(No Model.)

# L. G. WOOLLEY.

## DYNAMO ELECTRIC MACHINE.

No. 256,786. Patented Apr. 18, 1882.

Fig. 1.

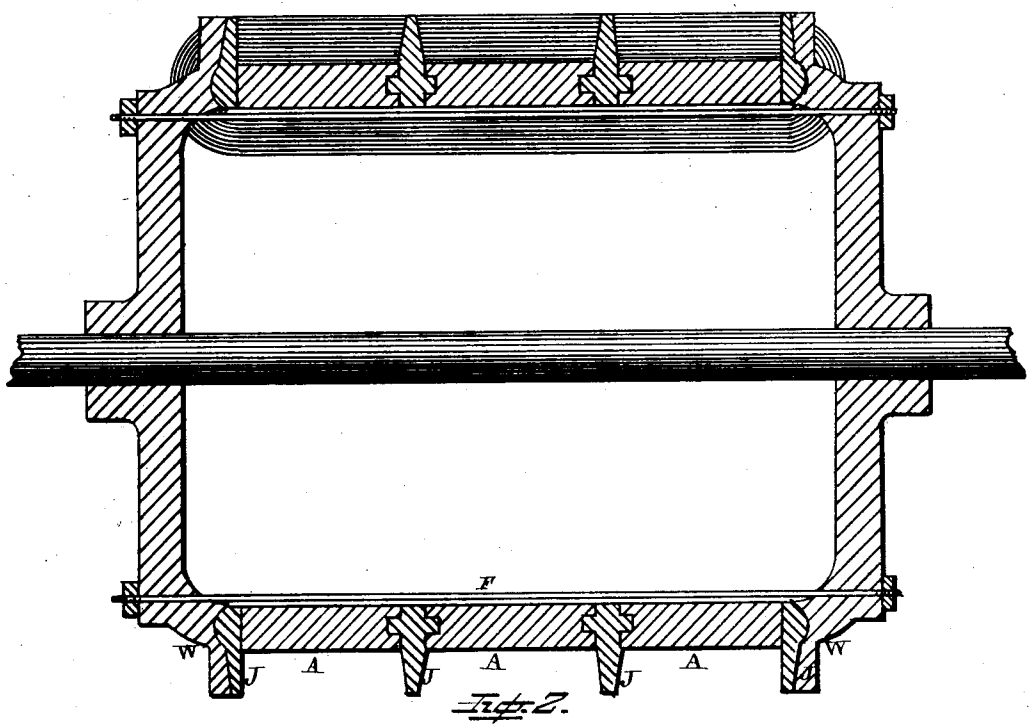



Fig. 2.


Fig. 3.

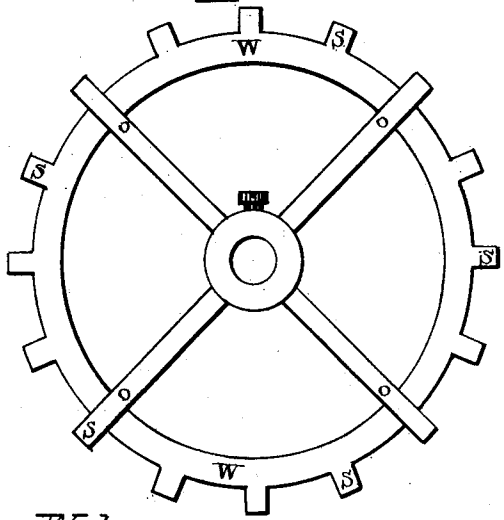



Fig. 4.

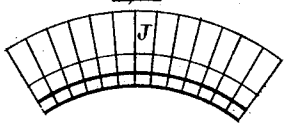
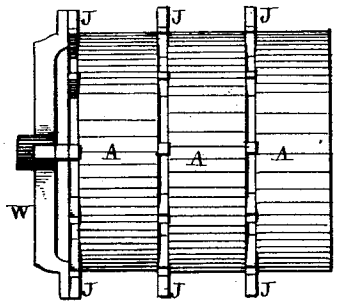



Fig. 5.




Witnesses.
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# UNITED STATES PATENT OFFICE.

LEONIDAS G. WOOLLEY, OF MENDON, MICHIGAN.

## DYNAMO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 256,786, dated April 18, 1882.

Application filed November 10, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, LEONIDAS G. WOOLLEY, of Mendon, in the county of St. Joseph and State of Michigan, have invented certain new and useful Improvements in Dynamo-Electric Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in dynamo-electric motors; and it consists, first, in an armature made of a number of flat tubular bands, which are separated from each other by suitable non-magnetic points, which are held between the edges of the bands, and between which points are left suitable air-spaces; second, in a spider which has formed with it a band or ring of the same thickness and diameter as the bands out of which the armature is formed, and which ring or band has suitable separating projections formed with it for separating and dividing the coils; third, in the arrangement and combination of parts, which will be more fully described hereinafter.

The object of my invention is to greatly simplify and cheapen the construction of the armature and at the same time increase its efficiency by providing large air-passages between a series of iron bands or rings, of which the main body of the armature is composed, and to so construct the armature that it will be strong, durable, and contain but a small body of iron and a few parts.

Figure 1 is a longitudinal vertical section of my invention. Fig. 2 is a detached plan view of two of the rings or bands and the separating magnetic pieces. Fig. 3 is an end view of the spider. Fig. 4 shows a portion of a ring which is separated into a number of pieces. Fig. 5 is a side view of the armature.

A represents the rings or bands out of which the armature is formed, and which rings or bands are made of iron and have their edges grooved, as shown. There will be enough of these bands used in forming the armature to make the armature of preferably greater length than its diameter, and each one of these rings or bands will be made as light as possible. These bands are separated from each other by a series of non-magnetic pieces, J, which have suitable flanges upon their sides, so as to fit in the grooves made in the edges of the rings or bands A. Should it be so preferred, these non-magnetic pieces may have grooves made in their sides, and then there will be corresponding tongues or flanges made upon the edges of the rings or bands, so as to fit in these grooves. Either construction may be used. These non-magnetic pieces are preferably formed by casting a ring of the shape preferred, and which is then placed in the lathe and turned into shape. This ring is then taken and cut into any desired number of pieces, as is shown in Fig. 4. Ordinarily there are about sixteen coils of wire wound upon an armature, and there will be one of these non-magnetic pieces, J, for every coil of wire used placed between the different plates. The outer ends of these non-magnetic pieces extend a suitable distance outward and form guides or separating-posts for the purpose of keeping the coils separate and distinct from each other.

The spiders through which the driving-shaft passes, and to which the shaft is fastened by suitable set-screws, are formed of brass or any non-magnetic material, having either arched or flat arms; and formed with the spider, in a single piece, is the ring or band W, which has the same width and diameter as the iron piece A. Formed upon the outer edges of this ring or plate W are a number of pins or projections, S, which form the end guides or spiders in winding the different coils and keeping them entirely separate and distinct.

The different rings or bands A are placed together, with the non-magnetic pieces J between them, and the spiders are then applied to the two ends, when the non-magnetic rods F are passed through the arms of one of the spiders, through inside of the bands or rings A without touching them, and through the arms of the spider at the opposite end. Nuts are applied to the ends of these rods and the parts are clamped rigidly and securely together. By passing these rods through the arms of the spiders and through the inside of the armature without touching any of the rings or bands A it will readily be seen that a great deal of work in the boring of holes is avoided,

and the armature correspondingly cheapened in construction.

One of the great advantages gained by this construction consists in the large air spaces or openings which are left between the different rings or bands A, so as to expose their edges to the cooling influence of the air. Another advantage gained consists in dividing the armature into a number of separate and distinct pieces, so that they will magnetize and demagnetize as rapidly as possible. Still another advantage gained consists in making the armature much lighter than has usually been done heretofore and greatly cheapen the manner of fastening the parts together.

Having thus described my invention, I claim—

1. In an armature for a dynamo-electric generator, the combination of a series of wide flat bands, A, made of magnetic material, with the non-magnetic separating-pieces J, the spiders, and the clamping-rods, substantially as shown.

2. In an armature for a dynamo-electric generator, the combination of a series of wide flat bands, A, made of magnetic material, with the non-magnetic separating-pieces J, the spiders, and the clamping-rods, the pieces J having their outer ends to project outward beyond the surfaces of the bands, so as to act as guides for the different coils, substantially as described.

3. In an armature for a dynamo electric generator, the combination of a series of wide flat bands, A, made of magnetic material and having grooves made in their edges, with the pieces J, having flanges on their sides to catch in the grooves, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

LEONIDAS G. WOOLLEY.

Witnesses:
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