

(No Model.)

R. J. GROVE & F. P. LUND.
ROLLER SKATE.

No. 596,111.

Patented Dec. 28, 1897.

Fig. 1.

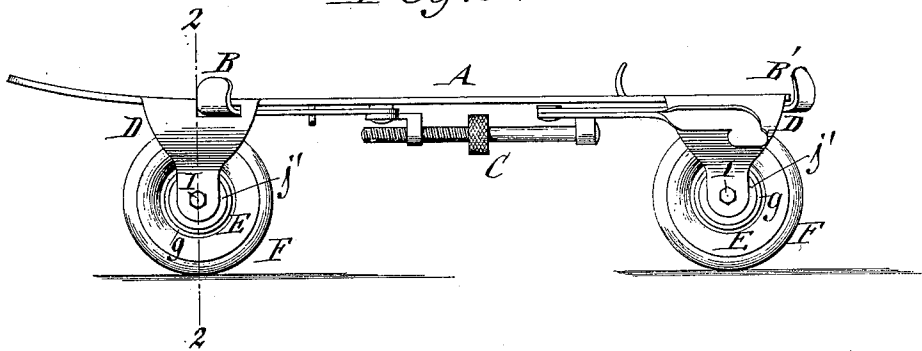


Fig. 2.

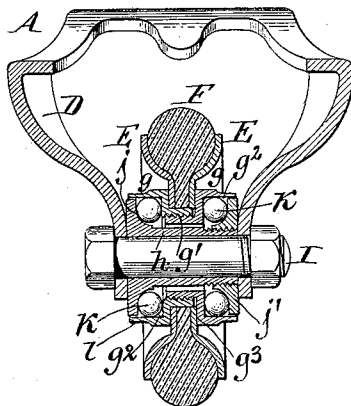


Fig. 4.

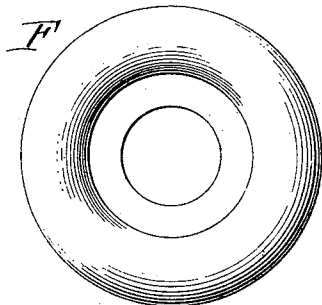


Fig. 5.

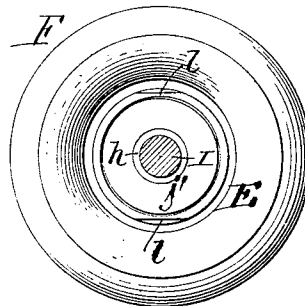
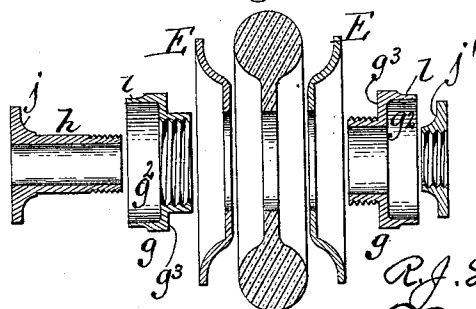


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

ROBERT J. GROVE AND FRANKLIN P. LUND, OF BUFFALO, NEW YORK.

ROLLER-SKATE.

SPECIFICATION forming part of Letters Patent No. 596,111, dated December 28, 1897.

Application filed June 9, 1897. Serial No. 639,997. (No model.)

To all whom it may concern:

Be it known that we, ROBERT J. GROVE and FRANKLIN P. LUND, citizens of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Roller-Skates, of which the following is a specification.

This invention relates to an improvement in roller-skates, and more especially to a combination skate designed to receive either a pair of tandem rollers or a runner, so that the skate may be readily converted into either form, as desired. An interchangeable skate of this kind is shown and described in Letters Patent of the United States No. 566,271, granted August 18, 1896, to F. P. Lund.

One of the objects of our invention is to provide the skate with ball-bearing rollers which can be applied to and removed from the skate without dismembering the bearings, so that they can be easily interchanged with a suitable runner.

The invention has the further object to so construct the rollers that their several parts can be conveniently taken apart and reassembled, so that the tires can be renewed when necessary without the aid of skilled labor, and finally to employ a minimum number of parts which can be cheaply constructed, so as to reduce the cost of the skate correspondingly.

In the accompanying drawings, Figure 1 is a side elevation of a skate embodying our invention. Fig. 2 is a vertical cross-section of the same in line 2 2, Fig. 1, on an enlarged scale. Fig. 3 is a transverse vertical section of one of the rollers, showing the parts separated. Fig. 4 is a detached side view of one of the tires on an enlarged scale. Fig. 5 is a detached side view of one of the rollers, partly in section.

Like letters of reference refer to like parts in the several figures.

A is the foot-plate of the skate, B B' the sole and heel clamps, and C the clamping-screw. These parts form no part of our present invention and may be of any ordinary or suitable construction.

D represents the depending forks, wings, or plates which are arranged on the front and rear portions of the foot-plate and between

which the two rollers are journaled. Each of these rollers consists of a pair of similar annular plates, webs, or disks E, between which the flexible or elastic tire F of the wheel is confined, and a hub to which the disks are secured. This hub is composed of two cylindrical or tubular sections *g*, which are detachably connected together by a screw-threaded joint *g'*, as shown in Fig. 2, so that the two sections can be screwed toward or from each other. The outer portion of each of these hub-sections is enlarged to form an annular bearing-box or ball-cup *g*². The inner ends of the bearing-cups form abrupt shoulders *g*³, between which the disks E and the tire F are firmly clamped, the disks and the tire being provided with central openings for the passage of the reduced middle portion of the hub. The disks are preferably dished on their outer sides, and their outer or peripheral portions are curved outwardly beyond their remaining portions, so as to form between the two disks an annular tire channel or groove which flares or enlarges toward the periphery of the wheel. The inner portion of the tire is contracted and its outer portion enlarged to conform to the space between the disks, as shown in Fig. 2. The tire is preferably constructed of rubber and projects beyond the edges of the disks, so that the roller runs only upon the tire.

h is a sleeve or hollow axle which is arranged within the hub of the roller and rigidly clamped between the arms or jaws of the fork D by a transverse tie-bolt or screw I, passing through the sleeve and through holes formed in the lower portions of the fork-arms.

j j' are the cones or inner parts of the bearings which are mounted on the ends of the sleeve *h*, and *k* the balls interposed between these cones and the cups *g*². One of these cones is preferably formed in one piece with the sleeve *h*, and the other is removably engaged therewith by a screw-thread, as shown.

As the disks E on opposite sides of the rubber tire are arranged between the shoulders *g*³ of the hub-sections and as the latter are connected by a screw-joint, the disks are forced toward each other and caused to tightly clamp the tire between them upon screwing the hub-sections together. These sections are turned by a suitable wrench and are provided for this

purpose with flattened portions *l*, as shown in Fig. 5, or are otherwise constructed to receive a suitable wrench.

5 The disks *E* can be cheaply stamped from sheet metal, thus materially reducing the cost of the rollers.

When it is desired to remove the rollers from the skate for substituting a runner for the same, it is only necessary to remove the clamping-bolts *I*, when the rollers can be with-
 10 drawn from between the fork-arms *D* without disturbing the ball-bearings, the sleeves *h* retaining the bearing-cones in their normal position and keeping the bearings intact. A skate-runner can now be secured between the
 15 fork-arms by means of the tie-bolts *I*, as in the Letters Patent hereinbefore referred to, for converting the skate into an ice-skate.

When the tire of a roller wears out, it can
 20 be readily replaced by a new one by removing the detachable bearing-cone *j'* from the sleeve *h*, disconnecting the hub-sections, removing the right-hand clamping-disk and the worn-out tire, and then substituting a new
 25 tire for the same and replacing the removed parts in the reverse order. This operation does not necessitate returning the skate to the factory and does not require the service of a mechanic, but can be easily performed by a
 30 novice or unskilled person. By thus applying the tire laterally over the hub the looseness or permanent stretching which results from springing an endless tire into the groove of the roller is avoided, thereby rendering the
 35 tire tight and secure and enabling the same to effectually withstand the lateral or deflecting strains to which it is subjected.

We claim as our invention—

1. The combination with a roller-hub composed of a pair of sections connected by a screw-threaded joint and each having an external shoulder or offset on its inner portion, a pair of disks or plates surrounding the sectional hub between said shoulders, and an elastic tire clamped between said disks and
 45 projecting beyond the edges of the same, so as to form the tread of the roller, the clamping of the tire due to screwing the hub-sections together being unrestrained except by the tire itself, substantially as set forth. 50

2. In a roller-skate, the combination with the foot-plate having a depending fork, of a roller journaled in said fork and consisting of a hub composed of sections connected by a screw-threaded joint and each having at its
 55 outer end an enlargement or ball-cup forming an external shoulder or offset, a pair of disks or plates mounted on the hub between said shoulders, a tire clamped between said disks, a sleeve passing through said hub and
 60 provided on its ends with bearing-cones, one of which is removably mounted thereon, balls interposed between said ball-cups and cones, and a clamping-bolt passing through said sleeve and the roller-fork, substantially as set
 65 forth.

Witness our hands this 7th day of June, 1897.

ROBERT J. GROVE.
 FRANKLIN P. LUND.

Witnesses:
 CARL F. GEYER,
 THEO. L. POPP.