

(19) **DANMARK**



Patent- og  
Varemærkestyrelsen

(10) **DK/EP 2479089 T3**

(12) Oversættelse af  
europæisk patentskrift

- 
- (51) Int.Cl.: **B 62 J 1/08 (2006.01)** **B 62 K 19/36 (2006.01)**
- (45) Oversættelsen bekendtgjort den: **2014-02-24**
- (80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2013-11-20**
- (86) Europæisk ansøgning nr.: **12152124.9**
- (86) Europæisk indleveringsdag: **2012-01-23**
- (87) Den europæiske ansøgnings publiceringsdag: **2012-07-25**
- (30) Prioritet: **2011-01-22 NL 2006053**
- (84) Designerede stater: **AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**
- (73) Patenthaver: **Gaastra, Andries, Listdreef 24, 2900 Schoten, Belgien**
- (72) Opfinder: **Gaastra, Andries, Listdreef 24, 2900 Schoten, Belgien**
- (74) Fuldmægtig i Danmark: **PLOUGMANN & VINGTOFT A/S, Rued Langgaards Vej 8, 2300 København S, Danmark**
- (54) Benævnelse: **Cykel med sadel til saddelpinden**
- (56) Fremdragne publikationer:  
**DE-U1- 20 305 933**  
**DE-U1- 20 310 592**  
**DE-U1-202004 012 689**  
**FR-A1- 2 948 625**  
**US-A- 4 925 203**



**Field of the invention**

The invention relates to a bicycle comprising a frame with a seat tube and a head tube) in which a fork is present with a front wheel in it, as well as a saddle pillar which can be moved into and out of the seat tube and a saddle attached near the  
5 top of the saddle pillar by means of a coupling member at the front of the saddle pillar, which saddle pillar is moveable between a top position, in which an upper part of the saddle pillar extends outside the seat tube, and a bottom position, and a seat stay is attached to the seat tube in which seat stay a rear wheel is present, wherein the seat tube and the saddle pillar are shaped such that the saddle in all  
10 positions between the top and bottom position is located in front of an imaginary line running through the axis of the seat tube.

**State of the art**

A bicycle of this type is known from US 4925203 A. With the known bicycle the saddle is attached to the saddle pillar by means of a coupling member. The saddle  
15 is located in front of the seat tube.

The angle of inclination of the seat tube is a given that cannot be deviated from without bringing about a detrimental effect on the ergonomics of the bicycle.  
There is a relation between the distance from the saddle to the crankshaft and the  
20 distance from the saddle to the handlebars. This relation provides that the user has an ergonomically correct position on the bicycle and it determines the angle of inclination of the seat tube. With a conventional bicycle (having a straight seat tube and a straight saddle pillar) on which the saddle is positioned above the saddle pillar, the seat tube is present at a distance from the head tube. This  
25 distance determines the freedom of movement between the seat tube and the head tube and the larger this distance the more freedom of movement and thus the more easily a rider can mount and dismount from the bicycle.

With the known bicycle mentioned above the saddle in top position is located  
30 above the seat tube and behind the rear wheel axle. As a result, there is a great risk of the bicycle with its rider during the ride toppling over backwards over the rear axle of the rear wheel. In addition, there will be a poor distribution of weight

during the ride which may induce the front wheel of a bicycle whose front wheel is driven by an electromotor to slip.

### **Summary of the invention**

- It is an object of the invention to provide a bicycle of the type defined in the opening paragraph, which is safer in use than the known bicycle. For this purpose the bicycle according to the invention is characterised in that the angle of inclination of the seat tube is such that the saddle in all positions of the saddle pillar between the top and bottom position remains before the axle of the rear wheel. This eliminates the hazard of toppling over backwards. Thus the bicycle according to the invention is safer than the known bicycle without this being at the cost of the ideal seating position. In addition, the distribution of weight between front and rear axle is improved, which is especially beneficial to electrically driven bicycles having the electromotor on the front axle.
- By shifting the seat tube backwards relative to the position on a conventional bicycle and while having frame dimensions that remain the same, more room is created for a rider to mount and dismount. Since the saddle is positioned before the saddle pillar in lieu of above it, the distance between the saddle and the handlebars has not changed, so that there is still the same relation between the distance from the saddle to the crankshaft and the distance from the saddle to the handlebars. Ergo, the bicycle according to the invention is more comfortable than a conventional bicycle, again without this being at the cost of the ideal seating position.
- The seat tube and the saddle pillar preferably have a straight or substantially straight shape.

- From DE 202004012689 U a bicycle is known having a saddle pillar moveable between a top position and a bottom position. In this known bicycle the saddle pillar extends completely inside the seat tube, even in top position. The present invention, however relates to a bicycle in which an upper part of the saddle pillar extends outside the seat tube in the top position.

The safest position of the saddle for a user is the position in which the user, once seated on the saddle, can simultaneously touch the ground with both feet.

Further, the optimized position of the saddle is the position in which the distances  
5 from the saddle to the crankshaft and to the handlebars are such that an optimum ergonomic position on the bicycle can be adopted. If one wishes to achieve this optimization for people 150cm tall and over, the bottom position of the saddle is to be sufficiently low to accommodate a person 150cm in length on the saddle with the feet touching the ground. This determines the maximum length of the  
10 seat tube and thus also the distance between the bottom and top position of the saddle. The latter in its turn determines the maximum length of the people for whom the bicycle has optimum use.

An embodiment of the bicycle according to the invention is **characterised in** that  
15 in the front of the seat tube from the top down there is provided a slot through which in the bottom position of the saddle pillar the coupling member projects and the saddle is located in front of the seat tube. As a result, a longer seat tube can be used than if the saddle would be located on top of the saddle pillar. The advantage of this is that the distance between the top and bottom position of the  
20 saddle is larger and the bicycle according to the invention is of optimum use for more people.

A further embodiment of the bicycle according to the invention is **characterised in that** the frame of the bicycle further comprises a top tube which is located  
25 between the seat tube and the head tube or between the seat tube and the front part of the down tube, and in that the top tube has a further slot which extends from the end attached to the seat tube to distal from this end. A top tube of this type is often applied in conventional bicycles to enhance the rigidity of the frame. This top tube is preferably attached to the seat tube near the top of the seat tube.  
30 On a bicycle comprising such a top tube, this tube would be an obstruction when the saddle is moved to the bottom position. Therefore, in this embodiment this top tube also has a slot through which the coupling member can project in the bottom position of the saddle.

**Brief description of the drawings**

The invention will be described below in more detail based on examples of embodiment of the bicycle according to the invention represented in the drawing figures, in which:

- 5            Fig. 1 shows a side elevation of a first embodiment of the bicycle according to the invention;
- Fig. 2 shows the bicycle shown in Fig. 1 with the saddle and handlebars in three different positions;
- Fig. 3 shows a front elevation of a detail of the top part of the seat tube with the saddle of the bicycle shown in Fig. 1;
- 10           Fig. 4 shows a second embodiment of the bicycle according to the invention provided with a top tube;
- Fig. 5 shows a detail of the top part of the seat tube with the saddle in the position shown in Fig. 4; and
- 15           Fig. 6 shows the top part of the seat tube with the saddle in the bottom position of the saddle.

**Detailed description of the drawings**

- Fig. 1 shows a side elevation of an embodiment of the bicycle according to the invention. The bicycle 1 comprises a frame 3 with a down tube 4. To the front part
- 20 of the down tube is attached a head tube 5 in which a fork 7 with a front wheel 8 in it, and handlebars 9 can be pivoted. To the rear part of the down tube 4 is attached a crankshaft bracket 11 as well as a cross tube 13. The crankshaft bracket accommodates a crankshaft 14 with pedals 15 bearing mounted in it. To this crankshaft bracket and cross tube is attached a straight seat tube 16 in which
- 25 a straight saddle pillar 17 with a saddle 18 attached to it can be moved. The seat tube and saddle pillar may be arranged slightly oval shaped or rectangular to prevent the saddle pillar from turning around its longitudinal axis relative to the seat tube. A seat stay 19 is attached to the seat tube 16 in which seat stay a rear

wheel 21 is present. Sprockets with a chain 22 passing over them are present on the hub of the rear wheel and on the crankshaft. This chain is guarded by a chain guard 23.

- 5 The saddle pillar 17 can be shifted between a top position and a bottom position. Fig. 2 shows the bicycle 1 with the saddle 18 and handlebars 9 in three different positions. In addition to the bottom position A also in two intermediate positions B and C. A coupling member 25 is attached to the saddle pillar near the top of the front 17A of the saddle pillar 17 directed to the head tube. The coupling member
- 10 is formed by a plate extending in the direction of movement. In the bottom position of the seat tube the coupling member projects from a slot 27 provided in the seat tube 16 (see Fig. 3). This slot extends from the top of the seat tube downwards over a distance D1 which is at least equal to the distance D2 along the saddle pillar 17 over which the coupling member 25 is attached to the saddle
- 15 pillar.

The saddle 18 is mounted on top of the coupling member 25 and is positioned in the direction of movement at a slight distance from the saddle pillar 17 (see Fig. 2). As a result, the seat tube 16 can be moved further backwards. The position of

20 the seat tube 16 and the saddle pillar 17 is indicated by means of a dotted line if the saddle 18 were mounted on top of the saddle pillar 17. In the bottom position of the saddle pillar the saddle 18 is thus present in front of the seat tube 16. In consequence, a longer seat tube can be used than if the saddle were present on top of the saddle pillar. The advantage of this is that the distance between the top

25 and bottom position of the saddle is larger and the bicycle has optimum use for more people. Since the saddle in all positions between the top and bottom position is located in front of an imaginary line 20 through the axis of the seat tube, the angle of the connecting line L between the saddle and the crankshaft 14 changes when the saddle is adjusted for height. This creates a variable seating

30 angle, so that persons between 150 and 195 cm in height can adopt an ergonomic seating position (correct distance between saddle and handlebars) and only a single frame size is needed, whereas for conventional bicycles five different frame sizes would be needed for this. As a result, the user always adopts a comfortable and ergonomically upright seating position during a ride.

Fig. 4 shows a second embodiment of the bicycle according to the invention. All parts that are similar to those of the first embodiment are indicated by similar reference numerals. In this bicycle 31 the frame 3 comprises a top tube 33 which  
5 extends between the seat tube 16 and the head tube 5. A further slot 35 is provided in the upper side 33A of this top tube. This further slot extends over a distance D3 from the end of the top tube attached to the seat tube to accommodate the coupling member 25 when the saddle 18 is in its bottom position.

10

Fig. 5 shows a front elevation and for illustrative purposes a detail of the upper part of the seat tube 16 with the saddle 18 in the position shown in Fig. 4. This detail with the saddle in bottom position is furthermore shown in Fig. 6 for illustrative purposes.

15

Albeit the invention has been described in the foregoing based on the drawing, it should be observed that the invention is not by any manner or means restricted to the embodiment shown in the drawing. The invention also extends to all embodiments deviating from the embodiment shown in the drawing within the  
20 scope defined by the claims.

25

**Patentkrav**

1. Cykel (1; 31) omfattende et stel (3) med et saddeletr (16) og et styr (5) i hvilken en gaffel (7) befinder sig med et forhjul (8) i den, savel som en saddelepind (17) der kan bevæges ind og ud af saddeletrret, og en saddele (18) fastgjort når

5 toppen af saddelepinden ved hjælp af en koblingsdel (25) ved forsiden af saddeletrret, hvilken saddelepind er bevægelig mellem en topposition i hvilken en øvre del af saddelepinden strækker sig uden for saddeletrret, og en bundposition (A), og et saddeletrsstøtte (19) er fastgjort til saddeletrret i hvilken saddeletrsstøtte et baghjul (21) befinder sig, hvori saddeletrret (16) og

10 saddelepinden (17) er formet sådan af sadlen (18) i alle positioner mellem top- og bundpositionen er anbragt foran en imaginær linje (20) der løber gennem saddeletrrets akse, **kendetegnet ved at** saddeletrrets hældningsvinkel er sådan at sadlen (18) i alle positioner af saddelepinden (17) mellem top- og bundpositionen forbliver foran baghjulsakslen (21).

15

2. Cykel (1; 31) ifølge krav 1, **kendetegnet ved at** saddeletrret (16) og saddelepinden (17) har en lige eller i det væsentlige lige form.

3. Cykel (1; 31) ifølge krav 1 eller 2, **kendetegnet ved at** foran saddeletrret (16)

20 fra toppen og ned er der tilvejebragt en spalte (27) gennem hvilken i bundpositionen af saddelepinden (17) koblingsdelen (25) rager ud og sadlen (18) er anbragt foran saddeletrret.

4. Cykel (31) ifølge krav 3, **kendetegnet ved at** stellet (3) af cyklen yderligere

25 omfatter et overrør (33) der er anbragt mellem saddeletrret (16) og styrrørret (5) eller mellem saddeletrret og den forreste del af underrørret (4), og **ved at** overrørret har en yderligere spalte (35) der strækker sig fra enden fastgjort til saddeletrret til distalt fra denne ende.

30

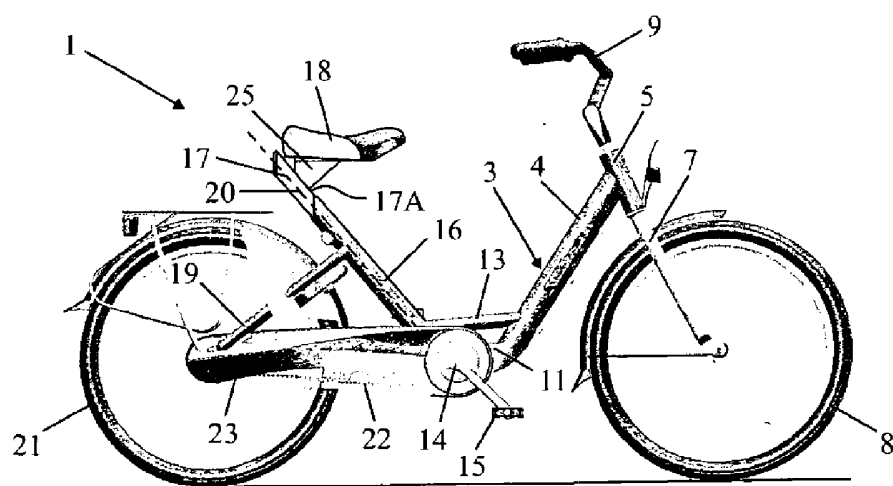
$1/2$ 

FIG. 1

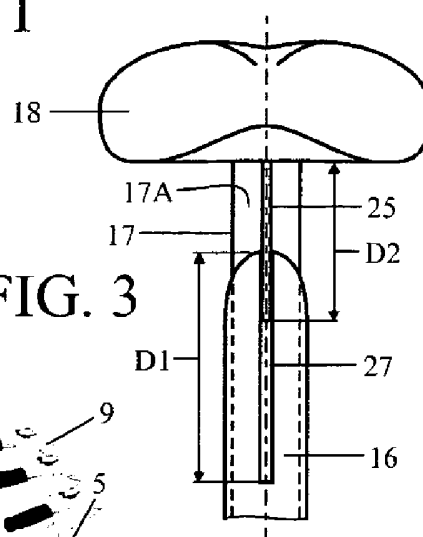


FIG. 3

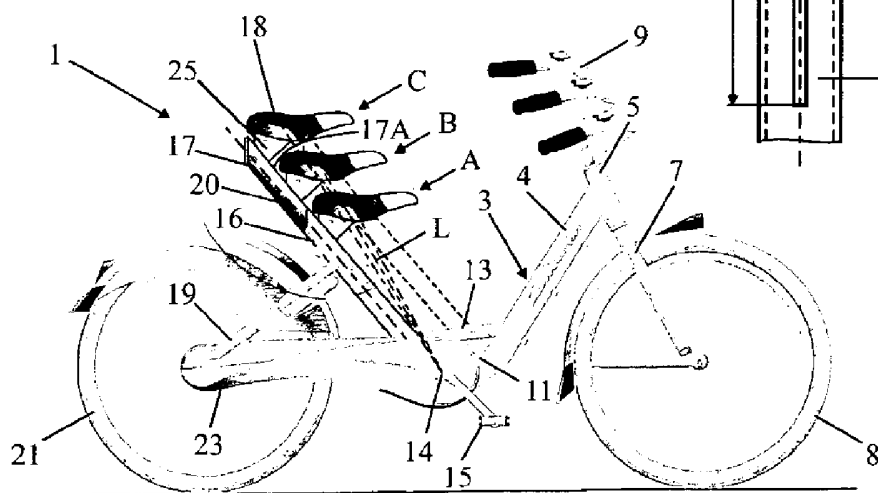


FIG. 2

2/2

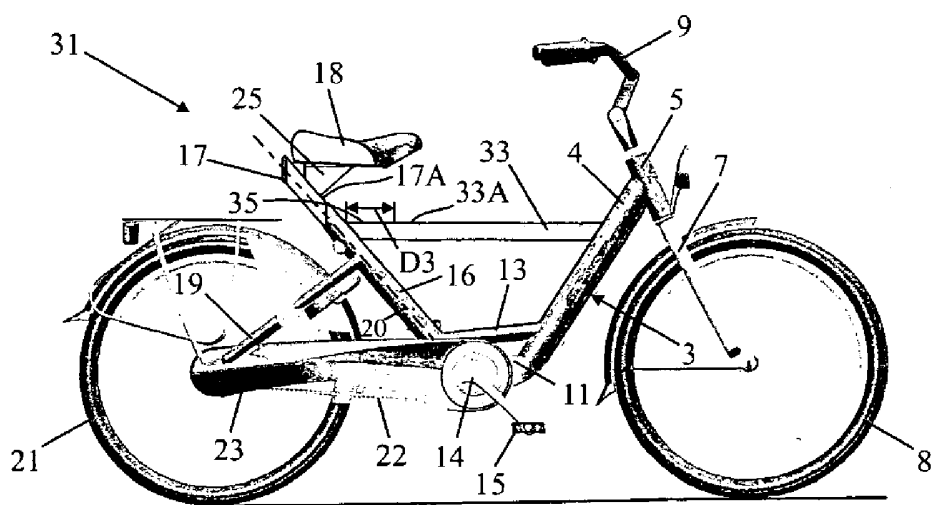


FIG. 4

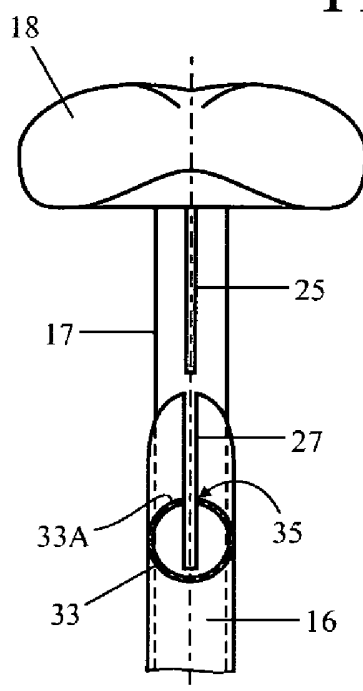


FIG. 5

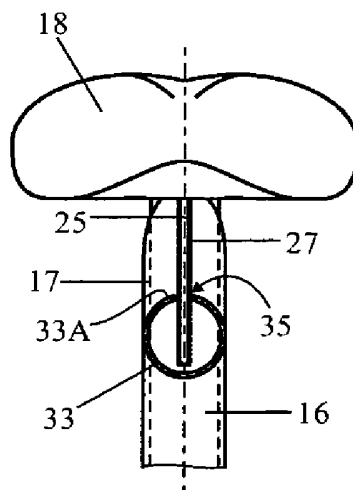


FIG. 6