No. 693,807. Patented Feb. 18, 1902.

J. SCHMITZ.

TURBINE FOR WATER METERS.

(Application filed Nov. 19, 1897.)

(No Model.)

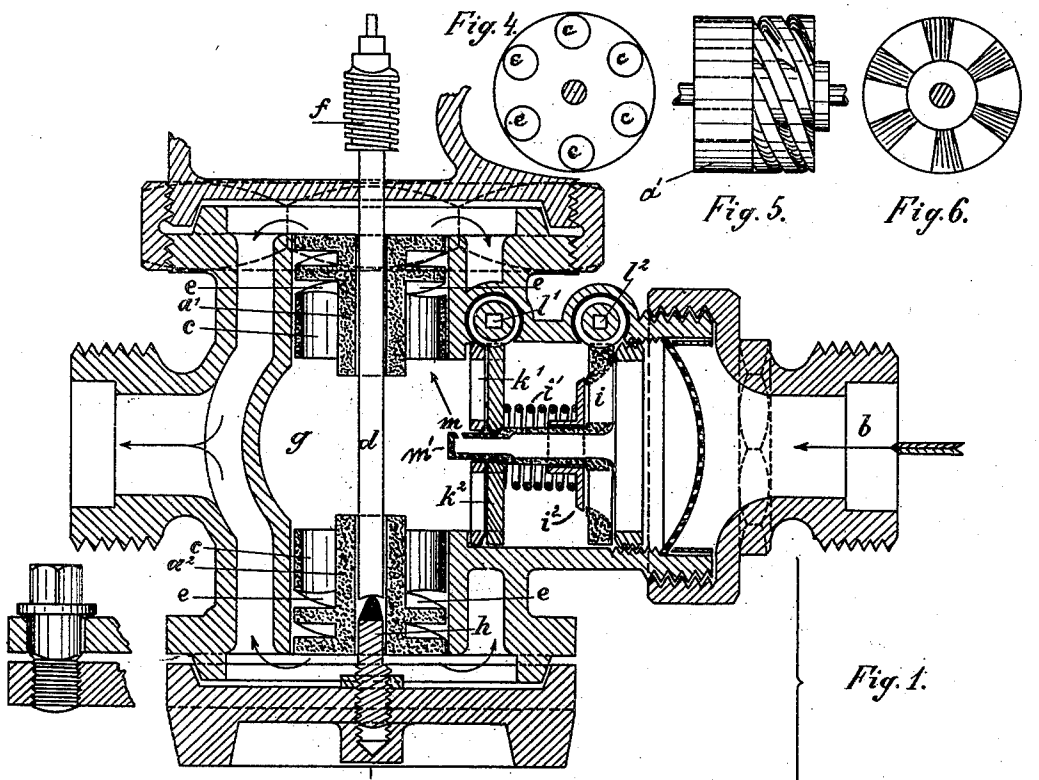
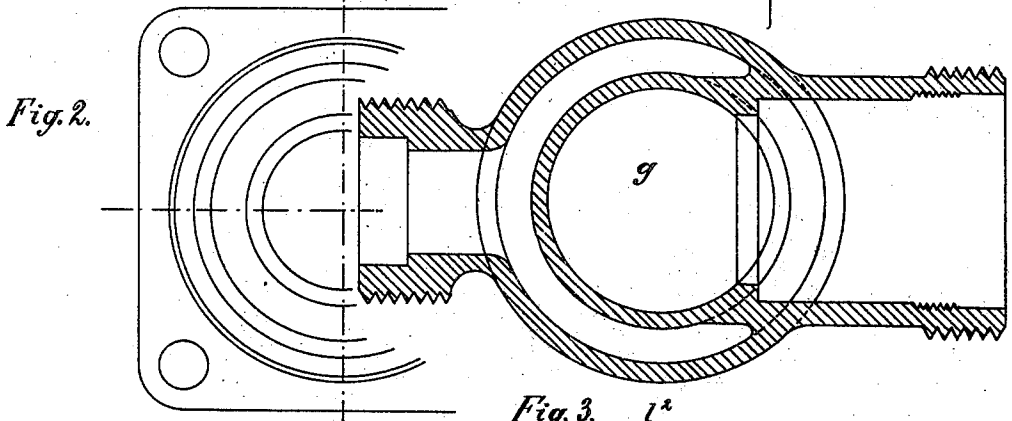
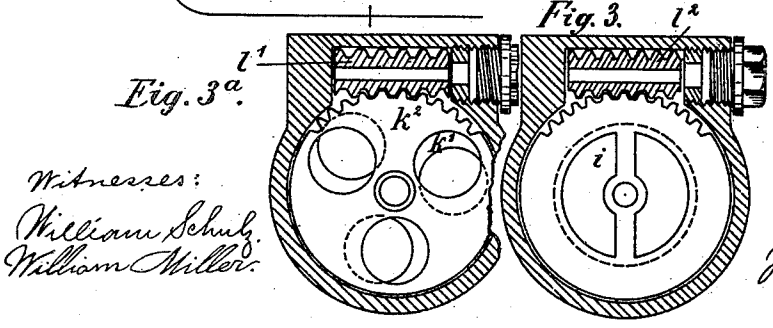


Fig. 1.





Witnesses:
William Schulz
William Miller.

Inventor:
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by his attorneys
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UNITED STATES PATENT OFFICE.

JOSEPH SCHMITZ, OF COLOGNE, GERMANY, ASSIGNOR TO EMIL ZAUM, OF COLOGNE, GERMANY.

TURBINE FOR WATER-METERS.

SPECIFICATION forming part of Letters Patent No. 693,807, dated February 18, 1902.

Application filed November 19, 1897. Serial No. 659,197. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SCHMITZ, a subject of the King of Prussia, Emperor of Germany, residing at Cologne-on-the-Rhine, Prussia, Germany, have invented new and useful Improvements in Turbines for Water-Meters and Similar Purposes, of which the following is a specification.

This invention relates to an improved construction of turbines for water-meters and similar purposes.

The accompanying drawings show the construction of a water-meter discharging five cubic meters of water per hour.

Figure 1 is a vertical longitudinal section of the meter; Fig. 2, a plan; Fig. 3, a cross-section taken through worm l^2; Fig. 3^a, a similar section taken through worm l'. Figs. 4, 5, and 6 are details of one of the turbines.

The letters a' a^2 represent a pair of turbines each composed of a body having longitudinal guide-channels c and a helicoidal head e. The turbines are fixed on the spindle d in such a way that the channels c face each other and communicate with opposite sides of a common inlet-chamber g, which is formed intermediate the turbines.

The water entering chamber g through inlet b flows in two streams in opposite directions through the channels c, and striking the helicoidal heads e effect the rotation of the turbines to actuate through worm f the mechanism by which the quantity of water passing through the meter is accurately measured. By causing the water to first enter the chamber g intermediate the turbines and to then flow in two diverging streams through the latter the turbines will float freely under the pressure of the water, so that friction is avoided and a very perfect registering action is obtained.

If by closing the cock of the water-pipe (not shown) by which the water is admitted to the nozzle b of the meter the turbines are set at rest, they fall by their own weight upon a pivot h, consisting of a hard stone, so that in starting the apparatus friction is avoided.

From the inlet-nozzle b of the casing the water passes through a disk valve i, provided with a hollow shaft m', that terminates in a small outlet-nozzle m. Against the valve i is held by spring i' a collar i^2, sliding on shaft m' and adapted to open and close the valve. On the shaft m' are furthermore mounted a pair of perforated disks k' and k^2, of which the disk k^2, by means of worm l', may be so turned while the meter is in operation that the cross-section of the water-passages may be regulated to correspond to the water-pressure, the size of the passages being increased as the pressure is diminished, and vice versa. The water passes from inlet b through valve i and disks k' k^2 into the body of the casing to actuate the turbines a' a^2 and to thus operate the indicator.

If by partly closing the outlet-cock the counter-pressure of the water in the meter becomes so high that the collar i^2 closes against its seat i and shuts off the main supply, a small jet of increased pressure will still pass through hollow shaft m' and the nozzle m to actuate the turbines. To adjust the force of this jet, the disk i may during the operation of the meter be rotated by means of a worm l^2, so as to change the direction of the nozzle m in relation to the upper turbine a', and to correspondingly change the effect of the jet upon such turbine. The position of the nozzle m is similar to the position of the disks k' k^2, adjusted to correspond to the water-pressure, so that the power of the jet will not cause too violent a motion of the turbine.

What I claim is—

1. The combination in a meter of a casing having an inlet, with a pair of perforated disks, a worm for adjusting said disks during the operation of the meter, a pair of perforated helicoidal turbines having each a channeled body and a helicoidal head, a shaft on which the turbines are mounted, and an intermediate inlet-chamber with which the channeled bodies of the turbines communicate, substantially as specified.

2. The combination in a meter of a casing with a rotatable valve having a hollow shaft, a pair of adjustable perforated disks mounted upon said shaft, and a pair of perforated helicoidal turbines within the casing, substantially as specified.

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

JOSEPH SCHMITZ.

Witnesses:
WILLIAM H. MADDEN,
FRITZ STENZ.