

J. O. HEINZE, JR.

MAGNETIC WHEEL.

APPLICATION FILED JUNE 19, 1912.

Patented June 3, 1913.

2 SHEETS-SHEET 1.

1,063,259.

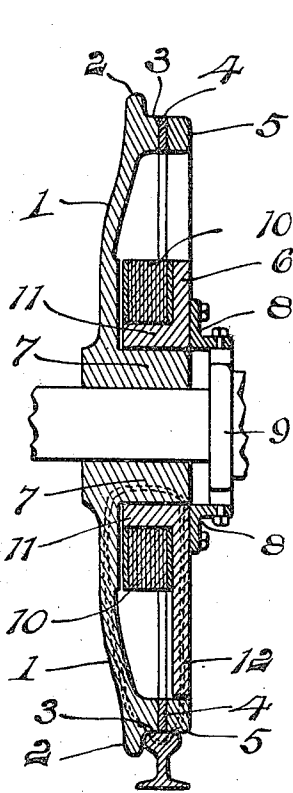


FIG. 2.

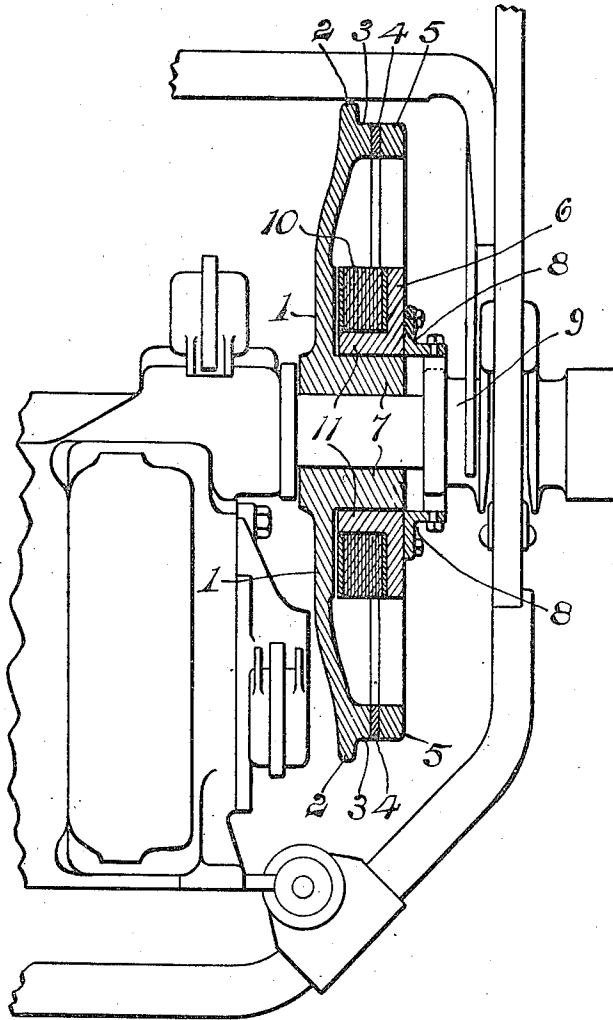


FIG. 1.

Witnesses
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Inventor

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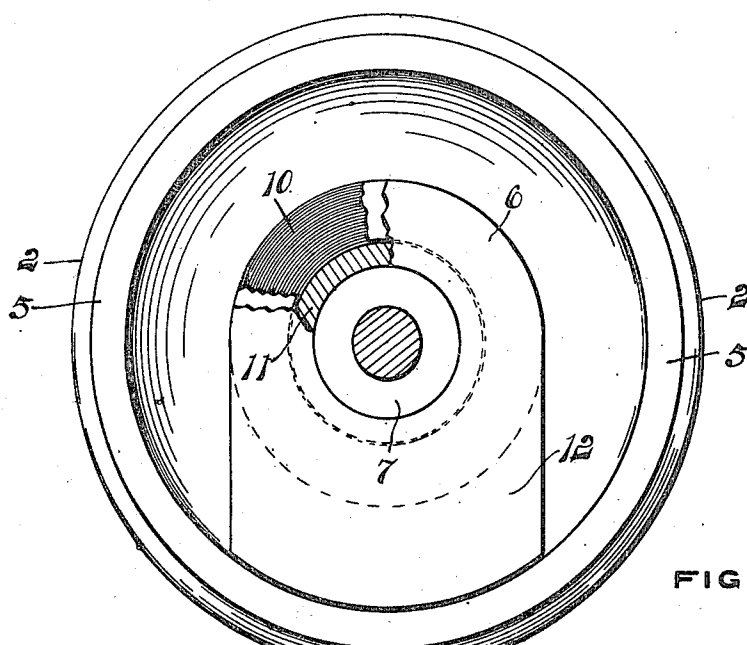


FIG. 3.

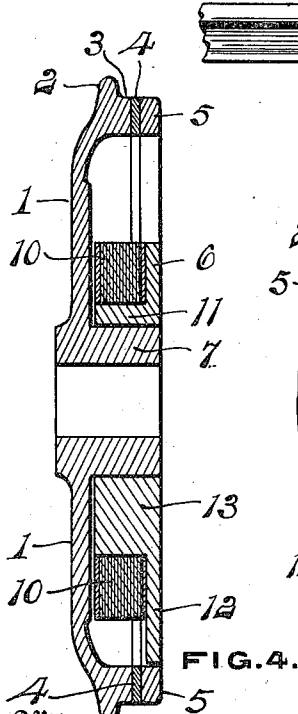


FIG. 4.

Witnesses
Lewis E. Sanders
Q. M. Shannon.

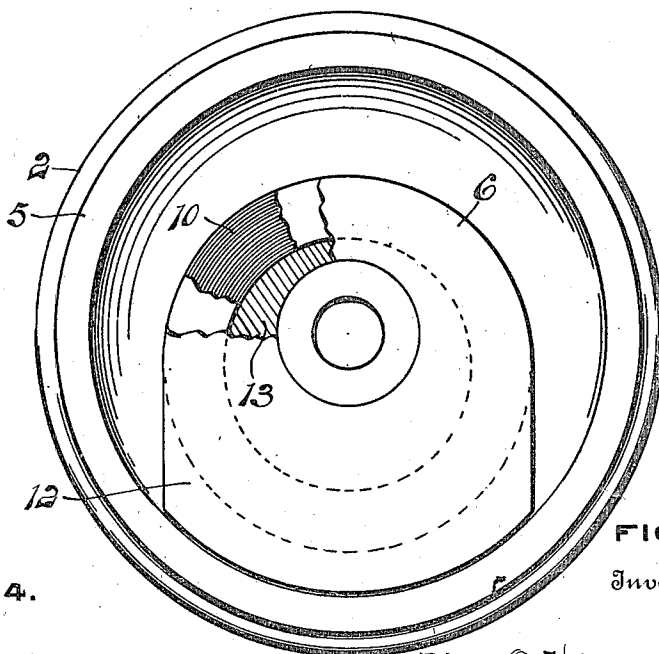


FIG. 5.

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UNITED STATES PATENT OFFICE.

JOHN O. HEINZE, JR., OF DETROIT, MICHIGAN.

MAGNETIC WHEEL.

1,063,259.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed June 19, 1912. Serial No. 704,547.

To all whom it may concern:

Be it known that I, JOHN O. HEINZE, JR., a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Magnetic Wheels, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to magnetic wheels and to a certain arrangement and disposition thereof whereby the tractive power is greatly increased without complicating the structure of the wheel materially or in otherwise altering its appearance or complicating its manufacture, the parts being so disposed as to give great magnetic efficiency with a minimum number of parts and simplicity of design.

The invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a plan view of a portion of a car frame showing a magnetic wheel in section, the latter together with the adjoining parts embodying features of the invention; Fig. 2 is a view in vertical section through the wheel; Fig. 3 is a view in side elevation of the wheel; Fig. 4 is a vertical section showing a modification of the wheel; and Fig. 5 is a side elevation of the same.

As herein shown in preferred form, a wheel 1 formed in any desired manner of magnetic metal, has the usual flange 2 and an integral tread having the outward face and appearance of a wheel tread of the standard type although it is formed with a ring or layer 4 of non-magnetic material such as steel containing a large percentage of manganese, separating the inner portion 3 of the tread from the outer portion or ring 5 of magnetic material, said portions being welded or otherwise intimately connected to the interposed ring to form a substantially integral body. This tread is so proportioned that when it rolls upon a track rail, the polar extremities 3 and 5 of the magnet are magnetically connected by the rail which forms a keeper for the magnet. A yoke 6 is held concentrically with the hub 7 of the wheel as by bracket members 8 which secure the yoke to any adjacent portion of the bearing 9 of the wheel axle. A magnetizing coil 10 of insulated wire encircles a sleeve 11

of the yoke that lies adjacent the hub and is connected in any preferred way through its terminals, which are not shown herein, with any suitable source of electric current. The yoke has a depending portion 12, the lower end face of which extends close to the inner periphery of the outer magnetic portion 5 of the wheel tread, the gap between said end and ring 5 being so slight as to produce very little loss in the magnetic efficiency of the magnetic circuit which is formed by said ring, yoke, wheel body and its tread portion 3, and the rail, said rail forming the keeper of the electro-magnet thus formed. If found desirable the coil may be positioned closely to the end of the yoke to shorten the magnetic circuit, by supporting said coil eccentrically in relation to the hub, upon an eccentric sleeve portion 13, as disclosed in the modification shown in Figs. 4 and 5.

As the rim of the wheel is continuous circumferentially and the yoke a single member which is held against turning with the wheel, there are no interruptions in the flow of the magnetic flux, thus greatly increasing the efficiency of the magnet, and by this construction and arrangement a magnetic wheel is obtained which presents a magnetic path that is substantially unbroken and that causes the greatest magnetic stress at the point where it is most desired, that is, at the point of rolling contact between the wheel and the rail. The tractive power of the wheel is therefore greatly increased for driving purposes, and its construction is such that it may be formed in the same manner as one of standard make, while the yoke may be readily removed and replaced when it becomes necessary to replace the wheel owing to the wearing away of its tread portion.

Obviously, changes in the details of construction may be made without departing from the spirit of my invention and I do not care to limit myself to any particular form or arrangement of parts.

What I claim is:—

1. A magnetic wheel comprising a body formed of magnetic metal having an inner tread portion, an outer tread portion formed of magnetic material, a non-magnetic tread portion interposed between said inner and outer tread portions, a member encircling the wheel hub and having a laterally ex-

tending portion with its outer side in juxtaposition to one of the tread portions, and a magnetic coil carried by said member adjacent the center of the wheel.

- 5 2. A magnetic wheel comprising a hub and body formed of magnetic material with a tread portion upon the body forming part of the wheel tread, a ring member forming a part of the wheel tread, an intervening
10 ring of non-magnetic material securing the tread portion and ring together, a member having a sleeve encircling the hub and a portion extending laterally therefrom with its end adjacent the inner side of the ring,
15 and a magnetic coil on the sleeve.

3. A magnetic wheel comprising a body portion formed of magnetic material and a rim formed of an inner tread portion integral therewith and an outer tread portion
20 of magnetic material magnetically insulated from said inner portion, a yoke having a sleeve encircling the wheel hub and a laterally extending portion with its outer end adjacent the inner periphery

of the outer tread portion, and a coil encircling the sleeve.

4. A magnetic wheel comprising a body of magnetic material, an inner tread portion integral therewith, an outer tread portion of magnetic material and an intervening ring of non-magnetic material intimately securing the tread portions together; a yoke having a laterally extending portion surrounding the hub of the wheel and with its outer end adjacent the inner side of the
3 outer tread portion, and a field coil encircling the portion of the yoke surrounding the hub, the coil and yoke being supported substantially within the plane of the wheel, and means for holding the yoke against
4 turning with the wheel.

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

JOHN O. HEINZE, JR.

Witnesses:

LEWIS E. FLANDERS,
ANNA M. SHANNON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."