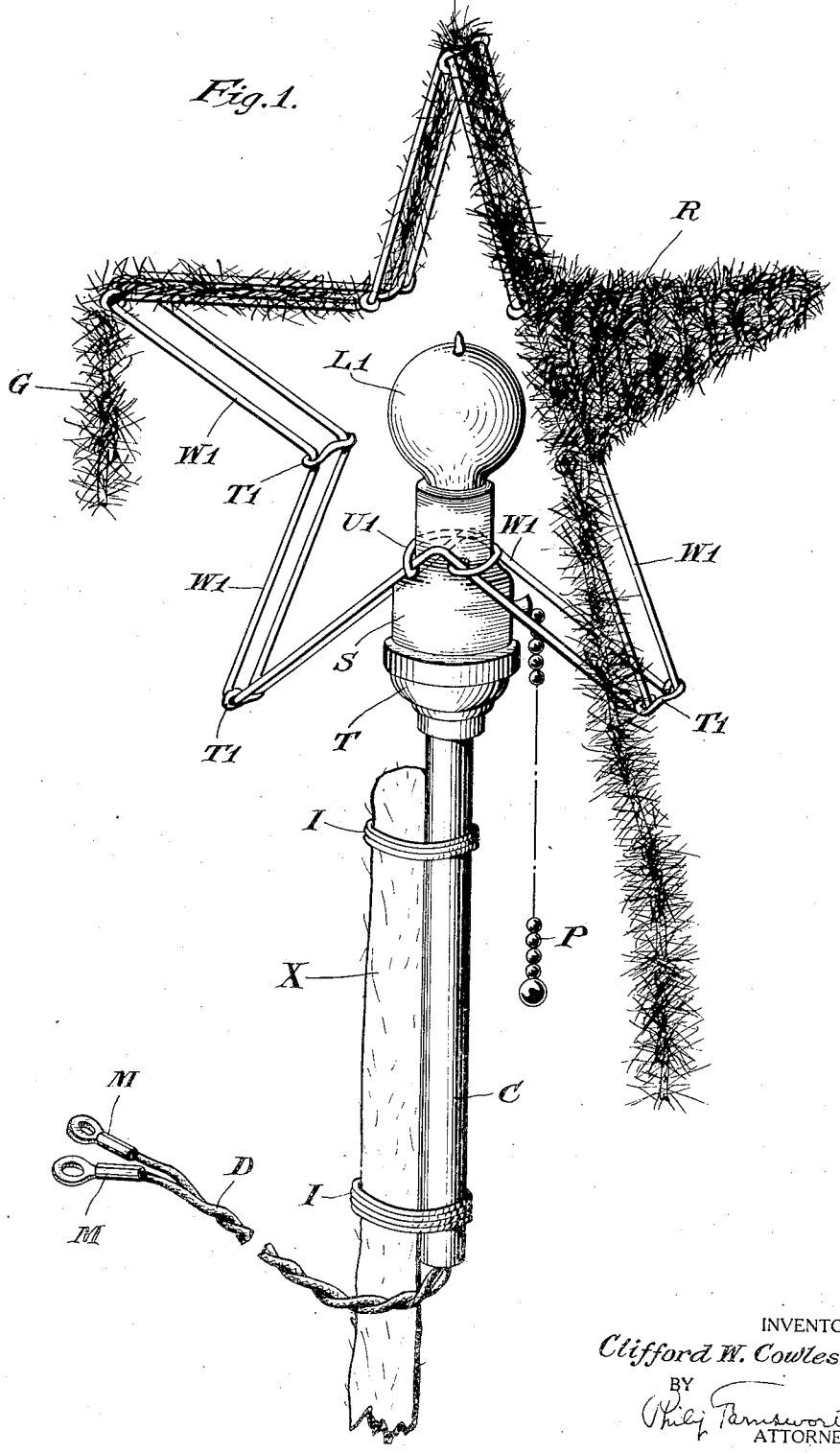
June 23, 1925. 1,543,424

C. W. COWLES

LIGHT SOURCE COVERING

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Fig. 1.




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Fig. 2.

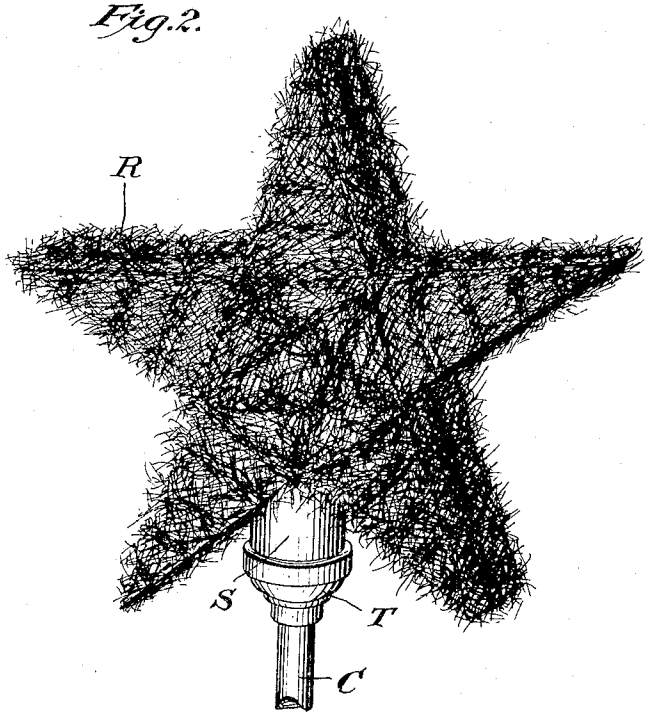
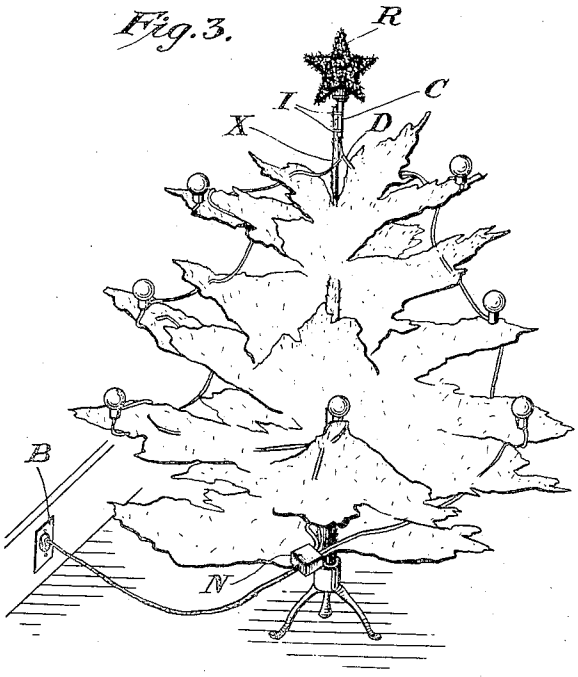



Fig. 3.




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Fig. 4.

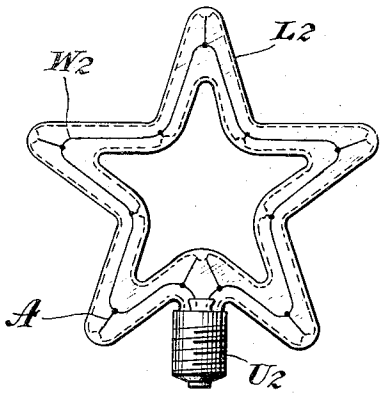



Fig. 5.

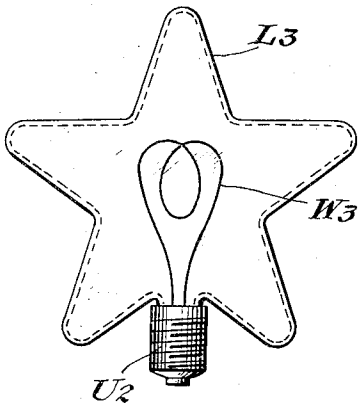
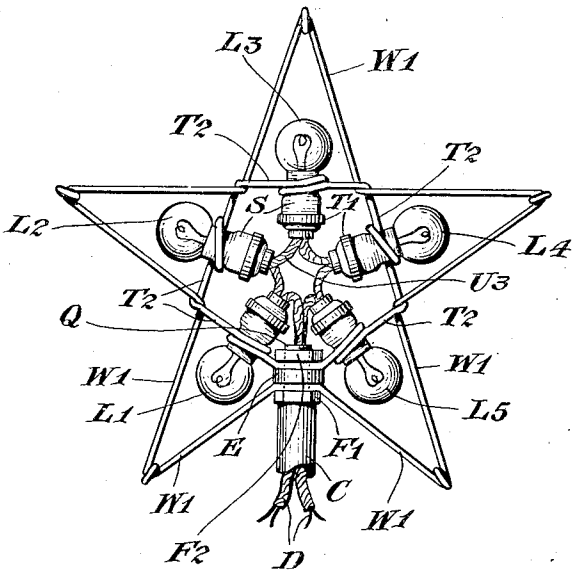



Fig. 6.




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# UNITED STATES PATENT OFFICE.

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## LIGHT-SOURCE COVERING.

Application filed January 9, 1924. Serial No. 685,096.

*To all whom it may concern:*

Be it known that I, CLIFFORD W. COWLES, a citizen of the United States of America, and a resident of New Britain, State of Connecticut, have invented certain new and useful Light-Source Coverings, the principles of which are set forth in the following specification and accompanying drawings, which disclose the form of the invention which I now consider to be the best of the various forms in which the principles of the invention may be embodied.

This invention relates to internally illuminated bodies such as and including Christmas tree stars, i. e., those commonly placed at the tops.

Among the objects of the invention is the improvement referred to in the following paragraph for the type of device which includes a covering material interposed between a source of light and the observer's eyes.

The invention consists of a novel arrangement (hereinafter described in detail in practical form) of electric lamp or lamps and a covering material therefor which normally causes a non-glaring but bright glow from the lamp and also and preferably causes a twinkling effect upon relative motion of the star or other internally illuminated device and the observer's eyes. The invention consists also of other features in connection with said principal feature.

The drawing shows an embodiment of the invention which is practical for manufacture and use, consisting of a complete self-contained unit including an electric incandescent lamp in its socket, the device requiring the user only to attach the complete unit to the tree and connect the circuit leads in the lighting circuit.

Figure 1 is a full scale elevation of a small star for a domestic tree, and embodying the invention the star portion itself being shown for clearness as incompletely manufactured as to the covering material, which in final form preferably completely encloses the lamp; the device being shown in Fig. 1, however, as otherwise complete including the lamp socket and the conduit for the circuit leads.

Fig. 2 is a front elevation of a completed device, (save for the breaking away of the lower part of the conduit or circuit lead tube) and showing the light-covering material on its skeleton frame of Fig. 1.

Fig. 3 is a view of a small tree with the improved star at the top, the lamp inside the star being connected by the circuit leads from its socket, in place of one of the lamps of the ordinary Christmas tree, the lighting circuit being shown as connected to a base-board socket as commonly employed for the purpose; and the star then being attached to the top of the main stem of the tree by the circuit lead conduit projecting from the star, so that the star itself thereby is held in erect position at the top of the tree.

Fig. 4 shows a modified form of lamp (from which the enclosing reflecting light-covering material of Fig. 2 has been omitted for clearness) wherein the frame for the reflecting material consists of the incandescent lamp itself serving in lieu of an independent frame, the lamp itself being shaped to constitute a five-pointed star outline and replacing the star-shaped reticulated frame of Fig. 1 as a base or support for the lamp-covering reflecting material.

Fig. 5 shows another modified form of incandescent lamp wherein the lamp itself serves as the frame for the reflecting covering material, of Fig. 2, the bulb or tube itself being shaped as a complete star without any central opening as in Fig. 4.

Fig. 6 shows a form of frame similar to that of Fig. 1 (and also reticulated to permit access of rays from the lamp to the reflecting covering material) but adapted for larger sizes of stars as for municipal Christmas trees, and embodying a plurality of lamps for the purpose of greater total illumination inside the star and of better distribution of light throughout the interior of the star.

Heretofore Christmas tree stars, as the crowning decoration of the tree and similar devices, have been dependent for their illumination upon outside sources of light, so that even when composed of reflecting material they did not shine very brightly, and therefore even if they twinkled to any extent at all, such twinkling effect was only in proportion to their dimness. The particular object of this invention is to provide a Christmas tree star or the like which

will glow very brightly (i. e., distinctly) indeed, but without glare, and which may have a very marked and striking twinkling effect due to the nature of the material surrounding the lamp, said material providing a multiplicity of minute reflecting surfaces arranged in many diverse planes so that upon each relative movement of the star and the observer's eyes, a different set of the various sets of bright reflecting surfaces acts on the eyes, the result of the quick shift of glowing light from one set of reflecting surfaces to another and yet another is a distinct effect of striking twinkling of a brightly glowing but non-glaring star.

In all forms of the invention, and irrespective of various features other than the above characterizing feature, the incandescent electric lamp is not substantially exposed to the observer's eyes as shown in the uncompleted star of Figs. 1 and 4–6, but most of the rays of the electric lamp are prevented from direct passage to the observer's eyes by means of the material (Fig. 2) having a plurality of preferably opaque but brightly reflecting surfaces arranged in the various different planes, so that, upon the slightest movement of either the observer or of the star at the top of the tree (as by room air currents), the star produces the distinct and striking twinkling or glowing effect.

In Fig. 2 is shown a complete star embodying the invention. The glowing and preferably twinkling effect, and the construction by which it is obtained, I believe to be wholly novel in the art. I have found that the best effect is obtained by employing an ordinary Christmas tree tinsel, preferably in strings or garlands, by winding such garlands to surround the lamp, (or a recticular frame around the lamp) in such way as to obstruct the greater part of the direct rays of the lamp. This results, as illustrated, in a layer of intermingled lengths of tinsel having surfaces comprising a multiplicity of minute reflecting surfaces arranged in diverse planes, said layer being more pervious to light from the concealed source through the interstices between the intermingled lengths of tinsel and incident on the multiplicity of minute exterior reflecting surfaces of the layer than to direct rays from the concealed source incident on the observer's eyes. Such material does not necessarily constitute a complete obstruction between all the direct rays from the lamp and the observer's eyes, but is itself a sort of reticulated structure permitting passage of some of the direct rays, but only at small spaces between the minute tinsel pieces, from lamp to eyes, and not sufficient to cause the effect of a glare of light. Such minute subdivided direct rays, through small spaces, contribute to the twinkling effect, upon any slight relative movement of the star or the observer's eyes, because upon such movement a new set of minute openings between the parts of the covering material may be interposed between the lamp and the observer's eyes, and between the time of such two exposures of direct rays, there may be obstruction by a set of minute tinsel pieces, the reflecting surfaces of which are not directed toward the eyes. But a large proportion, if not always all, of the twinkling effect is due to reflection of the rays by the multiplicity of minute reflecting surfaces directed toward the observer's eyes.

As is show in Figs. 1 and 2, the tinsel preferably is placed somewhat loosely or not in a very thick layer around the lamp, so that the rays from the lamp may reach at least to the minute exterior reflecting surfaces which are exposed directly to the observer's eyes, and so that the material will not offer a complete obstruction between the lamp and such exterior reflecting surfaces. The application of the reflecting material, however, may be so tight or thick that before the rays reach the observer's eyes they may have passed indirectly from the lamp to reflecting surfaces inside the mass of covering material, and thence to the exterior reflecting surfaces which finally pass the rays to the observer's eyes, i. e., the rays may have been reflected from one set of reflecting surfaces to another set before reaching the eyes. But it is sufficient, whatever be the application of the reflecting material to the lamp, that some of the rays emanating from the lamp finally are passed to the eyes by the plurality of reflecting surfaces, even although some of the rays may pass directly from lamp to eyes, and/or some rays indirectly from the lamp to one set of reflecting surfaces to another set of reflecting surfaces before passing to the eyes.

The invention may be characterized further as follows. Although the lamp is more or less covered by preferably opaque material, yet the object is to permit the passage of the rays to the observer's eyes, and it is even useful and permissible that some rays be permitted to pass directly from the lamp to the eyes, provided that such direct passing is not so great as to cause an excessive glare or to too greatly reduce the distinct and striking twinkling effect. That is, it is necessary, in order to obtain the twinkling effect or the glow which distinctly defines the shape of the covering material desired, that most of the rays of the lamp be prevented from direct passage to the eyes and that most of said rays be permitted to pass indirectly to the eyes by way, successively in point of time, of the multiplicity of minute reflecting surfaces arranged in various different planes. Nevertheless, the reflect-

ing mass is so porous, so to speak, to the rays from the lamp, that a substantial quantity of rays from the lamp may be allowed to pass directly to the eyes without seriously impairing the desired novel effect.

The mass of multiple reflecting surfaces may consist of the garlands, which is the trade-name of the ordinary tinsel strings commonly employed as Christmas tree decorations. The little flat hairs projecting laterally from the central string or core, in various directions, usually comprise a copper foil base which is plated either with silver or gold. An electric lamp enclosed in a not too thick mass of such garlands, according to my invention, will give a silver or golden glow (depending on whether the small flat hairs are plated with silver or gold) throughout the star from that set of the multiplicity of reflecting surfaces which happens to be facing the observer's eyes.

My invention includes all materials substantially equivalent to the tinsel garlands described. The invention includes also the various practical features of the assembly shown in the drawings as follows.

Figure 1 shows a practical method of manufacture, as well as a practical mode of use. A fairly stiff metal wire is bent into the shape of a five-pointed star $W^1$, preferably consisting of two parallel lengths of wire as shown, to constitute sufficient thickness of this reticulated frame. Such two wires are held in parallelism by transverse wire connectors $T^1$ having their ends bent around the parallel wires as shown in Fig. 1. The thickness of this reticulated frame $W^1$ is about the same as the diameter of the lamp (i. e., not very much greater or less), and preferably a little less, so that when the covering material R of Fig. 1 (as the tinsel garlands) is applied to frame $W^1$, said reflecting material encloses the lamp, the latter preferably not touching the covering R although covering R preferably is noninflammable as in the case of the silver or gold plated copper material of the garlands. The frame $W^1$ of Fig. 1 is reticulated in the sense that while it serves as a support for the reflecting covering R, yet it does not unduly obstruct the passage of the rays of light from the lamp to the outer reflecting surfaces of covering R.

A socket S for the lamp is secured in the ordinary way to fixture T secured to a metal conduit C. The smaller end of socket S is passed between the two parallel wires of frame $W^1$. Then the electric incandescent lamp $L^1$ is screwed into socket S. A wire $U^1$ is bent around the upper or smaller part of socket S. The ends of said wire $U^1$ are bent around and secured to the parallel wires of frame $Y^1$. Thus lamp L and its socket S are formed into a unit with frame $W^1$ and the lamp cannot be pulled out from said frame. Insulated socket leads D extends from the lamp socket and are housed in conduit C from the remote end of which they project to any suitable attached terminals as M.

To frame $W^1$, in Fig. 1, is applied garland string G, or several lengths of such tinsel strings in succession, as by coiling on and around the wires of the frame until the entire frame is covered by the minute opaque reflecting surfaces in various planes, in the manner shown at R (Figs. 1 and 2) :—the opaque cores of the strings are spaced apart from one another as clearly shown in Figs. 1 and 2, forming a coarsely reticulated structure similar to that of wire frame $W^1$ and for the same purpose, i. e., to permit the passage of light thru the comparatively wide spaces between the opaque material of the wires of the frame and the cores of the tinsel strings or garlands.

The spaces between the opaque tinsel cores are occupied by the above described little flat metal foil hairs, as is also clearly shown in Figs. 1 and 2. The light from the internal source passes more or less directly thru this more or less loose mass of reflecting hairs. This arrangement constitutes an interwinding or interweaving of the small tinsel hairs into a fabric-like structure which is the effective thing in causing the nonglaring external glow characteristic of the invention. When the frame has star-shaped projections as shown, (in Figs. 3 and 4 as well as in Figs. 1 and 2) or when the frame has any outward projections, any such projections assist in holding the tinsel interwinding in place over the light-source, especially when the garland string is wound or coiled in place around the frame as distinguished from being wound or otherwise woven before being applied to the frame. The device when completely provided with the covering material as shown in Fig. 2 is ready for sale and use, including the permanently incorporated lamp and its socket.

The user, in applying the star to the Christmas tree, simply secures it in erect position to the top of the main stem of the tree, as shown in Fig. 3, by binding conduit C to the tree as by strings I (Figs. 1 and 3). He then connects terminals M of circuit leads D to the lighting circuit of the tree, which may be the ordinary 110 volt house circuit. As shown in Fig. 3, the star with reflecting surfaces R, may be connected in lieu of one of the lamps of an ordinary Christmas tree lighting circuit, and in such case the terminals M of Fig. 1 may be replaced by an ordinary threaded terminal plug like $U^2$ of Figs. 4 and 5. Such lighting circuit may be connected, as is common, to connector N (Fig. 3) which in turn is connected to plug B screwed into the common baseboard socket. If the twinkling star is

connected in a circuit separate from the rest of the tree lights, it may have a pull switch P, Fig. 1.

The form of the frame for supporting the reflecting surfaces R, which is shown in Fig. 4, includes a complete incandescent lamp of star-shaped form, wherein both the filament $W^2$ and the enclosing evacuated tube are made in the form of a five-pointed star with a hollow center. This gives the same appearance and action as shown in Fig. 2, after the opaque reflecting material R is mounted or wound upon the star of Fig. 4 as a frame; but while it is possible, in the case of the frame of Fig. 4, to have the covering material R of Fig. 2 extend over the hollow center of the lamp of Fig. 4, such reflecting material may be mounted simply on the star-shaped lamp without covering the hollow center.

In the frame shown in Fig. 5, the ordinary shaped, centrally located filament $W^3$ is shown but with an enclosing vacuum $L^3$ having an over-all five-pointed star shape, the points constituting projections affording means for winding on the garlands in a manner generally similar to Fig. 1 to produce the completely garlanded star of Fig. 2.

In each of the forms of frame of Figs. 4 and 5, the incandescent filament terminates in circuit terminals on plug $U^2$ as in ordinary incandescent lamps as in the case of lamp $L^1$ of Fig. 1. And, as in Fig. 1, the garland frame of Figs. 4 or 5 may have its plug screwed into socket S, (Fig. 1) and be provided with fixture T and circuit lead conduit C; or, if desired, plugs $U^2$ of Figs. 4 and 5 may be screwed directly into the lamp sockets of the general lighting circuit of the tree shown in Fig. 3. Preferably, however, each complete device is provided with its own lamp socket S and with a conduit C (Fig. 1), which latter facilitates attachment of the star in erect form to the top of the tree, and facilitates electrical connection with a tree lighting circuit by way of suitable terminals or a plug on the ends of leads D projecting from the remote end of conduit C.

I do not claim any novelty in the forms of lamps shown in Figs. 4 and 5, as lamps, their relation to my invention being as frames for the reflecting material in lieu of the reticulated frame $W^1$ of Fig. 1.

In Fig. 6 is shown an embodiment of the invention comprising a large star suitable for the tops of large Christmas trees such as municipal trees or those used in large halls and churches for larger assemblages of people than domestic groups; Fig. 6 being in more reduced scale than the other figures. In the use of the larger star of Fig. 6, stronger interior illumination is required. For such purposes, I prefer either the frame constituted by the special lamp of Figs. 4 or 5, or else the multiple-lamp arrangement shown in Fig. 6 supported by a wire frame similar to that of Fig. 1. In Fig. 6, plural lamps $L^1$—$L^5$ are provided, one for each point of the star, and permissively a central lamp not shown, but located as in Fig. 1. In Fig. 6 the main reticulated frame $W^1$ may consist of the double parallel-wire arrangement of Fig. 1, and in addition, of a wire $T^2$ which in manufacture is wound successively around the plural lamp sockets S and around the wires of the main frame $W^1$, thereby constituting a support, mounted with main frame $W^1$, for all the lamps. The plural lamps are electrically connected in series by insulated leads $U^3$. The ends of the leads from the lowest lamp extend to and through the conduit C projecting from the remote end of the said conduit as leads D to the main lighting circuit. As shown in Fig. 6, the lamp-supporting wire $T^2$ is not wound around main frame $W^1$ at the point where conduit C is connected to frame $W^1$; said lamp-supporting wire $T^2$ being looped around a threaded conduit-extension Q; and wires $W^1$ and $T^2$ may be spaced apart at this location by a washer or spacer E. All these parts are tightly secured together by nuts $F^1$, $F^2$ screwed or threaded extension Q. The result of the construction of Fig. 6, after the reflecting covering R is applied as shown in Figs. 1 and 2, is a complete large unit throughout the interior of which the total illumination is distributed so that the bright but not glaring glow is uniform over the entire exterior of the star and therefore affords the most desirable foundation for the twinkling effect caused by the shift from one bright glow to another from a different set of reflecting surfaces.

In addition to the striking twinkling effect and the general practical nature of the invention in respect of both manufacture and use, the invention possesses the following advantages. The entire structure, including the opaque but reflecting covering R, is not inflammable, is sturdy and not easily broken, the reflecting covering R constituting a cushion shield for the vacuum tube lamp even when no reticulated frame $W^1$ of Fig. 1 is used to enclose the lamp but where the reflecting covering R is directly supported on the lamp as in the forms of Figs. 4 and 5. In addition to the winding of the garlands on the frame, and the tying on to the frame of the ends of the garlands, they may be secured thereto by small wires, not shown, so that the garlands cannot be detached save when desired. It is desirable, however, that the garlands be not so permanently applied as to prevent a removal of part of them by the user in order to permit the substitution of a new lamp in case the one sold with the set should burn out;

or for that purpose, socket S and/or lamp $L^1$ may be provided with readily removable means of attachment to frame $W^1$.

While other materials may be employed for the reflecting material R, yet the ordinary commercial garlands or tinsel strings are quite satisfactory in all respects including the fact that they do not oxidize, and they lend themselves admirably to winding on the frame in the proper manner so as not to totally obstruct too much of the rays from the lamp but only prevent too bright a glare, while permitting a bright glow preferably subject to the twinkling effect characterizing the invention. I know of nothing of this kind in the prior art, regardless of the material employed for the reflecting material R characterizing the invention.

I am aware that I am not the first inventor of more or less ornamental devices wherein a covering or material concealing a source of light has exterior visible surfaces producing reflections from the concealed source, but that others previously have disclosed such devices, including that of German patent to Woelfer 172,764 of 1905, British patent to Murrey 155,955 of 1919, and U. S. patent to Ludwig 1,410,336 of 1922. But my invention of improvements on such devices, including a covering material for the source of light, such as an electric lamp, involves the employment of lengths of tinsel arranged in a not-too-thick fabric-like finely reticulated layer of intermingled lengths of the tinsel, the surface of such layer comprising a multiplicity of minute tinsel reflecting surfaces arranged in diverse planes, the same constituting a covering material for the purpose which is radically different from any prior covering therefor, and one which produces the novel result, due to the extremely large number of minute exposed reflecting surfaces, of a distinct uniform glowing of the body of desired shape which is substantially free from any effect from direct rays constituting either a glare or a degree of obscuration of the shape of the body due to comparatively large reflecting surfaces.

I particularly point out and distinctly claim the part, improvement, or combination which I claim as my invention or discovery, as follows:—

1. The improved device for covering a light source concealed thereby, which comprises a supporting frame of desired shape, in combination with a covering of opaque tinsel supported on the exterior of said frame in the form of a substantially continuous winding of tinsel garland strings the cores of which are spaced apart from one another in said winding and the lateral hairs of which occupy said spaces.

2. The improved device for covering a light source concealed thereby, which comprises a supporting frame of desired shape having outward projections, in combination with a covering of opaque tinsel having reflecting surfaces and supported on the exterior of said frame in the form of a substantially continuous winding constituting a fabric-like structure; said frame projections assisting in retaining said winding in place and said frame being hollow to enclose a light-source; the opaque tinsel parts being spaced from one another in said winding sufficiently to permit the passage of light thru the winding by way of their reflecting surfaces.

3. The improved device for covering a light source concealed thereby, which comprises a supporting frame of desired shape, in combination with a covering of opaque tinsel supported on the exterior of said frame in the form of a substantially continuous winding of tinsel garland strings constituting a fabric-like structure; said frame being hollow to enclose an internal source of light; the cores of said strings being spaced apart in said winding, said spaces being occupied by the laterally projecting opaque metal tinsel hairs having reflecting surfaces, and said hairs also being spaced apart in said winding sufficiently to permit passage of light thru the winding by way of said spaces and said reflecting surfaces of the opaque hairs.

4. A device for covering a light source concealed thereby, which comprises a supporting frame of desired shape, in combination with a covering of metal hairs having reflecting surfaces and supported on the exterior of said frame in the form of a substantially continuous interwinding constituting a fabric-like structure; said frame being hollow to enclose an interior light source and permitting passage of light from such source to said fabric-like winding; and said hairs being sufficiently spaced apart in said winding to permit passage of light thru the winding by way of the reflecting surfaces of said opaque hairs.

5. The improved device for covering a light source concealed thereby, which comprises a supporting frame of desired shape, in combination with a covering of opaque tinsel supported on the exterior of said frame in the form of a substantially continuously wound tinsel garland string constituting a fabric-like structure; said frame being hollow to enclose an internal light source and of opaque material reticulated to permit passage of light from the light source; the successive portions of the opaque core of said tinsel string being spaced apart in said fabric-like winding; such spaces being occupied by the lateral opaque metal hairs having reflecting surfaces, and said hairs being spaced apart sufficiently to per-

mit passage of light thru the winding by way of said spaces and the reflecting surfaces of the opaque hairs.

6. The improved device for covering a light source concealed thereby, which comprises a star-shaped frame, in combination with a covering of opaque tinsel supported on the exterior of said frame in the form of a substantially continuously wound tinsel garland string constituting a fabric-like structure, said frame being hollow to enclose an internal light source; and the star-projections of said frame assisting in holding said tinsel string on said frame; the successive portions of the opaque core of said string being spaced apart in said fabric-like winding, such spaces being occupied by the lateral opaque metal hairs having reflecting surfaces; and said frame and winding permitting a non-glaring external glow from the internal light source.

7. The improved device for covering a light source concealed thereby, which comprises a frame of desired shape, in combination with a covering of opaque tinsel supported on the exterior of said frame in the form of a substantially continuously wound tinsel garland string constituting a fabric-like structure; said frame being hollow to enclose an internal light source; the successive portions of the opaque core of said string being spaced apart in said winding, such spaces being occupied by the lateral opaque metal hairs having reflecting surfaces; and said frame and winding permitting a non-glaring external glow from the interior light source.

8. The improved internally illuminated device which comprises a light-covering of minute opaque tinsel hairs having reflecting surfaces; an electric lamp surrounded by said covering; a hollow frame within which said lamp is supported and on the outside of which the opaque tinsel is supported in the form of a substantially continuous winding constituting a fabric-like structure; said frame being of opaque material and reticular to permit passage of light from said internal lamp to said tinsel winding; and the winding of said tinsel hairs involving a separation between the individual hairs sufficient to permit passage of light thru said winding by way of the reflecting surfaces of said hairs.

9. The improved device for covering a light source concealed thereby, comprising a supporting frame of desired shape; in combination with a covering of opaque tinsel supported on the exterior of said frame in the form of a substantially continuously wound plurality of minute opaque tinsel hairs constituting a fabric-like structure; said frame being hollow to enclose an internal light source and of opaque material reticulated to permit passage of light from the light source to said tinsel winding; the spaces between the portions of said frame being occupied by said opaque tinsel hairs; said hairs having reflecting surfaces and being spaced apart in said winding to permit passage of light thru the winding by way of their said reflecting surfaces.

10. The improved covering for light sources concealed thereby, which comprises minute tinsel hairs having reflecting surfaces and arranged in the form of a substantially continuous winding constituting a fabric-like structure, said hairs being opaque but spaced apart in said winding sufficiently to permit passage of light therethru by way of said spaces and said reflecting surfaces of the opaque hairs.

11. The improved covering for light sources concealed thereby, which comprises tinsel garland strings arranged in the form of a substantially continuous winding constituting a fabric-like structure; the successive portions of the opaque cores of said strings in said winding being spaced apart, such spaces being occupied by the laterally projecting metal hairs having reflecting surfaces, and said hairs being spaced apart sufficiently to permit passage of light thru said winding by way of the reflecting surfaces of said opaque hairs.

CLIFFORD W. COWLES.