

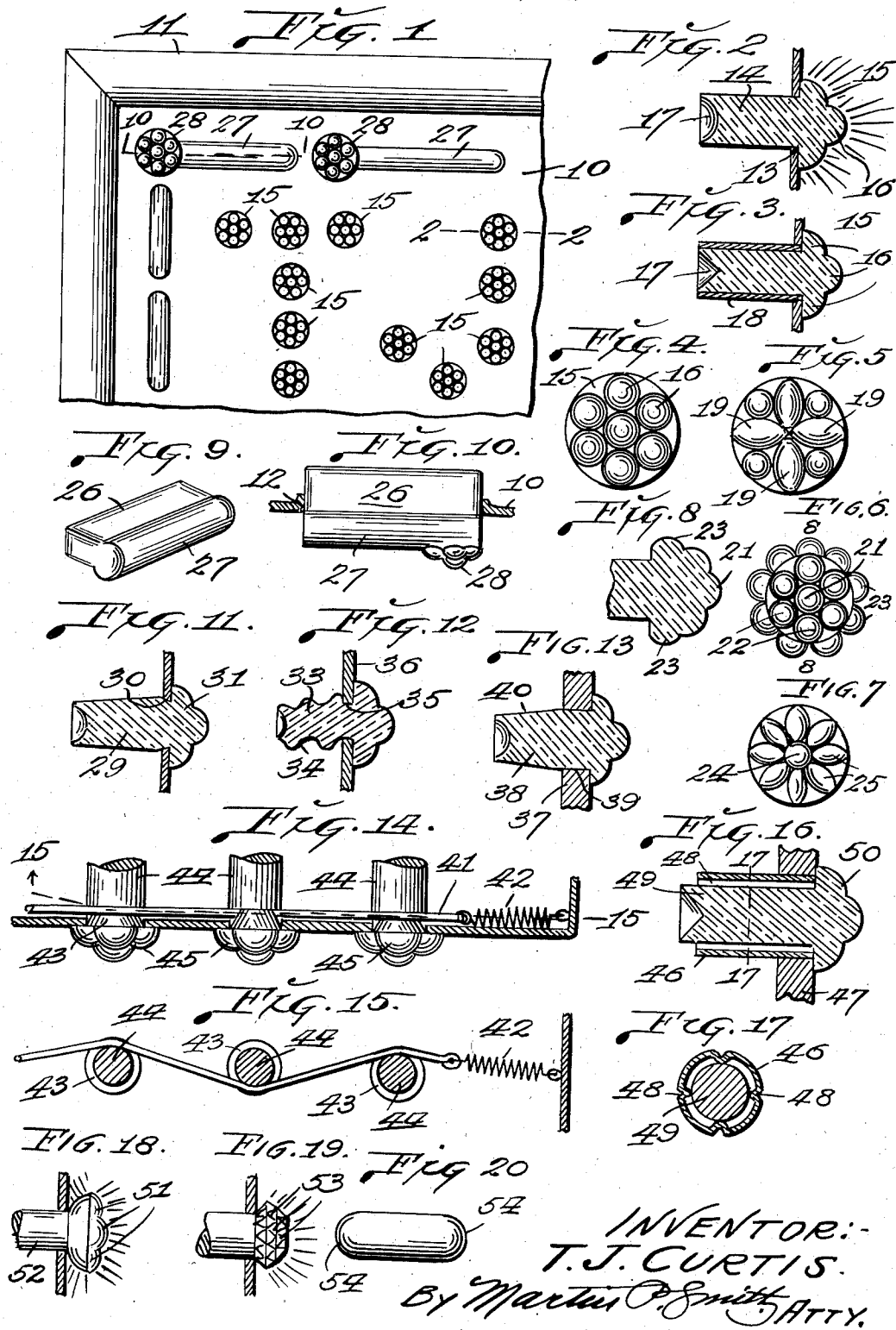
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ILLUMINATED SIGN ELEMENT

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ILLUMINATED SIGN ELEMENT

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1 Claim. (Cl. 40—133)

My invention relates generally to electrically lighted signs and more particularly to a light ray transmitting element and the means for securing the same in position upon a panel and the principal object of my invention is, to generally improve upon and simplify the construction of the illuminated sign element forming the subject matter of U. S. Letters Patent No. 2,051,288, issued to me August 18, 1936.

Further objects of my invention are, to provide a relatively simple, practical and inexpensive light ray transmitting element comprising a short shank or body portion composed of transparent material and provided on one end with an integral head shaped so as to form a plurality of lenses that are highly effective in radiating all of the rays of light that pass through the element, so that the sign or characters produced by the assembled elements will appear with equal brilliancy from all points above, below, and to the sides of the sign.

Further objects of my invention are, to provide improved means for anchoring the light ray transmitting elements in a panel that forms the background of the sign, further, to associate with the shank portions of the light ray transmitting elements, reflecting means which may be applied directly to the surfaces of the shanks or to the inner surfaces of sheaths of thin metal or the like that surround the shank and further, to construct the inner ends of the shanks of the elements so that all light rays entering the shanks will be directed outwardly toward the reflecting surfaces and from thence forwardly through the multi-lens shaped heads on the forward ends of the shanks from which the light rays are diffused in all directions, thereby producing the desired brilliant effects when the sign is in service.

Further objects of my invention are, to provide electrically illuminated light ray transmitting elements that may be utilized for producing decorative effects, for instance, borders on the panel of the sign, and to provide other forms of elements that may be interchangeably used on a sign panel for producing letters, figures, characters, and the like, and further, to construct the shank portions of the light ray transmitting elements so that the same may be easily and conveniently applied to the panel and securely anchored thereto, with the multi-lens heads positioned directly against the face of said panel.

A further object of my invention is, to provide a light ray transmitting element for signs and the like, having a head formed so as to provide a plurality of lenses with certain of said lenses dis-

posed in a circumferential row around the periphery of the head so as to project light rays radially in all directions from the multi-lens head and which provision greatly increases the illuminated effect of the sign and eliminates any dead or partially illuminated areas on the face of the panel immediately adjacent the heads of said elements.

With the foregoing and other objects in view, my invention consists in certain novel features of construction and arrangement of parts that will be hereinafter more fully described and claimed and illustrated in the accompanying drawing in which:

Fig. 1 is a front elevational view of the upper left hand corner of an illuminated sign produced with light ray transmitting elements of my improved construction.

Fig. 2 is an enlarged horizontal section taken on the line 2—2 of Fig. 1.

Fig. 3 is a horizontal section similar to Fig. 2 and showing the shank of the light ray transmitting element enclosed in a sheath having a reflecting inner surface.

Figs. 4, 5, 6, and 7 are front elevational views of different heads that may be provided on the light ray transmitting elements.

Fig. 8 is a cross section taken on the line 8—8 of Fig. 6.

Fig. 9 is a perspective view of a modified form of the light ray transmitting element and which is adapted for use in forming borders on the sign.

Fig. 10 is a horizontal section taken on the line 10—10 of Fig. 1 and showing a modified form of border forming element.

Figs. 11, 12, and 13 are sectional views similar to Figs. 2 and 3 and showing modified forms of the light ray transmitting elements and the means for securing the same in the panel of the sign.

Fig. 14 is a horizontal section taken through the panel of the sign and showing a modified arrangement for securing the light ray transmitting elements thereto.

Fig. 15 is a vertical section taken on the line 15—15 of Fig. 14.

Fig. 16 is a vertical section taken lengthwise through the center of one of the elements and showing a modified form of the means utilized for securing the element to the panel.

Fig. 17 is a cross section on the line 17—17 of Fig. 16.

Figs. 18, 19, and 20 are elevational views of modified forms of the light ray transmitting and diffusing element.

Referring by numerals to the accompanying

drawing which illustrates preferred embodiments of my invention, 10 designates the panel or wall of a sign and which may be of any size and shape and preferably provided on its marginal portions with a molding 11. This panel may be formed of sheet metal, wood, or any other suitable material.

A suitable housing (not shown) is provided to the rear of the panel or front wall 10 and arranged within said housing are sources of light, preferably electric lamps.

Panel 10 is perforated for the reception of the shank portions of the light ray transmitting elements and these perforations may take different forms, for instance, slots 12 for the reception of the elongated elements and circular openings 13 that receive the cylindrical shanks of the elements.

Inasmuch as a number of elements are utilized to form the letters or other characters of the sign, the openings 13 are arranged in groups to correspond with the letters and characters of different shapes.

In Fig. 1, I have illustrated a number of elements arranged to form a border around the marginal portion of the panel and other elements arranged to form the letters T J.

The form of light ray transmitting element illustrated in Fig. 1 comprises a short cylindrical body or shank 14 composed of transparent material, such as glass or any of the well known plastics, such as Catalin, Lucite, or the like, and formed integral with one end of this shank is a slightly enlarged head 15 that is shaped so as to provide a plurality of convex lenses 16, the latter being preferably arranged with one lens in the center and a plurality of lenses surrounding said central lens.

The inner end of the shank 14 is provided with a recess 17 which may be either concave as illustrated in Fig. 2 or substantially cone-shaped as illustrated in Fig. 3. The external surface of the shank 14 and also the convex surfaces of the lenses 16 may be either plain and polished or they may be etched or frosted after the manner of a conventional frosted electric light bulb. Further, the external surface of the shank 14 may be coated with mercury, aluminum, or other substance or substances that produce a reflecting surface and thus, all light rays that pass through the concave surface of the recess 17 will be directed outwardly against the reflecting surface and thence forwardly through the lenses 16 so as to produce the desired illumination on the face of the sign panel.

In Fig. 3, the shank of the light ray transmitting element is shown encased in a thin tube 18, preferably of metal, and which is provided with an internal reflecting surface that is effective in directing the light rays lengthwise through the shank and through the multi-lens head thereof.

I have found in producing the light ray transmitting elements, the use of transparent substances such as Catalin, Lucite, and the like, is particularly advantageous for such substance or substances are particularly effective in transmitting light rays from the lamps to the rear of the panel, lengthwise through the shanks and heads of the elements with very little, if any, loss of said rays and as a result the effectiveness of the light diffusion by the multi-lens heads is materially increased.

In Fig. 4, I have shown a head composed of a centrally arranged lens surrounded by a circular row of lenses and the construction illustrated in Fig. 5 comprises four oval convex lenses 19 ar-

anged alternately with four circular convex lenses 20.

In the construction illustrated in Figs. 6 and 8, the head is composed of a centrally arranged circular convex lens 21 surrounded by a plurality of similarly shaped lenses 22 and the peripheral portion of the head or that portion to the rear of the lenses 22 is made up of a row of convex lenses 23, the axes of which are radially disposed and occupy a plane at right angles to the axis of the central lens 21.

In Fig. 7, I have shown the head comprising a centrally arranged convex lens 24 surrounded by a plurality of radially disposed oval-shaped convex lenses 25.

In Fig. 9, I have shown a light ray transmitting element particularly adapted in forming a decorative border for the sign and such element comprises a shank 26 substantially rectangular in form and which is adapted to be positioned in a slot such as 12 that is formed in the panel 10.

Formed integral with one of the longitudinal faces of the shank 26 is a substantially cylindrical body 27 that forms the head of the element and which occupies a position in front of the panel in which the shank 26 is seated.

To further increase the effectiveness of the border forming elements a multi-lens head 28 may be located on either end or in the center of the elongated member 27 and said head 28 may have the shape of any one of the heads illustrated in Figs. 4 to 7 inclusive.

To firmly anchor the light ray transmitting element to the panel of the sign and particularly where said panel is composed of thin sheet metal, the shank portion of the element designated by the numeral 29 in Fig. 11 may be slightly tapered lengthwise and with a shallow groove 30 formed in said shank immediately adjacent the multi-lens head 31. Where such construction is employed, the shank is forced through an aperture in panel 32 until the edge of the panel around said aperture enters the groove 30.

In the construction illustrated in Fig. 12, the shank 33 is provided with a quick acting thread 34 that enables said shank to be quickly screwed into an opening 35 that is formed in the panel 36.

The form of element illustrated in Fig. 13 is particularly adapted for use in connection with a panel 37 having considerable thickness or where the panel is formed from wood or the like. In this construction, the shank 38 of the element is provided with a short cylindrical portion 39 that is adapted to fit snugly in an aperture that is formed in the panel 37 and the remaining portion of the shank is slightly tapered as designated by 40 in order to facilitate its passage through the aperture.

The construction illustrated in Figs. 14 and 15 is particularly adapted for the securing of a plurality of the elements to the panel with a single member, for instance, a wire 41, one or both ends of which are connected to retractile springs 42 and the latter being secured to the end walls of the housing to the rear of the panel. Where such fastening means is provided, the wire 41 passes alternately above and below the light ray transmitting elements and occupies circumferential grooves 43 that are formed in the shanks 44 of the elements immediately to the rear of the heads 45 thereof.

Thus the elements are retained in proper position on the panel by the member 41 which is held in a fairly taut condition by the springs 42 and if it is desired to remove one or more of the ele-

ments without disturbing the others, it is only necessary to exert pressure against the wire so as to move the same out of the grooves in the elements to be removed and the movement resulting from this pressure is permitted due to the arrangement of the retractile springs 42 between the ends of the wire 41 and the side walls of the housing. After the pressure on the wire 41 is relieved, the retractile springs 42 automatically take up the slack in said wire and maintain the same in engagement with the elements seated in the panel.

In the construction illustrated in Figs. 16 and 17, a tube 46, preferably of thin sheet metal, has one end seated in the panel 47 with the forward end of said tube flush with the front face of said panel and portions of the wall of said tube are pressed inwardly to form longitudinally disposed ribs 48. These ribs provide bearings for the shank 49 of the inserted light ray transmitting element and when the latter is properly positioned, the marginal portion of the head 50 overlies the front end of the tube 46. If desired, the inner surface of tube 46 may be polished or treated to provide a reflecting surface which adds materially to the brilliancy of the sign while the same is in service.

When a sign constructed in accordance with my invention is in service and the electric lamp or lamps within the housing to the rear of the panel are lighted, light rays from said lamps will pass into and lengthwise through the shanks or bodies of the elements and through the multi-lens heads on the forward ends of said shanks and thus, said light rays will be radiated and diffused in all directions so as to produce a particularly brilliant and attractive effect and the illumination being such that it is uniform and highly effective when viewed from any direction in front of, above, or to the sides of the sign.

The brilliancy of the sign may be increased by producing on the front of the panel a polished, white or light colored surface, and especially attractive effects may be produced by using colored electric lamps within the housing of the sign or by forming the light ray transmitting elements of tinted or colored transparent substances.

Especially desirable features of my invention are, the provision of the multi-lens heads for the light ray transmitting elements and the recessing of the inner ends of the shanks so as to produce concave or substantially conical faces, for such construction is highly effective in the transmission and diffusion of light rays from the source

or sources of light and which light rays are multiplied and diffused forwardly and radially from the heads of the elements by the convex lenses forming said heads.

In Fig. 18, the front portion of the head of the light ray transmitting and diffusing element comprises a cluster of convex lenses 51 and the rear portion of said head is in the form of a rearwardly presented convex lens 52 that is effective in directing light rays rearwardly and radially outward onto that portion of the face of the panel immediately adjacent the head.

In the modified form of element illustrated in Fig. 19, the head on the forward end of said element is provided with a plurality of facets 53 similar to the facets that are cut on diamonds and other precious stones. These facets function as prisms to radiate the light rays that pass through the shank and head of the device.

In the modified construction illustrated in Fig. 20, both ends of the body or shank of the element are provided with convex lens portions 54 which co-operate in transmitting light rays through the element and diffusing the same from the end of the element that is positioned in front of the panel of the sign.

Thus it will be seen that I have provided an illuminated sign element that is relatively simple in construction, inexpensive of manufacture and very effective in performing the functions for which it is intended.

It will be understood that minor changes in the size, form and construction of the various parts of my improved illuminated sign element, may be made and substituted for those herein shown and described, without departing from the spirit of my invention, the scope of which is set forth in the appended claim.

I claim as my invention:

The combination with a sign panel having a plurality of apertures, of transparent sign elements having body portions positioned in the apertures in said panel, each element provided on one end with a head formed with a plurality of convex lenses, there being a circumferential groove formed in each body portion adjacent said head, a flexible member seated in the grooves formed in the body portions of said elements for securing the same to the panel, which flexible member passes alternately above and below said sign elements and a retractile spring arranged between one end of said flexible member and a fixed part of the sign panel.

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