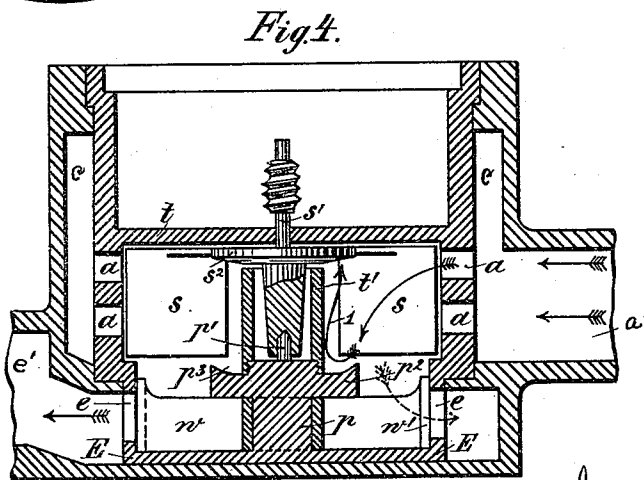
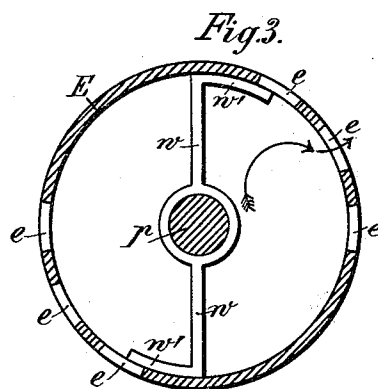
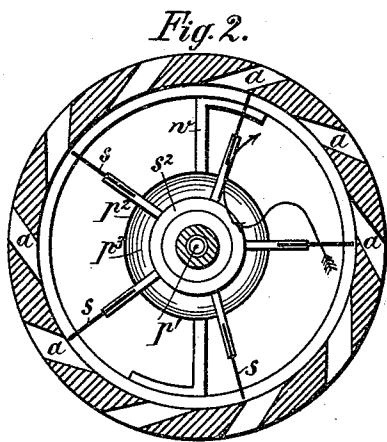
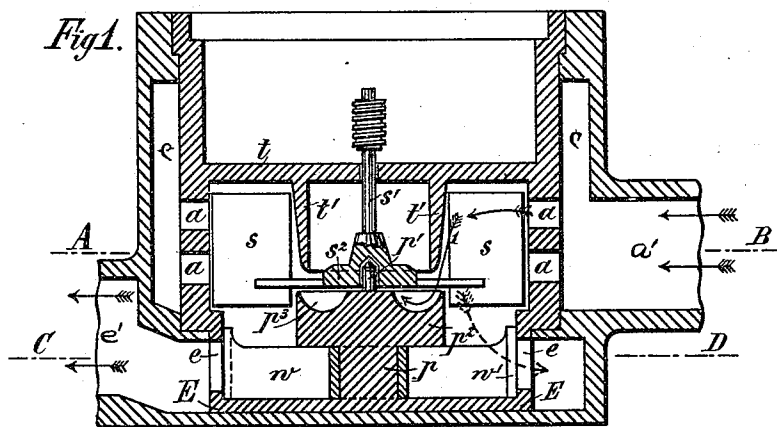


(No Model.)

O. BECKMANN.
WATER METER.

No. 470,033.

Patented Mar. 1, 1892.



Witnesses:
E. C. Duffy
H. E. Beck

Inventor:
Oswald Beckmann
per *O. C. Duffy*
Atty

UNITED STATES PATENT OFFICE.

OSWALD BECKMANN, OF Breslau, GERMANY.

WATER-METER.

SPECIFICATION forming part of Letters Patent No. 470,033, dated March 1, 1892.

Application filed September 21, 1891. Serial No. 406,327. (No model.) Patented in Germany June 2, 1887, No. 41,606, and in Austria-Hungary January 19, 1888, No. 40 and No. 42.

To all whom it may concern:

Be it known that I, OSWALD BECKMANN, a subject of the King of Prussia, German Empire, residing at the city of Breslau, German Empire, have invented certain new and useful Improvements in Water-Meters, (for which patents have been secured in Germany, dated June 2, 1887, No. 41,606, and in Austria-Hungary, dated January 19, 1888, No. 40 and No. 42,) of which the following is a specification.

This invention relates to certain improvements in meters, and more particularly to that class of meters in which the fluids operate upon a wing-wheel controlling the registering mechanism.

The invention consists in certain novel features of construction and in combinations of parts more fully described hereinafter, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a vertical section of the meter embodying my invention. Figs. 2 and 3 are horizontal sectional views taken on the lines A B and C D, respectively, Fig. 1. Fig. 4 is a vertical sectional view of a modified form of my invention.

a indicates the inlet or receiving pipe, opening into the annular receiving-chamber c , formed between the inner and outer walls of the meter.

e indicates the discharge from the meter from the annular discharge-chamber E. The horizontal partition t separates the interior of the meter, the registering mechanism (not here shown) being located above this partition, while the partition forms a chamber beneath, in which the wing-wheel rotates and through which the fluid passes. The fluid passes from the annular chamber c into the wing-wheel chamber through the inclined inlet-opening a . The wing-wheel is centrally mounted to rotate horizontally in the upper portion of the chamber beneath the partition t , and so that its wings pass close to the outer periphery of said chamber at the inner ends of said inlets a , which are so inclined that the water always rotates this wall in the same direction. The wall is provided with the centrally-horizontal disk s^2 , provided with a hub and rigid with the shafts s' , extending up through the partition t and provided with suitable means

to actuate the rigid mechanism. A rigid pivot or pedestal p extends upwardly from the bottom of the meter, and at its upper end is provided with a horizontal deflector p^2 , provided with a centrally-upwardly-extending pivot p' , on which the wing-wheel revolves, and which fits in a corresponding socket in the center of the under side of the wing-wheel hub. The upper face of the deflector p^2 causes the water to press up against the under side of the disk s^2 . In Fig. 1 this central annular partition or deflector t' depends from the under side of the partition t between the inner edges of the wings of the wing-wheel and the shaft and hub thereof, and is exteriorly tapered outwardly or cone-shaped, as shown. In this construction the fluid enters through the inlets a , exerts its influence on the wings of the wing-wheel, as shown by arrows, then strikes the deflector or partition t' , and is directed downwardly, as shown by arrow 1, against the upper face p^3 of the deflector p^2 against the disk of the wing-wheel, and then face p^3 directs the water upwardly against the under side of the disk s^2 , and thereby lifts, counterbalances the wing-wheel, and raises it from its pivot, so that the friction is reduced to a minimum and the sensitiveness of the wing-wheel is increased to a maximum degree.

In Fig. 1 the disk s^2 is shown at the lower end of wing-wheel hub, and the deflector t' extends from the deflector p^2 upwardly almost to the disk s^2 , and in this case the said deflector t' has straight walls or sides, if desired, as shown, so that the water takes the course shown by arrow 1, so that the same lifting action on the wing-wheel is attained.

The sensitiveness of the meter is materially increased by making the wing-wheel of aluminium, whereby the resistance of the wing-wheel to the incoming water is reduced to a minimum and the counterbalancing action of the water on the wheel is increased because of the lightness of this metal, whereby the efficiency of the meter is increased.

In order to produce the retardation of the outflowing water and at the same time to effect the regulation of the sections of the outflow, there is placed in the lower part of the casing in the outflow-chamber a diametri-

cally-supporting wall w , which is mounted to revolve about the pivot p , and which is provided at its ends with bent wings w' , which snugly bear against the inner cylindrical wall of the chamber E. These wings w' preferably point in opposite directions, so that they form with the supporting-wall w a reversed Z. As wall w turns, the outlet-openings e are decreased or increased in section by the wings w' , and thus a regulation of the exhaust-opening is produced. The wall w retards the water as it comes from above and passes in spiral streams outwardly by pumping it up and changing its direction in such a manner that the velocity of outflow is decreased. The result of this velocity in outflow is that the water coming from above gives out a greater portion of its energy in producing rotation of the wing-wheel.

It is evident that various changes might be resorted to in the forms, constructions, and arrangements of the parts described without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to the exact construction herein shown.

What I claim is—

1. In a meter, the combination of a casing having a chamber having inlet-openings, a rigid horizontal deflector therein below the planes of said openings and formed to deflect the water upwardly, and a loosely-mounted wing-wheel in said chamber having a rigid disk or portion above said deflector, for the purpose set forth, substantially as described.

2. The wing-wheel fluid-meter having its wheel-shaft provided with a disk rigid thereon, in combination with deflectors arranged to direct the fluid against said disk so as to lift or counter-balance the wing-wheel and reduce friction.

3. In a fluid-meter, the combination of the wing-wheel and the rigid deflector beneath the same, provided with a vertical pivot on which

the wing-wheel rests and rotates, said deflector being so arranged as to direct the fluid upwardly against the wing-wheel and thereby lift the same from said pivot, as and for the purposes set forth.

4. In a fluid-meter, the combination of the rigid deflector provided with a pivot, the wing-wheel at its center mounted on such pivot and having the central disk, said deflector being so arranged to force the fluid upwardly against said disk, and a central annular partition or deflector coacting with said first-mentioned deflector.

5. The combination, with the rotary mechanism actuated by the water and controlling the registering mechanism, of the retarding mechanism separate from and independent of said rotary register-controlling mechanism and regulating the outflow after the fluid has acted upon said rotary mechanism, as set forth and described.

6. The combination, with the operating mechanism of the fluid-meter actuated by the fluid, of the rotary retarding mechanism at the outflow from said operating mechanism and disconnected from and operating separately and independently thereof, as set forth.

7. The combination, with the operating mechanism of the fluid-meter, of the circular wall provided with the outlet-openings, and the rotary diametrical wheel located and provided with the lateral wings to bear against the inner side of said circular walls to close and open the outlet-openings from said circular walls, arranged to operate substantially as described.

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

OSWALD BECKMANN.

Witnesses:

HUGO WOLFF,
CARL UHREIBERG.