

No. 711,300.

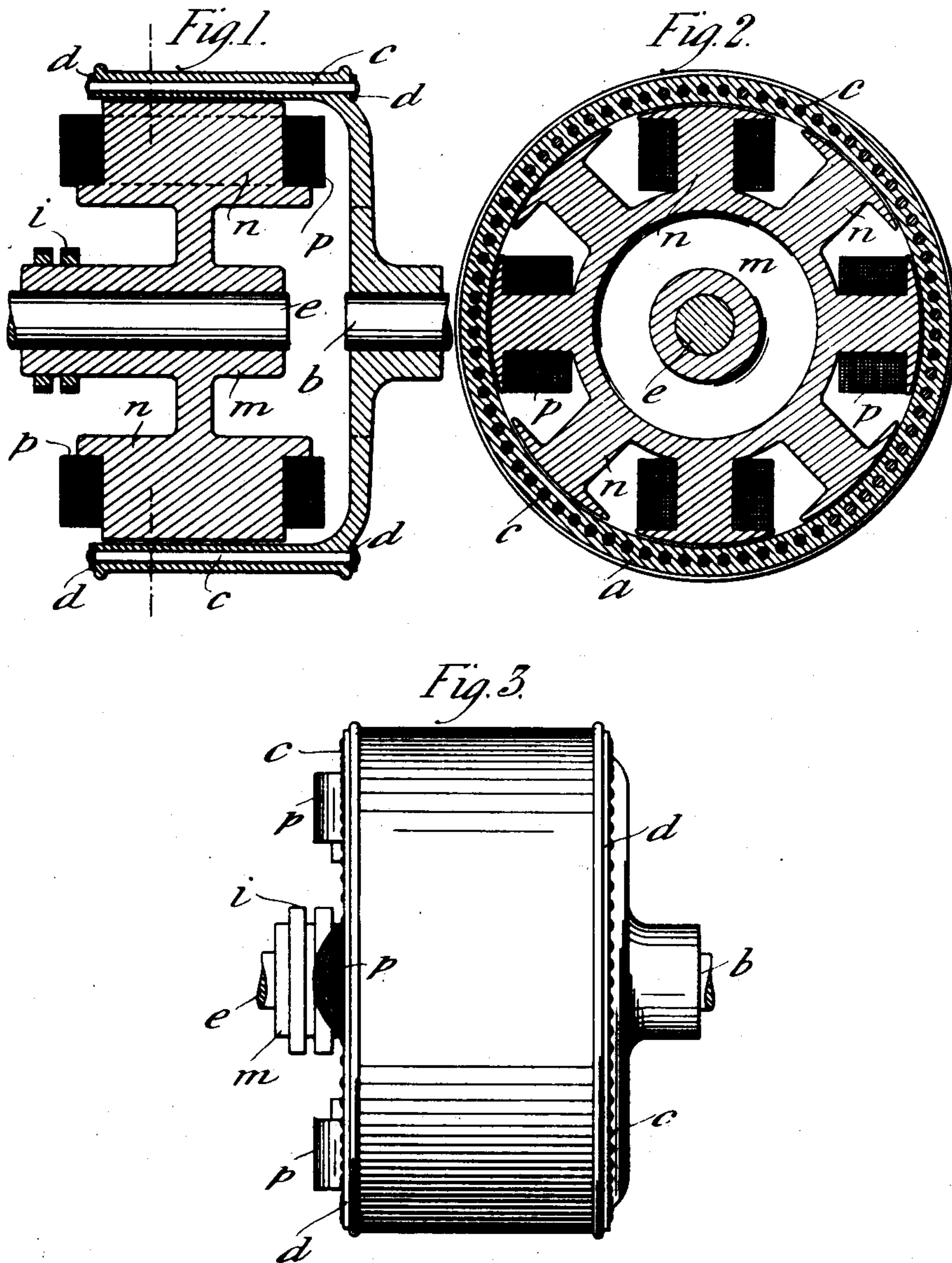
Patented Oct. 14, 1902.

H. A. EARLE.

ELECTROMAGNETIC TRANSMISSION GEAR.

(Application filed Jan. 18, 1902.)

(No Model.)



WITNESSES

J. M. Corwin
John Miller

INVENTOR

H. A. Earle
by Ballou & Byrnes
his attys

UNITED STATES PATENT OFFICE.

HARDMAN A. EARLE, OF MANCHESTER, ENGLAND.

ELECTROMAGNETIC TRANSMISSION-GEAR.

SPECIFICATION forming part of Letters Patent No. 711,300, dated October 14, 1902.

Application filed January 16, 1902. Serial No. 89,986. (No model.)

To all whom it may concern:

Be it known that I, HARDMAN ARTHUR EARLE, a citizen of England, residing at Salford Iron Works, Manchester, in the county
5 of Lancaster, England, have invented certain new and useful Improvements in Electromagnetic Transmission-Gear, (for which I have applied for a patent in Great Britain, dated October 12, 1901, No. 20,462,) of which
10 the following is a specification.

My invention relates to the construction of electromagnetic transmission-gear in such a way that without any actual contact of the two members when one of them is energized
15 by a current of electricity their mutual action thus produced causes the one member to follow and accompany the rotation of the other, the shafts on which the two members are fixed being thus clutched together and becoming
20 unclutched on cessation of the energizing-current.

I shall describe an electromagnetic transmission-gear according to my invention, referring to the accompanying drawings.

25 Figure 1 is a longitudinal section, Fig. 2 is a transverse section, and Fig. 3 is a side elevation, of the transmission-gear.

As shown in Fig. 1, one of the members *a* of the transmission-gear is a hollow cylinder
30 of iron or steel having its one end open and its other end closed by a disk integral with the cylinder and made with a boss keyed on one, *b*, of the shafts to be clutched. A number of copper bolts *c* are passed through longitudinal holes
35 bored in the cylindrical shell and have their ends riveted, preferably, over copper rings *d*. The rings *d* join up the rods *c*, so as to form closed paths for the electric currents induced in them. It is the mutual action between
40 these currents and those in the revolving electromagnet that causes power to be transmitted from one member of the gear to the other. The other member of the transmission-gear is keyed on the other shaft *e*, which is in line
45 with the former, *b*, and this member is an electromagnet of such diameter that it can revolve

freely within the cylindrical member *a* without touching its internal surface. This electromagnet consists of a boss *m*, having an even number of radial pole projections *n*,
50 every one or alternate one of which is wound with a coil of insulated wire *p*, making a number of poles of one polarity having between each pair of them a pole of opposite polarity, the ends of the wires being connected to two
55 insulated rings *i*, fixed on and revolving with the member *m*. This electromagnet, which constitutes one member of the transmission-gear, is keyed on one of the shafts *e* and is inserted into the hollow cylinder *a*, which con-
60 stitutes the other member, the diameter of the ends of the poles of the one being somewhat less than that of the interior of the cylinder, so that the two members do not touch each other.
65

By conducting-brushes bearing on the two insulated rings *i* a direct continuous electrical current from a source of electricity can be transmitted through the coils *p*, energizing
70 the magnet-poles, so that when one of the members of the transmission-gear rotates the other is caused to rotate with it.

Having thus described the nature of this invention and the best means I know of carrying the same into practical effect, I claim—
75

An electromagnetic transmission-gear consisting of two members fixed respectively on two shafts in alinement, the one member being a shell of iron or steel traversed by copper bolts secured to copper end rings, the
80 other member consisting of an electromagnet having pole-pieces extending nearly to but not contacting with the interior of the shell; substantially as described.

In testimony whereof I have hereunto set
85 my hand in presence of two subscribing witnesses.

HARDMAN A. EARLE.

Witnesses:

P. A. RAMAGE,
ROBT. DAVIS.