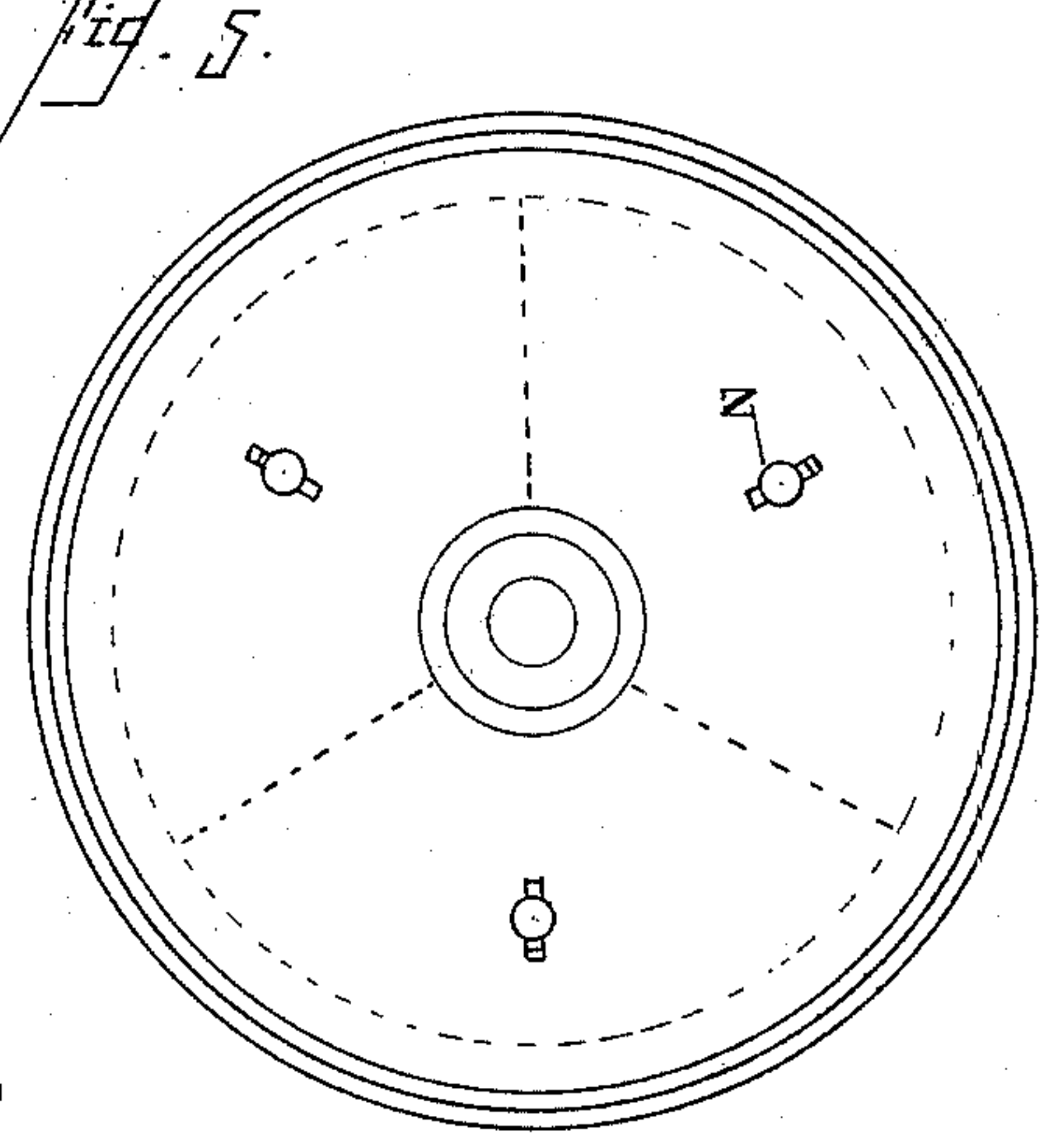
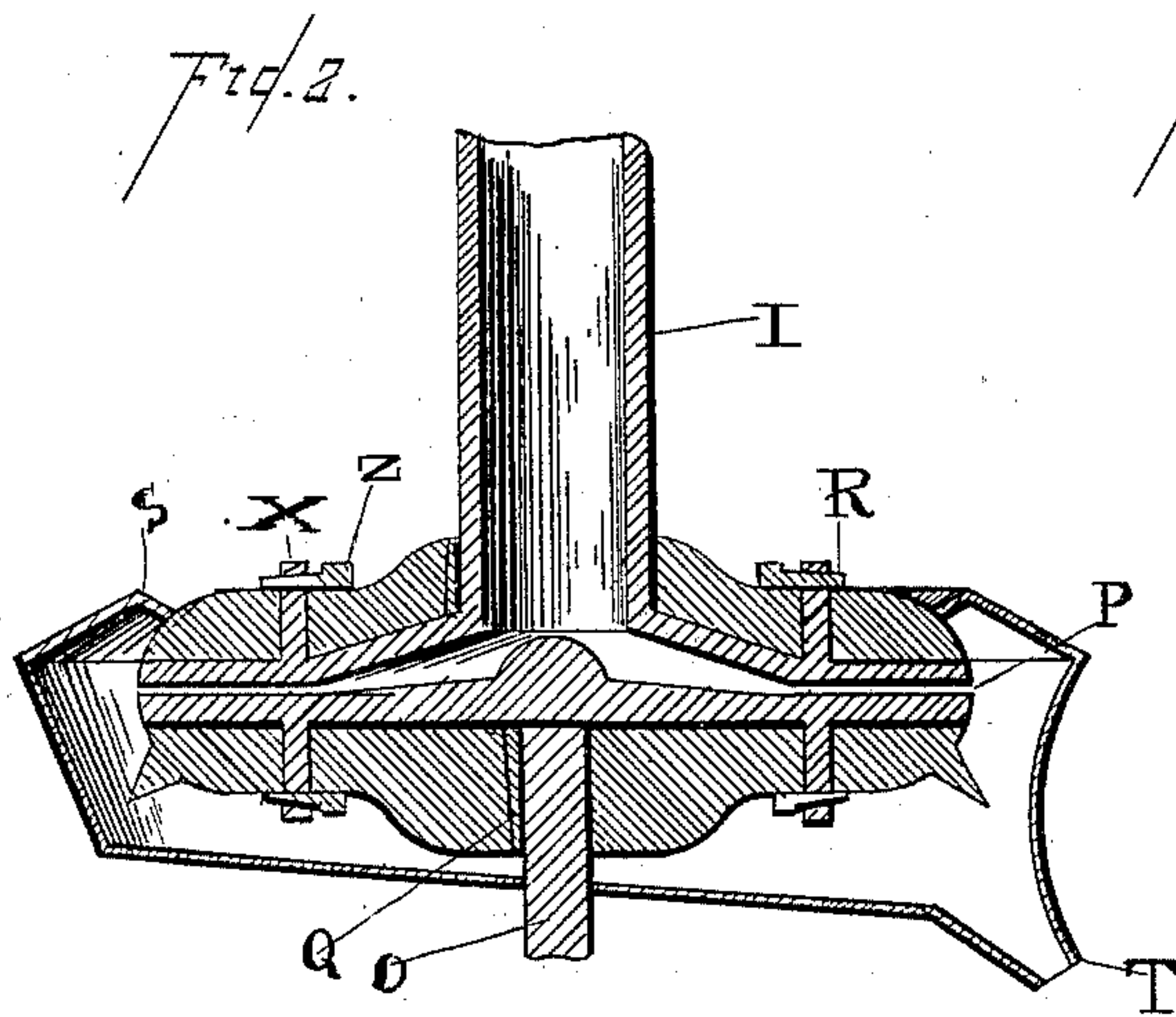
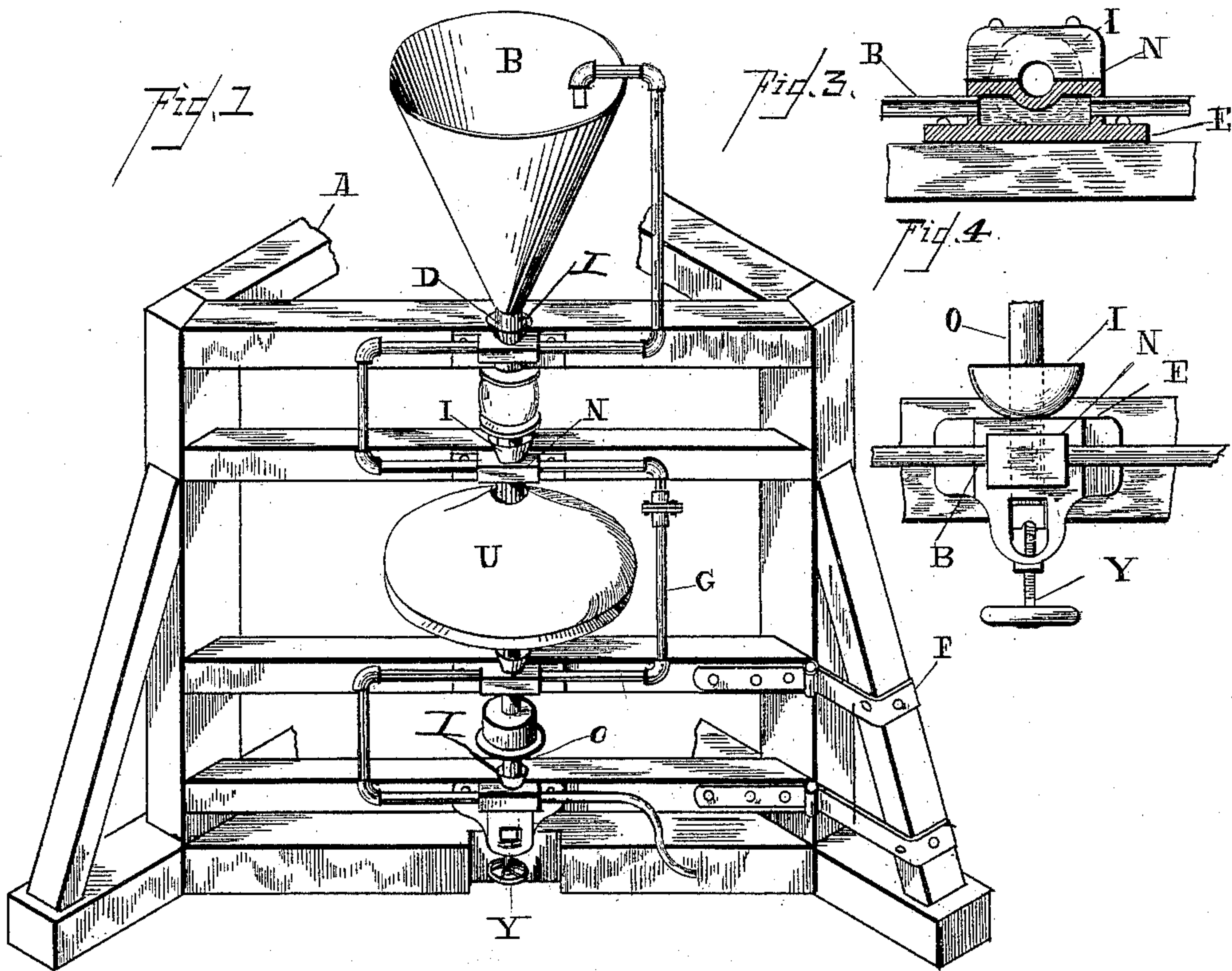


(No Model.)

I. L. CARL & J. B. PATERSON.
ORE MILL.

No. 433,670.

Patented Aug. 5, 1890.



WITNESSES
T. Willoughby
A. W. Bishop

INVENTORS
Irving L. Carl
James B. Paterson
A. S. General Attorney

UNITED STATES PATENT OFFICE.

IRVING L. CARL AND JAMES BUCHANAN PATERSON, OF SAN DIEGO, CALIFORNIA; SAID PATERSON ASSIGNOR TO ALFRED E. COWLES, OF SAME PLACE.

ORE-MILL.

SPECIFICATION forming part of Letters Patent No. 433,670, dated August 5, 1890.

Application filed February 13, 1890. Serial No. 340,379. (No model.)

To all whom it may concern:

Be it known that we, IRVING L. CARL and JAMES BUCHANAN PATERSON, citizens of the United States, residing at San Diego, in the county of San Diego and State of California, have invented certain new and useful Improvements in Ore-Mills, of which the following is a specification.

Our invention has reference to machines for pulverizing and disintegrating ores; and it consists in certain novel features hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of a machine embodying our improvements. Fig. 2 is a diametrical section of the grinding-disks. Fig. 3 is a sectional view of one of the journal-boxes. Fig. 4 is a detail sectional view of the step-bearing for the lower shaft, and Fig. 5 is a plan view of one of the disks with the working-faces removed.

In carrying out our invention we employ a triangular frame A, one side of which has its lower cross-bars supported by hinges F, so that they may be swung outward to permit inspection of the lower disk and its connections. At the top of this frame A we arrange a funnel-shaped hopper B, the lower discharge end of which registers with the upper end of the upper hollow shaft D. This hollow shaft D has the upper grinding-disk C secured to its lower end, and it is mounted in the journal-boxes N, which are secured on the side of the frame A. These journal-boxes have hollow compartments in their rear sides, and a pipe G communicates with said chamber to supply water thereto and thus prevent the boxes becoming overheated. The upper end of the pipe G projects over and into the hopper and discharges water into the hopper and upon the ores. Cups I are arranged on the upper sides of the journal-boxes to feed oil thereto. The lower shaft O is mounted in similar journal boxes, but is solid, and the

upper disk C is secured to the upper end of the said shaft. Band-pulleys are secured on the shafts, so that they may be rotated in opposite directions, as shown. The lower end of the lower shaft rests on a step-bearing E, which is adjustable vertically by means of a set-screw Y, so as to vary the distance between the disks and thus regulate the grinding. The grinding-disks are secured to their respective shafts by the keys Q, and they are provided with the recesses Z in their opposing sides, in which the metallic working-faces P are fitted, said faces being secured in position by the stems X, passing up through the disks, and the keys R inserted through said stems. A casing S, having an inclined bottom and a discharge-spout T, is fitted around the disks and receives the water and ground ore as they pass from between the disks, and the lower disk is provided with an external annular rib K, which directs the ground ore toward the outer side of the said casing.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

The combination of the frame, the journal-boxes secured thereon having hollow compartments in their rear portions, the hollow and solid shafts mounted in said journal-boxes, the hopper on the upper end of the hollow shaft, the grinding-disks on the adjacent ends of the shafts, and the water-pipe communicating with the hollow compartments of the journal-boxes and having its upper end projecting over, and into the hopper, as set forth.

In witness whereof we have hereunto set our hands and seals.

IRVING L. CARL. [L. S.]
JAMES BUCHANAN PATERSON. [L. .]

Witnesses:

A. B. SMITH,
HENRY C. LANGREHR.