March 25, 1924. 1,487,966

W. MILLER-METCALF

ROLLER SKATE

Filed June 28, 1923 3 Sheets-Sheet 1

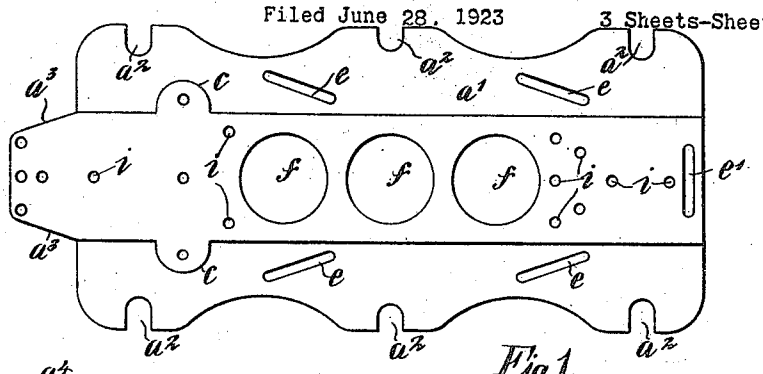


Fig. 1.

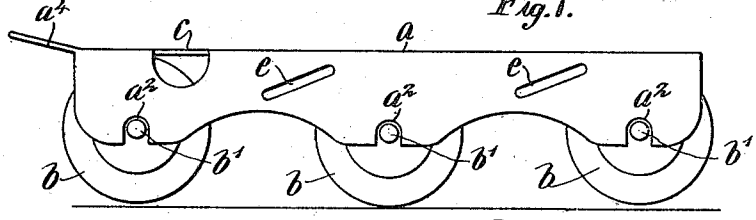


Fig. 2.

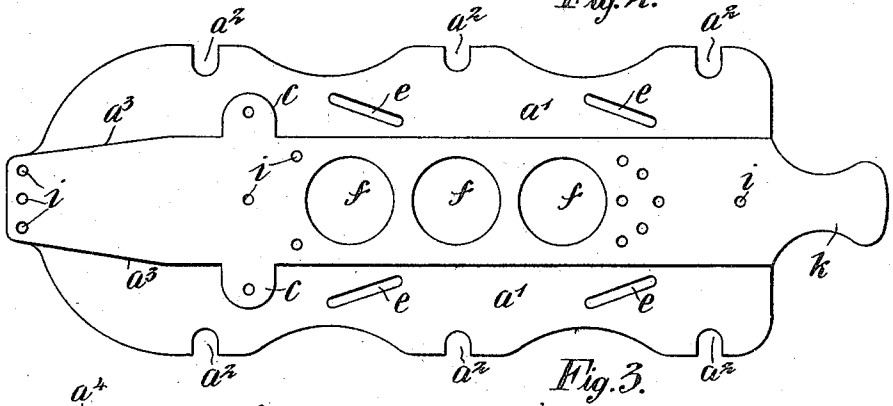


Fig. 3.

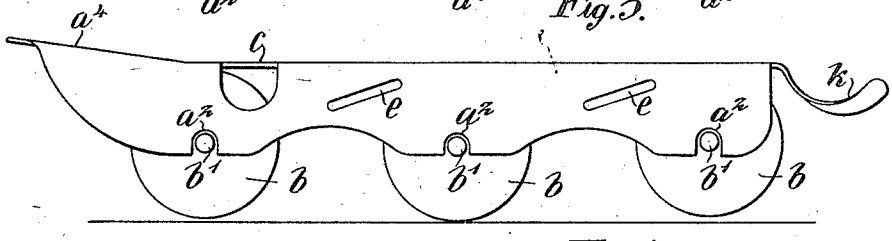


Fig. 4.

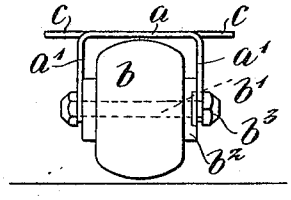


Fig. 2A



Fig. 2B

INVENTOR:

Walter Miller-Metcalf.

ATTORNEY: C. J. Madden

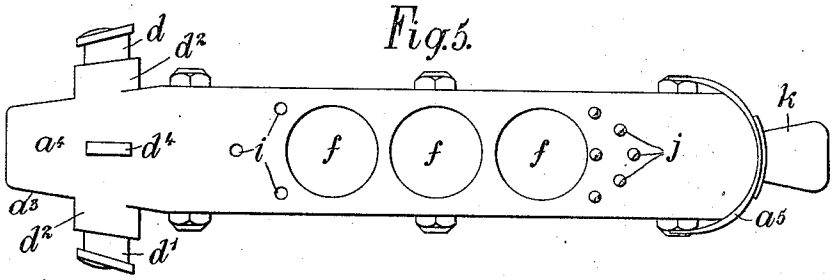
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W. MILLER-METCALF

ROLLER SKATE

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Fig.5.



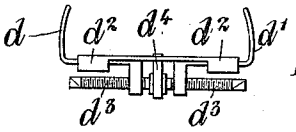


Fig.5ª.

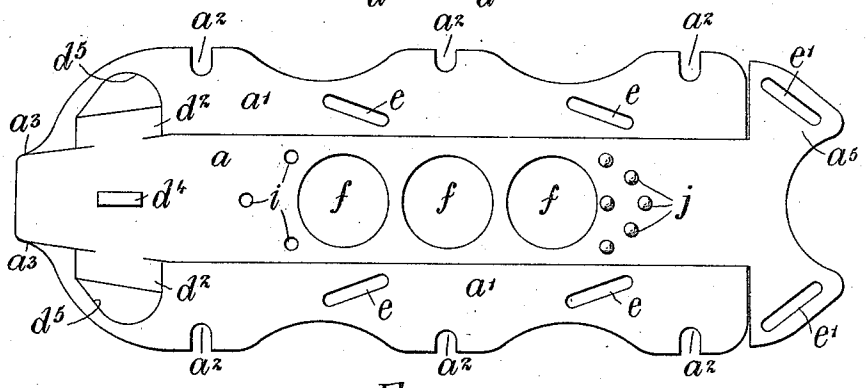


Fig.6.

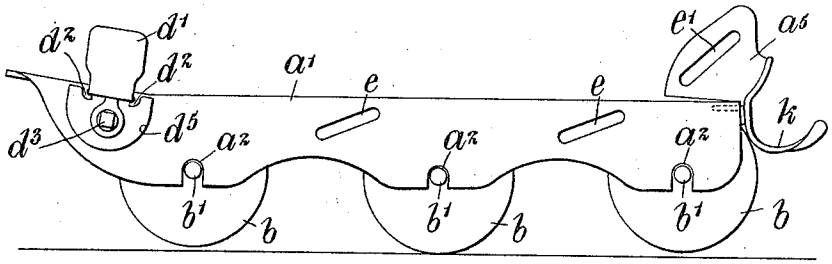


Fig.7.

INVENTOR:

Walter Miller-Metcalf.

ATTORNEY: a J Wadden

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W. MILLER-METCALF

ROLLER SKATE

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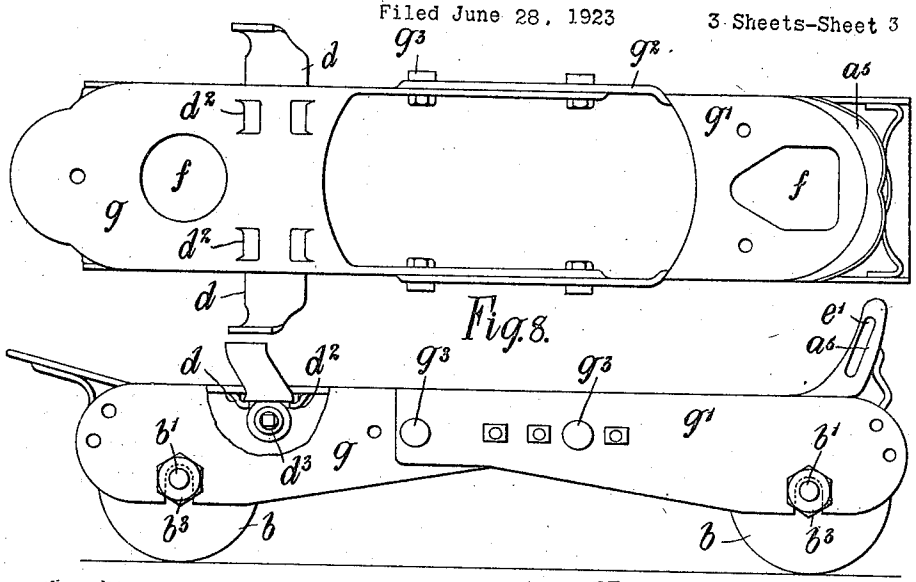


Fig. 8.

Fig. 9.

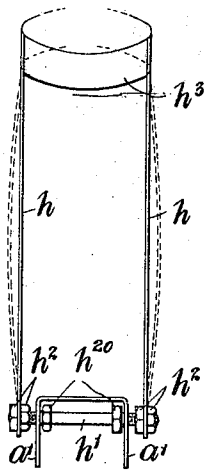


Fig. 10.

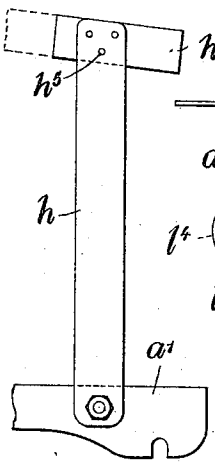


Fig. 11.

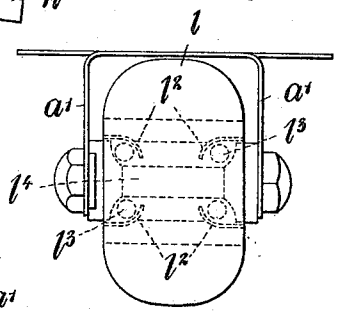


Fig. 13.

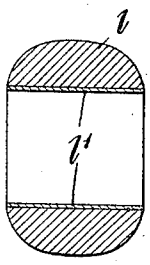


Fig. 14.

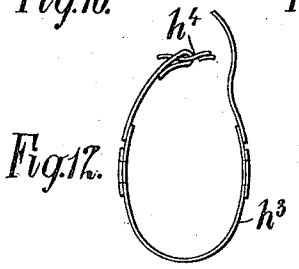


Fig. 17.

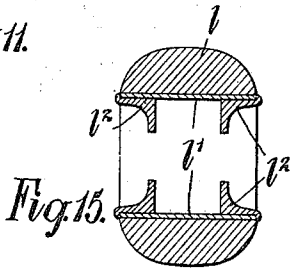


Fig. 15.

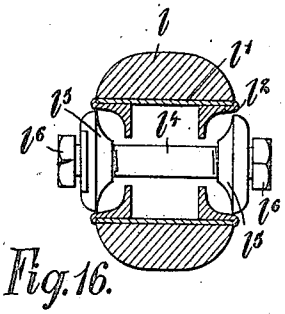


Fig. 16.

INVENTOR:

Walter Miller-Metcalf

ATTORNEY: W. W. Wadden

Patented Mar. 25, 1924. 1,487,966

UNITED STATES PATENT OFFICE.

WALTER MILLER-METCALF, OF NEW BRIGHTON, ENGLAND.

ROLLER SKATE.

Application filed June 28, 1923. Serial No. 648,368.

To all whom it may concern:

Be it known that I, WALTER MILLER-METCALF, residing at New Brighton, in the county of Chester, England, a subject of the King of Great Britain and Ireland, have invented certain new and useful Improvements in Roller Skates, of which the following is a specification.

This invention relates to roller skates adapted for use on any flooring or roadway and particularly to a type of skate having a single track, that is to say, in which the rollers, of which there may be two or more, are located one behind the other in the longitudinal axis or median line of the skate and in which the action is similar to ice skating.

The object of the invention is generally to effect such improvements as will bring this type of skate within the range of practical manufacturing possibilities and specifically to obtain a skate, which, as compared with the usual form of roller skate, is of simple construction, lighter in weight, cheaper to construct, little liable to get out of order, silent in running over any surface and inexpensive in the matter of renewals. An important feature of the invention is the provision of three rollers with the centre one dropped or of larger diameter to produce a swivelling action similar to the effect produced by the curved edge of an ice skate.

The invention comprises improvements in the mounting of the rollers; the construction of the frame from a single blank with details of toe supports; the provision of novel clips and rests for the toe and heel; the production of a longitudinally adjustable skate formed in two relatively adjustable main parts; and the provision of a special ankle support and construction of roller, all as hereinafter described and specifically claimed, reference being made to the accompanying drawings which show as examples several embodiments of the invention and in which:—

Figs. 1 and 2 are, respectively, a plan view of the blank of one form and a side view of the blank bent to provide the frame and carrying the rollers. Fig. 2^a is an end view of Fig. 2. Fig. 2^b is a detail view of an attaching pin hereinafter referred to. Figs. 3 and 4 are similar views to Figs. 1 and 2 of another form. Figs. 5, 6 and 7 are respectively a plan view of a finished skate of a third form, a plan view of the blank therefor, and a side view of the finished skate; Fig. 5^a is a detail view of a toe clip used with this form of skate. Figs. 8 and 9 are a plan view and a side view respectively of another form of skate formed of two longitudinally adjustable parts. Figs. 10 to 12 are detail views of an ankle support, and Figs. 13 to 16 are detail views of the preferred form of wheel or roller.

According to the construction shown in Figs. 1 to 7 of the drawings, the frame or body of the skate is formed of a single piece of sheet steel or other suitable metal or material being cut therefrom in the form of a flat blank (Figs. 1, 3 and 6) which is then pressed into channel section (Fig. 2^a) of various designs to, in all cases however, form depending side members a^1 of substantial height having recesses a^2 into which the spindles or axles b^1 of the rollers or wheels b are journalled or otherwise mounted. The top plate a of the frame is relatively narrow and may be generally flat, but preferably at a point forward of the spindle or hub of the front roller the side members are pressed as at a^3 to taper to the toe piece, and this pressure causes the said toe piece to curve upwards to conform to the natural upturn of the toe of the wearer's boot or shoe as at a^4. In the cutting out of the blank, provision may also be made for turning up at the rear a curved or semi-circular back rest a^5 for the heel as shown in Figs. 5 to 7.

Before the blank is pressed into channel section as aforesaid and in order to afford a broad support for the toe and, also, if desired, for the heel of the shoe, semi-circular or other suitably shaped pieces c are cut out of the parts which ultimately form the side members, these pieces however not being turned down but remaining flush with or substantially in the same plane as the upper surface of the frame as shown in Figs. 1 to 4 at the toe position. It will be observed that the lines along which the side members a^1 are bent or turned down are straight and parallel from their rear ends to the point where they meet the pieces c; that is to say, for the major portion of their length, such arrangement facilitating the bending or pressing operation, as will be understood.

In Figs. 5 to 7 and 8 and 9 there is also shown a form of adjustable toe clip consisting of two relatively slidable members d, d^1 mounted in straps d^2 turned down from the metal of the top plate of the frame to form guides for said members, the latter being

bent downward at their inner ends and traversed by right and left handed screws d^3 squared at the ends to receive a tool for adjusting purposes. The screws are secured at the centre to a depending plate d^4. The depending lateral members a^1 are cut away as at d^5 to provide access to the ends of the screws. The outside clip is made slightly longer than the inside one to enable the skate to be secured in correct position.

As shown in Figs. 1 to 4, 6 and 7, side members a^1 may be provided at required positions with slots e for passage of straps, and a similar slot or slots e^1 may also be formed in the heel part of the top plate a (Fig. 1) and in the back rest (Figs. 6, 7 and 9), and it may be desirable also to pierce the toe clip for the same purpose.

For reduction of weight, the upper surface of the skate formed by the frame under the waist of the foot may be cut away as indicated at f, and in the case of an adjustable type of skate as illustrated in Figs. 8 and 9, which is formed of two adjustable parts, relatively long plates g g^1 are employed before pressing into channel form, after which the channel is divided at or about the longitudinal centre and the side members of one part turned outwards as at g^2 to allow same to overlap the side members of the other part, connecting nuts and bolts g^3 or other appropriate form of connection being used to render the skate longitudinally adjustable to different sizes of shoes.

Two, three, four, or five rollers b in alignment are most suitable for practical purposes arranged in single track, three such rollers being shown in Figs. 2, 4 and 7 and two in Fig. 9; and where three, or four or five rollers are provided, the central one, two or three may be slightly dropped in the frame as shown in said Figs. 2, 4 and 7, or be of larger diameter in relation to the fore and aft rollers to give a similar effect to the curved blade of an ice skate and facilitate turning and figure skating.

On the spindles b^1 forming the roller axles a casing or barrel b^2 (Fig. 2^a) is mounted revolving on ball or other anti-friction bearings; and on the said barrel is carried the roller which may be of solid rubber vulcanized to the barrel, or of vulcanite and rubber or rubber compound with a metal tread if desired. Fibre, boxwood, or other specially prepared material may, however, be substituted; the spindles are shown as secured in the side members a^1 by nuts b^3.

As shown in Figs. 10 to 12 I may also provide an attachment as of spring steel secured to the sides of the frame a^1 by means of a swivel joint comprising a rod h^1 and adjustable nuts h^2 and h^{20}, said attachment comprising lateral members h extending up each side of the heel and carrying above a strap h^3 attached by rivets h^5 and provided with a buckle h^4 fitting above the ankle to give support to the latter, but with free movement forward and backward.

The skates are adapted to be screwed to the shoe through suitably positioned holes as i or to be attached by the usual clips or by straps; or detachable and renewable pins j as shown in Fig. 2^b may be provided to penetrate the sole and heel of the shoe or to secure straps in position, by the use of which straps the skates may be quickly and securely applied in a fixed position.

I may also provide a brake device k (Figs. 3, 4, 5 and 7) attached to the heel or toe of the skate or to both heel and toe, this being suitable in the form of a curved metal member adapted to contact with the ground at the will of the user, enabling the latter to stop or pull up in a similar manner to digging the rear of an ice blade into the ice, and permitting the usual roller skating practice of skidding one skate sideways to be abandoned.

Finally the preferred form of wheel or roller is illustrated in Figs. 13 to 16 in which the roller or its covering l is formed of rubber compound, fibre, hardwood, ebonite, vulcanite mounted on a piece of weldless steel tubing l^1, this latter supporting cups l^2 pressed into position, in which cups are engaged bearing balls l^3 bearing on the spindle l^4 which is provided with the usual adjustable cones l^5 having nuts l^6 associated with them. The same cups, cones and spindles may be used for any type of roller covering l which may be changed when necessary.

What I claim as my invention and desire to secure by Letters Patent of the United States is:—

1. A roller skate, having a frame or body of inverted channel-section comprising a relatively-narrow, flat top plate, and lateral members of substantial height bent directly downward from said plate and forming continuations thereof, the bend lines of said members being parallel and straight throughout the major portion of their length; the lower portions of the lateral members providing roller-axle bearings; and a plurality of rollers located in single track in the space between said members and having their axles mounted in said bearings.

2. A roller skate, having a frame or body of inverted channel-section comprising a relatively-narrow, flat top plate, and lateral members of substantial height bent directly downward from said plate and forming continuations thereof, the bend lines of said members being parallel and straight throughout the major portion of their length; the upper portions of the lateral members having parts thereof cut out adjacent the toe of the skate and bent upward into the plane

of the top plate to afford wider support, and the lower portions of said members providing roller-axle bearings; and a plurality of rollers located in single track in the space between said members and having their axles mounted in said bearings.

3. A roller skate, having a frame or body of inverted channel-section constructed of a single blank of sheet material and comprising a relatively-narrow, flat top plate, and lateral members of substantial height bent directly downward from said plate and forming continuations thereof, the bend lines of said members being parallel and straight throughout the major portion of their length; the lower portions of the lateral members providing roller-axle bearings; and a plurality of rollers located in single track in the space between said members and having their axles mounted in said bearings.

In witness whereof I have signed this specification.

WALTER MILLER-METCALF.