April 25, 1950 L. E. SMITH 2,505,154

ROLLER SKATE LIGHT MAGNETO

Filed Dec. 10, 1948 2 Sheets-Sheet 1

Fig. 1.

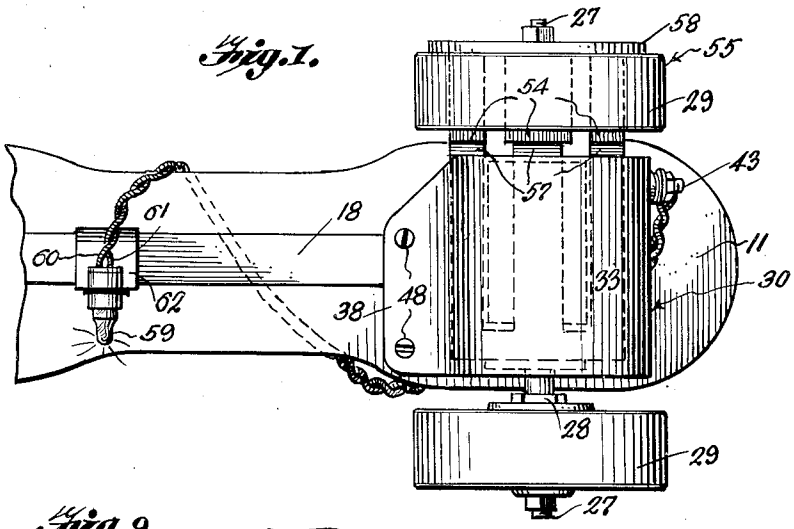


Fig. 3.

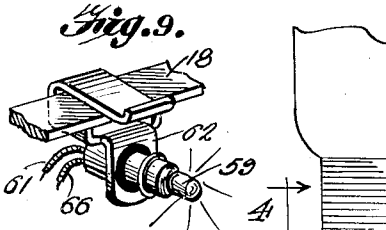
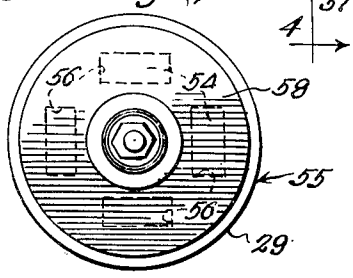


Fig. 2.



Inventor
LEONARD E. SMITH

By Patrick D. Beavers

Attorney

April 25, 1950 L. E. SMITH 2,505,154

ROLLER SKATE LIGHT MAGNETO

Filed Dec. 10, 1948 2 Sheets-Sheet 2

Fig. 4.

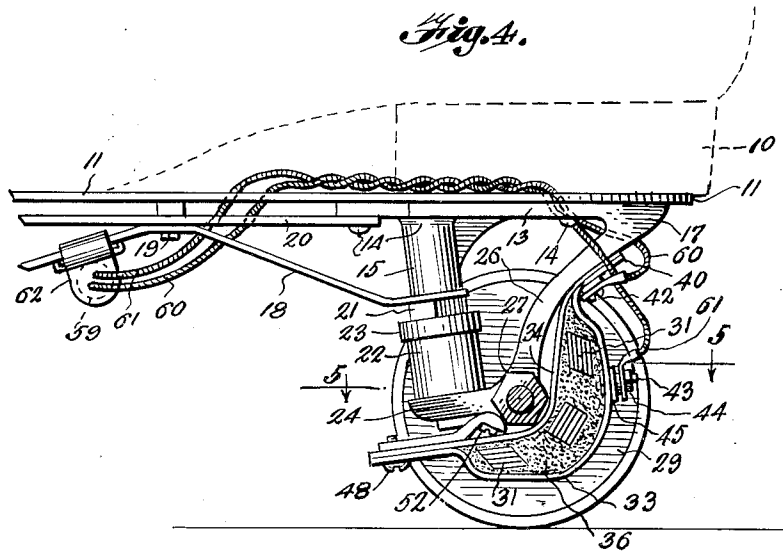


Fig. 6.

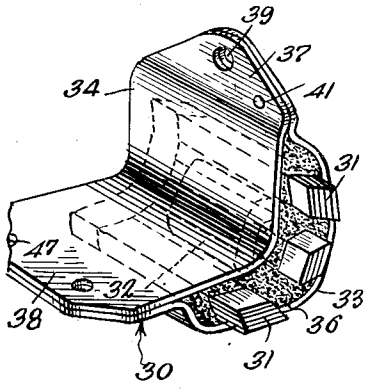


Fig. 5.

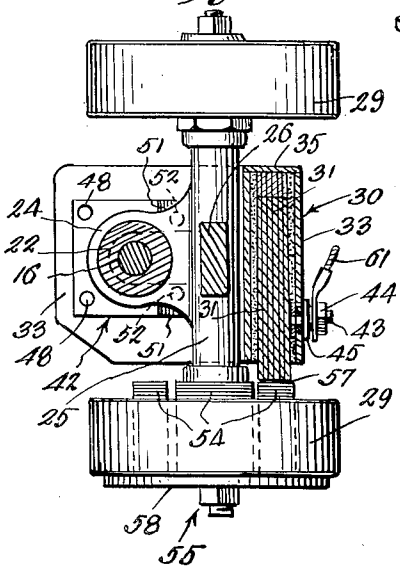
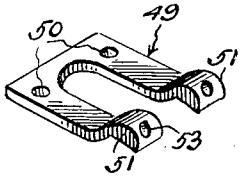


Fig. 8.



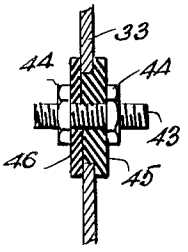
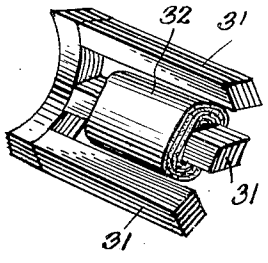


Fig. 10.

Fig. 7.



Inventor

LEONARD E. SMITH

By Patrick D. Beavers

Attorney

Patented Apr. 25, 1950 2,505,154

UNITED STATES PATENT OFFICE

2,505,154

ROLLER SKATE LIGHT MAGNETO

Leonard E. Smith, Wesleyville, Pa.

Application December 10, 1948, Serial No. 64,619

7 Claims. (Cl. 315—78)

1

This invention relates generally to magnetos and more particularly to a magneto having a stator and rotor which are especially adapted for mounting onto the truck and a wheel respectively of a roller skate, whereby one or more lights attached to either one or both of the skates and/or to the body of an exhibitionist skater may be energized from the magneto, thereby to add ornamention to, and otherwise further enhance the esthetic quality of the skater's performance substantially without interfering either with his movements or with the normal operation of the roller skates.

According to the construction and arrangement of the magneto of the present invention, the stator comprises an E-shaped core having a coil mounted on the center leg thereof, and the core together with a housing therefor are shaped about and rigidly secured to a truck of the skate, with the legs of the core rigidly secured to a truck of the skate, with the legs of the core extending parallel to the axle of the truck and without causing engagement of the stator, either with the wheels carried by the truck or with the surface upon which the wheels are caused to roll.

The rotor comprises a plurality of permanent magnets which are arranged with poles of magnetic polarity alternating in equi-spaced circumferentially arranged slots, provided therefor in the one of the wheels adjacent the ends of the core legs, the number of magnets employed and the spacing therebetween being such that three of the magnets always move opposite the legs of the core as the wheel rotates, and the magnets also being positioned in the slots to provide an optimism air gap with respect to the ends of the core legs without causing physical engagement therewith, and the magnets further being secured on the other ends thereof to a magnetic circuit closing washer, whereby the reluctance of the magnetic circuit comprising the core, magneto and washer is reduced to a low value and the energy output of the magneto is rendered sufficiently great to brightly light several lamps energized therefrom when the skater is moving only at a moderate speed.

An object of the present invention therefore is to provide a magneto, which may be mounted on a roller skate and operated by one of the wheels hereof to light one or more lamps carried either on the skates or skater, without interfering either with the movement of the skater or with the operation of the roller skates.

Still other objects, features and advantages of the present invention are those relating to the

2

novel construction, combination and arrangement of parts as will become more clearly apparent as the description proceeds, reference being had to the accompanying drawings wherein:

Figure 1 is a plan view of the underside of the rear portion of a roller skate having the magneto of the present invention mounted thereon.

Figure 2 is a rear elevational view of the roller skate shown in Figure 1.

Figure 3 is a view in elevation of the left rear wheel of Figure 2 as viewed along the line 3—3 thereof.

Figure 4 is a sectional view of the skate of Figure 2, taken along the line 4—4 thereof.

Figure 5 is a sectional view as seen along the line 5—5 of Figure 4.

Figure 6 is a perspective view of the stator.

Figure 7 is a view in perspective of the stator core and coil assembly.

Figure 8 is a view in perspective of the stator mounting bracket.

Figure 9 is a perspective view of the lamp mounting bracket, and

Figure 10 is a somewhat enlarged fragmentary sectional view of one of the mounting arrangements for one of the coil terminals.

Referring now to the drawings for a more complete understanding of the invention, the numeral 10 designates a shoe to which one foot plate 11 is secured as by the screws 12. The truck support base member 13 is secured as by rivets 14 to the foot plate and comprises the main truck support 15, which carries the truck pivot bolt 16, and the socket 17.

The main truck supports 15, of both the front and rear trucks, are braced to the foot plate as by the elongated strip 18, which is riveted as at 19 to the foot plate and to a link member 20, which is riveted as by rivets 14 to the front and rear base members 13, the extremities of strip 18 being secured to the main truck supports 15 as by the nuts 21. It will be understood that the front and rear trucks and the supports therefor are identical.

A cushion 22 is sleeved on pivot bolt 16 and interposed thereon between retainer cup 23 and retainer cup 24, which forms an integral part of the truck axle housing 25. The axle housing also has formed as an integral part thereof the supporting bracket 26, which is secured at its free end for limited movement in the socket 17 of base member 13. The axle 27 is secured in position in the axle housing 25, as by the nuts 28, and carries

the ball bearing mounted maple or fiber wheels 29.

The aforedescribed professional type of roller skate is particularly well suited, though not exclusively limited, for use with the skate light magneto presently to be described.

The stator of the magneto is generally designated by the numeral 30 and comprises a core which is built up of a stack of E-shaped laminae 31, the stacked laminae being formed arcuately whereby the legs of the E-shaped core are concentrically disposed with respect to the wheel axis of the skate when the stator 30 is mounted thereon.

A coil 32 having a predetermined number of turns and size of wire according to the desired energy capacity of the magneto is mounted on the center leg of the E-shaped core and serves to maintain the laminae 31 in assembled condition.

The core and coil assembly is mounted in a housing comprising the arcuately formed nonmagnetic pieces 33, 34 and end piece 35 are formed of any suitable material each, for example, as copper and which are secured together as by soldering to form a unitary casing, which conforms to the configuration of the truck, as may best be seen in Figure 4, whereby the stator is rendered compact and takes up a relatively small amount of space beneath the truck.

The core and coil assembly is preferably retained in the desired position in the casing therefor as by being potted therein by any suitable material such, for example, as by the wax 36, the ends of the legs of the core only projecting from the casing.

Casing members 33 and 34 together form mounting lips on tabs 37 and 38. Tab 37 is provided with an aperture 39 for receiving a screw 40 which is employed to secure the stator 30 to bracket 26, the bracket being provided with a suitable threaded aperture for receiving screw 40.

Tab 37 is also provided with a threaded aperture 41 for receiving the terminal screw 42, one end of coil 32, not shown, being soldered or otherwise electrically secured to either of casing members 33, 34 and 35 thereby to connect this end of the coil to terminal screw 42. The other end of coil 32 is soldered or otherwise electrically secured to a terminal screw 43, which is secured to casing member 33 as by the nuts 44, and insulated therefrom by the insulation bushing 45 and washer 46, Figure 10.

Tab 38 is provided with a pair of apertures 47 for receiving screws 48, by means of which stator 30 is secured to a V-shaped mounting bracket 49 therefor, its mounting bracket having threaded apertures 50 for receiving screws 48.

The space between the legs of bracket 49 is formed to receive the rounded head of bolt 16 and the ends of the legs are formed arcuately as at 51 to conform to the surface of axle housing 25 at the juncture thereof, with retainer 24 whereby the bracket is rigidly secured to the truck when the mounting screws 52 therefor are drawn up tight, screws 52 being received in apertures 53, formed therefor in bracket 49 and threadedly received in suitable threaded apertures provided therefor in the axle housing 25.

When stator 30 is mounted in position on the skate truck in the foregoing manner, the ends of the E-shaped core extend adjacent to a plurality of permanent magnets 54 which are carried by the left wheel 29, and together with this wheel comprise the rotor 55, as viewed in Figure 2, the

magnets being inserted in equi-spaced apertures or slots 56 provided therefor in the wheel and arranged concentrically with respect thereto, whereby the magnets are disposed opposite the ends of the legs of the E-shaped core, as may best be seen in Figure 2. The smallest possible air gap 57, consistent with avoiding physical engagement between the magnets and the core as the magnets rotate with the supporting wheel therefor, preferably is provided between the adjacent ends of the magnets and core in order to reduce the reluctance in the magnetic circuit, thereby to increase the energy output of the magneto. To this end, a washer 58, of magnetic material is cemented or otherwise secured to the other ends of the magnets, thus completing the magnetic circuit between the magnets which are arranged circumferentially about wheel 29, individual thereto with alternating magnetic polarities thereby to conform to the alternating magnetic polarities of the ends of the E-shaped core due to the coil being mounted on the center leg thereof.

By reason of the foregoing construction and arrangement of the stator 30 and rotor 55, a lamp 59 connected to terminal screws 42 and 43 as by conductors 60 and 61 is lighted when rotor 55 is twirled between the fingers, for example, the lamp being brought up to a bright light when the rotor 19 is rotated at a rate corresponding to the speed of rotation imparted thereto when a skater, having the magneto mounted on one of his skates, is merely moving at a moderately low speed.

The lamp may be mounted to the brace 18 as by the conventional V-shaped clamp 62 or may be attached to some portion of the skater's apparel, if desired, or in some cases therefrom to the other skate, with or without one or more colored lights, all in accordance with the specific ornamentation effects desired in a given performance.

In view of the foregoing, it should now be apparent that a skate light magneto has been provided which is well adapted to fulfill the aforestated objects of the invention, and whereas but one example of the invention has been disclosed which gives satisfactory results, it will be understood by those skilled in the art that additional examples may be resorted to without departing from the spirit and scope of the appended claims.

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

1. A roller skate light magneto comprising a rotor including a plurality of permanent magnets arranged on one of the wheels of the roller skate concentrically thereof for rotation therewith, a stator comprising an E-shaped core and a coil sleeved on the center leg of the core, and means for securing the assembly of said core and coil to the truck of the roller skate so that the ends of the legs of the core are concentrically disposed with respect to the axis of said one of the wheels and are disposed opposite any three adjacent ones of said plurality of magnets in succession as the wheel rotates.

2. A roller skate light magneto comprising a rotor, which includes one of the wheels of the roller skate and at lease one permanent magnet, carried thereby for rotation therewith, a stator secured to the truck for said one of the wheels and including a coil and core therefor so arranged with respect to said magnet as to generate a voltage in the coil by magnetic induction of the magnetic field of the magnet as said one of the wheels rotates, and electroresponsive ornamentation

means connected to said coil and controlled by said voltage induced therein.

3. A roller skate light magneto comprising a rotor, which includes one of the wheels of the roller skate and at least one permanent magnet carried thereby for rotation therewith, a stator mounted on the truck for said one of the wheels and including a core and a coil thereon arranged in magnetic energy transferring relations with respect to the field of said magnet, and an electric light connected to said coil and adapted to be energized by the electrical energy induced therein as said one of the wheels rotates.

4. A roller skate light magento comprising, in combination, a rotor including one of the wheels of the roller skate, a plurality of permanent magnets arranged on said one of the wheels parallel to and concentric with the axis thereof, a magnetic circuit closing washer secured to said magnets in abutting engagement with the ends thereof disposed adjacent the outer face of said one of the wheels, a stator comprising a laminated E-shaped core, a coil sleeved on the center leg of said core, a nonmagnetic casing for said core and coil, and a quantity of potting material in the casing for mounting the assembly of said core and coil in predetermined position in the casing with the ends of the legs of the core projecting therefrom, said core and casing therefor being shaped arcuately to conform to the truck for said one of the wheels whereby said ends of the core are positioned opposite the ends of the magneto, adjacent the inner force of said one of the wheels when the stator is mounted on the truck, and means for securing the stator to the truck with said opposing core and magnet ends arranged with a predetermined air gap therebetween.

5. A roller skate light magneto comprising a stator secured to one of the trucks of the roller skate and including a laminated core extended parallel to the wheel axis of the truck and a coil sleeved on the core, a rotor including a skate wheel on said truck and a permanent magnet carried by the wheel in magnetic energy transfer relation with respect to said coil by magnetic induction of the field of the magnet as the wheel rotates, an electric light, and a pair of flexible conductors connecting the light with the coil whereby the light is energized by said voltage induced in the coil.

6. Roller skate exhibition apparatus comprising a skate having a wheel supported truck, a magnetic field generating rotor including one of the supporting wheels for the truck, a voltage generating stator rigidly secured to said truck in magnetic energy transferring relation with respect to the field of said rotor, and electroresponsive ornamentation means including a plurality of conductors for connecting said ornamentation means to said stator so as to be energized by the voltage induced therein as said one of the wheels rotates.

7. Roller skate exhibiting apparatus comprising, in combination, a foot plate, a truck supporting base secured to said foot plate, a headed pivot bolt secured to said base, a truck supported by said pivot bolt, said truck having a wheel axle housing, a cushion retainer pivoted on said bolt and secured to said axle housing, a truck supporting bracket secured on one end to the axle housing and pivotally secured on the other end thereof to said base, a pair of wheels rotatively supported on said axle housing, a stator including a nonmagnetic casing having an open end, an E-shaped laminated core, a coil sleeved on the center of said core, a quantity of potting material for positioning said core and coil in said casing with the ends of the legs of the core projecting outwardly of said opening in the casing, a stator mounting bracket secured to said axle housing in interfitting relation with respect to the head of said pivot bolt, said casing having a tab secured to said stator mounting bracket, said casing having a second tab secured to said truck supporting bracket, said casing and core being arcuately formed to conform to the configuration of said truck whereby the legs of the core extend parallel to the truck wheel axis and said projected ends thereof extend into face adjacency with one of said pair of truck wheels concentrically therewith, a plurality of permanent magnets arranged on said one of the wheels in predetermined spaced opposing relation to said core ends, a magnetic circuit closing washer secured to the other ends of the magnets in abutting engagement therewith, an electric light, a pair of terminals secured to said casing, one of said terminals and one end of said coil being electrically connected to said casing, means for insulating the other one of said terminals from the casing, the other end of the coil being connected to said insulated terminal, and a pair of flexible conductors for connecting said light to said terminals.

LEONARD E. SMITH.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,476,719	Fritzinger	July 19, 1949