(No Model.)

G. L. SHOREY.

CENTRIFUGAL MACHINE.

No. 302,290. Patented July 22, 1884.

Fig: 1.

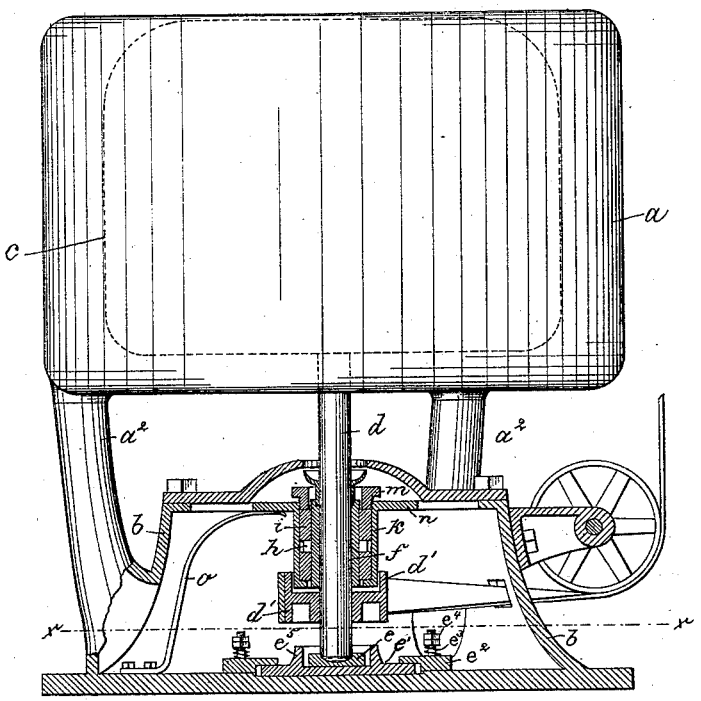
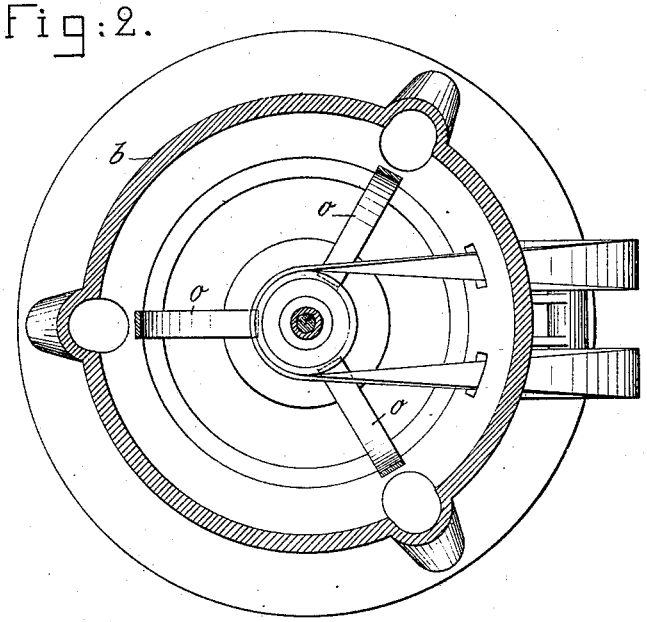


Fig: 2.



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UNITED STATES PATENT OFFICE.

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CENTRIFUGAL MACHINE.

SPECIFICATION forming part of Letters Patent No. 302,290, dated July 22, 1884.

Application filed December 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. SHOREY, of Lynn, county of Essex, State of Massachusetts, have invented an Improvement in Centrifugal Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to a centrifugal machine such as employed for throwing off the water from clothing in laundry operations, or for any similar purpose.

The invention consists in a novel construction of the bearings of the shaft carrying the basket or receptacle containing the materials to be operated upon by centrifugal force.

In another patent, No. 288,129, dated November 6, 1883, I have shown a shaft having a fixed pivot or bearing at its lower end and a supporting bearing or bolster above the said end, the said bolster being inclosed in a box having a yielding connection with the frame-work of the machine, it being free to slide between plates connected with the frame and adapted to resist to a certain extent the said sliding movement without positively restraining it.

The present invention consists, partly, in the combination of the shaft, having its weight sustained at its lower end upon the frame-work of the machine, but permitted to move laterally thereon, with a supporting bearing or bolster at an intermediate point on the shaft, and righting-springs resisting the movement of the said shaft from its normal vertical position. The supporting bearing, bolster, or sleeve is contained in a box connected with the frame-work of the machine by springs; and the invention further consists in details of construction and combinations of the parts hereinafter specified.

Figure 1 is a side elevation, partly in section, of a centrifugal machine embodying this invention; Fig. 2, a horizontal section thereof on line *x x*, looking upward.

The casing *a*, supported on legs a^2, connected with the base *b*, and the revolving basket *c*, (shown in dotted lines in the said casing,) may be of any suitable or usual construction, the said basket being mounted on a shaft, *d*, having a driving-pulley, *d'*, and resting at its lower end in a step or box, *e*, which sustains its weight, but does not support or hold the shaft upright. The box *e* and lower end of the shaft *d*, sustained thereon, can slide laterally with relation to the frame-work of the machine, it being shown as resting in a shoe or plate, *e'*, which is itself permitted to slide upon the base *b* of the machine, the said sliding movement of the box *e* on the plate *e'* being resisted by friction, and the movement of the plate *e'* itself being more powerfully resisted by a clamp, e^2, pressed against it by springs e^3 and nuts e^4. The plate *e'* is provided with a ridge, e^5, surrounding the box *e*, and serving as a receptacle for the lubricant. In centrifugal machines of ordinary construction, in which the lower end of the shaft is restrained from lateral movement when the load is very unevenly distributed, the swaying of the basket in starting is often sufficient to cause it to strike on the interior of the casing; but the lateral movement of the box *e* relieves the basket and greatly reduces the swaying movement, while the frictional resistance to such lateral movement prevents the basket from gaining momentum in its swaying movement, and gradually overcomes such swaying. In large machines, when the swaying is excessive, the box *e* may move far enough to strike the ridge e^5, when its further deviation will be resisted by the greater friction between the plate *e'* and its clamp and the base *b*, thus preventing or opposing further increase in such swaying. In small machines the plate *e'* may be omitted and the ridge e^5 be made upon the base *b*. The shaft *d* is supported or held in a vertical position concentric with the casing *a* and base *b* by a supporting-bearing consisting of a bushing, *f*, having a flange, *h*, and surrounded by springs *i*, of rubber, inclosed in a box, *k*, and held in place with suitable compression by a follower or gland, *m*. The box *k* is connected with the base *b* by springs *o*, which permit a slight lateral or rocking movement of the box *k* relative to the base, and thus partially absorb the vibrations of the shaft *d*. The said springs *o* are shown as fastened to a flange, *n*, of the box *k*, and tend by their elastic force to retain the said box, the bearing *f*, and shaft *d* therein

in the normal central position with relation to the frame-work of the machine, and with the axis of the said box and shaft vertical.

The springs *i* operate as described in my other invention, they being uniformly strained when the shaft and bearing *f* are concentric with the box *k* and with the axis of the said shaft and box coincident, and any deviation of the shaft from its vertical concentric position will produce uneven strain in the said springs *i*, which will then tend by their elastic force to restore the shaft *d* to its normal position.

It will be seen that the shaft *d* is not positively held at any point, but has an absolutely yielding connection with the frame-work of the machine, it being possible to move the shaft laterally while retaining its axis vertical, or to move the said shaft from the vertical position, the line of its axis, when thus moved, intersecting the normal central vertical axis at any point. This entire freedom of the shaft attained by the freedom of movement or absence of positive restraint of its bearings is very important, as it enables the machine to operate with loads that are very unevenly distributed without extreme deviation of the basket, and also without sufficient pressure on the bearing-surfaces as to cause them to heat.

I claim—

1. In a centrifugal machine, the shaft having its weight sustained, and having a lateral movement at its lower end on the base or frame-work, combined with a supporting-bearing, by which it is maintained in an upright position, substantially as described.

2. The shaft and bearing at its lower end, upon which its weight is sustained, while permitting the lateral movement of the said shaft, combined with a supporting bearing-sleeve and box surrounding and inclosing it, the springs interposed between the said sleeve and box, and the springs connecting the said box with the frame-work, substantially as described.

3. The shaft and its supporting-bearing, combined with the box surrounding and inclosing the said bearing, and the springs *o*, forming the sole connection between the said box and the frame-work of the machine, substantially as described.

4. The shaft and its supporting-bearing and box inclosing the said bearing, combined with springs interposed between said bearing and box, permitting a yielding angular movement of the shaft, and springs permitting a yielding lateral movement of the said bearing, substantially as described.

5. The combination of the shaft of a centrifugal machine with its weight-sustaining bearing or step and supporting-bearing by which it is held upright, both said bearings having a yielding connection with the frame-work of the machine, whereby the shaft is permitted to move laterally or angularly at any point in its length, substantially as described.

6. The shaft and its weight-sustaining bearing or step, combined with the shoe upon which the said step rests, and the shaft-supporting bearing, the said shoe being frictionally connected with the frame-work, and the step having a limited movement thereon in all directions, substantially as described.

7. The shaft and its weight-sustaining bearing or step *e* and supporting-bearing, combined with the shoe *e'*, having a frictional connection with the frame-work, and provided with a ridge, e^5, surrounding the step *e*, substantially as described.

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

GEO. L. SHOREY.

Witnesses:
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