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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
61/094,571	09/05/2008		105	5641-081721		

CONFIRMATION NO. 6482

28289

THE WEBB LAW FIRM, P.C.  
700 KOPPERS BUILDING  
436 SEVENTH AVENUE  
PITTSBURGH, PA 15219

## FILING RECEIPT



\*OC000000032470110\*

Date Mailed: 10/08/2008

Receipt is acknowledged of this provisional patent application. It will not be examined for patentability and will become abandoned not later than twelve months after its filing date. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

### Applicant(s)

James J. Wassel, Zelienople, PA;

### Power of Attorney:

Kirk Miles--37891

### If Required, Foreign Filing License Granted: 10/07/2008

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 61/094,571**

**Projected Publication Date:** None, application is not eligible for pre-grant publication

**Non-Publication Request:** No

**Early Publication Request:** No

**\*\* SMALL ENTITY \*\***

### Title

Reflectors for Use with a Lighting Fixture

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page 1 of 3

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**PROVISIONAL APPLICATION FOR PATENT COVER SHEET - Page 1 of 2**

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. \_\_\_\_\_

INVENTOR(S)			
Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)	Citizenship
James J.	Wassel	Zelienople PA	US
Additional inventors are being named on the _____ separately numbered sheets attached hereto			
ASSIGNEE			
Name of Assignee Appalachian Lighting Systems, Inc.			
TITLE OF THE INVENTION (500 characters max):			
"Reflectors for Use with a Lighting Fixture"			
Direct all correspondence to:		CORRESPONDENCE ADDRESS	
<input checked="" type="checkbox"/>	The address corresponding to Customer Number:		28289
OR			
<input type="checkbox"/>	Firm or Individual Name The Webb Law Firm		
Address		436 Seventh Avenue 700 Koppers Building	
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Zip	15219		
Country	U.S.A.	Telephone	412-471-8815
Email	webblaw@webblaw.com		
ENCLOSED APPLICATION PARTS (check all that apply)			
<input type="checkbox"/>	Application Data Sheet. See 37 CFR 1.76		<input type="checkbox"/> CD(s), Number of CDs _____
<input checked="" type="checkbox"/>	Specification Number of Pages 11		<input type="checkbox"/> Other (specify) _____
<input checked="" type="checkbox"/>	Drawing(s) Number of Sheets 11		
<b>Fees Due:</b> Filing Fee of \$210 (\$105 for small entity). If the specification and drawings exceed 100 sheets of paper, an application size fee is also due, which is \$260 (\$130 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
METHOD OF PAYMENT OF THE FILING FEE AND APPLICATION SIZE FEE FOR THIS PROVISIONAL APPLICATION FOR PATENT			
<input checked="" type="checkbox"/>	Applicant claims small entity status. See 37 CFR 1.27.		\$ 105.00
<input type="checkbox"/>	A check or money order is enclosed to cover the filing fee and application size fee (if applicable).		
<input checked="" type="checkbox"/>	Payment by credit card.		TOTAL FEE AMOUNT (\$)
<input checked="" type="checkbox"/>	The Director is hereby authorized to charge the filing fee and application size fee (if applicable) or credit any overpayment to Deposit Account Number: 23-0650. A duplicative copy of this form is enclosed for fee processing.		

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

**PROVISIONAL APPLICATION COVER SHEET**

*Page 2 of 2*

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.



No.

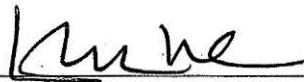


Yes, the name of the U.S. Government agency and the Government contract number are: \_\_\_\_\_

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SIGNATURE



Date

September 5, 2008

TYPED or PRINTED NAME

Kirk M. Miles

REGISTRATION NO.

37,891

(if appropriate)

TELEPHONE

412-471-8815

Docket Number:

5641 - 081721

# FEE TRANSMITTAL For FY 2008

Complete if Known

☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$ 105.00

Application Number	Not Yet Assigned
Filing Date	Concurrently herewith
First Named Inventor	James J. Wassel
Examiner Name	Not Yet Assigned
Art Unit	Not Yet Assigned
Attorney Docket	5641 - 081721

## METHOD OF PAYMENT (check all that apply)

☐ Check ☒ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): \_\_\_\_\_

☒ Deposit Account Deposit Account Number: 23-0650 Deposit Account Name: \_\_\_\_\_

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## FEE CALCULATION (All the fees below are due upon filing or may be subject to a surcharge.)

### 1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	310	75	510	255	210	105	
Design	210	105	100	50	130	65	
Plant	210	105	310	155	160	80	
Reissue	310	155	510	255	620	310	
Provisional	210	105	0	0	0	0	105.00

### 2. EXCESS CLAIM FEES

Fee Description	Small Entity Fee (\$)	Small Entity Fee (\$)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	210	105
Multiple dependent claims	370	185
<b>Total Claims - 20 or HP</b>	<b>Extra Claims</b>	<b>Fee (\$)</b>
		<b>Fee Paid (\$)</b>
HP = highest number of total claims paid for, if greater than 20.		
<b>Indep. Claims - 3 or HP</b>	<b>Extra Claims</b>	<b>Fee (\$)</b>
		<b>Fee Paid (\$)</b>
HP = highest number of independent claims paid for, if greater than 3.		

### 3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$260 (\$130 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

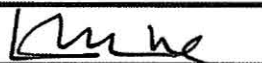
Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
- 100 =	/ 50 =	(round up to a whole number) x		

### 4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other (e.g., late filing surcharge):

## SUBMITTED BY

Signature		Registration No. (Attorney/Agent) 37,891	Telephone 412-471-8815
Name (Print/Type)	Kirk M. Miles	Date	September 5, 2008



## **REFLECTORS FOR USE WITH A LIGHTING FIXTURE**

### **CROSS REFERENCE TO RELATED APPLICATION**

**[0001]** This application is related to United States Provisional Patent Application No. 61/015,713 entitled "Lighting Fixture" filed December 21, 2007, which is hereby incorporated by reference in its entirety.

### **BACKGROUND OF THE INVENTION**

#### **Field of the Invention**

**[0002]** The present invention relates, in general, to a lighting fixture that utilizes light emitting diodes (LEDs) as its light source and, more particularly, to reflector arrangements configured to amplify and direct light produced by such a lighting fixture.

#### **Description of Related Art**

**[0003]** Conventionally, street lights and office lights have utilized incandescent, halogen or fluorescent bulbs to provide light. The use of incandescent and halogen bulbs has been problematic in a number of ways. First, incandescent light bulbs are very energy inefficient. A large percentage of the energy incandescent light bulbs consume is released as heat, rather than light. Although fluorescent bulbs are more efficient than incandescent light bulbs, fluorescent bulbs are still very inefficient when compared to LEDs or other similar solid state light emitters.

**[0004]** Additionally, incandescent and fluorescent light bulbs have short lifetimes when compared to solid state emitters. This requires lighting devices to be replaced more frequently. A short lifetime becomes even more problematic when used in overhead lighting in office buildings or in street lights where access may be difficult. Replacement is not only time consuming, but can be dangerous.

**[0005]** Furthermore, the unwanted heat produced in these lighting systems adds, not only to additional energy costs, but may also require additional air conditioning to lower the temperature of the area lit by the system. For example, in large buildings, overhead lighting is often provided by lights placed near the ceiling and directed downward. These buildings will require additional air conditioning to compensate for this energy produced as heat.

**[0006]** Although solid state emitters, such as LEDs, are known to be more energy efficient in general, LEDs have not been considered an option in the past for providing quality light in many applications, such as street lights and office lighting systems, because LEDs do not provide enough useful light at a distance.

### SUMMARY OF THE INVENTION

[0007] In view of the foregoing, a need exists for a lighting fixture that can be used as a street light or an office lighting system that utilizes LEDs or other solid state emitters to provide quality light from a distance. A further need exists for a reflector assembly for use in such a lighting fixture that directs and amplifies the light produced by the LEDs or other solid state emitters.

[0008] One embodiment described herein is directed to a reflector for use with a lighting fixture. The reflector includes a base having a first side and a second side. A first side face is desirably formed integral with the base and extending from the first side of the base at an angle, and a second side face is desirably formed integral with the base and extending from the second side of the base at an angle. The first side face is desirably symmetrical to the second side face about an axis of symmetry that runs through a center of the base.

[0009] The base of the reflector may include a plurality of holes that are used to fasten the reflector to a front side of a base plate of the lighting fixture. The first and second side faces may each have a plurality of angles formed therein. The first and second side faces may extend from the base at an initial angle of about 123° from the axis of symmetry, then angle back towards the axis of symmetry X at an angle of about 170° and, thereafter, angle back towards the axis of symmetry at an angle of about 170°. Alternatively, the first and second side faces may extend from the base at an initial angle about 115° from the axis of symmetry.

[0010] In another embodiment, the first and second side faces extend from the base at an initial angle of about 121° from the axis of symmetry and then angle back towards the axis of symmetry at an angle of about 165°. In still another embodiment, the first and second side faces extend from the base at an initial angle of about 115° from the axis of symmetry, then angle back towards the axis of symmetry at an angle of about 177° and, thereafter, angle back towards the axis of symmetry at an angle of about 165°. The reflector may be constructed from silver-coated aluminum with a protective polymer coating.

[0011] Another embodiment is directed to a method of manufacturing a reflector for use with a lighting fixture. The method includes, for example, the steps of: a) providing a sheet of silver-coated aluminum with a protective polymer coating; b) cutting the sheet to produce a reflector blank having a base with a first side face and a second side face extending therefrom; and c) bending the reflector blank such that the first side face and the second side face extend from the base at an angle. The cutting step may be accomplished by laser cutting. The step of laser cutting may further include laser cutting a plurality of holes into the base of the reflector blank.



[0012] The foregoing and other features and characteristics, as well as the methods of operation and functions of the related elements of structures and the combination of parts and economies of manufacture will become more apparent upon consideration of the following description with reference to the accompanying drawings, all of which form a part of this specification, wherein like reference numerals designate corresponding parts in the various figures.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1 is an elevational view of a front side of a lighting fixture for exemplary use as a streetlight.

[0014] FIG. 2 is an elevational view of a rear side of the lighting fixture of FIG. 1.

[0015] FIG. 3 is an elevational view of a side of the lighting fixture of FIG. 1.

[0016] FIG. 4A is a cross-sectional view of a reflector assembly used with the lighting fixture of FIG. 1.

[0017] FIG. 4B is a top plan view of a reflector assembly blank used to manufacture the reflector assembly of FIG. 4A.

[0018] FIG. 5 is a schematic diagram of an exemplary embodiment of the circuitry used for controlling the lighting fixture of FIG. 1.

[0019] FIG. 6 is an exemplary flow diagram illustrating a possible control configuration for the lighting fixture.

[0020] FIG. 7 is an elevational view of a front side of a lighting fixture for exemplary use as an office lighting fixture.

[0021] FIG. 8 is an elevational view of a rear side of the lighting fixture of FIG. 7.

[0022] FIG. 9 is an elevational view of a side of the lighting fixture of FIG. 7.

[0023] FIG. 10 is a cross-sectional view of a reflector assembly used with the lighting fixture of FIG. 7;

[0024] FIG. 11 is a cross-sectional view of another embodiment of the reflector assembly.

[0025] FIG. 12A is a cross-sectional view of a third embodiment of the reflector assembly.

[0026] FIG. 12B is a top plan view of a reflector assembly blank used to manufacture the reflector assembly of FIG. 12A.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0027] For purposes of the description hereinafter, the terms “upper”, “lower”, “right”, “left”, “vertical”, “horizontal”, “top”, “bottom”, “lateral”, “longitudinal” and derivatives

thereof shall relate to the invention as it is oriented in the drawing figures. However, it is to be understood that the invention may assume various alternative variations, except where expressly specified to the contrary. It is also to be understood that the specific devices illustrated in the attached drawings, and described in the following specification, are simply exemplary embodiments of the invention.

**[0028]** With reference to **FIGS. 1-3**, a lighting fixture **1**, for use, for example, as a streetlight, includes a base plate **3** having a front side **5** and a rear side **7**. As an example, three strips **9** are mounted on front side **5** of base plate **3**. Each strip **9** includes a plurality of surface-mount LEDs **11** mounted thereto. Base plate **3** has an exemplary thickness of about 1/8 to 1/4 of an inch thick and is constructed from anodized aluminum or any other suitable material. Base plate **3** functions as a heat sink for LEDs **11** and is oversized compared to strips **9** to ensure that LEDs **11** stay cool regardless of the outdoor temperature. Additionally, base plate **3** may be formed in the shape of a football, baseball glove, hockey stick, etc. to provide a decorative beam of light. LEDs **11** are high-power LEDs such as the LUXEON® Rebel manufactured by Phillips Lumileds Lighting Company or the Cree® XLamp® XR-E LED manufactured by Cree, Inc.

**[0029]** Lighting fixture **1** also includes a transparent cover **6** coupled to front side **5** of base plate **3**. Transparent cover **6** may be coupled to base plate **3** using any suitable fastening members such as bolts **8**. A pole mounting member **10** is coupled to rear side **7** of base plate **3**. Pole mounting member **10** includes a plurality of mounting holes **12** for receiving a fastening member (not shown) which allows a pole to be adjustably mounted to lighting fixture **1**. Lighting fixture **1** is configured to be mounted at a height sufficient to provide adequate lighting to a street or surface below. For instance, if lighting fixture **1** is mounted on a pole at a height of 30 feet above a street, lighting fixture **1** will provide a lighting pattern that extends about 23 feet from the base of the pole and about 15 feet on either side of the pole, as examples. Additionally, a camera and/or motion detector (not shown) may be mounted on front side **5** of base plate **3** for surveillance purposes.

**[0030]** With reference to **FIGS. 4A and 4B**, and with continuing reference to **FIGS. 1-3**, a reflector assembly **13** is mounted to front side **5** of base plate **3** such that side faces **41** extend at an angle from the top and the bottom of each of strips **9**. Each reflector assembly **13** includes a base **43** with a pair of integral side faces **41** extending from opposite sides thereof at an angle. Base **43** includes a plurality of holes **45** used to fasten reflector assembly **13** to front side **5** of base plate **3** using any suitable fastening means. The base **43** also includes a plurality of gaps **47** formed therein. Base **43** of reflector assembly **13** is mounted on front side

5 of base plate 3 over one of the strips 9 such that surface-mount LEDs 11 positioned on strips 9 extend through gaps 47 and side faces 41 of reflector assembly 13 extend at an angle from strip 9.

[0031] Each of the side faces 41 of the reflector assembly 13 has several angles therein as shown in FIG. 4A. Each side face 41 of reflector assembly 13 extends from base 43 at an initial angle of about, for example, 123° from an axis of symmetry X. Side faces 41 then angle back towards the axis of symmetry X at an angle of about, for example, 170°. Thereafter, side faces 41 are again angled back towards axis of symmetry X at an angle of , for example, about 170°. This configuration creates an angle of about 40° between the ends 49 of each of the side faces 41 of reflector assembly 13. The combination of these angles creates facets in the reflector which amplify the light provided by LEDs 11. In addition, side faces 41 of reflector assemblies 13 direct the light from each of the three strips 9 of LEDs 11 and focus the light into what appears to be a single beam of light.

[0032] With specific reference to FIG. 4B, reflector assembly 13 is constructed from a sheet of silver-coated aluminum with a protective polymer coating. Such a material has a reflectivity that is from 95% to 98% reflective. Additionally, the polymer coating prevents corrosion on reflector assembly 13. However, the use of silver-coated aluminum reflectors is not to be construed as limiting as any highly-reflective material may be used to construct the reflector assemblies. Once the sheet of silver-coated aluminum is obtained, reflector assembly 13 is cut from the sheet using, desirably, a laser thereby forming a reflector assembly blank 48. Reflector assembly blank 48 is a flat sheet that includes side faces 41, base 43, a plurality of holes 45, and a plurality of gaps 47 cut therein using the laser. Reflector blank 48 is then bent into the shape discussed hereinabove using a brake press. While FIGS. 4A and 4B illustrate one possible configuration of reflector assembly 13, this is not to be construed as limiting as other suitable configurations may be constructed.

[0033] With reference to FIG. 5, and with continuing reference to FIGS. 1-3, lighting fixture 1 includes a power supply and control circuitry 15 positioned within a housing 17 mounted on rear side 7 of base plate 3. Power supply and control circuitry 15 is electrically coupled to the plurality of LEDs 11. Housing 17 includes a window 19 with a light detector 21 positioned thereunder. Light detector 21 causes LEDs 11 to turn on when surrounding light has dropped below a predetermined level as will be described hereinafter. An exemplary embodiment of power supply and control circuitry 15 is illustrated in FIG. 5. However, this embodiment is not to be construed as limiting as the use of other circuitry configurations, microprocessors, and microcontrollers may be substituted.

[0034] An LED light (not shown) may also be mounted on rear side 7 of base plate 3 and coupled to power supply and control circuitry 15 so that when the utility workers are working on the pole where light fixture 1 is mounted, utility workers will be able to turn it on and see above lighting fixture 1. This LED light may be turned on manually, through the use of a magnetic switch, by an infrared sensor, or by an ultrasonic sensor, as examples.

[0035] Power supply and control circuitry 15 includes a controller that works in conjunction with light detector 21 to automatically turn lighting fixture 1 on and off. With reference to FIG. 6, the controller functions generally as follows. First, power is supplied to the controller thereby initializing the controller at block 600. Then, at block 610, light detector 21 looks for diminished ambient light signaling, for example, the arrival of dusk. Once sufficient diminished light (such as at dusk) is detected by light detector 21, lighting fixture 1 is turned on at full power at block 620. At blocks 630 and 640, after a predetermined period of time, the power of the light is reduced by 25% to 75%. Thereafter, at block 650, light detector 21 looks for increased ambient light signaling the arrival of dawn. Once sufficient ambient light (such as at dawn) is detected by light detector 21, lighting fixture 1 is turned off by the controller and the process returns to block 610. Accordingly, by reducing power by 25% to 75% after lighting fixture 1 has been on for a predetermined period of time, a savings of up to 90% of power over a current mercury vapor streetlight or high pressure sodium streetlight can be achieved. Additionally, this process extends the life of LEDs 11.

[0036] With reference to FIGS. 7-9, a lighting fixture 1', for use as office lighting, includes a base plate 3' having a front side 5' and a rear side 7'. Three strips 9' are mounted on front side 5' of base plate 3'. Each strip 9' includes a plurality of surface-mount LEDs 11' mounted thereto. Base plate 3' functions as a heat sink for LEDs 11' and is oversized compared to strips 9' to ensure that LEDs 11' stay cool. Base plate 3' includes a plurality of grooves 23 along a periphery thereof. Grooves 23 provide additional square inches of cooling which also extends LED life. Lighting fixture 1' is generally intended for indoor use. Accordingly, a transparent cover 6 is not strictly required in this embodiment.

[0037] With reference to FIG. 10, and with continuing reference to FIGS. 7-9, a reflector assembly 13' is mounted to front side 5' of base plate 3' such that side faces 41' extend at an angle from the top and the bottom of each of strips 9'. Each reflector assembly 13' includes a base 43' with a pair of integral side faces 41' extending from opposite sides thereof at an angle. Base 43' of reflector assembly 13' is mounted on front side 5' of base plate 3' over one of the strips 9' such that surface-mount LEDs 11' positioned on strips 9' extend through gaps formed in base 43', and side faces 41' of reflector assembly 13' extend at an angle from

strip 9'. Each side face 41' of reflector assembly 13' extends from base 43' at an initial angle of, for example, about 115° from an axis of symmetry X. This configuration creates an angle of about, for example, 90° between the ends 49' of each side face 41' of reflector assembly 13'. Side faces 41' of reflector assembly 13' amplify the light provided by LEDs 11'. In addition, side faces 41' of reflector assembly 13' direct the light from each of the three strips 9' of LEDs 11' and focus the light into what appears to be a single beam of light. As discussed above, reflector assemblies 13' are desirably constructed from silver-coated aluminum with a protective polymer coating.

[0038] With reference to FIG. 11, another possible configuration for the reflector assembly is shown. This reflector assembly 13'' includes a base 43'' with a pair of integral side faces 41'' extending from opposite sides thereof at an angle. Each of side faces 41'' of reflector assembly 13'' has several angles therein as shown in FIG. 11. Each side face 41'' of reflector assembly 13'' extends from base plate 3 at an initial angle of about, for example, 121° from an axis of symmetry X. The side faces 41'' of reflector assembly 13'' then angle back towards the axis of symmetry X at an angle of about, for example, 165°. This configuration creates an angle of about 60° between the ends 49'' of each of reflectors 13''.

[0039] The combination of these angles creates facets in side faces 41'' of reflector assembly 13'' which amplify the light provided by LEDs 11. In addition, side faces 41'' of reflector assembly 13'' direct the light from each of the three strips 9 of LEDs 11 and focus the light into what outwardly appears to be a single beam of light. Reflector assemblies 13'' are constructed from silver-coated aluminum with a protective polymer coating.

[0040] With reference to FIG. 12A and 12B, yet another possible configuration for the reflector assembly is shown. This reflector assembly 13''' includes a base 43''' with a pair of integral side faces 41''' extending from opposite sides thereof at an angle. Each side face 41''' of reflector assembly 13''' has several angles therein as shown in FIG. 12A. Each side face 41''' of reflector assembly 13''' extends from base 43''' at an initial angle of about 115° from an axis of symmetry X. Side faces 41''' then angle back towards the axis of symmetry X at an angle of about 177°. Thereafter, side faces 41''' are again angled back towards axis of symmetry X at an angle of about 165°. The combination of the foregoing listed angles creates facets in the reflector assembly 13''' that amplify the light provided by LEDs 11. In addition, side faces 41''' of reflector assemblies 13''' direct the light from each of the three strips 9 of LEDs 11 and focus the light into what outwardly appears to be a single beam of light. Reflector assemblies 13''' are also constructed from silver-coated aluminum with a protective polymer coating.

[0041] Additionally, various other types of reflectors for use in LED lighting fixtures have been envisioned. For instance, the reflectors may be of a rounded-type with multiple facet angles.

[0042] Although the invention has been described in detail for the purpose of illustration based on what is currently considered to be the most practical and preferred embodiments, it is to be understood that such detail is solely for that purpose and that the invention is not limited to the disclosed embodiments, but, on the contrary, is intended to cover modifications and equivalent arrangements. Furthermore, it is to be understood that this disclosure contemplates that, to the extent possible, one or more features of any embodiment can be combined with one or more features of any other embodiment.



THE INVENTION CLAIMED IS:

1. A reflector for use with a lighting fixture, the reflector comprising:  
a base having a first side and a second side;  
a first side face formed integrally with the base and extending from the first side of the base at an angle; and  
a second side face formed integrally with the base and extending from the second side of the base at an angle,  
wherein the first side face is symmetrical to the second side face about an axis of symmetry that runs through a center of the base.
2. The reflector of claim 1, wherein the base further includes a plurality of holes used to fasten the reflector to a front side of a base plate of the lighting fixture.
3. The reflector of claim 1, wherein the first and second side faces each have a plurality of angles formed therein.
4. The reflector of claim 3, wherein the first and second side faces extend from base at an initial angle of about  $123^\circ$  from the axis of symmetry, then angle back towards the axis of symmetry **X** at an angle of about  $170^\circ$  and, thereafter, angle back towards the axis of symmetry at an angle of about  $170^\circ$ .
5. The reflector of claim 3, wherein the first and second side faces extend from the base at an initial angle about  $115^\circ$  from the axis of symmetry.
6. The reflector of claim 3, wherein the first and second side faces extend from the base at an initial angle of about  $121^\circ$  from the axis of symmetry and then angle back towards the axis of symmetry at an angle of about  $165^\circ$ .
7. The reflector of claim 3, wherein the first and second side faces extend from the base at an initial angle of about  $115^\circ$  from the axis of symmetry, then angle back towards the axis of symmetry at an angle of about  $177^\circ$  and, thereafter, angle back towards the axis of symmetry at an angle of about  $165^\circ$ .

8. The reflector of claim 1, wherein the reflector is constructed from silver-coated aluminum with a protective polymer coating.

9. A method of manufacturing a reflector for use with a lighting fixture comprising the steps of:

- a) providing a sheet of silver-coated aluminum with a protective polymer coating;
- b) cutting the sheet to produce a reflector blank having a base with a first side face and a second side face extending therefrom; and
- c) bending the reflector blank such that the first side face and the second side face extend from the base at an angle.

10. The method of claim 9, wherein the cutting step comprises laser cutting the sheet to produce the reflector blank.

11. The method of claim 9, wherein the step of cutting further includes laser cutting a plurality of holes into the base of the reflector blank.

## **REFLECTORS FOR USE WITH A LIGHTING FIXTURE**

### **ABSTRACT OF THE INVENTION**

A reflector for use with a lighting fixture includes a base having a first side formed integrally with the base and extending from the first side of the base at an angle and a second side formed integrally with the base and extending from the second side of the base at an angle. The first side face is symmetrical to the second side face about an axis of symmetry that runs through a center of the base. A method of manufacturing a reflector for use with a lighting fixture includes providing a sheet of silver-coated aluminum with a protective polymer coating, laser cutting the sheet to produce a reflector blank having a base with a first side face and a second side face extending therefrom, and bending the reflector blank such that the first side face and the second side face extend from the base at an angle.

"REFLECTORS FOR USE WITH A LIGHTING FIXTURE"

Inventor: James J. Wassel

Attorney Docket No.: 5641-081721

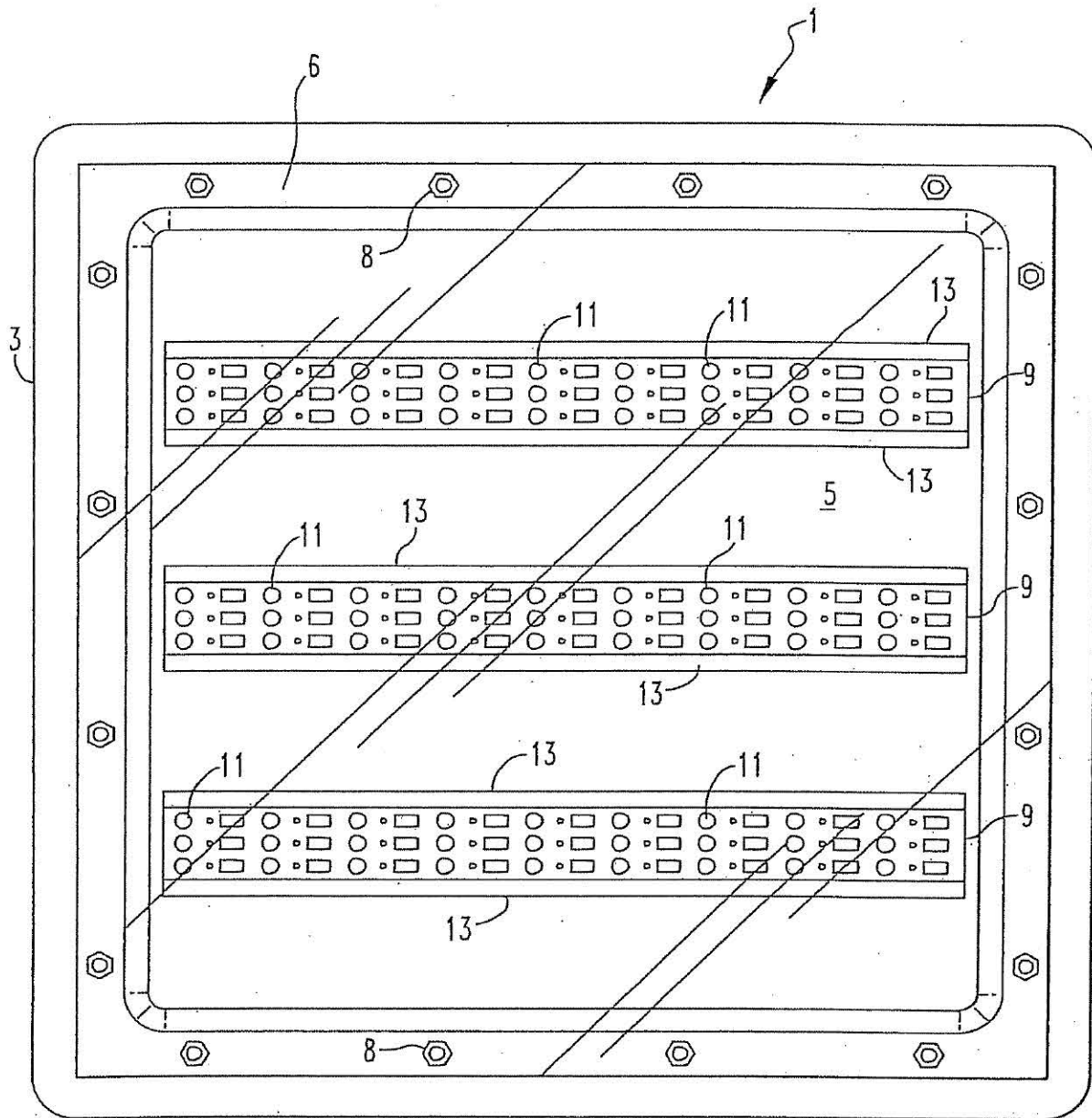


FIG. 1

"REFLECTORS FOR USE WITH A LIGHTING FIXTURE"

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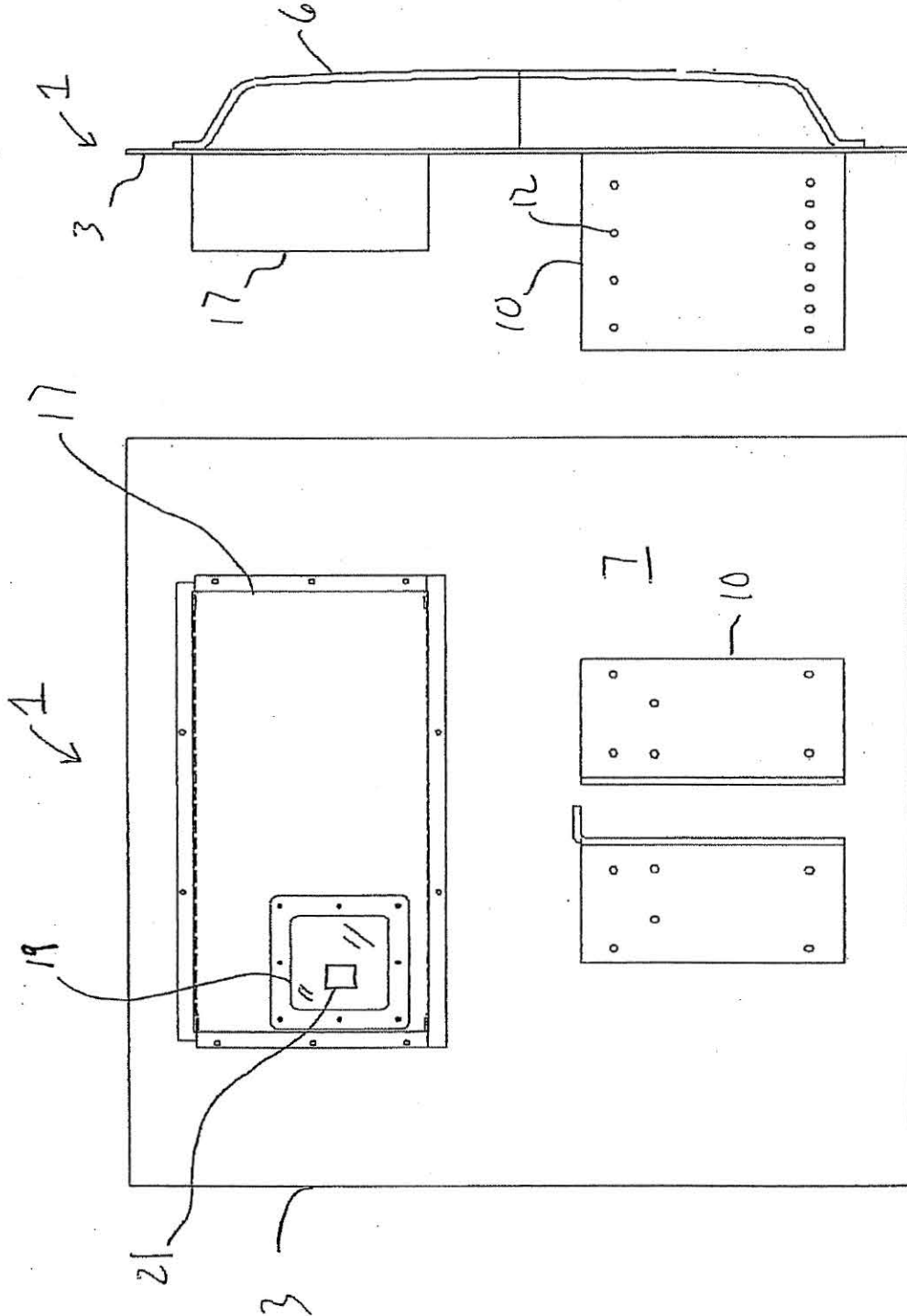


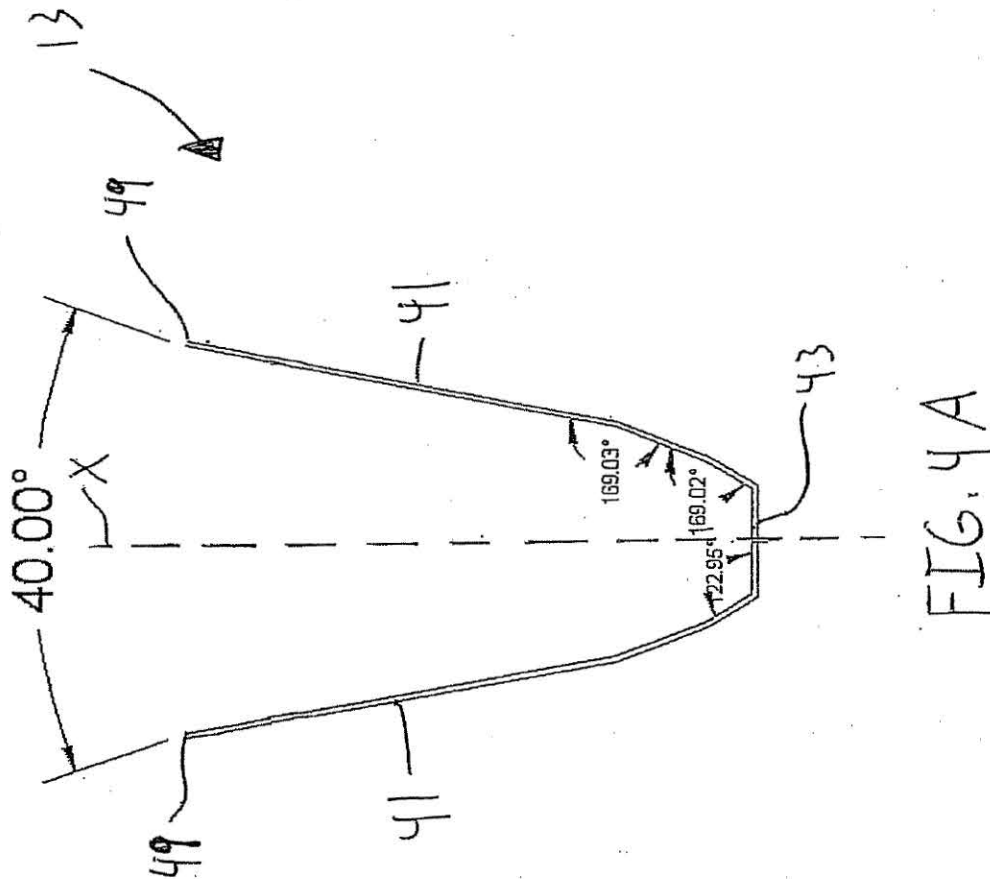
FIG. 3

FIG. 2

"REFLECTORS FOR USE WITH A LIGHTING FIXTURE"

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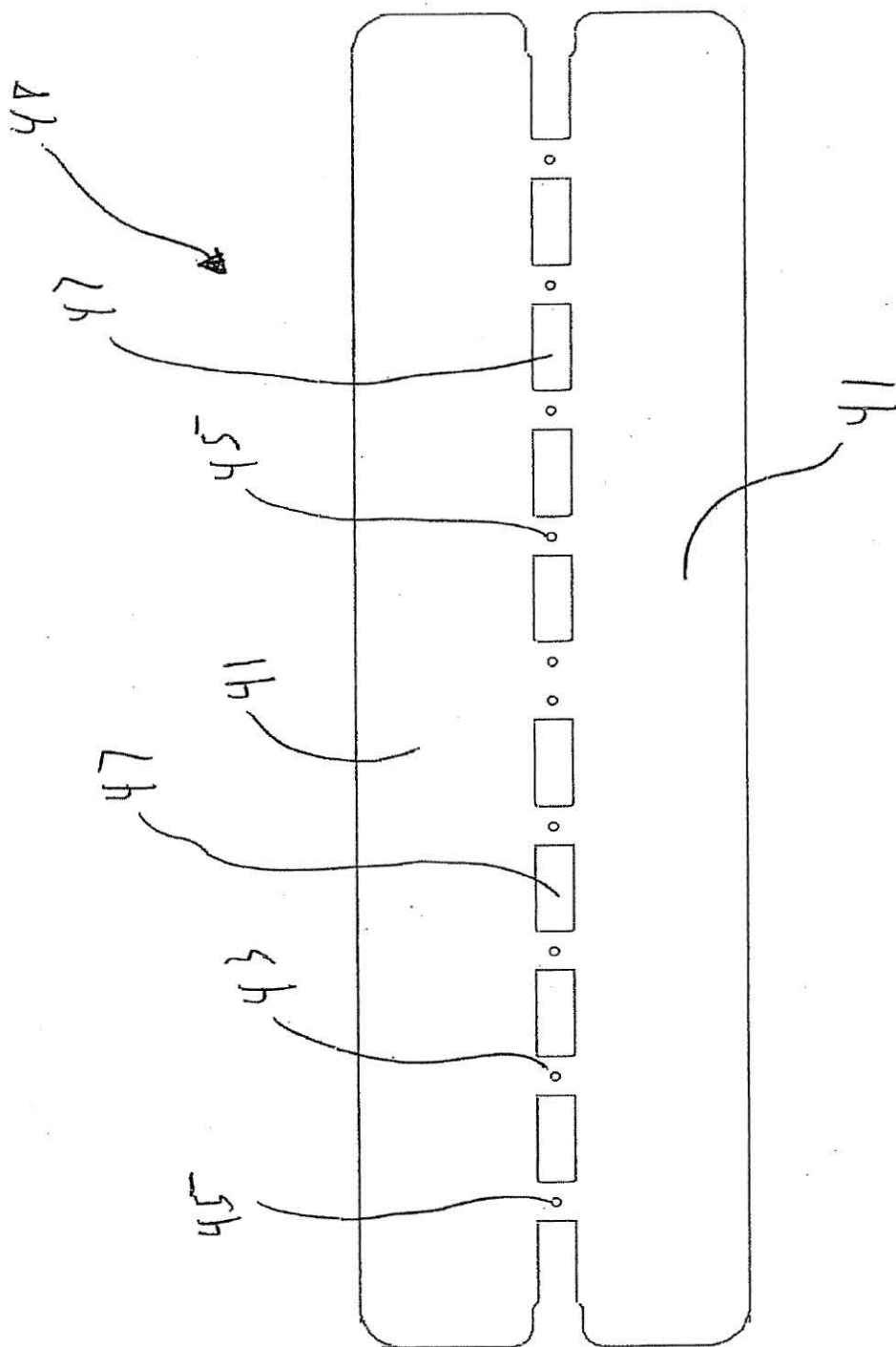


FIG. 4B

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"REFLECTORS FOR USE WITH A LIGHTING FIXTURE"

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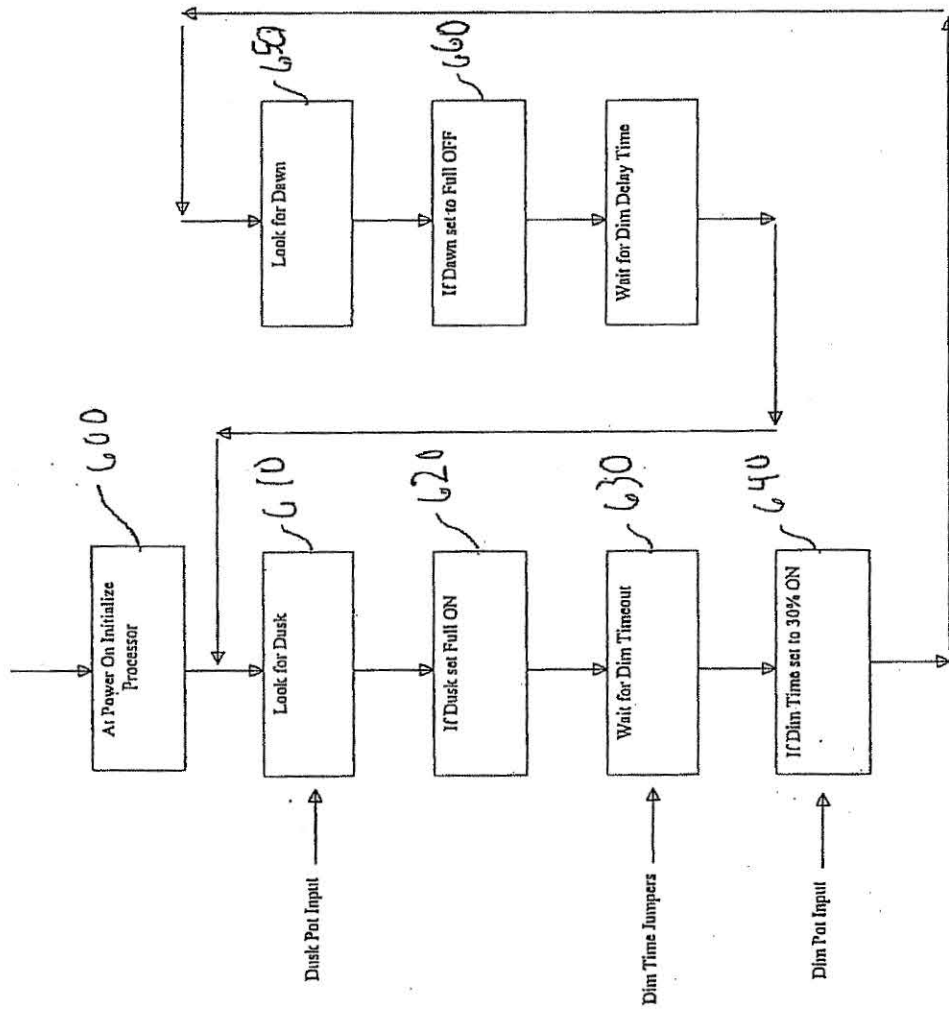
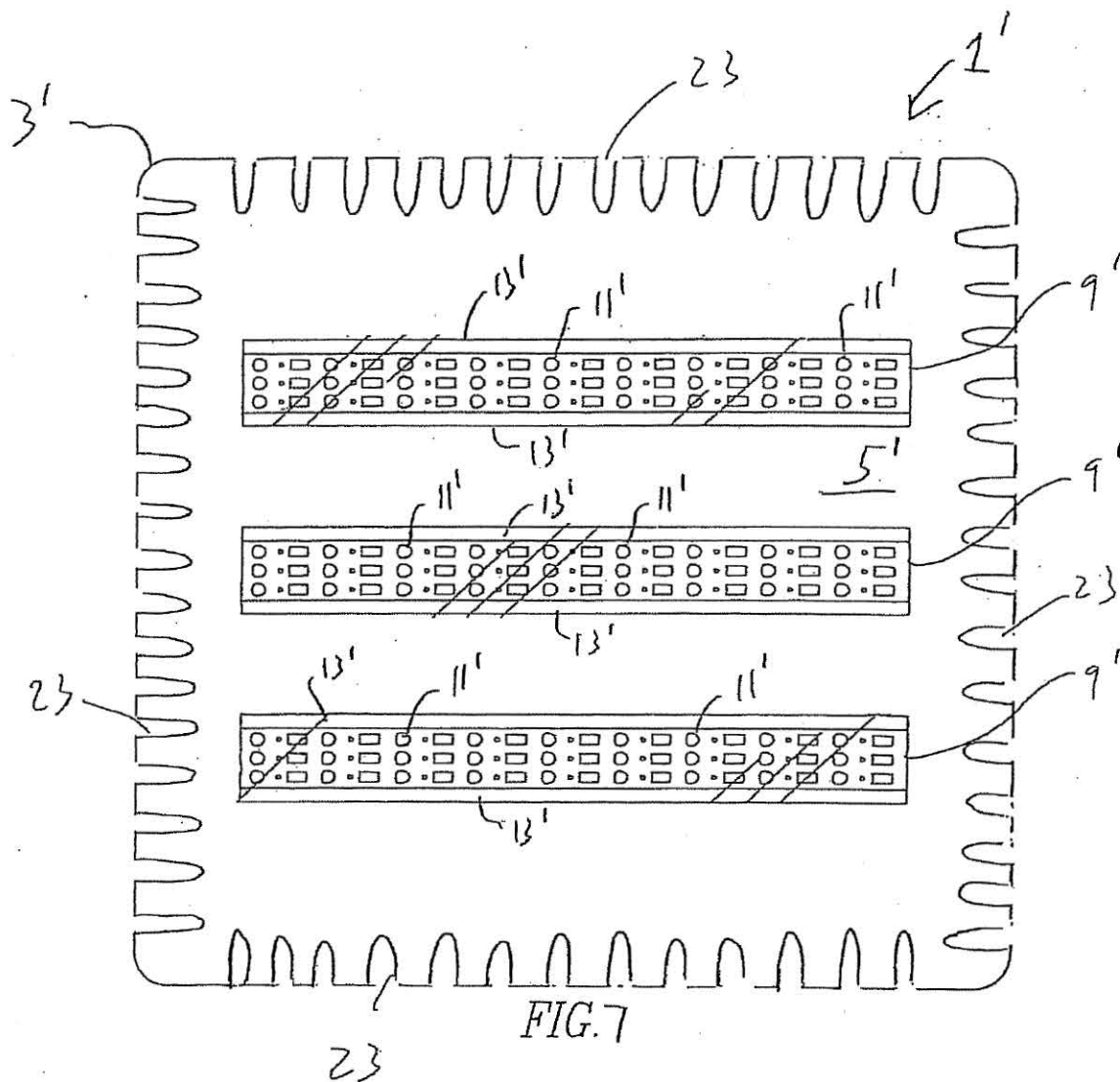


FIG. 6

"REFLECTORS FOR USE WITH A LIGHTING FIXTURE"

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"REFLECTORS FOR USE WITH A LIGHTING FIXTURE"

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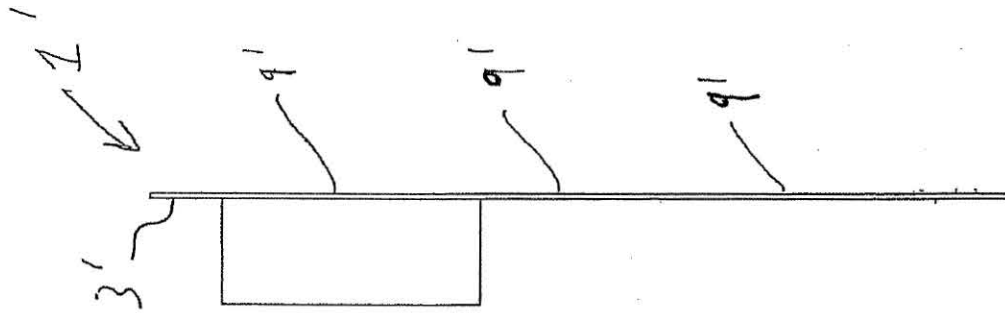


FIG. 9

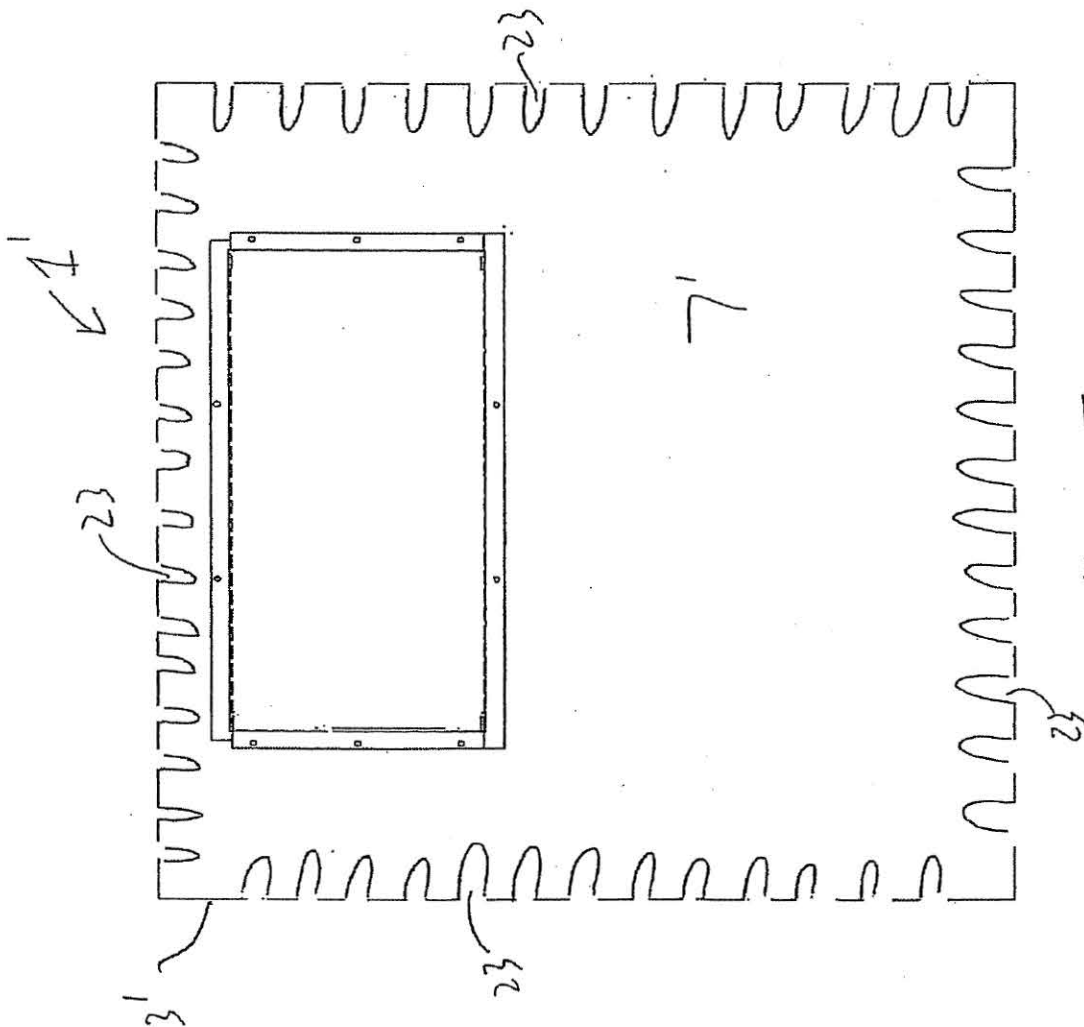


FIG. 8

"REFLECTORS FOR USE WITH A LIGHTING FIXTURE"

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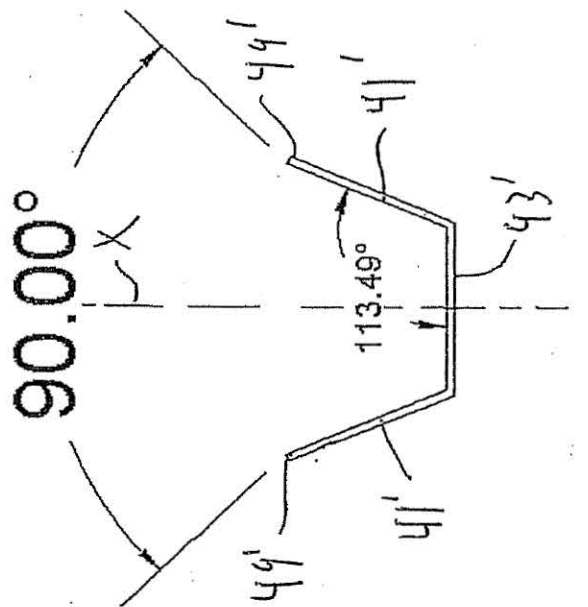


FIG. 10



"REFLECTORS FOR USE WITH A LIGHTING FIXTURE"

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Attorney Docket No.: 5641-081721

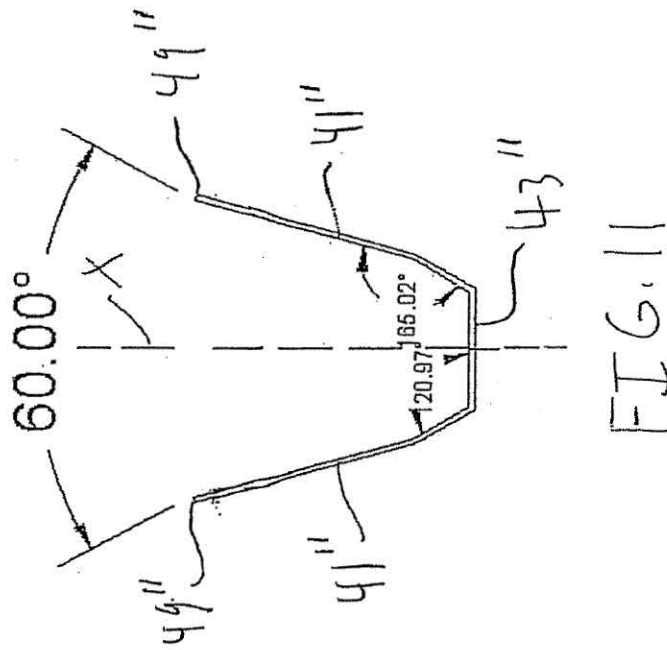
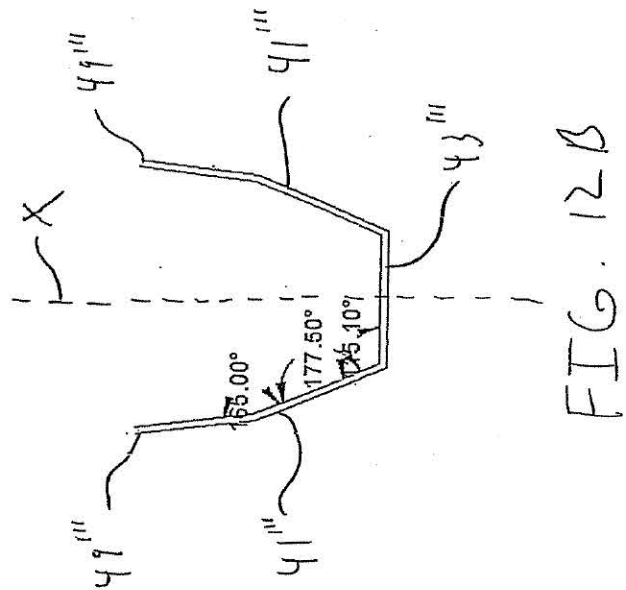
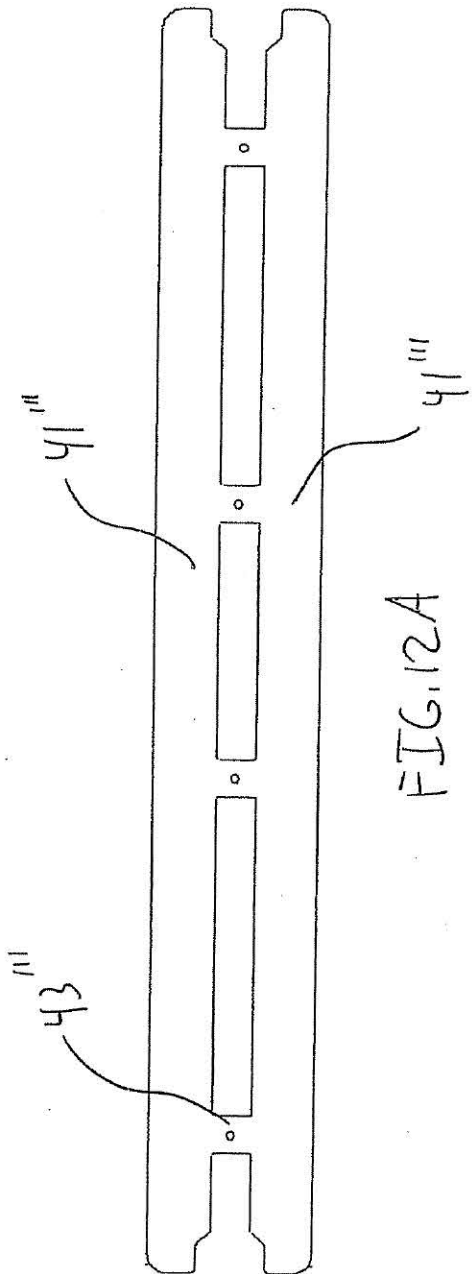


FIG. 11

"REFLECTORS FOR USE WITH A LIGHTING FIXTURE"

Inventor: James J. Wassel

Attorney Docket No.: 5641-081721



## Electronic Patent Application Fee Transmittal

**Application Number:**

**Filing Date:**

**Title of Invention:**

Reflectors for Use with a Lighting Fixture

**First Named Inventor/Applicant Name:**

James J. Wassel

**Filer:**

Kirk M. Miles/Sharyn Beck

**Attorney Docket Number:**

5641-081721

Filed as Small Entity

### Provisional Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
<b>Basic Filing:</b>				
Provisional Application filing fee	2005	1	105	105

**Pages:**

**Claims:**

**Miscellaneous-Filing:**

**Petition:**

**Patent-Appeals-and-Interference:**

**Post-Allowance-and-Post-Issuance:**

**Extension of Time:**

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				105

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	3895906
<b>Application Number:</b>	61094571
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	6482
<b>Title of Invention:</b>	Reflectors for Use with a Lighting Fixture
<b>First Named Inventor/Applicant Name:</b>	James J. Wassel
<b>Customer Number:</b>	28289
<b>Filer:</b>	Kirk M. Miles/Sharyn Beck
<b>Filer Authorized By:</b>	Kirk M. Miles
<b>Attorney Docket Number:</b>	5641-081721
<b>Receipt Date:</b>	05-SEP-2008
<b>Filing Date:</b>	
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1	Transmittal of New Application	ProvAppCover.pdf	199830	no	2
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Warnings:					
Information:					
2	Miscellaneous Incoming Letter	FeeTransmittal.pdf	143039	no	1
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Warnings:					
Information:					
3		Specs.pdf	1275641	yes	11
			d8c9a6091303b486a07ffb13865301b1ee167895		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	8	
	Claims		9	10	
	Abstract		11	11	
Warnings:					
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4	Drawings-only black and white line drawings	Drawings.pdf	571080	no	11
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5	Fee Worksheet (PTO-06)	fee-info.pdf	29673	no	2
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