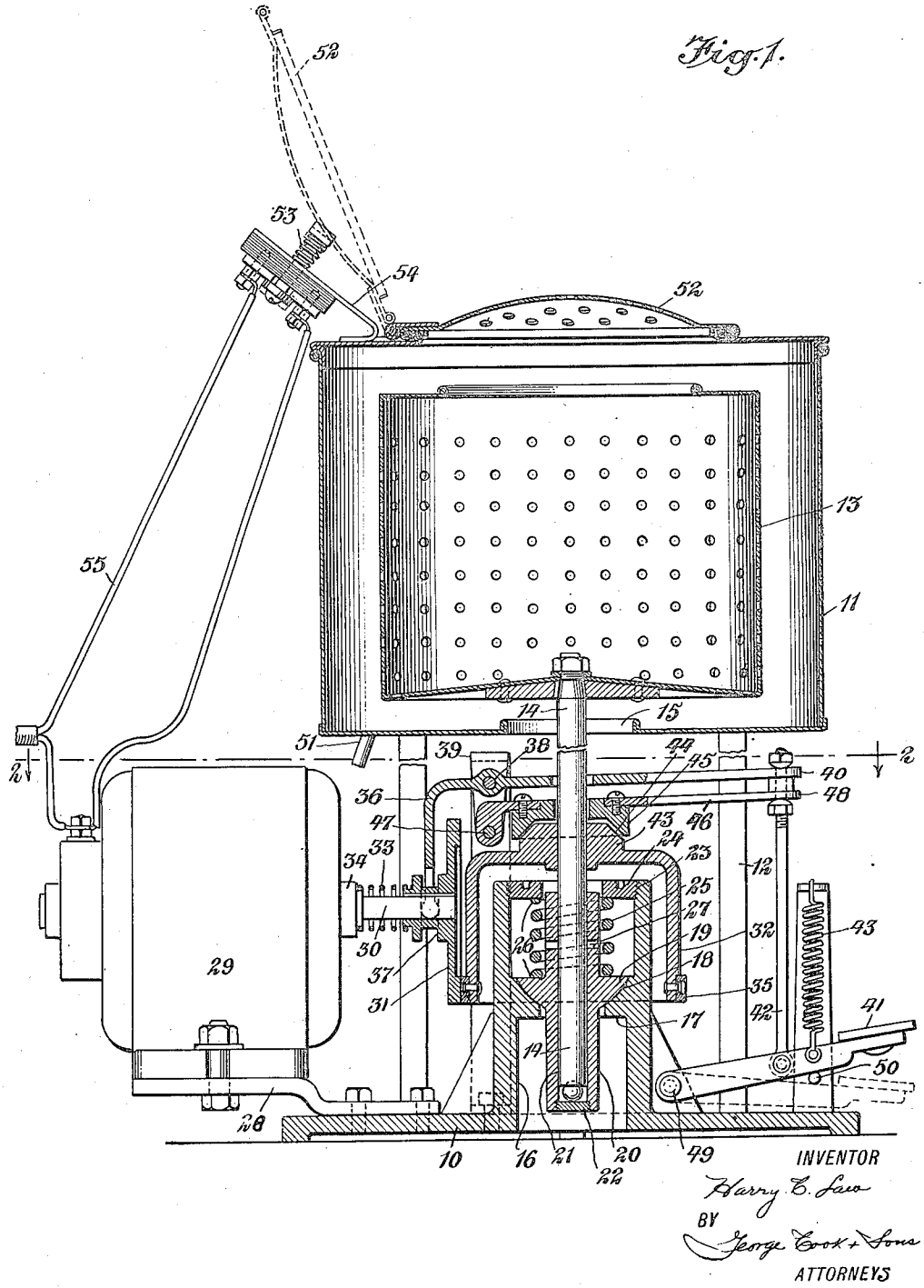
July 29, 1924. 1,502,677

H. C. LAW

CENTRIFUGAL DRIER

Filed March 26, 1921 2 Sheets-Sheet 1

Fig. 1.



INVENTOR

Harry C. Law

BY

George Cook & Sons

ATTORNEYS

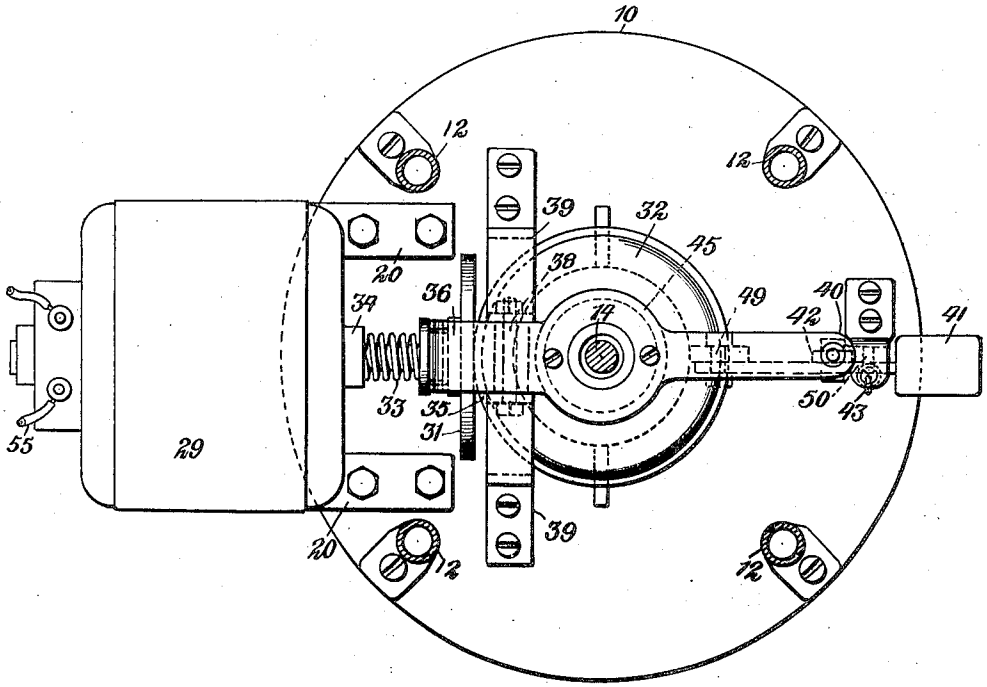
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Fig. 2.



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Patented July 29, 1924. 1,502,677

UNITED STATES PATENT OFFICE.

HARRY C. LAW, OF HASTINGS UPON HUDSON, NEW YORK.

CENTRIFUGAL DRIER.

Application filed March 26, 1921. Serial No. 456,001.

To all whom it may concern:

Be it known that I, HARRY C. LAW, a citizen of the United States, and a resident of Hastings upon Hudson, in the county of Westchester and State of New York, have made and invented certain new and useful Improvements in Centrifugal Driers, of which the following is a specification.

My invention relates to a centrifugal drier, and particularly to that type of machine as used in laundries.

An object of the invention is to provide a centrifugal drier which is so constructed that the tub will be driven at a high speed and with a minimum amount of vibration and friction, thus providing for the smooth and effective operation of the device.

A further object is to provide an improved centrifugal drying machine wherein the tub is driven in a smooth and quiet manner, at high speed, and without danger of undue forces or stresses being exerted upon the driving motor and thus protect it from being burnt out or excessively overloaded.

A further object is to provide an improved drying machine wherein the tub may be quickly and effectively stopped after the drying of the clothes or laundry has been accomplished.

A further object is to provide a drying machine having a tub supported upon and rotated by a vertically mounted shaft, the latter being supported by a single bearing, which allows the shaft to oscillate and thus seek its own center and to provide in connection with the foregoing a friction clutch for driving the shaft, and a friction brake for checking the rotation of the shaft after the drying of the articles in the tub has been accomplished; the foregoing features being carried out in a simple and effective manner, embodying but few parts, and so designed as to require a minimum amount of attention in operation and upkeep.

A further object is to accomplish the aforementioned ends in a simple and effective manner, to provide an improved form of vertical rocking bearing for the vertical shaft, so that it may be maintained normally in an upright position, and the resilient force by which this is carried out may be varied or adjusted.

A further object is to provide an article of the above-mentioned character wherein the motor is automatically thrown out of circuit by the opening of the lid of the casing surrounding the tub, so that the entire device will require a minimum amount of attention for its operation.

A further object is to provide an improved form of driving mechanism whereby the tub may be gradually accelerated and thus prevent undue load being brought to bear upon the motor during the starting of the device.

With the foregoing and other objects in view, my invention consists in the improved centrifugal drier illustrated in the accompanying drawings and hereinafter described and claimed, and in such variations and modifications thereof as will be obvious to those skilled in the art to which my invention relates.

In the drawings accompanying and forming a part of this specification and wherein the preferred embodiment of my invention is illustrated:

Figure 1 is a view in vertical longitudinal section of my improved laundry drier; and

Figure 2 is a view in horizontal section taken on the line 2—2 of Figure 1.

Referring to the several views, wherein similar reference numerals designate corresponding parts throughout, my improved laundry drying machine (which, however, may be used for the separation of cream or for other similar purposes for which centrifugal machines of the herein described type have heretofore been used) is formed with a base 10 which supports a casing 11 thereabove by the upstanding pillars or rods 12. Located within the casing 11 is the usual type of centrifugal laundry tub 13 which is mounted for rotation on the shaft 14, the latter extending through an opening 15 in the base of the casing 11 and adapted to rock or oscillate without interfering with the side walls of the opening 15.

It is necessary that the tub 13 be rotated or driven at high speed, and in order that this may be accomplished without undue friction or vibration, even though the material within the tub be so arranged that its center of gravity does not coincide with the axis of the shaft 14, I have provided the particular form of bearing as illustrated in Figure 1, wherein the base is formed with the upstanding housing 16, which is provided intermediate its ends, and projecting inwardly, with the ledge 17 having the up-

per wall thereof curved so as to form a socket 18 upon which rests the correspondingly curved shoulder 19 of the journal member 20. The journal member is provided with the central opening 21 extending therethrough and which receives the shaft 14 therein and supports the latter for rotation. A ball thrust bearing 22 is carried by the journal member 20, preferably located at the lower extremity of the latter, and is adapted to support the vertical shaft, and in connection with the opening 21 properly hold the shaft 14 for rotation when in a vertical position.

The upper extremity of the housing 16 is threaded as at 23, and receives a nut 24 therein, the latter bearing against a compression spring 25 which impinges at its lower extremity against the shoulder 19 carried by the journal member 20. Thus as the nut 24 is forcibly screwed into place, the spring 25 will be compressed and considerable pressure brought to bear upon the shoulder 19 and tending to hold it and the shaft 14 in a vertical position, although allowing it to oscillate or rock slightly and thus prevent undue vibration of the tub and shaft, although the former be eccentrically loaded. In order that the foregoing may be more effectively carried out, the upper and lower convolutions 26 of the spring are ground flat so as to bear upon the two surfaces almost entirely throughout the first convolution. A chamber is defined between the casing 16 and, lying above the shoulder 19, which may be packed with grease or other lubricant and which will not only lubricate the socket joint between the journal member and its support, but will also work its way through the openings or ducts 27 with which the journal member is provided, and will thus lubricate the entire bearing.

Mounted upon the base 10 is a bracket 28 and to which is secured an electric motor 29 having its shaft 30 extending substantially horizontally or at right angles to the vertical tub supporting shaft 14. A friction wheel or clutch 31 is splined to the shaft 30 and frictionally engages and is adapted to drive the friction wheel 32 carried by the shaft 14. A compression spring 33 is mounted upon the motor shaft, bears against a collar 34 at its one extremity and against the friction clutch wheel 31. The spring is thus adapted to maintain the friction clutch wheel in engagement with the friction wheel 32 and forcibly drive the latter, the action being more effectively carried out by the presence of a friction facing material 35 with which the friction wheel 32 is provided. A clutch lever 36 engages a groove 37 formed in the clutch wheel 31, and is pivotally mounted as at 38 by the support or column 39, the forward end 40 of the clutch lever being connected to a foot treadle 41 by the connecting link or bar 42. The foot treadle is normally maintained in a raised position by the torsional spring 43 which, holding the clutch lever 41 in a raised position, allows the spring 33 to hold the friction clutch wheels in proper frictional engagement for the driving of the tub by the motor.

The friction wheel 32 is substantially cup or bell shape so as to bring the frictional contact between the clutch wheel 31 and the facing 35 in the plane of the socket juncture 18—19, so that although the shaft 14 oscillates slightly about the socket 18—19, a substantially uniform driving or frictional effect will be had between the friction clutch wheels 31—32. Also the cup shape friction wheel 32 provides a most effective protection against the entrance of water or foreign material into the shaft bearing, so that the latter may be packed with grease or other lubricant and will remain in proper operable condition for a long period without attention. The hub 43 is provided with the conical surface 44 adapted to act as a friction wheel and, in connection with the friction brake shoe 45, constitutes a most efficient brake. The brake shoe 45 is carried by the brake lever 46, the latter being pivoted as at 47 to the column or support 39, and has its forward extremity 48 attached to the clutch link 42, so that as the foot treadle 41 is depressed, as indicated in dotted lines, the friction clutch will be disengaged and the friction brake brought into play, rapidly and effectively checking the motion of the tub, and all of which is accomplished without undue stresses or strains being brought to bear upon the rotatable and oscillatable shaft 14. Both the clutch lever 36 and the brake lever 48, as well as the brake shoe 45, are made in two sections, so that they may be disengaged and removed from their respective positions or assembled in place without disturbing the shaft 14 and its accessory parts. The foot treadle 41 is adapted to shift slightly, as well as turn upon its pivot pin 49, so that when in depressed position it may pass beneath a pin 50 and be held in lowered position. With the foot treadle in lowered position, the brake will be rigidly applied and the shaft will accordingly be supported and held against both rotation and oscillation or shifting, so that the material may be readily removed from the tub or inserted in place without disturbing the vertical alinement of the shaft. Further, the cone shaped surface of the brake wheel and brake shoe provides that each time the brake is applied the shaft 14 will be brought to proper central position, so that should the oscillation of the tub become too violent due to the excessive eccentric loading, the slight application of the brake will not only tend to decrease the speed of the tub but

will also tend to again centralize the shaft. However, if necessary, the brake may be further applied, so as to stop the tub and the material located therein may be re-arranged. The casing 11 which surrounds the tub is provided with the usual liquid outlet 51 and is also provided with the hinged lid 52. An electric switch 53 is carried by a bracket 54 mounted upon the casing and arranged in the path of movement of the lid 52, so that should the lid be thrown back forcibly against the switch 53, the electric circuit 55, which includes the motor 29, will be opened and the motor stopped. This complete stopping of the motor, however, will not always be necessary and the lid 52 may be merely thrown into an upright position without opening the electric circuit.

I have found that with the parts as thus arranged there will be no danger or likelihood of the motor being overloaded or burnt out due to a suddent application of the load; further, that the bucket will be accelerated in a quiet though rapid manner; that the particular support of the shaft and tub allows it to rotate at a high speed and without undue vibration even though the tub be eccentrically loaded; and that the various other features as herein pointed out combine to form a very efficient and serviceable drier or centrifugal extractor.

Having thus described and explained my invention, I claim and desire to secure by Letters Patent:

A machine of the class described comprising an upright shaft adapted to support a drum or tub thereon, a journal member rotatably receiving said shaft therein and provided with a thrust bearing support therefor, a housing, said housing and said journal member provided with a ball and socket joint for the support of the journal member, resilient means impinging upon the journal member and forcing it to seat upon the ball and socket joint provided therefor in said housing, an inverted cup-shaped member carried by said shaft extending over the said housing and protecting the same, the lower periphery of the inverted cup-shaped member acting as a horizontally disposed friction wheel, the upper extremity of said cup-shaped member provided with a conical braking surface, a shaft mounted at right angles to the first-mentioned shaft, a friction wheel carried thereby, means for resiliently forcing the second friction wheel against the friction wheel of the first-mentioned shaft, a brake member adapted to engage the conical braking surface carried by the first-mentioned shaft, and means operably engaging said brake member and the second-mentioned friction wheel and adapted to apply the brake member to the brake surface and simultaneously move the friction wheels apart, said means further adapted to release the brake member with respect to said brake surface and to simultaneously bring the said friction wheels together.

Signed at Hastings upon Hudson, in the county of Westchester and State of New York, this 10 day of March, A. D. 1921.

HARRY C. LAW.

Witnesses:
FRED. GORLICH,
FRED. SCHMIDT.