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K. K. McLEOD.

JOURNAL SUPPORT FOR CENTRIFUGAL MACHINES.

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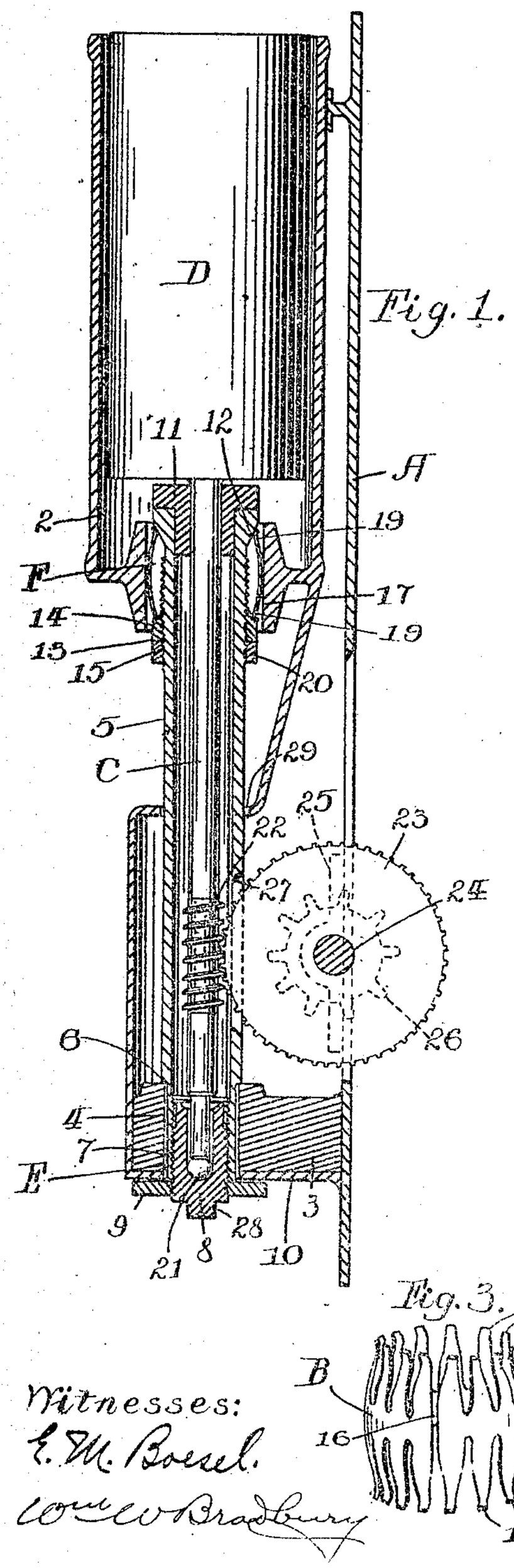

Fig. 1.

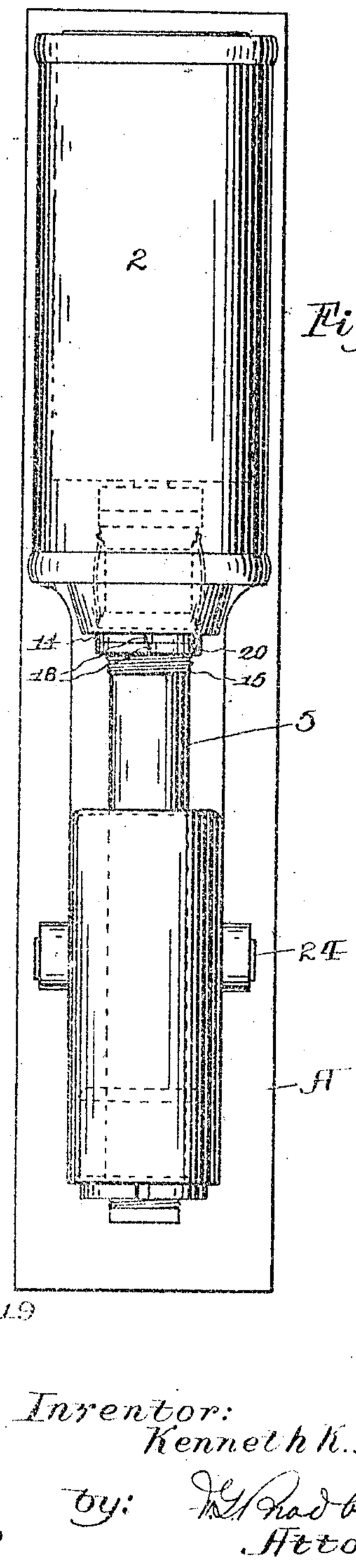

Fig. 2.

Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

KENNETH K. McLEOD, OF WHITE BEAR LAKE, MINNESOTA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE DE LAVAL SEPARATOR COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY

JOURNAL-SUPPORT FOR CENTRIFUGAL MACHINES.

No. 872,078. Specification of Letters Patent. Patented Nov. 26, 1907.

Application filed August 7, 1905. Serial No. 272,986.

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 Journal-Support for Centrifugal Machines, of which the following is a specification.

My invention relates to an improved journal support for centrifugal machines and has for its objects adjustability of its parts, simplicity of construction and effectiveness in use.

A further object is to provide means whereby the upright shaft which carries the separating bowl will assume that position in which it will run steadily and without vibration and thereby reduce the amount of friction between its journal surfaces.

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, and Fig. 3 is an enlarged view of the expanding collar used in connection with the journals.

In the drawings let A represent a portion of the frame of a centrifugal machine used in connection with a cream separator and formed with a bowl receptacle 2 and a journal support 3. In the journal support is a vertical opening 4, through which a journal sleeve 5 is adapted to pass loosely. This journal sleeve is formed with a shoulder 6, which rests upon the support 3 and is internally threaded at 7 upon its lower end to receive a step or bearing cup 8. A lock nut 9 is fastened on the step and impinges against the lower end of the journal sleeve at a slight distance from the lower surface 10 of the support 3, so that the upper end of the journal sleeve is permitted to swing slightly and the upright shaft C (hereinafter described) to assume a position which causes it to revolve steadily and without vibration.

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 expanding 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 and adjust it upon the sleeve and expand the collar B within the cylindrical wall or seat 17.

The expanding collar or central plate is formed with spring serrations or bowed fingers 19 which project from opposite sides thereof. This plate surrounds the bearing and the ends of its fingers are bent outward at their extremities and slide on the surface of the cones or shoulders 12 and 14 when adjusted. The object of providing a spring expanding collar in the upper journal is to permit the shaft C to assume that position in which it will revolve without vibration. The cone or shoulder 14 is locked when adjusted by means of a nut 20.

The vertical shaft C, supporting a cream separator bowl D upon its upper end and in the bowl receptacle 2, is adapted to revolve in the journal 11 and in the step 8. The lower end of this shaft is seated upon a ball bearing 21, which is carried by the step.

Between the ends of the bearing 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. A drive chain (not shown) or any other suitable source of drive mechanism may be connected with said sprocket.

The journal sleeve 5 is formed with a longitudinal slot 27, through which the worm gear 23 passes freely to engage the worm pinion. The journal sleeve, as shown, passes freely through an opening 29 in the frame A, said opening being of sufficient size to permit said bearing sleeve to be adjusted freely in its journals.

In use the lower bearing may be adjusted by turning the step 8. For this purpose said step is formed with a cap nut 28. After it is adjusted to raise the separator bowl D clear of the journal 11, it is locked by means of the nut 9, which impinges against the lower end of the journal sleeve. This construction (*i. e.* more particularly that portion of the journal E, which permits the bearing sleeve which it carries to pivot upon the journal support 10) causes the parts on

the upper journal to assume proper alinement and the journal 11 to carry the shaft C with a minimum amount of friction.

To adjust the upper journal within the cylindrical wall 17 the cone 14 is turned by means of a spanner wrench, which engages its notches 18, until the expanding collar B impinges against its surface to hold the upper end of the journal sleeve in substantially vertical position. 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, permits the shaft to assume that position in which it will run steadily. 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. A metallic spring adapted for journal bearings, comprising a central plate, bowed spring fingers projecting from said central plate on opposite sides thereof.

2. A metallic open ended spring adapted for journal bearings, comprising a central plate, bowed spring fingers projecting from said central plate on opposite sides thereof said plate being open ended.

3. A metallic spring adapted for journal bearings comprising a central plate, bowed spring fingers integral with and projecting from said central plate on opposite sides thereof.

4. A metallic open ended spring adapted for journal bearings comprising a central plate, bowed spring fingers integral with and projecting from said central plate on opposite sides thereof, said plate being open ended.

5. The combination with a bearing, of a central plate having bowed spring fingers projecting from said central plate on opposite sides thereof, surrounding said bearing, the ends of said fingers contacting with said bearing.

6. The combination with a bearing, of a central plate having bowed spring fingers projecting from opposite sides thereof, surrounding said bearing, the ends of said spring fingers contacting with said bearing, and a seat contacting with the central plate.

7. The combination with a bearing, of a central plate having bowed spring fingers integral therewith and projecting from opposite sides thereof, said device surrounding said bearing, the ends of said fingers contacting with said bearing.

8. The combination with a bearing, of a central plate having bowed spring fingers integral therewith and projecting from opposite sides thereof, said device surrounding said bearing, the ends of said fingers contacting with said bearing, and a seat contacting with the central plate.

9. The combination with a bearing, having an upper and a lower shoulder, of a central plate having bowed spring fingers projecting from opposite sides thereof, surrounding said bearing, the ends of said fingers contacting with said bearing respectively near the upper and lower shoulders.

10. The combination with a bearing, having an upper and a lower shoulder, of a central plate having bowed spring fingers projecting from opposite sides thereof, surrounding said bearing, the ends of said fingers contacting with said bearing respectively near the upper and lower shoulders, and a seat contacting with the central plate.

11. The combination with a bearing, having an upper and lower shoulder, of a central plate having bowed spring fingers integral therewith and projecting from opposite sides thereof, said device surrounding said bearing, the end of said fingers contacting with said bearing respectively near the upper and lower shoulders.

12. The combination with a bearing, having an upper and a lower shoulder, of a central plate having bowed spring fingers integral therewith and projecting from opposite sides thereof, said device surrounding said bearing, the ends of said fingers contacting with said bearing respectively near the upper and lower shoulders, and a seat contacting with the central plate.

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

KENNETH K. McLEOD.

Witnesses:
E. M. Boesel,
F. G. Bradbury.