

UNITED STATES PATENT OFFICE.

FULLER TRUMP, OF SPRINGFIELD, OHIO.

WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 552,308, dated December 31, 1895.

Application filed October 6, 1894. Serial No. 525,156. (No model.)

To all whom it may concern:

Be it known that I, FULLER TRUMP, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Water-Wheels, of which the following is a specification.

My invention relates to improvements in turbine water-wheels, and the object of my invention is to provide a wheel the construction of which is such that a large volume of water may be used and discharged with a wheel of small diameter.

A further object of my invention is to provide a water-wheel of this character which shall operate economically and effectively with a wholly or partially open gate. I attain these objects by the constructions shown in the accompanying drawings, in which—

Figure 1 is a plan view of a wheel embodying my invention partly broken away to show the gates. Fig. 2 is a sectional elevation of the same. Fig. 3 is a perspective view of the wheel removed from the casing, and Fig. 4 is a detail view of one of the gates.

Like parts are represented by similar letters of reference throughout the several views.

In its general construction my improved wheel does not differ materially from other wheels now in use—that is to say, it consists of an inner running wheel having a suitable number of buckets, and an outer casing having gates through which the water is admitted to said buckets, and means for opening and closing said gates.

The principal feature of my invention is in the shape of the wheel and of the gates which admit the water thereto.

In the said drawings, a represent the outer casing, which is formed in the usual way with a top plate a' and a bottom ring a^2 , the bottom ring being adapted to form a cylinder into which the lower ends of the wheel-buckets are fitted, as will hereinafter more fully appear. The top plate a' and the lower ring a^2 are bolted together in the usual manner by standards a^3 . The wheel b is journaled within the outer casing and provided with the usual shaft b' , which extends through the casing in one direction and is supported at the opposite end by a step b^2 in the usual manner. The buckets b^3 are preferably of

steel and cast into the wheel proper, though this is merely a mechanical feature which may or may not be employed. The outer edges of these buckets b^3 are formed on an incline, so that the wheel in its entirety has the shape of a truncated cone, said buckets being curved to form the proper surface for receiving and discharging the water, and being open from top to bottom with no intervening obstacle to interfere with the free discharge of the water therefrom, the discharge-opening from each bucket being on a curved line, as indicated at b^4 , whose length is equal to or substantially equal to that of the inclined edge which stands opposite to the gate or supply opening.

The gates which I preferably employ are oscillating gates of the butterfly type, so arranged that the rear end of one gate closes against the front end of another in a well-known manner. These gates, however, instead of being arranged at right angles to the inclosing-plates a' a^2 , are arranged at an incline to correspond to the shape of the wheel. These gates are shown at a^4 , and each gate is provided at the top and bottom with projecting lugs a^5 a^6 , adapted to receive suitable bolts or rods on which the gates are pivoted, the upper lug being extended outwardly so that the pivotal center thereof stands in line with the pivotal center of the lower lug. These gates are operated to open and close uniformly through the agency of a suitable ring-plate a^7 by a pinion a^8 engaging a gear-segment a^9 in the usual manner. The longitudinal portion of the lower ring a^2 , which, it should be stated, is provided with lateral and longitudinal flanges, is bored out to form a cylinder in which the wheel-buckets are adapted to fit. This cylinder is formed at a different angle from the upper portion of the casing, being preferably straight or at right angles to the lateral plates which support the gates, being at right angles or substantially so to the axis of the wheel, the buckets being correspondingly shaped. This construction permits the buckets to fit at all times closely within the cylinder at their outer peripheries and prevents leakage of the water at this point, which is not changed by any wear on the step and the consequent movement of the wheel longitudinally in the casing.

(No Model.)

3 Sheets—Sheet 1.

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ELECTRIC METER.

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Fig. 2.

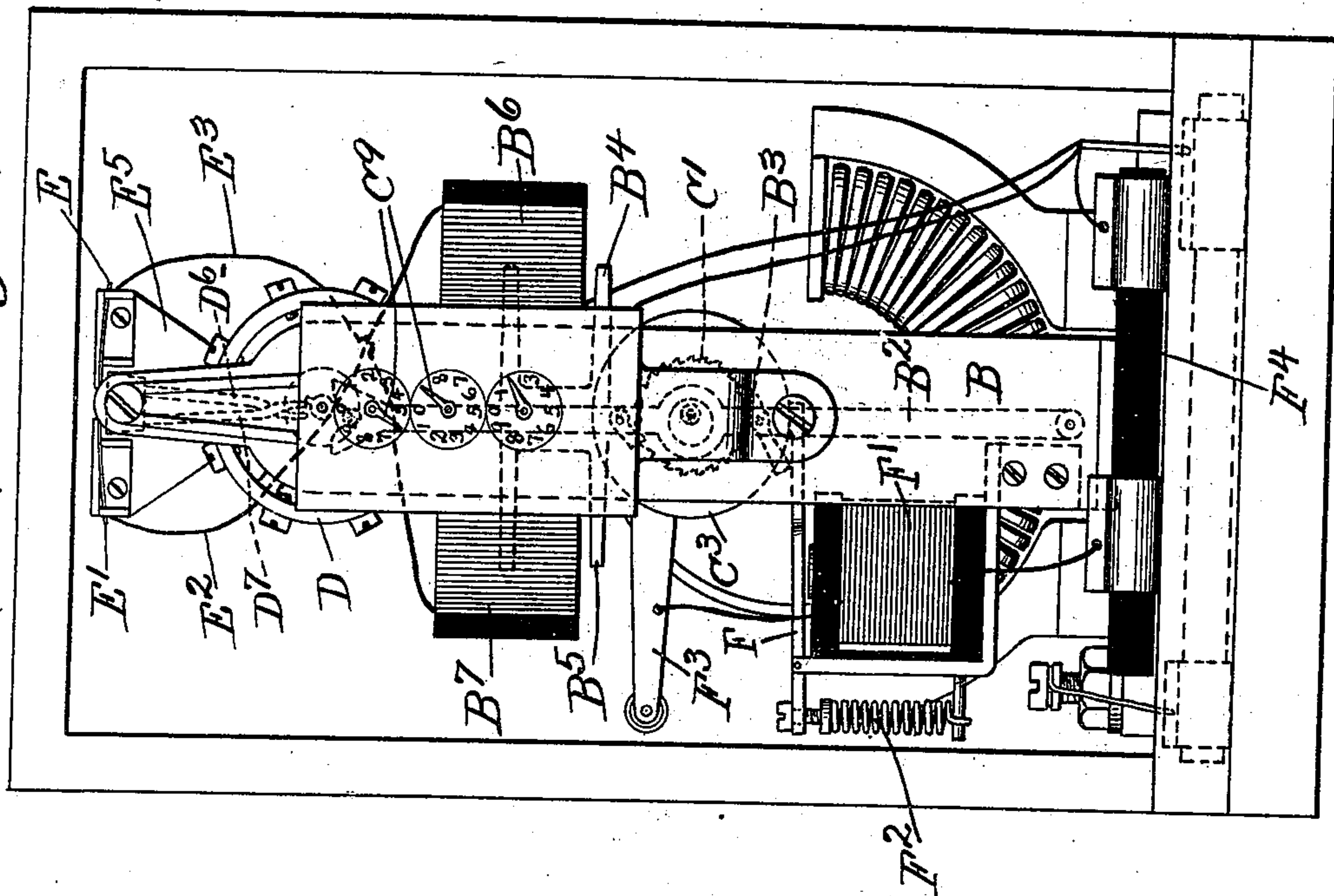
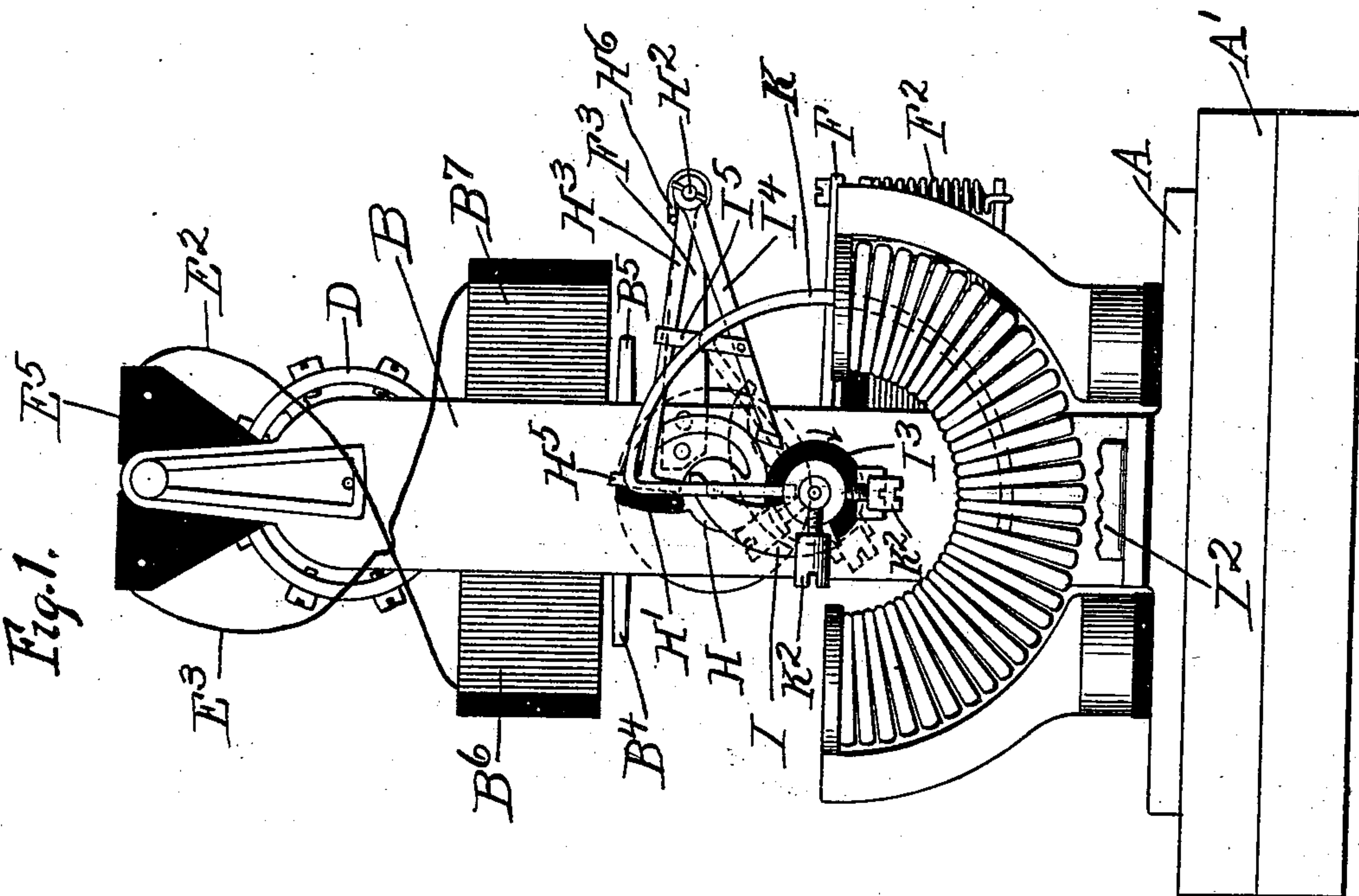


Fig. 1.



Witnesses,

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