(No Model.)

J. KLEIN.

ROTARY PUMP.

No. 538,524. Patented Apr. 30, 1895.

Fig. 1.

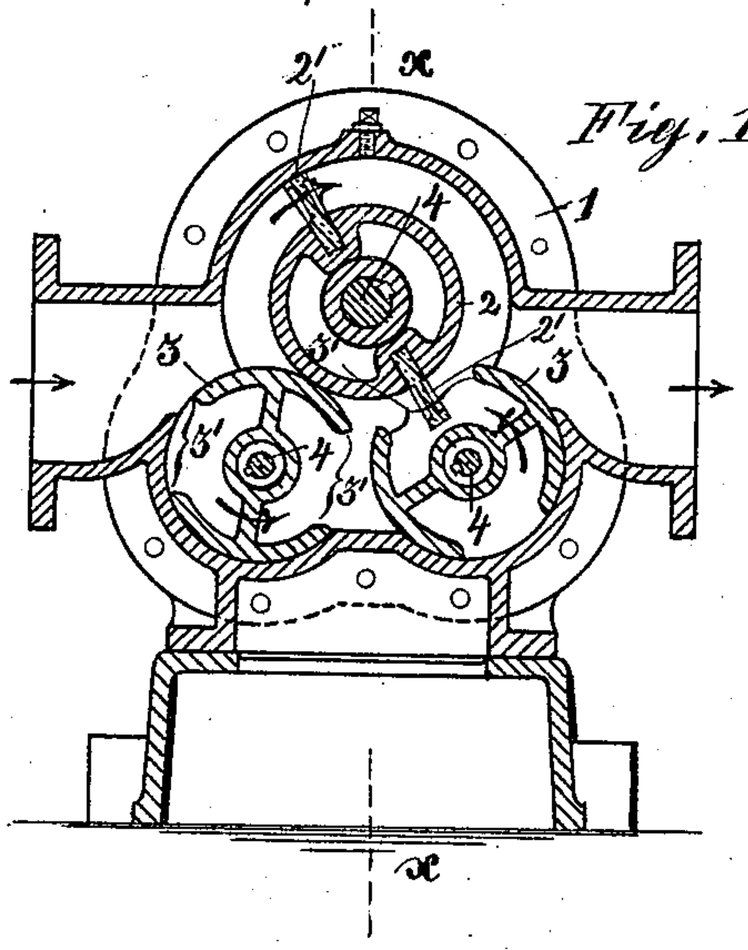


Fig. 4.

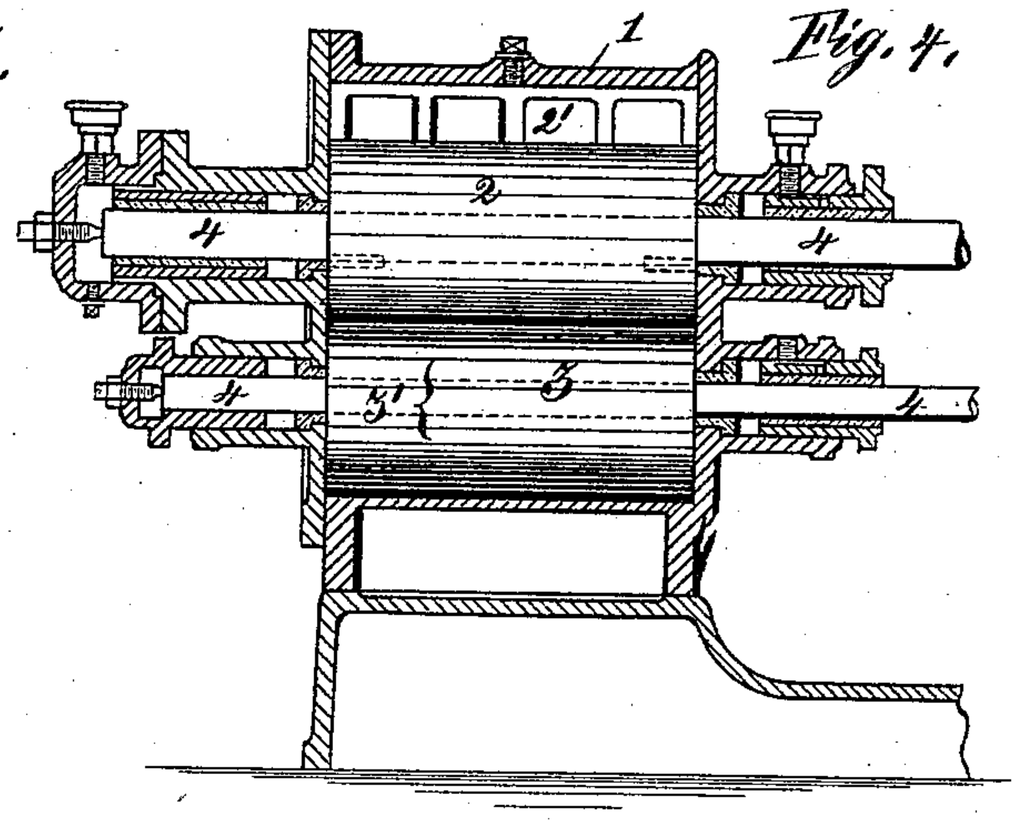


Fig. 2.

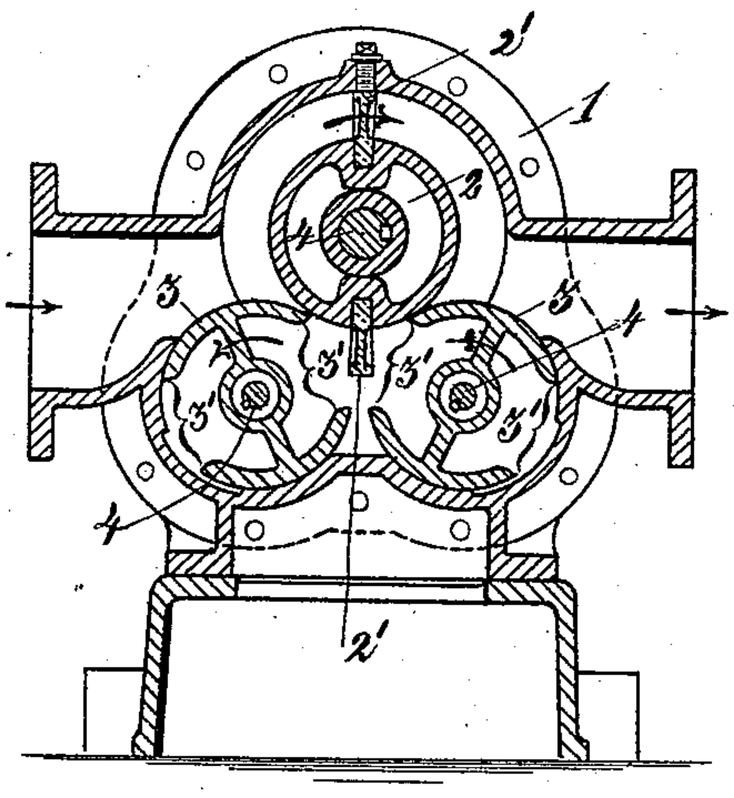
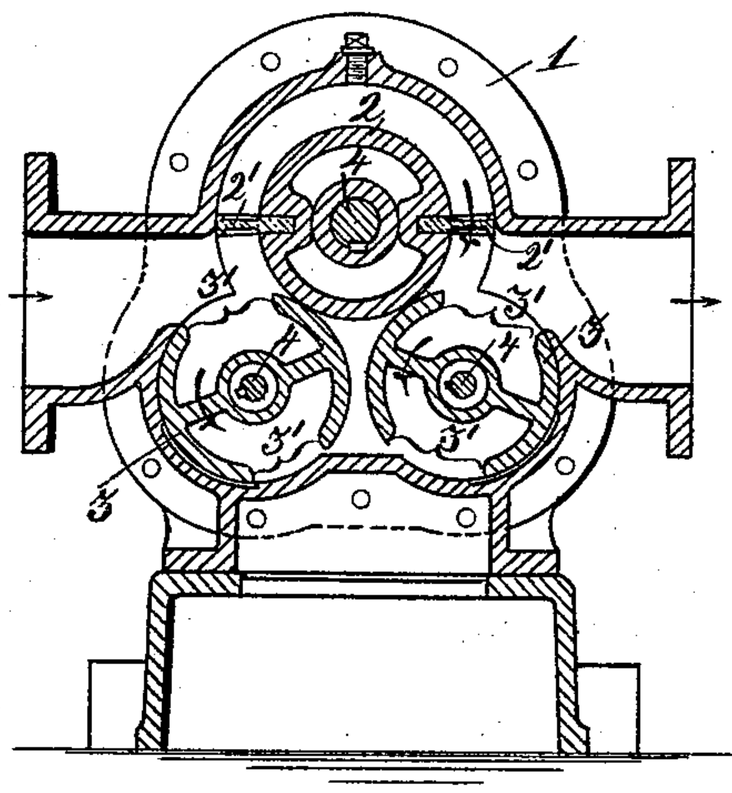


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHANN KLEIN, OF FRANKENTHAL, GERMANY.

ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 538,524, dated April 30, 1895.

Application filed January 30, 1895. Serial No. 536,650. (No model.)

To all whom it may concern:

Be it known that I, JOHANN KLEIN, a subject of the King of Bavaria, residing at Frankenthal, Bavaria, Germany, have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification.

This invention refers to the construction of a rotary pump and consists in making the pump so that wear and tear is largely prevented and the pump maintains the same efficiency. For this purpose the pump is made with rotating cylinders working with each other without special joint making appliances and being of the same diameter and having the same circumferential speed they roll upon each other without grinding action and hence without appreciable wear.

In the annexed drawings, Figures 1, 2, and 3 are vertical cross-sections showing the parts in different characteristic positions; and Fig. 4 is a longitudinal section on line *x x*, Fig. 1.

The rotary pump consists of three cylinders 2, 3 and 3 of like diameters and having their bearings so placed in the casing 1 that their shafts 4 lie in the three angle points of a triangle, the upper cylinder in certain parts touching the two lower ones, these latter however not touching each other.

The two lower cylinders 3 have each two diametrically opposite openings 3′ which however do not reach to the middle, the shafts passing through from end to end. The cylinders are of the section shown or thereabout.

The upper cylinder 2, which is in contact with the two lower ones 3, 3 has two wings 2′ inserted diametrically opposite each other which are of such a radial length as to touch and slide along the interior upper circular part of the casing. The shafts 4 of the cylinders are outside the casing provided with tooth wheels of equal diameter gearing with each other so that all three cylinders work with exactly the same circumferential speed. In consequence of this the cylinders 3 3 roll upon the upper cylinder 2 without any grinding action, while the two lower cylinders 3 do not touch each other. The wings 2′ of the upper cylinder 2 during its rotation engage alternately with the openings 3′ of the lower cylinders 3, so that the latter work fluid tight against the upper cylinder 2 partly alternately (Fig. 1) and partly simultaneously (Figs. 2 and 3). As the openings 3′ in the lower cylinders are very large and do not make joint against the upper cylinder, the wings never strike against edges of the openings, not even when the driving wheels on the shafts are worn out. The driving wheels may in consequence of the large openings 3′ be shifted round somewhat without influencing the action of the pump. As only the wings 2′ are subject to wear they are so inserted in the cylinder 2 that they can be set up by means of wedges or thin sheet metal pieces underneath. According to the direction of rotation of the cylinders the water will pass through from left to right or right to left.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

A rotary pump with a casing wherein work three cylinders viz: an upper cylinder provided with two wings placed diametrically opposite to each other and arranged to be set up for wear, and two lower cylinders working against the upper cylinder but not in contact with each other and each provided with two diametrically opposite openings, all three cylinders being of the same diameter and geared to have the same circumferential speed, and the wings of the upper cylinder passing freely through the openings in the lower cylinders, so that the cylinders do not grind against each other substantially as set forth.

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

JOH. KLEIN.

Witnesses:
AUGUST POST,
LUDW. POST.