

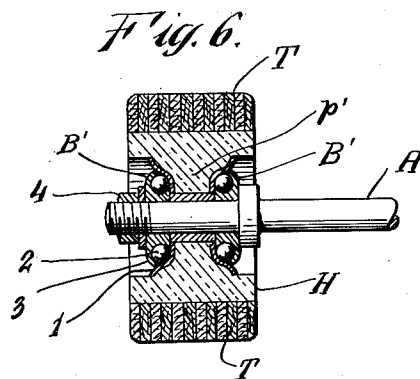
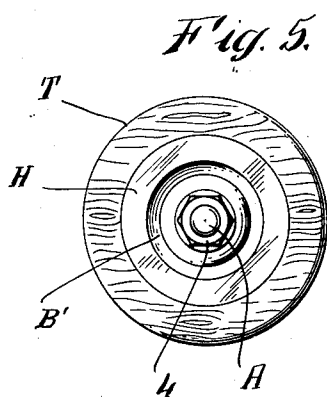
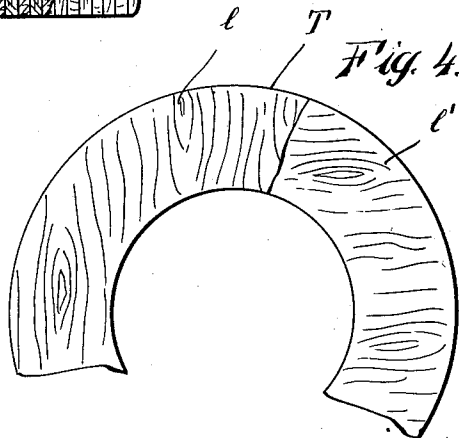
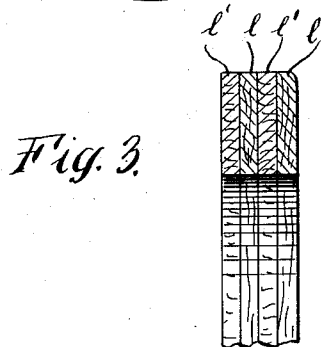
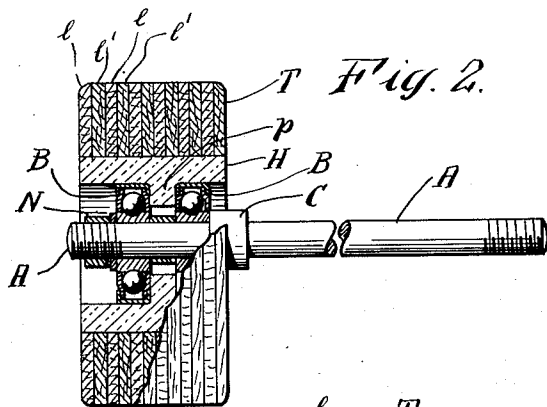
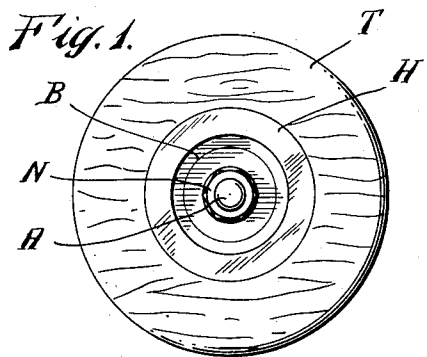
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ROLLER SKATE WHEEL

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ROLLER SKATE WHEEL

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This invention relates to roller skates and more particularly to roller skate wheels and has for its object the provision of an improved roller skate wheel and an improved light-weight roller skate wheel assembly.

Another object is to provide a non-skid tire for a roller skate wheel and a light-weight roller skate wheel assembly including the non-skid tire.

Another object is to provide a light-weight roller skate wheel assembly having a durable roller surface of high non-skid properties.

Other objects will be apparent as the invention is more fully hereinafter disclosed.

In accordance with these objects I have discovered that a roller skate wheel comprised of laminated wood with the wood grain of the alternate laminations disposed at an angle to each other, the laminated structure being cut or formed so as to present the lamination edges at the roller surface, provides a wheel having a durability and non-skid properties materially higher than possessed by any other type roller skate wheel now on the market.

In the art of roller skating, which more recently has been popularized indoors on highly smoothed and polished hardwood floors, it is believed apparent that in the execution of fast turns, jumps and intricate figures, one of the most important properties of a roller skate wheel is its non-skid property. Various types of wood wheels and composition wheels have heretofore been proposed. No wheel, on the market today, has satisfactory non-skid properties on polished wooden floors. The present invention aims to overcome this defect in roller skate wheels, and also aims to overcome the weight defect common in most roller skate wheels and to provide a light-weight, non-skid roller skate wheel.

In the manufacture of a roller skate wheel, in accordance with the present invention, there is a wide choice of materials available and various modifications and departures thereof may be made therefrom without essential departure from the present invention as one skilled in the art will recognize from the following disclosure of the specific embodiments thereof.

In my invention the laminated wood structure, from which the roller wheel or tire of the present invention is formed, may be comprised of a plurality of different types or kinds of wood and may be formed, per se, by any one of the plurality of methods, now known in the art, and a plurality of different bonding or wood impregnating agents may be employed therein, without essen-

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tial departure from the present invention inasmuch as, on the roller surface, the desired non-skid property of the wheel is obtained by the alternate presenting of the side and end of the wood grain at the roller surface and the desired wear-resistance property is obtained by employing laminations having a hardness approximating that of the hardwood floor on which the roller is to be used.

In the specific embodiments hereinafter disclosed, however, and in view of the fact that most floors are comprised of hard maple, I prefer to employ a laminated wood structure comprised of hard maple bonded together by a water-resistant bonding agent and molded to laminated form under high pressure as is customary in the art of forming laminated wood structures. The particular thickness of the maple wood laminations employed may vary quite widely without essential departure from the present invention, but I have found that laminations having a thickness, after molding, of about $\frac{1}{8}$ inch, appear to give the best results as far as non-skid properties are concerned, although good results in this respect are obtained with larger and smaller thicknesses of wood laminations.

Also, in the specific embodiments hereinafter disclosed, I prefer to utilize the present invention as a roller wheel tire, to cut down the weight factor of the wheel, and to employ in combination therewith a hub, comprised of light-weight molded plastic material, to the rim of which the tire is secured preferably by frictionally engaging means, and in the center of which are secured bearings, in which the wheel axle may be mounted, thereby providing a light-weight wheel assembly having a durable, non-skid roller surface.

Before further disclosure of the invention, reference should be made to the accompanying drawings wherein:

Fig. 1 is a side view of a light-weight roller skate wheel constructed in accordance with the specification of the preferred form of the present invention;

Fig. 2 is a sectional view of the same taken along plane 2—2 of Fig. 1;

Fig. 3 is an enlarged section illustrating the preferred laminated structure of the tire element of the wheel assembly of Figs. 1 and 2;

Fig. 4 is an enlarged staggered sectional view of the preferred laminated structure of Fig. 3 taken along a plane at right angles to the plane shown in Fig. 3;

Fig. 5 is a side view of a modified form of light-

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weight roller skate wheel conforming to the preferred form of the present invention; and

Fig. 6 is a sectional view of the same taken along plane 6—6 of Fig. 5.

As hereinabove indicated, in the preferred specific embodiment of the present invention and for purposes of reducing the weight factor in roller skate wheels, I prefer to utilize the laminated wood structure of the present invention in the form of a tire T, secured to the rim of a light-weight hub H which encloses bearings B—B supporting the wheel axle A.

Such a combination of elements comprising a roller skate wheel is shown in the drawings in two modified forms, the main difference therebetween being that induced or caused by the difference between the two types of bearings B—B and B'—B' shown.

Referring first to Figs. 1 to 4, inclusive, tire T is shown mounted on the rim periphery of hub H, and bearings B—B are shown seated within hub H in a position to axially locate axle A therein with lock-nut N on the outer end of axle A to secure the wheel assembly in position thereon against inner collar C.

In this assembly, elements A, C, B—B and N are old and well known elements and, per se, form no part of the present invention except in combination with elements H and T providing the light-weight, durable and non-skid roller skate wheel of the present invention.

Tire T is comprised of laminated wood, the wood laminations l—l' consisting of hard, kiln-dried maple and each lamination being of approximately the same thickness approximating $\frac{1}{16}$ inch. The wood grain of the alternate laminations, preferably, lie at an angle of 90° to each other, thereby to present at the wheel surface alternate side and end wood fiber sections. The wood laminations l—l' are secured together with a water-resistant adhesive under high pressure, by a process old and well known in the art, and, per se, forming no part of the present invention.

Hub H is comprised, preferably, of a light-weight molded organic plastic material such as is known in the art as a thermo-plastic methyl methacrylate resin. Various other moldable plastic compositions may be utilized in substitution for this resin without essential departure from the present invention as one skilled in the art will readily recognize, such as the phenol condensation products, synthetic resins, etc.

In the forming of tire T, it is preferable to provide first a laminated wood structure having the approximate thickness desired for the wheel width, which may vary widely from $\frac{3}{4}$ inch to $1\frac{1}{4}$ inch depending upon the type skate to which it is to be attached, and having a width and length many times the desired wheel diameter which also varies with the wheel width from 2 inches to $2\frac{1}{2}$ inches, from which laminated structure a plurality of wheel blanks may be cut. From the wheel blank, the wheel tire T is turned down in a lathe so that the central opening therein may be accurately centered and the roller surface made concentric thereto.

The inner surface of the central opening is rough machined to provide substantially a burred surface for frictional engagement of the tire with the outer rim or periphery of hub H. The outer or roller surface of the tire T is smoothed off to a smooth roller surface as is customary in the art to provide on such roller skate wheels. Such a smooth laminated surface presents alternate areas of wood grains of slightly different wear-

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resistant properties with the cross-grain areas being the harder. During service use the cross-grain areas tend to remain somewhat raised over the intermediate "along the grain" areas, thereby providing an annularly ribbed roller surface giving the desired non-skid property to the roller wheel.

In substitution for alternate laminations of maple with the grain directions alternately at right angles to each other, alternate layers of dissimilar woods of similar hardness to that of maple may be employed. It is impractical to employ roller skate wheels comprised of material having a hardness materially greater than the floor material upon which they are normally to be used or to employ wheels having a hardness materially less than that of the floor. Either the floor or the wheel thereby would be rapidly worn away. Where wheel materials of about the same hardness as that of the floor are employed maximum wear-resistance in wheel and floor is obtained. Under these conditions, it is adequate or sufficient to provide a tire thickness affording adequate strength with reasonably long life. Such a tire thickness approximates $\frac{1}{2}$ inch with the type of laminated material above disclosed.

The manner of mounting bearings B—B, which, per se, are old and well known in the art, in hub H may be varied widely without departure from the present invention, as may be noted in the drawings. In the modification of Figs. 1 to 4, inclusive, hub H is formed with a centrally located annular partition p inwardly depending from the center bore passageway therethrough. The diameter of the center bore passageway approximates that of the outside diameter of bearings B—B so that the entire assembly of tire T, hub H and bearings B—B may be formed into an integral body by pressing one within the other, with the burred inner surface of tire T preventing relative movement between the tire T and hub H, and bearings B—B being securely held in position on opposite sides of partition p.

In the arrangement of Figs. 5 and 6, tire T is secured on hub H in substantially the same manner as hereinabove disclosed, but hub H is provided with a different kind of annular partition p' shaped to receive thereagainst a different type of bearings B'—B', one on each side of partition p'. This type of bearing B'—B' as well as the type of bearings B—B, is old, per se, and does not form a part of the present invention except in the combination with the other elements thereof. Bearings B'—B' consist of a raceway plate 1, a plurality of ball bearings 2, and an outer raceway plate 3 held in position by nut 4. Bearings B—B are the usual type of cage bearings.

In the commercial development and adaptation of the present invention, it is probable that by impregnating relatively soft wood with synthetic resins, in accordance with known processes, the hardness of such soft woods may be brought up to that approximating maple. It is also probable that by means of such impregnated wood, floor hardnesses may be increased, in which event the hardness of the laminated wood tires of the present invention must be increased to approximate that of the floor. All such modifications, changes, alterations and departures of the present invention, therefore, are contemplated as may fall within the scope of the following claims.

What I claim is:

1. A roller skate wheel comprising, in combination, a substantially cylindrical hub mem-

ber consisting of molded synthetic plastic resin, roller bearing members secured in central axial alignment in said hub member, and an annular laminated wood tire secured to the outer periphery of said hub member, said tire consisting of a plurality of wood laminations of substantially the same hardness and thickness adhesively side secured together into a unitary body with the wood grain lying in a plane transversely perpendicular to the wheel axis and with the wood grain of each lamination disposed at an angle to the wood grain of adjacent laminations.

2. The roller skate wheel of claim 1, said resin consisting of methyl-methacrylate resin.

3. The roller skate wheel of claim 1, said wood laminations consisting of treated wood of substantially the same hardness and of a hardness approximating that of hard maple.

4. The roller skate wheel of claim 1, wherein said wood laminations consist of hard, kiln-dried maple.

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