

(No Model.).

3 Sheets—Sheet 1.

B. LJUNGSTRÖM.
MECHANISM FOR WORKING VELOCIPEDES.

No. 571,197.

Patented Nov. 10, 1896.

Fig. 1.

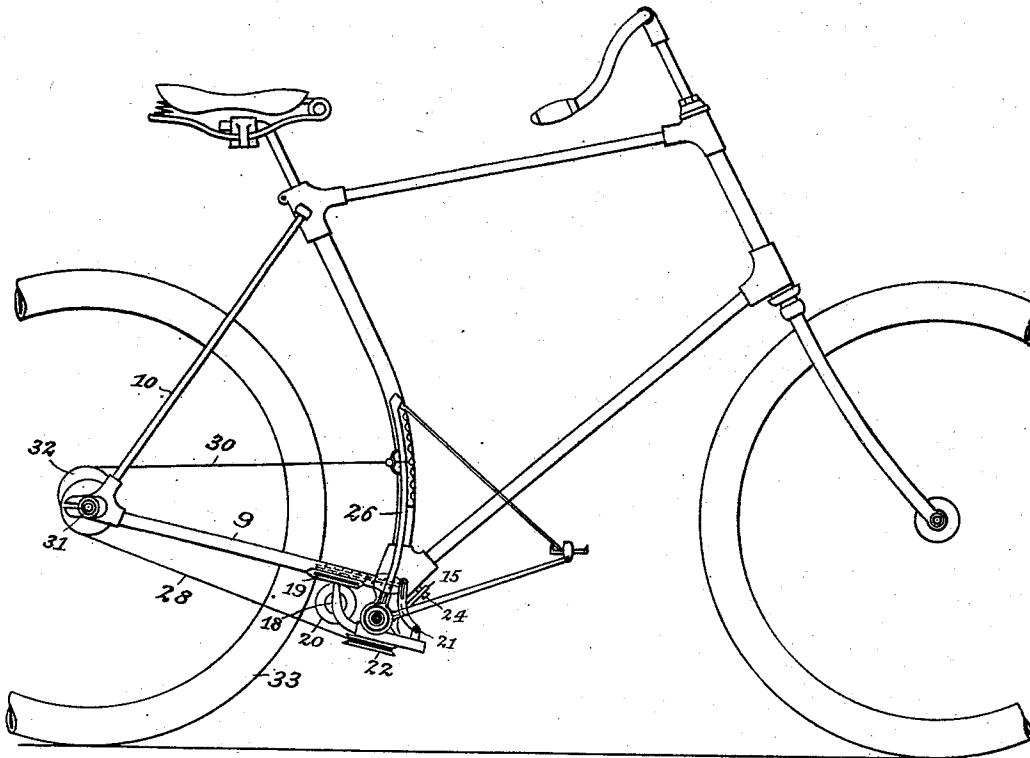
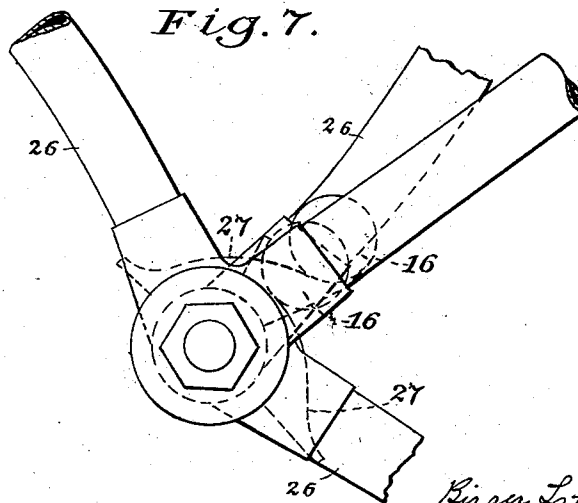


Fig. 7.



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Fig. 2.

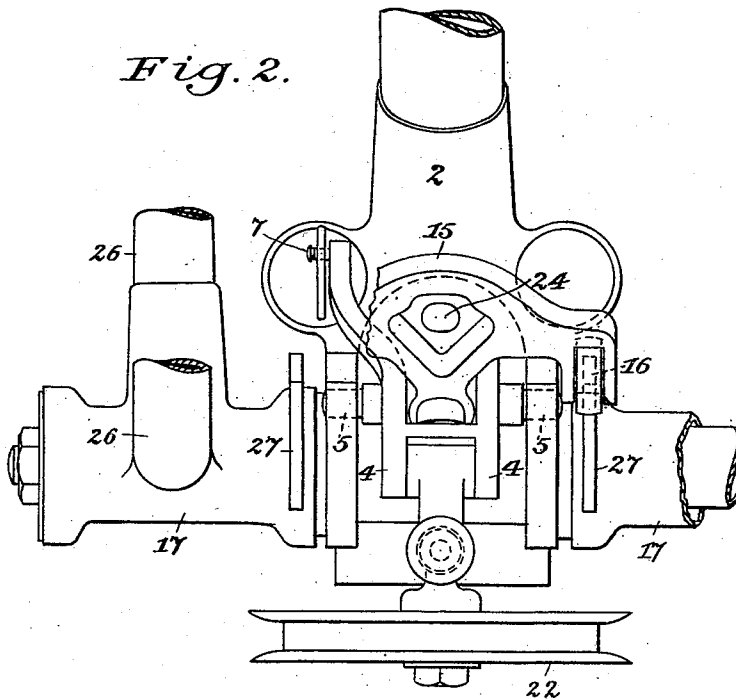
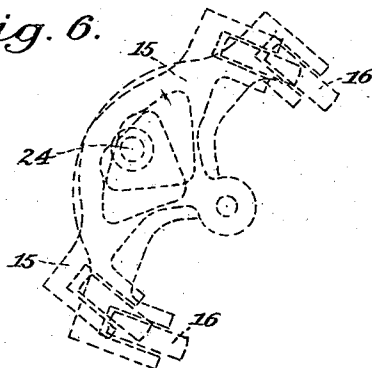


Fig. 6.



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Fig. 3.

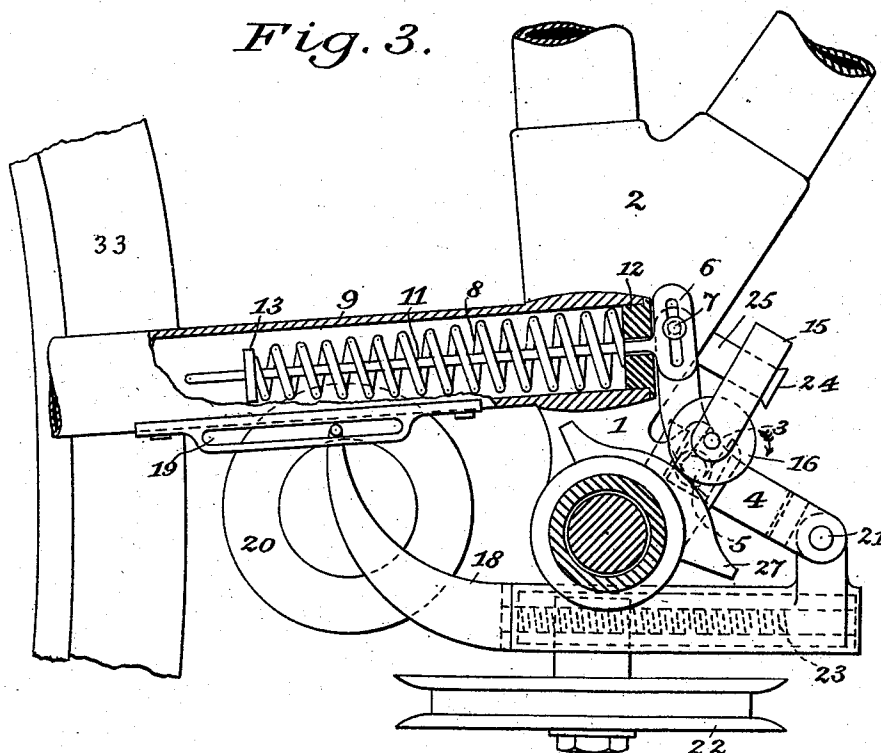


Fig. 4.

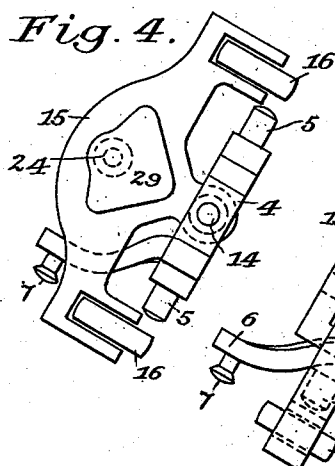
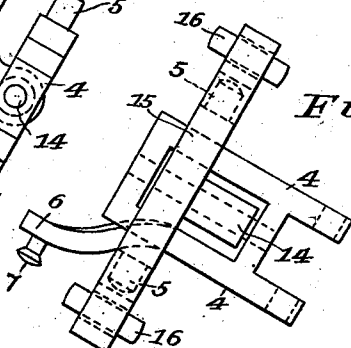


Fig. 5.



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UNITED STATES PATENT OFFICE.

BIRGER LJUNGSTRÖM, OF STOCKHOLM, SWEDEN.

MECHANISM FOR WORKING VELOCIPEDES.

SPECIFICATION forming part of Letters Patent No. 571,197, dated November 10, 1896.

Application filed February 28, 1896. Serial No. 581,149. (No model.)

To all whom it may concern:

Be it known that I, BIRGER LJUNGSTRÖM, mechanician, a subject of the King of Sweden and Norway, and a resident of 44^b Grefgatan, Stockholm, in the Kingdom of Sweden, have invented certain new and useful Improvements in Mechanism for Working Velocipedes, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to that class of velocipedes which are driven by the reciprocating action of a pair of treadle-levers, the objects being that the movements of the treadle-levers shall be reciprocal, and that by their simultaneous depression the brake may be applied to the driving-wheel. In velocipedes of this class the pedal-levers are more or less independent of each other, and a disarrangement of the driving-gear is not infrequently the result. Such a disarrangement is avoided in this invention in the manner described below.

Figure 1 shows in elevation a velocipede provided with the arrangement in question. Figs. 2 and 3 show a front view and a side view of the arrangement, drawn to a larger scale. Figs. 4 and 5 are details. Fig. 6 shows one of the details in the extreme positions of the same. Fig. 7 shows diagrammatically the treadles in their one extreme position.

The treadle-carrier 1, belonging to the frame 2, is provided with two forwardly-directed recesses or holes 3, in which rests the frame-shaped piece 4 by means of its pins 5. The piece 4 has an upwardly-projecting arm 6, with a pivot 7, with which is connected the link 8, which enters into the tube 9, being the one of the two stays which below serve as a support for the hind fork 10. The link 8 is surrounded by a spiral spring 11, resting against the stopper 12 of the tube, and the tension of this spring may be regulated, as desired, by means of the nut 13 on the threaded end of the link. On a shaft 14, journaled in the piece 4, is a balance 15, which is placed in an angle to said piece 4 and can turn on the shaft 14, and which at the ends is provided with rollers 16, resting on cams 27 on the treadle-naves, said cams being eccentric and at their ends curved outward. A fork 18, the bent legs of which enter into slots 19 on the tubes 9, carries the brake-disk 20, the for-

ward end of said fork being fixed to the piece 4 by means of pivots 21. The fork also serves as a support for the disk 22, around which runs the rope or chain 28 connecting the treadles, and which disk 22 can be moved forward or backward by means of an adjusting-screw 23, so as to give said rope or chain a proper tension. The balance 15 has an aperture 29, through which passes the pin 25, provided with a head 24 and fixed in the frame of the cycle.

The treadles have the shape of bell-crank levers 26, the one arm of which, by means of chains 30, is connected to a ratchet-coupling on the shaft 31 of the driving-wheel, the coupling having a disk 32, on which the chain is alternately wound up and off as the disk moves to and fro, in the latter case taking the driving-wheel 33 along. There are two such treadles, which alternately move up and down. The one roller 16 of the balance 15 presses against the nave-cam 27 of the one treadle and the other roller 16 against the nave-cam 27 of the other treadle. Said cams being eccentric, the consequence will be that the balance 15 obtains a rocking movement on the shaft 14, when the treadles move in the manner mentioned above. Thus it is evident that the treadles can not swing upward simultaneously, unless the piece 4 swings outward, in which case the spring 11 makes a resistance.

The moving of the treadles by means of the feet in the usual manner is not prevented by the pressure of the rollers 16 and does not cause any movement of the piece 4, as the cams 27 permit the balance 15 to swing, so that the one of the rollers 16 moves inward toward the center of the treadle while the other moves outward. On the other hand, at a pressure exercised from below on the one treadle only there will be a resistance, because if the treadle shall be able to move upward the other treadle must move downward, such a movement being prevented by the friction between cam 27 of this latter and the corresponding roller 16, or the piece 4 must swing outward around the pivot 21, which is prevented by the spring 11. Said resistance is sufficient to let the cycle rest, for instance, against the border of the sidewalk, with its depressed treadle, when it is desired to have it standing upright by itself. If both the

treadles are in the middle position, the pin-head 24 is opposite to the widest part of the aperture 29. (See Fig. 4.) The braking may then take place by acting simultaneously upon both the treadles by means of the feet. The braking is done in such a way that the piece 4 swings around the pins 5 in the direction of the arrow, Fig. 3, thereby compressing the spring 11. The fork 18 then moves backward and the braking-disk toward the driving-wheel 33. If the treadles are not opposite each other, for instance, if they are at their turning points, the braking cannot take place, as the pin-head prevents the inclined balance 15 and thus the piece 4 to swing outward. Thus an involuntary braking, which might occur when the treadles turn, is prevented.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In cycles, driven by means of oscillating treadles 26, an arrangement for regulating the treadles with regard to their relative position, consisting of a balance 15 journaled in such a position, that the axis of the same runs cross-wise to the treadle-shaft the ends of said balance being provided with rollers, cams 27 on the treadle-naves, upon which the rollers are adapted to rest, said cams being eccentric and so turned, that the treadle, when moving downward, forces the corresponding end of the balance to move outward, with the view, that the one treadle may not be pressed upward, unless the other treadle is simultaneously pressed downward.

2. In combination with the frame, the treadle-naves and the cams 27 thereon, the balance 15 having the rollers, the revoluble piece 4 journaled in the frame and the spring 11 for actuating said revoluble piece in such a direction that the rollers of the balance are pressed against the cams 27 on the treadle-naves, substantially as described.

3. In combination with the frame, the treadle-naves and the cams 27 thereon, the bal-

ance 15, the rollers, the revoluble piece 4 also formed as a balance, the movable part 18, and the turning disk supported thereby, of the chain or rope which connects the coupling-disks and also the brake-disk, and the spring 11 having one end connected to one end of the piece 4 and the other end connected to the movable part 18, whereby the chain or rope may be kept strained and the braking-disk out of engagement with the driving-wheel, substantially as described.

4. In combination with the frame, the treadle-naves and the cams 27 thereon, the balance 15, the rollers, the revoluble piece 4 also formed as a balance, the movable part 18, and the turning disk supported thereby of the chain or rope which connects the coupling-disks and also the brake-disk and the spring 11 having one end connected to one end of the piece 4 and the other end connected to the movable part 18, the headed pin fixed to the frame and passing through an aperture in the balance 15, said aperture being so shaped that the balance prevents the swinging of the piece 4, unless the balance occupies its middle position whereby the braking cannot take place when the treadles, are at the turning points, substantially as described.

5. In combination, with the frame, the treadle-naves, and the cams 27 thereon, the revoluble piece 4, the part 18, the turning and braking disks supported thereby, said part 18 having the ends of its legs bent angularly to pivots entering grooves in the frame, and having its other end connected with the balance 4 whereby said part 18 is effectually guided, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

BIRGER LJUNGSTRÖM.

Witnesses:

ERNST SVANGVIST,
CARL TH. SUNDHOLM.