

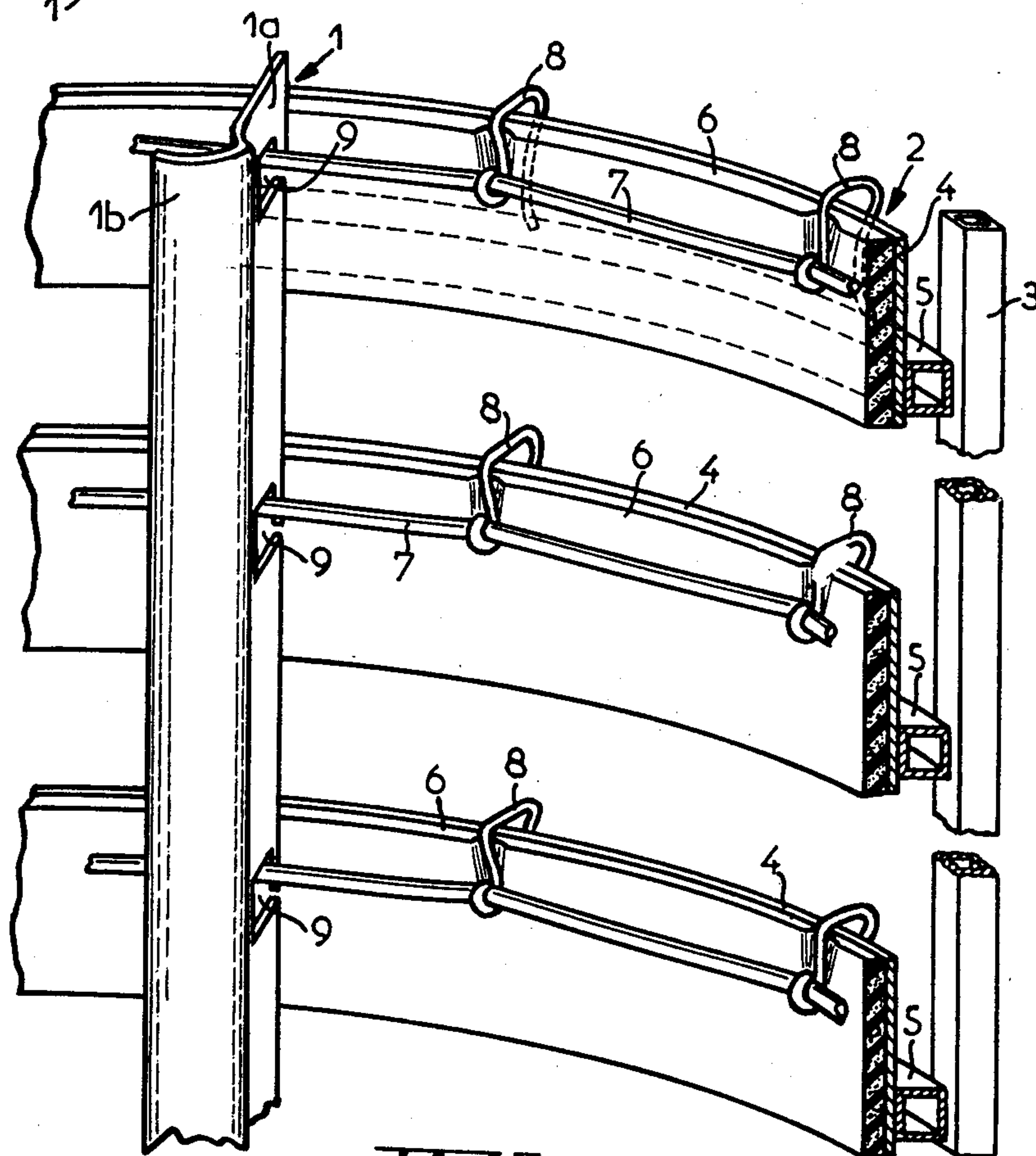
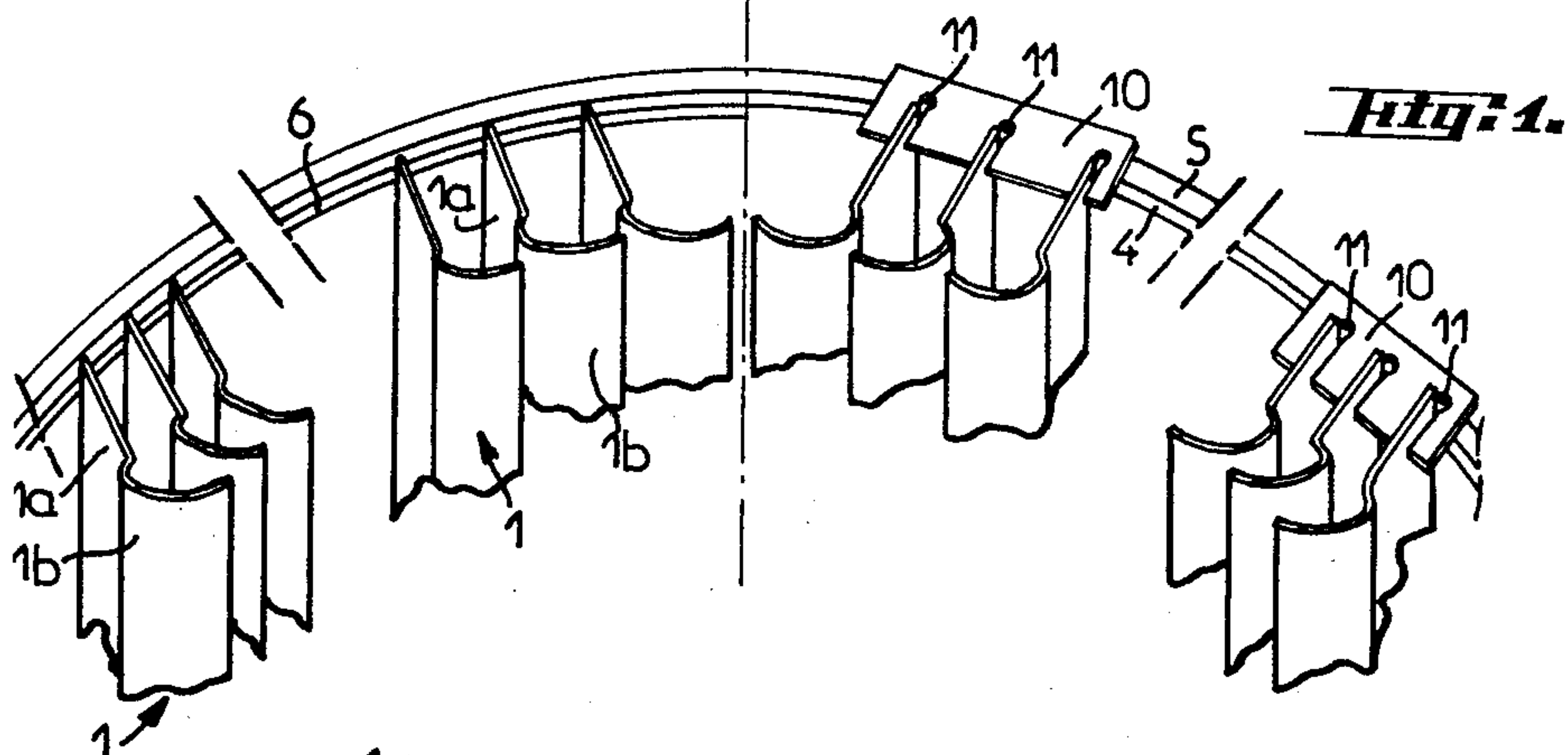
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CURVED SCREENS

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CURVED SCREENS

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4 Claims. (Cl. 88—28.9)

The present invention relates essentially to curved screens for the projection of motion pictures and the like, and has specific reference to a method of constructing curved screens of this character which consist of a plurality of juxtaposed elements.

It is known that there is an increasing trend toward the use of curved screens for motion picture projection and like uses, these screens being either concave or convex, or spherical. The manufacture of screens of this type is attended by delicate construction problems due to the difficulty of juxtaposing side by side a great number of elements each having a well-defined position. Thus, a known method of constructing screens of this type consists in utilizing strips having a specific cross-sectional contour; however, this method is characterized by a particularly high cost.

It is the essential object of this invention to provide novel curved screens made by a method eliminating these drawbacks and remarkable notably in that it consists in securing on a frame, framework or like rigid structure having a constant curvature, a plurality of rigid juxtaposed elements or sections of substantially L-shaped cross-section with at least one flange, wing or web acting as a support and a mat face adapted to diffuse the projected light and to act as an elementary screen, the different elements being so directed that their mat faces be substantially parallel to the same direction perpendicular to the projection axis throughout the screen surface.

With this method, curved screens consisting of juxtaposed elementary screen elements, each set with a view to reflect the maximum light flux toward the spectator, can be obtained while avoiding, in the case of a concave screen, the possibility for the light received by one portion of the screen from being reflected toward other portions thereof.

According to another feature characterizing this invention, in the case of a screen having a concave or convex shape, rectilinear elements of same shape and dimensions are used, disposed in parallel relationship to the generatrices of the cylinder.

According to another feature of this invention, in the case of a spherical or part-spherical screen, the elements are of arcuate configuration and so disposed as to form concentric circles.

It is a further object of this invention to provide a curved screen, consisting of juxtaposed elements for projecting motion picture films or like applications, which is constructed as described hereinabove and remarkable notably in that it comprises a frame, framework or like structure of constant curvature, and rigid angle members comprising at least one wing, flange or web acting as a support and a mat light-diffusing face constituting an elementary screen, which is secured on said frame or like structure and so arranged that the aforesaid faces be substantially parallel to a common direction perpendicular to the projection axis throughout the screen surface.

With the foregoing and other objects in view, the invention resides in the novel arrangement and combination of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed.

Other objects and advantages will become apparent

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from the following description taken in conjunction with the accompanying drawing in which:

FIGURE 1 is a perspective fragmentary and diagrammatic view showing a concave screen constructed according to the present invention; and

FIGURE 2 is a perspective fragmentary view showing on a larger scale the mounting of a separate element on a frame structure.

In the typical form of embodiment of the invention illustrated in FIGURES 1 and 2 of the drawing the screen consists of juxtaposed elements 1 of L-shaped cross-section, comprising a wing, flange or web 1a acting as a support and a face 1b constituting an elementary screen receiving the projected beam. This screen face 1b may be slightly bulged or have any other suitable contour. However, the bulged shape is advantageous in that it affords a certain freedom in the angular setting of the elements. Moreover, this face is coated or treated with a view to diffuse integrally the light received from the projector. Thus, for example, it may be ground with fine sand or coated with a mat, preferably white substance.

The elements 1 are secured on a rigid frame, framework or like structure 2 consisting of uprights 3 on which cylindrical strips 4 carried in turn by curved cross members 5 are secured, the various component elements of the frame structure being assembled through any suitable means such as welding, riveting, etc.

Secured on the front face of each strip 4, for example by cementing, is a band or sheet 6 of flexible material such as rubber or the like. Each strip is also provided with a cable or rope 7, for example a steel rope, suspended from elastic hook members 8. The number of these hooks is sufficient to cause the rope 7 to accommodate substantially the strip curvature. Of course, if a convex screen is contemplated the rope 7 will follow the strip curvature, so that these hooks may be reduced in number or even dispensed with completely.

The wings or flanges 1a of elements 1 are formed with notches 9 corresponding in number to the strips 4, to permit the passage of ropes 7 therethrough.

These elements are fitted in position by simply engaging the notches 9 of each element 1 in the ropes 7 so that the latter exert on the element 1 an elastic tension sufficient to urge same against the elastic sheet 6. Of course, each element is given a proper angular setting so that its front face 1b lie substantially at right angles to the axis of the optical projection. Due to the pull exerted by the rope 7 and to the local crushing of the flexible sheet 6 eliminating practically any risk of slipping of the supporting flange in relation to the strip, the front face 1b of each element 1 is constantly held in the desired, predetermined angular setting.

If desired, distance pieces such as illustrated at 10 in the right-hand portion of FIGURE 1 may be substituted for the sheets 6 on strips 4. Each distance piece 10 is formed with a number of notches 11 adapted to receive the flanges 1a of elements 1, the relative spacing and angular direction of these notches corresponding to those assigned to the elements themselves which are assembled thereby. These distance pieces 10 may have any desired and suitable dimensions and comprise any desired and suitable number of notches. In the example illustrated in FIGURE 1, each distance piece is formed with three notches. The relative spacing of these notches decreases gradually from the centre to the sides of the screen, to take due account of the juxtaposition of the faces 1b.

Of course, many modifications may be brought to the specific form of embodiment shown and described herein without departing from the scope of the invention. Thus, for example, in the case of a spherical or partly spherical screen, elements having the shape of circular arcs may

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be substituted for the rectilinear elements illustrated, these curved elements being disposed with a view to form concentric circles.

On the other hand, the ropes 7 may be provided at least at one of their ends with a rope tightener of any known and suitable type for keeping the ropes under a moderate tension.

Finally, elastic clamps, bayonet devices or the like may be substituted for the ropes 7 for holding the elements on the frame, without departing from the basic principles of the invention.

Of course, the invention should not be construed as being limited by the specific form of embodiment illustrated and described herein, as many modifications may be brought thereto without departing from the scope of the invention as set forth in the appended claims.

What I claim is:

1. A projection screen comprising curved strips carried by uprights and forming a substantially cylindrical frame structure with vertical generatrices, a series of juxtaposed screen elements extending parallel to said generatrices and comprising elongated rigid members each having a slightly bulged portion provided with a light diffusing front face and a flange rigid with said bulged portion and extending rearward therefrom, said front faces together constituting a single cylindrical projection surface and being substantially parallel to a direction perpendicular to the projection axis throughout the screen surface, and means for securing said rigid members on said frame structure, said means including notches provided in said flanges.

2. A projection screen comprising curved strips carried by uprights and forming a substantially cylindrical frame structure with vertical generatrices, and a series of screen elements comprising rigid front faces together constituting a single cylindrical projection surface and

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flanges solid with and extending behind said front faces, said rigid members being secured to said frame structure by means including notches provided in said flanges and being so arranged that said front faces are substantially parallel to a direction perpendicular to the projection axis throughout the screen surface, wherein said means for securing the rigid members on said frame structure comprise hook members secured on each one of said curved strips and a cable suspended from said hook members and accommodating the curvature of said strips, said cable passing through said notches of the flanges, whereby said cable is urged against said curved strips.

3. A projection screen according to claim 2, wherein each one of said curved strips is provided with a band of flexible material such as rubber inserted between said strip and said flanges.

4. A projection screen according to claim 3, further comprising distance pieces provided with a number of linear notches adapted for receiving said flanges at the ends of said flanges, said distance pieces being engaged in a corresponding number of screen elements for holding them in proper spaced relationship and angular setting.

References Cited by the Examiner

UNITED STATES PATENTS

1,122,192	12/14	Clark	88—28.9
2,476,521	7/49	Waller	88—28.9

FOREIGN PATENTS

1,037,721	8/58	Germany.
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