A. PONTEN.

FLUID CUSHIONED BEARING.

APPLICATION FILED JAN. 10, 1908.

913,232.

Patented Feb. 23, 1909.

Fig. 1.

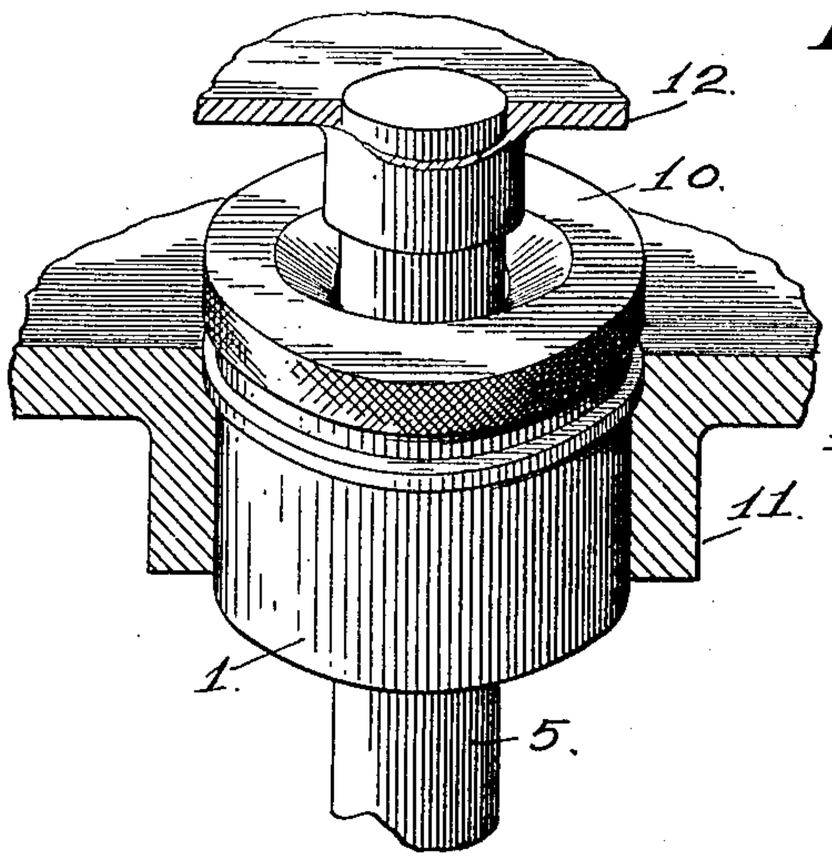


Fig. 2.

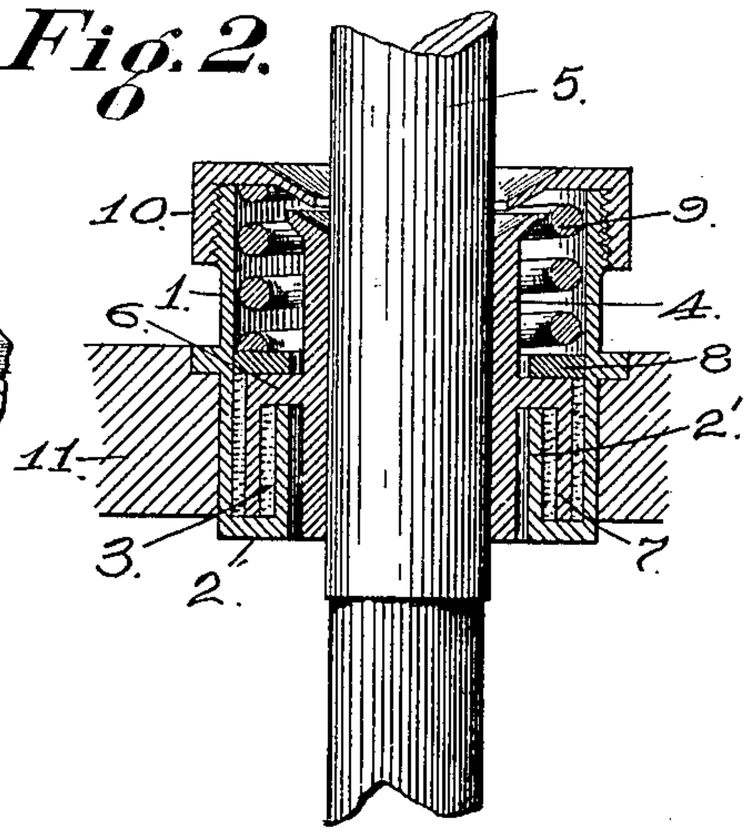


Fig. 3.

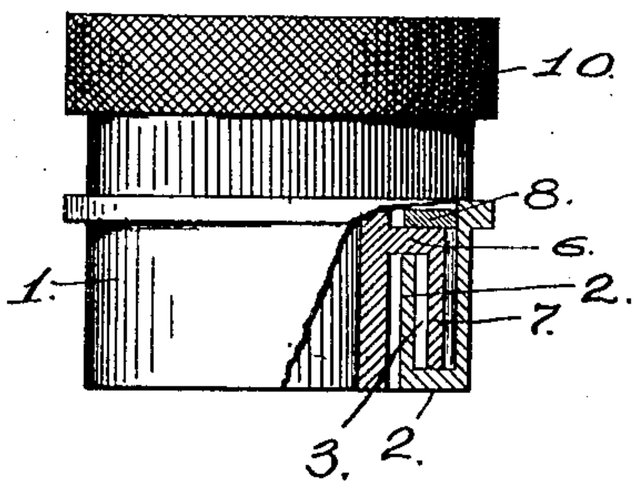
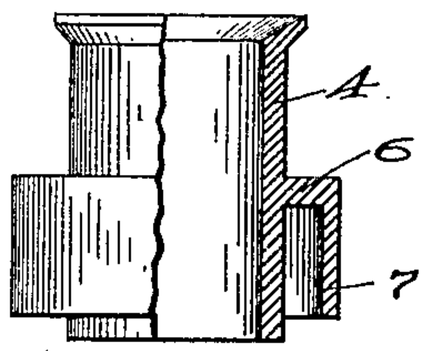


Fig. 4.



WITNESSES.

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UNITED STATES PATENT OFFICE.

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FLUID-CUSHIONED BEARING.

No. 913,232. Specification of Letters Patent. Patented Feb. 23, 1909.

Application filed January 10, 1908. Serial No. 410,103.

To all whom it may concern:

Be it known that I, ANDERS PONTEN, a citizen of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented certain new and useful Improvements in Fluid-Cushioned Bearings, of which the following is a specification.

The hereinafter described invention relates to an improved construction of cushioned bearing particularly adapted for use in connection with the vertical bowl carrying spindle of a cream separator, although the bearing is not confined in its use to cream separators.

The object of the invention is to provide a bearing which will slowly adjust itself to the lateral strains placed thereon by the swinging action or gyratory motion of a vertical shaft rotating at a high speed, the compensating action of the bearing providing against shocks, jars, or irregular strains being transmitted to the separator carried by the rotating shaft or spindle, hence securing a uniform separation of the material delivered into or onto the separator for treatment.

To comprehend the invention reference should be had to the accompanying sheet of drawings, wherein—

Figure 1 is a perspective view showing the application of the improved bearing. Fig. 2 is a vertical sectional view of the bearing, illustrating the spindle or shaft extended therethrough. Fig. 3 is a detail broken view of the outer shell or casing with the bearing sleeve therein. Fig. 4 is a similar view of the bearing sleeve for the spindle or shaft.

In the drawings, the numeral 1 is used to designate the outer cylindrical shell or casing of the bearing, from the apertured bottom 2 of which springs the inner upwardly projecting circular wall 2′. The said circular flange wall 2′, acting in conjunction with the inner face of the shell or casing 1, forms an inner fluid receiving chamber 3, in the lower portion of the said shell or casing.

Within the outer shell or casing 1, is fitted and held the bearing sleeve 4, through which bearing sleeve the spindle or shaft 5 extends. This bearing sleeve 4 is formed with a circular shoulder extension 6, which terminates in a depending circular wall 7. This depending wall 7, when the bearing sleeve 4 is dropped into the outer shell or casing 1, fits within the fluid receiving chamber 3, the under face of the shoulder extension 6 of the bearing sleeve 4 resting on the upper edge of the circular wall 2′, of the outer shell or casing.

The bore of the cylindrical bearing sleeve 4 is such as to permit of the spindle or shaft 5 rotating freely therein, although the said sleeve is held against rotation by means of the securing ring 8, fitted snugly within the outer shell or casing 1. This securing ring 8 is held onto the upper face of the circular shoulder extension 6, of the bearing sleeve 4, by the pressure of the spiral spring 9, which spring is fitted within the upper portion of the outer shell or casing 1, and surrounds the upper portion of the said bearing sleeve. The tension or compression of the said spring 9 is regulated by the internally threaded lock-cap 10, which screws onto the upper screw-threaded end portion of the outer shell or casing 1, Fig. 2 of the drawings. The securing ring 8 also serves to seal, so to speak, the fluid receiving chamber 3 of the outer shell or casing, so as to retain the liquid cushion therein, when the parts have been positioned.

The outer shell or casing is, in the present case, illustrated as attached to the bottom of a non-rotating or stationary shell 11, within which works the bowl 12 secured to the spindle or shaft 5 of a cream separator, although the bearing may be suitably attached to any non-rotating structure.

In placing the parts of the bearing together, the lower fluid receiving chamber 3 of the outer shell or casing is first filled with quicksilver, glycerin, or any viscous fluid. The bearing sleeve 4 is then fitted within the outer shell or casing, its depending circular wall 7 entering into the receiving chamber 3, until the circular shoulder extension 6 of the bearing sleeve rests on the upper edge of the inner circular wall 2′ of the said shell or casing. The securing ring 8 is then forced into the upper portion of the outer shell or casing until it rests on the face of the shoulder extension 6 of the bearing sleeve 4, so as to seal the chamber 3, when the pressure spring 9 is inserted and compressed by the screwing onto the threaded

end of the outer shell or casing the lock cap 10, thus not only holding down the securing ring to seal the chamber 3, but, by reason of the pressure thereof onto the shouldered extension 6, holding the bearing sleeve 4 against rotation.

While the bearing sleeve 4 is held against rotation, it is free to give slowly to lateral strains placed thereon by irregular rotation or gyratory movement of the spindle or shaft 5, which spindle or shaft, the moment it varies from its vertical axis of rotation bears against the bearing sleeve and seeks to rapidly throw the same outwardly. This tendency for rapid outward movement of the bearing sleeve is resisted by the body of viscous fluid sealed within the fluid holding chamber 3, bearing against the surface of the circular wall 7. However, the viscous fluid within the chamber 3 will slowly, but gradually give or change under the influence of the deforming force being acted thereon by the outward pressure exerted by the irregular movement of rotation of the spindle or shaft 5 onto the bearing sleeve 4, permitting the said sleeve to slowly move under the influence of the pressure of the said rotating spindle or shaft. However, the outward give or movement of the bearing sleeve, by the displacing of the fluid body within the chamber 3, will be so gradual, that no shocks or jarring effect will be transmitted to the material being treated by the separator carried by the spindle or shaft 5, hence the even and uniform action of separation desired to be given to the material treated, is not disturbed or broken by such irregular rotation of the spindle or shaft as may take place during the motion thereof. To permit of the lateral movement of the bearing sleeve, the central bore of the outer shell or casing is of a diameter sufficient to allow for slight play or movement to the said sleeve.

The essential features of the invention reside in the employment of a fixed outer shell or casing provided with a sealed fluid holding chamber, and of a laterally movable bearing sleeve mounted within the said shell or casing and held therein against rotation, the lateral movement of the said bearing sleeve under outward strain of the spindle or shaft being retarded by the resistance offered thereto by the body of viscous fluid within the fluid chamber of the outer shell or casing acting against the said bearing sleeve.

Having thus described the invention, what is claimed as new and desired to be protected by Letters Patent is—

1. A fluid cushioned bearing, the same comprising a non-rotating outer shell or casing, having a fluid chamber therein for the reception of a fluid body, a laterally movable bearing sleeve located within the said shell or casing, a securing ring acting against the bearing sleeve for sealing the fluid chamber of the outer shell or casing, and means for holding the said ring in position.

2. A fluid cushioned bearing, the same comprising a non-rotating shell or casing having a fluid receiving chamber therein, a laterally movable bearing sleeve held within the shell or casing against rotation, the said sleeve having an outwardly extending circular shoulder and provided with a depending circular wall which extends within the fluid receiving chamber of the shell or casing, a securing ring acting against the circular shoulder of the bearing sleeve to hold the same against rotation and for sealing the fluid chamber of the outer shell or casing, and means for holding the said ring in position.

3. A fluid cushioned bearing, the same comprising a non-rotating shell or casing having a fluid receiving chamber therein, a laterally movable bearing sleeve held within the shell or casing against rotation, the said sleeve having an outwardly extending circular shoulder and provided with a depending circular wall which extends within the fluid receiving chamber of the shell or casing, a securing ring acting against the circular shoulder of the bearing sleeve to hold the same against rotation and for sealing the fluid chamber of the outer shell or casing, a tension spring acting against the securing ring, and a cap adjustable on the outer shell or casing for retaining the tension of the said spring.

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

ANDERS PONTEN.

Witnesses:
N. A. Acker,
Axel Johnson.