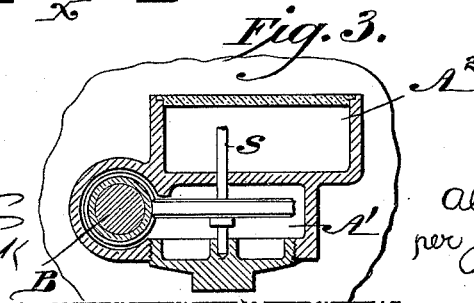
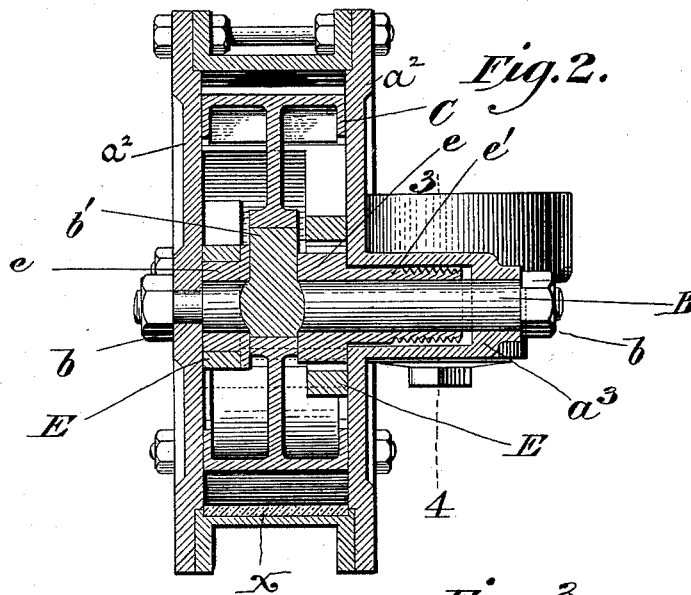
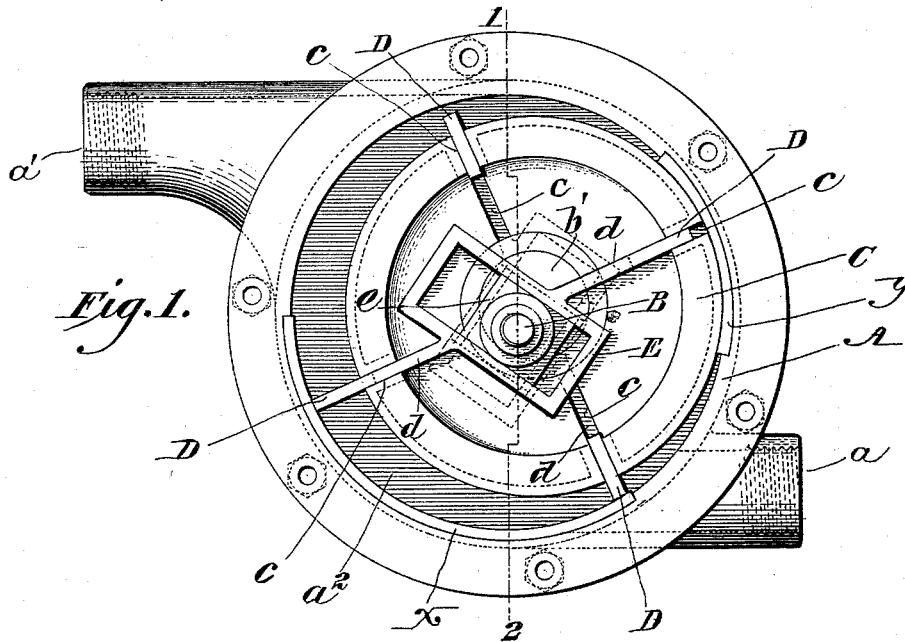


(No Model.)

A. J. FULLER.  
ROTATING FLUID METER.

No. 489,124.

Patented Jan. 3, 1893.



Witnesses:  
*John J. Nolan*  
*Chas. Low Beck*

Inventor:  
*Allen J. Fuller*  
*per Joshua Pusey*  
*attorney.*

# UNITED STATES PATENT OFFICE.

ALLEN J. FULLER, OF PHILADELPHIA, PENNSYLVANIA.

## ROTATING FLUID-METER.

SPECIFICATION forming part of Letters Patent No. 489,124, dated January 3, 1893.

Application filed August 29, 1891. Serial No. 404,058. (No model.)

*To all whom it may concern:*

Be it known that I, ALLEN J. FULLER, a citizen of the United States, residing at the city and county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Fluid-Meters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

10 Figure 1 is a side elevation of the apparatus, one of its cylinder heads having been removed to expose the internal construction. Fig. 2 is a full vertical section, as on the line 1—2, Fig. 1. Fig. 3 is a partial section, as on  
15 the line 3—4, Fig. 2.

This invention relates to improvements in that class of fluid meters, or motors, in which a series of sliding blades or wings are rotatably mounted within a cylinder or casing  
20 through which a fluid is run under pressure, the fluid in its passage forcibly rotating these blades or wings and the shaft or drum upon which they are mounted. When the apparatus is used as a meter or measuring device,  
25 the shaft is geared up with a suitable register, and when the apparatus is used as a motor the power is transmitted from said shaft to other mechanisms.

In order to impart the requisite sliding  
30 movements to the blades,—that is to say, whereby the blades are projected into the path of the in-coming fluid and then retracted at the proper time to permit of the free escape of the latter, the drum in which the blades  
35 are carried, has been mounted eccentrically in respect to the cylinder or casing, the outer ends of these blades in their rotation bearing against the wall of said cylinder or casing and being reciprocated thereby. This construction  
40 is objectionable owing to the severe resistance caused by the frictional contact of the blades with the cylinder, such resistance obviously affecting the accurate action of the apparatus.

45 The object of the present improvements is to provide a construction in which the blades are actuated from the body thereof by means of suitably-disposed traversing devices, whereby not only is the frictional resistance reduced to a minimum but the sliding action of  
50 the blades is more positive than is that of the first-described construction.

Another object is to provide a novel means for the transmission of motion from the apparatus to a register or other device.

I attain these ends by means of the mechanism illustrated in the annexed drawings to which reference will now be had—

A represents the cylinder which is provided in the usual manner with inlet and outlet  
60 ports,  $a$ ,  $a'$ , respectively. One of the cylinder-heads ( $a^2$ ) is formed with a hollow boss or extension,  $a^3$ , through and beyond which extends a transverse shaft B. This shaft runs  
65 through the chamber and out beyond the other head of the cylinder, and upon its outer ends, which are threaded, are screwed nuts,  $b$ , that take against the sides of said head and thus fix the shaft in place. Formed on, or secured  
70 to, this shaft, centrally within the chamber, is an eccentric,  $b'$ , upon which is mounted a drum C, the periphery of which is adjacent to the wall of the cylinder, at a point above the lower or inlet port  $a$ , as seen. This drum  
75 is provided with four radial ways  $d$ ,  $c$ , in which are contained the blades D, which latter are arranged in pairs at right angles to each other; the arm or connection,  $d$ , of one pair being on one side of the drum, and that of the other pair on the opposite side. On each arm, about  
80 midway between the blades, is a rectangular guide-frame E in which is fitted a block or wrist  $e$ , that is loosely mounted on the shaft B. The frames on the respective arms are  
85 disposed at right angles to each other, so that the blades are maintained in the proper positions relative to each other and to the wall of the cylinder. The action of these frames, when the drum is rotated, corresponds to that of an ordinary "traversing frame,"—that is  
90 to say, the frame rotates the block or wrist and the latter in turn reciprocates the frame, and therewith the blades. The block presents a broad bearing surface to the frame; hence the movement of the blades is positive  
95 and uniform. By this construction the frictional resistance occasioned by the reciprocation of the blades is reduced to a minimum, and, besides, there is no undue wear upon the wall of the cylinder. Moreover, the operation  
100 of the blades not being controlled by their position in respect to said wall, the blades may be disposed in a position to secure the best possible effect of the fluid during its ad-

mission to, and discharge from, the cylinder. It will be observed, by reference to Fig. 1, that the center of the shaft upon which the block is mounted, is laterally below the center from which the wall of the cylinder is described. The object of this eccentricity is to secure the requisite outward throw of the blades while they are traversing the lower space (marked *x*) between the inlet and outlet ports. At such period the blades are in close contact with the wall of the cylinder. As a means whereby there is obviated the necessity of turning or fashioning said wall to adapt it to the path of the blades, while they are traversing the space *x*, I fix in said space a lining plate of Babbitt, the outer or acting surface of which is appropriately shaped, as shown. This materially cheapens the construction. I also for a like purpose fit a similar lining material in the wall of the cylinder at the place (marked *y*), against which the drum abuts. On that block adjacent to the boss *a*<sup>3</sup> is a sleeve *e*<sup>1</sup> which is threaded so as to constitute a worm. This sleeve extends into said boss as seen, and one side of the latter is slotted so as to communicate with a box or chamber *A*<sup>1</sup> on the side of the cylinder head. In this chamber is mounted a vertical shaft, *s*, which extends into an upper chamber *A*<sup>2</sup>, in which registering mechanism of any proper character is contained.

The shafts may be geared up with said mechanism in any suitable manner.

I have not illustrated the registering mechanism in the drawings, inasmuch as the construction and operation of the same are well-known.

Having thus described my invention, I claim as new and wish to secure by Letters Patent—

1. The combination of the cylinder, with its inlet and outlet ports, the fixed shaft, the fixed eccentric thereon, the drum mounted on said eccentric, the sliding blades, the guide frames, and the blocks rotatably mounted on the shaft and engaged with said frames, substantially as described.

2. The combination of the cylinder, with its inlet and outlet ports, the shaft, the drum eccentrically mounted thereon, the sliding blades, the guide-frames, and the blocks with the sleeve extending outwardly from one of the same, said sleeve being adapted to transmit rotary motion from the block to a register or other device, substantially as described.

In testimony whereof I have hereunto affixed my signature this 8th day of July, A. D. 1891.

ALLEN J. FULLER.

Witnesses:

JOHN R. NOLAN,  
JOSHUA PUSEY.