

(No Model.)

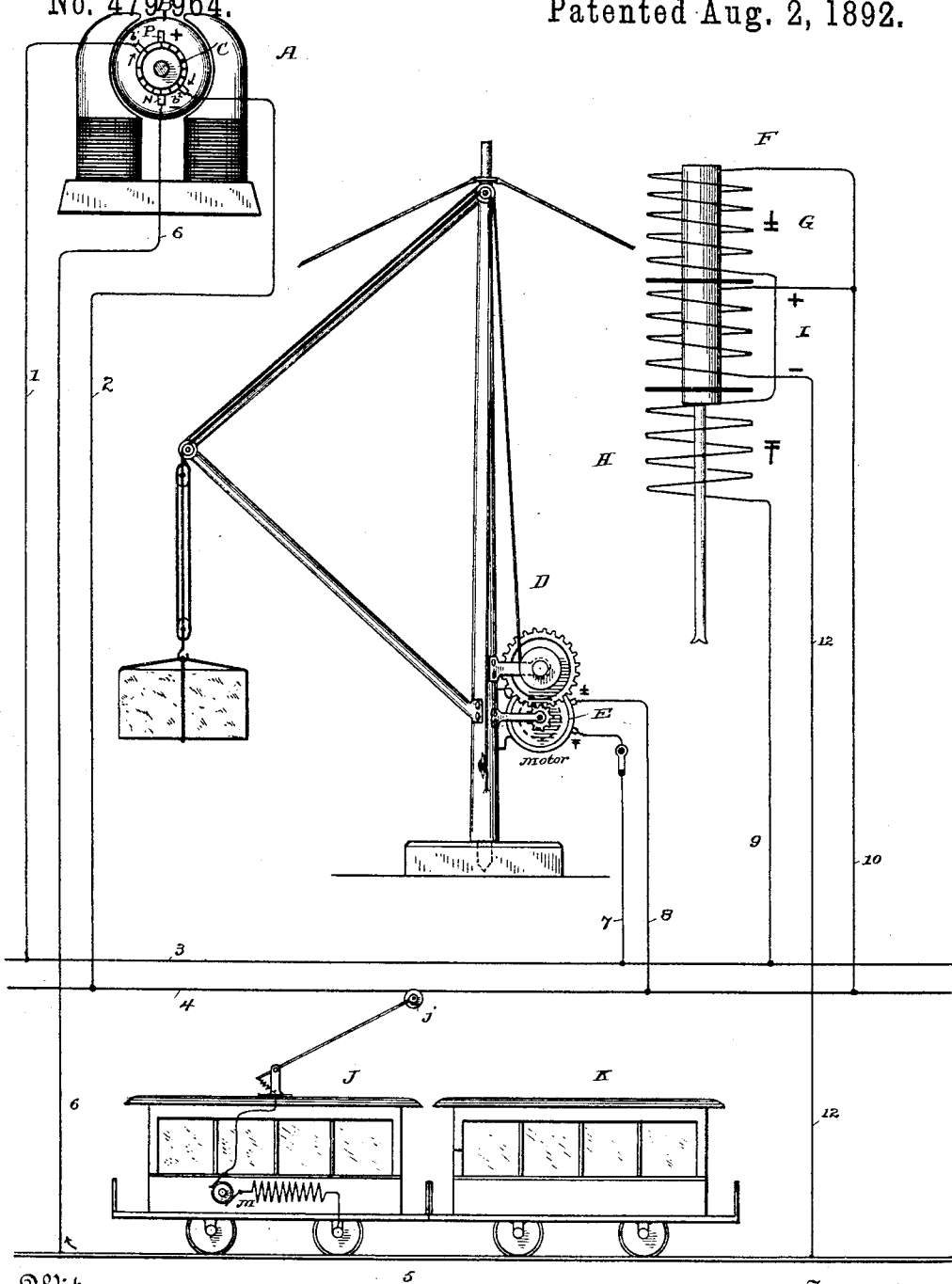
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SYSTEM OF DISTRIBUTING ELECTRIC CURRENTS.

No. 479,964.

Patented Aug. 2, 1892.



Witnesses

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UNITED STATES PATENT OFFICE.

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SYSTEM OF DISTRIBUTING ELECTRIC CURRENTS.

SPECIFICATION forming part of Letters Patent No. 479,964, dated August 2, 1892.

Application filed May 20, 1891. Serial No. 393,474. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. VAN DE-
POELE, a citizen of the United States, residing
at Lynn, in the county of Essex and State of
Massachusetts, have invented certain new
and useful Improvements in Systems of Dis-
tributing Electrical Currents, of which the
following is a description, reference being had
to the accompanying drawing, and to the let-
ters and figures of reference marked thereon.

My invention relates to new and useful im-
provements in the distribution of electric cur-
rents for the operation of mining and other
apparatus.

In my prior applications, Serial No. 388,565,
filed April 11, 1891, and Serial No. 382,877, filed
February 26, 1891, I have shown, described,
and claimed methods of supplying currents
for electric mining apparatus; but in both of
said applications the apparatus to be supplied
is shown and described as being all of the
same character, the object being to supply
electric currents of the proper character for
the apparatus in question. In the present
instance, however, the object is to supply cur-
rents of such character as will be capable of
operating a number of different types of ma-
chines, and, furthermore, to accomplish this
with the use of the smallest possible quantity
of copper in the conductors.

It will be understood that in a very great
many mining installations the objects of this
invention will be of great importance, and,
furthermore, that what is hereinafter de-
scribed will be commercially practical in a
great many instances.

An installation embodying the invention is
shown in the accompanying drawing and will
be hereinafter fully described, and referred
to in the appended claims.

The drawing is a view, partly in diagram
and partly in elevation, showing an arrange-
ment of circuits and apparatus embodying
my invention.

In said drawing, A is a continuous-current
dynamo-electric machine, which may be either
a generator or a counter-electro-motive-force
device supplied with current from some suit-
able source.

B is the armature, and C is the commutator. 50
The commutator C is provided with main
stationary brushes P and N and also has a
pair of moving commutator-brushes $b' b^2$,
which are arranged to be rotated or oscillated
about the said commutator by any desired 55
means—as, for example, in any of the differ-
ent methods set forth in my prior patents.
Conductors 1 2 extend from the moving
brushes $b' b^2$ to line conductors 3 4. Rails 5
of a tramway, which are of course to be prop- 60
erly connected at their extremities, are util-
ized as a third or return conductor, which is
connected by wire 6 with the stationary nega-
tive commutator-brush N.

It will be understood that in places where 65
there is no tramway and therefore no rail-
circuit available for use as a common return
a third line conductor will be employed in
place thereof. The present arrangement in-
cludes the tramway, but for the sake of illus- 70
tration only, since any other form of appara-
tus comprising a distinct type of electric mo-
tor would present similar electrical condi-
tions and therefore be within the scope of the
invention. 75

D represents a crane or hoist or other work-
ing device to the propulsion of which I have
applied an alternate-current motor E, which
is supplied with current through conductors
7 8, which are tapped into the line conduct- 80
ors 3 4, which receive their current through
the moving brushes $b' b^2$.

F represents a reciprocating electro-mag-
netic engine of the type shown, described, and
claimed in my patent, No. 451,786, dated May 85
5, 1891, and said engine comprises motor-coils
G H I, coils G H being in series with each
other and connected by conductors 9 10 with
the supply-conductors 3 4, which furnish said
coils with alternating currents having a de- 90
fined rise and fall and a frequency depend-
ing upon the rapidity of travel of the moving
brushes. The center coil I is operated by pul-
sating continuous currents and is connected
at one end by conductor 11 with conductor 10, 95
while its other terminal is connected by con-
ductor 12 with the rail-circuit 5, so that, as set
forth in my prior patent, the said coil I will

receive every other one of the alternating currents—that is to say, will be supplied with a pulsating intermittent current of constant direction.

5 J is a motor-car, and K is a trailer connected thereto.

j is a contact device carried by the car J and engaging the supply-conductor 4.

10 M is a motor upon the car J of the continuous-current type, one terminal of which is connected to the contact j and its other terminal through the running-gear of the car through the return-conductor 5. The motor M will therefore be supplied with currents in
15 a manner similar to the coil I in the engine F—that is to say, said motor will receive every other one of the alternating-current impulses sent to the circuit 3 4 through the moving brushes $b' b^2$. I find that a continuous-current motor can be operated perfectly well under
20 these conditions and with no detrimental results, since the mass of iron ordinarily employed in said motors is so great that the magnetism will not drop too far between impulses, and, in short, I am enabled to operate a continuous-current motor with intermittent pulsating currents with great success. It should be observed, however, that it is desirable in
25 any machine operated by other than an absolutely-steady current to laminate or subdivide the iron portions thereof, and the present is no exception to this rule. The motor E is an alternating-current motor of any known type, comprising, of course, divided iron through-
30 out.

Other apparatus might be operated by motors of the types herein set forth; but it is not deemed necessary to further illustrate the invention, since three distinct forms of motor
40 are herein shown, all supplied from a single source—viz, the machine A. Furthermore, in the installation illustrated but two copper conductors are carried to any distance from the machine, the third wire being the rails of
45 a tramway, thus presenting a simple, economical, and extremely useful system of distributing currents to mines or similar places where various types of electrical apparatus are to be operated and where it is of course
50 desirable to operate them all from one circuit if it can be done.

Various minor changes may be made in the details of the hereinbefore-described system without departing from the spirit or nature
55 of the invention.

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

1. A system of electrical distribution comprising a source of current of the continuous
60 type, means located at the source for dividing the current into pulsating currents of continuous direction and pulsating currents of alternating direction, circuit-conductors extending from said source, and electric motor
65 translating devices adapted to be operated by currents of different character in circuit

with and supplied with currents suitable to each directly from the source through part or all of the said conductors.

2. A system of electrical distribution comprising a source of current of the continuous type, means located at the source for dividing the current into pulsating currents of continuous direction and pulsating currents of
75 alternating direction, comprising one stationary and two moving commutator-brushes upon the commutator thereof, circuit-conductors extending from said brushes, and electric-motor translating devices adapted to be operated
80 by currents of different character in circuit with and supplied with currents suitable to each directly from the source through part or all of the said conductors.

3. A system of electrical distribution comprising a source of current of the continuous type, means for changing the continuous current into currents of different character, comprising stationary and moving commutator-brushes upon the commutator thereof, circuit-conductors extending from said brushes,
90 and alternating-current, continuous-current, and combined-current translating devices in circuit with said conductors, substantially as described.

4. A system of distributing electrical currents, which comprises an electro-dynamic machine of the continuous-current type, stationary and moving brushes upon the commutator thereof, and working circuits extending
100 from said brushes, and supplied, respectively, with pulsating currents of alternating and continuous direction, and translating devices of the continuous, alternating, and combined current types in circuit with and operated
105 by the several conductors, substantially as described.

5. A system of distributing electrical currents, which comprises a continuous-current electro-dynamic machine, stationary brushes
110 upon the commutator thereof, an auxiliary set of commutator-brushes adapted to be moved upon said commutator toward and away from the stationary brushes, line conductors connected with and supplied by the
115 moving brushes with alternating currents having a defined rise and fall, and a third conductor connected with one of the stationary brushes, alternating current-translating devices in circuit between the alternate-current
120 conductors, continuous-current devices in circuit between the third conductor and one of the alternating conductors, and translating devices adapted to be energized by both alternating and direct currents placed in circuit
125 with both sets of conductors, substantially as described.

6. A system of electrical distribution comprising a source of continuous current, stationary brushes upon the commutator thereof,
130 moving brushes also upon said commutator, and a working circuit extending from said moving brushes and supplied thereby with alternating currents having a defined rise and

fall, an electric-railway track connected to
one of the stationary brushes and forming a
third conductor, a motor-car upon the track,
provided with a continuous-current motor,
5 traveling connections between one side of the
alternating-current circuit and the track,
whereby the car-motor is supplied with in-
termittent pulsating currents of continuous
direction, stationary translating devices of the
10 alternating-current type, and stationary trans-
lating devices of the alternate-current type

in circuit with the alternate-current conduct-
ors, and a translating device or devices of the
combined-current type in circuit with all of
the conductors, substantially as described. 15

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

CHARLES J. VAN DEPOELE.

Witnesses:

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