

No. 775,836.

PATENTED NOV. 22, 1904.

R. C. LOWRY.
TRACTION INCREASING DEVICE.

APPLICATION FILED AUG. 13, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 3.

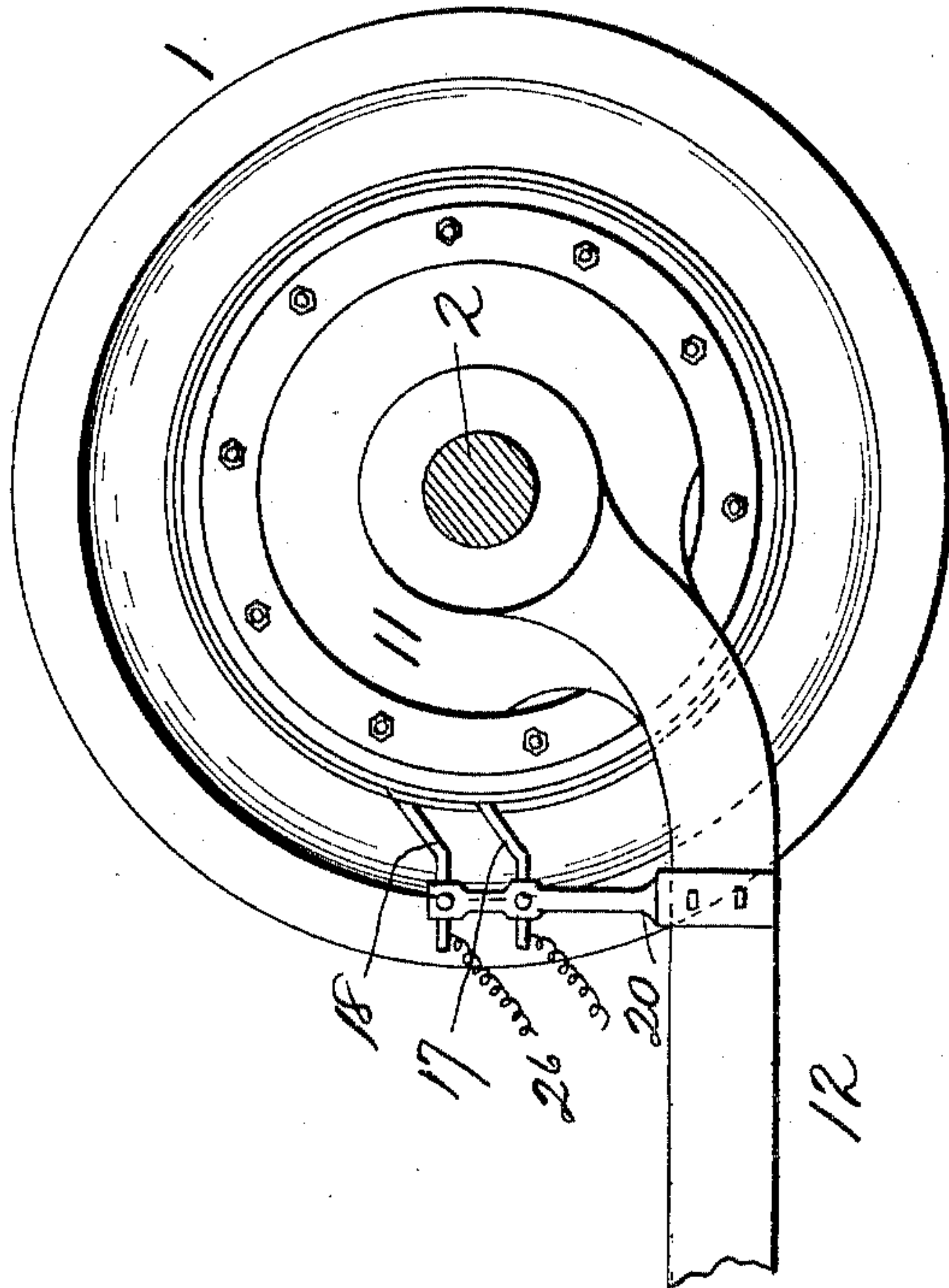
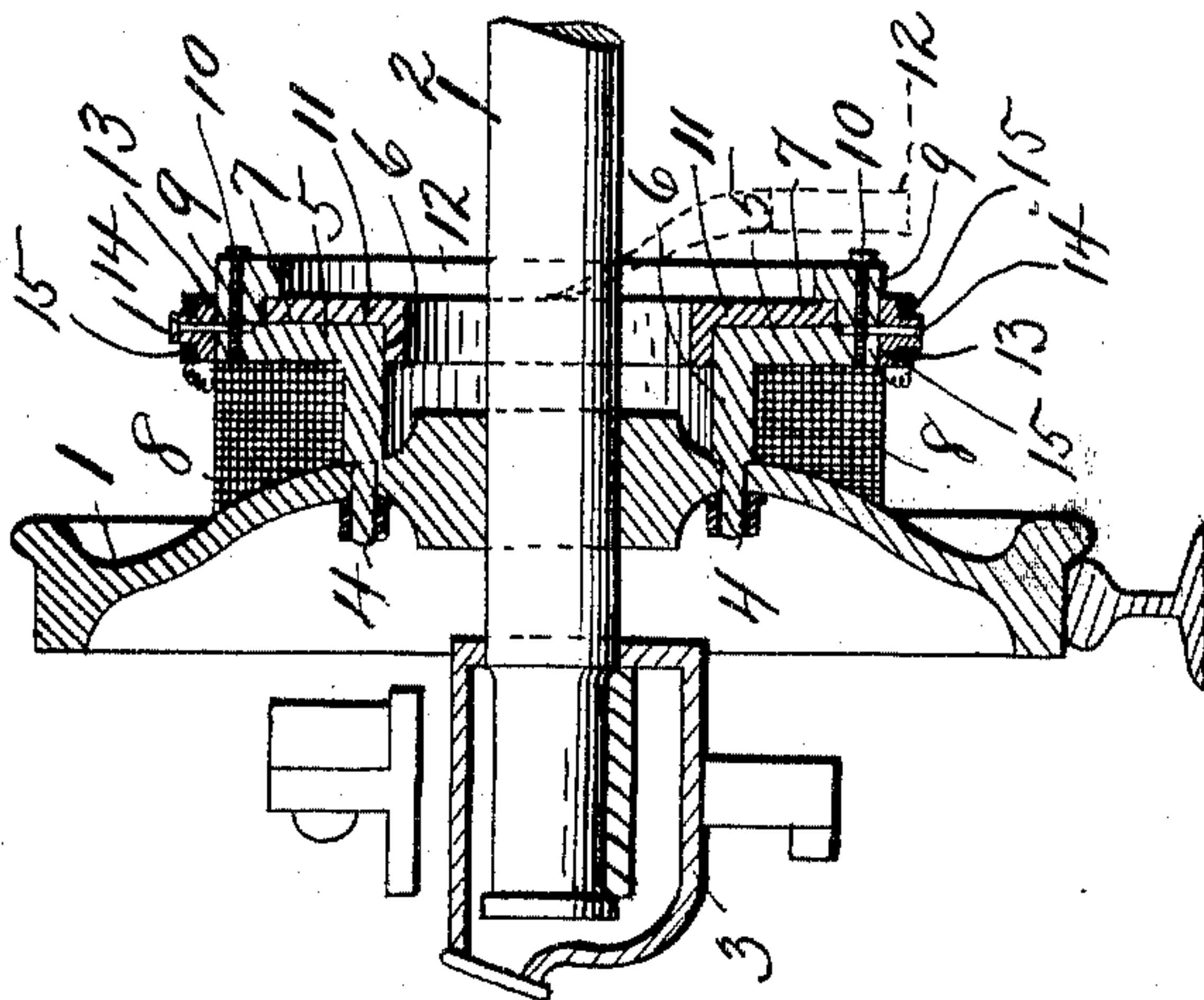


Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

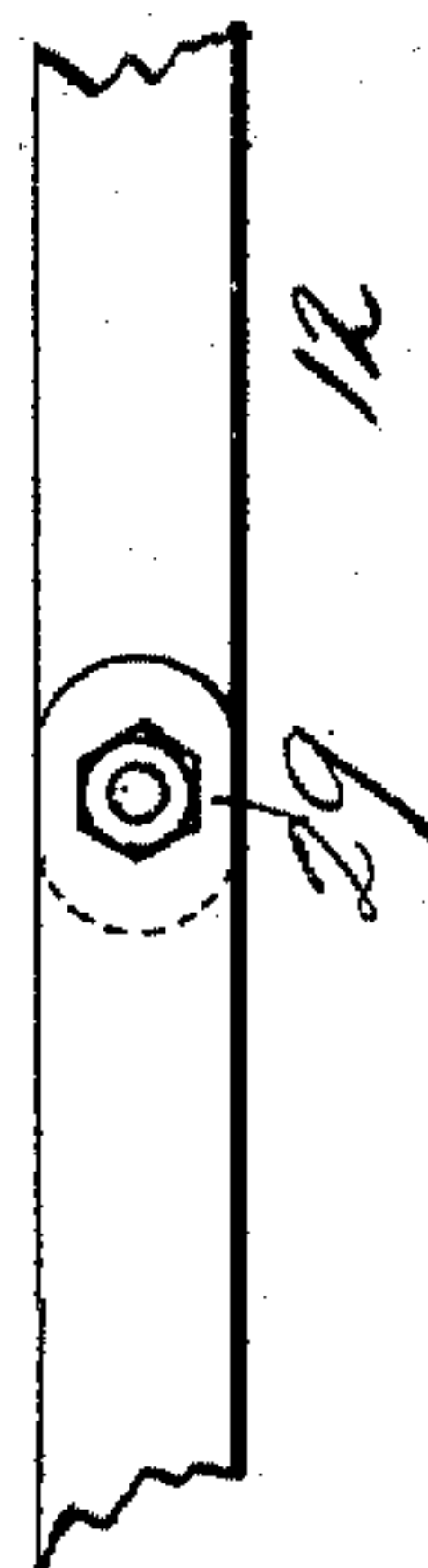
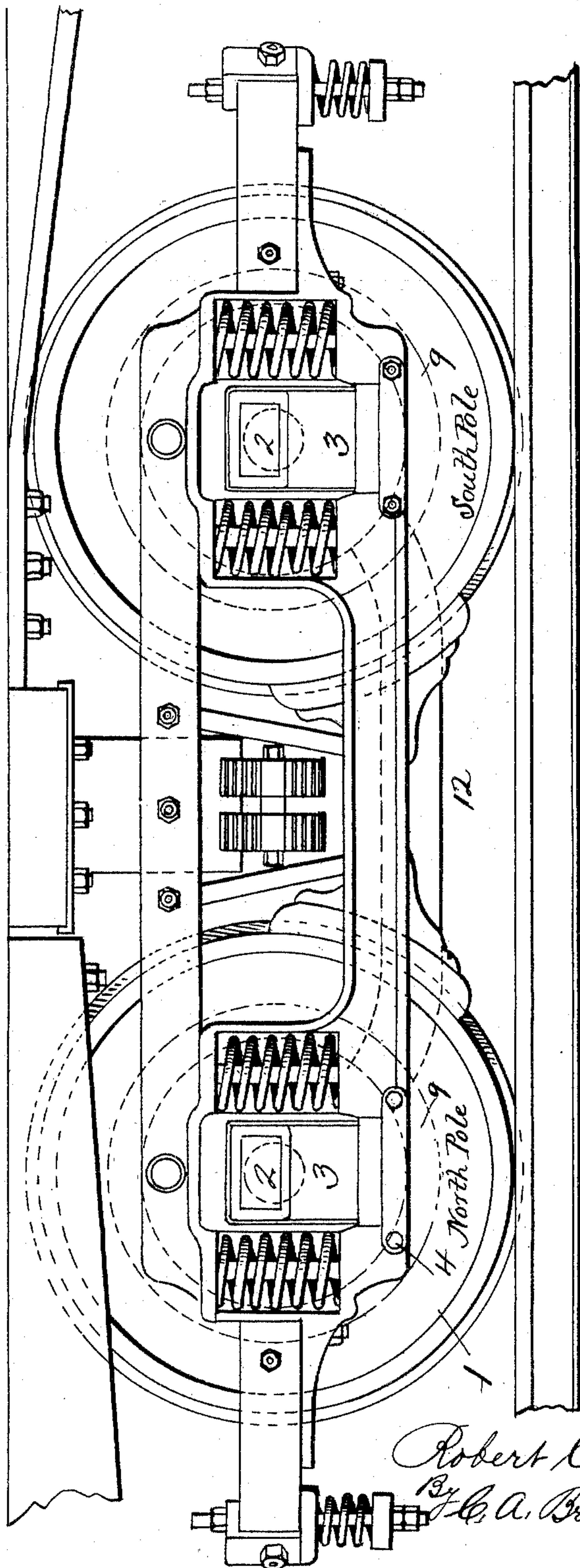


Fig. 4.

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UNITED STATES PATENT OFFICE.

ROBERT C. LOWRY, OF NEW WESTMINSTER, CANADA.

TRACTION-INCREASING DEVICE.

SPECIFICATION forming part of Letters Patent No. 775,836, dated November 22, 1904.

Application filed August 13, 1903. Serial No. 169,389. (No model.)

To all whom it may concern:

Be it known that I, ROBERT C. LOWRY, a subject of the King of Great Britain, residing at New Westminster, in British Columbia, Canada, have invented certain new and useful Improvements in Traction-Increasing Devices, of which the following is a specification.

My invention relates to means for increasing the adhesion of the wheels of vehicles, such as railway cars or locomotives, to the rails on which they move by the application of electromagnetism; and among the objects in view is to provide a simple, compact, and efficient device for increasing the adhesive power of locomotives, street-railway cars, or other vehicles moving on rails, which device may be constructed and applied at small cost and whereby I am enabled to secure the adhesion in such vehicles necessary to control them.

The invention consists in the novel construction, arrangement, and combination of parts as herein fully described, illustrated in the drawings, and pointed out in the appended claims.

In the drawings, Figure 1 is a vertical sectional view of a car-wheel and one end of its supporting-axle, showing my traction-increasing device in connection therewith. Fig. 2 is a side elevation showing two wheels of a truck running on the same rail provided with my traction device. Fig. 3 is a sectional elevation of the parts seen in Fig. 2 looking from the rear, and Fig. 4 is a detail view showing the yoke in sections hinged together.

Referring more particularly to Fig. 1, 1 indicates an ordinary car-wheel mounted upon and revolving with an axle 2, one end only of which is shown. The axle has a bearing in the journal-boxes 3, one of which is shown. Secured to the web of the wheel, as by bolts 4, is a casting 5 of the form shown, it having the cylindrical portion 6 and the annular portion or flange 7 standing at right angles to the portion 6. Upon the portion 6 is wound a coil of insulated wire 8, of copper, aluminium, or other material, through which electricity may be conducted.

9 indicates an iron ring which is adapted to be bolted to the flange 7 by means of bolts 10.

This ring 9 is intended to removably clamp in place a ring-shaped end 11 of a yoke 12 of mild cast-steel or other magnetic material.

13 is a vulcanite or other ring of insulating material secured to the casting 5, as shown, by screws 14.

15 represents commutator-rings of copper, brass, or other material suitable for conducting electricity carried by the ring 13, and with which rings 15 the ends of the wire coil are connected, an end to each ring. An electric current is conveyed from a convenient source of supply (not shown in figure) to one copper ring, as by an insulated brush 17, and taken off from the other ring by a similar brush 18, the brushes being carried by a holder 20, attached either to the yoke, as shown, or to the car-body.

The wheel of truck running on the same rail as the wheel just above referred to will be provided with the device above described; but in winding the coils the coil of one wheel will be wound in one direction—i. e., from right to left, (looking from the journal-box, as 3,)—while that of the other wheel will be wound in the opposite direction—i. e., from left to right—and the electric current will be made to flow in the direction of winding. The first wheel would then be a north pole, while the other would be a south pole. The car-wheels on the same axle should be of like or similar magnetic polarity—i. e., both north or both south. The rail between the truck-wheels on the same side (said wheels being in contact with said rail) acts as an armature. When, by way of wires, brushes, and rings, (shown in the drawings,) an electric current is turned into the coils, (which latter may be connected electrically either in series or in parallel,) the two wheels become magnetized. Starting from point of contact of one wheel and rail a magnetic circuit extends along the rail to the other wheel and then by way of it and of the yoke 12 back to the first wheel.

By my method of attaching the wire coils directly to the web of the wheels and providing a yoke, as 12, I procure a shorter magnetic circuit than is the case in other devices with which I am acquainted, and as I do not convey magnetism by way of the axle the latter may

be of non-magnetic material. When the axles carry electric motors, the introduction of magnetism into the axles may be objectionable. This I regard as a very important and valuable feature of my present invention and enables me to secure advantages not obtained by other constructions wherein the axles are magnetized or magnetic attachments are made therewith.

10 The yoke 12, before mentioned, extends from one car-wheel to the other car-wheel, running on the same rail, and the end of yoke attached to the latter is ring-shaped also and clamped in place in a manner similar to the
15 end first described. It will be understood that the devices carried by and in conjunction with one wheel are identical with those carried by the other wheel. When the coils are connected electrically in series, the wire 26, which
20 leads from the brush 18 of one wheel, is joined to the brush which bears upon the corresponding ring of the other wheel, and from the latter ring electricity is conveyed to the coil on said wheel, so as to flow through said coil
25 in a direction contrary to that in coil of first wheel, thence to the other ring of said second wheel, the brush bearing on the last-named ring, and thence to ground by any suitable conductor. The yoke 12 may or may not be
30 used. If used, I would preferably form it in two sections hinged together, as at 29, to allow of possible contraction in the wheel-base. While I show a casting 5, attached by bolts to wheel to receive the wire coil, it will be
35 understood that the wheel itself might be cast with a recess or chamber of the same general shape as 5 to receive such coil, and thus dispense with the necessity for bolts passing through web of wheel. If desired, the coil 12
40 might be incased or covered by a metal cover to protect it from dirt or damage,

By my construction I render it unnecessary to magnetize the axle, and I obtain reduced length of magnetic circuit, economy of space,
45 reduced cost of attachment, and fewer air-joints, thus insuring less reluctance in the magnetic circuit.

I do not limit myself to the application of an electric coil on the inside of the wheel.
50 The device may be attached to either side or to both sides.

What I claim as new, and desire to secure by Letters Patent, is—

1. In electromagnetic devices for increasing

the tractile or adhesive power between wheels 55 and rails, the combination with a car-axle and wheels mounted thereon, of a casting secured to the web of a wheel and revoluble therewith, an electromagnetic coil mounted on the casting, an insulating-ring carried by the casting 60 and commutating-rings mounted on said insulating-ring, the ends of the coil being connected respectively with the said commutating-rings.

2. In electromagnetic devices for increasing the tractile or adhesive power between wheels 65 and rails, the combination with a car-truck, axles carried thereby and wheels mounted on the axles, of a casting secured to the web of each of the wheels running on the same rail, an electromagnetic coil mounted upon each 70 casting, commutating-rings carried by and insulated from each casting and from each other, the ends of the coil being connected respectively with the said rings, a yoke extending between the car-wheels as described, having 75 its ends lying respectively against the castings and brushes bearing against the commutating-rings and an electric connection between a brush of one set of devices connected with one wheel and a brush of the other set of devices 80 connected with the other wheel, as specified and for the purpose set forth.

3. In electromagnetic devices for increasing the tractile or adhesive power between wheels 85 and rails, the combination with a car-truck, axles carried thereby and wheels mounted on the axles, of a casting secured to the web of each of the wheels running on the same rail, an electromagnetic coil mounted upon each casting, commutating-rings carried by and insulated from each casting and from each other, 90 the ends of the coil being connected respectively with the said rings, a yoke extending between the car-wheels as described, and made in sections pivoted together, having its ends 95 lying respectively against the castings and brushes bearing against the commutating-rings and an electric connection between a brush of one set of devices connected with one wheel and a brush of the other set of devices 100 connected with the other wheel, as specified and for the purpose set forth.

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

ROBERT C. LOWRY.

Witnesses:

WALTER B. WHITCOMB,
ROLLO WHITCOMB.