No. 879,115. PATENTED FEB. 11, 1908.

K. K. McLEOD.

JOURNAL SUPPORT FOR CENTRIFUGAL MACHINES.

APPLICATION FILED JUNE 7, 1907.

2 SHEETS—SHEET 1.

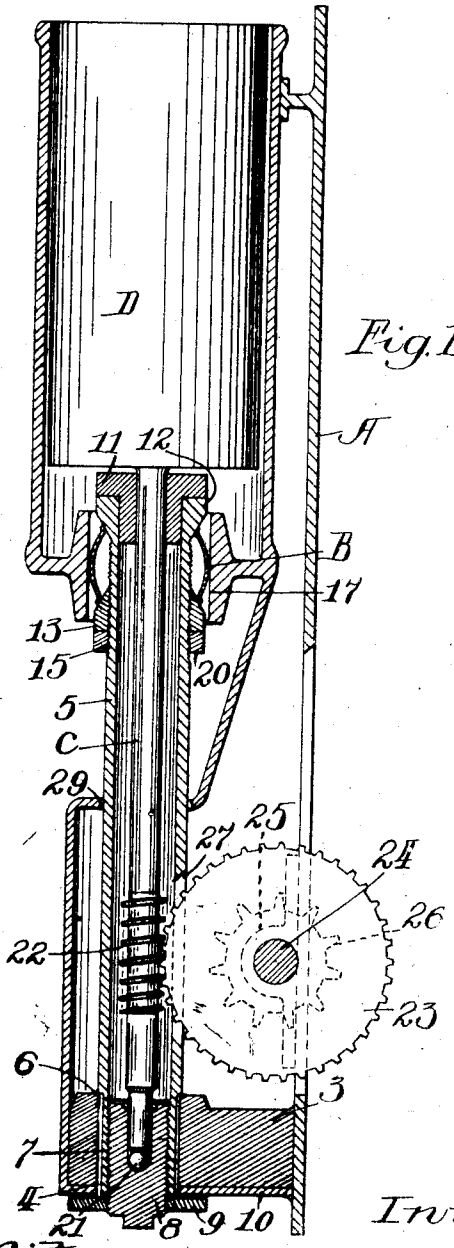


Fig. 1.

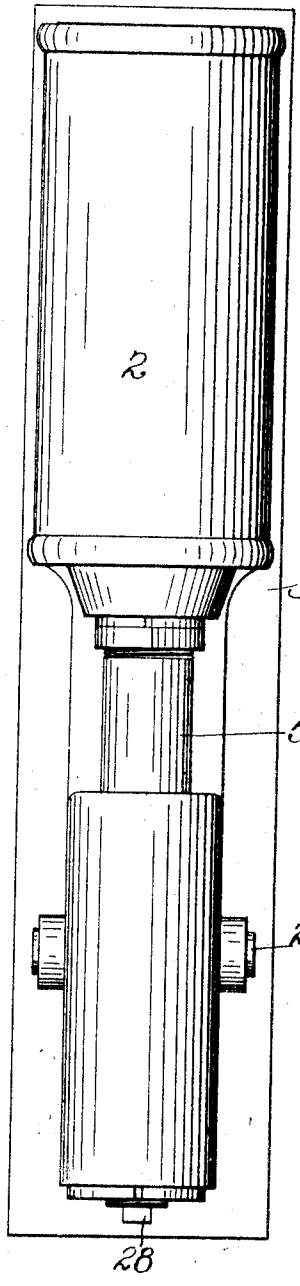


Fig. 2.

Witnesses:
H. C. Fischer
W. Dallgren.

Inventor:
Kenneth K. McLeod,
by: F. C. Bradbury
Attorney.

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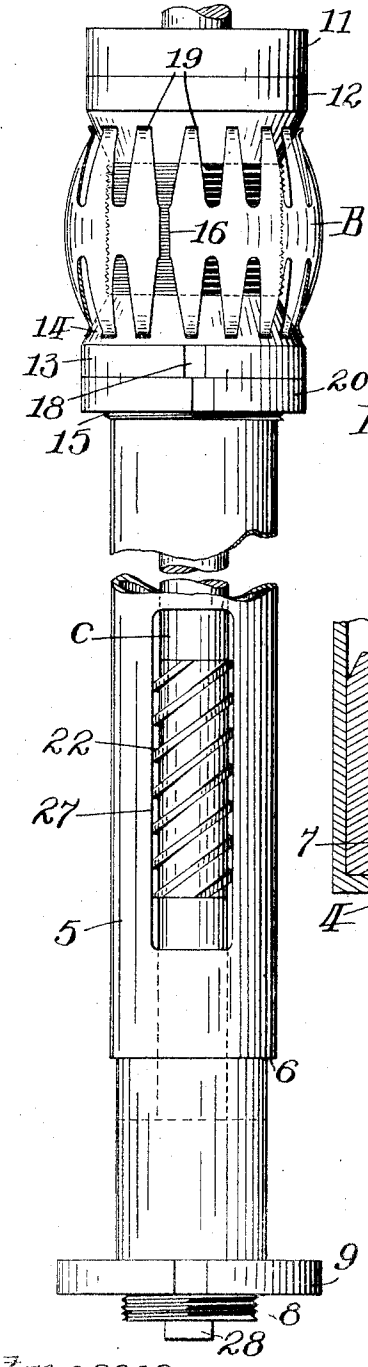


Fig. 3.

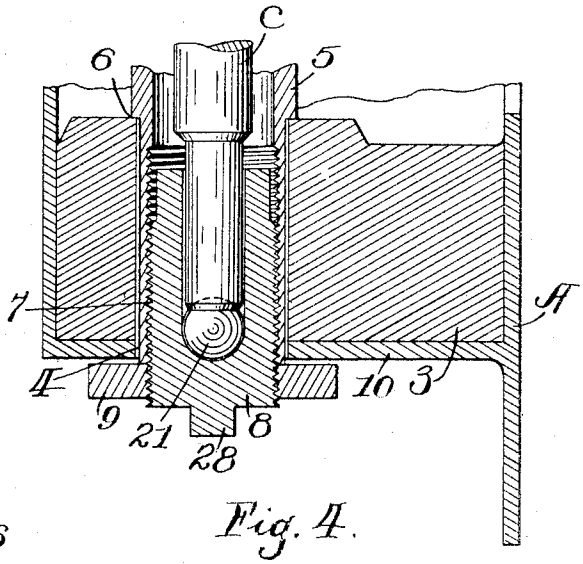


Fig. 4.

Witnesses:
H. L. Fischer.
J. M. Dahlgren.

Inventor:
Kenneth K. McLeod,
by: M. P. Bradbury
Attorney.

UNITED STATES PATENT OFFICE.

KENNETH K. McLEOD, OF WHITE BEAR LAKE, MINNESOTA.

JOURNAL-SUPPORT FOR CENTRIFUGAL MACHINES.

No. 879,115. Specification of Letters Patent. Patented Feb. 11, 1908.

Original application filed August 7, 1905, Serial No. 272,986. Divided and this application filed June 7, 1907. Serial No. 377,830.

To all whom it may concern:

Be it known that I, KENNETH K. McLEOD, a citizen of the United States, residing at White Bear Lake, in the county of Ramsey and State of Minnesota, have invented a new and useful Improvement in Journal-Supports for Centrifugal Machines, of which the following is a specification.

My invention relates to an improved journal support for centrifugal machines and is divided from the subject-matter of application Serial No. 272,986, filed August 7, 1905, by myself.

The primary object of this invention is a device of its kind which is adapted to rigidly support the upper and lower journals of the upright shaft which carries the separating bowl of a centrifugal machine so that said bowl will assume that position in which it will run steadily and without vibration and thereby reduce the amount of friction between its journal bearing surfaces.

Among further objects are simplicity of construction, effectiveness in use and adjustability of its parts.

In the accompanying drawings forming part of this specification, Figure 1 is a vertical sectional view of my invention showing the separating bowl and its drive shaft in full; Fig. 2 is a front view; Fig. 3 is an enlarged side view of the journal sleeve and part of the upright shaft, and Fig. 4 is an enlarged detail sectional view of the lower journal and journal support.

In the drawings A represents a portion of the frame of a centrifugal machine used in connection with a cream separator and provided with a bowl receptacle 2 and a journal support 3. In the journal support is a vertical opening 4 through which a journal bearing sleeve 5 passes loosely. This sleeve is a tube, formed with a shoulder 6 resting upon the support 3, and internally threaded at 7 upon its lower end to receive a step bearing 8. A lock nut 9 fastened on the step bearing and impinging against the lower end of the journal sleeve at a slight distance from the lower surface 10 of the support 3 permits the journal sleeve to swing on the shoulder 6 and the upright shaft C therein to assume a position which causes it to revolve steadily and without vibration about its own axis.

The upper end of the journal sleeve carries a journal bearing 11 and is formed with a conical upper shoulder or cone 12. An annular collar 13 formed with a cone or lower shoulder 14 is threaded at 15 below the upper cone or shoulder 12. These cones or shoulders 12 and 14 support a metallic open-ended expansible spring collar or central plate B between them which is split at 16 and rests within the cylindrical wall or seat 17 of the frame on the lower portion of its bowl receptacle 2. The movable cone or shoulder 14 is notched at 18 so that a spanner wrench may be engaged therewith to turn it upon the sleeve and thus expand and increase the tension of the collar B within the cylindrical wall or seat 17. The expansible collar does not specifically form the subject-matter of this application and I hereby disclaim it as part thereof. Other forms of expansible collars may, when desired be used in its place and where any reference is made to it in this specification and the accompanying claims, it is only in its broad sense as an element of its kind. The collar shown is provided with spring serrations or bowed fingers 19 projecting from opposite edges of the plate B and bent at their extremities so as to slide on the surfaces of the cones or shoulders 12 and 14 when the latter are adjusted. The cone or shoulder 14 is locked when adjusted by means of a nut 20.

The vertical shaft C supports a cream separator bowl D upon its upper end, in the bowl receptacle 2 and is adapted to revolve in the journal bearing 11 and step bearing 8. The lower end of this shaft is seated upon a ball 21 which is carried by the step bearing. Between the ends of the shaft is a worm pinion 22 which meshes with a worm gear 23. This gear is carried by a shaft 24 which is journaled at 25 upon the frame and carries a drive sprocket 26 and drive chain, not shown, or any other suitable actuating mechanism. The journal sleeve 5 is slotted at 27 to permit the worm gear 23 to engage the worm pinion. The sleeve as shown passes freely through an opening 29 in the frame A.

In use the lower bearing may be adjusted vertically by turning the step bearing 8 and for this purpose said step bearing is formed with a cap nut 28. After it is adjusted to raise the separator bowl D clear of the journal bearing 11 it is locked by means of the nut 9 which impinges against the lower end of the journal sleeve. To adjust the tension of the collar within the cylindrical opening 17 of the upper support the cone 14

is turned by means of a spanner wrench which engages its notches 18. After the cone 14 is adjusted the nut 20 may be set to lock it in place upon the sleeve. The upper journal bearing being resilient and the lower bearing pivoted as shown causes the shaft when revolving to assume that position in which it runs steadily and without vibration. This is particularly advantageous, for in machines of the character described a high number of revolutions such as from eight to ten thousand per minute are necessary to separate cream from milk and should the machine not stand vertically and the shaft not be free to assume that position in which it will run steadily, friction between the bearing surfaces soon renders the machine inoperative. This objection is entirely overcome with my invention.

Having described my invention, what I claim as new and desire to protect by Letters Patent, is:—

1. In a machine of the class set forth, supports having openings therethrough, a sleeve passing vertically through said openings, its lower end having a shoulder resting freely upon the lower support, and its upper end threaded and provided with a stationary cone, an adjusting cone on the upper end of said sleeve, means for locking said adjusting cone in place, a resilient collar impinged between said cones and resting in the upper opening to laterally support the upper end of said sleeve, bearings in the upper and lower ends of said sleeve, and an upright shaft in said bearings.

2. In a machine of the class set forth, a sleeve having a shoulder on its lower end, a frame below said shoulder and supporting the upper end of said sleeve, a step bearing in the lower end of said sleeve, a journal bearing in the upper end of said sleeve, a lock nut below said frame and holding said step bearing in said sleeve, a vertical shaft revolving upon said step bearing and in said journal bearing, and a spring between the upper end of the sleeve and frame, permitting said upper end to move laterally upon said shoulder and the shaft to assume that position in which it will revolve without vibration.

3. A device of the class set forth, consisting of a pair of supports having vertical openings 4 and 17 passing therethrough, a substantially vertical sleeve passing freely through said openings and provided with a shoulder 6 above its lower end and resting upon the lower support and with a cone 12 upon its upper end, another cone 14 threaded below the upper cone on said sleeve, a lock nut 20 adapted to tighten against the lower cone, an expansible collar in the opening 17 impinging against the surface of said cones and permitting the upper end of said sleeve to move laterally, a bearing 11 supported on the upper end of said sleeve, and a vertical shaft C in said bearing, for the purposes specified.

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

KENNETH K. McLEOD.

Witnesses:
PHILIP G. HOFFMAN,
F. G. BRADBURY.