lighting means including a pair of fluorescent tubes arranged along opposite inner margins of the casing, a cleat secured along the inner face of each of two opposite walls of the casing, and a shallow reflector element secured to the lower edges of said cleats and including a somewhat semi-cylindrical portion about each tube, the interiors of said semi-cylindrical portions being in opposed relation whereby light is reflected from one to the other of said semi-cylindrical portions to enhance the distribution of light throughout said casing while minimizing the space occupied by the board, the said lower edges of said cleats being conformed to the cross-sectional shape of said reflector element and maintaining said shape.

4. A draftsman's tracing board for use with a drafting table or the like having an inclined top comprising, in combination, a relatively large shallow casing of generally rectangular dimensions throughout, a flat translucent top panel therefor, lighting means within the casing, a shallow reflector element about the lighting means, a pair of extensible rod members carried one along each side of said board and having formations adapted to hook over the rear edge of said table top to support the board thereon in slanting operative position, and somewhat cylindrical bearings on the casing for the members, said members being selectively slidable and rotatable in said bearings to bring said formations into the plane of the casing and into close proximity therewith when not in use.

5. A draftsman's tracing board comprising, in combination, a relatively large shallow casing of generally rectangular dimensions throughout, a flat translucent top panel therefor, lighting means within the casing, said lighting means including a pair of fluorescent tubes arranged along opposite inner margins of the casing, a shallow reflector element about the lighting means embodying a somewhat semi-cylindrical portion about each tube, the interiors of said semi-cylindrical portions being in opposed relation, the lower margins of said semi-cylindrical reflector portions being continued toward each other in shallow trough-like form to meet angularly along a medial line extending across the board parallel with the top panel and spaced somewhat therebelow whereby rays of light are reflected from one to the other of said semi-cylindrical portions to enhance the distribution of light throughout said casing.

GEORGE E. FROELICH.