

S. T. TEACHOUT.
Water-Wheels.

No. 139,344.

Patented May 27, 1873.

Fig. 1.

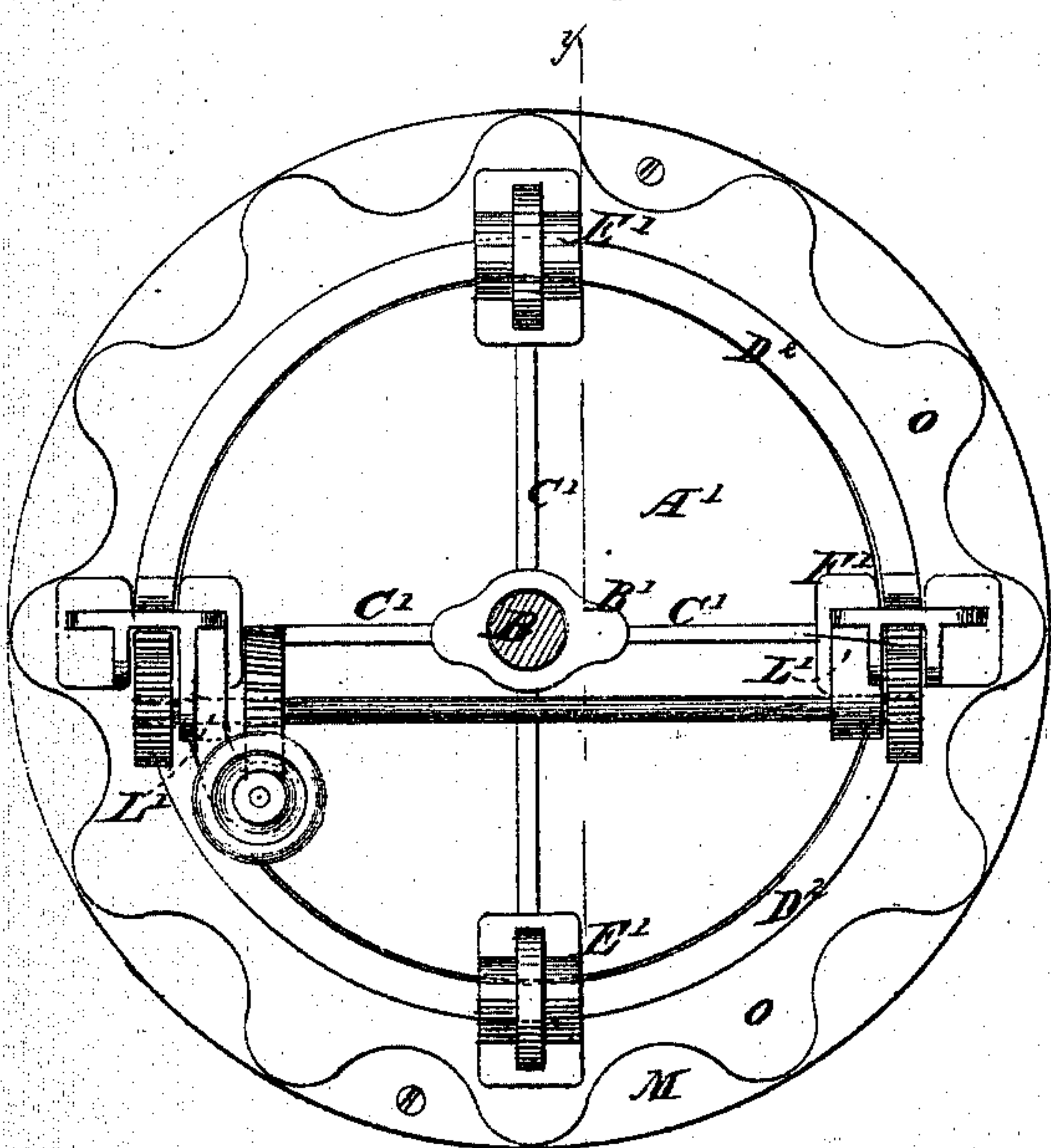


Fig. 2.

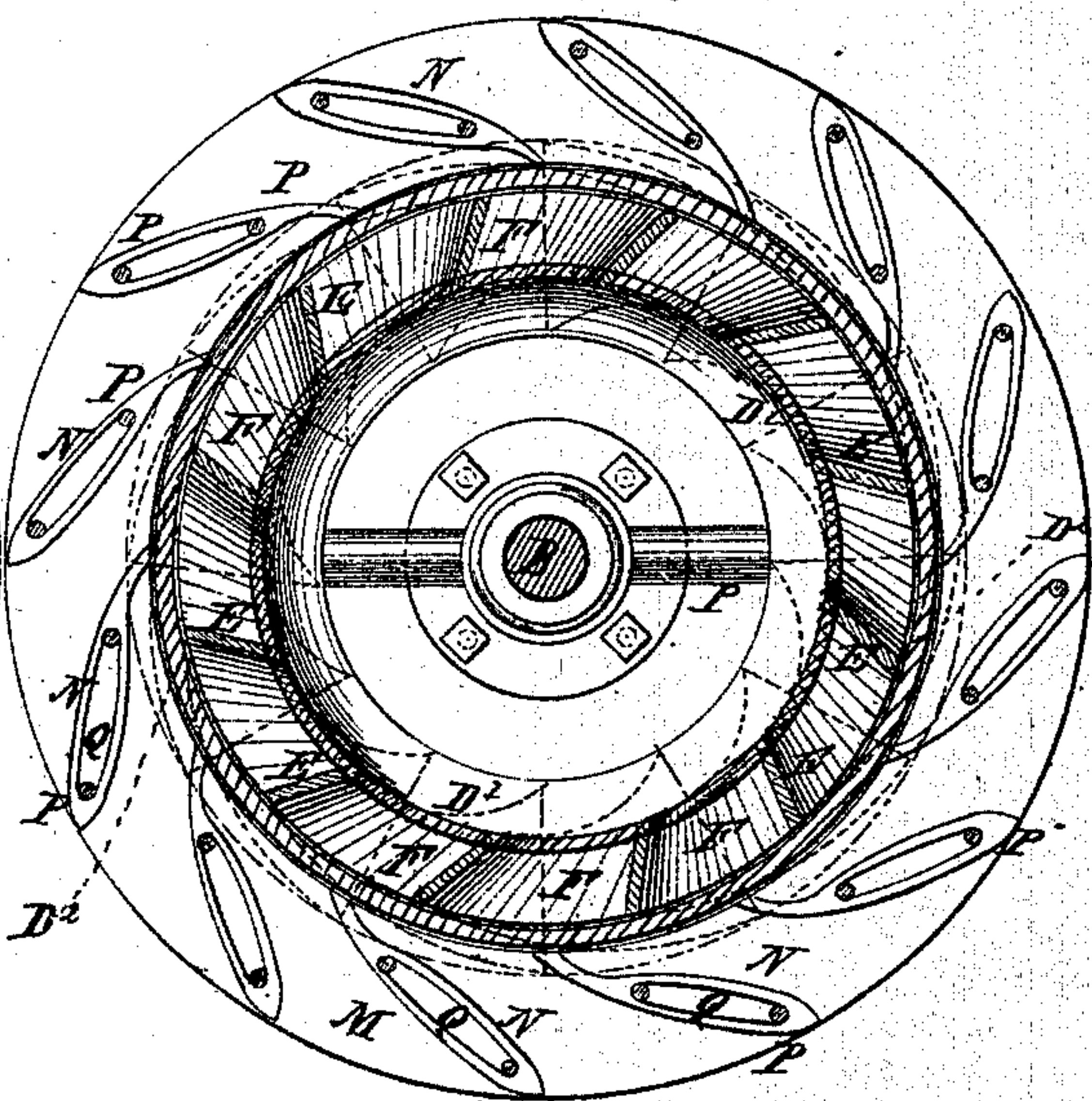


Fig. 3.

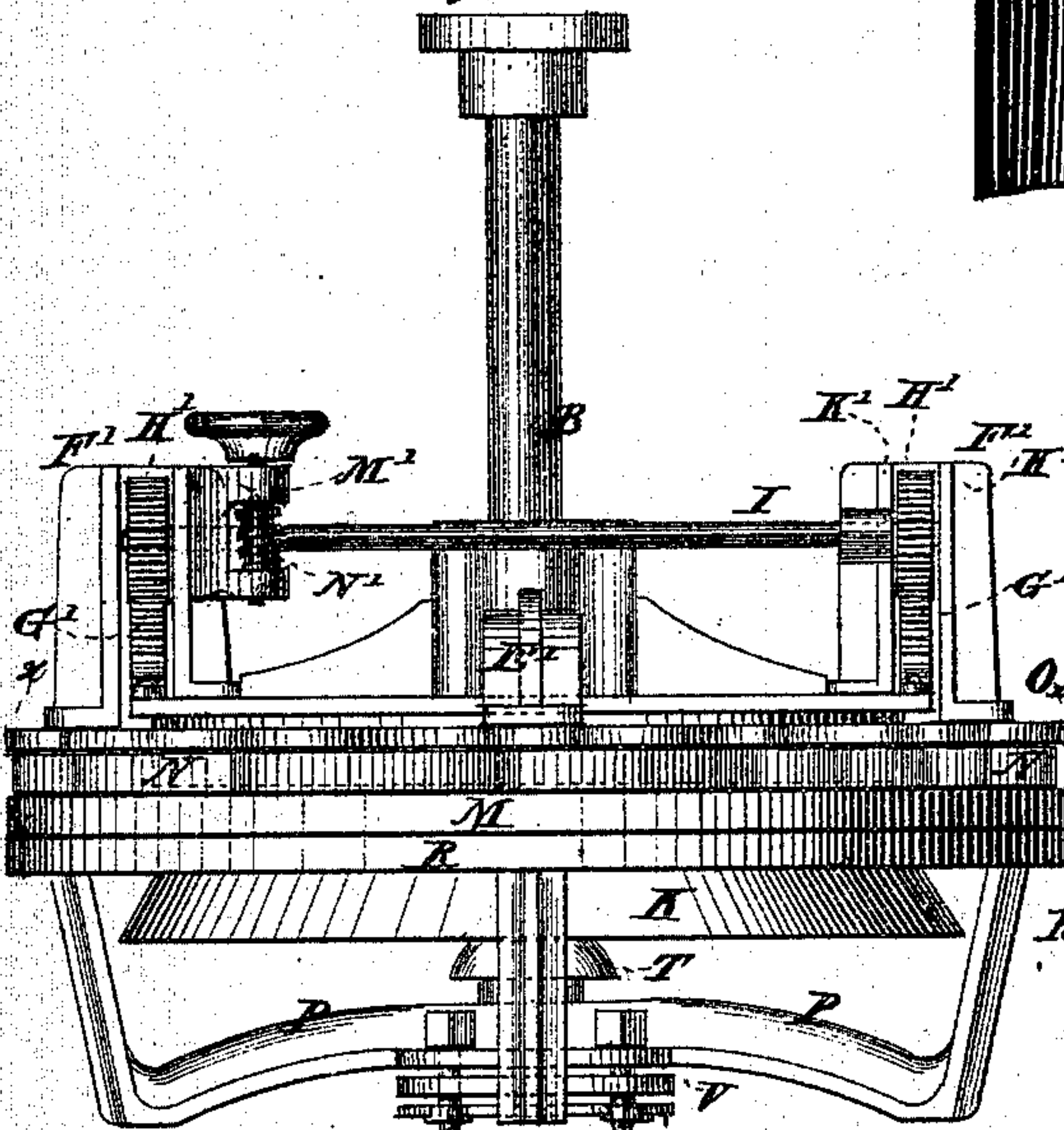


Fig. 5.

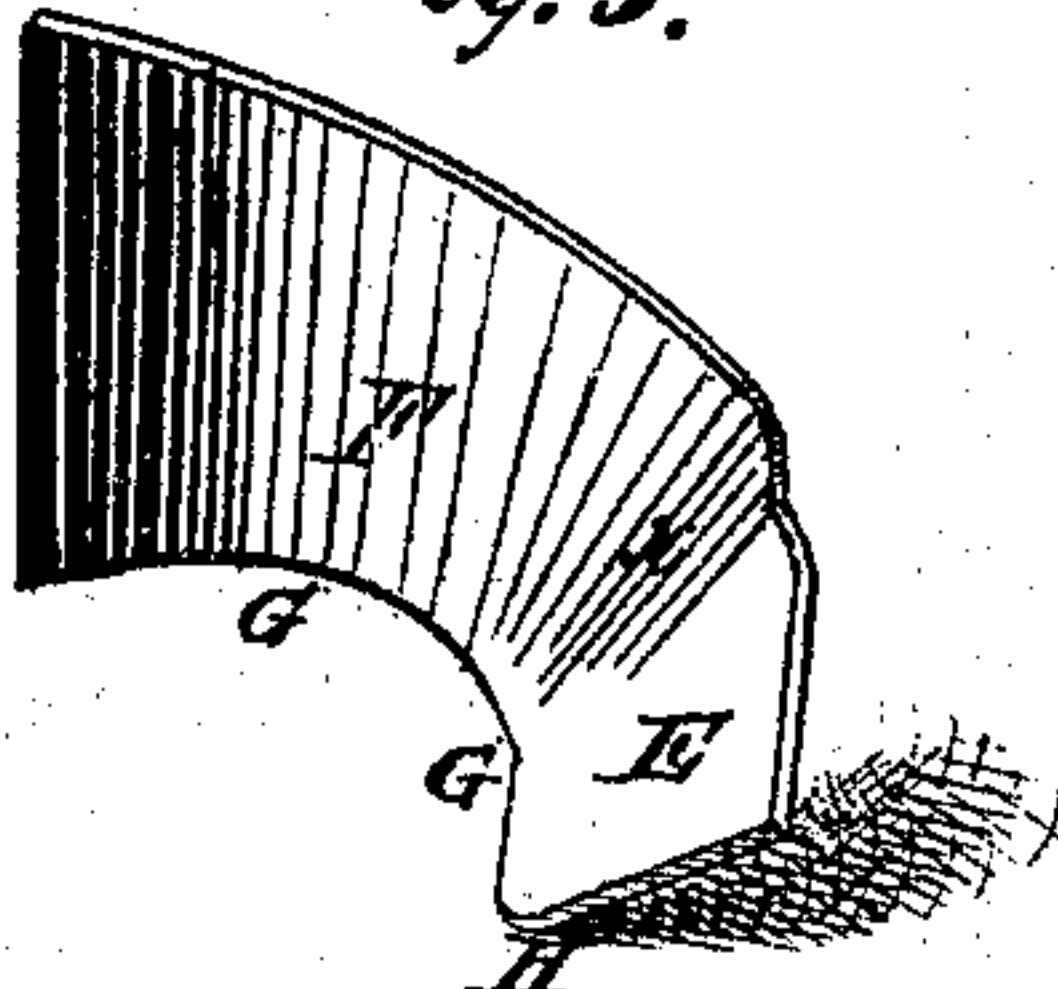
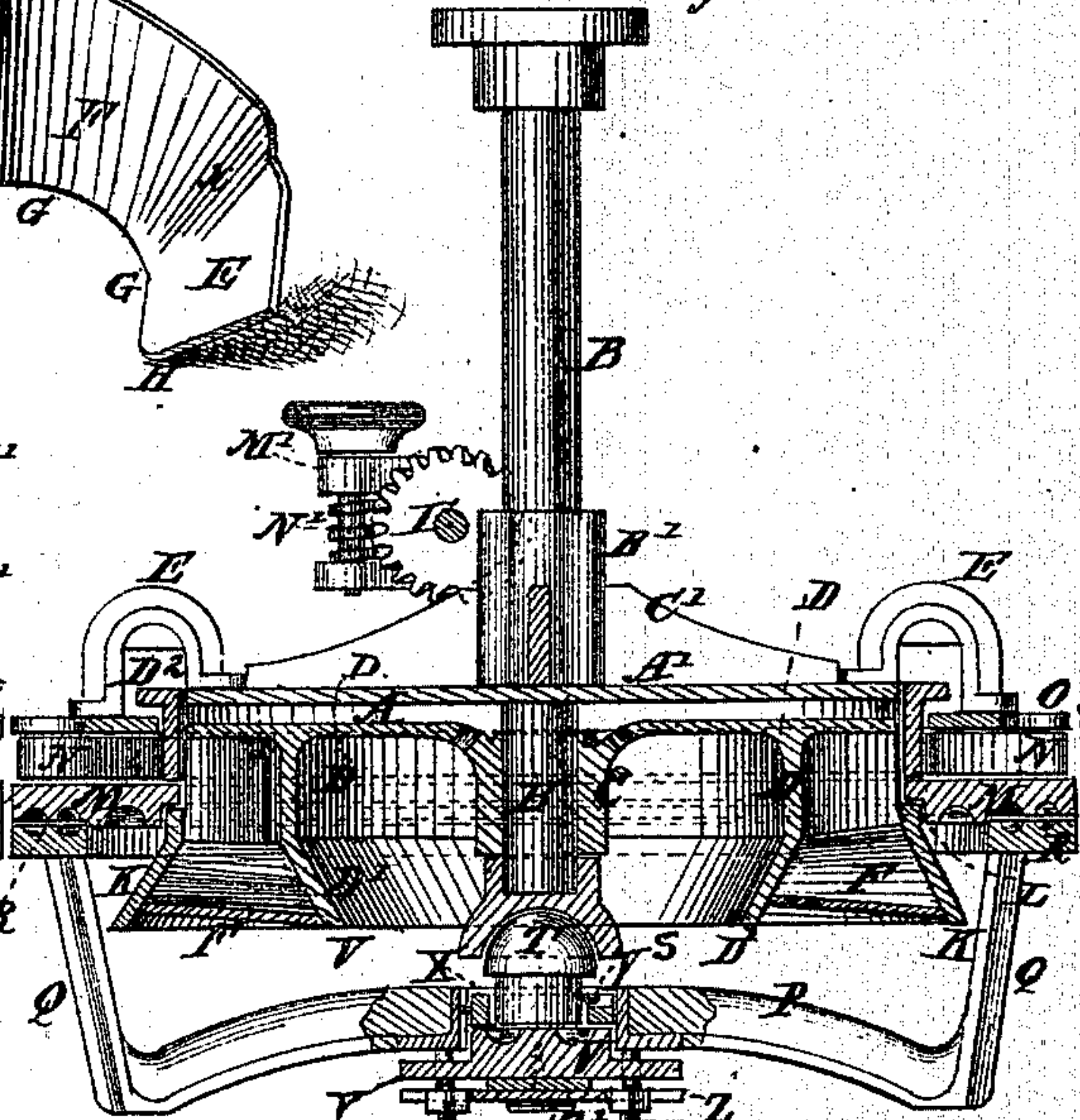


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

SAMUEL T. TEACHOUT, OF TROY, NEW YORK, ASSIGNOR TO HIMSELF AND
JOEL C. PECK, OF SAME PLACE.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **139,344**, dated May 27, 1873; application filed
July 20, 1872.

To all whom it may concern:

Be it known that I, SAMUEL T. TEACHOUT, of Troy, in the county of Rensselaer and State of New York, have invented a new and Improved Water-Wheel, of which the following is a specification:

The invention consists in a guide-rim with annular recess, and in combining with the buckets flaring flanges, as hereinafter fully described.

Figure 1 is a plan view of my improved water-wheel. Fig. 2 is a horizontal section. Fig. 3 is a transverse sectional elevation. Fig. 4 is a side elevation, and Fig. 5 is perspective view of one of the buckets.

Similar letters of reference indicate corresponding parts.

A is the top plate or disk of the wheel attached to the shaft B, by a hub, C. D is an annular flange or rim projecting downward from the under side of this plate as far from the periphery of the disk as the width of the upper part E, of the buckets. At a point about half way from top to bottom this flange turns from the vertical line toward the line of the axis of the shaft about twenty-six degrees more or less forming in said parts an inverted frustrum of a hollow cone. The buckets E F Fig. 5, are attached to this flange at their edges, G, and at the upper ends, H, they are attached to the under side of disk A. The parts E are of about equal width from top to the point I, where they curve, making nearly a right-angular turn, and from this point the buckets flare outward to the lower ends, making a considerable increase in the width, and so as to join the part D¹ of the flange D, on the inner edge, and a similarly-flaring flange, K, on the outer edge, flaring outward in about the same measure that the other flares inward, which said flange K is cast on the buckets. It terminates a little above the flaring part in an annular recess L, in the inner edge of the lower guide-rim M, to leave space for the water to enter the buckets. The upper parts E of these buckets are so inclined to the radial lines of the wheel as to range at right angles to the line in which the water moves in passing through the spaces between the guides N, so as to get the best results from the impact; and, as to width, they are in such

proportion to the spaces between the guides that the water does not spread laterally in coming against them, by which no loss is incurred on that account. The spaces between the parts E of the buckets contract in about the same measure that the buckets expand laterally, so that the water is caused to react upon the flanges D¹ and K with very beneficial results. By the widening of the lower parts of the buckets, a greater quantity of water can be discharged with buckets of the same pitch or angle than could otherwise be, by which the capacity of any wheel will be considerably increased after the limit in the width of the buckets has been reached, said limit being about one-seventh of the diameter. The guides N, which are secured between the guide-rims M and O by bolts P, which clamp them all together, are cast with a long vertical slot Q in the thicker part, where so much metal is not needed for strength, to economize the same, and to provide the holes for the bolts in the cheapest manner. Said slots are just long enough to have the bolts buried at each end, and thus hold the guides securely against moving. As these guides will generally be made of bronze-metal, the saving of metal thus effected is a matter of considerable importance. P' represents a bridge, tree, or spider suspended under the wheel by the arms Q, hanging from a rim, R, bolted to the under side of the lower guide-rim. The said bridge, tree or spider has a large vertical hole at the center, through which the inverted cap S fitted on the lower end of the shaft, also the lignumvitæ step-block T, can be readily passed in applying and removing them, and a ring U is fitted in said hole in the spider to hold the step; said ring being supported on a follower V suspended under the spider by bolts and nuts W. The ring has a pin, X, working in a vertical slot in the wall of the hole of the spider to prevent it from being turned by the shaft and step, and the step has a piece, Y, entering a notch in the ring to prevent it from being turned. The follower is adjustable up and down on the bolts to vary the height of the wheel. The nuts of said bolts are prevented from working off by a locking-plate, Z, which has notches corresponding to the nuts in form and position, which embrace said nuts

and prevent them from turning when the plate is screwed up against the under side of the follower by a screw, Z', at the center. A' represents the plate or disk for covering the top of the wheel; it is about the same size as the disk A, with a hub, B', at the center, through which the shaft passes, and having a stuffing-box for making a tight joint. C' represents strengthening-ribs for said disk radiating from the hub. At the periphery of this disk, and fitting it closely, is the annular ring or hoop-shaped gate D², fitting in an annular space between said disk and the upper guide-ring O, and having an ascending and descending motion in opening and closing. Said disk A is supported in this position by the strong arches E' and E', which are bolted to the top of guide-ring O, spring upward and over the gate so as to allow space for it to rise, and then extend down to the top of said disk to which they are bolted. To open and close the gate, I have the toothed bars G' attached to top of the ring on two opposite sides with pinions H' and a shaft, I', for working them; and I utilize the two arches, E', for the supports and guides for these toothed bars, also for supports for the shaft I', by extending them sufficiently high, providing the necessary flanges K' with a space or way between for the toothed bars, and attaching the bearing L' for the shaft, and one of said bearings I extend sufficiently, as shown at M', to form the support for the worm N', by which the shaft I' is turned; said worm

being on the lower end of a shaft which, in practice, will extend up through the fore-bay for being operated.

In order to have the most compact and solid volumes of water entering the buckets from the chutes to retain all the force until actually in the wheel, I make the spaces between the guides N as wide as the spaces between the buckets, and thus cause the water to be unobstructed and its force preserved until it arrives where its expenditure will afford beneficial results.

The rim R, by which the spider for holding the step is suspended, will be fastened to the floor in any way, and the rim M will be bolted to it so that it can be readily unfastened, so that the whole of the parts forming the case and inclosing the wheel can be raised up to afford access for cleaning out stones, blocks, sticks, or other objects which may wedge in the buckets.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The guide rim M provided with annular recess L, arranged as and for the purpose described.
2. The combination of the said bucket E F and the flaring flanges D¹ K, substantially as specified.

SAMUEL T. TEACHOUT.

Witnesses:

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