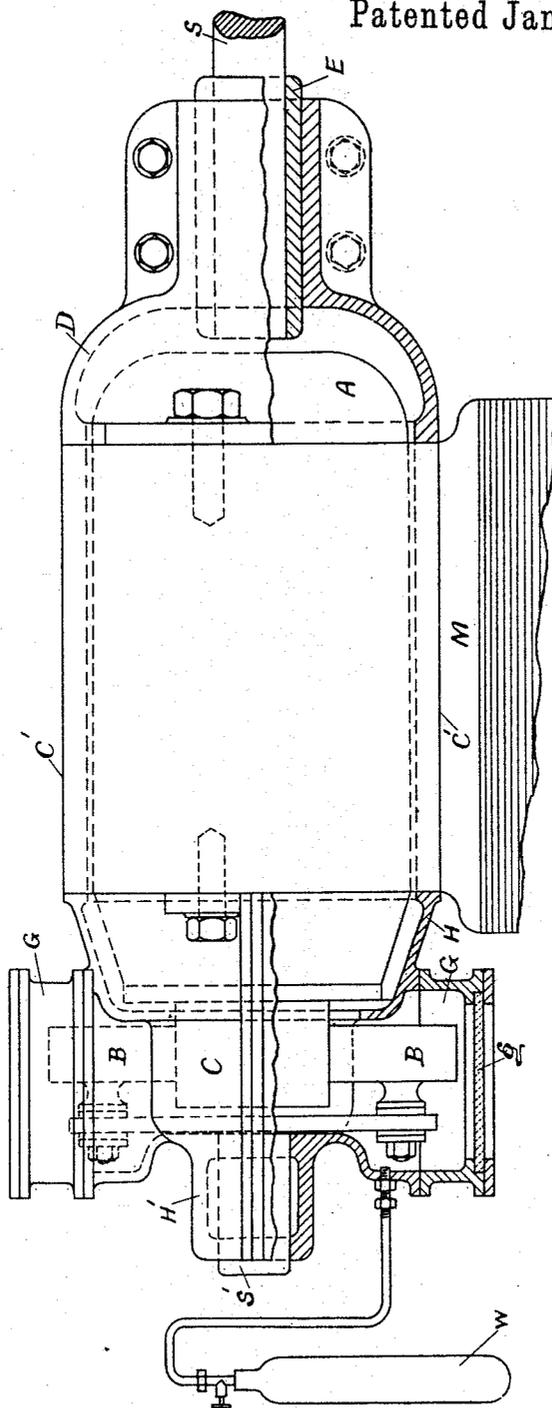


(No Model.)

W. T. GOOLDEN & L. B. ATKINSON.
DYNAMO ELECTRIC MACHINE AND MOTOR.

No. 489,302.

Patented Jan. 3, 1893.



Attest
Wm. F. Hall.
Henry E. Cooper.

Inventors
W. T. Goolder
L. B. Atkinson
by Richards & Co
Attys

UNITED STATES PATENT OFFICE.

WALTER T. GOOLDEN AND LLEWELYN B. ATKINSON, OF LONDON, ENGLAND.

DYNAMO-ELECTRIC MACHINE AND MOTOR.

SPECIFICATION forming part of Letters Patent No. 489,302, dated January 3, 1893.

Application filed August 18, 1891. Serial No. 403,072. (No model.) Patented in England September 19, 1887, No. 12,676.

To all whom it may concern:

Be it known that we, WALTER THOMAS GOOLDEN and LLEWELYN BIRCHALL ATKINSON, residing at London, England, have invented an Improvement in Dynamo-Electric Generators and Motors, (which has been patented to us in Great Britain under date of September 19, 1887, No. 12,676,) of which the following is a specification.

This invention relates to improvements in dynamo-electric generators and motors, and has for its object the providing of means whereby the whole of the moving parts of such machines together with the brushes and their holders are protected against the effects of the weather and are thus rendered suitable for use on board ship. The moving parts are also protected from dust and allow of machines so constructed being safely worked while in the presence of explosive gases, such as obtain in coal mines, without the risks attending upon the use of such machines as heretofore constructed, and when working under the like conditions.

The invention consists in applying to dynamo-electric generators or motors a casing or covering preferably of non-magnetic metal in the form as hereinafter particularly described. The casing, starting at the pole pieces or magnet bars, is continuous with the pedestals carrying the shaft or the casing, may be so constructed as to form the carriers of the bearings or brushes in which the shaft revolves. The casing may be made in parts or be provided with openings to allow of ready access to the interior parts for examination, while in order to admit of the working of the brushes and commutators being inspected windows of glass, horn, or other suitable substance are provided. The spaces between the pole pieces and the periphery of the armature are also inclosed by suitable coverings so that the whole armature, commutator, and brushes, shall be completely incased as a protection against atmospheric changes, or to exclude explosive gases, according to the situation in which the machine is employed.

When specially designed for use with machines intended to be used in coal mines or other dangerous places, the covering may consist of two or more casings arranged as outer,

inner, and if necessary intermediate coverings, provision being made to maintain a circulation of air or other cooling medium, between the outer and inner casings by which the heat, radiated from the armature and other working parts would be conveyed away.

To prevent any flame that might arise from the brushes doing injury to the internal parts of the machine when working in a gas impregnated atmosphere, the chamber in which the armature revolves may be provided with a pipe leading to a vessel charged with carbonic acid gas or other non supporter of combustion, a stop cock serving to control the supply of the chamber. Or the air caused to pass between the casings for the purpose of ventilation may be impregnated with some such non-supporter of combustion.

Though described as being applied to machines where it is desired to exclude the atmosphere or gases, it will be understood that the hereinbefore described invention is also equally applicable to motors working tram-cars or in other positions where dust or dampness may be encountered.

Having thus set forth the nature of our invention we will now proceed to more particularly describe how the same is carried into effect by reference to the accompanying drawing.

The figure shows an arrangement partly in elevation and partly in section in which the casing is so constructed as to include the bearings in which the shaft or spindle rotates, and a gas bottle supplying CO₂ at pressure is attached thereto.

In the drawing the casing C' C' is constructed in any desired number of parts bolted together so as to insure the bolts being airtight and is suitably secured to the top of the magnet bars M M and the pole pieces in which the armature A revolves.

The casing, made of any suitable non-magnetic metal, or alloy, such as gun metal, passes between the magnet bars, to each of which it is rigidly, and air tightly secured, and thus completely envelops the armature, while the prolongation at D carrying the bearing E, in which the shaft S rotates, prevents the ingress of air to this end of the armature. Similarly the brushes B B and commutator C are pro-

5 tected from the effects of the atmosphere, or danger, when working in a gas impregnated atmosphere, by the box-like receptacles G G secured by being bolted to the flanged pro-
 10 longation H of the casing C' C', and therefore removable at will for adjustment of the brushes. The receptacles G G are provided with glass or other windows *g* through which the working of the brushes B B and commu-
 15 tator C may be readily seen, while the prolongation H is continued to H' so as to form a bearing for the end S' of the shaft or spindle.

The interior of the case C' C' may be placed in communication, by means of suitable pipes
 15 and stop cocks, with any source, from whence air, or, if required, a non-supporter of combustion, such as carbonic acid gas, may be supplied. A carbonic acid gas receptacle W
 20 is shown in the drawing.

Having now particularly described and as-
 20 certained the nature of our said invention and in what manner the same is to be performed we declare that what we claim is:—

1. In combination, the armature, the com-
 25 mutator, and brushes therefor, the air tight non-magnetic casing surrounding the armature, and a jointed supplemental portion of

the casing surrounding the commutator and the brushes, and carrying the bearings, whereby access to said commutators may be had
 30 without removing the main casing, substantially as described.

2. In combination, the armature, the com-
 35 mutator, and brushes therefor, fixed on an adjustable brush carrier, the supplemental extension of said casing surrounding the com-
 40 mutator and brushes, and a box like receptacle G G removably jointed to said supplemental casing, whereby access may be had to the brushes substantially as described.

3. In combination, the armature, the com-
 45 mutator and brushes therefor, the main airtight casing surrounding the armature, the supplemental extension surrounding the com-
 50 mutator and the transparent windows in said extension substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WALTER T. GOOLDEN.

LLEWELYN B. ATKINSON.

Witnesses:

TOM. M. TULEY,

CHARLES F. ARROWSMITH.