

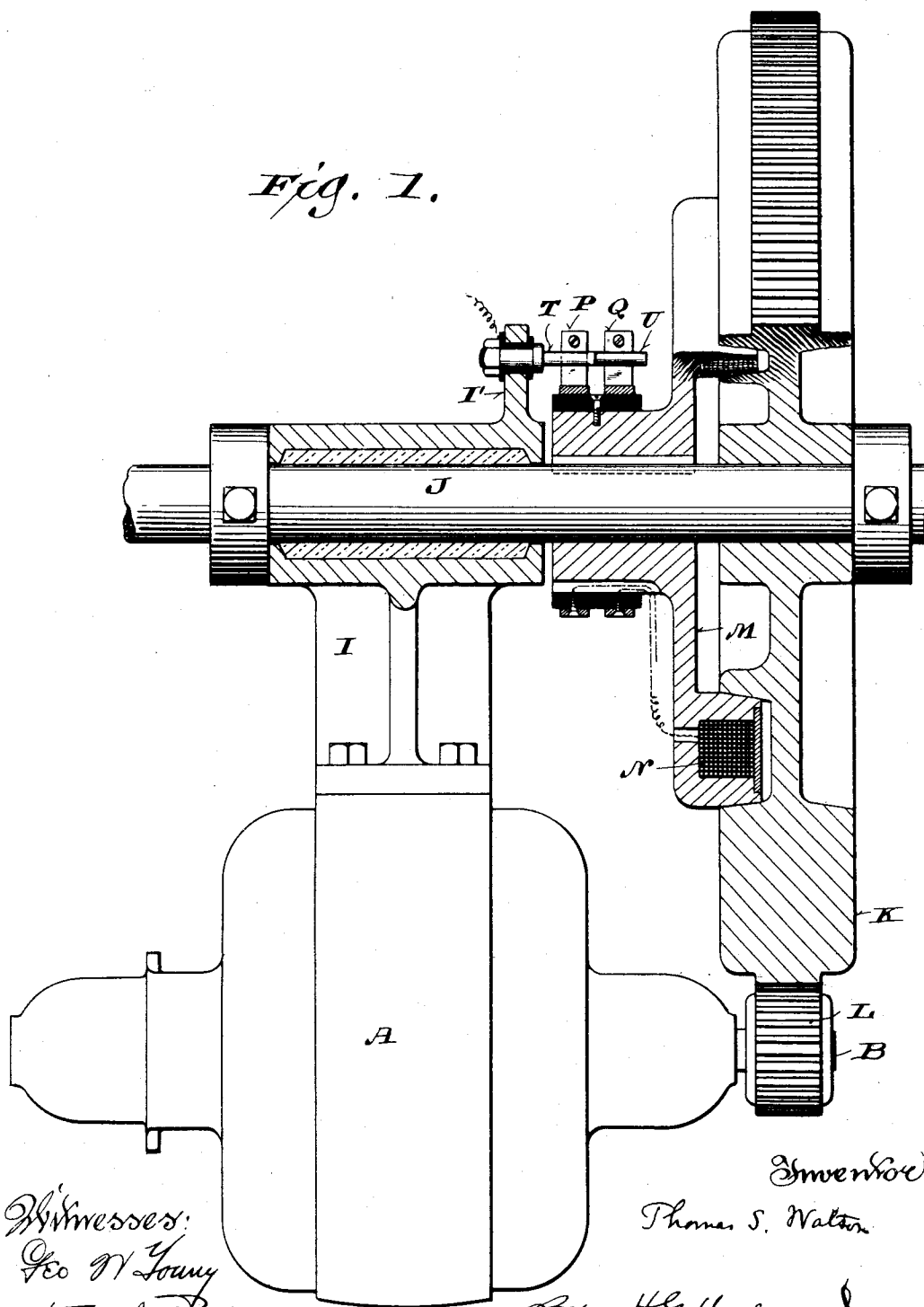
No. 792,684.

PATENTED JUNE 20, 1905.

T. S. WATSON.
ELECTRIC MOTOR.
APPLICATION FILED MAR. 21, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
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N.E. Oliphant

Inventor
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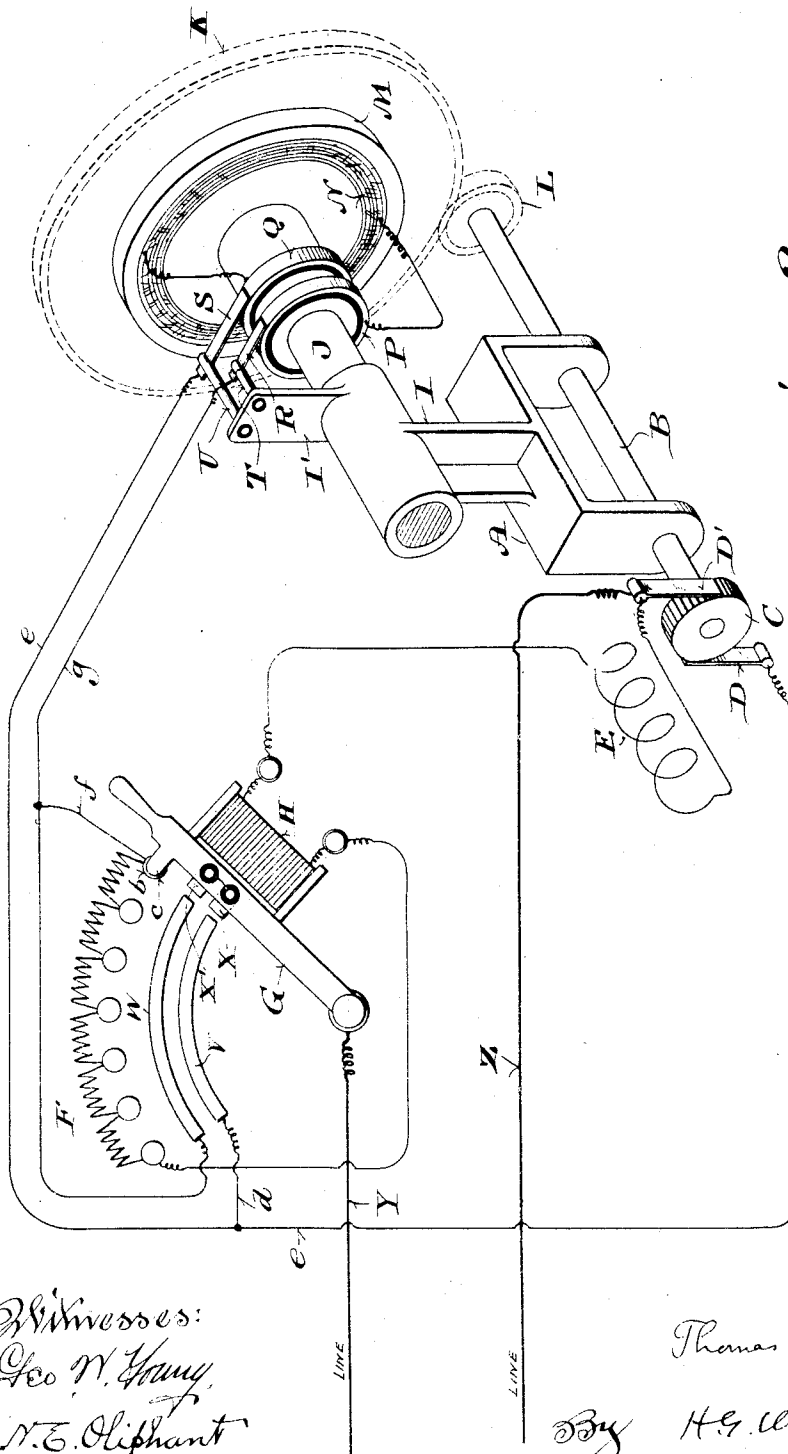
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UNITED STATES PATENT OFFICE.

THOMAS S. WATSON, OF MILWAUKEE, WISCONSIN.

ELECTRIC MOTOR.

SPECIFICATION forming part of Letters Patent No. 792,684, dated June 20, 1905.

Application filed March 21, 1905. Serial No. 251,219.

To all whom it may concern:

Be it known that I, THOMAS S. WATSON, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Electric Motors; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has especial reference to back-geared electric motors of the dynamo type; and its object is to provide for automatic start of machinery in connection with such a motor at the time said motor attains its full speed.

Hence said invention consists in what is hereinafter particularly set forth with reference to the accompanying drawings and subsequently claimed.

Figure 1 of the drawings represents a front elevation of one of my improved back-geared electric motors partly in section, and Fig. 2 a diagram of same in connection with line-wires.

Referring by letter to the drawings, A indicates the casing; B, the shaft; C, the commutator; D D', the commutator-brushes; E, the field-magnet, and F the starting resistance of an electric motor, and G indicates the rheostat-arm of the motor-controller. An electromagnet H is shown in the field-circuit of the motor for the purpose hereinafter specified; but it constitutes no part of my invention and may be omitted. In practice the motor-casing is made fast to any suitable support.

Integral with the motor-casing or fastened thereto by bolts or other suitable means is a bracket I, in which a shaft J has its bearing, and loose on this shaft is a gear-wheel K, that meshes with a pinion L, fast on the motor-shaft. The shaft J is the main one of machinery to be driven by the motor, and fast on said shaft is a disk M, having an annular flange that contains an electromagnet N and is shown as having taper fit in a corresponding groove in the adjacent side of the gear-wheel K, that constitutes the armature of said magnet. Contact-rings P Q are insulated on the hub of the disk M and wired to the electromagnet N in the flange of said disk. Op-

posing the rings are contact-brushes R S, and holders T U for these brushes are in insulated connection with an arm I' of the bracket I aforesaid. The brushes R S have electrical connection with contact-plates V W, over which electrically-connected brushes X X' of the rheostat-arm have travel, these brushes being insulated from said arm. A terminal b of the resistance is in electric connection with the brush R, and a lug c of the rheostat-arm has contact with said terminal when said arm is swung over into touch with the electromagnet H, by which it is held against automatic return, full current being then on the motor. Current being let on, the rheostat-arm G is moved from left to right to cut out the starting resistance from the motor, the starting-circuit being traced in on line-wire Y, said rheostat-arm, and resistance, wires f, g, plate W, brushes X' X, plate V, wires d, e, commutator-brush D, and commutator C, from whence it traces out on commutator-brush D' and line-wire Z, said motor being gradually speeded up, in proportion to the elimination of said resistance. When the rheostat-arm is swung its full limit to the right, its brushes X X' are out of contact with the plates V W and the motor-circuit is in on line-wire Y, said rheostat-arm, wires f, g, brush R, ring P, electromagnet N, ring Q, brush S, wire e, commutator-brush D, and commutator C, from which said current traces out on commutator-brush D' and line-wire Z, said electromagnet being energized to cause adherence of the gear-wheel K and disk M, the result being automatic start of the shaft J and machinery therewith at the instant the motor is run up to full speed.

The motor may support the shaft J or it may be suspended from said shaft, as found most convenient or desirable in practice, and it is within the scope of my invention to arrange the electromagnet N in the gear-wheel K instead of in the disk M, that clutches with said wheel.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An electric motor having its casing provided with a bracket, a shaft having bearing

in the bracket, a gear-wheel loose on the shaft and in mesh with a pinion fast on the motor-shaft, a disk fast on the former shaft and having clutch engagement with the gear-wheel,
5 an electromagnet carried by the disk and for which said gear-wheel constitutes an armature, and means controlling the motor and magnet, whereby when said motor is run up to full speed said magnet is automatically energized.
10

2. An electric motor having its casing provided with a bracket, a shaft having bearing in the bracket, a gear-wheel loose on the shaft and in mesh with a pinion fast on the motor-shaft, a disk fast on the former shaft, and having clutch engagement with the gear-wheel,
15 an electromagnet carried by the disk and for which said gear-wheel constitutes an armature, a motor-controller, and connections by which automatic energization of said magnet takes place when the rheostat-arm of the controller is adjusted to full-speed said motor.
20

3. An electric motor having its casing provided with a bracket, a shaft having bearing
25 in the bracket, a gear-wheel loose on the shaft and in mesh with a pinion fast on the motor-shaft, a disk fast on the former shaft and having clutch engagement with the gear-wheel, an electromagnet carried by the disk and for
30 which said gear-wheel constitutes an armature, contact-rings in insulated connection with said disks and electrically connected to the magnet, brushes opposing the rings and having insulated connection with said bracket,

a motor-controller, and connections by which
35 said brushes and magnet are automatically cut into the motor-circuit when the rheostat-arm of said controller is adjusted to cut out all of the starting resistance.

4. An electric motor having its casing provided with a bracket, a shaft having its bearing in the bracket, a gear-wheel loose on the shaft and in mesh with a pinion fast on the motor-shaft, a disk fast on the former shaft and having clutch engagement with the gear-wheel, an electromagnet between the gear-wheel and disk, and means controlling the motor and magnet, whereby when said motor is run up to full speed said magnet is energized to cause adherence of said gear-wheel and disk.
40 50

5. An electric motor, a shaft having its bearing in connection with the motor-casing, a clutch on the shaft comprising a normally loose gear-wheel in mesh with a pinion fast on the motor-shaft, a tight disk and an intermediate
55 electromagnet; and means controlling the motor and magnet, whereby when said motor is run up to full speed said magnet is energized to set the clutch.

In testimony that I claim the foregoing I
60 have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

THOMAS S. WATSON.

Witnesses:

N. E. OLIPHANT,
GEORGE FELBER.