United States Patent

Schmidt

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[54] PORTABLE WORK STAND CABINET AND ILLUMINATION SOURCE UNIT

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[52] **U.S. Cl.** .....**240/2,** 240/81, 240/81 BE, 248/123, 280/47.35, 312/250

[51] **Int. Cl.** **F21v 33/00**

[58] **Field of Search** .....240/2, 1.2, 1 A, 2 SL, 2.18, 240/41 B, 51.11, 52, 54 A, 78 F, 78 G, 81 BA, 81 BC, 81 BS, 81 C; 312/250, 223, 201; 248/123, 124; 280/47.35

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[57] **ABSTRACT**

A heavy castor mounted work stand cabinet forms the support base for a fixed vertical stanchion extending up a backside of the stand. The stanchion pivotally supports, at its top end, an elongated arm which extends outwardly above and past the front face of the work stand. Adjustable means are provided for supporting the arm either at right angles to the stanchion or at an obtuse angle with respect thereto. Pairs of parallel, spaced apart fluorescent light sources are positioned along forward and downwardly facing faces of the stanchion and of the arm, respectively, and the faces of the stanchion and the arm are each provided with surfaces of high light reflecting capability, said surfaces facing outwardly from each other at an obtuse angle. The weight and length of the arm and the weight of the stand are such that the device will not tip even when the stand is empty and the arm is in its horizontal position. Shelves in the cabinet are provided for the storage of work tools and supplies which, when so stored make the unit more stable and less susceptible to accidental tipping.

6 Claims, 6 Drawing Figures

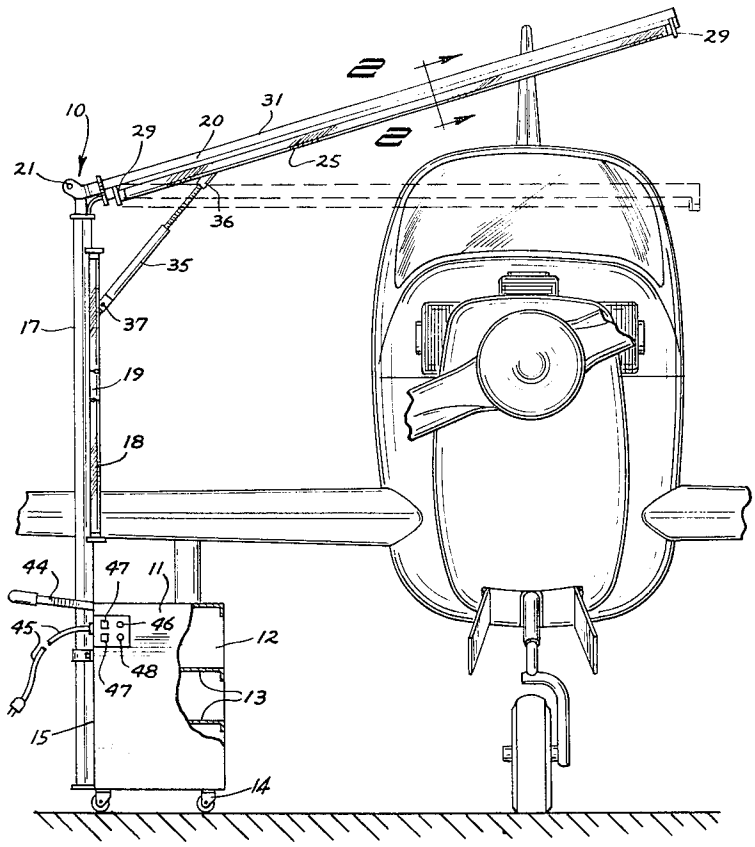
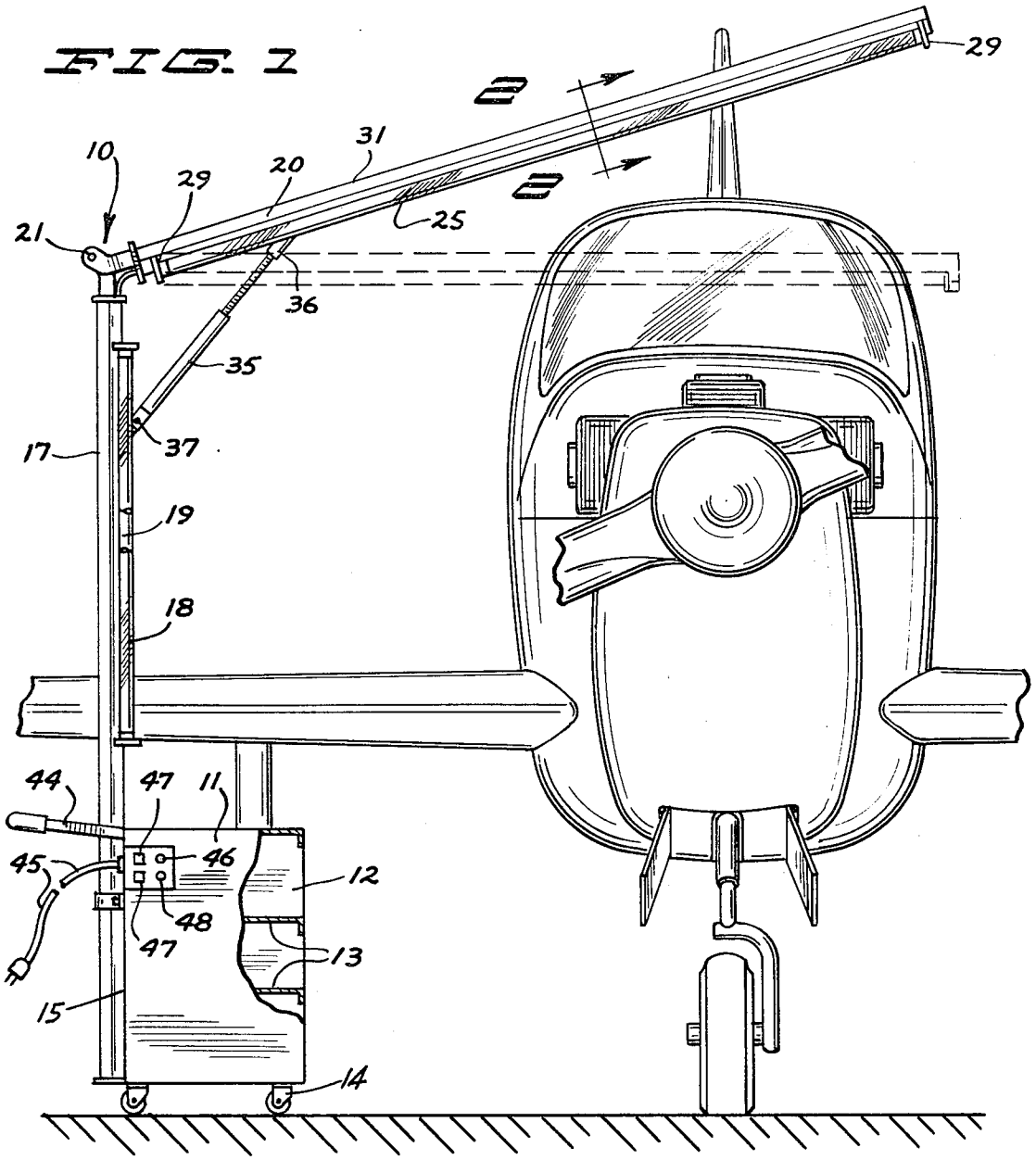


FIG. 1



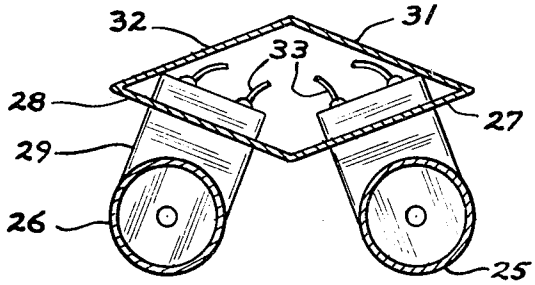


FIG. 2

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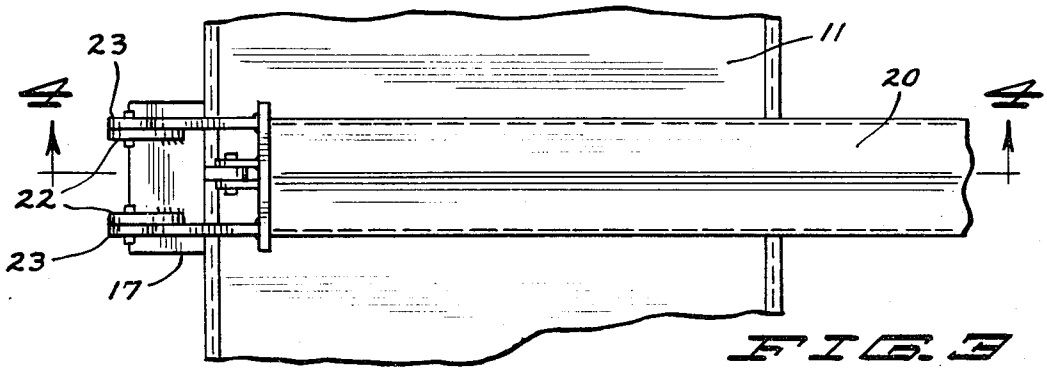

FIG. 3

FIG. 4

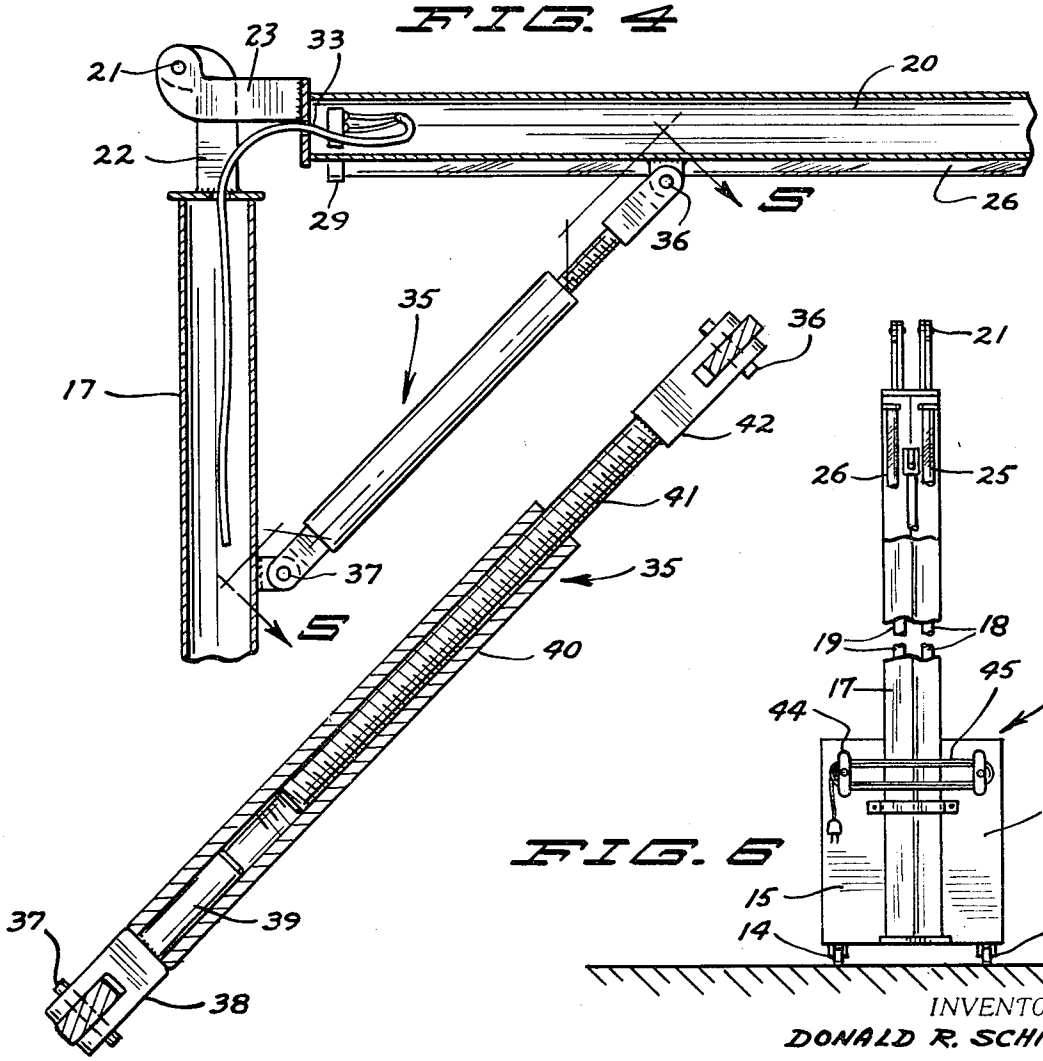

FIG. 6

FIG. 5

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PORTABLE WORK STAND CABINET AND ILLUMINATION SOURCE UNIT

BACKGROUND OF THE INVENTION

In performing repair work on engines of farm equipment, automotive vehicles including trucks, and aircraft engines particularly light aircraft, illumination of the work area has consistently been a problem whether the work is performed in a permanent garage or hangar or is performed inside of a building primarily designed for other purposes or even outside or under temporary shelters. It is not necessary or desirable to provide high levels of illumination at all areas within a garage or hangar for reasons of economy, and when such high levels of illumination are initially provided, the nature of the activities within the enclosure cause dust, oil and grime films to build up on the light sources and on the provided reflectors, thus severely reducing the amount of light reaching the work area.

In order to obviate the necessity for high levels of general illumination throughout a garage or other such enclosure, RMS shades are provided around incandescent light sources, thus tending to "beam" the light from the source directly onto an area where engine repair work is to be performed. This has the distinct disadvantage of causing a glare on the metallic surfaces which are being worked and of causing a concentration of heat from the incandescent source on the worker and on the work area. Further, this kind of direct or even semi-direct lighting is ineffective when the mechanic necessarily positions his body between the light source and the work in the process of performing his function.

The use of permanently mounted fluorescent light fixtures has alleviated some of the heat problems and, to a limited extent, some of the "spotlight" glare problems. These fluorescent lights, however, are positioned inside of concave reflectors which tend to cause the glare and body shielding problems mentioned above. A further drawback to permanently ceiling or high wall mounted fluorescent fixtures is the difficulty in cleaning the light source and the reflector. Thus, while the initial level of illumination may be satisfactory, this rapidly deteriorates to a point where very much less than 25 percent of the generated illumination is reaching the work surface.

Working under conditions including high glare, shadow due to necessary positioning of mechanic's body between the light source and the work area, high intensity of heat within the garage enclosure and directed by reflectors toward the mechanic, and low level of illumination at the work area, a mechanic is far less efficient and is subjected to severe eyestrain.

BRIEF SUMMARY OF THE INVENTION

In order to overcome the problems of the prior art, the portable work stand cabinet and the illumination source unit of the present invention was developed to provide a diffuse light source which is adapted to be positioned directly adjacent and over the work surface but to illuminate the entire work area and the surrounding area substantially uniformly. The necessary positioning of the mechanic's body over the work area in the process of performing his services, does not block the light in the work area sufficiently to substantially effect the illumination level, as the light impinging on all of the surrounding areas tends to refract and reflect into even the area over which the mechanic's body is positioned.

In a preferred form of the invention, the light source includes parallel vertically mounted fluorescent tubes which are positioned in adjacent relationship to flat adjacent reflecting surfaces which are connected to each other between the two light sources at an obtuse angle. This causes the direct light from the fluorescent tubes to be directed more intensely in a forward direction where both tubes are contributing to the illumination level. The illumination from direct light is less intense around to the sides where only one of the tubes contributes thereto, this complete illumination, however, being

effective through a horizontal arc of well over 270°. The reflected light from the tubes and off of the reflectors does not contribute substantially to the illumination level directly ahead of the stanchion, but does contribute to the illumination level to the sides through an angle of approximately 180°. Thus the vertically mounted source provides not only diffuse light over the work area, but also off of any adjacent walls or, for example, other vehicles or, in the case of aircraft, for example, wings and fuselage surfaces, etc.

Further illumination is provided by the two similarly mounted fluorescent tubes on an arm pivoted to the top of the stanchion and extending outwardly therefrom. Diffuse illumination is provided in the same relative directions as pointed out in connection with the vertically mounted tubes.

A support rod is pivotally mounted to the adjacent pivoted portion of the stanchion and arm and is readily adjustable in length to provide support for the arm in normal relationship to the stanchion or in upwardly extending obtuse angle relationship thereto.

As a support for the stanchion, a portable work stand cabinet having forwardly facing shelf areas is provided. Castor mounted wheels on the bottom of the stand render it portable, and a handle extends outwardly from the back of the stand and around the stanchion to protect it, to provide easy means for positioning the stand and light source, and to provide a rack on which the extension cord from the stand can be wound.

The stand is provided with an extension cord which is wired through an appropriate switch to the usual fluorescent light connection, and which is also wired to a convenient outlet consisting of one or more (two as shown) electrical plugs for powering hand tools such as drills or impact wrenches, which may be stored on the stand and used by the mechanic on the illuminated work area.

The weight of the stanchion and extension arm and the weight of the stand are such that the unit will be stable on a horizontal surface whether the arm is positioned straight out from the stanchion or is positioned in upwardly extending direction.

To provide a safety factor and substantially greater stability, the shelves of the cabinet are provided for storing such hand tools and other tools and materials useful to the mechanic on the illuminated job. Since all these materials and tools will normally be put into and on the work stand cabinet when moving the unit from one work site to another, even greater stability against tipping is automatically achieved during such movement.

The pivoted adjustable support rod can be taken apart or separated to the end that the extension arm can be folded over to have substantially vertical alignment when it is desired to store the unit or when it is desired to move it through a constricted area from one location of use to another.

IN THE DRAWINGS

FIG. 1 is a side elevational view of a device made according to the present invention showing it in working relationship to the engine area of a low wing single engine aircraft;

FIG. 2 is an enlarged sectional view taken on the line 2 — 2 in FIG. 1;

FIG. 3 is a fragmentary top plan view of the device of FIG. 1;

FIG. 4 is a vertical sectional view taken on the line 4 — 4 in FIG. 3;

FIG. 5 is an enlarged view partly in section and partly broken away of the holding rod taken on the line 5 — 5 in FIG. 4; and

FIG. 6 is a rear elevational view of the device of the invention with the extension arm in a storage position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A portable work stand cabinet and illumination source unit 10 includes a cabinet 11 provided with a forwardly facing

opening 12 and shelves 13. The cabinet is mounted on castors 14. Mounted on a rear wall 15 of the cabinet 11 is a vertically upstanding stanchion 17. A pair of spaced apart, parallel fluorescent tube light sources 18 and 19 are mounted on the forward surface of this stanchion.

At the upward most end of this stanchion 17, an elongated arm 20 is pivotally mounted as at 21. This mounting consists of hinge plates 22 integral with and extending outwardly from the stanchion 17 and hinge plates 23 integral with and extending outwardly from elongated arm 20. As will be explained later, the configuration of these hinge plates is such that when the elongated arm 20 is pivoted about the pivot point 21 to have vertical position behind stanchion 17, these two parts will not collide with each other until this parallel vertical positioning is obtained.

The construction of the elongated arm 20 is best seen in the cross sectional view of FIG. 2. A pair of spaced apart, parallel fluorescent tubes 25 and 26 are mounted to downwardly facing reflector walls 27 and 28, respectively, as at 29. These reflector walls are joined together at position midway between the light tubes 25 and 26, are at an obtuse angle with respect to each other, and are positioned such that the angle between them, measured on the reflection surface side thereof, is greater than 180°. As shown, two other walls 31 and 32 combine with reflector walls 27 and 28 to provide a structure which is closed in transverse cross section and which encloses the usual fluorescent lighting wires 33.

It is to be understood that the vertical stanchion 17 and the fluorescent tubes 18 and 19 bear the same relationship to each other as do the elongated arm 20 and the fluorescent tubes 25 and 26. In other words, a horizontal cross sectional view through the stanchion 17 and the fluorescent tubes 18 and 19 would appear substantially identical to FIG. 2 of the drawings.

In order to adjustably support elongated arm 20 with respect to stanchion 17, adjustable support rod 35 is provided. This rod is pivotally mounted as at 36 to the arm 20 and as at 37 to the stanchion 17. As best seen in FIGS. 4 and 5, this support rod 35 includes a lower bracket 38 pivotally mounted to stanchion 17 as at 37 and having an outwardly extending cylindrical stud 39 integral therewith. A rotatable sleeve 40 is slidably mounted on the stud 39, is held there by gravity, and is internally threaded to receive a threaded stud or shank 41 which extends integrally outwardly from an upper bracket 42 which is pivotally mounted to the elongated arm 20 as at 36.

When it is desired to adjust the angular relationship of the elongated arm 20 with respect to the vertical stanchion 17, the sleeve 40 is rotated to change the relative longitudinal positioning of the threaded stud 41 with respect to the sleeve. Thus the sleeve may have position as seen in FIGS. 4 and 5 to support the elongated arm 20 in horizontal relationship to the floor, or can have position as seen in FIG. 1 to support the arm as seen in that figure.

When it is desired to store the unit of the invention or to move it through a constricted or congested space, the adjustable support rod 35 is taken apart by sliding the sleeve 40 off of the stud 39. The arm 20 may then be pivoted about point 21 to have position as seen in FIG. 6.

For ease in handling the unit of the invention, a pair of rearwardly extending handles and hand grips 44 are provided on the cabinet 11, and these handles also serve as a convenient storage place for a power extension cord 45. This cord leads through the switch 46 to the fluorescent lights in any usual or convenient manner. Convenience outlets 47,47 are also powered from the power cord 45, and one or both of them may be controlled by switch 48.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A portable illumination source and stand therefor including a wheel mounted base constituted as a rectilinear box having a front face and an opposite rear wall; a vertical stanchion fixedly mounted with respect to said rear wall, said stanchion having a pair of adjacent, integrally connected forwardly and outwardly facing vertical reflector walls; a pair of elongated, parallel, spaced apart light sources each mounted on and spaced from one of said vertical reflector walls; an elongated arm pivotally mounted at a top end of said stanchion to extend forwardly therefrom, an elongated light source mounted on a bottom side of said arm, and means for fixing the angular relationship of said arm to said stanchion.

2. The combination of claim 1 wherein said rectilinear box is constituted as a work stand having shelves open to the front face thereof.

3. The combination of claim 1 wherein said elongated arm has a pair of adjacent, integrally connected, downwardly and outwardly facing substantially horizontal reflector walls, said arm mounted light source includes a pair of elongated, parallel, spaced apart light sources each mounted on and spaced from one of said substantially horizontal reflector walls, and wherein said vertical reflector walls are situated at an obtuse angle from each other as are the substantially horizontal walls.

4. The combination of claim 3 wherein said means for fixing the angular relationship of the elongated arm to the vertical stanchion is constituted as a support rod adjustable as to length and pivotally mounted to said stanchion and to said arm at position adjacent and spaced from the point where the arm is pivotally supported on the stanchion.

5. The combination of claim 4 wherein said rectilinear box is constituted as a work stand having shelves open to the front face thereof.

6. The combination of claim 5 wherein the pivotal mounting of the arm to the stanchion is done using offset brackets so that, with the support rod disconnected, the elongated arm can be swung over the top of the stanchion and will assume position parallel to and adjacent the stanchion.

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