

J. G. DOAK.
ROLLER SKATE.

APPLICATION FILED APR. 6, 1907.

1,024,835.

Patented Apr. 30, 1912.

Fig. 1.

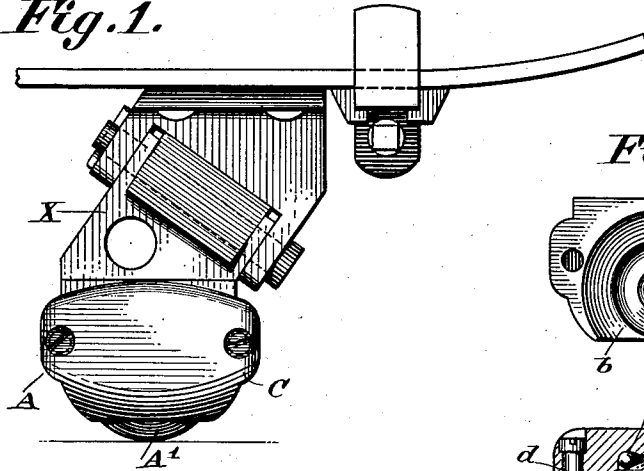


Fig. 2.

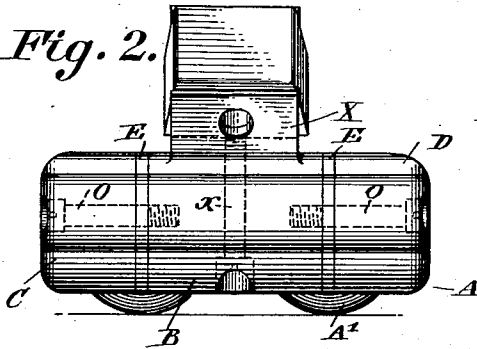
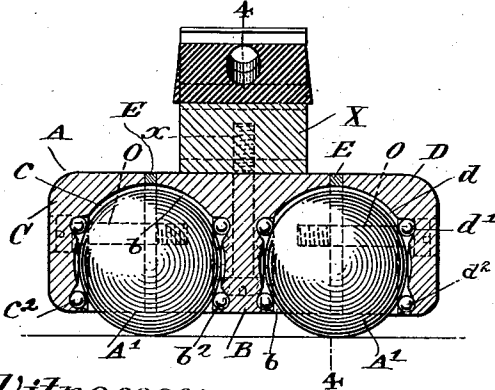


Fig. 3.



Witnesses:
Archibald Young
W. R. Hunter

Fig. 6.

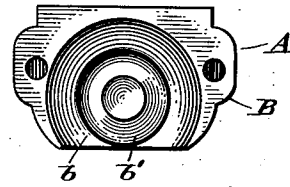


Fig. 5.

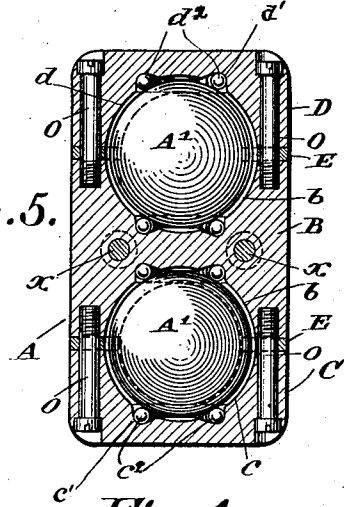
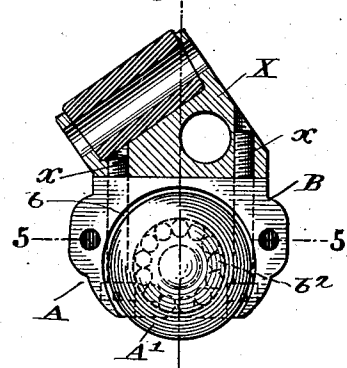


Fig. 4.



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UNITED STATES PATENT OFFICE.

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ROLLER-SKATE.

1,024,835.

Specification of Letters Patent.

Patented Apr. 30, 1912.

Application filed April 6, 1907. Serial No. 366,733.

To all whom it may concern:

Be it known that I, JAMES G. DOAK, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Roller-Skates, of which the following is a specification.

My invention relates to roller skates, such as employ balls for rollers, and more particularly, to an anti-friction or ball-bearing mounting for such ball-rollers.

As heretofore constructed, skates of this general class using balls for rollers have been objectionable on the ground of friction. Various ways of mounting the ball-rollers have been adopted with an idea to overcome this fault, but none of them have proved thoroughly successful. The present construction is adapted to give an absolutely frictionless forward and backward rotation of the ball-roller while at the same time retarding rotation of the ball-roller in any other direction, thus allowing the skate to be moved forward or backward with the least possible effort, while all tendency toward sidewise movement of the same is retarded.

Referring to the drawings, wherein similar letters indicate corresponding parts in each of the several views:—Figure 1 is a side elevation of the device as applied to a skate, the rear half of the skate being omitted; Fig. 2 is a front view; Fig. 3 is a transverse sectional view; Fig. 4 is a sectional view on the line 4—4, Fig. 3; Fig. 5 is a sectional view, the section being taken on the line 5—5 Fig. 4. Fig. 6 is a view in elevation of the interior of one of the detachable bearing cups or sections.

This invention, broadly speaking, comprises a supporting block of the form in general use in skates of this class for connecting the foot plate of the skate to the box or journal adapted to carry the skate rollers. This supporting block is connected to a box comprising several sockets in which are secured the several ball-rollers at each end of the skate. The sockets are constructed of several separable sections, each containing ball races for anti-friction bearings for the ball-rollers. In the preferred form of the invention all of the connections above mentioned are detachable.

X represents the attaching or supporting block separably connected by screws x to the

middle section B of the ball-roller box designated as a whole by the letter A. The ball-roller box comprises three sections, B, C and D, separably connected by screws O, said screws passing through sections C and D respectively and taking into section B, as clearly shown in Fig. 4. In the preferred form of the invention, spacing pieces E in the nature of separators or washers are placed between sections B and C, and B and D, respectively. Section B is provided with cup-shaped chambers or socket sections b at either side thereof, each of said chambers having formed therein a circular vertical ball-race, b' , the axis of which is at right angles to the normal line of travel of the skate. Suitable anti-friction ball-bearings b^2 are placed in these races in such manner as to hold and support the ball-rollers A' as clearly shown in Figs. 3 and 5.

Sections C and D are provided with cup-shaped chambers or socket sections, c and d respectively, similar to socket sections b and having ball races c' and d' respectively for containing ball bearings c^2 and d^2 . Ball races c' and d' are parallel to ball races b' and the centers of all the ball races are in the same line.

In assembling the device, the ball-race b' at one end of section B is filled with anti-friction ball-bearings b^2 , ball-roller A' placed on this anti-friction surface, washer E placed about the outer edge of chamber b , anti-friction ball-bearings c^2 placed in ball-race c' of section C, section C placed over the exposed portion of ball-roller A and all said sections firmly bound in place by screws O, as clearly shown in the drawings. If desired, washers E may be omitted and sections B, C and D so constructed as to compensate for such omission. The sections at the other side of the ball roller box are similarly assembled. By the use of separators or spacers E of various widths the device can be readily adapted for the use of ball rollers of various sizes as desired.

Viewing Figs. 3 and 5, it is obvious that ball-rollers A' in every case are supported entirely by and between two parallel circles of continuously revolving anti-friction ball-bearings. Likewise it is clear from both of said figures that a perfectly free rotation is permissible in a forward and backward movement of the skate, there being practically no friction, whereas any movement at an angle to such line of travel is retarded by

the frictional bearing between the walls of the ball-races and the respective ball-bearings in such races.

It is obvious that many minor changes may be made in the construction of the several parts and the mode of assembling them without in any way departing from the scope and spirit of the invention.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent is:

1. A bearing for ball rollers, comprising a central section having laterally open cup-shaped chambers in their opposite ends, circular vertically-disposed ball races being formed in the lateral walls of said chambers, supplemental sections one on each side of said central section each formed with a cup-shaped chamber provided with a vertically disposed ball race, circular series of bearing balls running in said races, ball rollers supported by and between two circular series of bearing balls, and means for connecting the supplemental sections to the central section to form sockets around the ball rollers.

2. The combination with the supporting block of a roller skate, of a bearing comprising a central section secured to said block, and hollowed out at each end to provide cup-shaped chambers each formed with a vertically disposed circular ball race, supplemental sections formed on their inner sides with cup-shaped chambers having vertically disposed circular ball races, confronting those of the central section, means for detachably connecting said sections to form sockets, ball rollers within said sockets, and circular series of bearing balls running in said ball races and by and between which the ball rollers are supported.

3. The combination with the supporting

block of a roller skate, of a bearing comprising a central section secured to said block, and hollowed out at the under side of each end to provide cup-shaped chambers, each formed with a vertically disposed circular ball race in its innermost wall, supplemental sections formed in their inner sides with cup-shaped chambers having vertically disposed circular ball races confronting those of the central section, spacing washers between the central section and supplemental sections, means for securing the latter and the washers to the central section, ball rollers within said chambers, and circular series of bearing balls running in the ball races and supporting the ball rollers.

4. A roller skate comprising a supporting block, a section secured to the under side of the supporting block and having its ends formed with concave chambers and circular vertically disposed ball races, in said chambers, end sections each having one face formed with a concave chamber opposed to a chamber in the first-mentioned section and having a vertically disposed circular ball race, circular series of balls running in said races, ball rollers supported by and between the circular series of balls, spacers between the first-mentioned section and each of the end sections, and means for securing the spacers and the several sections together, the opposed concave chambers forming sockets around the ball rollers whereby said rollers are exposed for only a small portion of their surfaces below the sections.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES G. DOAK.

Witnesses:

JOHN THIEL,

M. J. MURPHY.