

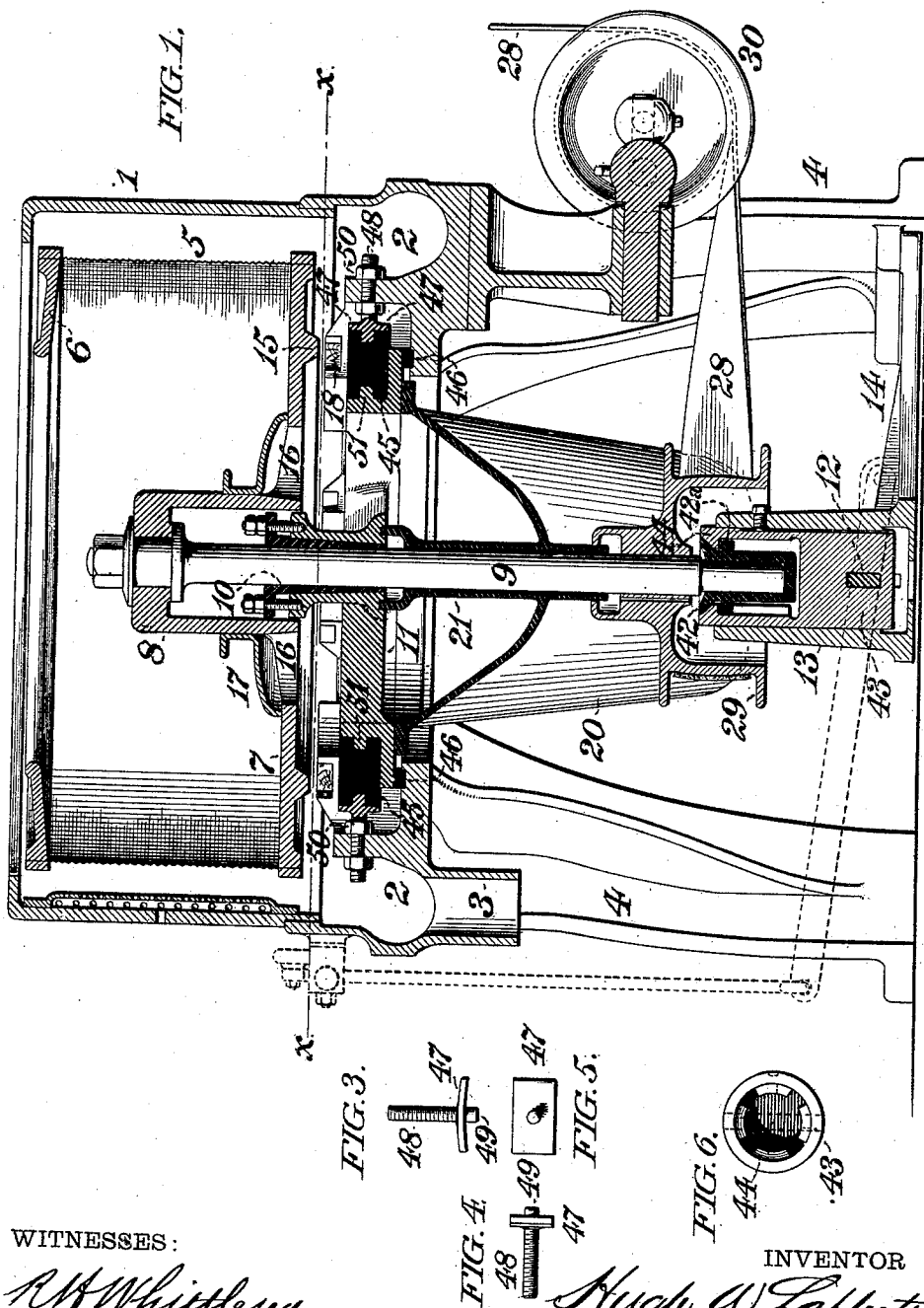
(No Model.)

2 Sheets—Sheet 1.

H. W. LAFFERTY.
CENTRIFUGAL MACHINE.

No. 474,389.

Patented May 10, 1892.



WITNESSES:

R. H. Whittlesey
F. E. Gaither

INVENTOR

Hugh W. Lafferty
by J. Snowden Bell
att.

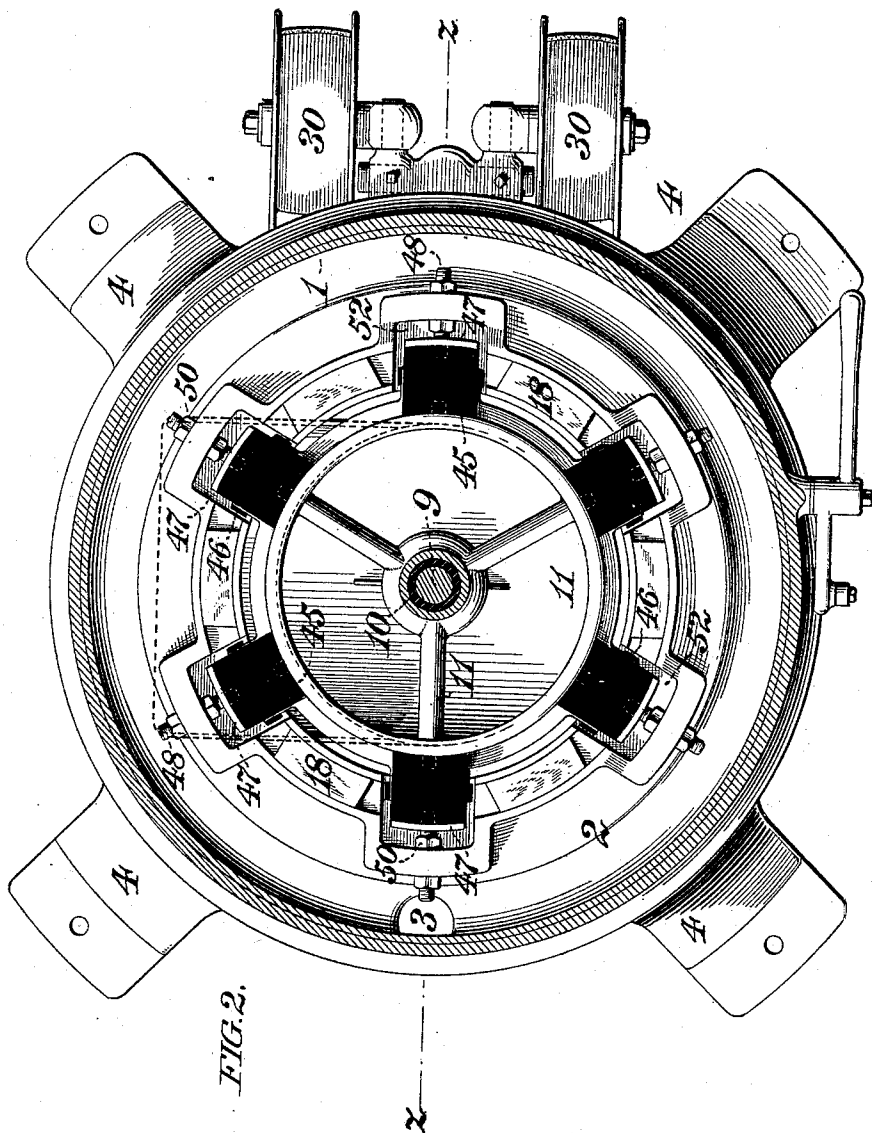
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UNITED STATES PATENT OFFICE.

HUGH W. LAFFERTY, OF WILMINGTON, DELAWARE.

CENTRIFUGAL MACHINE.

SPECIFICATION forming part of Letters Patent No. 474,389, dated May 10, 1892.

Application filed March 3, 1891. Serial No. 383,594. (No model.)

To all whom it may concern:

Be it known that I, HUGH W. LAFFERTY, of Wilmington, in the county of New Castle and State of Delaware, have invented a certain new and useful Improvement in Centrifugal Draining-Machines, of which improvement the following is a specification.

My invention relates to centrifugal draining-machines of the class known as "standing machines"—that is to say, those in which the drum and spindle are supported and rotate upon a lower step or bearing; and its object is to provide simple and efficient means by which gyration of the rotating members will be permitted without jars or shocks due to unequal loading of the basket, and the cost, complication, and liability to breakage of the bolts and link connections heretofore employed for the purpose will be avoided.

To this end my invention consists in certain novel devices and combinations, hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a vertical central section through a centrifugal draining-machine embodying my invention at the line $z z$ of Fig. 2; Fig. 2, a horizontal section through the same at the line $x x$ of Fig. 1; Figs. 3, 4, and 5, plan, side, and inner end views, respectively, of one of the face-plates detached; and Fig. 6, a plan or top view of the step-carrier.

My improvement is herein illustrated as applied in a centrifugal draining-machine, the general structural features of which accord with that set forth in Letters Patent of the United States No. 304,942, granted and issued to me under date of September 9, 1884. My invention has, however, no necessary relation to or dependence upon such patented construction, the same being selected merely for convenience and clearness of illustration and being one of the several forms of standing machines known in the art for application to which my improvement has been devised.

The outer casing 1 of the machine shown in the drawings is of the usual cylindrical form, and is connected at bottom to an annular lower section or bed 2, in which is formed a downwardly-projecting spout or discharge-nozzle 3, and which is supported on legs or standards 4, by which the machine may be secured to a suitable floor or foundation, and

which, with the bed 2, form the frame of the machine. The drum or basket 5 is secured at its upper side to a cap-plate 6, and at its lower side to a bottom plate 7, having a central cylindrical hub 8, at the base of which are formed discharge-openings 16, controlled by a valve or cap 17, fitting around the hub and over said openings.

The hub 8 is secured upon the upper end of a vertical spindle 9, which passes, with the capacity of free rotation, through a gland or bushing 10, connected to the central hub or boss of an upper-bearing frame 11, having an annular rim connected by radial arms to said central hub. The lower end of the spindle 9 fits truly in and rests upon a step or lower bearing 42, the upper portion of which is on its outer surface in the form of a section of a sphere, and is supported on correspondingly-faced lugs or bearings 44 on the upper end of a supporting block or carrier 43, in order to admit of the gyratory movement of the spindle 9 and connected drum or basket 5. The carrier fits and is vertically movable in a box or casing 13, fixed to a plate 14, which is connected to the standards of the machine, and the carrier, together with the step 42 and the spindle and drum supported thereon, are adapted to be raised and lowered by a transverse bar 12 and suitable connections, in order to separate or bring into contact, respectively, braking-shoes 15 on the bottom plate 7 of the drum and friction-blocks 18 on the bed-section 2, as heretofore practiced for releasing and for retarding the drum.

For the purpose of maintaining the step and carrier in normal vertical relation and preventing their separation in being raised and lowered, the step 42 is provided with circumferential projections 42^a, which fit under the lower sides of the bearings 44 of the carrier 43, the projections 42^a being inserted in the openings between the bearings and the step being then turned, so as to bring them below the bearings, which then fit between the spherical bearing-face of the step and the projections thereon, thus preventing relative displacement of the step and carrier in their vertical movements.

The elastic resistance requisite to control and equalize the gyratory movements of the spindle and drum about the center of the

spherical bearing of the step 42 is provided by a series of springs interposed between the upper-bearing frame 11 and the bed-section 2 of the main frame of the machine.

5 These springs are formed of rubber blocks 45, each of which fits on a pin or projection 51 on the rim of the frame 11 and on a seat on said rim and projects into a recess or pocket 52 on the inner side of the bed-section 2. The blocks 45 bear on the bed section 2 through adjustable face-plates 47, each of which abuts against the outer face of a block and is provided with a projection 49, fitting in said block, and on its opposite side 15 with a screw-stem 48, passing through the outer wall of the pocket 52 of the block and having nuts 50 on opposite sides of said wall, by the adjustment of which nuts compression to a greater or less degree may be imposed 20 upon the block or the block relieved therefrom, as desired. By this construction the frame 11, which gyrates with the spindle and drum, is adapted to bear uniformly around its center upon the main frame of the machine, and the uniform circumferential resistance to gyration which is thereby exerted counteracts the tendency to jars and shocks which results from unequal distribution of the charge in the drum, and insures the smooth and easy running of the machine. It 30 will also be seen that the construction possesses material advantages in point of simplicity and strength relatively to those heretofore employed in which the upper bearing is coupled by link-and-pin and bolt connections to springs fixed on the frame.

The upper-bearing frame 11 slides on rubber blocks 46, fixed on the bed-section 2, and carries a chute or discharge-spout 20 for the 40 delivery of material discharged from the lower openings 16 of the drum. The chute 20 is formed integral with a sleeve 21, which incloses the spindle 9 and fits at its upper end in a recess in the bottom of the bearing-frame 45 and at its lower end in a recess in the top of a driving-pulley 29, secured upon the spindle 9 adjacent to the step 42, said pulley carrying a driving-belt 28, which passes around guide-pulleys 30, journaled on the frame, and 50 transmits power from a suitable prime mover for the rotation of the spindle and drum.

I claim as my invention and desire to secure by Letters Patent—

1. In a centrifugal draining-machine, the 55 combination of a spindle, a drum or basket fixed thereon, a step or bearing supporting the

lower end of the spindle, an upper-bearing frame inclosing the spindle, a circumferential series of springs interposed between and abutting against said bearing-frame, and bearing-faces connected to the main frame of the machine, and a series of supporting-springs fixed to said main frame below the bearing-frame, substantially as set forth.

2. In a centrifugal draining-machine, the 65 combination of a spindle, a drum or basket fixed thereon, a step or bearing supporting the lower end of the spindle, an upper-bearing frame composed of a central hub inclosing the spindle, and an outer rim connected by radial 70 arms to said hub, a series of rubber blocks, each supported on and abutting against the outer rim of the bearing-frame, and a series of bearing-faces, each fitting against one of said blocks and provided with a stem connected to the adjacent portion of the main frame of the machine, substantially as set forth.

3. In a centrifugal draining-machine, the combination of a spindle, a drum or basket 80 fixed thereon, a step or bearing supporting the lower end of the spindle, an upper-bearing frame inclosing the spindle, a series of rubber blocks supported circumferentially on said bearing-frame, a main frame having a series 85 of recesses or pockets, each adapted to admit the outer end of one of said blocks, a series of bearing-faces, each fitting against the outer end of one of said blocks and provided with a screw-stem passing through the outer wall of 90 the adjacent pocket, and nuts engaging said stems on opposite sides of said walls, substantially as set forth.

4. In a centrifugal draining-machine, the combination of a spindle, a drum or basket 95 fixed thereon, an upper-bearing frame inclosing the spindle, springs interposed between said frame and faces on the main frame of the machine, a lower step or bearing supporting said spindle and having a spherical outer face 100 adjoining its top, and a series of circumferential projections below said spherical face, and a vertically-movable supporting block or carrier having a series of bearing-faces corresponding with the spherical face of the step 105 and separated by openings for the passage of the circumferential projections of said step, substantially as set forth.

HUGH W. LAFFERTY.

Witnesses:

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CHAS. A. FOSTER.