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भारत सरकार  
GOVERNMENT OF INDIA

पेटेंट कार्यालय  
THE PATENT OFFICE

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

क्रमांक : 044135898  
SL No :



पेटेंट सं. / Patent No. : 382332  
आवेदन सं. / Application No. : 2105/CHE/2013  
फाइल करने की तारीख / Date of Filing : 10/05/2013  
पेटेंटी / Patentee : INDIAN INSTITUTE OF SCIENCE

प्रमाणित किया जाता है कि पेटेंटी को उपरोक्त आवेदन में यथाप्रकटित "A SEAT ASSEMBLY FOR A CYCLE" नामक आविष्कार के लिए, पेटेंट अधिनियम, १९७० के उपबंधों के अनुसार आज तारीख 10th day of May 2013 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 "A SEAT ASSEMBLY FOR A CYCLE" as disclosed in the above mentioned application for the term of 20 years from the 10th day of May 2013 in accordance with the provisions of the Patents Act, 1970.



अनुदान की तारीख : 23/11/2021  
Date of Grant :

पेटेंट नियंत्रक  
Controller of Patent

टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, 10th day of May 2015 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 10th day of May 2015 and on the same day in every year thereafter.



**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 THE APPLICANT:**

We,

|  |                            |   |
|--|----------------------------|---|
| <b>Name:</b> Indian Institute of Science | <b>Nationality:</b> Indian | <b>Address:</b> Bangalore 560 012, Karnataka, India |
|--|----------------------------|---|

hereby declare that the true and first inventor(s) of the invention disclosed in the complete specification filed in pursuance of our application numbered \_\_\_\_\_ filed on \_\_\_\_\_.

**2. INVENTOR(S)**

(a) NAME : Dibakar Sen  
(b) NATIONALITY : Indian  
(c) ADDRESS : Centre for Product Design and Manufacturing Indian Institute of Science, Bangalore-560012

(a) NAME : Mukunda Madhav Nath  
(b) NATIONALITY : Indian  
(c) ADDRESS : Centre for Product Design and Manufacturing Indian Institute of Science, Bangalore-560012

(a) NAME : Nitin Gupta  
(b) NATIONALITY : Indian  
(c) ADDRESS : Centre for Product Design and Manufacturing Indian Institute of Science, Bangalore-560012

Dated this 10<sup>th</sup> Day of May, 2013

Signature:

Name:

P.H.D. RANGAPPA

K & S PARTNERS

AGENT FOR THE APPLICANT

**~~3. DECLARATION TO BE GIVEN WHEN THE APPLICATION IN INDIA IS FILED BY THE APPLICANT(S) IN THE CONVENTION COUNTRY:-~~**

~~We the applicant(s) in the convention country hereby declare that our right to apply for a patent in India is by way of assignment from the true and first inventor(s).~~

~~Dated this 10<sup>th</sup> Day of May, 2013~~

~~\_\_\_\_\_ Signature:~~

~~\_\_\_\_\_ Name: P.H.D. RANGAPPA~~

~~\_\_\_\_\_ K & S PARTNERS~~

~~\_\_\_\_\_ AGENT FOR THE APPLICANT~~

**~~4. STATEMENT (to be signed by the additional inventor(s) not mentioned in the application form)~~**

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

~~Dated this 10<sup>th</sup> Day of May, 2013~~

~~Signature of additional inventor(s):-~~

~~===== Name:-~~

To:

The Controller of Patent

The Patent Office Branch

At: *Chennai*

31 MAY 2013

FORM 13  
THE PATENTS ACT, 1970  
(39 of 1970)  
&  
THE PATENTS RULES, 2003  
APPLICATION FOR AMENDMENT OF THE APPLICATION FOR PATENT /  
COMPLETE SPECIFICATION  
[See section 57 and Rule 81(1)]

CBR: 766/  
Dte: 31/05/2013  
Amt: 800  
3115713

We,

|   |                    |   |
|---|--------------------|---|
| Name:<br><b>INDIAN INSTITUTE<br/>OF SCIENCE</b> | Nationality:<br>IN | Address:<br>Bangalore 560 012, Karnataka, India |
|---|--------------------|---|

request leave to amend the specification with respect to the Indian Patent Application No. **2105/CHE/2013** filed on **10.05.2013** by way of correction.

Our reasons for making this amendment are as follows:

The name for the following inventor has been wrongly indicated as "Mukunda Madhav Nath" instead of **Mukunda Madhava Nath**

We declare that no action for infringement or for the revocation of the patent in question is pending before a court.

We declare that the facts and matters stated herein are true to the best of our knowledge, information and belief.

Dated this 30<sup>th</sup> day of May, 2013

*P.H.D. Rangappa*  
P.H.D. RANGAPPA  
OF K & S PARTNERS  
AGENT FOR THE APPLICANT

To  
The Controller of Patents  
The Patent Office  
Chennai

# FORM 2

THE PATENTS ACT, 1970  
(39 of 1970)  
&  
THE PATENTS RULES, 2003

## COMPLETE SPECIFICATION

(See section 10 and rule 13)

**Title: “A SEAT ASSEMBLY FOR A CYCLE”**

**NAME AND ADDRESS OF THE APPLICANT:**

**INDIAN INSTITUTE OF SCIENCE**, Bangalore 560 012, Karnataka, India.

**NATIONALITY:** Indian

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

## **TECHNICAL FIELD:**

The present disclosure relates to a seat assembly. Embodiments of the present disclosure disclose the seat assembly for securement to a bicycle.

## **BACKGROUND**

Generally vehicles such as but not limiting to Bicycles, tri-cycles, two wheelers are provided with seat to support body weight on Ischial tuberosities, generally known as hip bone. Narrow seats do not provide enough space for supporting hip bones and hip bones hang outside the sitting area. Because of this perineum gets pressed against seat which leads to health issues for male riders and discomfort for female riders.

Present seat assemblies do not provide proper suspension, and thereby the riders feel uncomfortable seating. Further, the nose part of the seat creates perineum pressure which can lead to many health issues including impotency to the male riders. To solve this problem, nose part of the seat is replaced with no-nose saddle. No-nose saddles solve the problem of increased perineum pressure but it leads to other problems. Researches show that no-nose saddles reduce the rider's perception of stability. Furthermore, absence of nose makes it difficult for the rider to stabilize the bicycles while turning it.

One such no-nose saddle is known from the prior art US 6652025 (herein after referred as '025 patent). The bicycle seat assembly of the '025 patent comprises a mount in the form of a pair of parallel and spaced apart mounting members. A pair of support members extends upwardly and rearwardly in relation to the respective mounting members for supporting a pair of annular seat members thereon which support the buttocks of the rider. The support members and seat members supported thereon are movable relative to the mounting members between flexed and unflexed positions. The seat members include a peripheral seating surface about a central opening which suspends the sit bones of the rider therein.

The bicycle seat assembly as described in the '025 patent is provided with a suspension in the end which makes the design similar to conventional designs and system may not work as intended because the structure is kinetically over constraint.

In light of foregoing discussion, it is necessary to develop a seat assembly to overcome the problems stated above.

## **SUMMARY**

The shortcomings of the prior art are overcome and additional advantages are provided through the provision of system as claimed in the present disclosure.

Additional features and advantages are realized through the techniques of the present disclosure. Other embodiments and aspects of the disclosure are described in detail herein and are considered a part of the claimed disclosure.

In one non-limiting embodiment of the present disclosure, there is provided a seat assembly for a cycle. The assembly comprises a plurality of rods connectable to a fork end of the bicycle. Each of the plurality of rods are spaced apart from one another, and rods extends longitudinally from a respective rear end to a respective front end of the plurality of rods forming a base portion. The rods are bent at predetermined shape at the front end to form a bent portion, and each of the plurality of rods extends longitudinally towards the rear end from the bent portion forming a top portion. The rods are made of material having yield strength greater than 1000 Mpa. The assembly further comprises a damper provided in between the base portion and the top portion of the plurality of rods to facilitate damping in the seat assembly.

In an embodiment of the present disclosure, a seat is mounted on top portion of the plurality of rods.

In an embodiment of the present disclosure, the plurality of rods is made of material having vertical displacement at the top end less than 10mm within the elastic limit in the aforementioned configuration.

In an embodiment of the present disclosure, the plurality of rods is made of a material such as spring steel, and carbon fibre. Further, the dampers are made of a visco-elastic material, the visco-elastic material is at least one of natural rubber, synthetic rubber, neoprene, silicone rubber, butyl rubber, polyacrylic rubber, and polyurethane.

In an embodiment of the present disclosure, the dampers in between the base portion and the top portion of the plurality of rods using support members. The support member is pin-joint assembly. The pin-joint assembly comprises a pin and a rotating part connected to the plurality of rods using a strap.

In an embodiment of the present disclosure, the plurality rods are substantially parallel to each other.

In an embodiment of the present disclosure, the base portion and the top portion of the plurality of rods are inclined at an angle ranging from about 0 degrees to about 30 degrees.

It is to be understood that the aspects and embodiments of the disclosure described above may be used in any combination with each other. Several of the aspects and embodiments may be combined together to form a further embodiment of the disclosure.

The foregoing summary is illustrative only and is not intended to be in any way limiting. In addition to the illustrative aspects, embodiments, and features described above, further aspects, embodiments, and features will become apparent by reference to the drawings and the following detailed description.

#### **BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS**

The novel features and characteristic of the disclosure are set forth in the appended claims. The disclosure itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying figures. One or more embodiments are now described, by way of example only, with reference to the accompanying figures wherein like reference numerals represent like elements and in which:

FIG. 1 illustrates perspective view of bicycle seat assembly according to an embodiment of the present disclosure.

FIG. 2 illustrates side view of bicycle seat assembly showing the position of damper in a bent portion of rods according to present disclosure.

FIG. 3 illustrates a perspective view of damper of the bicycle seat assembly as one embodiment of the present disclosure.

FIGS. 4a-4c illustrates a perspective view of support member for a damper of the seat assembly according to an embodiment of the present disclosure.

The figures depict embodiments of the disclosure for purposes of illustration only. One skilled in the art will readily recognize from the following description that alternative



embodiments of the structures and methods illustrated herein may be employed without departing from the principles of the disclosure described herein.

## **DETAILED DESCRIPTION**

The foregoing has broadly outlined the features and technical advantages of the present disclosure in order that the detailed description of the disclosure that follows may be better understood. Additional features and advantages of the disclosure will be described hereinafter which form the subject of the claims of the disclosure. It should be appreciated by those skilled in the art that the conception and specific embodiment disclosed may be readily utilized as a basis for modifying or designing other structures for carrying out the same purposes of the present disclosure. It should also be realized by those skilled in the art that such equivalent constructions do not depart from the spirit and scope of the disclosure as set forth in the appended claims. The novel features which are believed to be characteristic of the disclosure, both as to its organization and method of operation, together with further objects and advantages will be better understood from the following description when considered in connection with the accompanying figures. It is to be expressly understood, however, that each of the figures is provided for the purpose of illustration and description only and is not intended as a definition of the limits of the present disclosure.

To overcome the drawbacks mentioned in the background the present disclosure provides a seat assembly for a cycle. The term cycle referred herein above and below is a kind of vehicle which is either manually powered, or powered by any motor. The cycle may be at least one of but not limiting to bi-cycle, and tri-cycle. The seat assembly may be secured to a frame of the cycle to support body weight of the rider/user. The seat assembly comprises a plurality of rods connectable to a fork end of the bicycle. The rods are arranged substantially parallel to each other, and are spaced apart from one another. The rods extend longitudinally from their respective rear end to a respective front end forming a base portion of the seat assembly. Then, the rods are bent at predetermined shape at the front end to form a bent portion. Then, the rods extend longitudinally towards the rear end from the bent portion forming a top portion of the seat assembly. A seat of predetermined shape may be removably fixed on top portion of the seat assembly to form a seating portion. The arrangement of rods as explained above, facilitates suspension/spring action in the seat assembly thereby improves comfortness of the rider/user of the cycle. The assembly further comprises a damper provided in between the base portion and the top portion of the rods to facilitate damping in the seat assembly.

Reference will now be made to figures which are exemplary embodiments of the present disclosure, as illustrated in the accompanying drawings. Where ever possible referral numerals will be used to refer to the same or like parts.

In the following description the words such as front, rear, bottom, and top are used with respect to particular orientation of the figures as depicted in the present disclosure. The words are used to explain the aspects of the present disclosure and for better understanding; however the same is not a limitation to the present disclosure. The present disclosure is explained by taking bicycle as example, however the same should not be considered as limiting factor. The seat assembly as described can be readily used in any application where such need is necessary.

FIG. 1 is an exemplary embodiment of the present disclosure which illustrates perspective view of bicycle seat assembly (100). The bicycle seat assembly (100) according to present disclosure comprises plurality of substantially parallel running rods (101) which are connectable to fork (F) end of the bicycle frame. In an embodiment of the present, the rods (101) are two in number. In an another embodiment, the rods (101) may be more than two such as four, six, eight, etc. In alternative embodiment of the present disclosure, the rods (101) may be in a form of sheet with a predetermined width. The rods (101) are spaced apart from one another and run longitudinally from a respective rear end (101a) to a respective front end (101b) of the rods (101) forming a base portion (A) of the seat assembly (100). In front end (101) the rods (101) are configured to turn backward making a bent portion (B) of predetermined shape and then run backwards. In an embodiment of the present disclosure, the shape of the bent portion (B) is selected from at least one of but not limiting to “C” shape, “V” shape, “U” shape, and inverted “U” shape. Further, the rods (101) extend from the bent portion (B) towards rear end (101a) of the rods (101) to form a top portion (C) of the seat assembly (100). In an embodiment of the present disclosure, the top portion (C) and base portion (A) of the seat assembly (100) is such that, but not limiting to, they are mutually parallel to each other. In alternative embodiment, the top portion (C) and base portion (A) are configured to be at an angle ranging from about 0 degrees to about 30 degrees. i.e. the angle the top portion (C) make when kept of the base portion (A) would range from 0 to about 30 degrees. In an embodiment of the present disclosure, the rods may be configured in a shape such as but not limiting to circular, square, rectangular, triangular or any other shape which is

known in the art. Further, the surface pattern of the plurality rods (101) may be flat or serrated or hair pin configuration.

The condition of operation of the rods (101) involves shock and impact loading in a continuous manner. Further, in the seat assembly (100) of the present disclosure, the displacement of the seat (104) in the vertically downward direction is made within predetermined limit to maintain human comfort. In an embodiment of the present disclosure, the rods (101) are made materials are having yield strength of 1000 MPa and above. Further, the vertical deflection of the rods (101) can be up to 10 mm at the loading point of the rod. Therefore, the material is elastic enough to provide less than 10 mm of lateral deflection with respect to its longitudinal axis without reaching yield stress limit so that only elastic deformation occurs. As an example, the rods (101) are made of material such as alloy spring steel. The alloy spring steel is used for conditions of high stress and shock/impact loadings. There are three variants of alloy spring steel that can be used in the present disclosure, i.e. Chromium Vanadium, Silicon Manganese, and Chromium Silicon. In an embodiment, the rods may be made of material such as but not limiting to any composite or plastic materials, which has yield strength more than 1000MPa, and carbon fibre

The assembly (100) includes a seat (104) removably fixed on to the top portion (C) of the parallel rods (101) which is extending towards rear end (101a) of the rods (101) from the bent portion (B). The seat (104) supports rider's hip bones, and length of the seat (104) is decided from anthropometric data making perennial area away from seat. Further, the seat (104) is positioned on top surface (C) of the seat assembly (100) such that rear end of the seat (104) coincides with an end of top portion (C) of the seat assembly (100). The bent portion (B) also makes the nose shape which helps rider to stabilize the cycle while making maneuvers. Front edge of the seat (104) is profiled to ease the paddling. In an embodiment of the present disclosure, seat is made of a material such as but not limiting to polyurethane, plastic, and foam. In an embodiment, the seat (104) may be wrapped with the cloth/cover.

The bicycle seat assembly (100) further comprises a damper (102) fitted in between the bottom portion (A) and the top portion (C) of the seat assembly (100) to facilitate damping action. In an embodiment of the present disclosure, the bent the damper (102) is provided in bent portion (B), the bent portion (B) provides the spring action, and the rubber damper (102) gives damping action. This makes the spring-damper suspension system in the bicycle seat assembly (100), thereby improves comfort of the rider. Further, the seat assembly (100)

solves major problems of reducing the perineum pressure, supporting Ischial tuberosities, providing suspension system and provides nose for better riding stability.

FIG. 2 is an exemplary embodiment of the present disclosure which illustrates side view of the seat assembly (100) showing the position of damper (102) in a bent portion (B) of rods (101). The rubber damper (102) which is fitted between the top portion (C) and the base portion (A) of rods (101) to facilitate damping action in the bicycle seat assembly (100). In one embodiment the rubber damper (102) is held proximal to the front end (101b) as compare to the rear end (101a). In one embodiment the rubber damper (102) is held in the bent portion (B) of the rods (101) using support members (103). The support members (103) are connected to the metal rods (101) at one end, and the other ends of the support members (103) are profiled to match the shape of the damper (102) to hold the damper (102) in position. In an embodiment of the present disclosure, the damper (102) is circular in shape [best shown in FIG. 3] and the support members (103) are curved at the supporting ends to match with the damper (102). In alternative embodiment of the present disclosure, the dampers (102) are of cylindrical shape having star shaped support, and hair pin shaped profile. Alternatively, one skilled in the art may use any shape of damper (102) in between the top portion (C) and bottom portion (A) of the seat to facilitate damping.

FIGS. 4a-4c are exemplary embodiments of the present disclosure illustrating perspective view of support member (103) for a damper (102) of the seat assembly (100). The support member (103) shown in FIGS. 4a-4c is a pin-joint assembly (103). The pin-joint assembly (103) comprises a pin (103a) and a rotating part (103b) connected to the plurality of rods using a strap (103c). The pin (103a) comprises a steeped cross section, and a rotating member (103b) is positioned in a step portion of the pin (103a). The rotating member (103b) comprises a through hole at its one end to accommodate the pin (103a). Other end of the rotating member is profiled to match with the cross section of the damper (102). In an embodiment of the present disclosure, at least one support member (103) is provided in each of the rods (101) in both base portion (A) and top portion (C) for supporting the dampers (102).

In alternative embodiment, the support member can be fixed to the rods by using brackets (not numbered) [best shown in FIG. 1] by placing a rotating member (103b) in between the brackets and then passing a pin (not numbered). The damper (102) will be held between two support members [best shown in FIG.1] to facilitate damping. Since, the rotating member is

curved at supporting surface the contact between spring i.e. metal rods (101) and damper (102) makes line contact as the spring (101) starts deforming. So practically any curved shape will eventually end up in line contact as spring starts deforming which will change the damping properties of the damper (102) being used. Thus, in when support members (103) are attached to the rods through a pin joints (103a), they rotates the support members (103) when spring i.e. metal rods (101) deforms. Thus, the characteristics of damper (102) are maintained.

The bicycle seat assembly (100) of the present disclosure has following advantages:

The present disclosure provides a bicycle seat assembly (100) which is simple in construction, easy to assemble and economical.

The present disclosure provides a bicycle seat assembly (100) which uses the metallic rods (101) as spring and damper (102) to provide damping, thereby eliminates the use of additional coil spring which reduces the number of components in assembly (100), which in turn reduces the cost and complexity of the assembly greatly.

The present disclosure provides a bicycle seat assembly (100) which eliminates the problems such as Perineum pressure/Irritation, Support for body weight, Vibrations, Nose for stability perception faced by the bicycle riders:.

Industrial applicability:

The seat assembly as described can be used any other applications not limiting to cycles. For example the seat assembly can be used in two wheeler vehicles, etc.

Equivalents:

With respect to the use of substantially any plural and/or singular terms herein, those having skill in the art can translate from the plural to the singular and/or from the singular to the plural as is appropriate to the context and/or application. The various singular/plural permutations may be expressly set forth herein for sake of clarity.

It will be understood by those within the art that, in general, terms used herein, and especially in the appended claims (e.g., bodies of the appended claims) are generally intended as "open" terms (e.g., the term "including" should be interpreted as "including but not limited to," the term "having" should be interpreted as "having at least," the term "includes" should be interpreted as "includes but is not limited to," etc.). It will be further understood by those



within the art that if a specific number of an introduced claim recitation is intended, such an intent will be explicitly recited in the claim, and in the absence of such recitation no such intent is present. For example, as an aid to understanding, the following appended claims may contain usage of the introductory phrases "at least one" and "one or more" to introduce claim recitations. However, the use of such phrases should not be construed to imply that the introduction of a claim recitation by the indefinite articles "a" or "an" limits any particular claim containing such introduced claim recitation to inventions containing only one such recitation, even when the same claim includes the introductory phrases "one or more" or "at least one" and indefinite articles such as "a" or "an" (e.g., "a" and/or "an" should typically be interpreted to mean "at least one" or "one or more"); the same holds true for the use of definite articles used to introduce claim recitations. In addition, even if a specific number of an introduced claim recitation is explicitly recited, those skilled in the art will recognize that such recitation should typically be interpreted to mean at least the recited number (e.g., the bare recitation of "two recitations," without other modifiers, typically means at least two recitations, or two or more recitations). Furthermore, in those instances where a convention analogous to "at least one of A, B, and C, etc." is used, in general such a construction is intended in the sense one having skill in the art would understand the convention (e.g., "a system having at least one of A, B, and C" would include but not be limited to systems that have A alone, B alone, C alone, A and B together, A and C together, B and C together, and/or A, B, and C together, etc.). In those instances where a convention analogous to "at least one of A, B, or C, etc." is used, in general such a construction is intended in the sense one having skill in the art would understand the convention (e.g., "a system having at least one of A, B, or C" would include but not be limited to systems that have A alone, B alone, C alone, A and B together, A and C together, B and C together, and/or A, B, and C together, etc.). It will be further understood by those within the art that virtually any disjunctive word and/or phrase presenting two or more alternative terms, whether in the description, claims, or drawings, should be understood to contemplate the possibilities of including one of the terms, either of the terms, or both terms. For example, the phrase "A or B" will be understood to include the possibilities of "A" or "B" or "A and B."

While various aspects and embodiments have been disclosed herein, other aspects and embodiments will be apparent to those skilled in the art. The various aspects and embodiments disclosed herein are for purposes of illustration and are not intended to be limiting, with the true scope and spirit being indicated by the following claims.

Referral Numerals:

| <b>Reference Number</b> | <b>Description</b> |
|-------------------------|--------------------|
| 100                     | Seat assembly      |
| 101                     | Rods               |
| 101a                    | Rear end of rods   |
| 101b                    | Front end of rods  |
| 102                     | Damper             |
| 103                     | Support member     |
| 103a                    | Pin                |
| 103b                    | Rotating element   |
| 103c                    | Strap              |
| 104                     | Seat               |
| A                       | Base portion       |
| B                       | Top portion        |
| C                       | Bent Portion       |
| F                       | Fork               |

**We claim:**

1. A seat assembly (100) for a cycle, comprising:
  - a plurality of rods (101) connectable to a fork end (F) of the bicycle,
  - each of the plurality of rods (101) are spaced apart from one another, and rods (101) extends longitudinally from a respective rear end (101a) to a respective front end (101b) of the plurality of rods (101) forming a base portion (A), and the rods (101) are bent at predetermined shape at the front end (101b) to form a bent portion (B), and each of the plurality of rods (101) extends longitudinally towards the rear end (101a) from the bent portion (B) forming a top portion (C), wherein the rods (101) are made of material having yield strength greater than 1000 MPa; and
  - a damper (102) provided in between the base portion and the top portion of the plurality of rods (101) to facilitate damping in the seat assembly (100).
2. The seat assembly as claimed in claim 1, wherein a seat (104) is mounted on top portion (C) of the plurality of rods (101).
3. The seat assembly as claimed in claim 1, wherein the plurality of rods (101) is made of material having an elastic limit less than 10mm.
4. The seat assembly as claimed in claim 1, wherein the plurality of rods (101) is made of a material such as spring steel, composite material and carbon fibre.
5. The seat assembly as claimed in claim 1, wherein the dampers (102) are made of a visco-elastic material.
6. The seat assembly as claimed in claim 5, wherein the visco-elastic material is at least one of natural rubber, synthetic rubber, neoprene, silicone rubber, butyl rubber, polyacrylic rubber, and polyurethane.
7. The seat assembly as claimed in claim 1, wherein the dampers (102) in between the base portion and the top portion of the plurality of rods (101) using support members (103).
8. The seat assembly as claimed in claim 6, wherein the support member (103) is pin-joint assembly.

9. The seat assembly as claimed in claim 7, wherein the pin-joint assembly comprises a pin and a rotating part connected to the plurality of rods using a strap.
10. The seat assembly as claimed in claim 1, wherein the plurality rods (101) are substantially parallel to each other.
11. The seat assembly as claimed in claim 1, wherein the base portion (A) and the top portion (C) of the plurality of rods (101) are inclined at an angle ranging from about 0 degrees to about 30 degrees.
12. A cycle comprising a seat assembly as claimed in claim 1.

Dated this 8<sup>th</sup> day of May, 2014

SRAVAN KUMAR GAMPA  
IN/PA-1744  
OF K&S PARTNERS  
AGENT FOR THE APPLICANT.

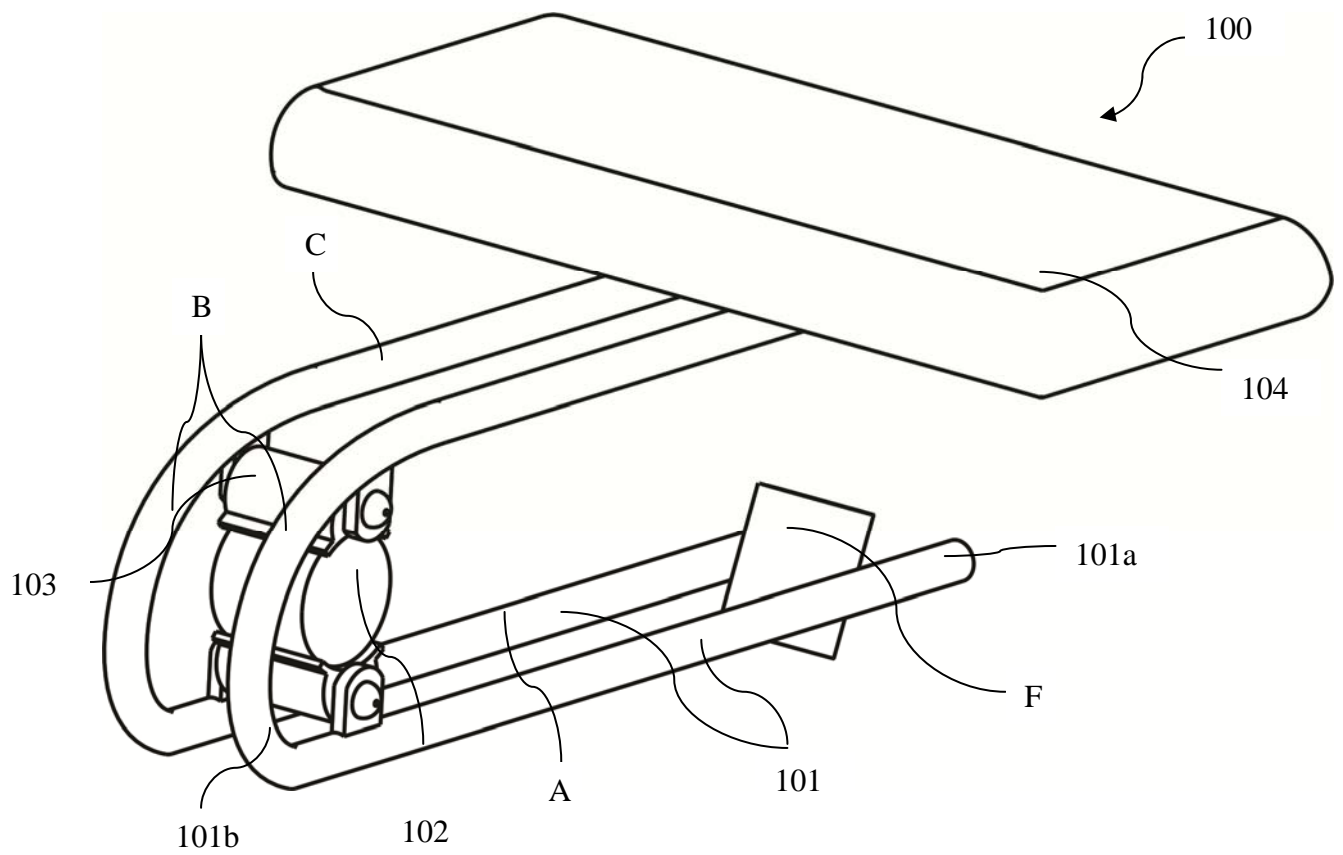
## **“A SEAT ASSEMBLY FOR A CYCLE”**

### **ABSTRACT**

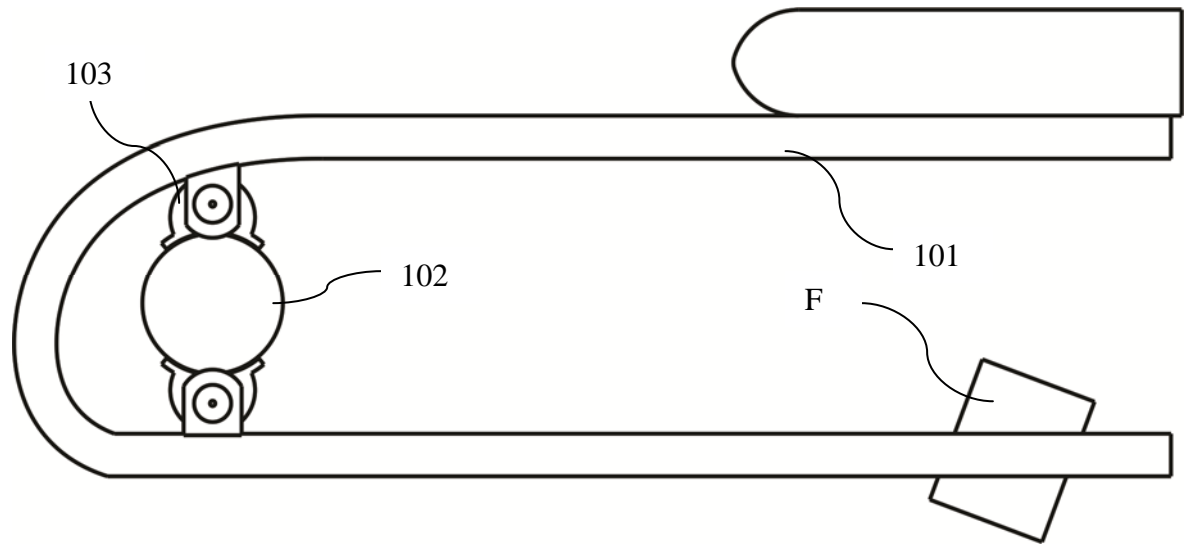
The present disclosure provides a seat assembly for a vehicle. The assembly comprises a plurality of rods connectable to a fork end of the bicycle. Each of the plurality of rods are spaced apart from one another, and rods extend longitudinally from a respective rear end to a respective front end of the plurality of rods forming a base portion. The rods are bent at predetermined shape at the front end to form a bent portion, and each of the plurality of rods extends longitudinally towards the rear end from the bent portion forming a top portion. The assembly further comprises a damper provided in between the base portion and the top portion of the plurality of rods to facilitate damping in the seat assembly.

### **FIG. 1**

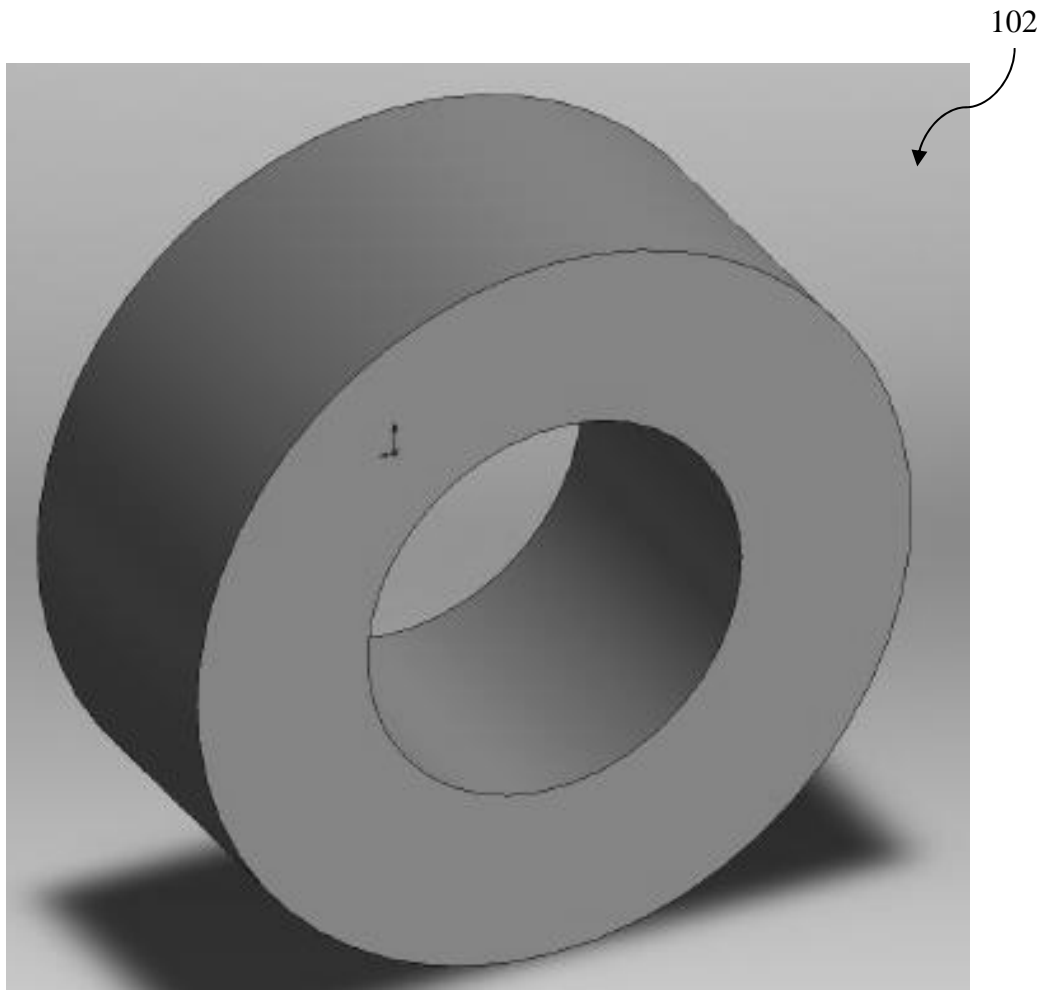




**FIG. 1**

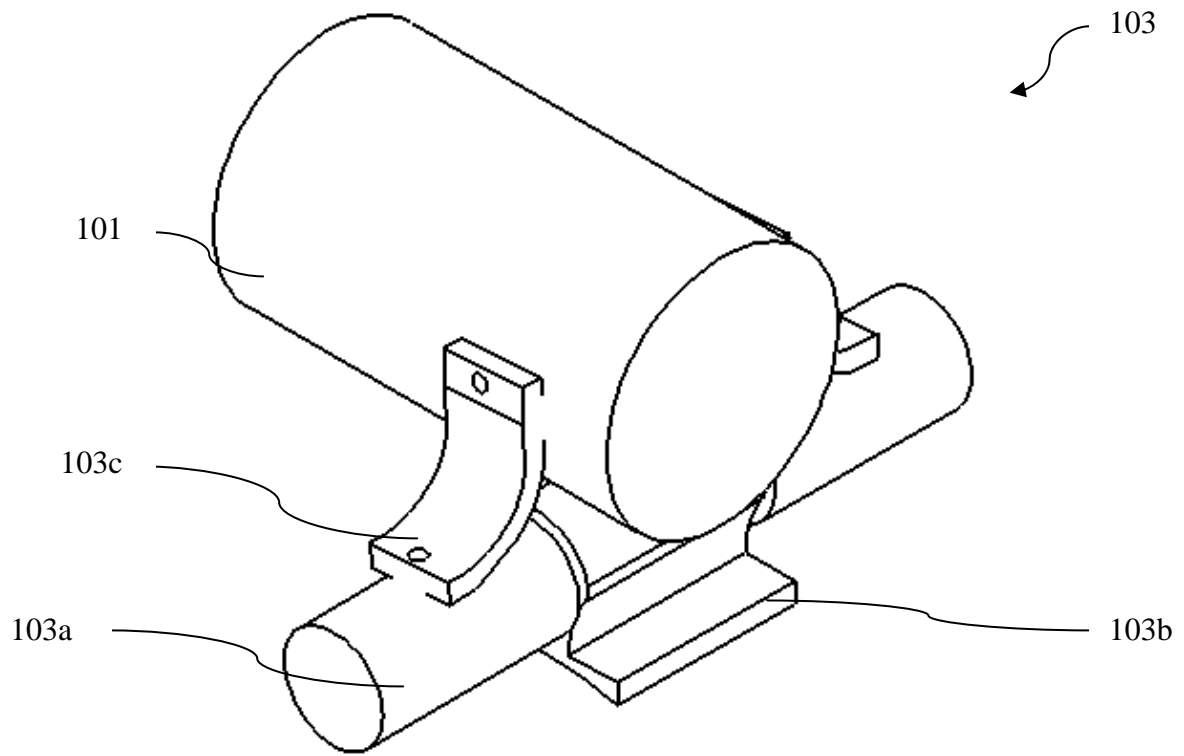


**FIG. 2**

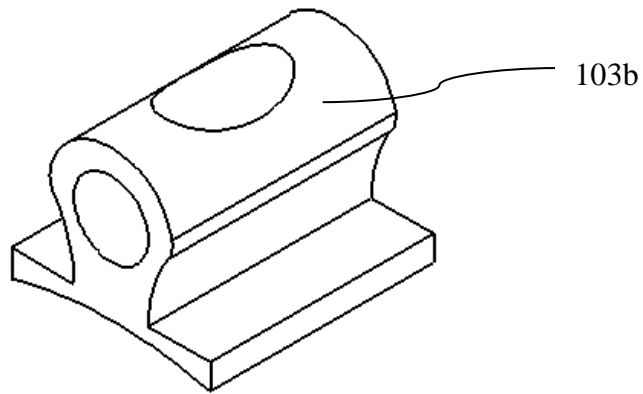


**FIG. 3**

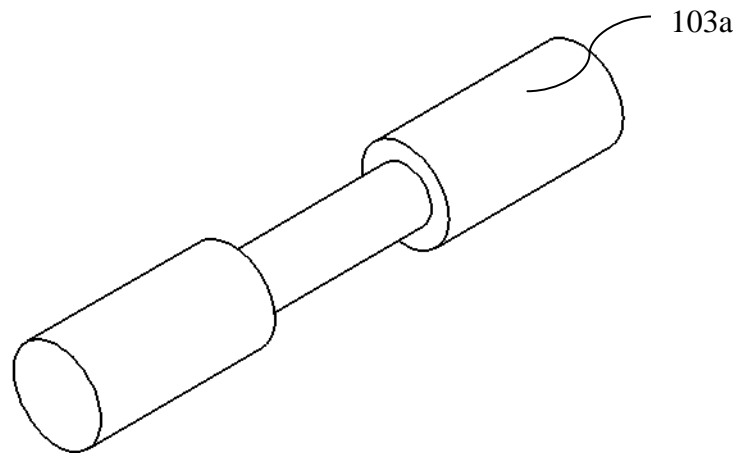
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**FIG. 4a**



**FIG. 4b**



**FIG. 4c**



**We claim:**

1. A seat assembly (100) for a cycle, comprising:
  - a plurality of rods (101) connectable to a fork end (F) of the bicycle,
  - each of the plurality of rods (101) are spaced apart from one another, and rods (101) extends longitudinally from a respective rear end (101a) to a respective front end (101b) of the plurality of rods (101) forming a base portion (A), and the rods (101) are bent at predetermined shape at the front end (101b) to form a bent portion (B), and each of the plurality of rods (101) extends longitudinally towards the rear end (101a) from the bent portion (B) forming a top portion (C), wherein the rods (101) are made of material having yield strength greater than 1000 MPa; and
  - a damper (102) provided in between the base portion and the top portion of the plurality of rods (101) to facilitate damping in the seat assembly (100).
2. The seat assembly as claimed in claim 1, wherein a seat (104) is mounted on top portion (C) of the plurality of rods (101).
3. The seat assembly as claimed in claim 1, wherein the plurality of rods (101) is made of material having an elastic limit in a range of 1mm to 10mm.
4. The seat assembly as claimed in claim 1, wherein the plurality of rods (101) is made of a material such as spring steel and carbon fibre.
5. The seat assembly as claimed in claim 1, wherein the dampers (102) are made of a visco-elastic material including
  - at least one of natural rubber, synthetic rubber, neoprene, silicone rubber, butyl rubber, polyacrylic rubber, and polyurethane.
6. The seat assembly as claimed in claim 1, wherein the dampers (102) in between the base portion and the top portion of the plurality of rods (101) using support members (103).
7. The seat assembly as claimed in claim 6, wherein the support member (103) is pin-joint assembly.

Amended claims – clear version

8. The seat assembly as claimed in claim 7, wherein the pin-joint assembly comprises a pin and a rotating part connected to the plurality of rods using a strap.
9. The seat assembly as claimed in claim 1, wherein the plurality rods (101) are parallel to each other.
10. The seat assembly as claimed in claim 1, wherein the base portion (A) and the top portion (C) of the plurality of rods (101) are inclined at an angle ranging from 0 degrees to 30 degrees.
11. A cycle comprising a seat assembly as claimed in claim 1.

Dated this 10<sup>th</sup> Day of May, 2013



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सं. \ No. 2105/CHE/2013

दिनांक \ Dated the 23/11/2021

सेवा में, \ To :

Address of Service:- K&S Partners Intellectual Property Attorneys 4121/B, 6th Cross, 19A Main, HAL II Stage (Extension), Bangalore – 560 038, Karnataka INDIA

Email Id:- ipo@knspartners.com

विषय :- पेटेंट आवेदन संख्या 2105/CHE/2013 के संबंध में अधिनियम की धारा 43 के तहत पेटेंट अनुदान तथा पेटेंट रजिस्टर में प्रविष्टि की सूचना

Sub :- Intimation of the grant and recordal of patent under section 43 of the Act in respect of patent application no. 2105/CHE/2013

महोदय/महोदया,

Sir/Madam,

आपको सूचित किया जाता है कि पेटेंट अधिनियम, 1970 की धारा 12 व 13 तथा उस आधार पर बने नियम के तहत उपर्युक्त पेटेंट आवेदन के परीक्षण [व 21/10/2021 को हुई सुनवाई] के उपरान्त एतद्वारा पेटेंट अनुदान किया जाता है। तथा पेटेंट अनुदान की प्रविष्टि 23/11/2021 को पेटेंट रजिस्टर में कर दी गयी है।

This is to Inform you that following the examination of above mentioned patent application under section 12 and 13 of The Patents Act, 1970 and Rules made thereunder [and hearing held on 21/10/2021 ] a patent is hereby granted and recorded in the Register of Patents on the 23/11/2021. The Patent Certificate is enclosed herewith.

|   |                                 |
|---|---------------------------------|
| पेटेंट संख्या \ Patent No   | : 382332                        |
| आवेदक का नाम \ Name Of Applicant  | : INDIAN INSTITUTE OF SCIENCE   |
| पेटेंट दिनांक \ Date of Patent  | : 10/05/2013                    |
| पूर्विका तिथि \ Priority Date   | : 10/05/2013                    |
| परीक्षण हेतु अनुरोध दाखिल करने की तिथि \ Filing date of Request for examination | : 08/05/2014                    |
| शीर्षक \ Title  | : "A SEAT ASSEMBLY FOR A CYCLE" |
| दावों की संख्या \ Number of claims  | : 1-10                          |

उपर्युक्त पेटेंट के अनुदान का प्रकाशन अधिनियम की धारा 43 के तहत पेटेंट कार्यालय के आधिकारिक जर्नल में किया जाएगा।

The grant of above mentioned patent will be published in the Official Journal of the patent Office under section 43 of the Act.

पेटेंट अधिनियम 1970 यथा संशोधित पेटेंट (संशोधन) नियम, 2005/ पेटेंट नियम, 2003 यथा संशोधित पेटेंट (संशोधन) नियम, 2016 की धारा 142 की उप-धारा (4) के प्रावधानों के तहत उपरोक्त प्रविष्टि की तिथि से 3 माह के भीतर इस कार्यालय में नवीकरण शुल्क जमा किया जाना चाहिए।

The payment of renewal fee is required to be made at this office within three(3) months from the aforesaid date of recording according to the proviso in sub-section(4) of Section 142 of The Patents Act,1970, as amended by The Patents (Amendment) Act, 2005 / The Patents Rules, 2003 as amended by The Patents (Amendment) Rules, 2016.

Neeraj Kumar Meena

(नियंत्रक पेटेंट)

Controller of Patents

टिप्पणी / Note :

1. संशोधित नवीकरण शुल्क हेतु कृपया महानियंत्रक पेटेंट, अभिकल्प एवं व्यापार चिह्न की आधिकारिक वेबसाइट [www.ipindia.gov.in](http://www.ipindia.gov.in) पर उपलब्ध पेटेंट (संशोधन) नियम 2016 की प्रथम अनुसूची (शुल्क) देखें।

For revised renewal fees kindly refer to the First Schedule (fees) of The Patents (Amendment) Rules 2016 available on the official website of Controller General of Patents, Designs and Trade Marks [www.ipindia.gov.in](http://www.ipindia.gov.in)

2. कार्यालय द्वारा पेटेंट प्रमाणपत्र की कोई भी कागजी प्रति अलग से जारी नहीं की जाएगी।

No hard copy of Patent Certificate shall be issued separately by the office.