No. 648,725. Patented May 1, 1900.

T. COLLINS & E. L. HARTMANN.

BEARING FOR CENTRIFUGAL SEPARATORS.

(Application filed Aug. 16, 1899.)

(No Model.)

Fig. 1.

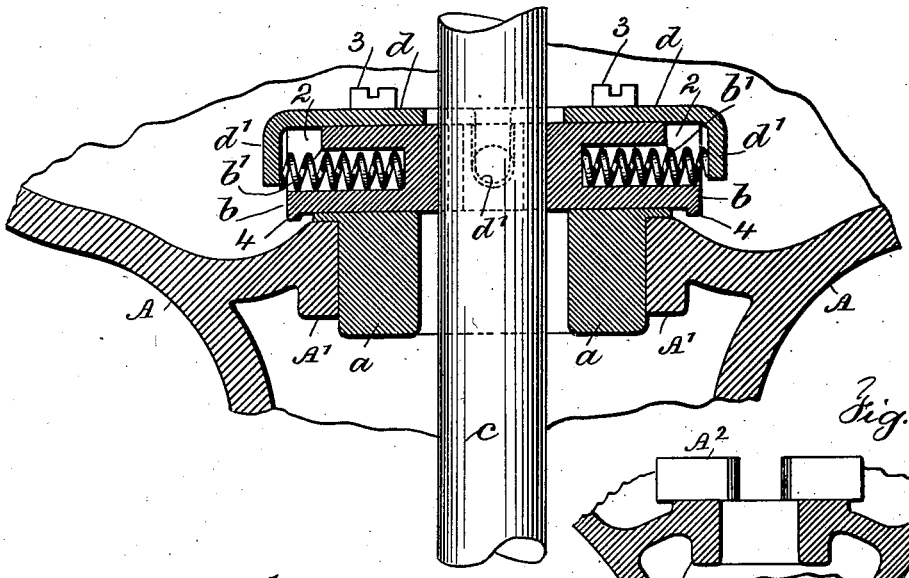


Fig. 4.

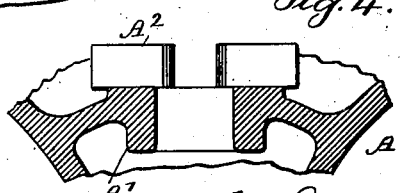


Fig. 2.

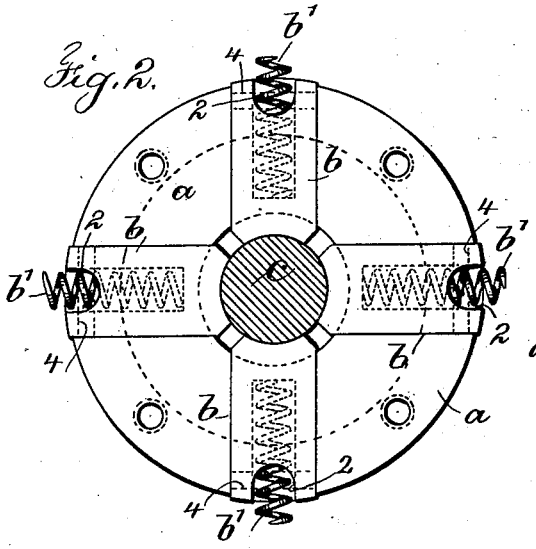
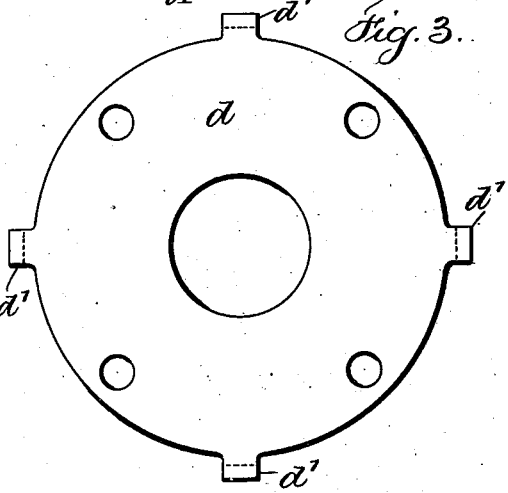


Fig. 3.



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UNITED STATES PATENT OFFICE.

THOMAS COLLINS AND ERNEST L. HARTMANN, OF BAINBRIDGE, NEW YORK, ASSIGNORS TO THE AMERICAN SEPARATOR COMPANY, OF SAME PLACE.

BEARING FOR CENTRIFUGAL SEPARATORS.

SPECIFICATION forming part of Letters Patent No. 648,725, dated May 1, 1900.

Application filed August 16, 1899. Serial No. 727,366. (No model.)

To all whom it may concern:

Be it known that we, THOMAS COLLINS, a subject of the Queen of Great Britain, and ERNEST L. HARTMANN, a citizen of the United States, both residing at Bainbridge, in the county of Chenango and State of New York, have invented a new and useful Improvement in Bearings for Centrifugal Separators, of which the following is a specification.

Our invention relates to an improved form of top bearings for centrifugal separators. Heretofore in these bearings a solid sleeve has been employed around the shaft at the bearing and the parts of the bearing have been complicated and rubber or other flexible material has been employed in connection therewith; and the objects of our invention to reduce the parts and simplify the construction and to render the parts more serviceable.

In carrying out our invention we employ a frame that is connected to the frame of the centrifugal separator adjacent to the upper part of the shaft. This frame is annular and provided with an upper portion transversely slotted at equidistant places, and in these slots we employ spring-actuated jaws with shoulders to prevent the jaws moving too far in one direction, and we employ a ring-plate on the top of the frame to maintain the sliding jaws in the frame with downwardly-projecting fingers, against which the springs press to force the jaws forward. The faces of the jaws are curved to the contour of the shaft and bear directly upon the shaft and yield as the shaft sways with the centrifugal motion of the machine.

In the drawings, Figure 1 is a vertical cross-section representing our improvements. Fig. 2 is a plan of the bearing with the top plate removed. Fig. 3 is a plan of the top plate, and Fig. 4 is a partial vertical cross-section of a modification in smaller size.

A represents a part of the frame of a centrifugal separator in which there is a central opening within the ring portion A'. The frame *a* comprises an annular portion or ring to set within the portion A' and to be secured thereto in any desired manner. The upper portion of the frame *a* is of greater diameter, so that a shoulder is provided setting upon the upper face of the portion A', and in this way a firm bearing is provided in the frame of the machine for the frame of the bearing. The frame *a* is radially slotted at equidistant points for the reception of the jaws *b*, which fit snugly therein and are each adapted to a longitudinal movement, the upper surface of the jaws being flush with the surface of the frame. The adjacent faces of the jaws *b* are curved to an arc agreeing with the circumference of the shaft *c* of the centrifugal separator. The jaws *b* are made partially hollow with an opening from the back end forward of a size adapted to receive the springs *b'*, and the jaws are notched at 2 in their upper faces. The ring-plate *d* fits upon the top of the frame and over the spring-actuated jaws *b*, and the opening therein limits the movement of the vertical shaft, preventing the same moving too far out of the perpendicular, and this ring-plate is provided with downwardly-projecting equidistant fingers *d'* of a width to pass into the notches 2, the fingers coming down behind the openings in the jaws as stops for the rear ends of the springs *b'*. Screws 3 pass through the ring-plate into threaded openings in the upper surface of the frame *a* for removably securing the said ring-plate to the frame. The jaws *b* at their rear edges are each provided with a shoulder 4, acting as a stop against the adjacent edge of the frame *a* to prevent the jaws moving too far inwardly. The notches 2 prevent the jaws moving too far outwardly. The shaft *c* revolves directly against the surfaces of the jaws *b*, and there are thus no parts that have to be supported or are liable to become loose. We may make the ring-plate *d* with an annular flange as the equivalent of the fingers *d'*.

In the rapid rotation of the shaft *c* of the centrifugal separator there is more or less of an oscillating motion, and this is compensated for by the yielding spring-actuated jaws *b*, which move with the shaft and maintain a bearing upon the surface of the shaft at all times.

The devices of our invention form a simple and efficient top bearing containing but few parts that are accessible and readily lubricated.

We have found that in some sizes of centrifugal separators it is preferable instead of

making the frame *a* as a separate annular portion or ring to set within the portion A′ to build this annular portion as an extension A^2 from and above the portion A′ of the machine, and the construction embracing this upward extension we have illustrated in the modification, Fig. 4. In this upward extension radial slots are made at equidistant points for the reception of the jaws *b*, similar to those made in the frame *a* when the same is a separate annular portion.

We claim as our invention—

1. The combination with the frame and shaft of a centrifugal separator, of an annular extension to the frame of the machine of greater internal diameter than the shaft and leaving a space around the shaft, the said extension being slotted radially at equidistant points, spring-actuated jaws placed and moving longitudinally in said slots and having curved adjacent ends to bear directly upon the surface of the shaft, a plate fitting upon the said annular extension above the said jaws and stops for limiting the movement of the said spring-actuated jaws in either direction, substantially as set forth.

2. The combination with the frame and shaft of a centrifugal separator, of an annular frame of greater internal diameter than the shaft adapted to fit the frame of the machine, spring-actuated jaws placed equidistant and moving longitudinally in slots in the upper face of the annular frame and having curved adjacent ends to bear directly upon the surface of the shaft and stops for limiting the movement of said spring-actuated jaws in either direction, substantially as set forth.

3. The combination with the frame and shaft in a centrifugal separator, of an annular frame fitting an opening in the frame of the machine and having an enlarged upper portion to rest upon the frame of the machine, said annular frame being grooved radially at equidistant places, jaws fitting the grooves of said frame and having curved adjacent faces to bear directly upon the separator-shaft, said jaws having openings therein from the other end and springs in said openings, a ring-plate fitting upon the annular frame and extending over the jaws and having depending fingers passing down behind said jaws to act as stops for the rear ends of the springs, substantially as set forth.

4. The combination with the frame and the shaft in a centrifugal separator, of an annular frame fitting an opening in the frame of the machine and having its upper portion larger than the lower portion and provided with radial equidistant grooves, jaws fitting said grooves and having adjacent surfaces curved to conform to the separator-shaft and bearing directly thereon, the said jaws having openings made therein from the opposite end and notches in the upper portions of the said jaws at said openings, shoulders 2 along the lower edges of said jaws, springs within the openings in the jaws, a ring-plate secured to the upper surface of the frame and extending over the spring-actuated jaws and having depending fingers in line with the center of said jaws and adapted to fit the notches therein and serving as stops at the rear ends of the springs, substantially as and for the purposes set forth.

Signed by us this 3d day of August, 1899.

THOMAS COLLINS.
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Witnesses:
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