

[54] REFLECTIVE BARNDOOR

[75] Inventors: **Fenton D. Hamilton**, Los Angeles;
Richard B. Glickman, Sherman
Oaks; **George R. Hartz**, Canoga
Park; **Joseph N. Tawil**, Woodland
Hills, all of Calif.

[73] Assignee: **Berkey-Colortran, Inc.**, Burbank,
Calif.

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[58] Field of Search. **240/3, 3.1, 41.1,**
240/41.15, 41.2

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Primary Examiner—Richard M. Sheen
Attorney—Fred Flam

[57] ABSTRACT

A soft fill luminaire for minimizing shadows on the field to be illuminated is provided with reflective barn-doors. The barndoors raise the level of fill illumination at the center of the field without materially reducing the fill illumination at the margins of the field.

3 Claims, 5 Drawing Figures

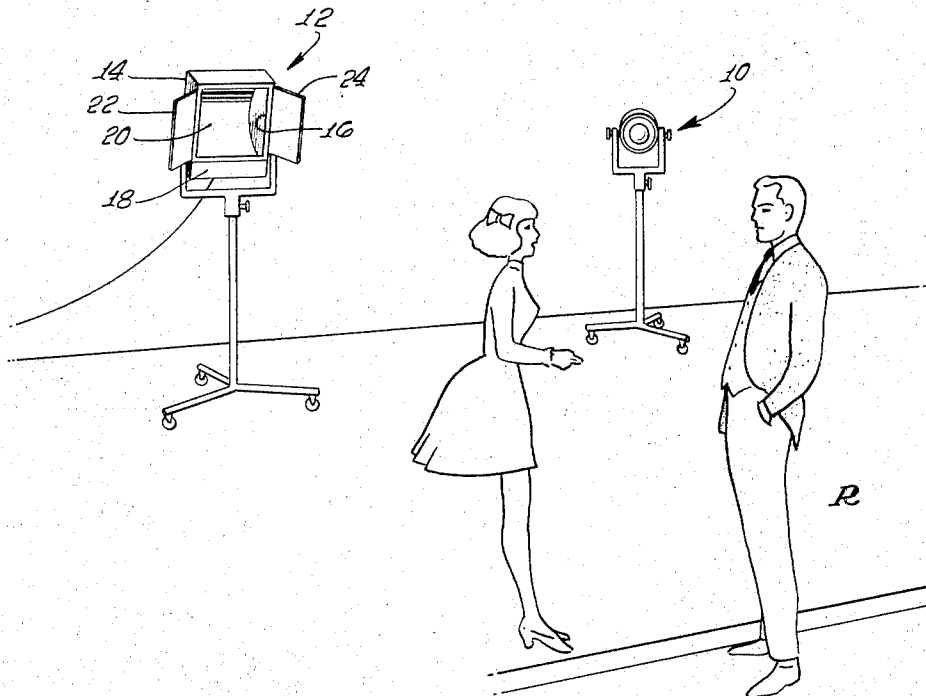


FIG. 1.

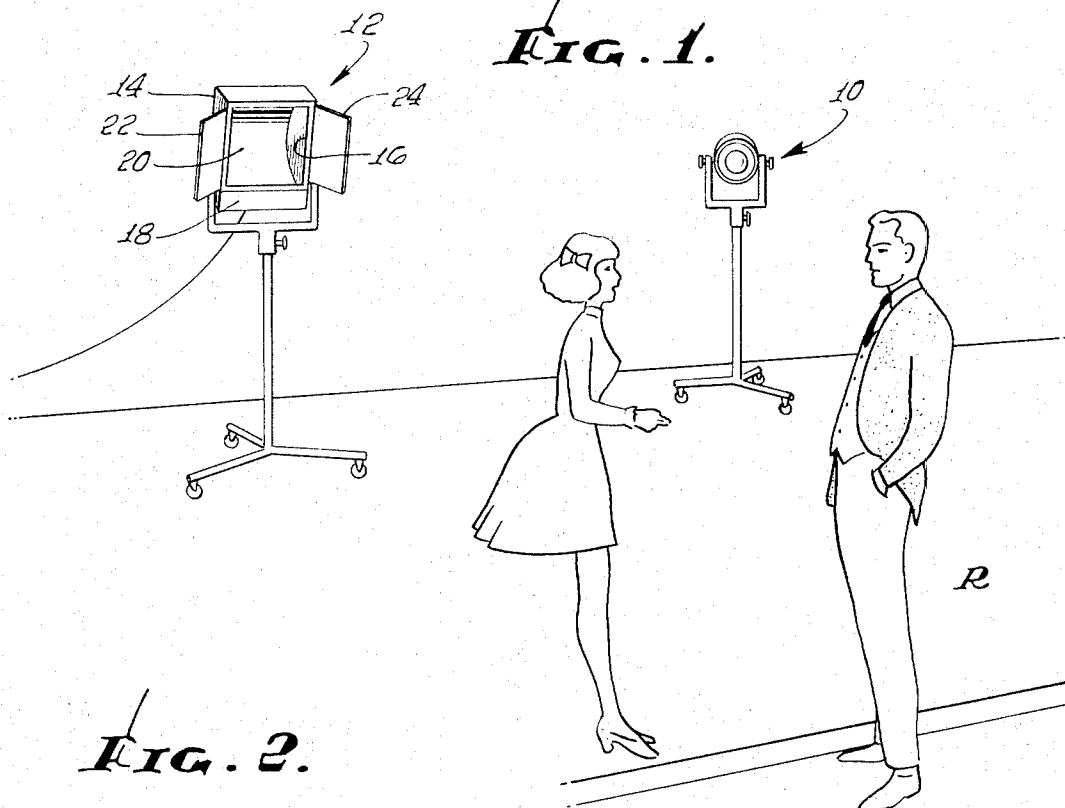
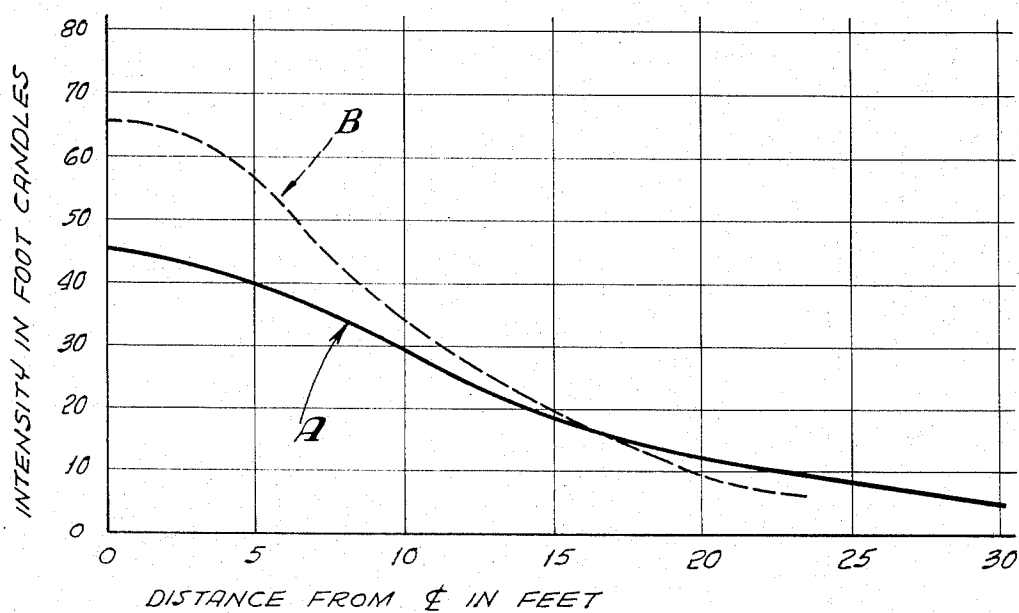
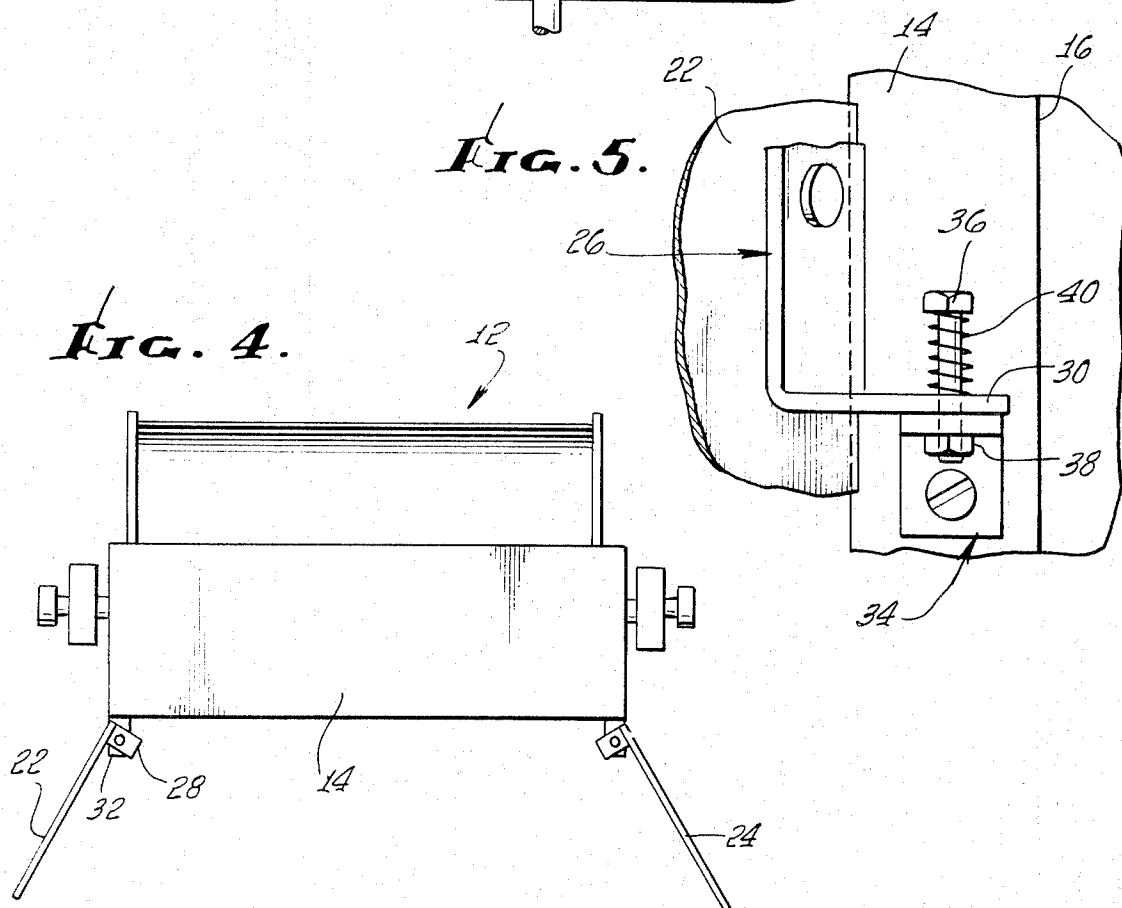
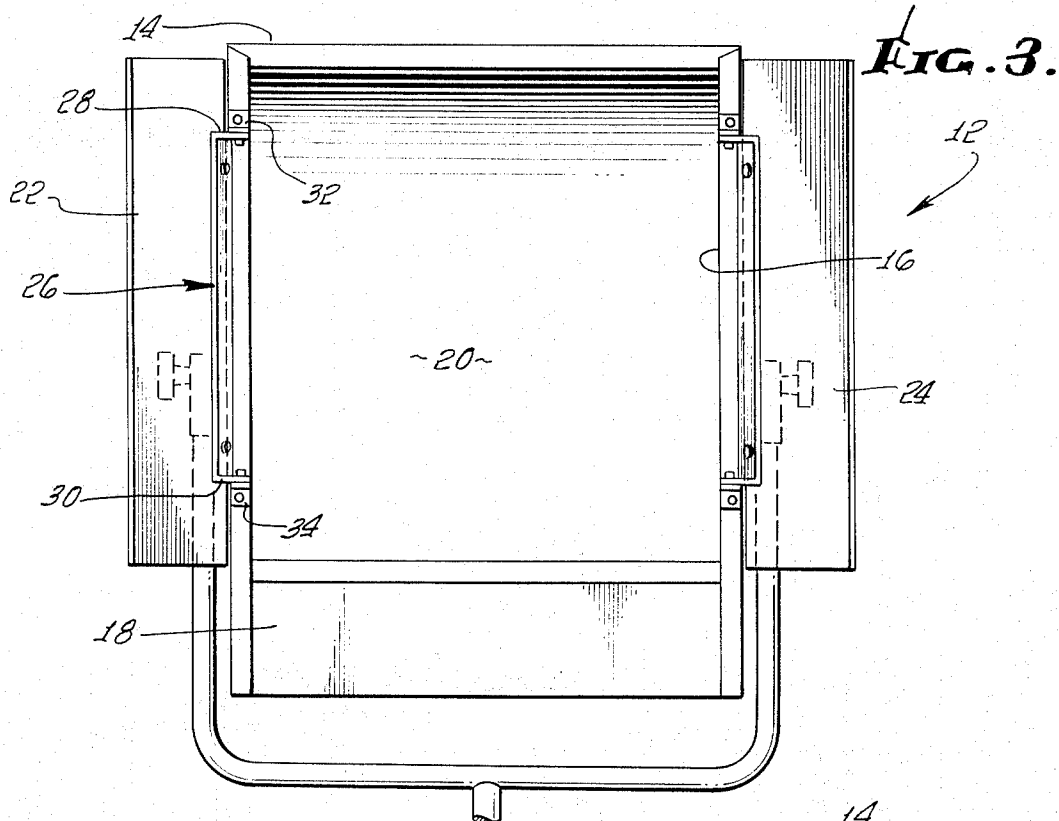


FIG. 2.





REFLECTIVE BARNDOOR

BACKGROUND OF THE INVENTION

1. Field of Invention

This invention relates to lighting equipment suitable for motion picture and television photography or the like. The objects intended to be photographed may be illuminated by the use of two types of lighting equipment: first, primary or key lighting that brings the field to a level of illumination appropriate for camera use; and second, fill lighting. Fill lighting may be used for two essentially different purposes. One purpose is to highlight portions of the field. Another purpose is to soften harsh shadows produced by the primary lighting equipment. This invention relates particularly to fill lighting of the type intended to soften the field.

2. Discussion of Prior Art

Typical luminaires for providing a shadowless light comprise a rather large non-focusing reflector illuminated by an indirect or recessed light source. If the shadows cast by the primary light source were not sufficiently softened by a single soft fill luminaire, additional similar luminaires were brought into play. A lighting system that requires numerous and/or bulky equipment is, of course, disadvantageous. Especially is this so if a high degree of mobility and/or independence from a fixed sound stage is desired.

The primary object of this invention is to make it possible for a single luminaire to perform the functions heretofore performed by two.

BRIEF SUMMARY OF THE INVENTION

In order to achieve the foregoing objective, we provide barndoor type attachments to the soft fill luminaire. Whereas barndoors are ordinarily black and non-reflective, serving only sharply to cut off primary lighting from edge portions of the field, the barndoors that we provide have their interior surfaces reflective. The light energy is redirected rather than absorbed, as in the conventional barndoor arrangement. The intensity level of the central portion of the field is raised in a shadowless manner.

To the extent that one barndoor intercepts light energy that would illuminate the marginal portions of the field, the opposite barndoor, by virtue of its reflective function, largely compensates. Consequently, the fill characteristics of the luminaire at the marginal field portions are retained. Although the center of the field is more intensely illuminated, it is illuminated by a source that does not increase the shadow-casting characteristic.

BRIEF DESCRIPTION OF THE DRAWINGS

A detailed description of the invention will be made with reference to the accompanying drawings. These drawings, unless described as diagrammatic or unless otherwise indicated, are to scale.

FIG. 1 is a diagrammatic view of a typical stage, indicating both a primary lighting luminaire and a soft fill luminaire, the soft fill luminaire being made in accordance with the present invention.

FIG. 2 is a graph showing intensity in foot candles of a conventional soft fill luminaire and a luminaire made in accordance with the present invention.

FIG. 3 is a front elevational view of the improved soft fill luminaire.

FIG. 4 is a top plan view thereof.

FIG. 5 is an enlarged fragmentary elevational view showing a typical bracket mounting for the barndoor.

DETAILED DESCRIPTION

The following detailed description is of the best presently contemplated mode of carrying out the invention. This description is not to be taken in a limiting sense but is made merely for the purpose of illustrating the general principles of the invention since the scope of the invention is best defined by the appended claims.

In FIG. 1 there is illustrated a stage illuminated by one or more primary lighting luminaires 10. While the primary luminaire 10 raises the level of illumination adequately for motion picture or television camera work, it casts sharp shadows due at least in part to the fact that the source itself is exposed along the axis of the luminaire opening and due in part to the small physical size of an intense source. In order to soften the shadows, a soft fill luminaire 12 is provided.

The luminaire 12 includes a box-like housing 14 that has a large rectangular frontal opening 16. A source of illumination is located along the bottom of the housing 14, and it is shielded from direct view by a cover plate 18. The light from the source is cast upwardly towards a reflector 20 formed in this instance on the inside of the housing back. The reflector casts soft fill lighting outwardly of the opening 16.

The illumination is of the shadowless type due to the indirect location of the illumination source, the large size of the opening 16 and the broad, non-focusing characteristics of the reflector 20. The graph A in FIG. 2 shows the distribution of illumination cast by the luminaire 12 as thus far described.

Without changing the size or rating of the light source itself, the level of illumination at the center of the field illuminated by the luminaire 12 is increased without markedly reducing the level of illumination at the margins of the field, all as indicated by the graph B in FIG. 2. This is accomplished by providing two barndoors 22 and 24 at opposite sides of the luminaire housing 14.

The inner surface of each barndoor does not absorb light cast upon it as a conventional barndoor does, but instead redirects the luminous energy to the field to be photographed. For this purpose, the inner surface of each of the barndoors is reflective. The surface may be highly specular or mirror-like or preferably it is slightly mottled. Each barndoor at least partially reiterates the illuminated luminaire housing, not the recessed light source itself. Each barndoor is located at an appropriate angle to intercept the light radiating from the reflector 20 and to redirect it to the center of the field.

The barndoor 24, for example, necessarily intercepts the soft fill illumination at the right portion R of the stage. However, the companion barndoor 22 reflects light from the luminaire 12 to the right portion of the stage past the edge of the barndoor 24. Similarly, the barndoor 24 compensates for the intercept of the barndoor 22. As shown in FIG. 2, the marginal illumination is not appreciably reduced by the barndoors 22 and 24. In order to ensure the compensating effect, the width of the barndoors is held to a fraction of the width of the luminaire opening 16 itself. Good results are achieved by limiting the barndoor width to about one-half the width of the opening 16.

The soft fill illumination at the center of the field is markedly increased by the reflective character of the barndoors, and the use of a second soft fill luminaire may be avoided.

The configuration barndoors 22 and 24 is otherwise noncritical. The doors 22 and 24 may be supported in any desired manner to provide adjustment of angularity for focusing. In the present instance, the barndoors are generally rectangular. A long, generally U-shaped bracket 26 is attached to the inside of the barndoor 22 near one vertical edge. The ears 28 and 30 of the U-shaped bracket are pivotally mounted by a pair of angle brackets 32 and 34. One of the brackets 34 is shown in detail in FIG. 5. The ear 30 is in face-to-face contact with the upstanding arm of the angle bracket 34. A screw 36 extends through aligned apertures in the ear 30 and the bracket arm and is confined in the apertures by a nut 38. A spring 40 surrounds the bolt and acts between the head of the bolt 36 and the ear 30 to impose a force yieldingly restraining angular movement of the barndoor. The companion ear 28 of the bracket 26 is similarly supported by the angle bracket 32. The companion barndoor 24 is supported in the same manner.

Adjustment of the angularity of the barndoors serves to some extent to shape the curve B. For example, the center peak may be flattened and the peripheral level slightly raised. The angularity necessary to focus is of course a function of the distance of the luminaire from the subject illuminated.

Intending to claim all novel, useful and unobvious features shown or described,

We claim:

1. In a system of stage lighting in which one or more luminaires provide primary lighting for the field to be illuminated, the combination therewith of a separate secondary soft fill luminaire:

- a. said soft fill luminaire having a housing providing a large opening adapted to be addressed to the field;
- b. said housing having a reflector surface located behind said opening;
- c. a source of indirect illumination frontally concealed within the opening, and casting light on said reflector; said luminaire having no effective direct source of illumination; and
- d. a pair of reflective members, each of said members being pivotally attached on an opposite side of said large opening and being pivotable about said side to an angle for concentrating illumination at the center of the field illuminated by said soft fill luminaire, each of the reflective members compensating by reflection for the barndoor effect of the opposite reflective member whereby marginal illumination of the field is maintained.

2. The combination as set forth in claim 1 in which said reflective members are mounted for angular adjustment for focusing the reflected rays.

3. The combination as set forth in claim 1 in which the width of each reflective member is about half the corresponding width of the luminaire opening.

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