

(No Model.)

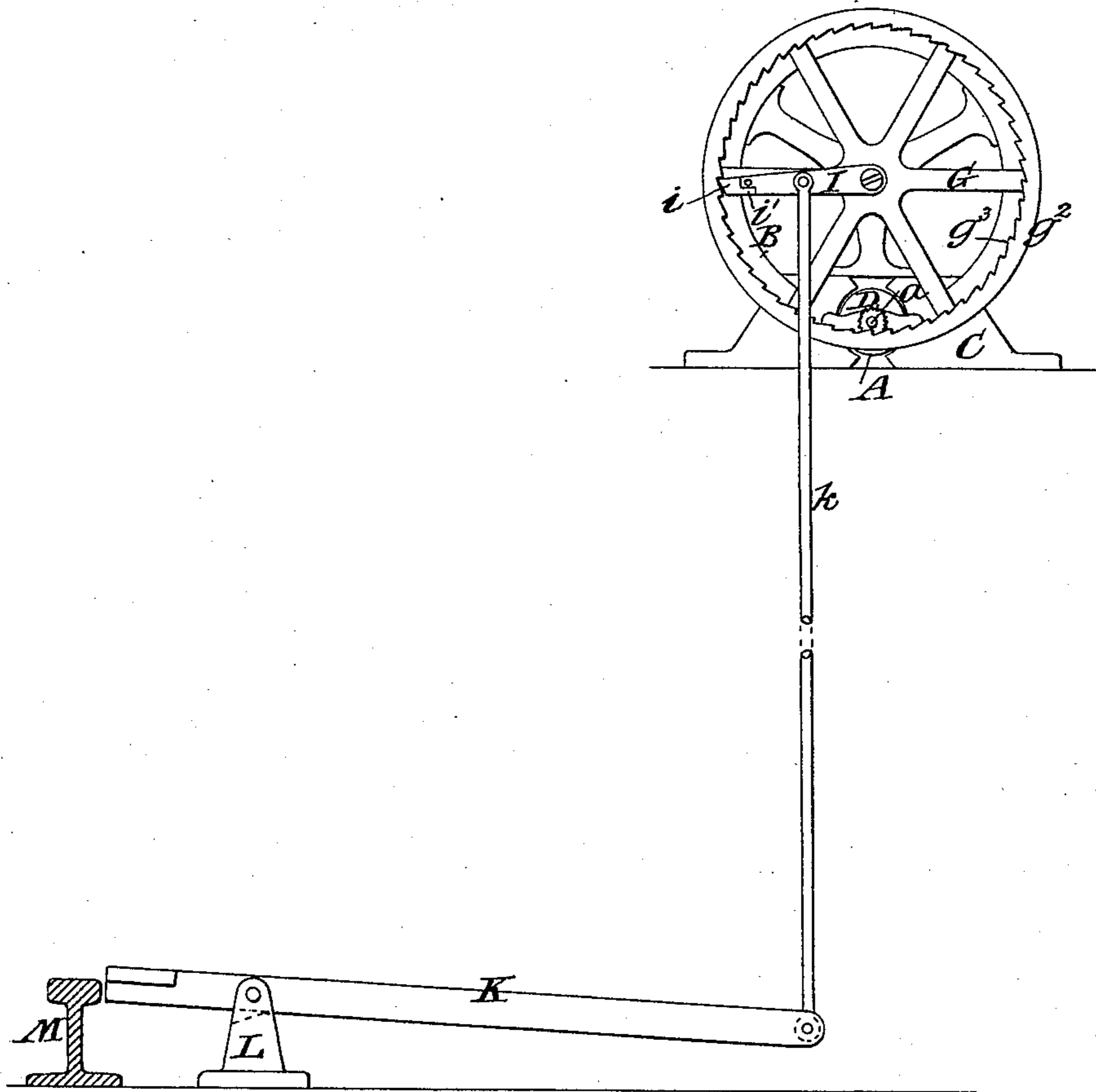
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A. G. LEONARD.
MAGNETO ELECTRIC GENERATOR.

No. 563,599.

Patented July 7, 1896.

Fig. 1.



Witnesses:
O. Sundgren
George Barry.

Inventor:
Arthur G. Leonard
by attorneys
Brown & Leonard

(No Model.)

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Fig. 2.

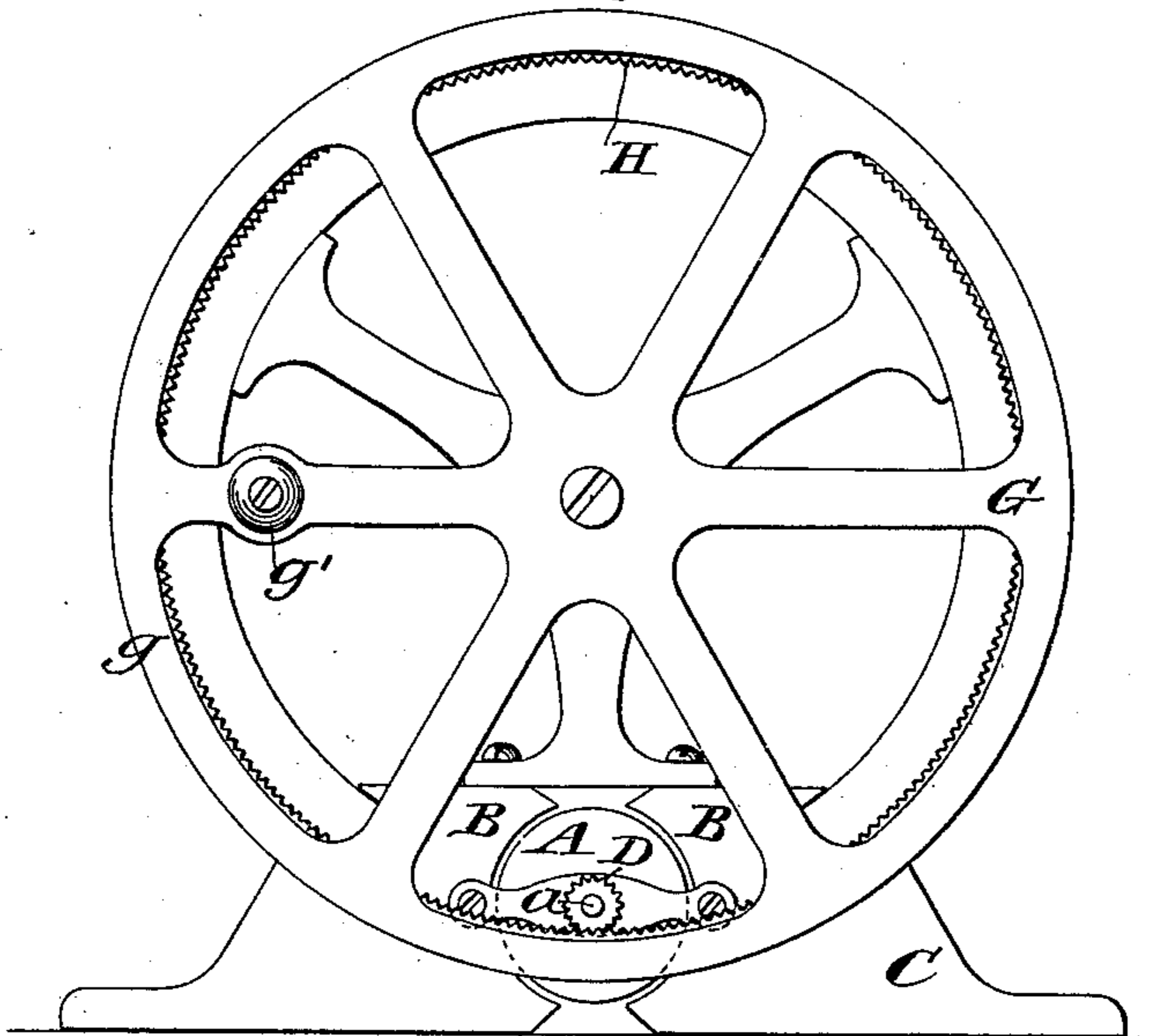


Fig. 3.

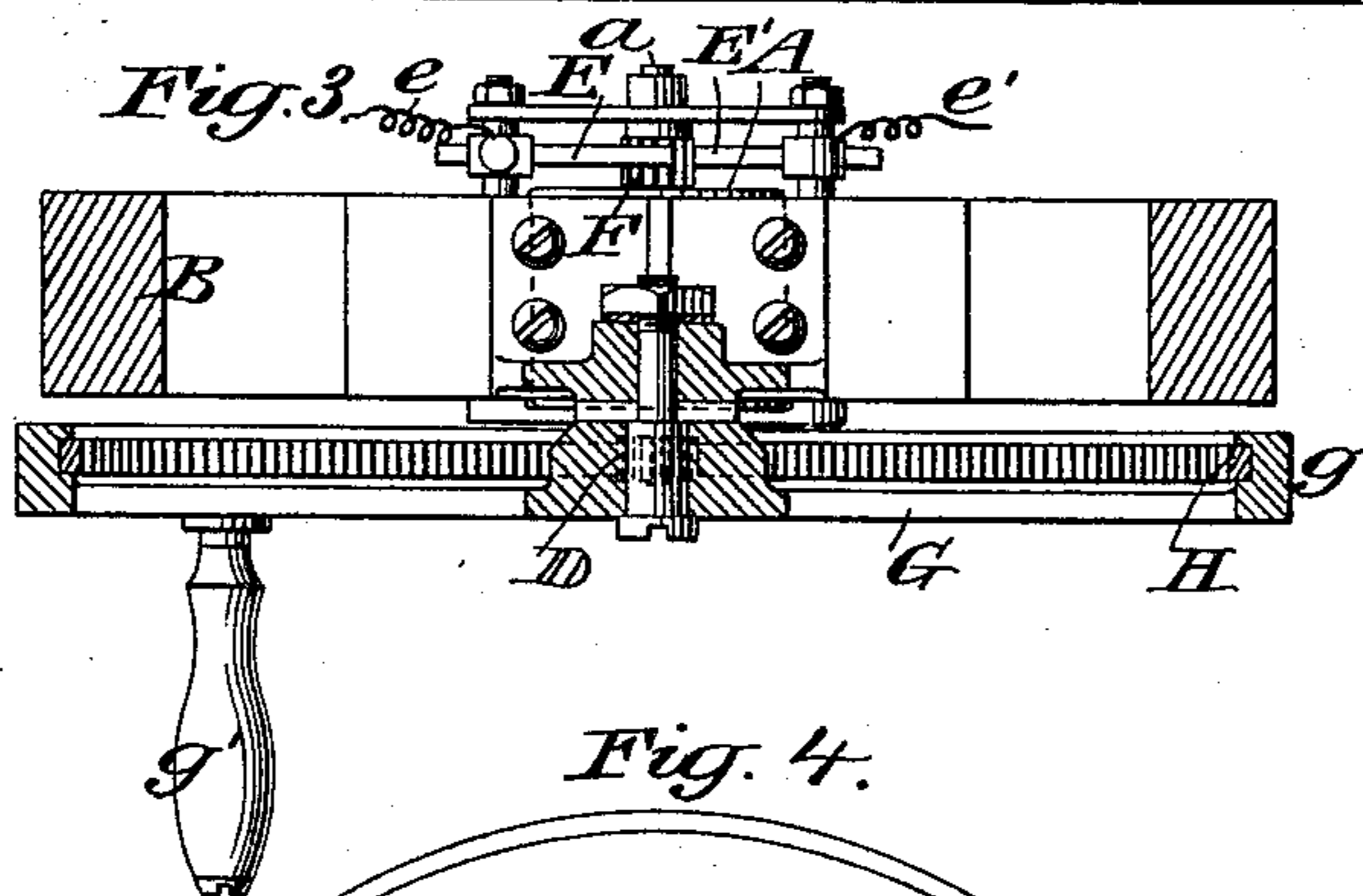
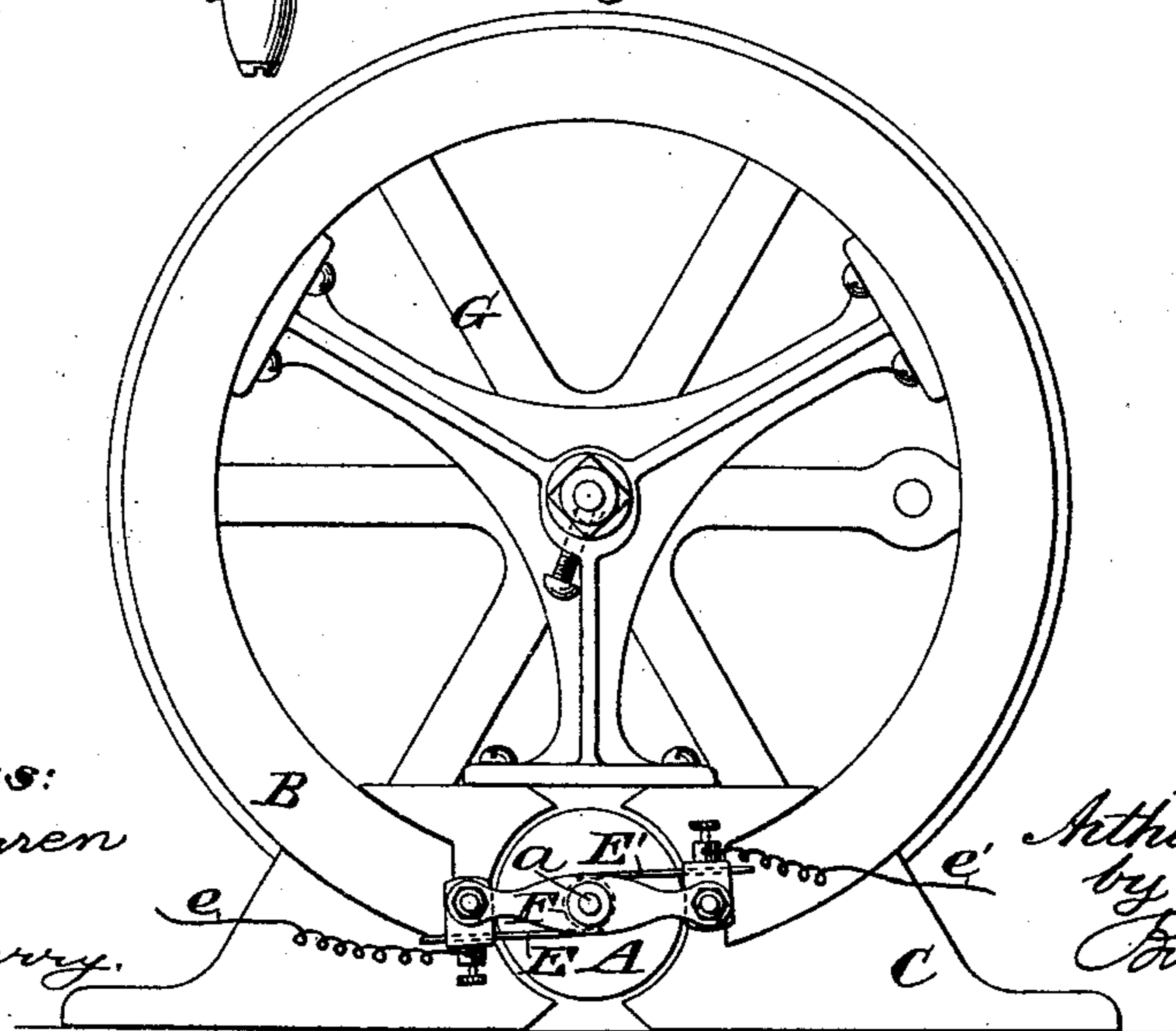


Fig. 4.



Witnesses:
O. Sundgren
George Barry.

Inventor:
Arthur G. Leonard
by attorneys
Fenn & Howard

UNITED STATES PATENT OFFICE.

ARTHUR G. LEONARD, OF NEW YORK, N. Y.

MAGNETO-ELECTRIC GENERATOR.

SPECIFICATION forming part of Letters Patent No. 563,599, dated July 7, 1896.

Application filed August 10, 1894. Serial No. 519,979. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR G. LEONARD, of New York, in the county and State of New York, have invented a new and useful Improvement in Magneto-Electric Generators, of which the following is a specification.

My invention relates to an improvement in magneto-electric generators with the object in view of providing a generator which may be operated either by hand or by a passing train to generate electric currents at intervals, as the current may be momentarily required for the performance of some particular act.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents the generator in its position relative to one of the rails of a railway-track and adapted to be operated by the wheels of a passing train. Fig. 2 is a front view of the generator. Fig. 3 is a view in horizontal central section, and Fig. 4 is a rear view of the generator.

A rotary armature A, located within the field of a magnet B, is mounted in suitable bearings in a pedestal or base C. The spindle or shaft *a* of the armature is provided with a toothed pinion D. A pair of brushes E E' are supported in position to contact with a commutator F on the spindle or shaft of the rotary armature, and conducting-wires *e e'* lead from the brushes to the point where the electric current is to be utilized.

An operating-wheel G, quite large in comparison with the small pinion D on the shaft of the rotary armature, is provided with a rim *g*, along the interior of which there is located an annular strip H of some suitable yielding material, preferably of a tough nature, such, for example, as leather, vegetable fiber, or rubber, the said strip H being provided along its inner face with a roughened or corrugated surface for working in engagement with the teeth of the pinion D.

Where the pinion is very small and the drive-wheel is very large, it has been found that intermeshing gear of metal is liable to become rapidly worn, aside from its increased cost, in view of the precision with which the teeth must be made to register. The tough, roughened surface of the strip H, while hav-

ing a sufficient contact with the pinion to cause it to rotate with the rotation of the drive-wheel, is found to be a material saving in first cost and to be much more durable and satisfactory in operation. For instance, when a sudden impulse is imparted to the wheel, its great leverage upon the comparatively small pinion will tend to pound and break the pinion-teeth, unless provision is made for the slipping, at first, until the pinion is gradually brought into full motion. The yielding roughened surface in contact with the pinion also prevents noise.

The drive-wheel G is provided with an operating-handle *g'* for operating it by hand, when so desired, and for the purposes of operating the generator by a passing train I provide the wheel G with a second rim *g*², provided with an internal ratchet-gear *g*³. I have shown the rim *g*² attached directly to the spokes of the wheel G, as that is a feasible way of arranging it. It is obvious, however, that it might be located on the axle of the wheel G, if so desired.

At the center of the wheel G or rim *g*² I pivot an operating-arm I, carrying at its free end a pawl *i*, pivotally secured to the end of the arm I and so beveled at its free end that it will pass on its downward stroke freely over the ratchet-gear *g*³, but will engage the ratchet-teeth and turn the rim *g*², and hence the wheel G, on its upward stroke. The pawl *i* is provided with a heel *i'*, which engages with a shoulder on the arm I to prevent it from rocking on its pivot when pressed upwardly against the ratchet-gear *g*³.

A connecting-rod *k* connects the arm I with the free end of a vibrating lever K, fulcrumed on a suitable support L, and having one of its arms projected into a position normally above and in proximity to the outer side of one of the railway-rails M.

As the wheels of a passing train successively pass into engagement with the end of the lever K and depress it, they will lift the arm I, and hence the pawl I, causing the wheel G to rotate and generate an electric current by rotating the armature A. The arm I and pawl *i* will, in the structure which I have herein presented, return under the influence of gravity the moment the wheel of the passing train leaves the end of the le-

ver K, so that while the train is passing over there will be a succession to lines of the arm I, the rapidity of such successive movements depending upon the speed with which the
5 train passes.

The electric current generated by the apparatus, either by the passing of the train or by hand, may be utilized to lock or release signal-operating mechanism near by or at a
10 distance or may be utilized for operating the signal itself, as may be found desirable.

What I claim is—

The combination with a rotary armature of a magneto or dynamo electric generator,

and a driving-pinion fixed to rotate with the
shaft or spindle of the generator, of a drive-
wheel provided with a circular yielding cor-
rugated or roughened surface in position to
engage the periphery of the driving-pinion,
the engagement of the yielding surface with
20 the pinion being such as to permit a slipping
under a sudden impulse imparted to the
drive-wheel, substantially as set forth.

ARTHUR G. LEONARD.

Witnesses:

H. F. HENRY, Jr.,
ALONZO POTTER.