

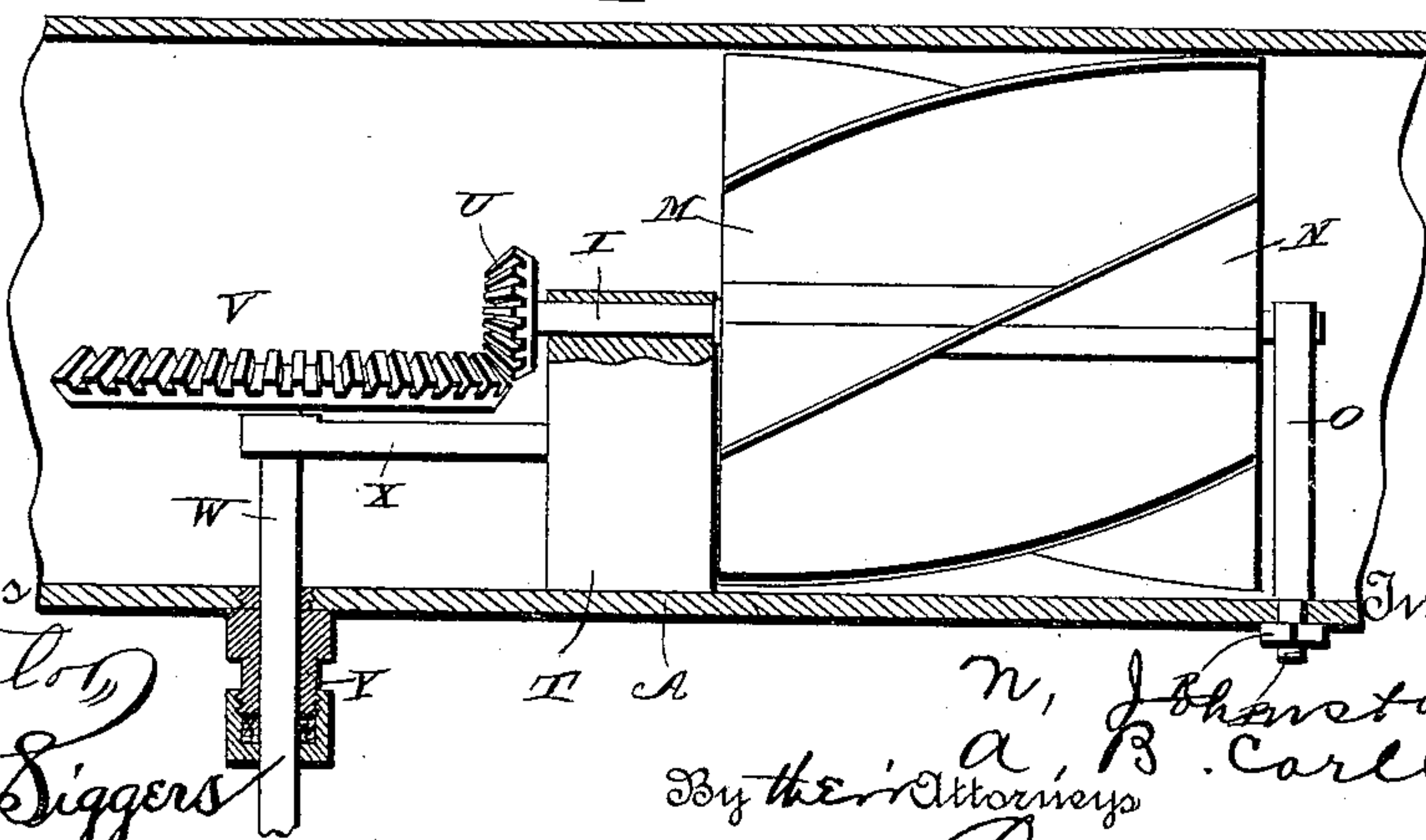
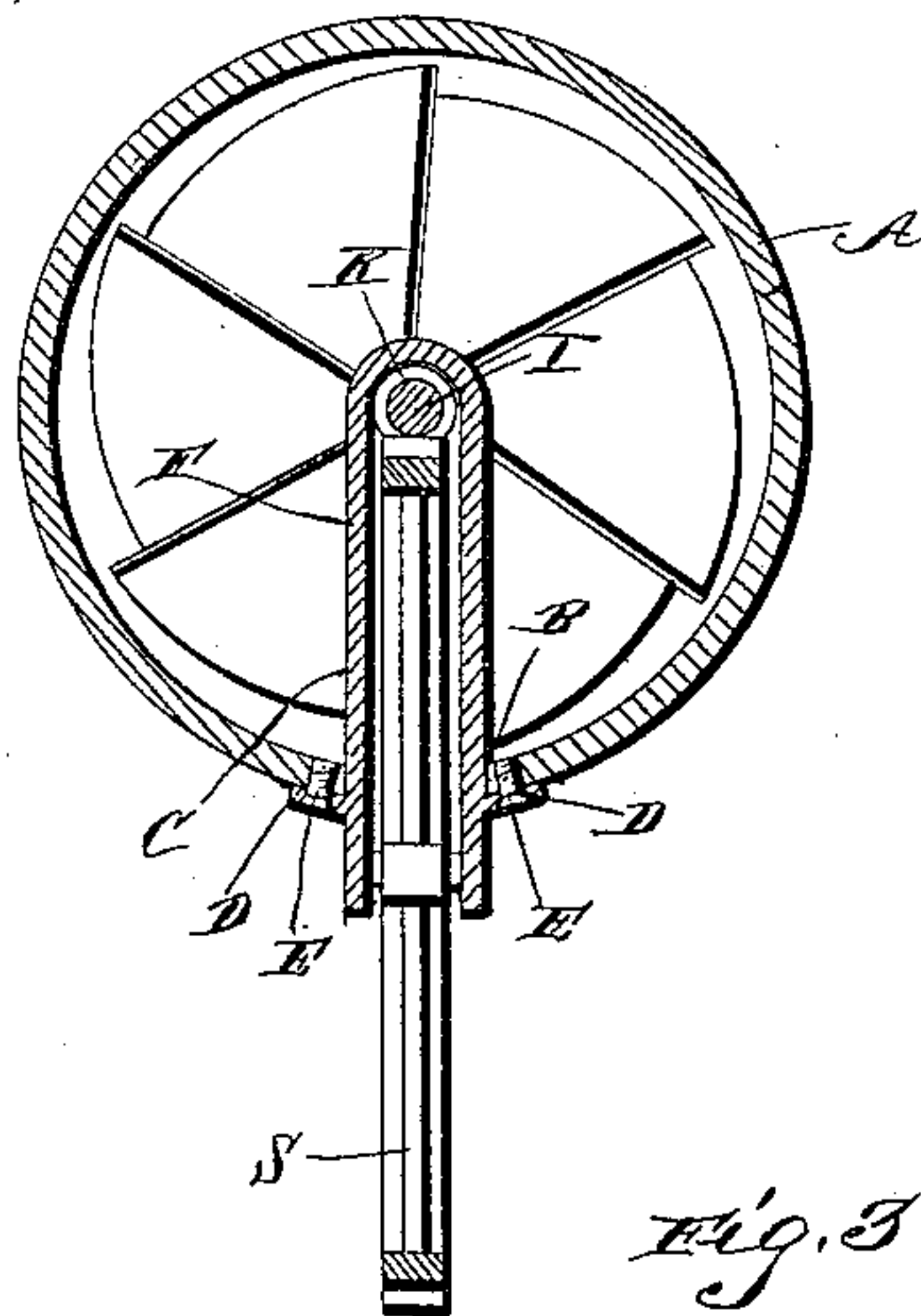
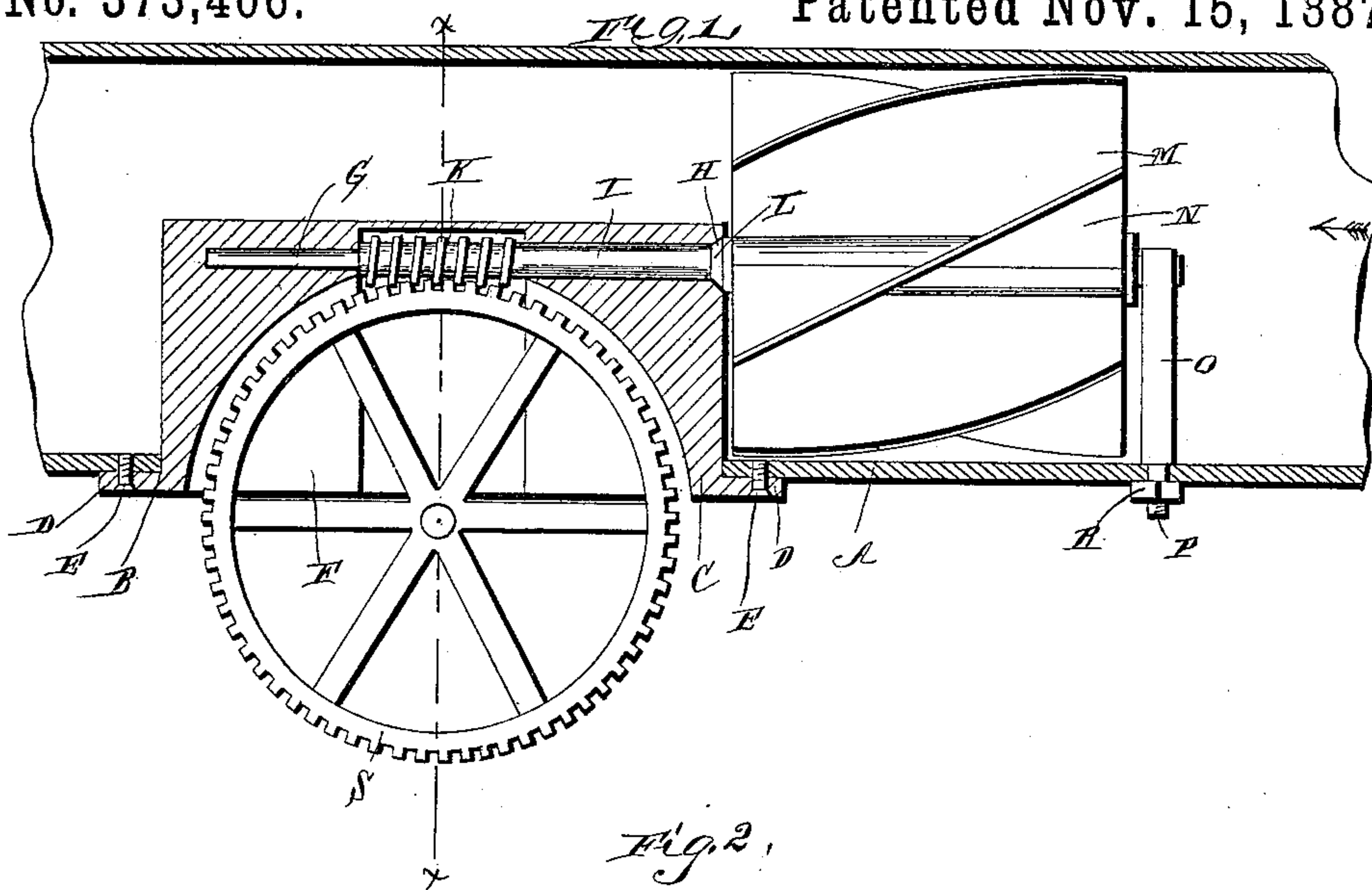
(No Model.)

N. JOHNSTON & A. B. CARLL.

ROTARY METER FOR GAS.

No. 373,406.

Patented Nov. 15, 1887.



Witnesses

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UNITED STATES PATENT OFFICE.

NORWOOD JOHNSTON AND ADDISON B. CARLL, OF WASHINGTON, PENNSYLVANIA.

ROTARY METER FOR GAS.

SPECIFICATION forming part of Letters Patent No. 373,406, dated November 15, 1887.

Application filed July 25, 1887. Serial No. 245,243. (No model.)

To all whom it may concern:

Be it known that we, NORWOOD JOHNSTON and ADDISON B. CARLL, citizens of the United States, residing at Washington, in the county of Washington and State of Pennsylvania, have invented a new and useful Improvement in Gas-Meters, of which the following is a specification.

Our invention relates to an improvement in gas-meters; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claim.

The object of our invention is to provide a gas-meter which is adapted to measure large quantities of gas under high pressure—such as flow from gas-wells and through gas-mains.

In the drawings, Figure 1 is a vertical longitudinal sectional view of a portion of a gas-main provided with a gas-meter embodying our improvements. Fig. 2 is a vertical transverse sectional view of the same, taken on the line *xx* of Fig. 1. Fig. 3 is a horizontal sectional view of a modified form of our invention.

A represents a section of gas-main, which is provided in its lower side with a longitudinal opening, B.

C represents a metallic block, which is adapted to extend upward through and to fit snugly in the said opening, and the said block is provided at its lower side with laterally-extending flanges D, which bear against the under side of the pipe. Screws or bolts E are passed through openings made in the said flanges and enter threaded openings in the gas-main and thereby firmly secure the block thereto. In the center of the block is a vertical longitudinal opening, F, which is semicircular in shape and extends to the lower side of the block. In the upper side of the block, in line with the axis of the gas-main, is a horizontal longitudinal bore, G, the front end of which is enlarged and is provided at the front end of the block with a countersunk annular recess, H.

I represents a horizontal shaft, which has its rear portion journaled in the bore G, and is provided with a worm, K, that is arranged in a recess which communicates with the upper side of the recess F.

L represents an annular shoulder or enlargement, which is formed on the shaft I and en-

ters the recess H, forming a ground joint therewith, and thereby packing the shaft so snugly in the bore G that gas cannot escape from the main around the shaft.

M represents an operating-screw comprising a series of radial spirally-arranged blades, N, that project from the front portion of the shaft I. These blades extend nearly to the sides of the gas-main.

O represents a standard or post, which is secured to the lower side of the gas-main at a suitable distance in advance of the block B by means of a depending threaded stud, P, which extends through an opening in the lower side of the gas-main, and a clamping-nut, R, which works on the lower end of the threaded stud. The upper end of the post or standard A is provided with a horizontal opening, in which the front end of the shaft I is journaled.

S represents a gear-wheel, which has its shaft journaled in suitable bearings on the under side of the gas-main. This gear-wheel extends up into the recess or opening F in the block B and engages the worm K. Suitable registering mechanism, which is not here shown, as it is of the usual well-known construction and forms no part of our invention, is connected to and operated by the wheel S, the said registering mechanism being adapted to register the number of revolutions of the screw M.

The operation of our invention is as follows: As the gas flows through the main in the direction indicated by the arrow in Fig. 1, it strikes against the spiral blades of the screw, and thereby rotates the latter and the shaft I at a rate of speed proportioned to the velocity with which the gas flows through the main. The tendency of the gas in pressing against the blades of the screw is to force the shaft I forward and thereby cause its offset or shoulder L to be so firmly seated in the recess H as to prevent leakage. The rotation of the shaft I is imparted to the gear-wheel S, and consequently to the registering mechanism, by means of the worm K, which meshes with the wheel S.

It will be observed by reference to Figs. 1 and 2 that the mechanism is almost entirely inclosed in the gas-main out of the way, and thereby our improved gas-meter takes up very little space.

It will be observed that the mechanism, be-

ing inclosed in the metallic block C, is not where it can be injured by the passing of the gas, and can be oiled and inspected at any time. The machine does not require any bend
5 or turn of the pipe, but simply measures the gas as it passes through the main.

The blades can be made with more or less slope, according to whether it is required to measure gas moving at a low or high speed.

10 In constructing one of our meters for a large-sized main, in the place of one large wheel S, connecting with the worm K, two smaller ones can be used, one working entirely within the block C and the other connecting it with the
15 registering-machine. In this way the block C can be made smaller.

We have successfully tested a gas-meter thus constructed in a gas-well under the pressure of gas sufficient to cause the screw to make
20 six thousand revolutions per minute.

In Fig. 3 we illustrate a modified form of our invention, in which a standard, T, is substituted for the block C. A bevel-pinion, U, is attached to the rear end of the shaft I in lieu
25 of the worm, and a bevel-wheel, V, is substi-

tuted for the wheel S, the said bevel-wheel being secured to a shaft, W, that is journaled in an arm, X, extending forward from the standard T and in the packing-box Y in one side of the gas-main.

Having thus described our invention, we claim—

In a gas-meter, the combination of the main A, the shaft I, journaled centrally therein and provided with the screw M, the block C, forming the bearing for the rearend of the shaft I,
35 said block extending through one side of the gas-main and having the recess F, the worm K on the shaft I, and the gear-wheel S, extending into the recess F and engaging the
40 worm, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

NORWOOD JOHNSTON.
ADDISON B. CARLL.

Witnesses:

JAS. I. BROWNSON, Jr.,
S. C. CLARK.