

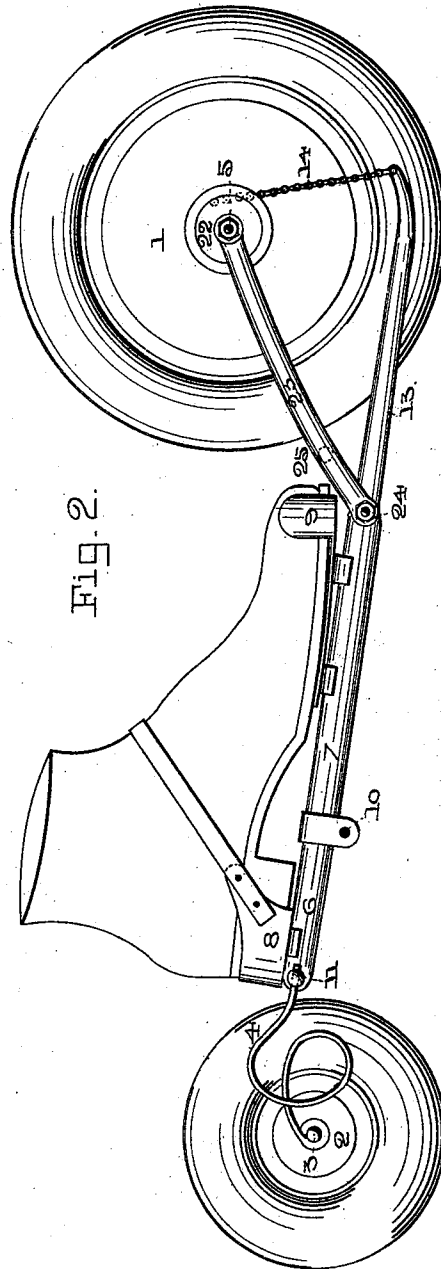
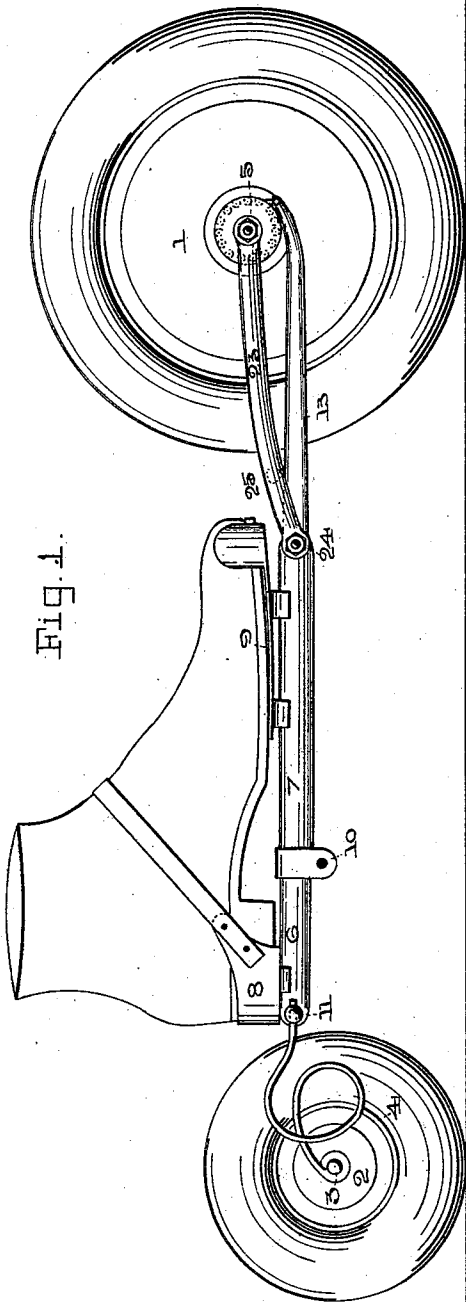
(No. Model.)

2 Sheets—Sheet 1.

J. G. A. KITCHEN.  
WHEEL OR ROLLER SKATE.

No. 525,270.

Patented Aug. 28, 1894.



Witnesses.  
C. M. Werle  
Hubert O. Peck

Inventor:  
J. G. A. Kitchen  
per O. E. Duff  
Attorney

(No Model.)

2 Sheets—Sheet 2.

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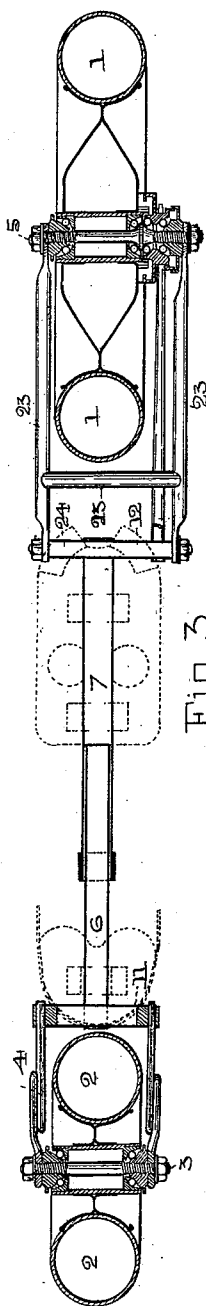


Fig. 3.

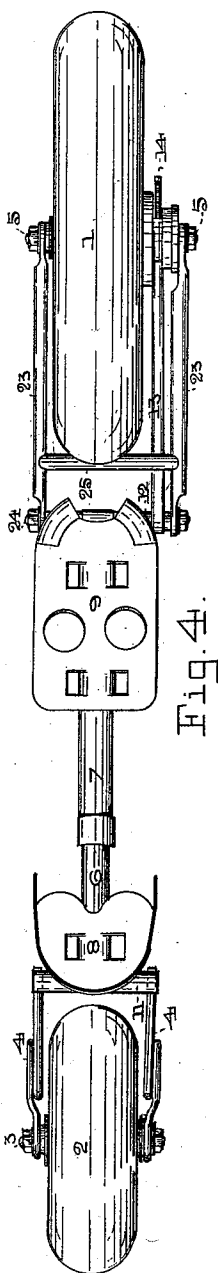


Fig. 4.

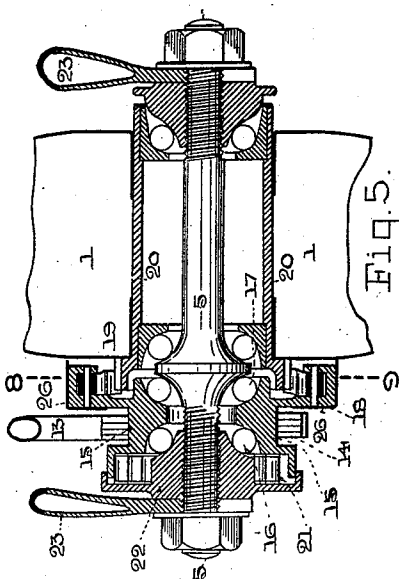


Fig. 5.

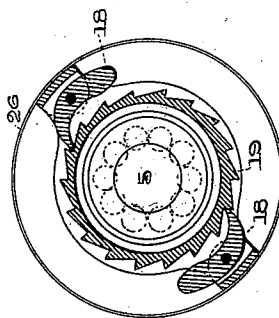


Fig. 6.

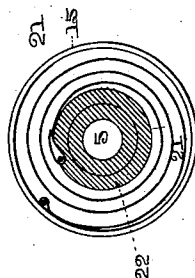


Fig. 7.

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# UNITED STATES PATENT OFFICE.

JOHN GEORGE AULSEBROOK KITCHEN, OF ARDWICK, ENGLAND.

## WHEEL OR ROLLER SKATE.

SPECIFICATION forming part of Letters Patent No. 525,270, dated August 28, 1894.

Application filed December 18, 1893, Serial No. 493,929. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN GEORGE AULSEBROOK KITCHEN, a subject of the Queen of Great Britain and Ireland, residing at Ardwick, near Manchester, in the county of Lancaster, England, have invented Improvements in Wheel or Roller Skates, of which the following is a specification.

This invention of improvements in or relating to wheel or roller skates has for its object to obtain increased speed with reduced vibration and greater comfort. Hitherto each of the wheels or rollers in skates has been free to rotate on its axis in either direction.

Now according to this invention the front leading wheel of each skate is so connected through clutch mechanism with a vertically movable frame or foot piece that by the downward or stepping movement of the skater's foot, that is to say, as the weight of the body is brought upon the foot piece, additional rotary motion will be imparted to the leading roller. The leading and rear wheels which are placed in line with each other are according to one construction connected by a jointed frame, a portion of which serves as the foot rest. The rollers may be provided with elastic or resilient tires or with elastic disks to reduce vibration.

The accompanying drawings illustrate a roller skate constructed according to this invention, Figure 1. being a side elevation of the same with the parts in their normal positions; Fig. 2. a similar view, but with the movable frame or foot piece depressed; Fig. 3. a plan, partly in section, showing the arrangement of the hinged frame work and ball bearings; Fig. 4. a plan, showing the frame depressed; Fig. 5. an enlarged sectional elevation of one end of the front wheel axle and the clutch mechanism thereon; Fig. 6. a sectional elevation on line 8. 9. of Fig. 5. and Fig. 7. an end elevation thereof with some of the parts removed for the sake of clearness.

1. 2. are the front and rear wheels respectively; the front wheel is of somewhat larger diameter than the rear wheel and both are provided with suitable resilient tires such as pneumatic tires.

The axle 3. of the rear wheel 2 is connected by means of curved spring bars 4. to a jointed frame hereinafter called the foot piece, the

forward end of which is fixed to the axle 5. of the front wheel 1.

The foot piece is composed of two tubular portions 6. and 7. arranged telescopically one within the other and carrying respectively a heel plate 8. and a toe plate 9. A clamping band and locking screw 10. is provided for enabling the parts to be rigidly secured together in any desired position. By this arrangement the length of the skate can be readily adjusted to suit requirements. The rear end of the said foot piece terminates in a cross piece 11. arranged at right angles thereto to which are secured the forward ends of the curved spring bars 4, the other ends of these bars being fastened to the ends of the axle 3. of the rear wheel (Figs. 1. to 4). These spring bars serve to reduce vibration and to allow of the back wheel being canted when traveling in a circular path owing to the inclination of the body of the skater depressing one spring more than the other; the front wheel will be caused to become simultaneously canted in the same direction though not to the same extent. The forward end of the foot piece terminates in a tubular cross piece 12. to which an arm 13. is secured so as to project forward beyond and below the front wheel axle 5. (Figs. 1. and 2.) the arrangement being such that the telescopic parts 6. 7. and the arm 13. radiate as one member from the rear wheel axis 3.

The arm 13. is connected by a flexible band or chain 14. that partly encircles and is attached to the periphery of a drum 15 which is supported on ball bearings 16. 17. (Fig. 5) arranged around the axle 5. and serves as a clutch. This drum is provided with two pawls 18. (Figs. 5. and 6.) that engage with ratchet teeth 19. formed on the outside flange of the hub 20. of the front wheel.

Within the recessed outer portion of the boss 15. is arranged a coiled spring 21. one end of which is connected to the said boss and the other to the fixed adjusting cone 22. of the ball bearing. This spring is wound or coiled in the opposite direction to that of the chain 14. so that as the chain is uncoiled, the spring will be wound up so that when the weight which depresses the arm 13. is removed, the spring 21. will come into action and raise the foot piece 6. 7. and the arm 13.

into the position shown in Fig. 1. Springs may be provided to hold the pawls 18 in gear with the ratchet teeth 19, but preferably the pawls are provided with weighted rear ends as shown, so that when quickly revolved the weighted arms will, by centrifugal force fly outward thus bringing the pointed ends of the pawls into gear with the ratchet wheel teeth; when only revolving slowly one of the pawls will drop into gear by gravity. The leading wheel 1. is retained in its relative position with the rear wheel 2. by two radiating links 23. which form part of the jointed frame and are secured at one of their ends to the axle 5. and pivoted at their other ends to a pin 24. passing through the cross tube 12. (Fig. 3) thus a portion of the skater's weight is supported by the spring bars 4. and the remainder of the weight by the chain 14.

The spring 21. is so constructed that when coiled up it shall be of sufficient strength to raise the foot piece into the position shown in Fig. 1. upon the weight being removed. A transverse stay bar 25. connecting the links 23. serving to limit the upward movement of the said foot piece 6. 7. 26. is a cover to prevent access of dust to the ball bearings. The rollers 1 and 2. are preferably made of dished metal, or of celluloid disks and are free to revolve on their axles upon ball or other suitable bearings.

The rear roller can revolve in either direction, but the front one can only rotate in a forward direction, any tendency to rotate in the opposite direction being prevented by reason of the ratchet wheel connected thereto engaging the pawls carried by the drum 15. the movement of which is controlled and limited by the chain 14. the length of which in the example shown, is such as to allow the drum to make only about three quarters of a revolution.

It will be readily understood from the above description that as the weight of the body is supported on the fore part of the foot the hinged foot piece will descend to the position shown in Fig. 2. thereby partly rotating the drum 15. through the chain and so giving an impetus to the leading roller, and as the foot is raised and brought forward for the next stroke the forward end of the foot piece 6. 7. and arm 13. will again be raised and the pawls will engage with the ratchet teeth ready to assist the skater forward by imparting rotary motion to the front wheel when the weight of the body again comes on the toe plate.

The strength of the spring 21. may be modified to suit the weight of the skater, also the diameter of the chain race on the drum 15. may be varied according to circumstances.

For heavy skaters there may be arms and clutch gear on each side of the leading wheel.

What I claim is—

1. A roller skate comprising a foot piece supported by two tracking rollers arranged at the front and rear ends thereof, the front end of the foot piece pivotally connected with the

front roller, and driving connections between the front end of the foot piece and the front roller to drive the roller by the vertical movement of the foot piece, the rear end of the foot piece having a cross head, and springs therefrom to the axle of the rear roller, substantially as described.

2. A roller skate having a vertically movable foot piece, a front driving roller, pivotal connections between the front portions of the foot piece and said roller, and driving mechanism for said roller connected with and operated by the front end of the foot piece, substantially as described.

3. A roller skate comprising a foot piece supported by two tracking rollers arranged at the front and rear ends thereof, respectively, said foot piece having a jointed connection with the front roller, and driving connections between the front end of the foot piece and said front roller to drive the roller by the vertical movement of the foot piece, substantially as described.

4. A roller skate having the vertically movable foot piece, the front driving roller, links pivotally connecting the front portion of the foot piece and the roller axle, a pawl and ratchet mechanism for driving the roller, and a flexible connection from the foot piece to said mechanism to actuate the same, substantially as described.

5. A roller skate comprising a vertically movable foot piece, carrying rollers therefor, flexible connections between the rear end of said foot piece and the rear roller, a jointed connection between the forward roller and said foot piece, clutch mechanism adapted to rotate said forward roller in a forward direction when operated in one direction and to rotate idly in the opposite direction, a flexible connection between the forward end of said foot piece and said clutch mechanism, and a spring for returning the various parts into their operative positions, substantially as herein described for the purpose specified.

6. A roller skate comprising a foot piece made in parts capable of adjustment in length, carrying rollers for said parts, clutch mechanism adapted to rotate the forward roller in a forward direction when operated in one direction and to rotate idly in the opposite direction, a flexible connection between the forward end of said foot piece and said clutch mechanism, and a spring for returning the various parts into their operative positions, substantially as herein described for the purpose specified.

7. A roller skate comprising a foot piece adapted to vibrate in a vertical plane, carrying rollers therefor, clutch mechanism comprising a ratchet wheel connected to the forward roller and a drum provided with one or more pawls adapted to engage said ratchet wheel when rotated in one direction but to ride idly over said wheel when the drum is rotated in the opposite direction, a coiled spring having one end connected to said drum and the

other end to a relatively fixed part of the skate, and a flexible connection arranged to be wound on said drum, in an opposite direction to said spring and connected with the forward end of said foot piece, substantially as herein described.

8. A roller skate comprising a foot piece provided with a forward extension, carrying wheels, flexible connections between the rear ends of said foot piece and the axle of the rear roller, links jointed to the forward end of said foot piece and connected to the axle of the forward roller, and mechanism for rotating said forward roller by downward movement of said foot piece, said mechanism comprising a ratchet wheel fixed to said forward roller, a spring drum provided with one or

more pawls to engage said ratchet wheel when rotated in one direction but to rotate idly thereon in the opposite direction and a chain connecting the extension of said foot piece to said drum and adapted to rotate the latter in opposition to its spring substantially as herein described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN GEORGE AULSEBROOK KITCHEN.

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