(No Model.)

G. D. BURTON.

ANTI-FRICTION BEARING FOR ROLLER SKATES.

No. 329,435. Patented Nov. 3, 1885.

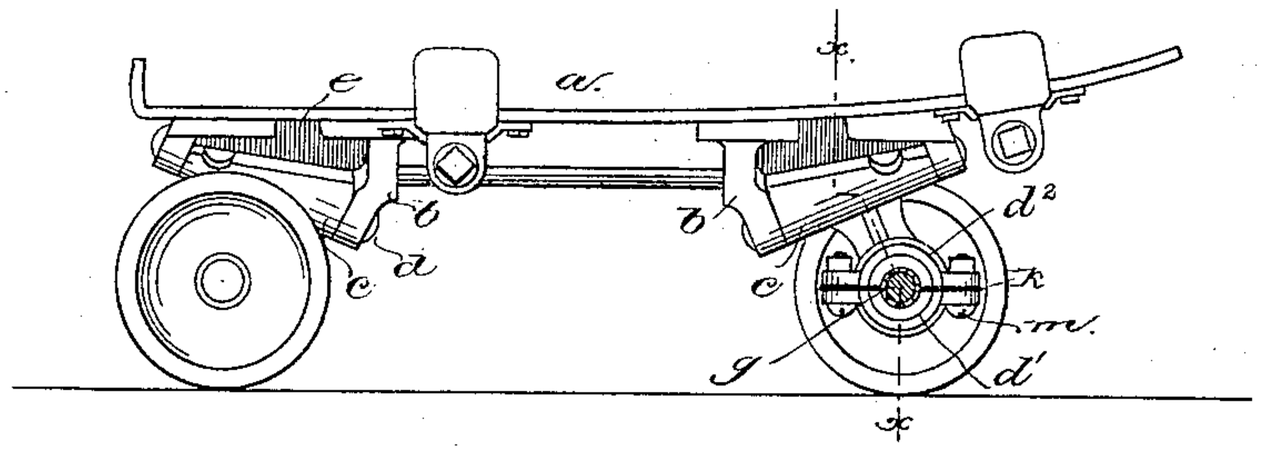
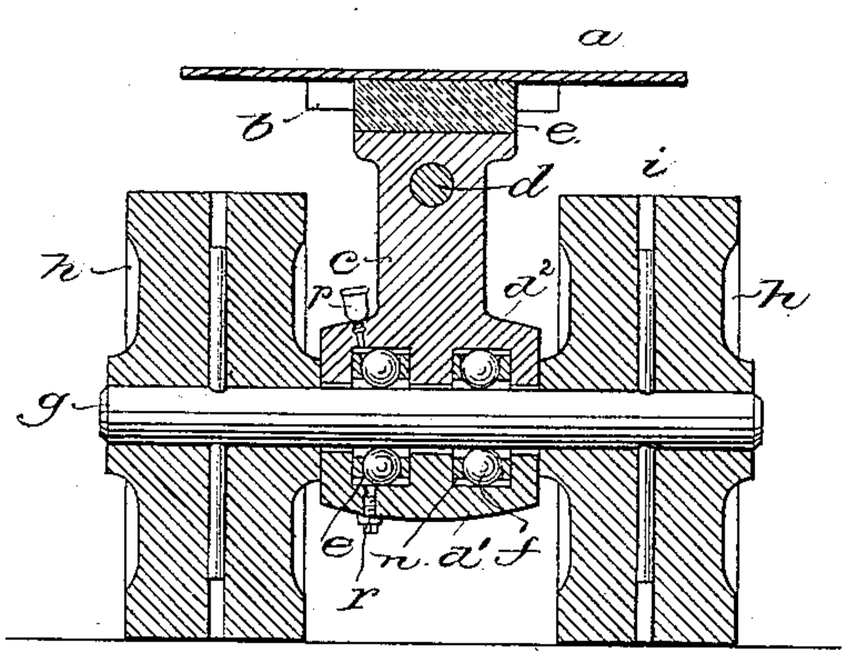


Fig-1-



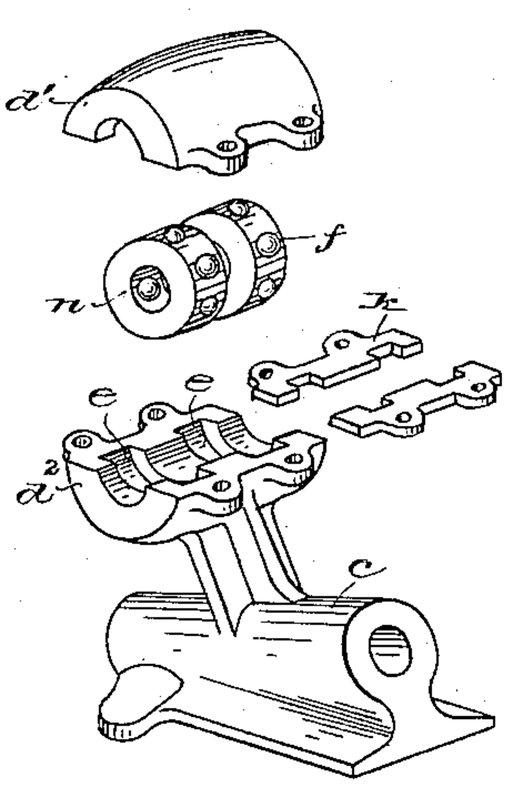


Fig-2-

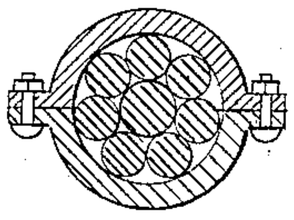
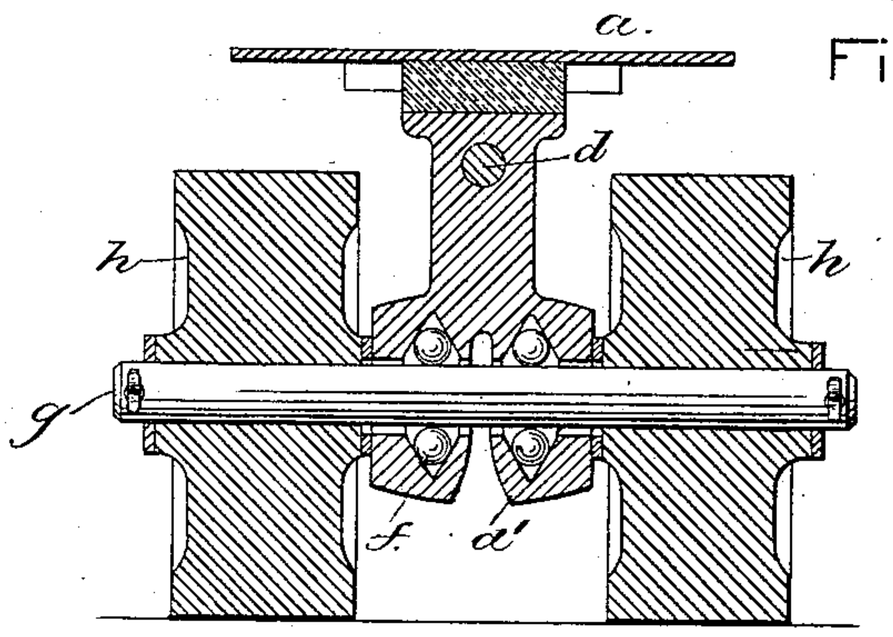


Fig-3-

Fig-6.



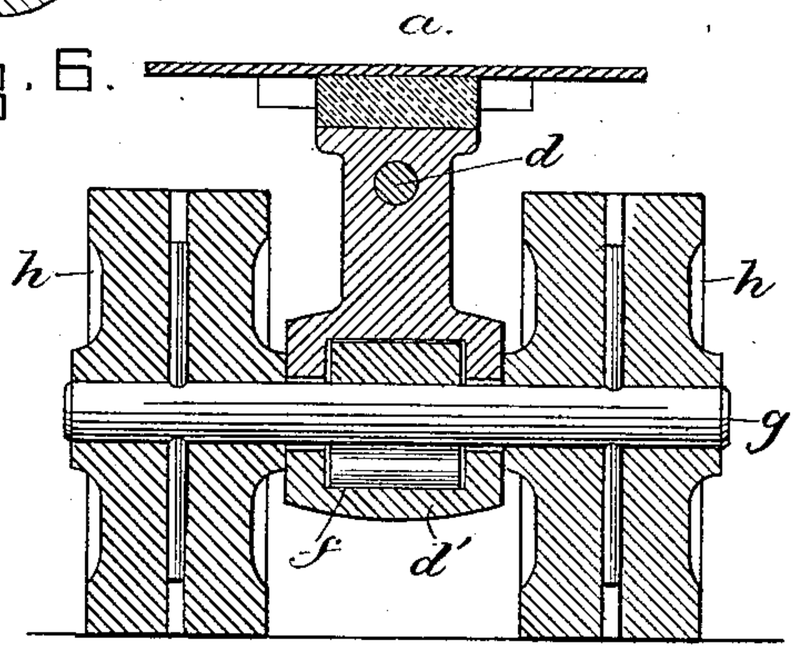


Fig-4-

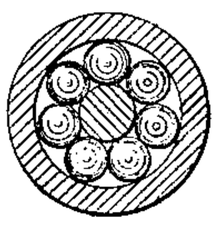


Fig-5-

Fig-7.

WITNESSES

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ANTI-FRICTION BEARING FOR ROLLER-SKATES.

SPECIFICATION forming part of Letters Patent No. 329,435, dated November 3, 1885.

Application filed February 24, 1885. Serial No. 156,846. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. BURTON, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Anti-Friction Bearings for Roller-Skates, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention, relating to roller-skates, has for its object to reduce the friction of the bearing-surfaces between the rotating rollers and sole-plate or body of the skate, and to provide a bearing which will run smoothly and without wear without the employment of lubricants.

The invention consists, essentially, in the combination of the sole-plate or body of the skate with roller-pedestals mounted to rock on inclined axes with relation to the sole-plate, and provided with boxes having one or more annular recesses surrounding the axle of the rollers, into which are inserted balls or rollers which turn freely between the axle and the box or recess in the pedestal, thus causing the axle to turn with rolling friction instead of rubbing friction.

The skate-rollers may either be fixed upon their axles so that both rollers of each pair are compelled to turn in unison, or they may be loosely mounted on the said axles in the usual manner, in which case when the axle is in use it will turn with the rollers rather than the latter turning upon a stationary axle, as most commonly practiced in roller-skates.

Figure 1 is a side elevation of a roller-skate embodying this invention, one of the rollers being removed and the axle shown in section. Fig. 2 is a substantially vertical section on line *x x*, Fig. 1, through one of the pairs of rolls and bearing-pedestal; Fig. 3, a perspective view of one of the bearing-pedestals and a portion of the bearing taken apart; Figs. 4 and 5, sections similar to that of Fig. 2, but showing modification of the bearing; and Figs. 6 and 7, vertical sections through the axle and its bearing-box, the former showing the box made in two parts, and the latter showing the box as made in one part integral with the pedestal.

The sole-plate or skate-body *a* and the lugs *b* beneath the heel and toe portions, to afford a bearing for the pedestal *c*, may be of usual construction, the said pedestal turning on inclined arbors or pivots *d* in the said lugs *b*, and normally held in a central position by springs *e*, in the usual manner. The pedestals *c* are each provided with a bearing-box, shown in Figs. 1, 2, 3 as made in two parts, *d' d²*, the said parts when fastened together forming a boss, which is bored transversely, to receive the roller-axle *g*, which is smaller than the said bore, so that it does not come to a bearing therein. The said boss or box is provided with one or more internal grooves, *e*, shown in Figs. 2, 3, 4 as two in number, forming annular chambers around the axle *g*, in which chambers are placed anti-friction balls or rollers *f*, which revolve about the axle as it turns, producing rolling friction only on the bearing portions of the axle *g* and of the box. As shown in Figs. 2 and 3, the balls are separated from one another by recessed rings or cages *n*, and thin strips of material (shown at *k*) may be inserted between the two parts of the box, to provide for slight adjustment or variation in the size of the same, so that the balls may fit properly between the axles and the boxes.

As shown in Figs. 2, 3, 4, balls are employed to afford the anti-friction bearing, there being two rows of the said balls, and the boxes having two corresponding grooves to receive them, while in Fig. 5 the axle has an anti-friction bearing upon rollers *f'*, one row of which only need to be employed.

As shown in Figs. 4 and 5, the balls or rollers occupy the entire space around the axles, and the said boxes may, if desired, be made in one piece, the axle being inserted up to one of the grooves, and then the rolls dropped in from the other end of the box, when by pushing the axle through the balls will be held in place between the axle and the balls. This forms an extremely simple and durable bearing. A portion of the material of the box may be removed between the two rows of balls, as shown in Fig. 4.

The rollers *h* of the skate may either be fixed upon the axle *g*, as shown in Figs. 2 and 5, in which case both will turn together like the wheels of a railway-car, or they may be loosely fastened upon the axles, as shown in

Fig. 4, in which case they may turn independently of the axles to accommodate the difference in movement of the rollers when moving in curved lines; but this independent movement of the rollers will be small and the friction and wear between the rollers and axles will be only very slight, as the axles will accompany the rollers in the chief part of their rotary movement.

The rubbing or wearing friction is very small in bearings of this kind, so that no lubricant is required, thus obviating the soiling of the skates and garments of the wearers. In case, however, it is desired to use a lubricant to diminish the friction of the balls or rollers upon one another or upon the separating-cage *n*, the box may be provided with a suitable oil-cup, as shown at *p*, Fig. 2, and with an outlet-passage closed by a screw, *r*, to enable the oil to be removed and the bearing cleaned readily.

By interposing anti-friction bearings between the axle and a box formed in the pedestal of the skate, instead of between the roller itself and the axle, it is possible to apply any usual form of rollers *h* directly to the axle without alteration.

I am well aware that it is old to provide roller-skates with balls arranged in recesses in their roller-pedestals to form anti-friction bearings for the rollers; but in every instance of such construction to me known the balls are held in place by a separate detachable cover, which is liable to work loose and cause loss of the balls, while in my construction by boring out a recess in the solid substance of the pedestal and dropping the balls into such recesses through the axle-hole I am enabled to dispense with attached plates and to make a much more secure construction.

I claim—

1. The axle and its attached wheels or rollers, combined with a pedestal having a transverse bore of a diameter slightly in excess of that of the axle to receive said axle, and provided with internal grooves opening into said bore, and with anti-friction devices placed in said grooves and held against displacement in one direction by the axle and against displacement in all other directions by the substance of the pedestal itself when said axle is secured in the bore in said pedestal, substantially as shown and described.

2. In a roller-skate, a roller-pedestal having the axle-bearing box integral therewith, bored transversely and provided with one or more internal grooves around the said bore, combined with a roller-axle extending through the said bore, and anti-friction balls or rollers in the said groove, surrounding and constituting the bearing for the said axle, substantially as described.

3. A bearing-pedestal transversely bored and provided with internal grooves, combined with the roller and axle extending through the said bore, and anti-friction balls or rollers arranged in said grooves and supporting and in immediate contact with the axle, and an oil cup or passage entering the upper portion of the box and the closed outlet-passage from the lower portion of the box, as and for the purpose described.

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

GEO. D. BURTON.

Witnesses:
E. F. PERKINS,
ALLSTON C. LADD.