(No Model.)

F. LAMBERT.

MECHANISM FOR CONTROLLING THE ACTION OF OSCILLATING DISKS.

No. 490,025. Patented Jan. 17. 1893.

Fig. 1

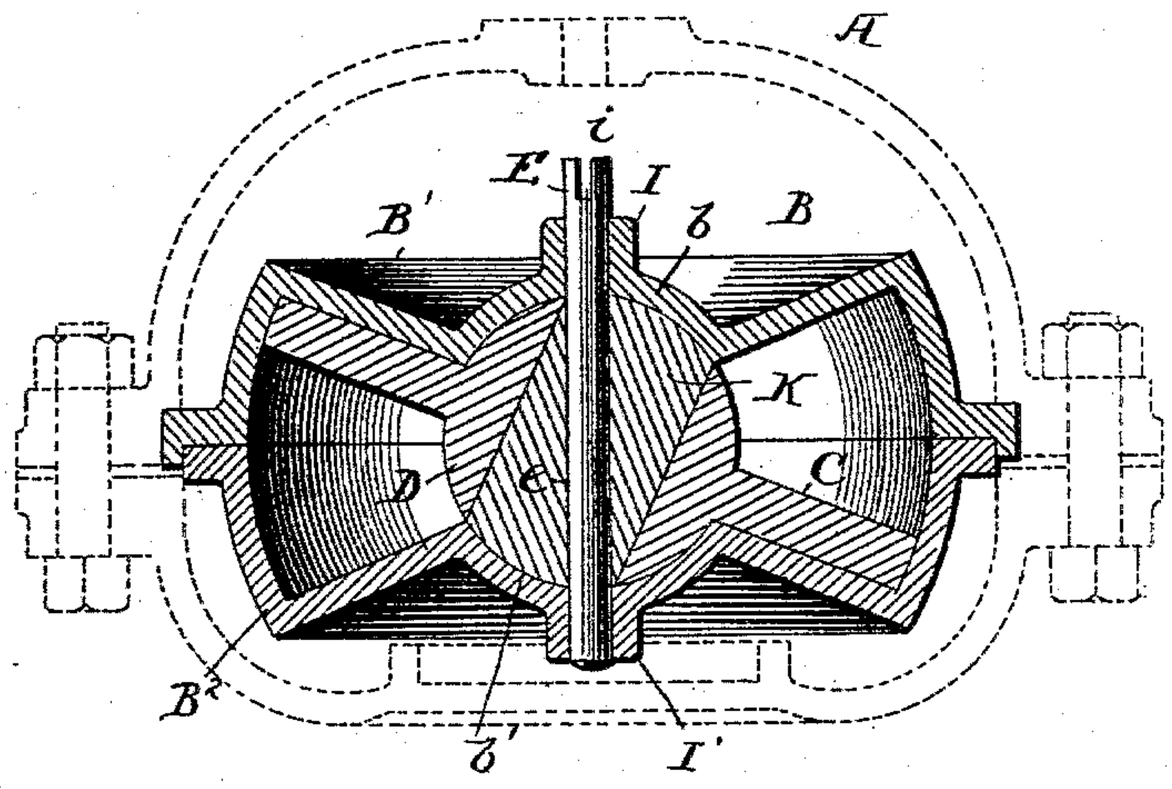


Fig. 2.

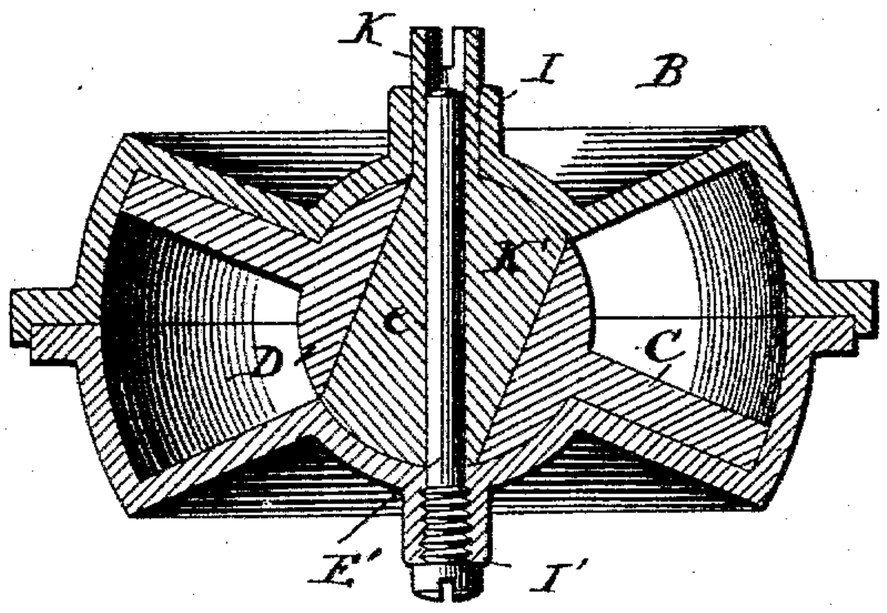


Fig. 3

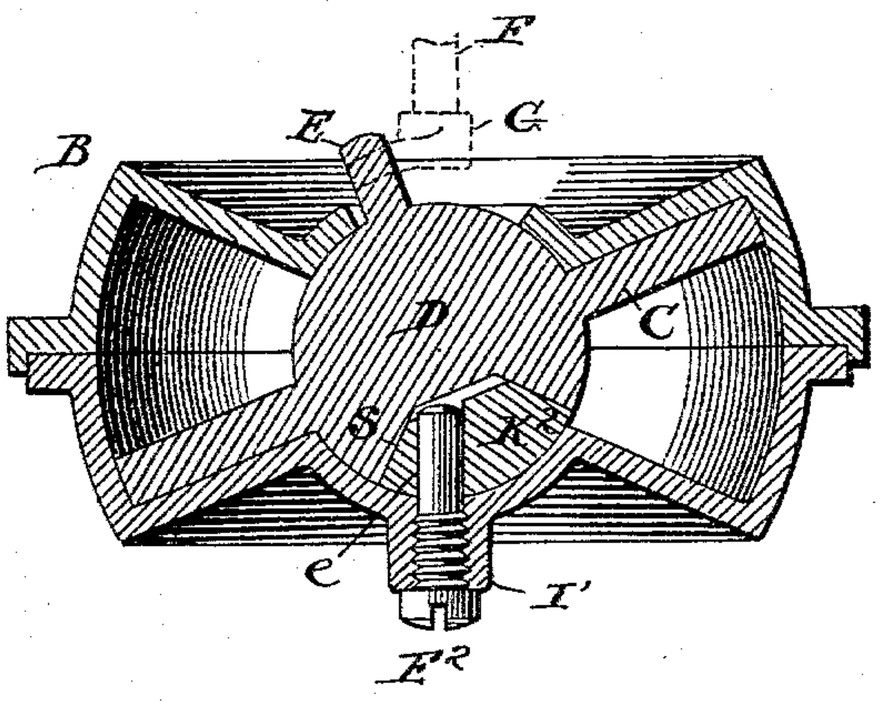
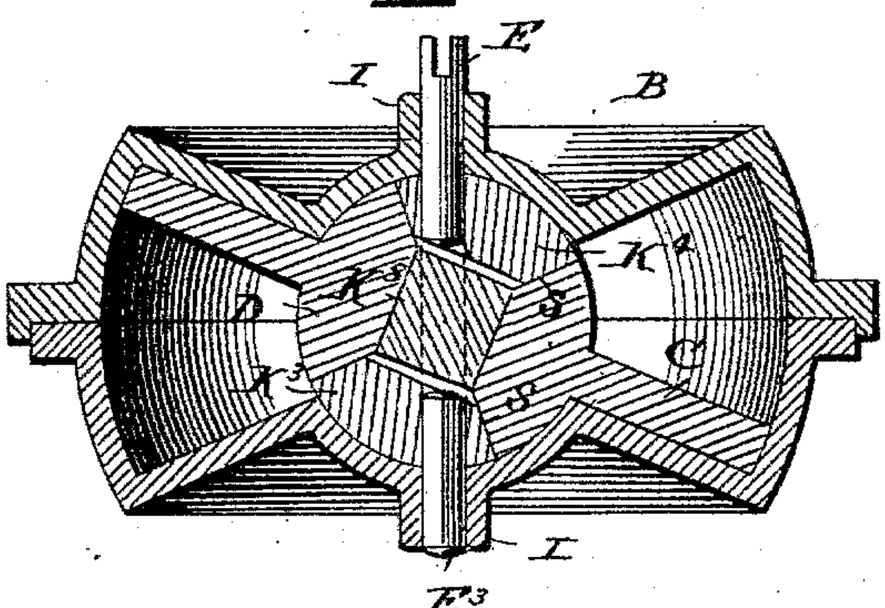


Fig. 4.



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UNITED STATES PATENT OFFICE.

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MECHANISM FOR CONTROLLING THE ACTION OF OSCILLATING DISKS.

SPECIFICATION forming part of Letters Patent No. 490,025, dated January 17, 1893.

Application filed April 7, 1892. Serial No. 428,166. (No model.)

To all whom it may concern:

Be it known that I, FRANK LAMBERT, a citizen of the French Republic, and a resident of Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Mechanism for Controlling the Action of Oscillating Disks, of which the following is a specification.

My invention relates to oscillating disk actions, such for instance as are generally used in water meters, and which of course can be used for motors or other purposes, and it has for its object to provide means whereby the action of the oscillating disk can be controlled under varying conditions of operation, and to these ends my invention consists in the features of construction and arrangement of parts substantially such as are hereinafter set forth.

Referring to the accompanying drawings, Figure 1, is a vertical section of a device embodying my invention; Figs. 2, 3, and 4 are similar views showing different embodiments of the invention.

I have shown my invention as embodied in a water meter, as that is the simplest form for illustrating the same, and in the drawings A, represents the outer case of the motor or meter made in sections, and secured together by suitable devices, and supported in the interior of the outer case is a case B, which is known as the disk chamber. This disk chamber may be variously constructed, but is shown as composed essentially of two parts, the upper casing B′, and the lower casing B^2, which are suitably secured together. These casings are made in the form of cone frusta, placed reversely toward each other, and the extremities or peripheries of the cone frusta are joined by the central portion of the case in the form of a segment of a circle. Mounted in this case is a disk or piston C, which is formed with, or connected to a central ball D, which is supported in sockets *b*, *b′* in the respective conè frusta, which allows the disk to vibrate and move freely in the disk chamber under the action of the fluid passing therethrough, or acting upon the fluid passing therethrough.

It is well known that as the disk moves or mutates in the disk chamber, the disk should be so controlled that the surfaces of the disk should be in direct contact with the surfaces of the cone frusta in order to produce the most perfect results, and it is the object of my invention to provide means to maintain this relative position of the disk, and its bearing surfaces, so that the action of the disk will be controlled in its gyration or mutation in the disk chamber.

In carrying out my invention it is desirable to have some means whereby motion may be transmitted to the disk, or the motion of the disk may be transmitted to other mechanism; such for instance, as a registering mechanism in a water meter when the invention is used as a water meter. To do this I provide a spindle E, which is shown in Fig. 1 for instance as having bearings in the sockets of the case, the bearings in this instance being extended as at I, and this spindle is arranged to be connected to the operating or operated mechanism, not shown, by any suitable means, the slot *i* being indicated which may receive a pin or arm on a spindle or otherwise. In this construction the central ball D of the disk is bored centrally at right angles to the plane of the disk with an opening large enough to admit and receive the cylindrical plug K, and to allow it to rotate freely in the opening. This plug is secured to rotate with the spindle E by any suitable means, as for instance driving the spindle E into the opening *e* made through the body of the plug. This opening is at right angles to the line longitudinally central of the plug corresponding to the inclination of the surfaces of the cone frusta. With this construction it will be seen that as the disk C mutates, the plug K will be caused to rotate, and carrying with it the spindle E, which will rotate freely in its bearings I, and the rotating angular motion described by the plug will maintain a constant contact of the surfaces of the disk with the respective cone frusta of the disk chamber, while the rotation of the spindle E could be utilized to transmit its own motion to other devices, or to transmit its motion to the disk itself, and it will be seen that the disk is properly controlled.

In Fig. 2, I have illustrated substantially

the same invention, but in this instance the plug K′ is made with an extension or hub *k*, which may serve as a driving or driven connecting portion. The spindle E′ in this instance, instead of being fastened to the plug, is loosely fitted to the opening *e* thereof, and may be secured in the bearing or extension I′, so that it operates as a guide to the plug, but does not necessarily rotate therewith, but serves to aid in securing the proper control of the disk.

In the embodiment of my invention illustrated in Fig. 3 the same general structure is carried out, but the plug K^2 is shown in the form of a spherical segment fitting a similar recess or opening S in one side of the ball D of the disk, while the other side of the ball is provided with a spindle E extending through an opening in the socket, and this may be connected to drive or be driven by a spindle F through the medium of an arm G, or in any other well known way. In this construction the spindle E^2 does not pass entirely through the disk ball, but only through the segmental plug K^2, which is provided with an opening *e* eccentrically formed therein, and the spindle may be fixed in the bearing I′. The sides of this segmental plug are preferably drawn on lines radial from the center of the disk ball, although of course they may be at another angle. The segmental plug is free to rotate in the recess in the disk ball, and also on the spindle E^2, or if the spindle E^2 is free to rotate in its bearing I′, the segmental plug may be secured to the spindle E^2 to cause it to rotate therewith. It will be seen that when the disk mutates, this segmental disk will rotate in the recess in the ball, and on, or with the spindle E^2, and the action of the disk will be controlled while the motion may be transmitted to, or by the disk through the medium of the spindle E and its connections.

In the form shown in Fig. 4, substantially the same details of construction are shown, except that the controlling action is double, and there are two spherical segmental plugs K^3, K^4 fitted in recesses S on opposite sides of the disk ball. With this arrangement of course there should be two spindles E and E^3, the spindle E being secured to the segmental plug K^4, so as to rotate therewith, while the spindle E^3 may or may not be secured to the segmental plug K^3. In some instances, I may combine with these segmental plugs K^3, K^4, a cylindrical plug K^5 similar to the plug H shown in Fig. 1, but shorter, and mounted in an opening in the center of the disk ball, the sides of the opening being at right angles to the faces of the disk. With this arrangement, I preferably use a single spindle E, as indicated in dotted lines extending through the segmental plugs K^3, K^4, and the cylindrical plug K^5, one or more of which plugs should be secured to the spindle, and this spindle will have its bearings in the projections I, I′. It will be obvious that one of the segmental plugs K^4 for instance might be provided with a hub similar to the hub K′ in Fig. 2, and the spindle E would not necessarily project above its bearings. It is also obvious that other arrangements and changes in the details of construction of the plug and the spindles can be made by those skilled in the art without departing from the spirit of my invention, and I do not therefore limit myself to the precise construction and arrangement of devices shown, but it will be seen that in all cases the disk is thoroughly under control whether it is operating as a motor or is being driven.

What I claim is:

1. The combination with a disk chamber and disk therein, of a plug loosely fitting an opening in the disk, and a spindle for the plug, substantially as described.

2. The combination with a disk chamber and disk therein, a ball for the disk, an opening in the ball, a plug loosely fitting the opening, and a spindle for the plug, substantially as described.

3. The combination with the disk chamber and disk therein, a plug fitting the disk and free to move therein, and having a non axial opening, and a spindle fitting said opening, substantially as described.

4. The combination with the disk chamber and disk therein, of a plug loosely mounted in an opening in said disk chamber, and a spindle connected to the plug and rotating therewith substantially as described.

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

FRANK LAMBERT.

Witnesses:
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