

(No Model.)

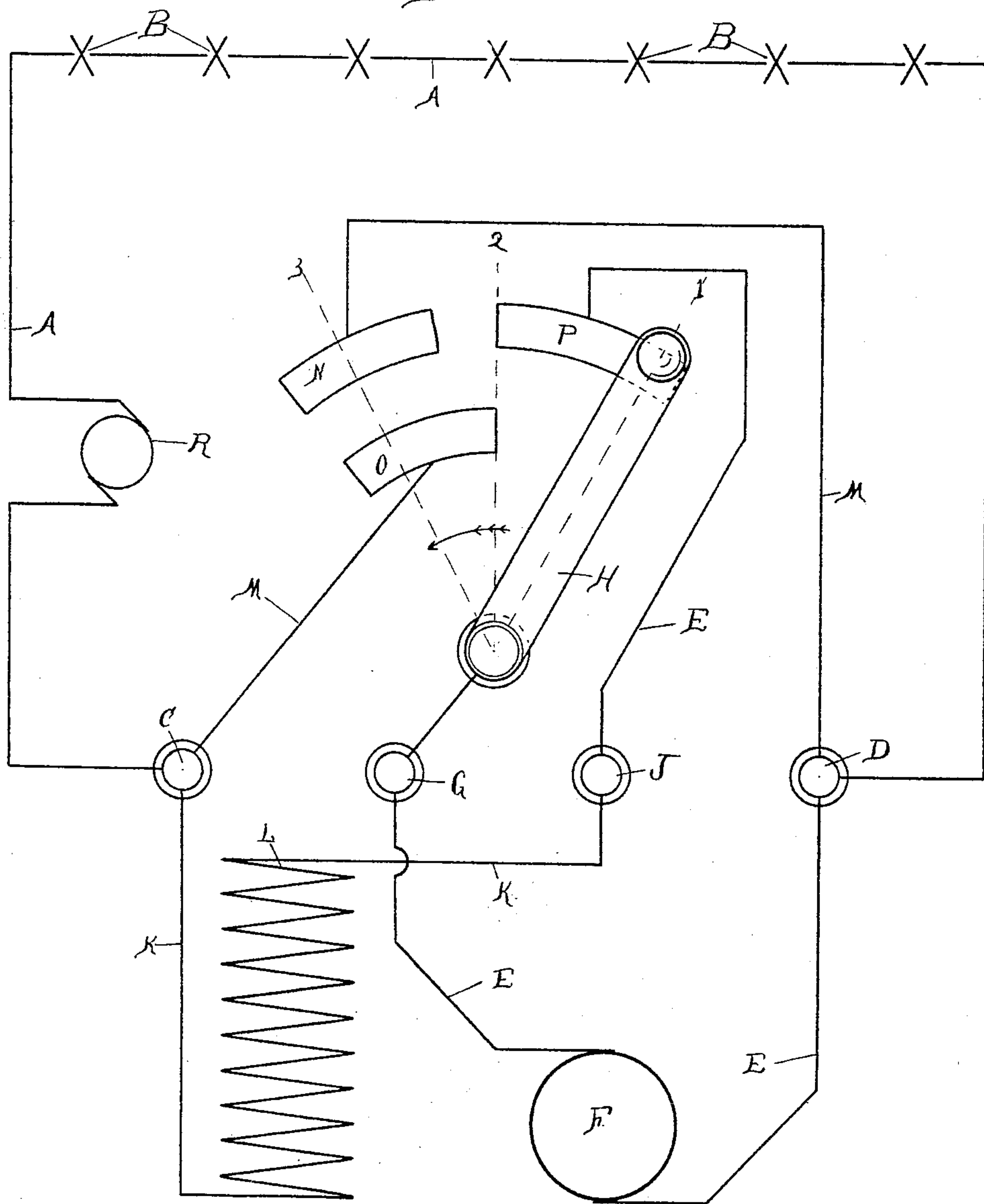
2 Sheets—Sheet 1.

N. VAN DENBURGH & F. H. LOVERIDGE.
MEANS FOR SWITCHING GENERATORS OR MOTORS IN OR OUT OF CIRCUIT.

No. 494,608.

Patented Apr. 4, 1893.

Fig. 1.



Witnesses

Virginia Wiley

Walter J. Smith

Inventors

Nathan Van Denburgh

Frederick H. Loveridge

by Francis W. Parker,
Attorney.

(No Model.)

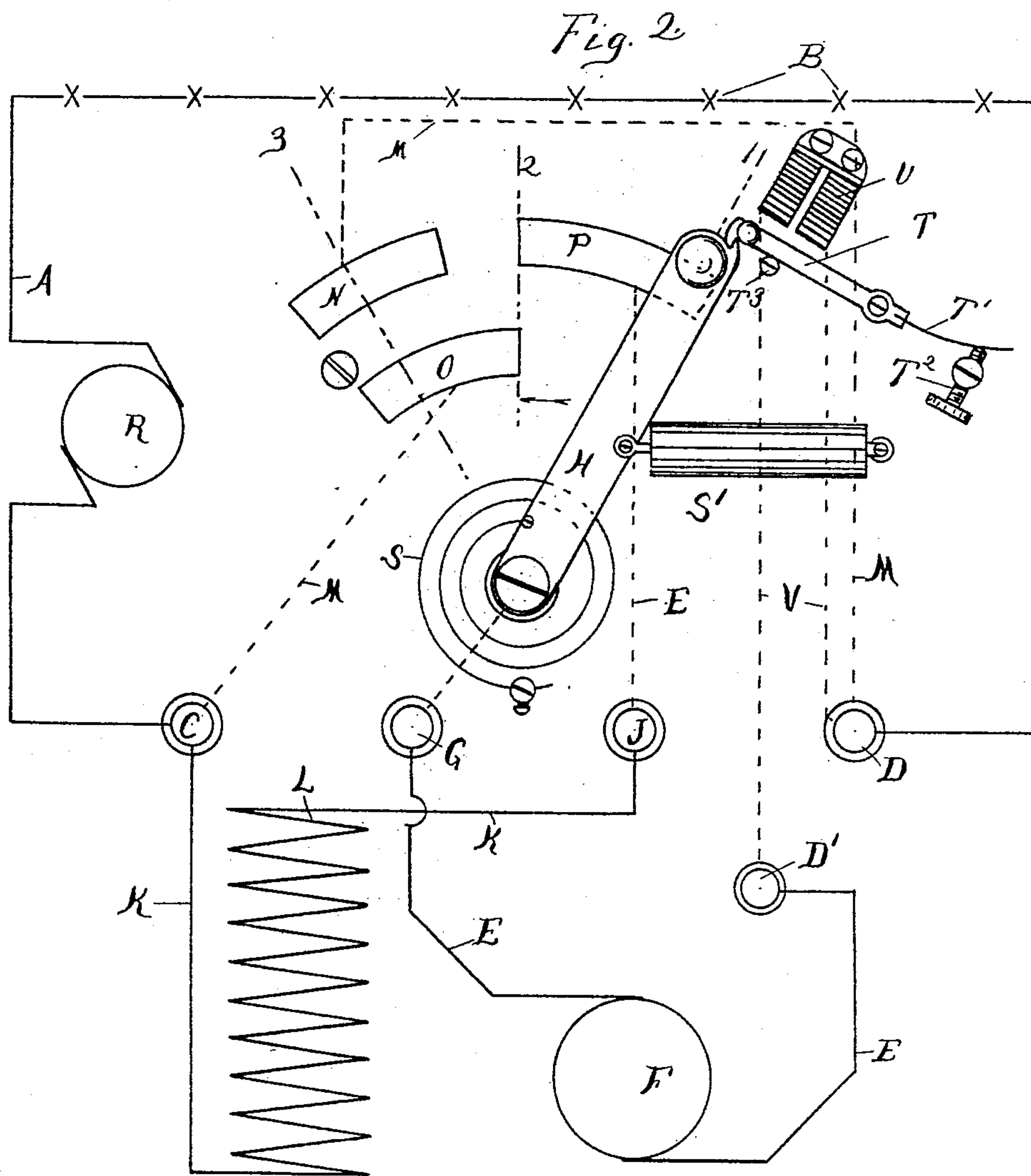
2 Sheets—Sheet 2.

N. VAN DENBURGH & F. H. LOVERIDGE.

MEANS FOR SWITCHING GENERATORS OR MOTORS IN OR OUT OF CIRCUIT.

No. 494,608.

Patented Apr. 4, 1893.



WITNESSES

Virginia Wiley

Walter J. Gunthorp.

Inventors

Nathan VanDenburg
Frederick H. Lovelidge
by Brauce W. Parker,
Attorney.

UNITED STATES PATENT OFFICE.

NATHAN VAN DENBURGH AND FREDERICK H. LOVERIDGE, OF CHICAGO,
ILLINOIS.

MEANS FOR SWITCHING GENERATORS OR MOTORS IN OR OUT OF CIRCUIT.

SPECIFICATION forming part of Letters Patent No. 494,608, dated April 4, 1893.

Application filed February 23, 1892. Serial No. 422,563. (No model.)

To all whom it may concern:

Be it known that we, NATHAN VAN DENBURGH and FREDERICK H. LOVERIDGE, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Means for Switching a Generator or Motor In or Out of Circuit and Without Breaking the Continuity of Said Circuit, of which the following is a full, clear, and exact specification.

Our invention relates to a device for switching a generator or motor in or out of circuit and without breaking the continuity of said circuit. It is illustrated in the accompanying drawings wherein,

Figure 1 is a diagrammatic view of the dynamo circuits and switch. Fig. 2 is a similar view with an automatic switch operating device associated therewith.

A is the main or working circuit having the lamps B B and the machine terminals C D.

E is the armature circuit which passes from terminal D through armature F to switch terminal G, thence to a pivoted switch arm H and thence to the field terminal J.

K is the field circuit from terminal C to terminal J passing about the field magnet L.

N is a circuit from terminal C to terminal D and including the two contact points N O, the circuit being completed when these points are connected by the switch.

P is a contact plate connected with the conductor E or armature circuit and in the path of the switch H.

R may be a motor in series with the lamps.

S is a spiral spring tending to draw the switch arm H over to the third position or to the left as indicated in Fig. 2.

S' is a retarding device to prevent too great rapidity in this motion. The switch arm is normally locked by the catch T held in engagement therewith by the spring T' bearing against the adjustable set screw T².

T³ is a stop.

U is a magnet to which the catch T serves as a movable armature.

V is a circuit to such magnet leaving the terminal D and returning to the terminal D'.

The arrangement, position, size and proportion of the parts are not necessarily as

shown, but may be varied without departing from the spirit of our invention.

The use and operation of our invention are as follows: Assuming a dynamo operating at full load to supply the lamps B the parts will be in the position shown in full lines and the switch will be in position 1 marked with a dotted line. If now it should be desired for any reason to cut the dynamo out or to stop the action of the same it is accomplished by first moving the switch into position 2 as indicated by the dotted lines where its extremity will be in contact with plate O and plate P. By this means the field magnet is short-circuited as a complete circuit is made from switch to terminal G through armature terminal D, exterior circuit terminal C, conductor M, contact O and switch. At the same time the field magnet L will remain in the circuit from terminal C, over conductor M, contact O, switch H, contact P, conductor E, binding post or terminal J, conductor K and field magnet L. The switch should remain in this position for a moment or until the slight sparking begins at the brushes, when it should be quickly moved to the third position marked by the dotted line 3. This motion by rupturing the contact made from piece O to piece P by switch H opens the field magnet circuit and at the same time short-circuits the armature when the machine may be left and it will cease its action without dangerous sparking at the brushes.

Referring to Fig. 2 the operation is as follows: Whenever the current reaches an abnormal condition the magnet U will be energized to such an extent as to withdraw the armature T whereupon the action of the spring S will move the switch toward the left and this motion will be so far retarded by the action of the retarding device S' that it will pass slowly across the second position and to the other position so as to accomplish substantially the result indicated above. The lamps B B are operated from the dynamo having the armature F and field magnet L, and this same dynamo may operate other translating devices, as for example, the motor R.

We claim—

1. The method of cutting out a dynamo electric machine from operation which consists in

first cutting the field magnet out of the main circuit and into a local circuit, and then cutting the armature out of the main circuit and into a local circuit.

5 2. The method of cutting out a dynamo electric machine from operation which consists in first cutting the field magnet out of the main circuit and into a local circuit, and then cutting the armature out of the main circuit and
10 into a local circuit and then, or simultaneously with the last action, opening the local field magnet circuit.

3. The combination of a main operating circuit including the armature and field magnets
15 with a local circuit including only the armature and another local circuit including only the field magnet and suitable terminals for such circuits and a circuit controller whereby both the armature and field magnet may be
20 cut out of the working circuit each into its respective local circuit.

4. The combination of a dynamo electric machine having a local armature with a local

field magnet circuit and a main circuit including both field magnet and armature with terminals for said circuits consisting of three
2 plates and a moving switch arm adapted to engage one of the said plates and then by successive movements to engage the plates in successive pairs.

5. The combination of a main operating circuit including the armature and field magnets with a local circuit including only the armature and another local circuit including only the field magnet and suitable terminals for
3 such circuits and a circuit controller whereby both the armature and field magnet may be cut out of the working circuit each into its respective local circuit, and an automatic device for operating such circuit controller when
40 the current becomes abnormal.

NATHAN VAN DENBURGH.
FREDERICK H. LOVERIDGE.

Witnesses:

WALTER J. GUNTROP,
VIRGINIA WILLEY.