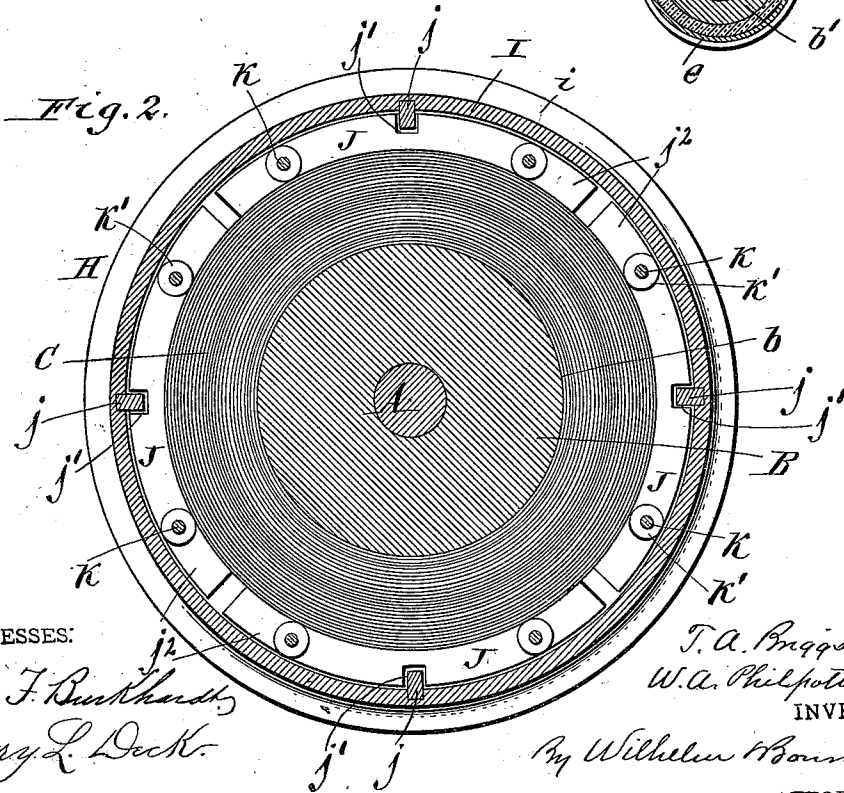
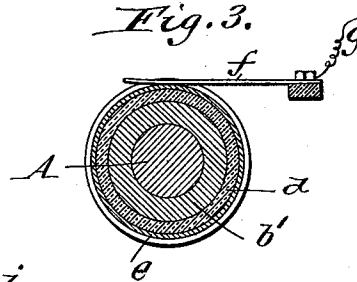
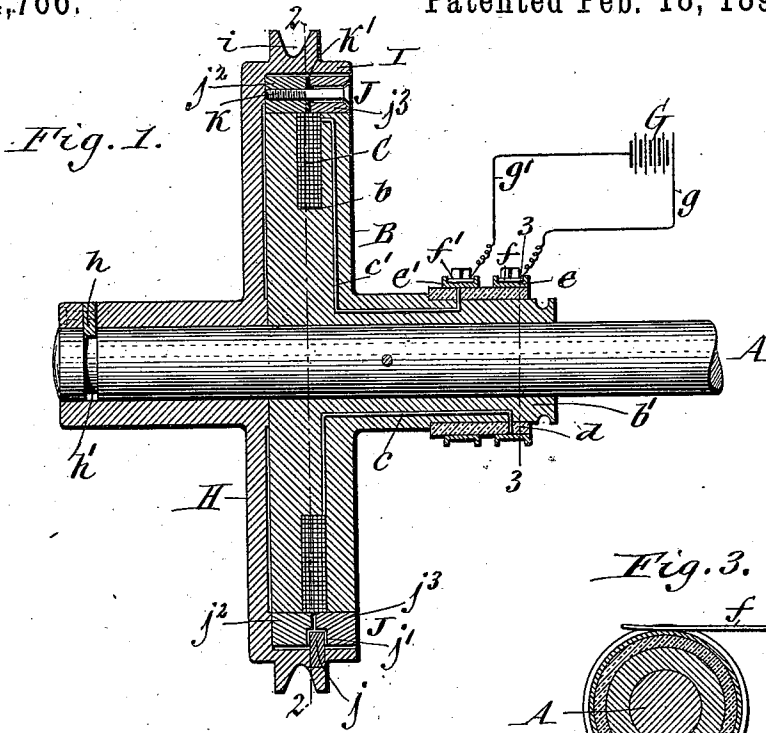


(No Model.)

T. A. BRIGGS & W. A. PHILPOTT, Jr.
ELECTRIC CLUTCH.

No. 554,766.

Patented Feb. 18, 1896.



WITNESSES:

Chas. F. Burkhardt
Henry L. Decker

T. A. Briggs
W. A. Philpott Jr.
INVENTORS.

By Wilhelm Bonner
ATTORNEYS.

UNITED STATES PATENT OFFICE.

THOMAS A. BRIGGS, OF NIAGARA, CANADA, AND WILLIAM A. PHILPOTT, JR., OF NIAGARA FALLS, NEW YORK.

ELECTRIC CLUTCH.

SPECIFICATION forming part of Letters Patent No. 554,766, dated February 18, 1896.

Application filed June 25, 1895. Serial No. 553,977. (No model.)

To all whom it may concern:

Be it known that we, THOMAS A. BRIGGS, residing at Niagara Falls South, Ontario, Canada, and WILLIAM A. PHILPOTT, Jr., residing at Niagara Falls, Niagara county, New York, citizens of the United States, have invented a new and useful Improvement in Electric Clutches, of which the following is a specification.

This invention relates to an electric clutch for communicating motion from a driving shaft or wheel to a driven shaft or wheel.

The objects of our invention are to render the clutch simple and durable in construction, to insure the prompt engagement and disengagement of the coupling parts of the clutch, and to prevent the movable clutch-armatures from being permanently polarized.

In the accompanying drawings, Figure 1 is a longitudinal section of our improved electric clutch. Figs. 2 and 3 are transverse sections thereof in lines 2-2 and 3-3, Fig. 1, respectively.

A represents the driving-shaft, with which the machinery to be driven is connected in any suitable manner.

B represents a clutch-disk of soft iron which is secured to the shaft, and which is provided in its periphery with an annular groove *b* containing a coil C of insulated wire.

d represents an insulator-sleeve surrounding the hub *b'* on one side of the clutch-disk, and *ee'* are metal rings mounted on this sleeve and connected respectively with the inner and outer ends of the wire coil by wires *c c'*.

ff' represent brushes bearing against the metal rings and connected with opposite terminals of an electric generator G by wires *g g'*. Upon closing the electric circuit the current from the generator is passed through the coil, thereby energizing the clutch-disk and converting the same into an electromagnet.

H represents a clutch-wheel, of brass or other non-magnetic material, mounted loosely on the shaft on one side of the clutch-disk so as to turn on the shaft, but held against lengthwise movement thereon by a key *h* secured to the hub of the clutch-wheel and entering an annular groove *h'* in the shaft, as shown in Fig. 1. This wheel is provided with an annular rim or flange I, which overhangs the periphery of the clutch-disk, and is rotated

continuously by a driving-belt engaging with an annular groove *i* on the outer side of the wheel-flange, or by other suitable means.

J represents segmental clutch-shoes or armatures of iron, which are arranged between the wheel-rim and the periphery of the clutch-disk, and whereby said wheel and disk are coupled or uncoupled. Each of these clutch-shoes is capable of a limited radial movement between the wheel-rim and clutch-disk, but is compelled to rotate with the clutch-wheel by means of an internal radial pin *j* secured to the wheel-rim and engaging with a notch or recess *j'* in the outer side of the shoe. Upon rotating the clutch-wheel, when the electric circuit is broken, the clutch-shoes are thrown outwardly against the inner side of the wheel-rim by centrifugal force, thereby holding the clutch-shoes out of engagement with the clutch-disk, so that the latter will not be affected by the movement of the clutch-wheel. The instant the clutch-disk becomes magnetized by closing the electric circuit the shoes are drawn firmly against the periphery of the disk, thereby coupling the clutch wheel and disk and causing the movement of the wheel to be transmitted to the shaft and the mechanism connected therewith. Upon breaking the circuit the disk is de-energized and the shoes are disengaged from the disk by centrifugal force, thereby uncoupling the wheel and disk.

It has been found in practice that a clutch-shoe made out of a single piece has a tendency to become polarized and cling to the annular face of the clutch-disk on opposite sides of the coil. In order to obtain an instantaneous release of the shoes from contact with the disk when the circuit is broken, each of the shoes is divided lengthwise into two parts *j² j³*, said parts being separated by a non-magnetic medium. The distance between these two sections is determined by the rapidity with which it is desired to uncouple the clutch—i. e., the greater the distance the quicker the clutch will release. The two parts of the shoe are connected by screws *k* and separated by washers *k'* supported on the screws, said screws and washers being made of brass or other non-magnetic material.

We claim as our invention—

1. In an electric clutch, the combination with a rotary electromagnetic disk, of a clutch-wheel surrounding the face of said disk, and clutch-armatures arranged between the opposing faces of said disk and wheel, said armatures being coupled with said wheel to rotate therewith and capable of movement toward and from said disk, substantially as set forth.
2. In an electric clutch, the combination with a rotary electromagnetic disk, of a clutch-wheel provided with an annular rim which overhangs the periphery of said disk, clutch shoes or armatures arranged between said rim and the periphery of said disk, each shoe or armature being provided with a recess in its outer side, and pins arranged on the inner side of the rim and engaging with the recesses in said shoes or armatures, substantially as set forth.
3. In an electric clutch, the combination with a rotary electromagnetic disk provided in its periphery with an annular groove and a coil of insulated wire arranged in said groove and adapted to be connected with an electric generator, of a clutch-wheel provided with an annular rim which overhangs the periphery of said disk, and clutch shoes or armatures arranged between said rim and the periphery of said disk and loosely connected with said wheel, each of said shoes or armatures being composed of two longitudinal sections which are separated by a non-magnetic medium and adapted to engage with the periphery of the disk, respectively, on opposite sides of the coil, substantially as set forth.
4. In an electric clutch, the combination with a rotary electromagnetic disk provided in its periphery with an annular groove, and a coil of insulated wire arranged in said groove and adapted to be connected with an electric generator, of a clutch-wheel provided with an annular rim overhanging the periphery of said disk and having internal radial pins, clutch-shoes arranged between said rim and the periphery of the disk and provided with recesses which receive said pins, each of said shoes being composed of two longitudinal sections, non-magnetic washers arranged between the sections of each shoe, and non-magnetic screws connecting the sections of each shoe, substantially as set forth.

Witness our hands this 13th day of June, 1895.

THOMAS A. BRIGGS.

WILLIAM A. PHILPOTT, JR.

Witnesses to the signature of Thomas A. Briggs:

JNO. J. BONNER,

THEO. L. POPP.

Witnesses to the signature of William A. Philpott, Jr.:

FREDERICK LUPPIE,

FRANK L. CROSS.