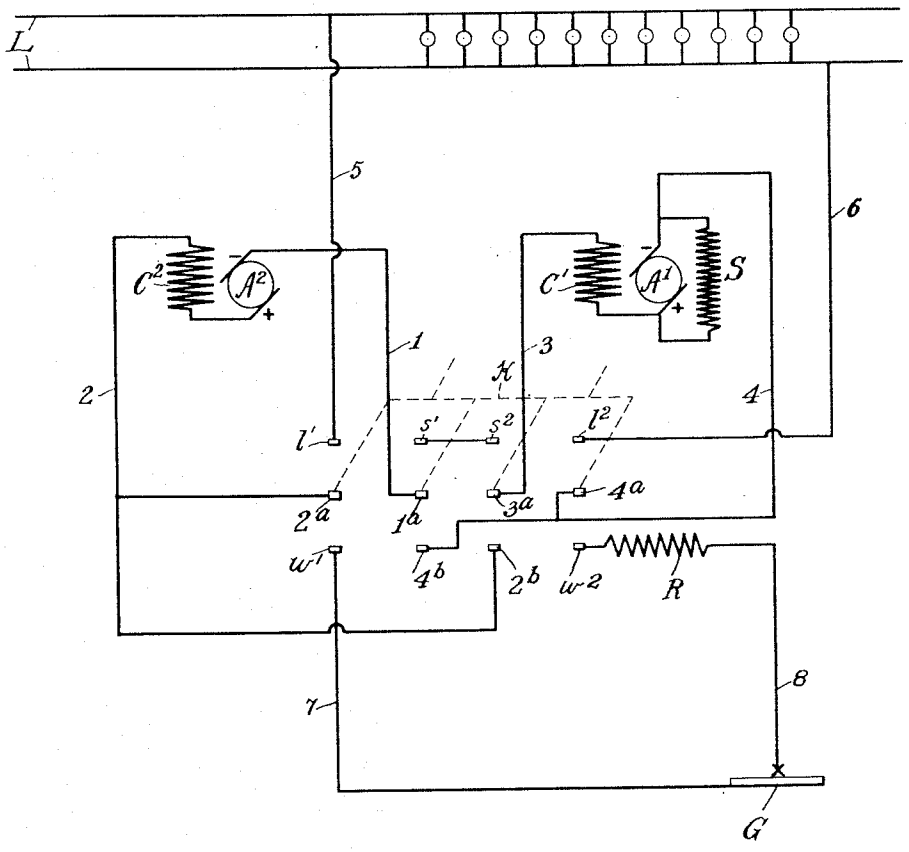
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ELECTRIC GENERATOR

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JOHANNES KJEKSTAD, OF BROOKLYN, NEW YORK.

ELECTRIC GENERATOR.

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To all whom it may concern:

Be it known that I, JOHANNES KJEKSTAD, a subject of the King of Norway, residing at the city of New York, in the borough of Brooklyn and State of New York, have invented certain new and useful Improvements in Electric Generators, of which the following is a full, clear, and exact description.

My invention relates to electric generators and an object of my invention is to provide a generator which is capable at full load capacity of satisfying the current and wattage requirements of different circuits. For example, my invention has useful application to a system including coordinated electric lighting and electric arc welding circuits, and contemplates a generator capable of supplying current alternately to the two circuits and operating at full capacity under both circumstances. For arc welding a relatively high amperage at low voltage is required, while for lighting the voltage required is relatively high with a relatively low amperage capacity.

In order to adapt my generator to supply current and voltage of either value, I split up the armature winding into two parts, the current capacity of each of which is that of the lighting circuit, and collect the current and potential generated in the two parts separately and provide suitable switching means for conveniently connecting the collectors either in series or in parallel. The series field winding is similarly split, one part being in series with each portion of the armature winding. The shunt field winding is energized from one of the collector members. The switching means preferably comprise a number of stationary contacts suitably connected to the various terminals and a double throw switch or the equivalent co-operative with the contacts to effect in its different positions the connection desired, for instance to connect the collector members in series into the lighting circuit or in parallel into the welding circuit.

In the drawing, I have shown a diagram of a system employing my invention.

The generator may have a standard frame and standard field and armature coils and cores. The armature has two commutators A' and A^2, one at each end of the armature, and half of the armature coils are connected to each commutator. The compound field coils C' and C^2 are in series with the respective parts of the armature winding, and the shunt field coils S are connected across the brushes of one commutator. In the circuit arrangement shown there are twelve stationary contacts arranged in three rows of four each, and a four pole double throw knife switch K in one position connects the intermediate contacts with the corresponding upper contacts, and in another position connects the intermediate contacts with the corresponding lower contacts. The negative brush of the commutator A^2 is connected by the lead 1 to the intermediate contact 1^a, and the positive brush is connected by the lead 2 to both the intermediate contact 2^a and the lower contact 2^b. The positive brush of the commutator A^1 is connected by the lead 3 to the intermediate contact 3^a, and the negative brush is connected by the lead 4 to both the intermediate contact 4^a and the lower contact 4^b. The two terminals of the lighting circuit are connected through leads 5 and 6 to the upper contacts $1'$ and 1^2, respectively, while the leads 7 and 8, which are connected respectively with ground and the movable electrode of the welding circuit, are connected to the lower contacts w' and w^2. The two upper contacts s' and s^2 are electrically connected and oppose the intermediate contacts 1^a and 3^a.

Assuming that there is developed at each commutator $62\frac{1}{2}$ volts and 80 amperes, it follows that when they are connected into a circuit in series they will give 80 amperes at 125 volts pressure, and that when they are connected in parallel they will give 160 amperes at $62\frac{1}{2}$ volts.

When the switch K is in its upper position the two commutators are connected into the lighting circuit in series, the circuit being as follows: from the positive

brush of commutator A′, wire 3, contacts 3^a, s^2, s', and 1^a, wire 1, commutator A^2, wire 2, contacts 2^a and 1′, wire 5, lighting circuit L, wire 6, contacts 1^2 and 4^a, wire 4 to the negative brush of the commutator A′, and through armature A′ to the starting point.

When the switch K is in its lower position the commutators are connected into the welding circuit in parallel, the two parallel circuits being as follows: from the positive brush of commutator A^2, wire 2, contacts 2^a and w', wire 7, ground G, pencil and wire 8, stabilizing resistance R, contacts w^2 and 4^a, wire 4, contacts 4^b and 1^a, and wire 1 to the negative brush; also from the positive brush of commutator A′, wire 3, contacts 3^a and 2^b, wire 2, contacts 2^a and w', wire 7, ground G, pencil and wire 8, stabilizing resistance R, contacts w^2, and 4^a, and wire 4 to the negative brush of commutator A′.

It is obvious that my invention may be otherwise variously embodied without departing from the spirit and scope of the appended claims.

I claim:

1. In combination with two load circuits, an electric generator comprising an armature including two collector members and having part of its winding connected to one collector member and another part of its winding connected to the other collector member, and means for selectively connecting the collector members either in series into one load circuit to the exclusion of the other load circuit or in parallel into the said other load circuit to the exclusion of said one load circuit.

2. In combination with two load circuits, an electric generator comprising an armature including two collector members and having part of its winding connected to one collector member and another part of its winding connected to the other collector member, a plurality of stationary contacts connected respectively to the terminals of the two load circuits and to the collector members, and switching means co-operative with the stationary contacts when in one position to connect the collector members in series into one load circuit to the exclusion of the other load circuit or when in another position to connect them in parallel into the said other load circuit to the exclusion of said one load circuit.

3. In combination with a lighting circuit and a welding circuit, a generator comprising an armature including two commutators and having part of its winding connected to one commutator and part to the other commutator, two series field coils, one in series with each part of the armature winding, and means for selectively connecting the commutators either in series into the lighting circuit to the exclusion of the welding circuit or in parallel into the welding circuit to the exclusion of the lighting circuit.

4. In combination with a lighting circuit and a welding circuit, a generator comprising an armature including two commutators and having part of its winding connected to one commutator and part to the other commutator, two series field coils, one in series with each part of the armature winding, a shunt field winding fed from one of the commutators, and means for selectively connecting the commutators either in series into the lighting circuit to the exclusion of the welding circuit or in parallel into the welding circuit to the exclusion of the lighting circuit.

5. In combination with a lighting circuit and a welding circuit, a generator comprising an armature including two commutators and having part of its winding connected to one commutator and part to the other commutator, two series field coils, one in series with each part of the armature winding, a plurality of stationary contacts connected respectively to the terminals of the lighting and welding circuits and to the commutators, and switching means co-operative with the stationary contacts when in one position to connect the commutators in series into the lighting circuit to the exclusion of the welding circuit or when in another position to connect them in parallel into the welding circuit to the exclusion of the lighting circuit.

6. In combination with a lighting circuit and a welding circuit, a generator comprising an armature including two commutators and having part of its winding connected to one commutator and part to the other commutator, two series field coils, one in series with each part of the armature winding, a shunt field winding fed from one of the commutators, a plurality of stationary contacts connected respectively to the terminals of the lighting and welding circuits and to the commutators, and switching means co-operative with the stationary contacts when in one position to connect the commutators in series into the lighting circuit to the exclusion of the welding circuit or when in another position to connect them in parallel into the welding circuit to the exclusion of the lighting circuit.

7. In combination with a lighting circuit and a welding circuit, a generator comprising an armature including two commutators and having part of its winding connected to one commutator and part to the other commutator, two series field coils, one in series with each part of the armature winding, a shunt field winding fed from one of the commutators, a plurality of stationary contacts connected respectively to

the terminals of the lighting and welding circuits and to the commutators, and a four pole double throw switch co-operative with the stationary contacts when in one position to connect the commutators in series into the lighting circuit to the exclusion of the welding circuit or when in another position to connect them in parallel into the welding circuit to the exclusion of the lighting circuit.

In witness whereof, I subscribe my signature.

JOHANNES KJEKSTAD.