

[54] **VISIBLE LIGHT APPARATUS FOR CURING PHOTO-CURABLE COMPOSITIONS**

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[57] **ABSTRACT**

There is provided a device for efficient production of light in the low visible range for photo-curing materials, the device being particularly adapted for dental applications. The efficient light source comprises a tungsten halogen lamp with a concentrating reflector which reflects visible light and passes middle and far infrared wavelengths. A filter system is provided comprising a dichroic heat reflecting filter which efficiently passes light from 400 to 700 nm and reflects energy in the visible red and near infrared wavelengths back to the lamp envelope, thus enhancing lamp halogen cycle efficiency. The dichroic heat reflecting filter is followed by a dielectric filter which provides a high efficiency bandpass at the desired visible range. A highly efficient fiber optic light guide is positioned to receive the focused and filtered light and to transmit it to a reduced surface light applying tip at the end of a handpiece. The fiber light guide is encased in a specially designed sheathing which provides protection to the optical fibers and carries two electrical conductors which are connected between a control switch on the handpiece and the power supply for the lamp.

35 Claims, 3 Drawing Figures

