

**HOW TO MANAGE THE
DYNAMO: A HANDBOOK FOR
SHIP ENGINEERS, ELECTRIC LIGHT
ENGINEERS, AND ELECTRO-
PLATERS**

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How to Manage the Dynamo: A Handbook for Ship Engineers, Electric Light enginners, and electro-platers by S. R. Bottone

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©

HOW TO MANAGE THE DYNAMO

A HANDBOOK

FOR

*SHIP ENGINEERS, ELECTRIC LIGHT ENGINEERS,
AND ELECTRO-PLATERS*

BY

S. R. BOTTONE

AUTHOR OF "THE DYNAMO, HOW MADE"; "ELECTRO MOTORS"; "ELECTRIC BELLS";
"ELECTRICAL INSTRUMENTS"; "A GUIDE TO ELECTRIC LIGHTING"; ETC., ETC.

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PREFACE.

THE following pages are intended specially for the use of those who, being thoroughly good engineers and capable of managing ship or land engines, find themselves suddenly called upon to undertake the management of the dynamo of an electric light or electro-plating installation. The instructions given apply more particularly to the dynamo, its management, its defects, and their remedies. No attempt will be made at explaining the theoretical or constructional details; *these* will be found in other works by the author. In order to facilitate the comprehension of such technical terms as are absolutely requisite in a work of this kind, a table of definitions is subjoined, and will be found at the end of the book. To this table the reader is referred for explanation of special terms.

S. BOTTONE.

HOW TO MANAGE THE DYNAMO.

§ A. A dynamo is a machine, by the aid of which energy, in the shape of motion, is transformed into energy in the form of electricity. Although the forms given to dynamos are many, yet the essential portions are in all very much alike. They consist in (*a*) a fixed mass of iron wound with many turns of insulated copper wire, which, when the machine is working, becomes powerfully magnetic, and therefore called the field magnets; (*b*) a rotating mass of iron also wound with insulated copper wire, which generates a current when rotated between the poles of the aforesaid field magnets, and which is called an armature; (*c*) a ring of two or more sections of brass, copper, or phosphor bronze, each one of which is separated from its neighbour by some insulating substance, which ring, being in connection with the ends of the wires of the armature,

collects the electricity generated and transmits it to (d) the brushes, that consist in strips of copper supported on insulated holders, which strips press upon the sections of the ring of the collector. In connection with these essential portions we have the *shaft* or *spindle* which carries the revolving armature; the standards and bearings which support the shaft and the pulley, by means of which motion can be imparted to the armature. Fig. 1 illustrates a typical

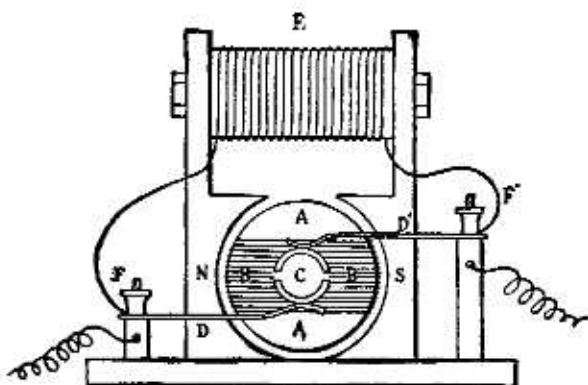


FIG. 1.

form of dynamo in which E is the fixed mass of iron or field magnets wound with insulated wire, of which the pole pieces (also in iron) N and S are but prolongations; AA is the armature or revolving

iron portion, coiled with the wire BB, the ends of which connect to the collector or commutator C; D and D' are the brushes which convey the current

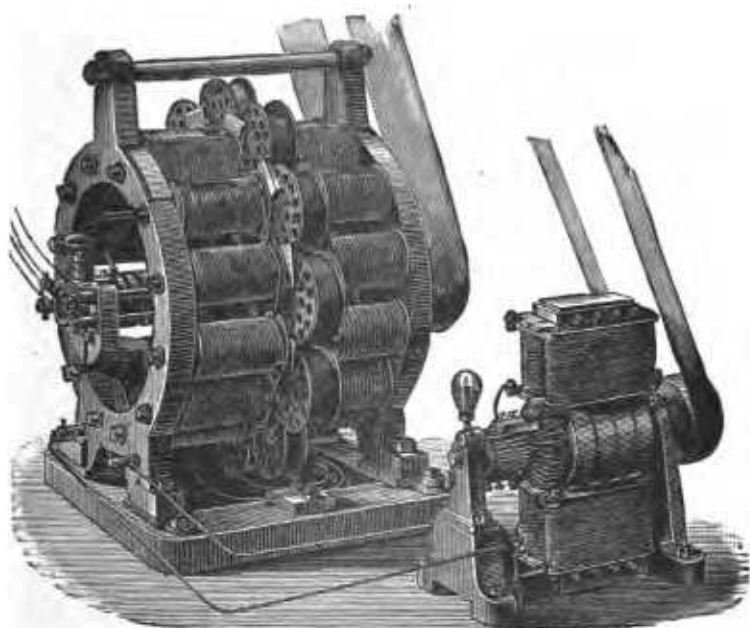


FIG. 2.

from the collector to the terminals F and F'. Dynamos may be divided into four classes, namely: 1st. Those in which the field magnets are magnetised by a current supplied from an external source. These