(No Model.)

S. H. BARTLETT.

FRICTION GENERATOR.

No. 416,662. Patented Dec. 3, 1889.

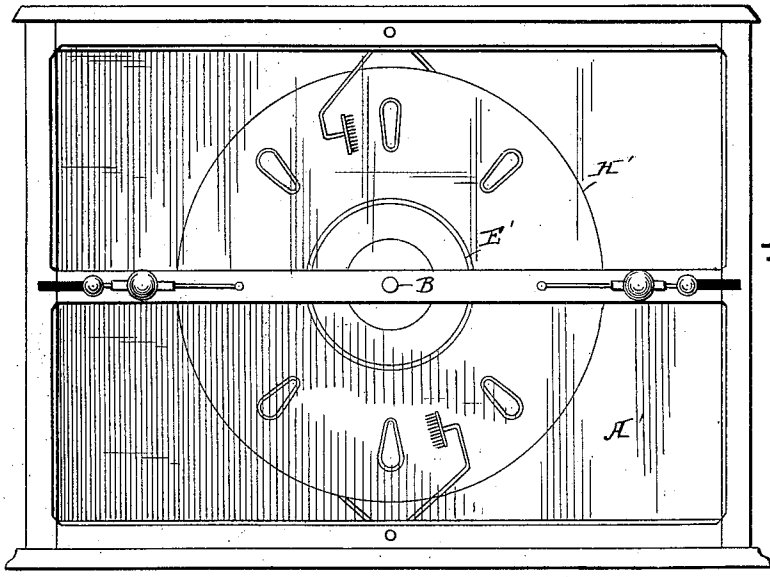


Fig. 1.

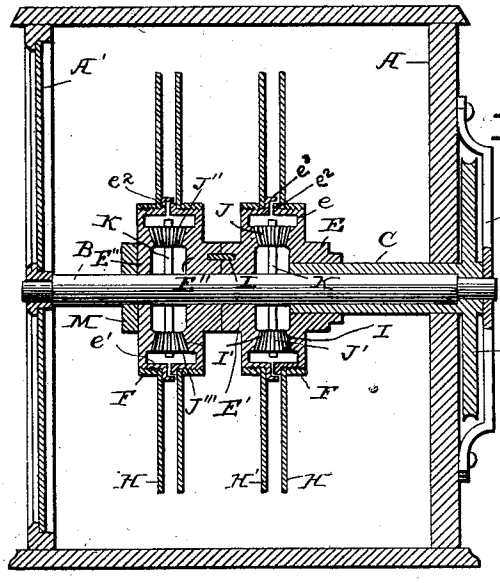


Fig. 2.

Fig. 3.

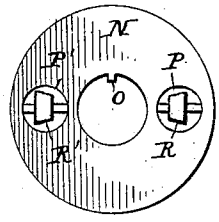


Fig. 4.

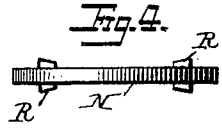
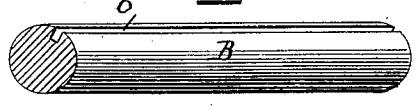


Fig. 5.



Witnesses
Jno. G. Hinkel, Jr.
W. S. McArthur

Samuel H. Bartlett.
Inventor

By his Attorneys
Foster & Freeman

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

SAMUEL H. BARTLETT, OF NEW YORK, N. Y.

FRICTION-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 416,662, dated December 3, 1889.

Application filed June 7, 1889. Serial No. 313,454. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL H. BARTLETT, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Friction-Generators, of which the following is a specification.

My invention relates to friction-generators, or what are sometimes called "influence-machines," by which static or frictional electricity is produced and used in the sciences and arts, and the object of the invention is to produce a machine that shall be capable of practically generating a large amount of electricity, and shall be simple, cheap, and effective in operation; and to these ends my invention consists in a machine constructed substantially as hereinafter set forth.

Referring to the accompanying drawings, Figure 1 is a side view of a machine embodying my invention. Fig. 2 is a horizontal section of a part thereof sufficient to show my improvement. Figs. 3 and 4 are respectively plan and edge views of another arrangement of gears or friction-wheels, and Fig. 5 is a detail view.

My invention is especially applicable to that class of friction generators or machines known in the art as "Wimhurst machines," in which there are one or more pairs of plates arranged in proximity to each other and adapted to rotate in opposite directions.

The special object of my present invention consists in providing means whereby these plates, whatever may be their number, may be easily and accurately rotated and, preferably, at the same rate of speed, and I have specifically shown and described only the parts of the machines that relate to my invention, the general construction and arrangement of the machine being well known to those skilled in the art.

The frame or case A may be made of any suitable material, and may be air-tight or not, and is shown in rectangular form, although, of course, this is not of importance. Mounted in the sides of said frame is a stationary rod or shaft B, having one end preferably projecting beyond one of the sides of the case, which is provided with a guard or supporting-brace G, in which one end of the rod is secured and supported, the other end being fixed in the opposite side of the case A′. Mounted upon this rod is an elongated hub or hollow collar C, adapted to rotate freely thereon and projecting slightly beyond the outside of the case, and provided with a suitable driving-wheel D, to which power may be applied in any suitable way.

Mounted upon the inner end of the collar is a hub E, which may be of various forms, but is preferably shown as having an extension *e*, provided with a flange *e′*, extending parallel to the axle and having a rib e^2 on its free edge. Upon this collar is fitted a ring F, which is adapted to screw closely thereupon and to hold in place the plate H, of glass or other material, forming one of the elements of the generator. This rib e^2 preferably, as indicated in the drawings, fits under an offset e^3 on the adjacent hub, and thereby forms a practically-closed joint to protect the internal gear, hereinafter described, from dust, or the oil or lubricant, if used, from passing to the plates. Upon this hub E is fitted a gear I, which is shown in the present instance as a bevel-gear and as engaging with a similarly-shaped pinion J, mounted upon a rod K, fixed in the shaft B. There are preferably two of these bevel-gears J J′ on each end of the rod K, in order to preserve an even balance and prevent binding or friction. Also mounted on the shaft B is another hub E′, similarly shaped to the hub E, except that the parts are reversed, and this is provided with a similar gear I′, also engaging bevel gear-wheels J J′. In this way it will be seen that when the collar is rotated upon the rod B the hub E, secured thereto, rotates therewith in the same direction, and the gear I, working in the gear-wheel J, transmits motion to the hub E′ and causes it, with its attached plate H′, to rotate in an opposite direction and at the same speed.

When it is desired to use more than a single pair of plates, other hubs, as E^2 E^3, are similarly applied to the shaft, and some sort of a connection is made between the adjacent hubs of each pair, so that the power will be transmitted from one pair to the other. While various means may be used to accomplish this result, I have shown a simple slot L in the two adjacent hubs, in which a pin or block may be placed to cause the hubs E′ E^2

to rotate in the same direction. In order to keep these hubs in proper relations to each other, a suitable collar or other device M is secured upon the fixed rod, and this may be made adjustable by being screw-threaded or otherwise. In this way the relations of the hubs to each other and to the beveled gears or pinions fixed upon the rods J can be accurately maintained.

In place of the rods K passing through the fixed rod B, I may use disk N, secured to the rod in any proper manner, as by the projection O entering a groove *b* in the fixed rod B, as shown in Figs. 3 and 5. This disk is perforated at two or more points, as shown at P P′, and in these openings are mounted friction-wheels R R′, upon suitable shafts supported therein. In case these disks and friction-wheels are used, of course the hubs E are provided with a similar friction-surface in place of the bevel-gears I, and the parts may be maintained in proper frictional relations upon the shaft B by the collar M. It will thus be seen that I may mount upon the fixed rod B as many couples or pairs of plates and their connected driving-hubs as are desired, and that they will all rotate at the same speed and in opposite direction to one another with relation to each pair. The driving-gear for these plates is fully protected from dust and dirt, and only one belt or other driving mechanism is necessary, and this can be arranged inside or outside (but preferably the latter) of the machine, and all multiple wheels, gears, or belts connected with the source of power are avoided.

I claim—

1. In a friction-generator, the combination, with a frame or case, of a rod mounted in said case, a collar mounted on said rod, a hub mounted on said collar carrying a plate, another hub loosely mounted on said rod, and intermediate gear between the hubs, whereby the plates are rotated in opposite directions, substantially as described.

2. In a friction-generator, the combination, with a frame or case, of a stationary rod mounted in said frame or case, a collar mounted on said rod, a hub carried by said collar supporting a plate, another hub mounted on the shaft and supporting another plate, bevel gear-wheels mounted on said hubs, and a bevel-gear working between said gear-wheels, substantially as described.

3. In a friction-generator, the combination, with the rod, of the hubs mounted thereon, said hubs being provided with inwardly-projecting flanges supporting the plates, bevel-gears on the hubs, and bevel gear-wheels engaging therewith, substantially as described.

4. In a friction-generator, the combination of the hubs having inwardly-projecting flanges and supporting the plates, the hubs being recessed at their edges to overlap to protect the internal gear, substantially as described.

5. In a friction-generator, the combination, with a fixed rod, of two sets of hubs, each carrying plates, gears mounted on said rod to cause each pair of plates to rotate in opposite directions, and connections between the contiguous hubs of the adjacent pairs, whereby all the plates may be rotated, substantially as described.

6. In a friction-generator, the combination, with a fixed rod, of a collar mounted thereon, a hub on the collar supporting a plate, one or more hubs loosely mounted on said rod, and each supporting a plate, bevel-gear connections between each pair of hubs, and a pulley mounted on the collar for rotating the same, substantially as described.

7. In a friction-generator, the combination, with the fixed shaft, of a number of hubs mounted thereon, bevel-gears between each pair of hubs, and an adjustable collar mounted on the rod to maintain the parts in proper relations, substantially as described.

8. In a friction-generator, a hub having a flange with a projecting rim for supporting the plate, and a screw-threaded collar adapted to the flange to hold the plate in position, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL H. BARTLETT.

Witnesses:

W. H. WOODHULL,

AUGUST HEINE.