R. HUTTON.
Roller-Skates.

No. 196,230. Patented Oct. 16, 1877.

Fig: 1.

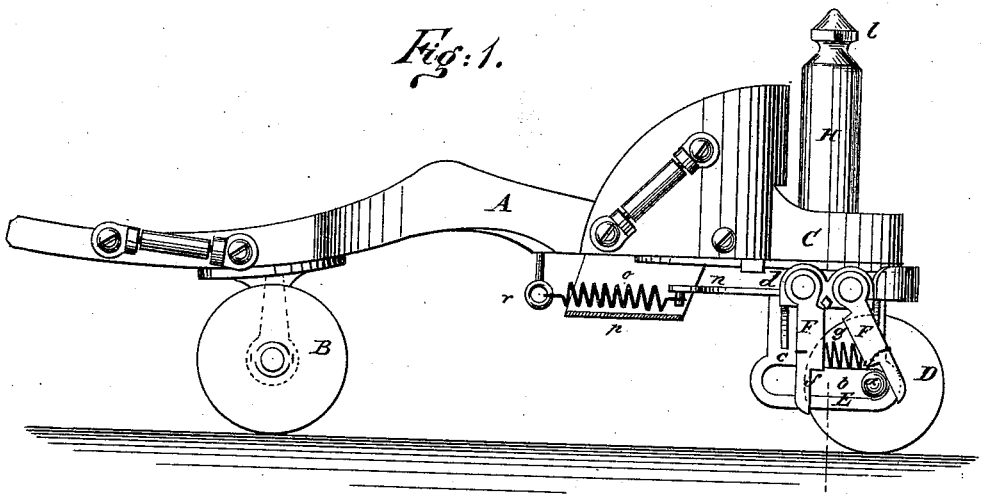


Fig: 2.

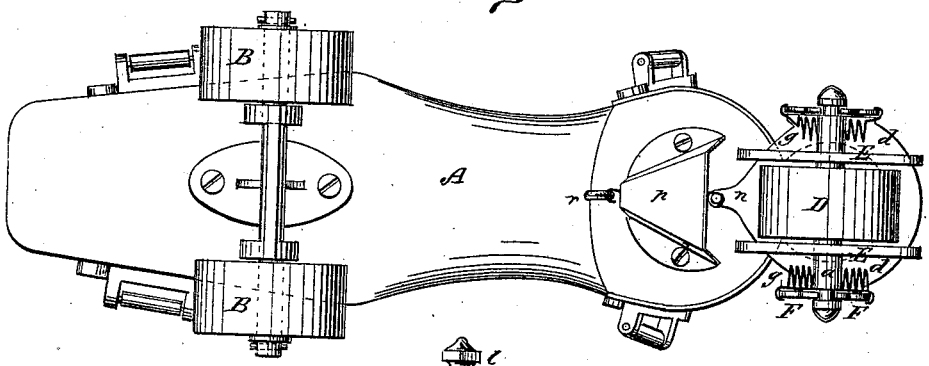
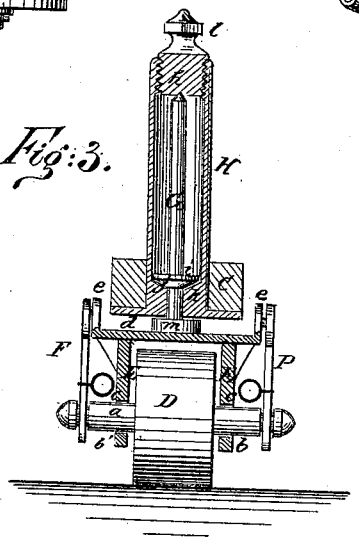


Fig: 3.



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UNITED STATES PATENT OFFICE.

ROBERT HUTTON, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO PHILIP HAFFNER, OF SAME PLACE.

IMPROVEMENT IN ROLLER-SKATES.

Specification forming part of Letters Patent No. **196,230**, dated October 16, 1877; application filed August 13, 1877.

To all whom it may concern:

Be it known that I, ROBERT HUTTON, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Roller-Skate; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making part of this specification.

This invention is in the nature of an improvement in roller-skates.

The invention consists in a roller-skate having a rear roller constructed with a bearing within which the axis of the roller may shift in a straight line, either to the front or rear of its normal central position, in which normal or central position the horizontal axis of the roller is at right angles to a vertical axis.

The invention also consists in a roller-skate with the rear roller having bearings within which the horizontal axis of the roller may shift in a straight line, and provided with fingers, in combination with the axis of the roller, whereby said axis is restored to its normal central position within the bearings.

The invention also consists in a roller-skate with a vertical axis, constructed with a spindle provided with a conical bearing-surface, located near the lower part of said spindle, and fitting into a corresponding conical seat; and the invention also consists in a roller-skate with its rear roller provided with a spring, whereby the roller may be restored to its normal central position after it has been turned on its vertical axis.

In the accompanying sheet of drawings, Figure 1 is a side elevation of my improved roller-skate; Fig. 2, a view of under side of skate; and Fig. 3, a cross-section taken in line *x x*, Fig. 1.

Similar letters of reference indicate like parts in the several figures.

A represents the sole of the skate, which may be of wood or any other suitable material. To the under side of the sole A, and a short distance from the front end of the same, are fixed, and in suitable bearings, rollers B. These rollers are fixed to their support and bearing, so that their axis shall at all times be at right angles to the sole A. To the rear of the sole A, or, rather, to a prolongation, C, from the heel of the same, is secured the rear roller D.

The roller proper, D, may be made of wood or other suitable material, and through its center passes an axis, *a*, so that the roller may freely revolve on its axis. The portions of the axis *a* which protrude on either side of the roller D are received in and supported by bearings E. These bearings consist of horizontal slots *b*, formed into plates *c*, which plates are secured at right angles to, and depend from, a circular plate, *d*.

The horizontal slots *b*, which constitute the bearings before referred to, are of a width sufficient to permit the introduction of the axis *a*, and so that said axis may slide readily to and fro within such bearings.

The circular plate *d*, to which the plates *c* are secured, as aforesaid, is constructed with lugs *e*, located on either side of said plate. To these lugs are loosely riveted fingers F, two fingers on each side of the plate, as shown in Figs. 1 and 2, so that when the axis *a* of the roller D is in its normal position, which is exactly midway from either extremity of the slot *b* or bearing, the said axis will be received between the fingers F, which will then depend at right angles to the circular plate *d*, and bear against the said axis *a*, and for this purpose that part of the fingers which bear against the axis have recesses *f* formed therein. Uniting the fingers F is a spiral spring, *g*, the ends of which are secured, respectively, to the fingers F, as shown in Figs. 1 and 2.

Firmly fixed to the center of the circular plate, and on its upper surface, is a spindle, G. This spindle has a conical bearing, *h*, formed in its upper end, and a collar, *i*, with a conical under surface, *j*, secured to it at a point near its lower end. This spindle is received within a cylinder, H, which cylinder has at its lower end a conical seat, *k*, corresponding to the conical under surface *j* of the collar *i*, within which said collar rests, and also a screw-cap, *l*, which receives the conical bearing *h* at the upper end of the spindle G, as shown in Fig. 3. The spindle, when in this position, is fixed to the prolongation C by passing up through the prolongation, and a bearing-plate, *m*, affixed to the under side thereof. To the circular plate

d, or to a lug, *n*, thereof, is secured one end of a spiral spring, *o*, which spiral spring is protected by a hood, *p*, and has its other end secured to a suitable fixture, *r*.

Now, my roller-skate being constructed substantially as I have described it, its operation is as follows: When the skates are affixed to the feet of the user, and the user propels them in a straight line, the rear roller D revolves in a direction parallel with the front rollers B, and in a line coincident with a line drawn longitudinally through the center of the sole A; but when the user desires to describe a curve with the skate, or change the position of his feet from a straightforward course to some other, then the increased friction thrown upon the periphery of the wheel D causes the circular plate *d* (which, as before described, supports the roller through its bearings) to turn on the vertical spindle G, so that the roller D assumes a position more or less at an angle from its normal position, adapting itself to the change of position of the feet of the user, that it may revolve with equal facility in its changed position as it revolved before the change of position was made. Simultaneously with the change of course, the axis *a* of the roller D slides within the slots *b* of its bearings—to the rear end of the slots when the skate is propelled forward, and to the front end of the slots when the skate is propelled backward. This shifting of the axis *a* throws the axis in front of or behind the vertical spindle G, so that a leverage in length equal to the end of the slot *b*, to which the axis has shifted, and the center of the vertical spindle, is exerted on said central axis, thereby greatly facilitating and causing the circular plate *d*, and with it the roller D, to turn, that the roller D will accommodate itself to any curve on which the skate is propelled with great promptness, and thereby roll with equal facility on such curves. With such construction the roller D will readily revolve with every possible change of direction of the skate without at any time becoming fixed or dragging on the floor, which would retard the skater, and, under some circumstances, trip him.

The fingers F, as the axis *a* of the roller D is shifted in the slots *b*, yield or open, as shown in Fig. 1, the spring *g* expanding for that purpose, and exert an elastic pressure against the axis, that facilitates the shifting of the axis within the slot materially, the spring at all times exerting a force to restore the axis to its normal position, which force insures promptness in change of position of the axis within its bearings, and consequently promptness in change of position of the roller D by reason of the turning of the vertical spindle G, as before stated.

To restore the roller D, or to assist in restoring it, and maintaining it in a position coincident with a line drawn longitudinally through the center of the sole A, the spring *o* exerts its force, which spring is expanded as the circular plate *d* turns on the spindle G, and the recovery of the spring assists to effect the restoration of the roller to the position before named.

To prevent the vertical spindle G wearing loose within its bearing, and to maintain at all times a true circular turning of the spindle without wabbling, in addition to the bearing *h* at the end of the spindle, I also affix to it a collar, *i*. This collar, with its conical under surface *j*, fits into a corresponding conical bearing, *k*, giving a broad bearing-surface, which is truly maintained as the bearing wears in use.

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

1. A roller-skate with a rear roller having its axis borne within slots, whereby said axis may shift in a straight line within said slots, substantially as and for the purpose described.

2. In a roller-skate, the axis of the rear roller combined with finger-plates and spring, to facilitate the shifting of the axis within its bearings, substantially as and for the purpose described.

3. In a roller-skate, a circular revolving plate constructed with supporting finger-plates, substantially as and for the purpose described.

4. In a roller-skate, a vertical spindle, constructed with a collar having a convex under surface, which collar is located near the lower end of said spindle, substantially as and for the purpose described.

5. In a roller-skate, a vertical spindle with a conical bearing at its upper end, and a collar with a convex under surface, substantially as and for the purpose described.

6. In a roller-skate, a revolving circular plate combined with a spring, whereby said circular plate may be assisted to assume and maintain a given position, substantially as described.

ROBERT HUTTON.

Witnesses:
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