

March 28, 1944.

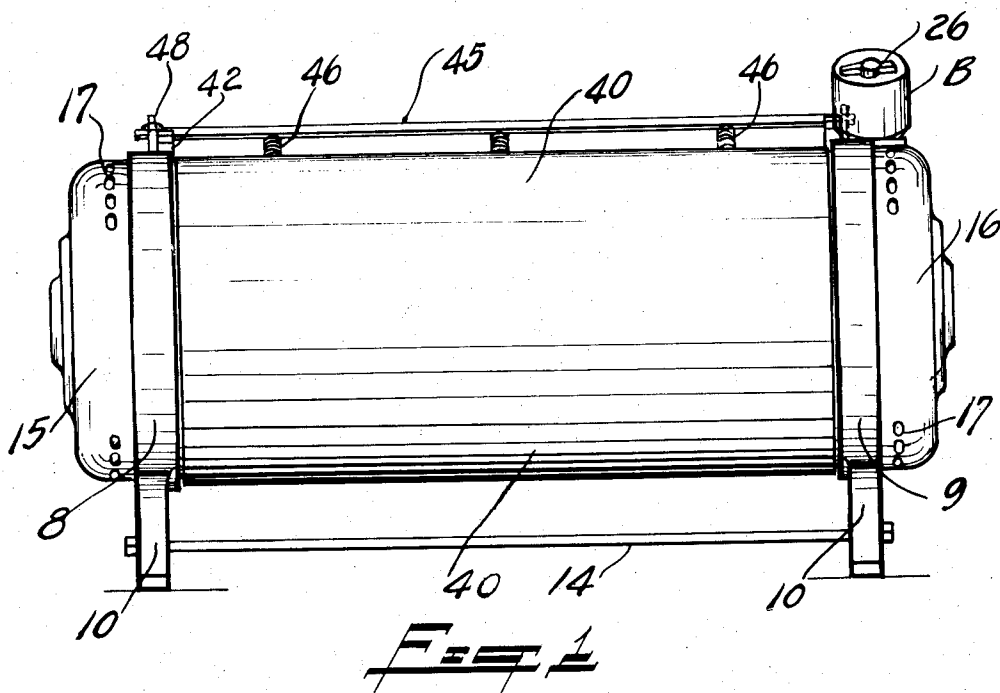
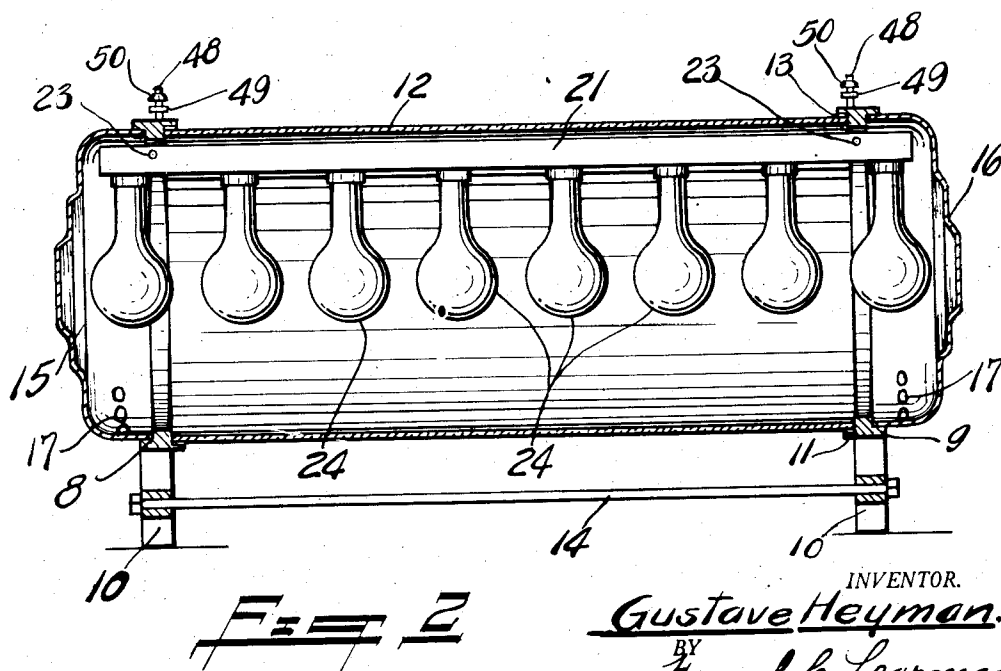
G. HEYMAN

2,345,196

BLUE PRINTING MACHINE

Filed Aug. 26, 1942

3 Sheets-Sheet 1



INVENTOR.

Gustave Heyman.

BY

Frank C. Learman.

March 28, 1944.

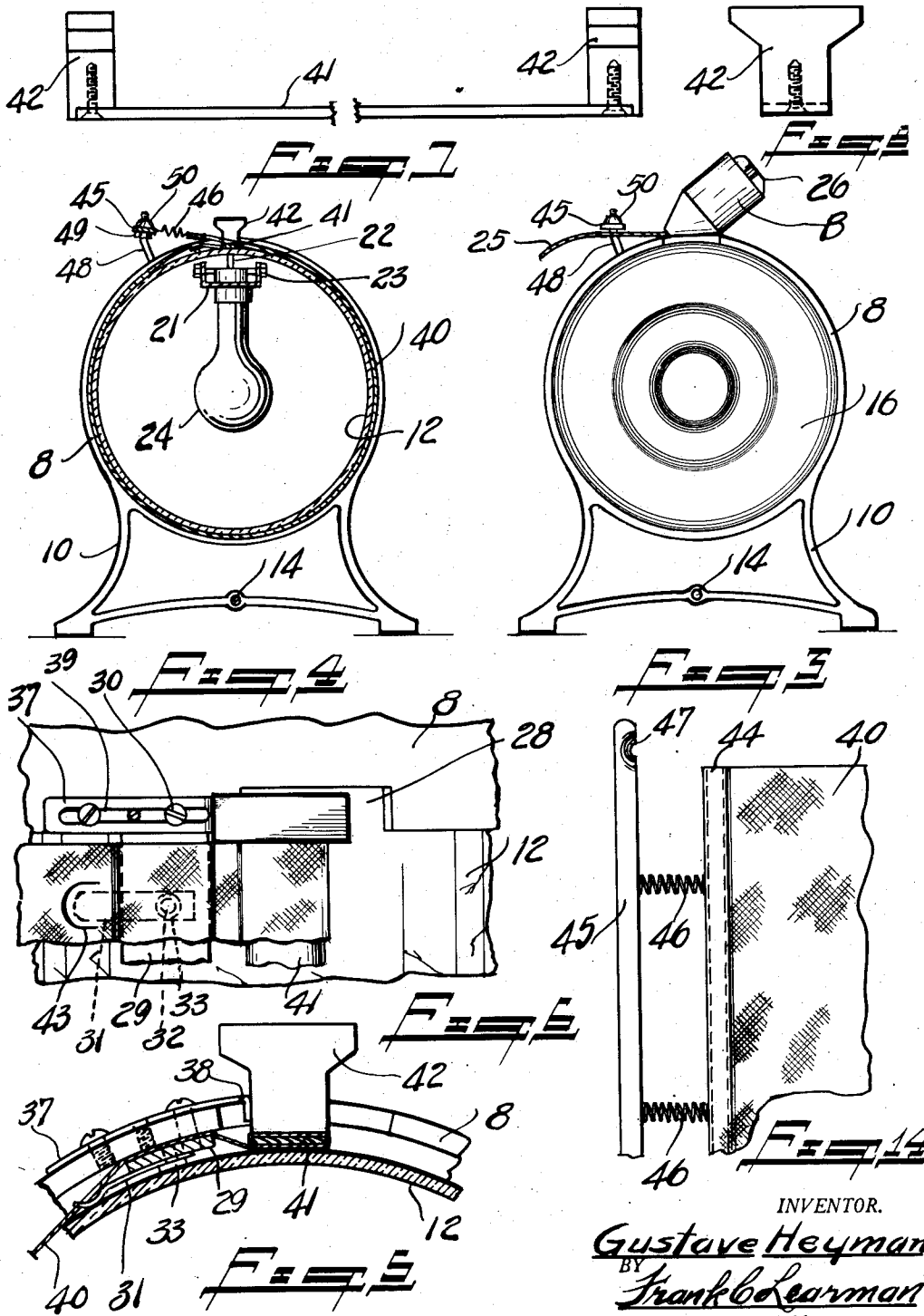
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

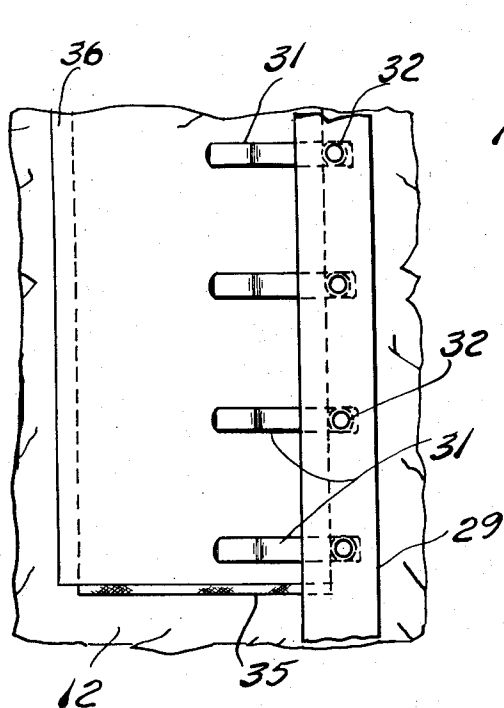


Fig. 10

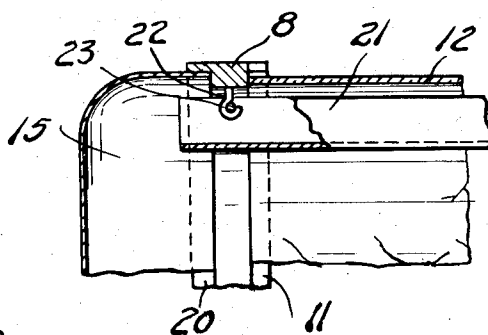


Fig. 13

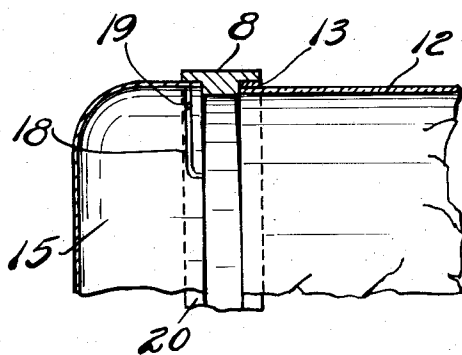


Fig. 12

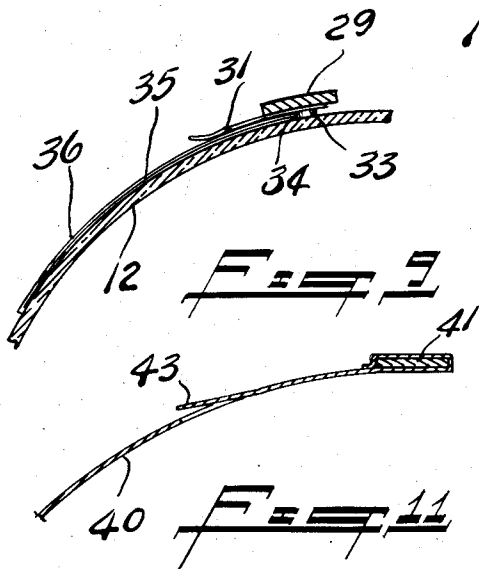


Fig. 11

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UNITED STATES PATENT OFFICE

2,345,196

BLUEPRINTING MACHINE

Gustave Heyman, Battle Creek, Mich.

Application August 26, 1942, Serial No. 456,450

11 Claims. (Cl. 95—77.5)

This invention relates to improvements in printing machines, and more especially to a machine for making blue prints and other prints in which sensitized sheets of paper are exposed to light and then either washed and dried or dry developed in a manner well known to the trade.

One of the prime objects of the invention is to design a blue printing machine which is readily portable so that it can be easily moved from place to place, which is of substantial construction, and very economical to operate and maintain.

Another object is to design a printing machine composed of few parts, and in which conventional "Mazda" light bulbs, or other conventional fluorescent or tungsten bulbs can be utilized as the source of printing light, so that the original cost and cost of replacement is extremely low in comparison with other machines at present on the market.

A further object is to design a machine in which the light source is located approximately in the longitudinal center of the glass or transparent printing cylinder so that the printing results will be even and uniform.

A still further object is to provide a quickly attachable or detachable curtain, one end of which is detachably connected to the frames of the machine outside the printing area, with the opposite end swung over the attached end and having frictional engagement therewith during the printing period, insuring close, tight contact of the tracing and paper with the transparent cylinder, this curtain also serving as a loading table preparatory to the printing operation.

A further object still is to provide a blue printing machine design which makes provision for adequate ventilation, which can be easily and quickly assembled and/or dis-assembled, and in which the end frames serve as the support for all of the associated parts.

Still a further object, is to provide means for frictionally gripping the one end of the tracing and sensitized paper to facilitate the loading operation, together with means serving as a stop to locate the one end of the paper with relation to the printing surface of the cylinder.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts, hereinafter more fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims, it being understood that changes may be made in the form, size, propor-

tion and minor details of construction, without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

Fig. 1 is a front elevational view of my improved printing machine.

Fig. 2 is a longitudinal sectional view thereof.

Fig. 3 is an end view.

Fig. 4 is a transverse, sectional end view.

Fig. 5 is an enlarged, fragmentary, transverse, sectional view illustrating the manner of mounting the attaching curtain bar on the end frame and also the bar adjusting means.

Fig. 6 is a fragmentary, plan view of the mechanism shown in Fig. 5.

Fig. 7 is a fragmentary front, elevational view of the curtain attaching bar, and

Fig. 8 is an end view thereof.

Fig. 9 is an enlarged fragmentary, sectional, end view showing the resilient fingers, stops and tracing, etc.

Fig. 10 is a top, plan view thereof.

Fig. 11 is an end view similar to Fig. 9 showing, in section, the curtain.

Fig. 12 is an enlarged fragmentary, front view, illustrating the end reflector securing means, and

Fig. 13 is a similar view illustrating the manner of mounting the gang socket bar.

Fig. 14 is a fragmentary, plan view of the curtain, illustrating the resilient connection of the securing bar.

Referring now more particularly to the drawings in which is shown the preferred embodiment of my invention, the machine proper comprises a pair of longitudinally spaced, circular end frames 8 and 9 respectively, having legs 10 cast integral therewith; the inner edge of each end frame being turned as at 11 to accommodate the ends of a glass or transparent work receiving cylinder 12, and a strip of felt or other resilient means 13 is provided to cushion the ends of the cylinder and minimize breakage. A tie rod 14 connects the lower ends of the end frames to reinforce and maintain them in spaced relation.

End reflectors 15 and 16 respectively are detachably secured to the end frame members 8 and 9, the inner face of each reflector being suitably treated to provide an efficient reflecting surface, and spaced openings 17 are provided in each reflector in order that proper ventilation may be had through the machine to dispel excess heat generated by the light bulbs.

Slotted passages 18 are provided in the inner rim of each end reflector, and engage radially

projecting pins 19 provided in the turned section 20 of the end frames, this arrangement serving to detachably lock the reflectors to the end frames so that they may be easily and quickly removed for repair, replacement of light bulb or bulbs, cleaning, or for any other purpose.

A longitudinally disposed channel shaped, gang socket bar 21 spans the end frames 8 and 9 within and at the upper portion of the glass cylinder 12, and lugs 22 are cast integral with these end frames and are adapted to accommodate bolts 23 which pass through the channel shaped bar 21 and serve to secure it to the end frames.

A plurality of light bulbs 24 are mounted in this gang socket bar 21 in longitudinal spaced relation, the lighting filament of each bulb being approximately on the longitudinal axis of the transparent cylinder, so that uniform light is obtained, and I wish to direct particular attention to the fact that there is one bulb at each end of the socket bar outside of the maximum printing length of the machine, and this together with the reflection from the end reflectors insures ample light at the ends so that uniform prints are obtained.

I also wish to stress the fact that ordinary commercial "Mazda" bulbs are utilized in this unit and give excellent printing results, and the initial cost, and cost of replacement is but a fraction of the cost of the light bulb or bulbs used in conventional machines at present on the market, and the useful life is also much longer.

A timer B is mounted on the end frame 9 as shown, and is connected with a source of energy leading to the light bulbs, a cord 25 leading to a socket (not shown), or other source of electrical energy. A dial 26 is provided on the timer B, so that it may be "set," and the bulbs energized for predetermined periods to suit the printing time required. This timer is of conventional design at present on the market, and I do not deem it necessary to show and describe it in detail.

Pockets 28 are provided in end frames 8 and 9, and a relatively thin bar 29 spans these end frames directly below said pockets, and is secured in position by means of screws 30, a plurality of resilient fingers 31 being mounted on said bar in spaced apart relation and are held in position by means of rivets 32, the heads 33 of which project beyond the face of the bar and ride on the cylinder 12 as shown, to form "stops" 34 to prevent the tracings and sensitized paper 35 and 36, being inserted beyond the effective printing area of the transparent cylinder.

Adjustable curtain strips 37 are mounted on the end frames, directly adjacent the pockets 28, the one end being turned as at 38 for engagement with the curtain attaching bar to permit forward or backward setting of said curtain bar and in a manner to be presently described, slotted openings 39 being provided in the strips 37 to accommodate the screws 30 and permit adjustment as desired.

The curtain 40 that holds the tracing and sensitized paper in position against the transparent cylinder 12, is light-proof and quickly detachable, an attaching bar 41 being secured to the one end of the curtain, with the ends projecting beyond the edges thereof, said bar having a knob 42 mounted on each end as shown, these projecting end sections being accommodated in the pockets 28, with one edge bearing against the turned end 38.

The strips 37 are of a length to permit forward or backward adjustment of the curtain attaching bar 41, and when properly adjusted, will prevent sidewise shifting of the curtain, after it has been wound snug around the transparent cylinder, it further permits the taking up of slack which may develop in the curtain material after prolonged use.

The knobs 42 serve as convenient hand grips to facilitate the attachment or removal of the end of the curtain; the curtain, directly over each finger, being cut as shown at 43, so that close, tight contact with the transparent cylinder is maintained at all times.

It will be noted that the curtain attaching bar 41 together with the bar 29 are located above the gang socket bar 21, so they are outside of the effective printing area of the cylinder 12.

The curtain 40 is of a length to provide an overlap when in position around the transparent cylinder, and a bar member 44 is secured to the free end of the curtain. A securing bar 45 is resiliently secured to this curtain bar 44 by means of spaced apart springs 46, said bar projecting beyond the edges of the curtain and being notched as at 47 to facilitate attachment to curved upwardly, projecting brackets 48 which are mounted on the circular end frames 8 and 9, the upper end of the brackets being shouldered as at 49, and acorn nuts 50 are provided so that the end of the bar is accommodated between said shoulders and said acorn nuts, and when the bar is attached, a uniform tension will be provided on the curtain, eliminating all wrinkles, and holding the tracing and sensitized paper tight and in intimate contact with the transparent cylinder and with each other.

When it is desired to make prints, the operator first takes the tracing together with a sheet of sensitized paper, places the paper on the tracing and inserts them beneath the resilient fingers 31 with the ends in abutting relation with the stops 34; he then grasps the one end of the curtain 40, places the ends of the bar 41 in the slots 28 and winds the free end of the curtain around the glass cylinder 12, and attaches the notched ends of the bar 45 to the brackets 48 between the shoulders 49 and the nuts 50, the springs 46 provide for uniform tension on the curtain forcing the paper and tracing 35 and 36 tightly against the transparent cylinders, smoothing out all wrinkles and closing all light gaps.

The timer B is then "set" to provide the required exposure, and the bulbs energized for the printing operation.

At the end of the "set" period, the timer acts to cut off the current, and the exposed sensitized paper is ready to be developed, either in a water bath, or by a dry chemical process well known to the trade.

When it is necessary or desired to make a number of small prints simultaneously, the operator merely spots the small tracings and paper as the curtain is being wound, and all of the prints can be made in the one exposure period.

While in the present instance, I have shown a plurality of bulbs in the cylinder, it will be understood that the light source may be one long fluorescent bulb, or the number of bulbs may be changed as desired without departing from the spirit of the invention.

The machine is very easy and simple to operate, it is composed of few parts and the speed

is governed by the nature and kind of material to be printed; the entire lighting arrangement is designed to be assembled, installed or removed as a single self contained unit, and the end frames are so designed that all parts are mounted on and carried thereby.

From the foregoing description it will be obvious that I have perfected a simple, practical, efficient and economical printing machine which can be manufactured and marketed at very low cost, and which is readily portable for any desired purpose.

What I claim is:

1. A machine for making prints on sensitized paper comprising spaced apart end frames, a longitudinally disposed transparent cylinder having its ends mounted in said end frames, reflectors forming a closure for said cylinder, a gang socket bar extending through said cylinder and connected to a source of electrical energy, said bar being detachably connected to the end frames, a plurality of spaced apart light bulbs connected to said bar, and a light-proof curtain mounted on said frames for encircling said cylinder when the light source is energized.

2. A machine according to claim 1 in which the end light bulbs are located beyond the maximum printing length of the machine.

3. A machine according to claim 1 in which the filaments of the light bulbs which constitute the source of light are located approximately in the longitudinal axis of the glass cylinder.

4. A machine of the class described comprising circular end frames having turned and shouldered inner rims, a longitudinally disposed transparent cylinder connecting said end frames with the ends of the cylinder received in said turned sections, reflectors detachably connected to the end frames and forming a closure for said cylinder, an elongated gang socket bar extending through said cylinder and detachably mounted on said frames, a plurality of "Mazda" light bulbs mounted thereon in spaced apart relation and connected to a source of electrical energy, pockets in said end frames, a light-proof curtain having its one end detachably mounted in said pockets, and means on the free end of the curtain, and adapted to be detachably connected to the end frames to provide a tension on said curtain.

5. A machine of the class described comprising spaced apart circular end frames having turned inner and outer edges, a longitudinally disposed

transparent cylinder with its end sections accommodated in said turned ends, reflectors detachably mounted in the outer turned edges and formed with a plurality of spaced apart openings therein, an elongated gang socket bar secured to and spanning the end frames within and at the upper portion of the glass cylinder, a plurality of light bulbs mounted thereon in spaced apart relation with the bulb filaments arranged substantially on the longitudinal axis of the cylinder, pockets in the frame, a light-proof curtain, an attaching bar secured to one end thereof and having its ends detachably mounted in said pockets, means for adjusting said bar in said pockets, and a securing bar resiliently secured to the free end of the curtain and adapted to be connected to said end frames to provide a tension on said curtain when the machine is in operation.

6. A construction as defined in claim 5 in which lugs are cast integral with the end frames and accommodate securing means for spacing and anchoring the gang socket bar and holding the frames in spaced relation.

7. A machine as defined in claim 5 in which a plurality of resilient fingers are provided to engage the transparent cylinder.

8. A construction as defined in claim 5 in which stops are provided for automatically locating the one end of a tracing and sensitized paper.

9. A machine of the class described comprising end frames, a longitudinally disposed, transparent cylinder mounted therein, pockets in the end frames, a light-proof curtain, an attaching bar secured to one end of the curtain and projecting beyond the edges thereof for removable engagement in said pockets, a series of light bulbs, resilient fingers mounted on said attaching bar and engageable with the transparent cylinder, a securing bar on the free end of the curtain, resilient means connecting said curtain and securing bar, and brackets on the end frames for detachably connecting said securing bar.

10. The construction defined in claim 9 which includes perforated, quickly detachable, end reflectors projecting beyond the end frames.

11. A construction as defined in claim 9 in which the curtain is slit at spaced apart points to accommodate the ends of the resilient fingers, and provide tight contact with the transparent cylinder.

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