MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS
STANDARD REFERENCE MATERIAL 1010a
(ANSI and ISO TEST CHART No. 2)
APPLICATION FOR A STANDARD PATENT
OR A STANDARD PATENT OF ADDITION

Insert full name(s) of applicant(s)
of

24 HASCOMBE WAY MORLEY WA

Insert address(es) of applicant(s)

Insert title of invention

Bicycle brake push

(tick appropriate box)

Insert name of actual inventor

Edward Seward Sommert

The actual inventor(s) of the said invention is

Edward Seward Sommert

Insert address(es) of applicant(s)

24 HASCOMBE WAY MORLEY

WEST AUS

THESE SECTIONS ARE ONLY TO BE COMPLETED WHERE APPLICABLE:

(ONLY TO BE USED IN THE CASE OF A CONVENTION APPLICATION)

Details of basic application(s) —

Number of basic application ........................................

Name of Convention country in which basic application was filed ........................................ ISO Code ............

Date of basic application ........................................

(ONLY TO BE USED IN THE CASE OF A FURTHER APPLICATION MADE BY VIRTUE OF SECTION 51)

Number of original application ........................................

Person by whom made ........................................

(ONLY TO BE USED IN THE CASE OF AN APPLICATION FOR A PATENT OF ADDITION)

I request that the patent may be granted as a patent of addition to the patent applied for on

Application No. ........................................ Patent No. ........................................

in the name of ........................................

Edward Seward Sommert

I request that the term of the patent of addition be the same as that for the main invention or so much of the term of the patent for the main invention as is unexpired.

Dated this Eleventh day of April 1988

Signature of applicant or Australian attorney

TO

THE COMMISSIONER OF PATENTS

This form must be accompanied by either a provisional specification (Form 9 and true copy) or by a complete specification (Form 10 and true copy).
DECLAIRATION IN SUPPORT OF AN APPLICATION FOR A PATENT

In support of the Application made by Edward Freegard
for a patent for an invention entitled Bicycle easy push

of 24 Hascombe Way Melbourne W.A.
do solemnly and sincerely declare as follows:-

1. I am the applicant for the patent.

(or, in the case of an application by a body corporate)

1. I am authorized by

the applicant for the patent to make this declaration on its behalf.

2. I am the actual inventor of the invention.

(or, where a person other than the inventor is the applicant)

2. I am the actual inventor of the invention and the

facts upon which I am entitled to make the application are as follows:


Declared at Perth this Eleventh day of Sep't 1988

(Signature of Declarant)

TO:

THE COMMISSIONER OF PATENTS.

(IMPORTANT – Cross out inapplicable words in the above Form.)
APPLICATION FOR A STANDARD PATENT
OR A STANDARD PATENT OF ADDITION

Edward H. Torrent
24 Hascombe Way
Morley 6062

I/we hereby apply for the grant of a standard patent for an invention entitled

BICYCLE PERFORMANCE IMPROVED

which is described in the accompanying provisional specification.

The actual inventor(s) of the said invention is/are

EDWARD H. TORRENT

My/our address for service is

24 Hascombe Way
Morley 6062

This form must be accompanied by either a provisional specification (Form 9 and true copy) or by a complete specification (Form 10 and true copy).
DECLARATION IN SUPPORT OF AN APPLICATION FOR A PATENT

In support of the Application made by Edward St. Somen

for a patent for an invention entitled BICYCLE CONVERSION
305MM CRANK LEVERAGE
STRECHED FRAME

1. Edward St. Somen

of 24 HACCOMBE WAY

do solemnly and sincerely declare as follows:—

1. I am the applicant for the patent.

(or, in the case of an application by a body corporate)

1. I am authorized by

the applicant for the patent to make this declaration on its behalf.

2. I am the actual inventor of the invention.

(or, where a person other than the inventor is the applicant)

2. ____________________________________________________________

of ____________________________________________________________

is the actual inventor of the invention and the facts upon which I am entitled to make the application are as follows:—

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

Declared at Perth, the twenty-seventh day of January 1988

(Signature of Declarant)

TO:

THE COMMISSIONER OF PATENTS.

(IMPORTANT — Cross out inapplicable words in the above Form.)
PATENT OFFICE ACT.

INSPECTED AT THE
AND MAY BE
FOR REPRODUCTION
ARE UNSUITABLE
THIS APPLICATION
LODEGED WITH
DOCUMENTS
PATENT ABSTRACT

Document No. AU-A-24453/88

AUSTRALIAN PATENT OFFICE

(19) AUSTRALIAN PATENT OFFICE

(54) Title
EASY PUSH BICYCLE

(51) International Patent Classification(s)
B62M 001/04

(21) Application No.: 24453/88
(22) Application Date: 14.01.88

(23) Filing Date of Complete Specification: 27.10.88

(43) Publication Date: 20.07.89

(60) Related to Provisional(s): P16303 P17688

(71) Applicant(s)
EDWARD HOWARD TORRENT

(72) Inventor(s)
EDWARD HOWARD TORRENT

(57) Claim

Stabilised pedal lever connected to crank pin and shaft will convert lever reciprocation into rotary motion through to shaft.

Rear end stabilised pedal levers that drive cranks with 50mm throw pins and centre mounted pedals that pivot front end of lever. With long stroke pedal lever adjustment power strokes will travel 3.28 times the distance than crank throw pin. Slow motion crank throw pins and slow motion stabiliser pivot. This double slow movement that prolongs early effective and maximum leverage that magnify the pedal path travel and leverage. A 44mm or less crank throw will give slower movement with better pedal path performance. Pedal lever measurements will vary with different crank throw lengths. Cranks and shaft assembles with 11mm cotter pins and grub screws.
SHORT TITLE:

EASY PUSH BICYCLE

The following statement is a full description of this invention, including the best method of performing it known to me:

* Note: The description is to be typed in double spacing, pica type face, in an area not exceeding 250 mm in depth and 160 mm in width, on tough white paper of good quality and it is to be inserted inside this form.
Easy Push Bicycle crank section
The rear end stabilised pedal levers that drives cranks and shaft. The lever front has pivoted pedals and a connecting bush to crank pin will give early and prolong maximum leverage, makes it easy to push. The distance between crank pin centre and stabiliser pivot centre is as short as possible for maximum performance.

17cm of pedal travel when stabiliser pivot centre and crank shaft centre is in the 43mm to 48mm distance range of each other maximum leverage.

The pedal pivot centre to crank pin centre 34cm apart that gives 28cm foot and heel space clearance with pedal up stroke.

No claim on this Proto 3 frame due to over weight 18 kilograms also the seat position will be moved to rear to suit pedal leg movement. The crank pin bush will be replaced with preloaded ball race and a short stepped down crank pin.

The pedal shaft bush will be a press fit with needle bearings each side.

Chain adjustment drop in pull out rear axle slot section
Has two slide plates each with two elongated holds, four bolts that fits into elongated holes with flat washers the bolts continue into four rear fork holes with four more washers and nuts that will co-ordinate chain adjustment. Has a drop in pull out rear wheel axle slot angled for chain pull in with safety nut kept in collars. Proto one P.1.6303 with regular two nut hold would lose chain adjustment with nut slip.

Seat adjustment section
Seat stand tube adjustment and hold has two saddled U bolts with a four nut lock up gives a good grip.
Pedal travel path movement short stroke.

The pedal support shaft centre has a bow shape travel path. Starting from T.D.C. the pedal down power stroke travels the front convex path 43.5 cm down and turns to the rear at the end of power stroke to commence the up stroke path 39.5 cm travel and turns to the front at the end of up stroke to complete 83 cm travel revolution. The up stroke path has a maximum 5.5mm concave and a 74° top slant to the rear. The inside area of pedal path has a maximum width of 91mm, 38cm end to end length and vertical length 36.2cm. See Drawing \# 9.

A. Bicycle

To compare a standard roadster with a short cut pedal movement of 83cm revolution. The standard single speed 48 tooth chain wheel drives 18 tooth sprocket 1:2.66 with 16.85 cm crank throw diameter 33.7cm and pedal travel circumference 106cm per revolution.

B. Bicycle

Has 44 tooth chain wheel drive to 18 tooth wheel sprocket 1:2.44. A 34cm long pedal lever that drive a 50mm throw crank that gives a short cut pedal travel movement of 83cm per revolution on this short stroke movement.

Pedal and Tyre Travel Ratio

<table>
<thead>
<tr>
<th></th>
<th>PEDAL REVOLUTION</th>
<th>TRAVEL</th>
<th></th>
<th>PEDAL REVOLUTION</th>
<th>TRAVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>PEDAL REVOLUTION</td>
<td>106cm</td>
<td>B</td>
<td>PEDAL REVOLUTION</td>
<td>83cm</td>
</tr>
<tr>
<td>A 2</td>
<td>PEDAL REVOLUTION</td>
<td>-</td>
<td>B 2.56</td>
<td>PEDAL REVOLUTION PLUS</td>
<td>-</td>
</tr>
<tr>
<td>A</td>
<td>PEDAL REVOLUTION TYRE TRAVEL</td>
<td>1:2.66</td>
<td></td>
<td>PEDAL REVOLUTION TYRE TRAVEL</td>
<td>1:2.44</td>
</tr>
<tr>
<td>A</td>
<td>PEDAL REVOLUTION TYRE TRAVEL</td>
<td>568cm</td>
<td>B</td>
<td>PEDAL REVOLUTION TYRE TRAVEL</td>
<td>521cm</td>
</tr>
<tr>
<td>A 2</td>
<td>PEDAL REVOLUTION TYRE TRAVEL</td>
<td>1136cm</td>
<td>B 2.56</td>
<td>PEDAL REVOLUTION PLUS TYRE TRAVEL</td>
<td>1333cm</td>
</tr>
</tbody>
</table>

Tyre circumference 213.62cm. Dia 68cm.
A and B bicycle with equal pedal travel. B bicycle will give more power strokes and tyre travel with low ration 44T 18T 1:2.44 than B bicycle with 48T 18T 1:2.66.

**Pedal Travel path Short and Long stroke**

<table>
<thead>
<tr>
<th></th>
<th>SHORT STROKE</th>
<th>LONG STROKE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedal power stroke</td>
<td>43.5cm</td>
<td>52cm</td>
</tr>
<tr>
<td>Pedal up stroke</td>
<td>39.5cm</td>
<td>46cm</td>
</tr>
<tr>
<td>End to end length</td>
<td>38cm</td>
<td>44.5cm</td>
</tr>
<tr>
<td>Vertical length</td>
<td>36.2cm</td>
<td>41.5cm</td>
</tr>
<tr>
<td>Up stroke path max concave</td>
<td>5mm</td>
<td>21mm</td>
</tr>
<tr>
<td>Inside path max width</td>
<td>91mm</td>
<td>91mm</td>
</tr>
<tr>
<td>1 revolution pedal travel</td>
<td>83cm</td>
<td>98cm</td>
</tr>
<tr>
<td>Slant top to rear</td>
<td>74°</td>
<td>66°</td>
</tr>
</tbody>
</table>

The long crank 17.8cm used with regular racing bicycles has one revolution pedal travel 111.84 circumference. 98cm circumference for long stroke. A 50 tooth chain wheel with 17 tooth sprocket used on patent addition P1.7688 11-4-88.

**Pedal centre mounted 70° swing**

Has a pedal section each side of 19mm square lever. Each section has 2 semi shaped boomerang aluminium plates 6mm thick. Plate tops have 8 tooth contour that fits the shape of a shoe sole. Plate bottoms have 10mm carry holes and up forward 6mm harness hole. Between the 2 plates fits a non slip rubber block 3cm wide 6cm long with up front harness holes. Pedal carry shaft is supported by aluminium square bush pressed into end of lever a 10mm hole drilled and reamed. To make the 2 sections turns as one and keep all plates and rubber parallel with lever a harness bolt and nut with centre tube spacer 22mm long to keep the sections apart and parallel.
Pedal lever

Stabilised pedal lever connected to crank pin and shaft will convert lever reciprocation into rotary motion through to shaft. Lever has 3 rear stabiliser anchor holes. The first hole centre from pedal carry shaft centre is 42.5cm for long stroke and the second hole 45cm for short stroke. 42.5 and 45 holes will be elongated for a 25mm variable adjustment. Rear 47cm hole not in use due to leverage fall off and short pedal movement.

Lever has fabricated bush housing tube with a 50mm long bush with thrust washers each end. "Pre-load ball race can be used as it will be better for lubrication". Pedal carry shaft centre to connecting crank pin centre is 34cm long.

Stabilisers

Stabilisers hang from rear forks 28.2cm from rear chain adjustment bolt hole. Each stabiliser has two spherical rod ends with thread lock nuts and a pin between rod thread both ends so that pedal height can be adjusted. Weld in tube rod ends will be used as a standard once the correct length has been established with the adjustable stabiliser. It will make stabilisers lighter and keep rod ends in line with weld in tube rods. The tubes are plugged at each end to stop lubricant running down.

Bottom bracket

The crank pins are welded to cranks can be one piece cast steel. Cranks are locked into shaft with 11mm cotter pins and held in with grub screws. The cotter pin entrance side of crank has 8mm of thread depth for grub screw. Shaft has 12mm long flat sections each end in opposite positions for cotter pin lock up. The bracket housing has bearing stops with a 14mm depth each side.
Bottom bracket

It has two ball bearings each sealed both side.

W 14mm x ID 20mm x OD 37mm with one 2.5mm thick flat washer as spacer on left hand side between bearing and crank. On the right hand chain side a 2.5mm washer spacer between bearing and 7mm long collar used as a centraliser for chain wheel adaptor also used as spacer fits next to right hand crank. The crank throw hole when at TDC are offset to the rear so pedal lever will trail the advanced crank on down power stroke. The chain wheel adaptor "holder" is held by right hand crank with two bolts one 10mm bolt hole with thread at the throw end of crank. On the opposite end of crank a 22mm long extension 3mm thick with 6mm bolt hole so to fit adaptor to crank with bolts and nuts. No claim on bottom bracket, shaft, bearings spacers, collar, and housing. Will use the regular type of brackets. They are lighter, no bearing seal drag with more ball surface contact and easy to service. A regular "conventional" bottom bracket was used on proto 1 bicycle Provisional P.1.6303 14-1-1988.
Connection

Pedal carry bolt shaft 12 fits into pedal plate holes 4, 3 washer 6 bush 22 washer 6 pedal plates 2 and 1. Nut 10.

Harness bolt 11 fits into holes 5 of pedal plate 4. Rubber block grip 8 pedal plate 3 spacer 7 pedal plate 2 rubber block grip 8 pedal plate 1 nut 9.

Pedal lever connecting housing bush 23 fits crank pin 31.

Pedal lever elongated hole 24 fits to stabiliser hole bottom end 41.

Stabiliser top end 41 fits fork hole 43.

Crank pin 31 press fits 38 weld.

Crank bolt hole 32 fit chain wheel adaptor. Photo 7.
Lines up with hole 71.

Crank hole 33 fits 36 cotter pin 27 grub screw.

Crank hole 35 fits bottom bracket shaft Photo No. 6. 39A

Crank pin washers 38A fits crank 31.

Crank pin split pin 39 fit hole 39A.

Chain wheel adaptor hole 34 lines up with 72 Photo 7.
Chain adjustment

It has two slide plates left and right side. Each plate has two elongated hole 35mm long 10mm wide. At the end of rear forks are four 10mm bolt holes all horizontal with each other. On each side the bolt holes 51mm apart. When fork bolt holes are bolted to elongated holes of slide plates this will co-ordinate chain adjustment. Four bolt adjustment is used due to proto bicycle provisional P1 6303 14-1-1988 would not hold chain adjustment with two nut slippage.

Rear wheel axle drop in pull out

Rear wheel can be removed and installed without disturbing chain adjustment. With rear wheel installed in slots the axle centre will be directly below the mid centre of rear elongated hole by 35mm centre to mid centre.
As the axle will bottom the slots in a fixed position. The outside diameter of the regular rear axle nuts "wheel nut" will fit the inside diameter of a welded collar to slide plate with a 3mm depth. The collar has a entrance slot that lines up with slide plate slot. The nuts will require 3½ turns to clear the collars when removing the rear wheel for safety if a 40 tooth chain wheel is used without a collar the chain will pull the axle out of slot. 44 tooth and above will pull the axle in.

Connection


Slot 4 fits rear wheel axle single speed and derailleur gear shift.
Seat stand adjustment and hold

Two U bolts with wrap around saddles 37mm long for seat stand tube grip. U bolts size 6mm Dia x 33mm wide x 68mm long for 25mm seat stand tube up to a 30mm tube can be used with wider U bolts. Four U bolt supports 12mm square 30mm long welded right angle two on each side 8.5cm apart to bottom bracket and seat stand brace.

Connection
Two U bolts with saddles fits into 2 with washers 6 and nuts 8. This will grip seat stand tube 5.

No claim on this Proto 3 frame due to over weight 18 kilograms also the seat position is not right for pedal leg movement will move to rear.

No claim on bottom bracket shaft, bearings spacers collar and housing.
The claims defining the invention are as follows:

1. Rear end stabilised pedal levers that drive cranks with 50mm throw pins and centre mounted pedals that pivot front end of lever. With long stroke pedal lever adjustment power strokes will travel 3.28 times the distance than crank throw pin. Slow motion crank throw pins and slow motion stabiliser pivot. This double slow movement that prelons early effective and maximum leverage that magnify the pedal path travel and leverage. A 44mm or less crank throw will give slower movement with better pedal path performance. Pedal lever measurements will vary with different crank throw lengths. Cranks and shaft assembles with 11mm cotter pins and grub screws.

2. Chain adjustment has 4 bolt and nut hold with 2 slide plates each with 2 elongated holes. Drop in pull out rear wheel axle slot angled for chain pull in. For safety has nut keep in collars.

3. Seat stand tube adjustment and hold has 2 saddled U bolts with 4 nut lock up.

Dated this 27 day of OCT 1988 TORRENT

NAME OF APPLICANT (BLOCK LETTERS)

* Note: If there is insufficient space above to type the statement of claim, do not use this sheet, but use separate sheets of paper beginning with the words "The claims defining the invention are as follows:" and ending with the date and the name of the applicant in block letters.
DRAWINGS
DRAWING FIG 1

SCALE 1:1

1. LH PEDAL PLATE
2. CENTRE LH PLATE
3. RUBBER BLOCK WILL REST ON CARRY BOLT
Fig 2
R.H. PEDAL LEVER

Scale 2:1

1. L.H. PEDAL PLATE 87 MM L
2, 3, 4. PEDAL PLATES 76 MM LONG
PEDAL PLATE AND CARRY HOLES USE THE SAME NO.

PAGE

Fig 1
5. HARNESS BOLT HOLES
6. TWO BRASS WASHERS

Fig 3
22. PEDAL LEVER BUSH
7. SPACER AND STOP COLLAR
8. RUBBER BLOCKS 30 MM X 60 MM
9. NUT 6 MM HARNESS BOLT
10. NUT 10 MM CARRY BOLT
11. HARNESS BOLT
12. CARRY BOLT
CRANKS  SCALE 1:1
31  CRANK PIN 58MM L
32  CHAIN WHEEL ADAPTOR
    BOLT HOLE 10MM THREAD
33  COTTER HOLE
34  CHAIN WHEEL ADAPTOR
    BOLT HOLE 6MM BOLT & NUT
35  SHAFT HOLE 18MM DIA.
36  COTTER PIN 11MM DIA
37  GRUB SCREW
38  CRANK PIN HOLE 14MM
38A  WASHERS
39  SPLIT PIN
STABILISER 2:1:

41 Rod Ends
42 Weld
43 Fork hole
44 Lubricating nipple

DRAWING FIG 5
1 R.H. SIDE CHAIN ADJUSTMENT
SLIDE PLATE DROP IN DROPOUT WHEEL
AXLE LOCK IN SLOT
2 REAR ELONGATED HOLE WITH MID
CENTRE MARK
3 FRONT ELONGATED 10 MM W 35 MM L
4 AXLE SLOT
5 3 MM RAISED COLLAR
6 ANGLE TURNED OUT
7 ANGLE TURNED IN
REAR ELONGATED HOLE MID CENTRE
MARK TO 4 CENTER MARK 35 MM
11 DERAILLEUR HOLE.
FRONT

1 RH SIDE CHAIN ADJUSTER
5 COLLAR
6 ANGLE TURNED OUT
7 ANGLE TURNED IN
8 10 MM BOLTS
9 1.5 THICK WASHERS
53 FRAME FORK REAR HOLE
56 10 MM BOLT HOLES
10 NUTS 10 MM
1. U BOLT
2. U BOLT HOLE
3. SADDLE
4. BRACE
5. SEAT STAND
6. WASHER 4 OF
7. 6MM THREAD
8. 6MM NUT 4 OF
9. WELD

SEAT STAND HOLD AND ADJUSTMENT
43.5 POWER STROKE.

36.2 CM.

38 CM

5.5 MM CONCAVE

91 MM

74°

39.5 CM

UP STROKE

DRAWING 9

PEDAL PATH SHORT STROKE

SCALE 2:1