

F. R. KUNKEL.
 REVERSIBLE INDUCTION MOTOR.
 APPLICATION FILED JULY 6, 1908.

1,024,635.

Patented Apr. 30, 1912.

Fig. 1.

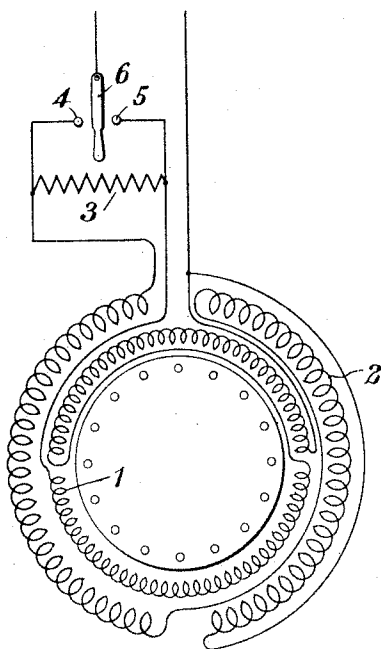
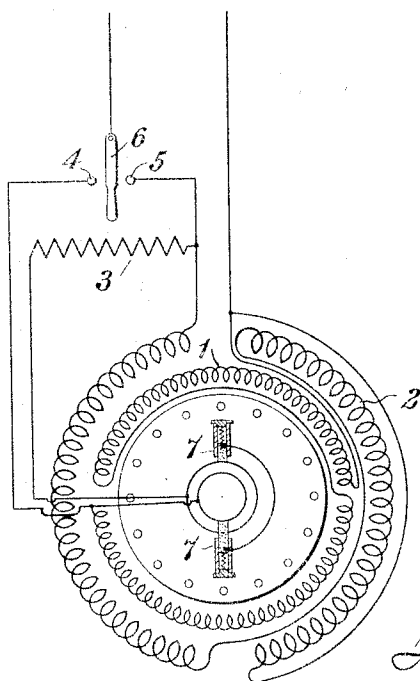


Fig. 2.



WITNESSES:

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FRED R. KUNKEL, OF EDGEWOOD PARK, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, OF EAST PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

REVERSIBLE INDUCTION-MOTOR.

1,024,635.

Specification of Letters Patent.

Patented Apr. 30, 1912.

Application filed July 6, 1908. Serial No. 442,177.

To all whom it may concern:

Be it known that I, FRED R. KUNKEL, a citizen of the United States, and a resident of Edgewood Park, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Reversible Induction-Motors, of which the following is a specification.

My invention relates to single-phase induction motors, and it has for its object to provide simple and effective means for reversing at will the direction of rotation of motors of the character indicated.

The invention is illustrated in the accompanying drawing, Figure 1 of which shows diagrammatically an induction motor and its circuit connections, and Fig. 2 shows similarly the construction and connections of a modified form of the motor of Fig. 1.

In Fig. 1, the motor comprises two similar primary windings 1 and 2 between extremities of which an ohmic resistance 3, or other suitable phase-changing device, is connected, the other extremities of the windings being connected together to form one terminal of the motor. The extremities of the resistance 3 are connected to contact terminals 4 and 5, with the one or the other of which a movable switch arm 6 may engage, said switch arm being adapted to be connected to one terminal of a suitable supply circuit (not shown).

It is common knowledge in the art that, in order to effect operation of an induction motor, the currents traversing the primary windings should differ somewhat in phase, and also that the direction of rotation may be reversed by reversing the phase relations of the currents traversing the windings. The phase displacement is effected in the present instance by means of the resistance 3, and the direction of rotation is determined by the position of the switch arm 6, since when it engages terminal 4, it is connected in series with the winding 1, and when it engages the terminal 5 the resistance is in series with the winding 2.

In Fig. 1 the invention is shown as applied to a motor in which both the primary windings remain in circuit continuously, but

it is equally applicable to motors in which one of the windings is rendered ineffective when the motor attains a predetermined speed, as illustrated in Fig. 2. The motor of Fig. 2 comprises, in addition to the two similar primary windings 1 and 2, a centrifugal switch 7 of any suitable form, such as that shown, that is included in series with the resistance 3 between the terminals of the windings 1 and 2, the remainder of the connections being the same as in Fig. 1. From an inspection of Fig. 2 it will be seen that by movement of switch arm 6 the resistance may be included in circuit with the one or the other of the primary windings, and that when the motor attains a predetermined speed, the centrifugal switch interrupts the circuit of the winding in series with which the resistance was connected.

I claim as my invention:

1. The combination with an induction motor having two primary windings, of a single resistance connected between the extremities of the said windings, and a switch member for making external circuit connection to the one extremity or the other of the resistance.

2. The combination with an induction motor having two primary windings, of a phase modifying device, a centrifugal switch, and means for connecting the said device and switch in series with the one or the other of the said windings, according to the desired direction of rotation.

3. The combination with an induction motor having two primary windings, of a phase modifying device and a centrifugal switch connected in series between the extremities of the said windings, and a switch member for making external circuit connection to the one or the other of the said extremities of the windings.

In testimony whereof, I have hereunto subscribed my name this 30th day of June, 1908.

FRED R. KUNKEL.

Witnesses:

W. J. BRANSON,
BIRNEY HINES.