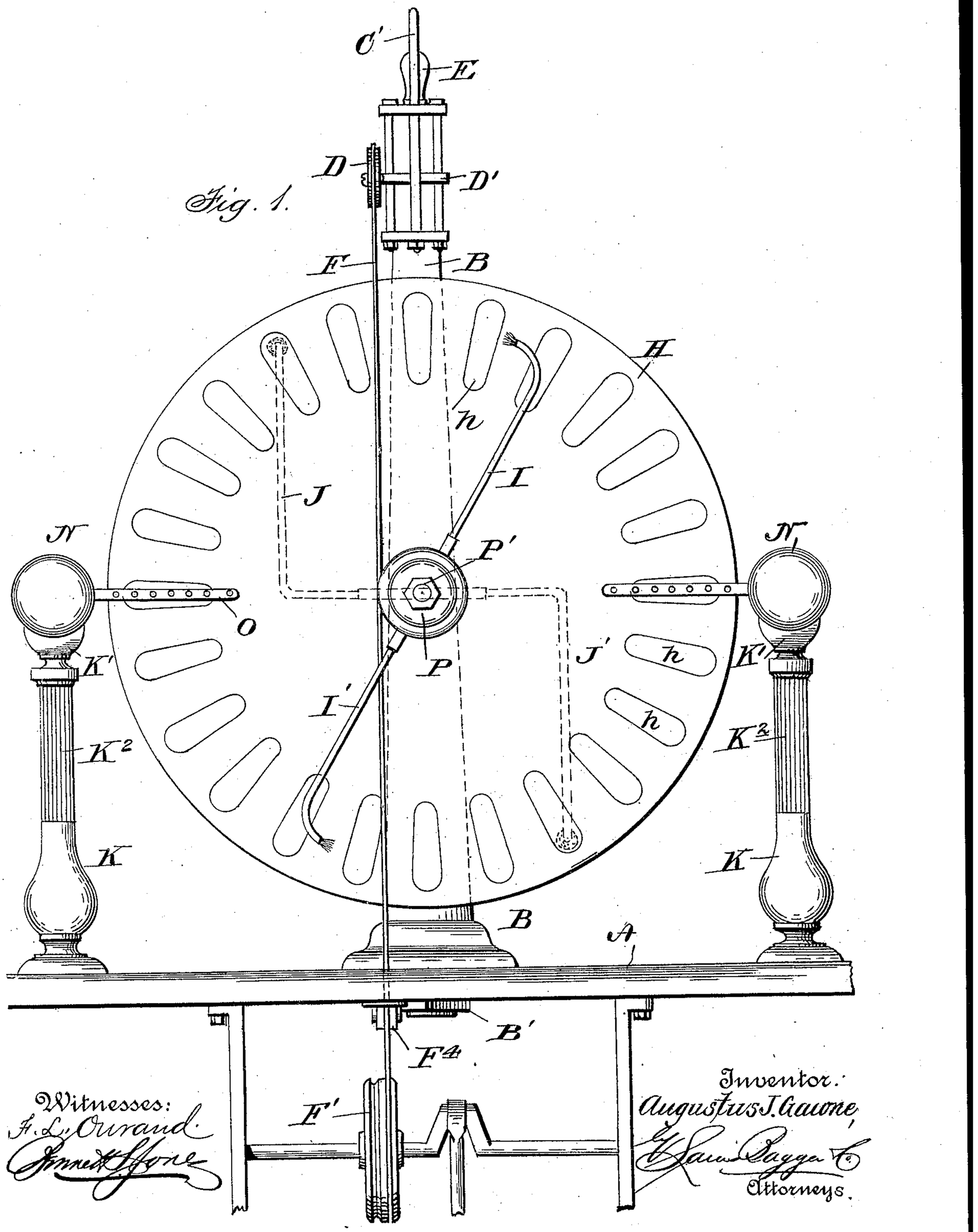
(No Model.) 3 Sheets—Sheet 1.

A. J. GAWNE.

STATIC GENERATOR.

No. 575,231. Patented Jan. 12, 1897.

Fig. 1.



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(No Model.) 3 Sheets—Sheet 2.

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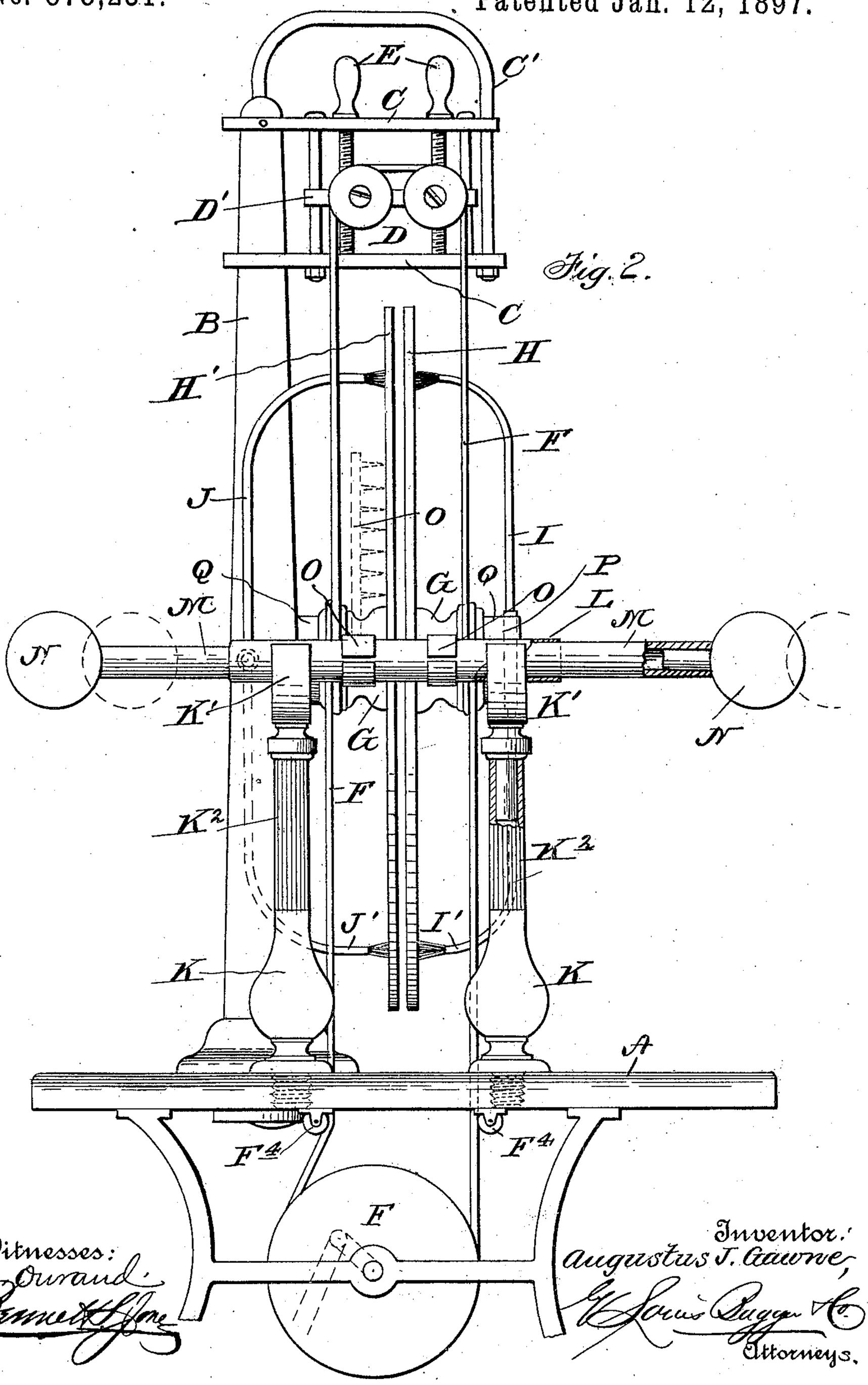

Fig. 2.

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(No Model.) 3 Sheets—Sheet 3.

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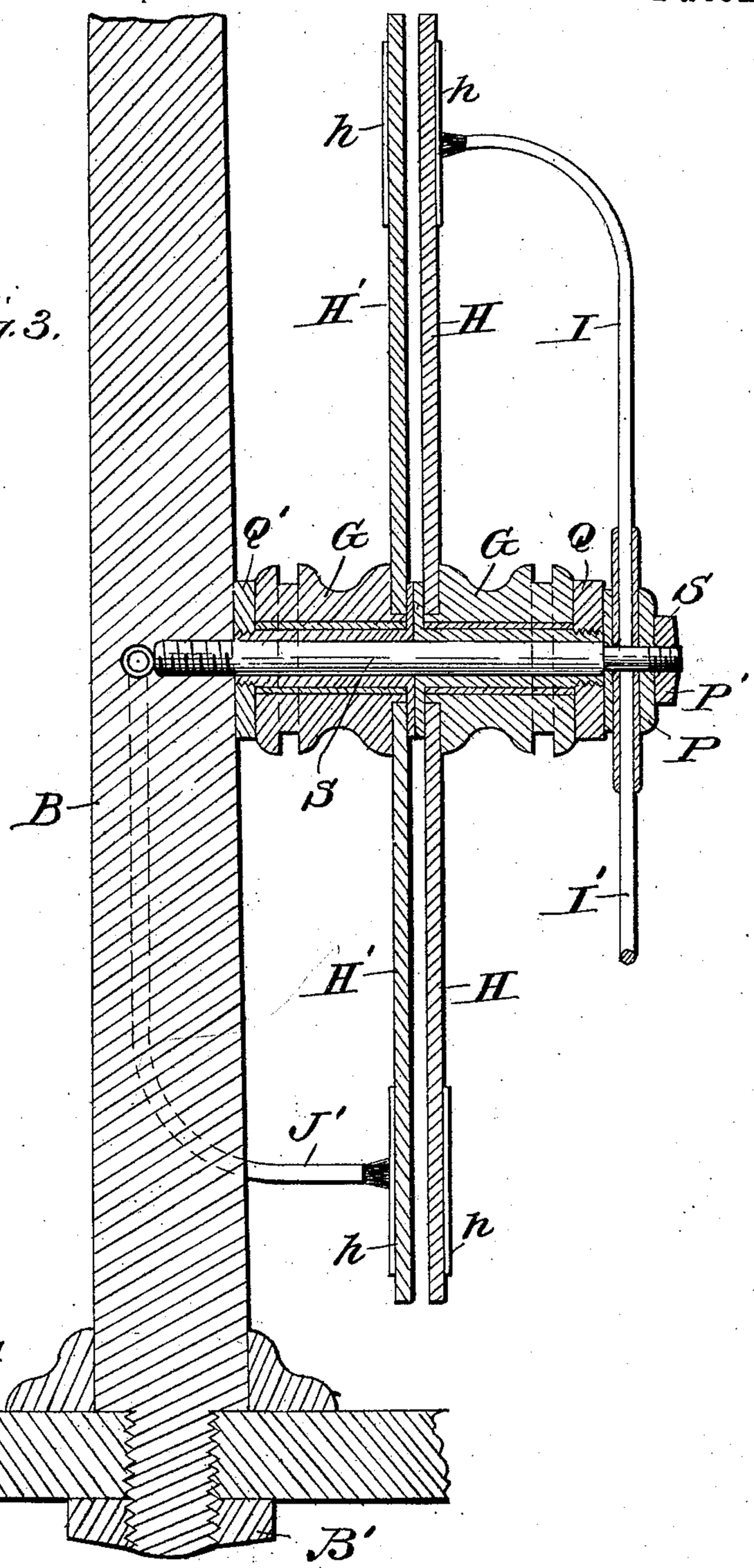
Fig. 3.



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UNITED STATES PATENT OFFICE.

AUGUSTUS JAMES GAWNE, OF SANDUSKY, OHIO.

STATIC GENERATOR.

SPECIFICATION forming part of Letters Patent No. 575,231, dated January 12, 1897.

Application filed October 10, 1896. Serial No. 608,510. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS JAMES GAWNE, a citizen of the United States, and a resident of Sandusky, in the county of Erie and State of Ohio, have invented certain new and useful Improvements in Static Batteries; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to static electric generators of the general type and mode of operation as shown in the so-called "Wimhurst" machine; and said invention consists in certain constructions and arrangements of parts, such as will be hereinafter specified and claimed, whereby the following results and advantages are secured: first, a far greater certainty and reliability regarding the prompt and satisfactory working of the generator under varying conditions of atmospheric humidity; second, doing away with the necessity for Leyden jars, earth connections, or earth insulation of the general machine; third, greater convenience in dismembering the machine for packing or for moving from place to place or for renewing parts by way of repair, interchange, or substitution; fourth, easy and certain facility of assemblage of the parts constituting the machine.

In the drawings, Figure 1 represents my machine in front elevation; Fig. 2, the same in side elevation; Fig. 3, a longitudinal vertical section of the same in side elevation.

Generally described, my invention consists in two disks made to revolve in opposite directions by the action of a single belt common to both disks and in association with said disks the metallic combs and brushes usually employed in static electric generators.

A is any suitable table or support, which for manifest reasons I prefer shall be easily portable. In this table is journaled the prime driving-pulley F′, which pulley may be actuated by a treadle-and-pitman contrivance or by an electric motor or water-motor, as desired.

Fixed to the table A is a post or suitable support B, made preferably of wood or any so-called "electric non-conducting material." I prefer to attach the post B to the table A by the screw and clamp-nut arrangement sufficiently shown by the illustration in Fig. 3 of the drawings. To the upper end of the post B, which is made to extend a sufficient distance above the revolving disks, is attached one form of belt-pulley and belt-tightening device that I have found to serve an effectual purpose. This device consists of a frame C C′, the post C of wood and the post C′ of wrought-iron. Within the posts C C turn the hand-screws E E, by which is raised or lowered the bar D′, in which are journaled the pulleys D, over which passes the driving-belt F. It will be readily seen that this belt F may be tightened or loosened, as required, by properly turning the screws E E.

H H′ are disks of varnished or shellacked glass, upon the faces of which, as shown in Figs. 1 and 3 of the drawings, are attached very thin plates *h* of copper, brass, or tin.

Arranged to be brought into frictional contact with the disks H H′ and their metallic plates *h* are metallic brushes held at the ends of metallic arms I I′ J J′. These arms, as shown in Figs. 1 and 3 of the drawings, have such a union and connection with the central stem or shaft S that they can be moved readily so that their brushes may be made to make contact with the disks at a point nearer to or further from their peripheries, or said arms may be turned to different radial positions upon the face of their respective disks, or they may be turned or twisted within their telescopic bearings so as to give a greater or less frictional pressure of their brushes against the disks, or be turned so that said brushes shall not come into contact at all with said disks or their plates *h*.

I may here say that after my generator has "taken hold," so to speak, that is, has begun to give forth its electrical effect, all of the brushes upon the arms I I′ J J′ may be turned entirely from any contact with the disks without any observable diminution of the effective operation of the machine, and even after an indefinite period of rest, with said brushes all remaining well out of contact with the disks, the machine upon being started again will,

without any adjustment or tinkering whatever, promptly come into full and perfect action, and this even in a very damp and foggy atmosphere, in which static generators generally refuse to operate at all.

K K′ K² are supports for carrying the collectors O and the terminals N. The collectors O are the usual comb-shaped static electric generators. They are made of metal and there are four of them, a pair being carried by each support K′, and the members of each pair presenting toward each other on opposite faces of the revolving disks; but in my machine it will be observed that the collectors O are so attached to their respective supports K′ that they can be swung up or down from a horizontal presentation or may be moved nearer to or farther from their respective disks.

K K′ K² is my preferred three-part construction of the posts or carriers for the collectors O and terminals N. The sections K K′ are made of wood and the section K² preferably of hard rubber, as indicated in Fig. 2 of the drawings. The sections K K′ telescope into the section K², so that these parts of the machine are very readily assembled by first screwing the sections K into the table A, the same as in the case of the standard B already described, after which the sections K′ and K² are simply slipped into place.

The arm M, which carries the terminals N, is a metallic tube having a sliding bearing itself within the supports, so that it can, as desired, be longitudinally moved and adjusted, and, as shown in Fig. 2, the terminal N has a stem fitting into the ends of the arm M, so that a terminal of one shape or character can be easily removed and replaced by one of another kind.

S is a fixed non-revolving spindle carried on the standard B, upon which spindle revolve the disks H H′ and which also holds the bearings for the brush-arms I I′.

It is important in machines of the class herein referred to that the revolving glass disks, whether one, two, or more such disks be employed, should be readily attached to the machine and attached in such a way as to be firmly held and run true and to be subjected to the least liability of fracture either during use or in taking the machine apart or putting it together. All of these ends are very effectually attained by the construction and combination of parts shown clearly in Fig. 3, and which I will now describe.

For each glass disk there is provided a metallic spool which fits and revolves upon the spindle S. This spool at the end where the disk has to rest has a flange against which the disk is placed. The opposite end of the spool has a screw-thread cut upon it upon which is run a nut Q or Q′, which nut constitutes an adjustable flange upon the spool opposite to the flange already described.

G or G′ is another spool, which also serves as a pulley for its attached disk. This spool is provided with a metallic bushing fitting over the flanged spool, already described, at the end adjacent to the fixed flange of the internal or clamping spool. The spool G or G′ is provided with a receiving and bearing shoulder for its disks H or H′.

When the parts that have now been described are assembled together, as shown in Fig. 3, the nut Q or Q′ is tightened until the disk is held with sufficient firmness between the fixed flange of the internal spool and the flange of the spool G or G′, and it will be seen that when thus assembled and placed upon the spindle S and secured thereon by the brush-arm hub P and the nut P′ the disk H and its two spools, internal and external, will revolve together in one direction, while the disk H′ and its two spools will revolve in an opposite direction. The opposite revolutions of the disks H H′ are accomplished by the belt-and-pulley arrangements shown in one form in Figs. 1 and 2 and in a modified form in Figs. 4 and 5. This matter of hanging the disks of static electric generators has always heretofore been one of the most difficult features in constructing these machines and one of the most expensive and has been attended with one or both of the following dangers: either a loose, unreliable, and often untrue attachment of the disk or a liability of breaking the disk while constructing, assembling, or using the machine.

I wish it to be clearly understood that I do not limit my invention, so far as it relates to my method of hanging the disk upon its shaft or spindle, to machines employing two opposite revolving disks, such as illustrated in the accompanying drawings, as the same or substantially the same means as herein described may be adopted for hanging in machines using two or more revolving disks, without in any degree departing from this branch and feature of my invention.

Another feature of my invention is the arrangement shown whereby a single belt, common to both disks, shall operate to revolve said disks in opposite directions. This belt is shown at F, and, starting at the prime driving-pulley F′, it will be seen to pass up to and around the spool G, thence up to and over the tightening-pulleys D, thence down to and around the pulley G′, and from thence down to the driving-pulley F′.

Having thus fully described my invention, what I claim is—

1. In a static electric generator, the combination with the table, the post secured thereto, the shaft secured to said post, the rotatable spools mounted on said shaft provided with flanges at their meeting or inner ends, the pulleys mounted on said spools, the oppositely-rotatable disks clamped between said flanges and pulleys and the screw-nuts engaging with the ends of said spools, of the driving-pulley located beneath the belt passing therearound and around the said pulleys, the frame secured to the upper end of

said post, the vertically-movable bar having screw-threaded openings, the screws passing therethrough, and the pulleys journaled to said bar around which said belt also passes, substantially as described.

2. In a static electric generator, the combination with the oppositely-rotatable disks and the metal plates secured thereto, of the sectional posts, comprising the lower portion secured to the table of the generator, the tubular portion secured to said lower portion and the upper portion telescoping into said tubular portion, the laterally-slidable tubular arm connected with said upper portions of the posts, the current-collectors connected with said arm, and the terminals provided with stems fitting in the ends of said tubular arm, substantially as described.

3. In a static electric generator, the combination with the oppositely-rotating disks, the metal plates secured thereto and the brush-holders connected with the apparatus by telescoping or sliding joints or connections whereby the brushes may be given longitudinal or radial adjustment, of the laterally-movable tubular arm, the current-collectors connected therewith and the terminals having stems engaging with the ends of said arm, substantially as described.

4. The brush-holders I, I′, J, J′, united to the general apparatus by telescoping or sliding joints or connections whereby the brushes may be given longitudinal or radial adjustment, substantially as described.

5. In a static electric generator, the combination with the table, the post secured thereto, the longitudinal shaft, the oppositely-rotating disks, the frame at the upper end of said post, the vertically-adjustable pulleys, the single driving-belt, and the pulley located below the table, of the radially and longitudinally adjustable brush-holders, the sectional posts secured to said table, the laterally-slidable tubular arm, the current-collectors connected therewith, and the terminals provided with stems fitting in said tubular arm, substantially as described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

AUGUSTUS JAMES GAWNE.

Witnesses:

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ELLA M. HOUSTON.