

Sr No.	CBR No / Reference No.	Patent Application No.	Name of the Patent	Date of Filing the patent
1	201621000959	201621000959	Self Cleaning Steps	11-01-2016
2	6386/ E- 2/1040/2016- MUM	201621012701	Brick Box Type Solar Cooker	11-04-2016
3	9157/ E-2/886/ 2017- MUM	201721013090	Ice to Water Converter Cum Water Treatment Apparatus Based on Solar Energy	12-04-2017
4	2728/ E-2/ 315/ 2018-MUM	201821005958	Solar Collector Using Plastic Glazing	16-02-2018
5	7603/ E- 2/12227/2016- MUM	201621015234	Pedal Operated Oscillating Cylinder Reciprocating Pump	02-05-2016
6	6735/ E-2/ 771/ 2018-MUM	201721013090	Curved Surface Absorber Type Foldable Solar Fluid Heater	11-04-2018
7	TEMP/E- 1/44626/2018- MUM	201821041516	Solar Cooker With Heat Storage	02-11-2018
8	TEMP/E- 1/8803/2020- MUM	202021008250	Sliding Vehicle Chassis frame to minimize the intensity of frontal	27-02-2020
9	TEMP/E- 1/9330/2020- MUM	202021008734	Sliding and Interlocking vehicle chassis frame	29-02-2020
10	TEMP/E- 1/2480/2021- MUM	202121002275	Vehicle Chassis Framewith sliding and Interlocking System	18-01-2021
11	TEMP/E- 1/3541/2021- MUM	202121003496	Solid Damping System with Variable Length Facility	27-01-2021
12	TEMP/E- 1/22107/2022- MUM	202221019975	Wood Seasoning Cum Straightening Device	01-04-2022
13	TEMP/E- 1/24904/2022- MUM	202221022532	Solar Distillation System With Evapoartive Surface Augmentation	16-04-2022

Details of Patents filed Till Date

Sr. No.	Nation	Patent Application No.	Name of the Patent	Date of Filing	Date of Award	Patent No.
1	Indian Patent	201621022124	Curved Surface Absorber Type Solar Fluid Heater	28-12-2016	Oct-21	378587
2	US Patent	P8023US00	Curved Surface Absorber Type Solar Fluid Heater	06-05-2019	Oct-21	PCT Pub No.WO2018/12 2870
3	China Patent	PCT/IN2017 /050619	Curved Surface Absorber Type Solar Fluid Heater	06-04-2019	Oct-21	PCT Pub No.WO2018/12 2870
4	Indian Patent	2185/MUM/2011	MULTIPURPOSE COOLING APPARATUS	02-08-2011	Jan-21	356049
5	Indian Patent	1753/MUM/2015	Multipurpose Hollow Hemispherical Solar Collector	01-05-2015	Sep-21	377915



**INTELLECTUAL
PROPERTY INDIA**

PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS



सत्यमेव जयते

भारत सरकार
GOVERNMENT OF INDIA

पेटेंट कार्यालय
THE PATENT OFFICE

पेटेंट प्रमाणपत्र
PATENT CERTIFICATE
(Rule 74 Of The Patents Rules)

क्रमांक : 022111443
SL No :



पेटेंट सं. / Patent No. : 356049
आवेदन सं. / Application No. : 2185/MUM/2011
फाइल करने की तारीख / Date of Filing : 02/08/2011
पेटेंटी / Patentee : 1.TARUP MILAP CHORDIA 2.DR. SANJEEV DAMODAR
SURYAWANSHI 3.NIKITA GURANA NENWANI 4.SURAJ
SHITALCHAND YAMBAL et al.

प्रमाणित किया जाता है कि पेटेंटी को उपरोक्त आवेदन में यथाप्रकटित "MULTIPURPOSE COOLING APPARATUS" नामक आविष्कार के लिए, पेटेंट अधिनियम, १९७० के उपबंधों के अनुसार आज तारीख 2nd day of August 2011 से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled "MULTIPURPOSE COOLING APPARATUS" as disclosed in the above mentioned application for the term of 20 years from the 2nd day of August 2011 in accordance with the provisions of the Patents Act,1970.



अनुदान की तारीख : 19/01/2021
Date of Grant :

पेटेंट नियंत्रक
Controller of Patent

टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, 2nd day of August 2013 को और उसके पश्चात प्रत्येक वर्ष में उसी दिन देय होगी।

Note. - The fees for renewal of this patent, if it is to be maintained will fall / has fallen due on 2nd day of August 2013 and on the same day in every year thereafter.



**INTELLECTUAL
PROPERTY INDIA**

PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS



सत्यमेव जयते

क्रमांक : 022115097
SL No :



भारत सरकार
GOVERNMENT OF INDIA

पेटेंट कार्यालय
THE PATENT OFFICE

पेटेंट प्रमाणपत्र
PATENT CERTIFICATE
(Rule 74 Of The Patents Rules)

पेटेंट सं. / Patent No. : 378587
आवेदन सं. / Application No. : 201621022124
फाइल करने की तारीख / Date of Filing : 28/12/2016
पेटेंटी / Patentee : 1.DR. SURYAWANSHI SANJEEV DAMODAR 2.MR.
NARENDRA NILKANTH PAWAR

प्रमाणित किया जाता है कि पेटेंटी को उपरोक्त आवेदन में यथाप्रकटित CURVED SURFACE ABSORBER TYPE SOLAR FLUID HEATER नामक आविष्कार के लिए, पेटेंट अधिनियम, १९७० के उपबंधों के अनुसार आज तारीख 28th day of December 2016 से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled CURVED SURFACE ABSORBER TYPE SOLAR FLUID HEATER as disclosed in the above mentioned application for the term of 20 years from the 28th day of December 2016 in accordance with the provisions of the Patents Act,1970.



अनुदान की तारीख : 04/10/2021
Date of Grant :

पेटेंट नियंत्रक
Controller of Patent

टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, 28th day of December 2018 को और उसके पश्चात प्रत्येक वर्ष में उसी दिन देय होगी।

Note. - The fees for renewal of this patent, if it is to be maintained will fall / has fallen due on 28th day of December 2018 and on the same day in every year thereafter.



**INTELLECTUAL
PROPERTY INDIA**

PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS



सत्यमेव जयते

क्रमांक : 022114986
SL No :



भारत सरकार
GOVERNMENT OF INDIA

पेटेंट कार्यालय
THE PATENT OFFICE

पेटेंट प्रमाणपत्र
PATENT CERTIFICATE
(Rule 74 Of The Patents Rules)

पेटेंट सं. / Patent No. : 377915
आवेदन सं. / Application No. : 1753/MUM/2015
फाइल करने की तारीख / Date of Filing : 01/05/2015
पेटेंटी / Patentee : 1.DR. SANJEEV DAMODAR SURYAWANSHI
2.NARENDRA NILKANTH PAWAR

प्रमाणित किया जाता है कि पेटेंटी को उपरोक्त आवेदन में यथाप्रकटित MULTIPURPOSE HOLLOW HEMISPHERICAL SOLAR COLLECTOR नामक आविष्कार के लिए, पेटेंट अधिनियम, १९७० के उपबंधों के अनुसार आज तारीख 1st day of May 2015 से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled MULTIPURPOSE HOLLOW HEMISPHERICAL SOLAR COLLECTOR as disclosed in the above mentioned application for the term of 20 years from the 1st day of May 2015 in accordance with the provisions of the Patents Act,1970.



अनुदान की तारीख : 27/09/2021
Date of Grant :

पेटेंट नियंत्रक
Controller of Patent

टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, 1st day of May 2017 को और उसके पश्चात प्रत्येक वर्ष में उसी दिन देय होगी।

Note. - The fees for renewal of this patent, if it is to be maintained will fall / has fallen due on 1st day of May 2017 and on the same day in every year thereafter.

No.: 4632747

SAMPLE

PATENT CERTIFICATE FOR INVENTION

TITLE OF INVENTION: CURVED SURFACE ABSORBER TYPE SOLAR FLUID HEATER
INVENTOR: SURYAWANSHI, SANJEEV DAMODAR ; PAWAR, NARENDRA
NILKANTH
PATENT NO.: ZL 2017800816789
FILING DATE OF APPLICATION: December 28, 2017
PATENTEE: SURYAWANSHI, Sanjeev Damodar & PAWAR, Narendra Nilkanth
ADDRESS OF FIRST PATENTEE: MAHARASHTRA, INDIA
ISSUANCE DATE: August 24, 2021
ISSUANCE NO.: CN 110214254 B

After the examination was performed according to the Patent Law, the present Office decides hereby to issue a patent right and the present Patent Certificate, and to register the right on the Patent Record. The Patent Right will be effective as of the date of announcement of granting the Patent Right. The term of the present patent is twenty years, counting from the filing date.

The present Certificate discloses items of the legal status as same as the patent right was recorded. Items of assignment, pledge, invalidation, termination, and restoration of patent right, as well as change of Proprietor's name, nationality, address, etc., are recorded on the Patent Record.

Director General Shen Changyu

Date: August 24, 2021

NO.: 4632747

Proprietor of Patent Right should pay annuities according to the provisions prescribed in the Patent Law and the Implementing Regulation thereof. Payment of annuities for the present patent shall be exercised within one month prior to December 28, each natural year. Failure to pay a prescribed annuity would result in the patent right ceasing when the term for payment of said annuity expires.

The information of the applicant and inventor recorded in this patent at the filing date of application are as follows:

APPLICANT: SURYAWANSHI, Sanjeev Damodar & PAWAR, Narendra Nilkanth

INVENTOR: SURYAWANSHI, SANJEEV DAMODAR; PAWAR, NARENDRA NILKANTH

证书号第4632747号



发明专利证书

发明名称：曲面吸收器型太阳能流体加热器

发明人：桑吉维·达莫达·苏里亚万希
纳伦德拉·尼尔坎特·帕瓦尔

专利号：ZL 2017 8 0081678.9

专利申请日：2017年12月28日

专利权人：桑吉维·达莫达·苏里亚万希
纳伦德拉·尼尔坎特·帕瓦尔

地址：印度马哈拉施特拉邦

授权公告日：2021年08月24日

授权公告号：CN 110214254 B

国家知识产权局依照中华人民共和国专利法进行审查，决定授予专利权，颁发发明专利证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。专利权期限为二十年，自申请日起算。

专利书记载专利权登记时的法律状况。专利权的转移、质押、无效、终止、恢复和专利权人的姓名或名称、国籍、地址变更等事项记载在专利登记簿上。



局长
申长雨

申长雨

2021年08月24日

证书号第 4632747 号

专利权人应当依照专利法及其实施细则规定缴纳年费。本专利的年费应当在每年 12 月 28 日前缴纳。未按照规定缴纳年费的，专利权自应当缴纳年费期满之日起终止。

申请日时本专利记载的申请人、发明人信息如下：

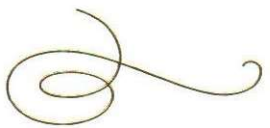
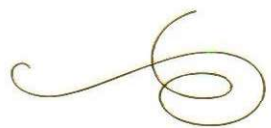
申请人：

桑吉维·达莫达·苏里亚万希；纳伦德拉·尼尔坎特·帕瓦尔

发明人：

桑吉维·达莫达·苏里亚万希；纳伦德拉·尼尔坎特·帕瓦尔

*United
States
of
America*



To Promote the Progress

of Science and Useful Arts

The Director

of the United States Patent and Trademark Office has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this United States

Patent

grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(2) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

Donna H. Hulford

Performing the Functions and Duties of the Under Secretary of Commerce for Intellectual Property and

Director of the United States Patent and Trademark Office



Maintenance Fee Notice

If the application for this patent was filed on or after December 12, 1980, maintenance fees are due three years and six months, seven years and six months, and eleven years and six months after the date of this grant, or within a grace period of six months thereafter upon payment of a surcharge as provided by law. The amount, number and timing of the maintenance fees required may be changed by law or regulation. Unless payment of the applicable maintenance fee is received in the United States Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period.

Patent Term Notice

If the application for this patent was filed on or after June 8, 1995, the term of this patent begins on the date on which this patent issues and ends twenty years from the filing date of the application or, if the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121, 365(c), or 386(c), twenty years from the filing date of the earliest such application ("the twenty-year term"), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b), and any extension as provided by 35 U.S.C. 154(b) or 156 or any disclaimer under 35 U.S.C. 253.

If this application was filed prior to June 8, 1995, the term of this patent begins on the date on which this patent issues and ends on the later of seventeen years from the date of the grant of this patent or the twenty-year term set forth above for patents resulting from applications filed on or after June 8, 1995, subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b) and any extension as provided by 35 U.S.C. 156 or any disclaimer under 35 U.S.C. 253.



US011112144B2

(12) **United States Patent**
Suryawanshi et al.

(10) **Patent No.:** **US 11,112,144 B2**
(45) **Date of Patent:** **Sep. 7, 2021**

(54) **CURVED SURFACE ABSORBER TYPE SOLAR FLUID HEATER**

(58) **Field of Classification Search**
CPC .. F24S 60/30; F24S 10/70; F24S 10/40; F24S 2020/18; F24S 40/53; F24S 40/60; F24S 70/60

(71) **Applicants:** Sanjeev Damodar Suryawanshi, Maharashtra (IN); Narendra Nilkanth Pawar, Maharashtra (IN)

(Continued)

(72) **Inventors:** Sanjeev Damodar Suryawanshi, Maharashtra (IN); Narendra Nilkanth Pawar, Maharashtra (IN)

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,086,911 A * 5/1978 Futch F24S 60/30
126/591
4,098,263 A * 7/1978 Lanciault F24S 60/30
126/623

(Continued)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

FOREIGN PATENT DOCUMENTS

(21) **Appl. No.:** **16/474,160**

EP 0466107 A1 * 1/1992 F24S 25/10
FR 2367993 A1 * 5/1978 F24S 60/30

(22) **PCT Filed:** **Dec. 28, 2017**

(Continued)

(86) **PCT No.:** **PCT/IN2017/050619**

§ 371 (c)(1),

(2) **Date:** **Jun. 27, 2019**

Primary Examiner — Steven B McAllister

Assistant Examiner — Daniel E. Namay

(74) *Attorney, Agent, or Firm* — DeLio Peterson & Curcio LLC; Robert Curcio

(87) **PCT Pub. No.:** **WO2018/122870**

PCT Pub. Date: **Jul. 5, 2018**

(57) **ABSTRACT**

(65) **Prior Publication Data**

US 2019/0346179 A1 Nov. 14, 2019

A curved surface absorber type solar fluid heater having radially spaced curved surfaces, preferably hemispherical and closed at bottom periphery, defining a closed chamber termed as collector which receives a fluid to be heated. The curved surface absorber type solar fluid heater encompasses two radially spaced transparent curved surfaces preferably hemispherical, closed at bottom periphery, placed over collector termed as a glazing, and an insulated hemispherical hot fluid tank, placed within the cavity of inner curved surface of the collector and bottom insulation. A plurality of plumbing connections is made between the collector and the hot fluid tank with arrangement of non-return valves to prevent backflow of fluid from hot fluid tank towards the collector. An air vent is located at the highest position of the collector. A drain plug is located at a lowest position on the collector.

(30) **Foreign Application Priority Data**

Dec. 28, 2016 (IN) IN201621022124

(51) **Int. Cl.**

F24S 60/30 (2018.01)

F24S 10/70 (2018.01)

(Continued)

(52) **U.S. Cl.**

CPC **F24S 60/30** (2018.05); **F24S 10/40** (2018.05); **F24S 10/70** (2018.05); **F24S 70/60** (2018.05);

(Continued)

19 Claims, 7 Drawing Sheets

