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W. E. ANDRÉE.

CENTRIFUGAL MACHINE.

APPLICATION FILED SEPT. 18, 1905.

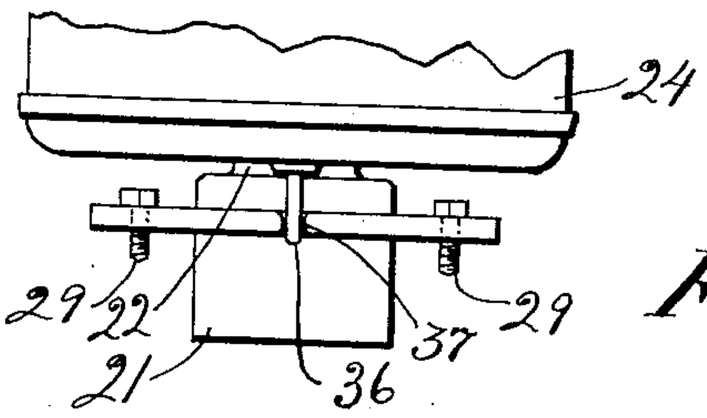

Fig. 2.

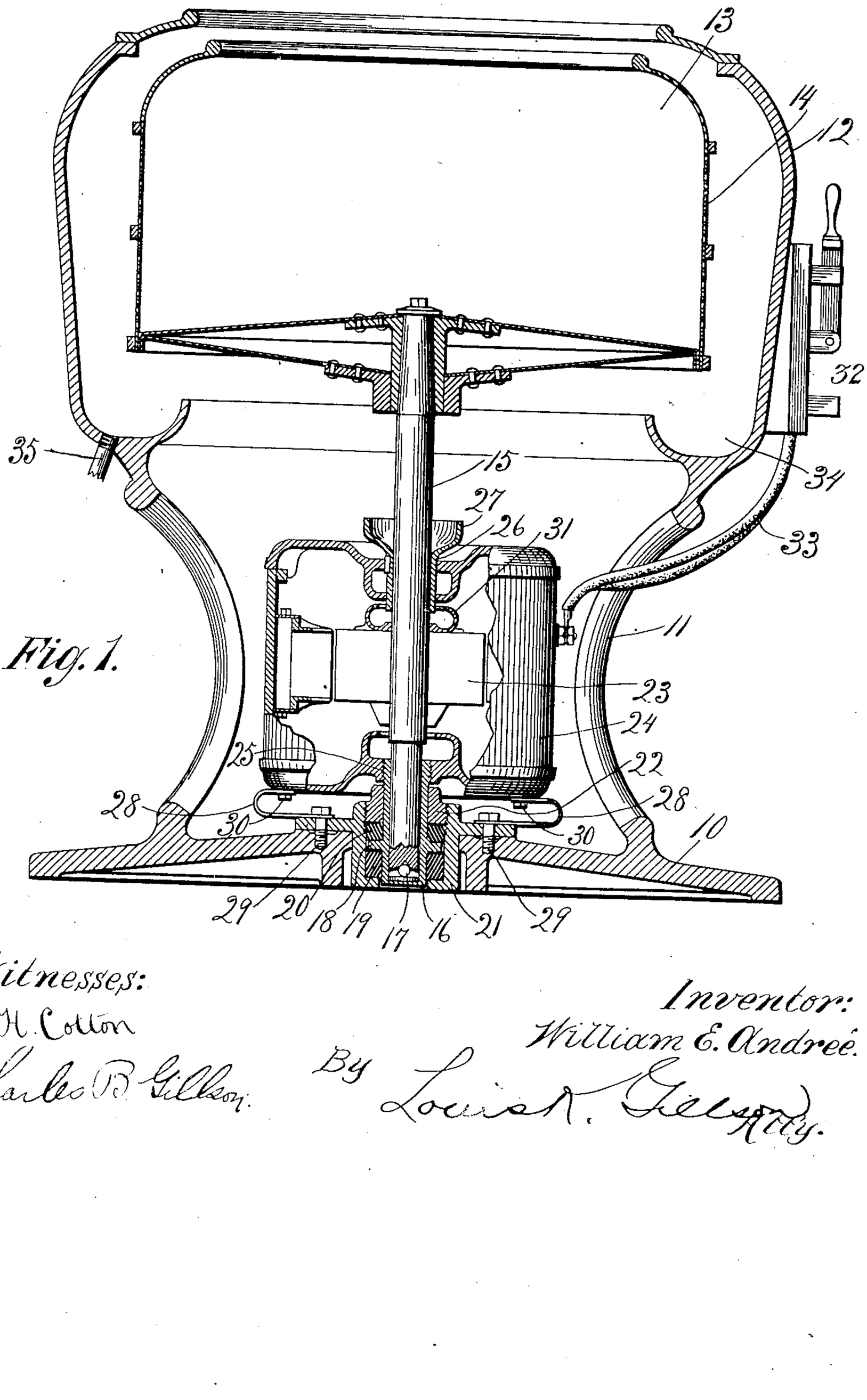

Fig. 1.

Witnesses:
W. H. Cotton
Charles B. Gillson.

Inventor:
William E. Andrée.
By Louis R. Gelsthy.

UNITED STATES PATENT OFFICE.

WILLIAM E. ANDRÉE, OF CHICAGO, ILLINOIS, ASSIGNOR TO NELSON & KREUTER COMPANY, A CORPORATION OF ILLINOIS.

CENTRIFUGAL MACHINE.

No. 816,058. Specification of Letters Patent. Patented March 27, 1906.

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To all whom it may concern:

Be it known that I, WILLIAM E. ANDRÉE, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Centrifugal Driers, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

This invention relates to driers for use in laundry-work for expressing the water from garments after washing. Its object is to provide for the direct application of a motor to the rotating member of the machine; and it consists in a suitable standard, a perforated receptacle mounted on a rotatable vertical spindle, and an electric motor carried in part by the spindle and in part by the standard, and in various details of construction, as hereinafter pointed out.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical central section of the machine, partly in elevation; and Fig. 2 is a detail of a modification of one of the features of the machine.

The machine is shown as having a base 10, from which rise standards 11, carrying an annular casing 12, within which is located the receptacle 13 for the articles to be dried, this receptacle having perforated walls 14 and being carried by a vertical spindle 15, stepped in a sleeve 16, carried by the base. Preferably a ball 17 is interposed between the end of the spindle 15 and the bottom of the sleeve 16, one of these parts, as shown the end of the spindle, being slightly concave in order to center the ball. The sleeve is provided with a radial flange 18 intermediate of its ends and is inclosed by a pair of elastic rings, preferably of rubber 19 20, located one on each side of the flange 18, one of the rings, as 19, filling the space between the flange and the bottom of the casing 21, within which the sleeve 16 is inclosed, and the other ring 20 being forced against the flange 18 by an annular follower 22, screwed into the casing 21. The central aperture of this follower is sufficiently large to allow of lateral play of the sleeve 16.

The motor-armature 23 is fixed upon the spindle 15 and its field 24 is supported by the sleeve 16, the lower end of its casing being in threaded engagement therewith, as shown at 25. The upper end of the field-casing is provided with a bushing or box 26, having a bearing upon the spindle 15, this box extending upwardly and flaring to form a grease-cup 27. The lower end of the field-casing 24 is connected to the base 10 in order to prevent its rotation. This connection is shown in Fig. 1 as being accomplished by means of a plurality of U-shaped spring members 28, secured to the base by means of screws 29, which secure the casing 21 in place and secure it to the field-casing by the bolts 30.

A grease-cup 31 is formed on the upper face of the armature 23 to receive the drippings from the box 26. A switch is conventionally shown at 32, and leaders 33 convey the current thereform to the field of the dynamo.

The lower end of the casing 12 is provided with an instanding and upwardly-curved stand to provide a trough 34 to receive the water expressed from the articles in the receptacle 13, and a drain-pipe 35 is provided for emptying this trough.

There is shown in the drawings an electric motor of the induction type; but any form of motor may be used and the electrical connections will be made in the manner well-known to those skilled in the art. In lieu of the flexible connections 28 between the field-casing and the base there may be used for preventing the rotation of the field-casing 24 of the motor studs 36, projecting downwardly from the casing and entering apertures 37 in the base, as shown in Fig. 2, it being important that such apertures be of greater radial dimension with reference to the base than the diameter of the studs.

In machines of this class a speed is developed which renders it impracticable to use stationary journals for the shaft or spindle, and for this reason the problem of applying a motor directly to the spindle has been a difficult one. In the machine shown and described the proper relation between the armature and field of the motor is maintained by mounting one of them upon the spindle and the other upon the sleeve or box within which the spindle turns, this box being allowed sufficient lateral play to permit the casing 14, with its variable load, to find its true center of rotation. The follower 22 may be turned down upon the ring 20 with sufficient force to prevent the rotation of the

sleeve. The screw-thread at 25 will be so connected that the reaction on the casing due to the rotation of the armature will tend to turn the casing down.

In order to economize time, it is necessary to use some form of brake mechanism to stop the machine when the expressing operation is completed. In this machine this is accomplished by a reversal of the current, and hence the direction of the reaction upon the motor-casing is reversed and tends to turn it back on the thread at 25. This tendency is resisted by the direct connection between the dynamo-casing and the base, while this connection does not prevent the lateral movement incident to the automatic centering of the machine.

A centrifugal machine in which the motor is carried directly by the spindle or mounted to sway laterally with it finds its true center of rotation much more readily, and consequently with much less strain of the parts, than when power is transmitted from the outside driving mechanism, for the reason that its center of gravity is brought much more nearly the point on which the revolving part turns. The very considerable weight of the motor reduces the question of balancing the load to a minimum, as the amount of material introduced into the receptacle is ordinarily much less in weight than the motor and all lateral strain, as by the application of a driving-belt to a pulley on the spindle, is avoided.

The machine here shown and described may be driven in either direction by merely changing the electrical connections, and the yielding or loose connections between the field and the base of the machine are important not only for the purpose of permitting the use of a reverse current for brake purposes, but also as adapting the machine to be operated in either direction.

I claim as my invention—

1. A centrifugal machine comprising, in combination, a base, an elastic cushion seated on the base, a journal-box resting on the cushion, a spindle stepped in the box, a motor having its rotatable element secured to the spindle and its fixed element secured to the journal-box, and a receptacle carried by the spindle.

2. A centrifugal machine comprising, in combination, a base, an annular elastic cushion seated on the base, a journal-box having a flange resting on the cushion, a spindle journaled in the box, a motor having its rotatable element secured to the spindle and its fixed element secured to the journal-box, and a receptacle carried by the spindle.

3. A centrifugal machine comprising, in combination, a base, a journal-box mounted in the base, springs supporting the box against lateral oscillation, a spindle stepped in the box an electric motor having its armature fixed to the spindle and its field fixed to the box, and a receptacle carried by the spindle.

4. A centrifugal machine comprising, in combination, a base having a well, a journal-box located in the well and having a radial flange, elastic cushions within the well and engaging opposite faces of the flange, a follower adjustably mounted in the well and bearing the cushions to the bottom thereof, a spindle stepped in the box, an electric motor having its armature and field fixed, one upon the spindle and the other upon the box, and a receptacle carried by the spindle.

5. A centrifugal machine comprising, in combination, a base, a journal-box mounted in the base, springs supporting the box against lateral oscillation, an electric motor having its armature fixed to the spindle and its field fixed to the box, stops engaging the field with the base to prevent the rotation of the former, and a receptacle carried by the spindle.

6. The combination with a frame comprising a base, a standard rising from the base and an annular casing carried by the standard, of a journal-box mounted in the base, a spring reacting between the base and the journal-box, a spindle stepped in the box and extending into the casing of the frame, a motor having its rotatable element secured to the spindle and its fixed element secured to the box, and a receptacle mounted on the spindle within the annular frame-casing.

WILLIAM E. ANDRÉE.

Witnesses:
LOUIS K. GILLSON,
CHARLES B. GILLSON.