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शासकीय जर्नल

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दिनांक: 06/12/2019
DATE: 06/12/2019

पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE

(12) PATENT APPLICATION PUBLICATION

(21) Application No.201941046543 A

(19) INDIA

(22) Date of filing of Application :15/11/2019

(43) Publication Date : 06/12/2019

(54) Title of the invention : G GLASS FOR ELECTRICAL POWER GENERATION AND ELECTRICAL ENERGY STORAGE

(51) International classification :C03C17/25
(31) Priority Document No :NA
(32) Priority Date :NA
(33) Name of priority country :NA
(86) International Application No :NA
Filing Date :NA
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(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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3)DR.V.NIRMAL KANNAN

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5)DR.K.UMAMAHESWARI

6)DR.G.SATISH PANDIAN

7)DR.R.PARTHASARATHY

8)DR.S.DINESH KUMAR

(57) Abstract :


G glass is an innovative product invented by merging both electrical power generation and electrical energy storage. G glass consists of five layers, which consists of Float glass, flexible solar thin film, thin polymer sheet, thin storage cells and thin polymer sheet. In G glass, G represents the green energy harvesting using glass. This type of glass can be used in commercial as well as residential form of individual and multi storage buildings. The significant scope of this product invention is generating and storing energy without pollution. Even the scrap of this product will not pollute the environment when compared to that of the other methodologies and products of this type.

No. of Pages : 7 No. of Claims : 5

15/11/19 EDP/R1 New app (comp) F9

D196347

4500/-

<p align="center">FORM 1</p> <p>THE PATENTS ACT 1970 (39 OF 1970) & The Patents Rules, 2003 APPLICATION FOR GRANT OF PATENT (See section 7, 54 & 135 and rule 20(1))</p>	<p align="center">For Office Use Only</p>  <p align="center">700329730</p>
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	Application No	201941046543
	Filing Date	15-11-2019
	Amount of fee paid	1750/-
	CBR No	37535
	Signature	<i>[Signature]</i> 15/11/19

1. APPLICANT'S REFERENCE / IDENTIFICATION NUMBER
(As Allotted by Office)

2. TYPE OF APPLICATION (Please tick the appropriate category)

Ordinary (<input checked="" type="checkbox"/>)		Convention () -		PCT-NP ()	
Divisional ()	Patent of Addition ()	Divisional ()	Patent of Addition ()	Divisional ()	Patent of Addition ()

3A. APPLICANT

Name in full	Nationality	Country of Residence	Address of the Applicant	
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			Country	India
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			City	Ramanathapuram
			State	Tamil Nadu
			Country	India
			Pin code	623 502

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PATENT OFFICE CHENNAI 2019

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			State	Tamil Nadu
			Country	India
			Pin code	639111

3B. CATEGORY OF APPLICANT [Please tick at the appropriate category]

Natural Person <input checked="" type="checkbox"/>	Other than Natural Person		
	Small Entity <input type="checkbox"/>	Start-up <input type="checkbox"/>	Others <input type="checkbox"/>

4. INVENTOR [Please tick at the appropriate category]

Are all the Inventor (s) same as the applicant (s) named above?	Yes <input checked="" type="checkbox"/>	No <input checked="" type="checkbox"/>
---	---	--

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Inventor (4)

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Inventor (5)

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NAME : Dr. S. Dinesh Kumar
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5. TITLE OF THE INVENTION :

G glass for Electrical Power Generation and Electrical Energy Storage

6. AUTHORISED REGISTERED PATENT AGENT (S)	IN / PA No.	-
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	Mobile Number	-
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	Telephone Number	04324-286212
	Mobile Number	9884883958
	Fax Number	04324-286408
	E-mail ID	v.nirmalkannan@gmail.com

8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION

Country	Application Number	Filing date	Name of the applicant	Title of the invention	IPC (as classified in convention country)
--	--	--	--	--	--

9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT)

International Application Number	International Filing date
--	--

10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION

Original (first) application number	Date of filing of original (first) application
--	--

11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT

Main application / patent no.	Date of filing of main application
--	--

ATENT OFFICE - CHENNAI 20/11/2019 15:40



12. DECLARATIONS

3. Declaration by the inventor(s):
(In case the applicant is an assignee: the inventor(s) may sign herein below or

the applicant may upload the assignment or enclose the assignment with this application for patent or send the assignment by post / electronic transmission duly authenticated within the prescribed period).

We are the above named inventor(s) are true & first inventor(s) for this invention and declare that the applicant herein is our assignee or legal representative

(a) Date : 15.11.2019

(b) Signature : (1) 
(2) 



(c) Name : (1) Dr. G. Prabhakar
(2) Dr. S. Selvaperumal

4. Declaration by the applicant (s) in the convention country:

(In case the applicant in India is different than the applicant in the convention country: the applicant in the convention country may sign herein below or applicant in India may upload the assignment from the applicant in the convention country or enclose the said assignment with this application for patent or send the assignment by post / electronic transmission duly authenticated within the prescribed period).

We, the applicant(s) in the convention country declare that the applicant(s) herein is our assignee or legal representative.

(a) Date : 15.11.2019

(b) Signature : (1) 
(2) 

(c) Name : (1) Dr. G. Prabhakar
(2) Dr. S. Selvaperumal

5. Declaration by the applicant (s):

We the applicant (s) hereby declare that:

- We are in possession of the above mentioned invention.
- The provisional / complete specification relating to the invention is filed with this application.
- The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by me before the grant of patent to me.
- There is no lawful ground of objection(s) to the grant of the patent to us.
- We are the true and first inventor(s)
- We are the assignee or legal representative of true and first inventor(s).
- The application or each of the applications, particulars of which are given in Paragraph-8, was the first application in convention country / countries in respect of my invention.
- We claim the priority from the above mentioned application filed in convention country / countries and state that no application for protection in respect of the invention had been made in a convention country before that date by us or by any person from which I derive the title.
- Our application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned in Paragraph-9
- The application is divided out of my application particulars of which is given in Paragraph -10 and prays that this application may be treated as deemed to have been filed on 21/12/2016 under section 16 of the Act.
- The said invention is an improvement in or modification of the invention particulars of which are given in Paragraph-11.

13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

(a) Form-2

Item	Details	Fee	Remarks
Complete Provisional specification #	No. of pages 6		
No. of claim(s)	No of claims 5		
	No. of pages 1		
Abstract	No. of pages 1		
No. of drawing(s)	No. of drawings 3		
	No. of pages 2		

In case of a complete specification, if the applicant desires to adopt the drawings filed with his provisional specification as the drawings or part of the drawings for the complete specification under rule 13(4), the number of such pages filed with the Provisional specification is required to be mentioned here.

- (b) Complete specification (in formation with the international application) / as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies).
- (c) Sequence listing in electronic form
- (d) Drawings (in conformation with the international application) / as mended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies)
- (e) Priority document(s) or a request to retrieve the priority document(s) from DAS (Digital Access Service), if the applicant had already requested the office of first filing to make the priority document(s) available to DAS.
- (f) Translation of priority document / Specification / International Search Report / International Preliminary Report on Patentability.
- (g) Statement and Undertaking on Form 3
- (h) Declaration of Inventor ship on Form 5

(i) Power of Authority NAT 20/11/2019 16:40

(j)

Total fee Rs.....in cash / Banker's cheque / Bank draft bearing



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PATENT

No..... DateonBank.

We hereby declare that to the best of my knowledge, information and belief the fact and matters slated herein are correct and We request that a patent may be granted to us for the said invention.

Date : 15.11.2019

(a) Signature : (1) 
(2) 

(b) Name : (1) Dr. G. Prabhakar
(2) Dr. S. Selvaperumal

To
The Controller of Patents,
The Patent Office, Chennai

Note:-Repeat boxes in case of more than one entry

- ❖ To be signed by the applicant or by authorised registered patent agent otherwise where mentioned.
- ❖ Tick / cross whichever is applicable / not applicable in declaration in paragraph-12
- ❖ Name of the inventor and applicant should be given in full, family name in the beginning.
- ❖ Strike out the portion which is/are not applicable


15-Nov-2019/96347/201941046543/Form 1

ABSTRACT OF INVENTION

G glass for Electrical Power Generation and Electrical Energy Storage

G glass is an innovative product invented by merging both electrical power generation and electrical energy storage. G glass consists of five layers, which consists of Float glass, flexible solar thin film, thin polymer sheet, thin storage cells and thin polymer sheet. In G glass, G represents the green energy harvesting using glass. This type of glass can be used in commercial as well as residential form of individual and multi storage buildings. The significant scope of this product invention is generating and storing energy without pollution. Even the scrap of this product will not pollute the environment when compared to that of the other methodologies and products of this type.

DATE : 15.11.2019

Signature : (1) 

(2) 

Name : (1) Dr. G. Prabhakar

(2) Dr. S. Selvaperumal


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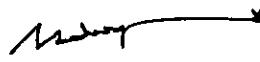
Preamble to the Description

G glass for Electrical Power Generation and Electrical Energy Storage

The conventional methods of harvesting solar energy for the generation of electrical energy requires separate catchment area for laying Photovoltaic cells. For storing the generated energy, conventional batteries requires more separate spaces near the catchment area. The G glass addresses the above mentioned disadvantages of occupying huge areas in conventional methods. This product can be placed as windows or doors which normally come inside the built-in area of the building. So it does not need separate area other than the built-in area for generating as well as storing electrical energy. Since the layers are pasted with thin polymer sheets, electrical maintenance and replacement becomes much easier.

DATE : 15.11.2019

Signature : (1) 

(2) 

Name : (1) Dr. G. Prabhakar

(2) Dr. S. Selvaperumal

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DESCRIPTION

G glass for Electrical Power Generation and Electrical Energy Storage

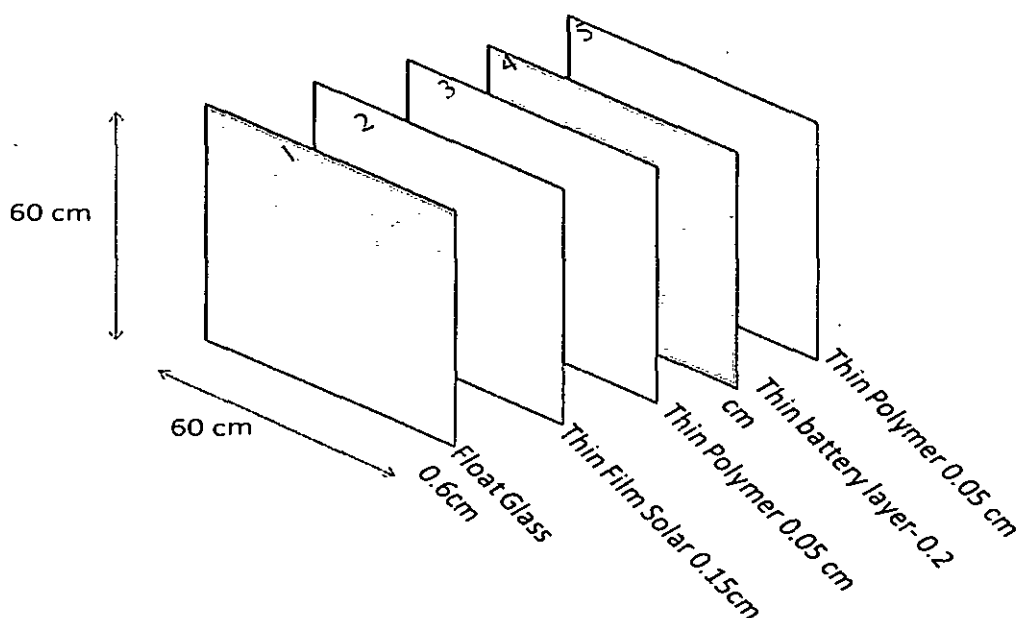




Figure 1 Sectional view of G glass exposing its layers

This invention is related to renewable energy harvesting and storage in a single product, which is very thin and also more attractive to use. The major G glass components are thin film solar and thin storage cells in series connection. As shown in Figure 1, The first layer (1) is made up of clear float glass which acts as a protective layer and also allows light for the solar thin film available in the next layer (2). The solar thin film available in the second layer (2) generates electrical energy from the sunlight passing through the clear float glass. For insulation and safety purpose, the third and fifth layers (3, 5) are pasted with thin polymer sheet. In the fourth layer, (4) thin storage cells are placed to store energy generated by solar thin film in the second layer. As shown in figure II, the storage cells are arranged in an array of cells meeting the requirements as per the generation and load usage. This back up energy can be used by the load during the later hours of the day.

DATE : 15.11.2019

Signature : (1) 

(2) 

PATENT OFFICE CHENNAI 20/11/2019 16:40

Name : (1) Dr. G. Prabhakar

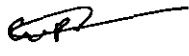

(2) Dr. S. Selvaperumal

Claim

G glass for Electrical Power Generation and Electrical Energy Storage

1. This invention comprises of both generation and storage of electrical energy with minimum built in area consumption, as the product can be used as a window or a door.
2. Generation and storage can be extended as per the requirement of load in a simple way.
3. Maintenance and Replacement is simple.
4. The significant scope of this product invention is generating and storing energy without pollution.
5. The scrap of this product will not pollute the environment when compared to that of the other methodologies and products of this type.

DATE : 15.11.2019

Signature : (1) 
(2) 

Name : (1) Dr. G. Prabhakar
(2) Dr. S. Selvaperumal

Complete Specification

The accompanying drawings, which are included in and form a part of the specification, illustrate an incarnation of the present invention and, together with the description, serve to explain the principles of the invention. In the drawings:

Figure: I is a Sectional view of G glass exposing its layers

Figure: II is a Plan view of Series connection of thin storage cells in the fourth layer of G glass

Figure: III is a Sectional view of internal connection between the terminals of second layer and fourth layer of G glass

G-glass for electrical power generation and electrical energy storage

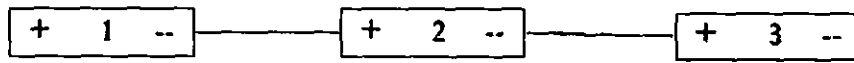


Figure 2: Plan view of Series connection of thin storage cells in the fourth layer of G glass

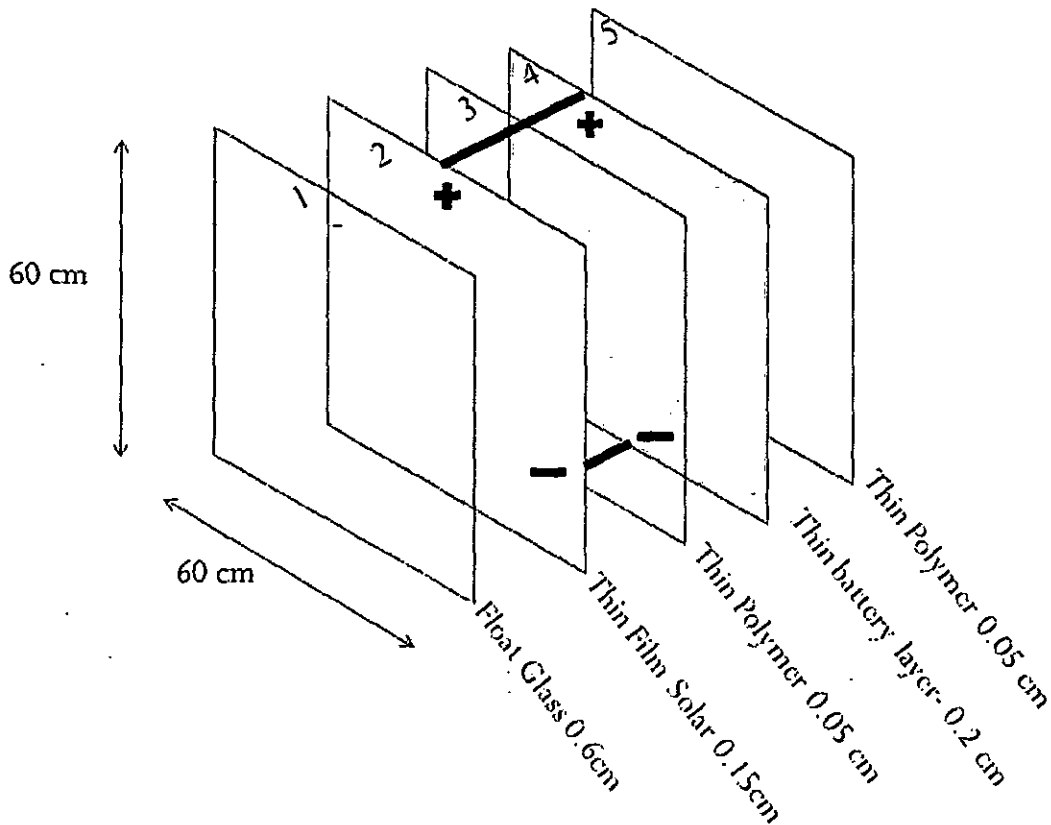


Figure 3: Sectional view of internal connection between the terminals of second layer and fourth layer of G glass

DATE : 15.11.2019

Signature : (1)

(2)

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Name : (1) Dr. G. Prabhakar


(2) Dr. S. Selvaperumal

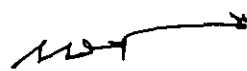
The proto-model of the product developed is of the following specifications in Table 1.

Table1 G-glass Specifications

Layers	Material	Purpose	Specifications
First layer	Clear float glass	Protective layer	60cms x 60 cms x 0.6 cm
Second layer	Solar thin film	Solar energy absorption and electrical energy generation	10 w, 12 V, 840mAh, Panel Size: 60 cm x 60 cm x 0.15cm
Third & Fifth layer	Thin Polymer sheet	Insulation and safety purpose	60cms x 60 cms x 0.05 cm
Fourth layer	Thin storage cells (3 numbers)	Storing the electrical energy generated	60cms x 60 cms x 0.2 cm, electrical parameters for a cell-2.5 v to 4 v , 3.75 Ah, 2.813 Wh, 9000 F capacity

DATE : 15.11.2019

Signature : (1) 

(2) 

Name : (1) Dr. G. Prabhakar

(2) Dr. S. Selvaperumal

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THE GAZETTE OF INDIA EXTRAORDINARY

FORM 2
THE PATENT ACT 1970
(39 OF 1970) &
The Patents Rules, 2003
COMPLETE SPECIFICATION
(See section 10 and rule 13)



700329765

TITLE OF THE INVENTION:

G glass for Electrical Power Generation and Electrical Energy Storage

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PATENT OFFICE C.V.S.B. Engineering College, 1/2019 16:40

15-Nov-2019/96347/201941046543/Form 2 (Title Page)

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 India.

2. PREAMBLE TO THE DESCRIPTION :

-----Separate sheet is attached-----

3. COMPLETE SPECIFICATION

The following specification particularly describes the invention and the manner in which it is to be performed.

-----Separate sheet is attached-----

4. DESCRIPTION



----- Separate sheet is attached -----

5. CLAIMS

----- Separate sheet is attached -----

6. DATE

: 15.11.2019

Signature : (1) 
 (2) 

Name : (1) Dr. G. Prabhakar
 (2) Dr. S. Selvaperumal

7. ABSTRACT OF THE INVENTION

----- Separate sheet is attached -----

Note:-

- ❖ Repeat boxes in case of more than one entry.
- ❖ To be signed by the applicant(s) or by authorized registered patent agent otherwise where mentioned.
- ❖ Tick(✓)/cross(x) whichever is applicable/not applicable in declaration in para-9.
- ❖ Name of the Inventor and applicant should be given in full, family name in the beginning.
- ❖ Complete address of the inventor and applicant should be given stating the postal Index no./code, state and country,
- ❖ Strike out the column which is/are not applicable

PATENT

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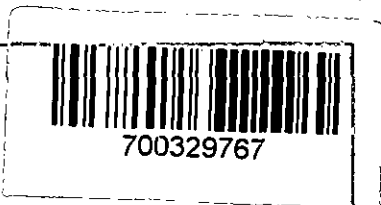
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Form 3
THE PATENTS ACTS, 1970
(39 of 1970) &
The Patents Rules, 2003
STATEMENT AND UNDERTAKING UNDER SECTION 8
(See Section 8, Rule 12)

1. Name of the applicant		We are (1) Dr. G. Prabhakar (2) Dr. S. Selvaperumal (3) Dr. V. Nirmal Kannan hereby declare that			
2. Name, Address and Nationality of the joint applicant		i. That we have not made any application for the same / substantially the same invention outside India ii. That we, who have made this application Number _____ dated _____ alone, made for the same / substantially the same invention, application for the patent in other Countries, the particulars of which are given below:			
Name of the Country	Date of Application	Application Number	Status of application	Date of publication	Date of grant
N/A	N/A	N/A	N/A	N/A	N/A
3. Name and Address of the Assignee		iii. That the rights in the application has been to _____ that I undertake that upto the date of grant of the patent by the Controller, I would keep him involved in writing the details regarding corresponding applications for the patents filed outside India within six months from the date of filing of such application. Dated this 15 day of November 2019			
4. To be signed by the applicant or his authorized registered patent agent		Signature : (1) (2) Name : (1) Dr. G. Prabhakar (2) Dr. S. Selvaperumal			
5. Name of the natural person who has signed.		Date : 15.11.2019 Signature : (1) (2) Name : (1) Dr. G. Prabhakar (2) Dr. S. Selvaperumal			
		To The Controller of Patents, The Patent Office. Chennai			

PATENT OFFICE, CHENNAI 20/11/2019 16:40
 Note: Strike out whichever is not applicable

FORM 5
THE PATENTS ACT, 1970
(39 of 1970) &
The Patents Rules, 2003
DECLARATION AS TO INVENTORSHIP
[See section 10(6) and rule 13(6)]



1. NAME OF APPLICANT	: (1) Dr. G. Prabhakar (2) Dr. S. Selvaperumal (3) Dr. V. Nirmal Kannan
-----------------------------	---

hereby declare that the true and first inventor of the invention disclosed in the complete specification filed in pursuance of my application numbered _____ dated _____ is

2. INVENTOR

Inventor (1)
NAME : Dr. G. Prabhakar
NATIONALITY : Indian
ADDRESS : Associate Professor,
Department of Electrical and Electronics Engineering,
V.S.B. Engineering College,
Karur -639 111, Tamil Nadu, India.

Inventor (2)
NAME : Dr. S. Selvaperumal
NATIONALITY : Indian
ADDRESS : Professor and Head,
Department of Electrical and Electronics Engineering,
Syed Ammal Engineering College,
Ramanathapuram-623502, Tamil Nadu, India.

Inventor (3)
NAME : Dr. V. Nirmal Kannan
NATIONALITY : Indian
ADDRESS : Professor ,
Department of Mechanical Engineering,
V.S.B. Engineering College,
Karur -639 111, Tamil Nadu, India

Inventor (4)
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NATIONALITY : Indian
ADDRESS : Professor and Dean
Department of Electronics and Communication Engineering,
V.S.B. Engineering College,
Karur -639 111, Tamil Nadu, India

Inventor (5)
NAME : Dr. K. Umamaheswari
NATIONALITY : Indian
ADDRESS : Associate Professor,
Department of Electrical and Electronics Engineering,
V.S.B. Engineering College,
Karur -639 111, Tamil Nadu, India.

15-Nov-2019/96347/201941046543/Form 5

PATENT OFFICE, CHENNAI 20/11/2019 16:40

Inventor (6)

NAME : Dr. G. Satish Pandian
 NATIONALITY : Indian
 ADDRESS : Associate Professor,
 Department of Mechanical Engineering,
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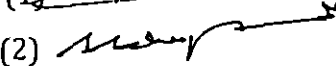
Inventor (7)

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 India.

DATE : 15.11.2019

Signature : (1) 
 (2) 

Name : (1) Dr. G. Prabhakar
 (2) Dr. S. Selvaperumal

3. DECLARATION TO BE GIVEN WHEN THE APPLICATION IN INDIA IS FILED BY THE APPLICANT IN THE CONVENTION COUNTRY:-

I, the applicant in the convention country hereby declare that my right to apply for a patent in India is by way of assignment from the true and first inventor

Date : 15.11.2019

4. STATEMENT

(to be signed by the additional inventor not mentioned in the application form)

I assent to the invention referred to in the above declaration, being included in the complete specification filed in pursuance of the stated application.

Date: 15.11.2019

PATENT OFFICE CHENNAI 20/11/2019 16:40
 Signature of the additional inventor(s):-

Name:-

To

The Controller of Patent,
The Patent Office, Chennai.

Note:-

- ❖ Repeat boxes in case of more than one entry.
- ❖ To be signed by the applicant(s) or by authorized registered patent agent
Or otherwise where mentioned.
- ❖ Tic(√)/cross(x) whichever is applicable/not applicable in declaration in para-9.
- ❖ Name of the Inventor and applicant should be given in full, family name in the beginning.
- ❖ Complete address of the inventor and applicant should be given stating the postal Index no./code, state and country,
- ❖ Strike out the column which is/are not applicable

15-Nov-2019/96347/201941046543/Form 5

PATENT OFFICE CHENNAI 20-11-2019 .16:40

FORM 9
THE PATENTS ACT, 1970
(39 of 1970)
&
The Patents Rules, 2003
REQUEST FOR PUBLICATION
[See Section 11A(2): rule 24A]

CBR : 375353

Date : 15-11-2019

Amt : 2750/-

15/11/19

1. Name, address and nationality of the applicants:

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V.S.B. Engineering College,
Karur -639 111, Tamil Nadu, India



700329768

To be signed by the applicant or hereby request for early publication of my his
authorized registered patent application for Patent No. _____
dated _____ under section 11A(2) Act.

2. Name of the natural person who has signed.

DATE : 15.11.2019

Signature : (1) *[Signature]*
(2) *[Signature]*

Name : (1) Dr. G. Prabhakar
(2) Dr. S. Selvaperumal

To

The Controller of Patents,

Patent Office, CHENNAI 20.11.2019 16:40
Guindy,
Chennai-600 032.

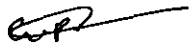

15-Nov-2019/96347/201941046543/Form 9

Claim

G glass for Electrical Power Generation and Electrical Energy Storage

1. This invention comprises of both generation and storage of electrical energy with minimum built in area consumption, as the product can be used as a window or a door.
2. Generation and storage can be extended as per the requirement of load in a simple way.
3. Maintenance and Replacement is simple.
4. The significant scope of this product invention is generating and storing energy without pollution.
5. The scrap of this product will not pollute the environment when compared to that of the other methodologies and products of this type.

DATE : 15.11.2019

Signature : (1) 
(2) 

Name : (1) Dr. G. Prabhakar
(2) Dr. S. Selvaperumal