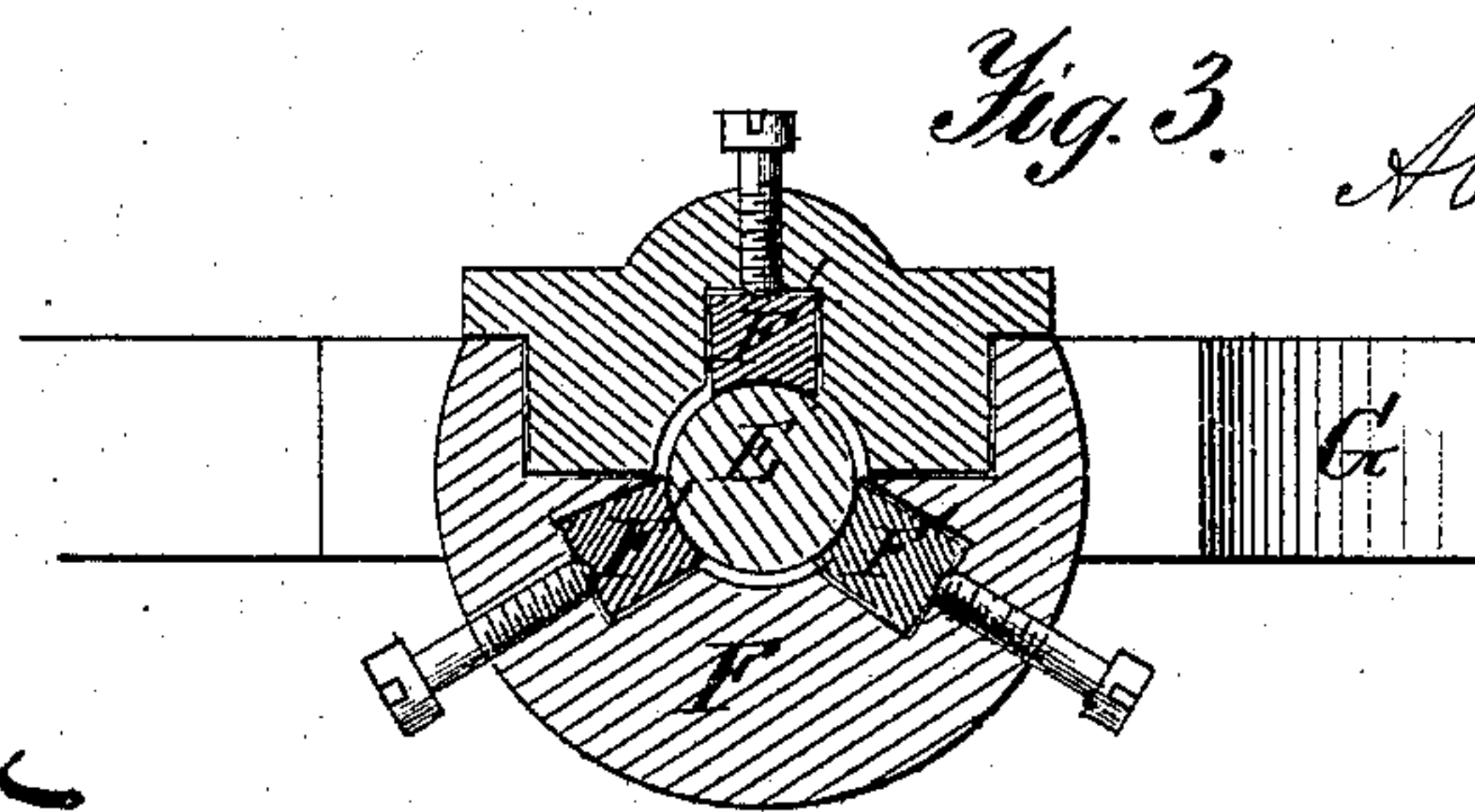
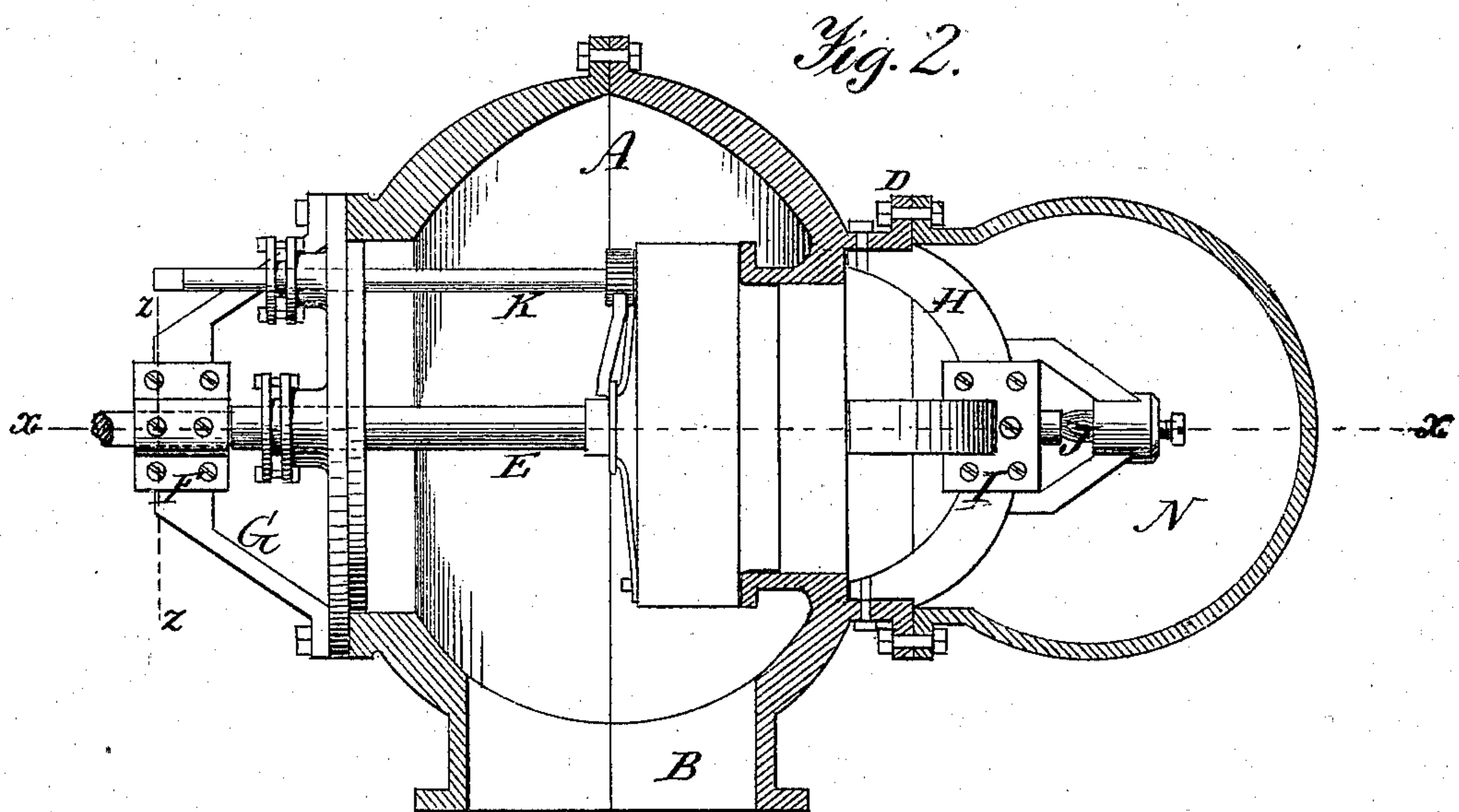
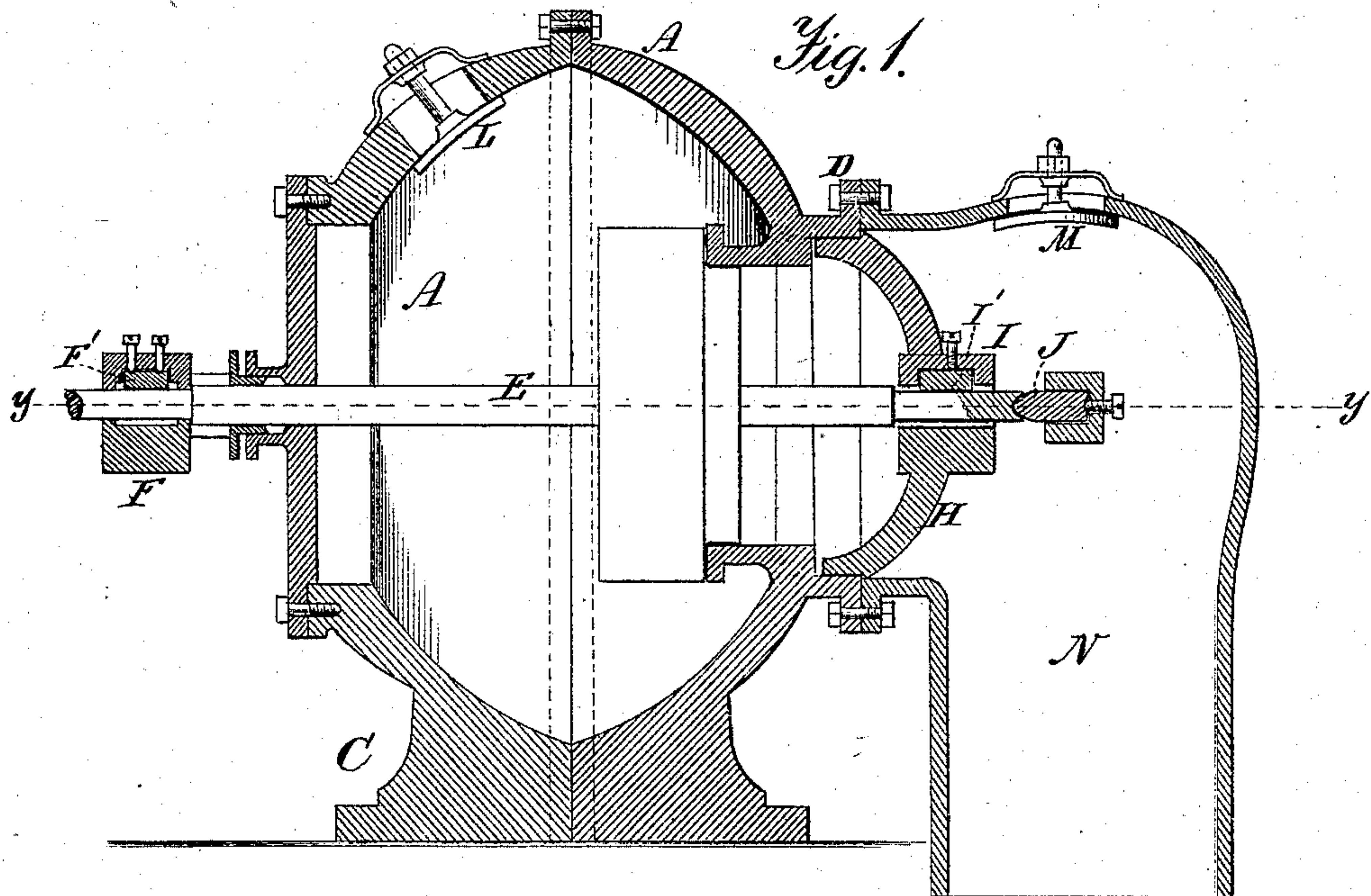


A. MYERS.

Metallic Cases for Turbine Wheels.

No. 137,471.

Patented April 1, 1873.



Witnesses.
A. Ruppert.
W. Bradford

Abraham Myers
Inventor.
by
D. W. Colwell & Co.
his Attys.

UNITED STATES PATENT OFFICE.

ABRAHAM MYERS, OF SALEM, OREGON.

IMPROVEMENT IN METALLIC CASES FOR TURBINE WHEELS.

Specification forming part of Letters Patent No. **137,471**, dated April 1, 1873; application filed March 19, 1873.

To all whom it may concern:

Be it known that I, ABRAHAM MYERS, of Salem, in the county of Marion and State of Oregon, have invented a new and useful Improvement in Metallic Cases for Turbine Wheels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing making part of this specification, in which—

Figure 1 is a vertical section on the line xx of Fig. 2. Fig. 2 is a horizontal section on the line yy of Fig. 1; and Fig. 3 is a vertical section on the line zz of Fig. 2.

The same letters on all the figures indicate identical parts.

Turbine water-wheels are generally used on vertical shafts. Prominent among this class of motors is the wheel invented by James Letfel, of the patent for which I am a part owner. These wheels, driving a vertical shaft, generally require expensive gearing to convey the power to the propulsion of horizontal lines of shafting. In using the wheels I have found it convenient, in many instances, to attach them on horizontal shafts, and it is to enable this to be done in the best manner that my invention, on which this application is founded, has been contrived by me.

The following description will enable those skilled in the art to apply my invention.

In the annexed drawing, A is a spherical cast-iron casing, into which the supply-pipe opens, being connected by a flanged neck, B. The casing rests on a base, C, and has an outlet neck and flange at D. Opposite to the latter is a flat plate attached by bolts, through the center of which passes the shaft E, passing through a stuffing-box to prevent the escape of the water. The outer bearing of the shaft is in an adjustable box, F, supported on a bridge, G, bolted to the head-plate. This box is rendered adjustable by the followers F', operated by set-screws tapped through the box, by means of which these followers can be shifted to adapt them to the center of the shaft. As this journal must be lubricated with oil the box must be so flanged and fitted to the shaft that the oil will be retained. The other end of the shaft is supported upon a similar box sustained by the bridge H bolted

to the inside of this neck D. This journal-box I is precisely like the box F F', except that as the bearing is lubricated by the water, the ends of the box are not flanged, so that the water may flow freely through the box, along the shaft, and between the followers. The end of the shaft bears against the adjustable step J. The lower case or tubular portion, which incloses the wheel, is fitted neatly to the inner surface of the neck D, which is formed with a flange at the inner end projecting into the interior of the spherical casing, against which the flange on the water-wheel case may be bolted to sustain its own weight and that of the gates, the weight of the wheel only being carried on the shaft, and that of the wheel and shaft resting upon the bearings F F' I I'. The gates of the Leffel turbine are operated by a shaft and pinion. This shaft K passes through the flat plate, a stuffing-box being also fitted to this shaft for the same purpose as that on the shaft E. A bent tube, flanged at the upper end, is bolted to the flange on the neck D, and is designed to extend below the surface of the tail-water, to serve as a draft-tube for utilizing the entire head of water. To compensate for the space occupied by the bridge H, so as not to impede the flow of the water, the draft-tube N is enlarged at the part which incloses the bridge, which, in the case illustrated, is at the angle where it diverts the water from its horizontal to its vertical course. The effect of this tube being to bring into operation the entire pressure due to the head, the pressure is made equal upon all the floats of the wheel, notwithstanding the difference of height due to the diameter of the wheel. Man-holes are placed upon the spherical case and draft-tube, as shown at L and M, to give access to the wheel and internal bearing. The opening, covered by the flat head-plate, is large enough to permit the wheel to be inserted or removed without taking down the spherical case.

The entire casing is intended to be made of metal, and fitted at the shops where the wheels are made so that they may be shipped entire and put into the place where used.

I am aware that cases for water-wheels running on vertical shafts have been in use—all then that I claim as new in this invention are

those modifications by which they are adapted for this special use.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A portable metallic case for a turbine, running upon a horizontal shaft, combining in its construction water induction and education openings, a head-plate, and bridges with adjustable bearings, and a downwardly-bent draft-tube, substantially as set forth.

2. The downwardly-bent draft-tube, enlarged at the portion surrounding the internal bridge, substantially as set forth.

3. In combination with the horizontal shaft

the internally-placed bearings I I', having openings between the adjustable followers for the passage of the outflowing current of water, substantially as set forth.

4. In combination with bearings F F' and I I', fitted with adjustable followers, the adjustable step J, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

A. MYERS.

Witnesses:

R. MASON,

A. RUPPERT.