(No Model.)

H. B. PORTER.

ELECTRICAL MOTOR.

No. 523,995. Patented Aug. 7, 1894.

Fig. 1.

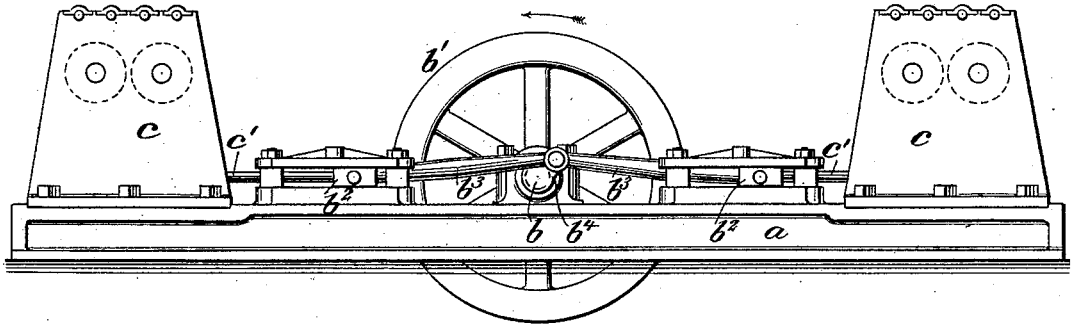


Fig. 2.

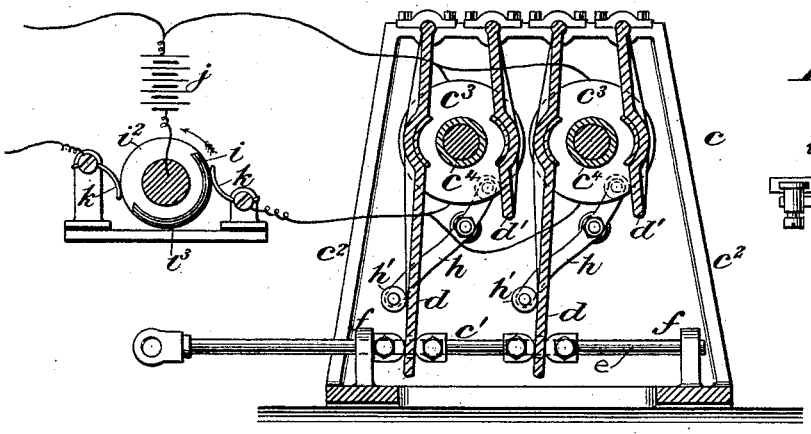


Fig. 4.

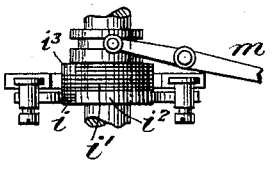
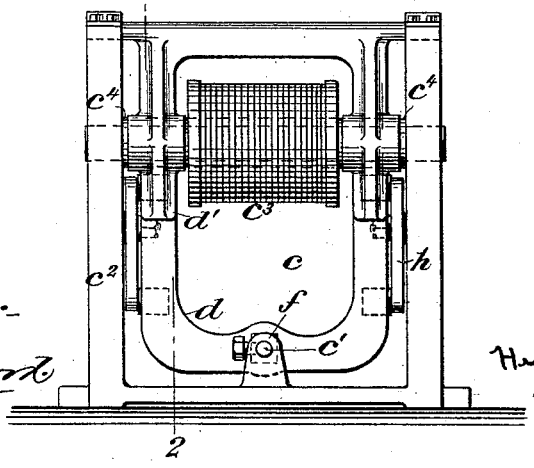


Fig. 3.



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UNITED STATES PATENT OFFICE.

HENRY B. PORTER, OF NEW YORK, N. Y.

ELECTRICAL MOTOR.

SPECIFICATION forming part of Letters Patent No. 523,995, dated August 7, 1894.

Application filed December 5, 1893. Serial No. 492,831. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. PORTER, a citizen of the United States, and a resident of the city, county, and State of New York, have invented a new and useful Electrical Device or Mechanism for Producing and Transmitting Power, of which the following description, taken in connection with the drawings herewith accompanying, is a specification.

My invention has for its object to provide an electrical motor of cheap and simple construction having an increased motive power, and the invention consists in the peculiar construction and arrangement of parts hereinafter set forth in detail and pointed out in the claims.

Referring to the accompanying drawings:—Figure 1, represents a pair of my improved motors and a driving shaft with a fly wheel thereon, showing a convenient method of securing connection between said motors and a driving shaft to communicate motion to the latter. Fig. 2, is a vertical section of the motor through line 2—2 of Fig. 3, also showing a cross-section of the driving shaft with a device for alternately changing the current from one motor to the other. Fig. 3, is an end elevation of the motor, and, Fig. 4, is a plan view of the driving shaft and the current regulating device shown in Fig. 2, also showing a shifter rod for adjusting the latter.

To explain in detail,—a represents a bed or support upon which the motors, driving shaft and several connecting parts are supported; b, a driving shaft having one of its bearings on said bed; b' a fly-wheel on said shaft; b^2, b^2 reciprocating sliding-heads; b^3, b^3 rods connecting said sliding heads with a crank-arm b^4 on the shaft b; c, c, my improved motors and c' c' reciprocating rods having connection with said sliding heads b^2 b^2 and operated by the motors to reciprocate said head and operate the driving shaft through the medium of the connecting parts as described.

The construction of my improved motor is as follows:—c^2 represents the supporting frame or stand; c^3 c^3 two helices which are formed with their cores c^4 c^4 projecting at each end thereof for the attraction of the armature, and are supported by a suitable rod of non-conducting material passing through the same and extending within suitable seats in the frame as more clearly shown in Fig. 3 to support the magnets in their proper position.

A double armature, consisting of two swinging frames d and d' pivoted to the upper end of the frame as shown and formed in a manner to engage with the core at each end of the helix and upon opposite sides thereof, is applied to each magnet. One of the parts d of the armature is of greater length than the other and at or near its end engages with a horizontally arranged rod e, which is loosely supported to slide in suitable bearings f, in order to reciprocate the same and operate the connecting head b^2 as shown, or other moving part of a machine or other device to which it might be attached. This engaging arm d of the armature receives the combined motive power from the two parts of the latter when operated or attracted toward the core, by means of a pivoted lever h, which, at its opposite ends is provided with anti-friction rolls h' h' thereon adapted to engage with the corresponding face or surface of the two parts d and d of the armature, in order that the same may be caused to move in unison when moving toward or from the core and one be caused to move the other alternately as the same are moved in opposite directions as will be readily understood; the short arm d' thus communicating its power to the opposite arm d by means of this said lever h.

Referring to Figs. 2 and 4, I have shown a device or means for automatically changing the current from one motor to the other, when two are employed for operating or rotating a driving shaft, in order that each may alternately act to draw the reciprocating connecting rods back and forth and rotate the connecting shaft. This device consists of a sleeve i located upon said shaft in a manner to rotate therewith and also slide horizontally thereon, the surface of which is divided into three sections, the central section i' being of non-conducting material and the end sections being formed of conducting and non-conducting material as shown at i^2 and i^3, each forming half the circumference of the sleeve. The circuit from the battery j is alternately changed from one motor to the other for the purpose as hereinbefore set forth, by means of two brushes k, k, forming one end of the circuit wires, which engage with said sleeve

i and alternately make and break the circuit as the conducting or non-conducting surface of the sleeve is in contact with the same during the revolution of the shaft, as will be readily understood.

The operation of the shaft may be stopped or reversed by shifting the sleeve on the shaft to bring the proper surface into contact with the brushes, by means of a pivoted rod *m* which engages therewith.

Having thus set forth my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. An electrical motor, consisting of a magnet, an armature consisting of two pivoted arms or frames operating in combination with said magnet from opposite sides thereof, and a pivoted lever operating in combination with the parts of said armature whereby the motive power from one of said parts may be communicated to the other, in a manner substantially as described and for the purpose set forth.

2. An electrical motor, consisting of a magnet, a double armature consisting of two pivoted arms or frames operating in combination with said magnet from opposite sides thereof, a sliding rod having connection with one of said parts of the armature, and a pivoted lever operating in combination with said armature whereby one of its parts may receive the motive power from the other, substantially as described and for the purpose set forth.

3. In combination with a rotating shaft and a pair of electrical motors provided with reciprocating rods operated thereby and connected with said shaft through the medium of a crank-arm thereon, of a sleeve on said shaft having its perimeter divided into two sections formed of conducting and non-conducting material respectively, and two brushes forming the end of the circuit wires from the two motors, having contact with said sleeve whereby the current may be alternately changed from one motor to the other, substantially as described and for the purpose set forth.

4. In combination with a rotating shaft and a pair of electrical motors provided with reciprocating rods operated thereby and connected with said shaft through the medium of a crank-arm thereon, of a movable sleeve on said shaft having its surface divided into sections of conducting and non-conducting material substantially as set forth, and means for engaging with and adjusting said sleeve on its shaft, substantially as described and for the purpose set forth.

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