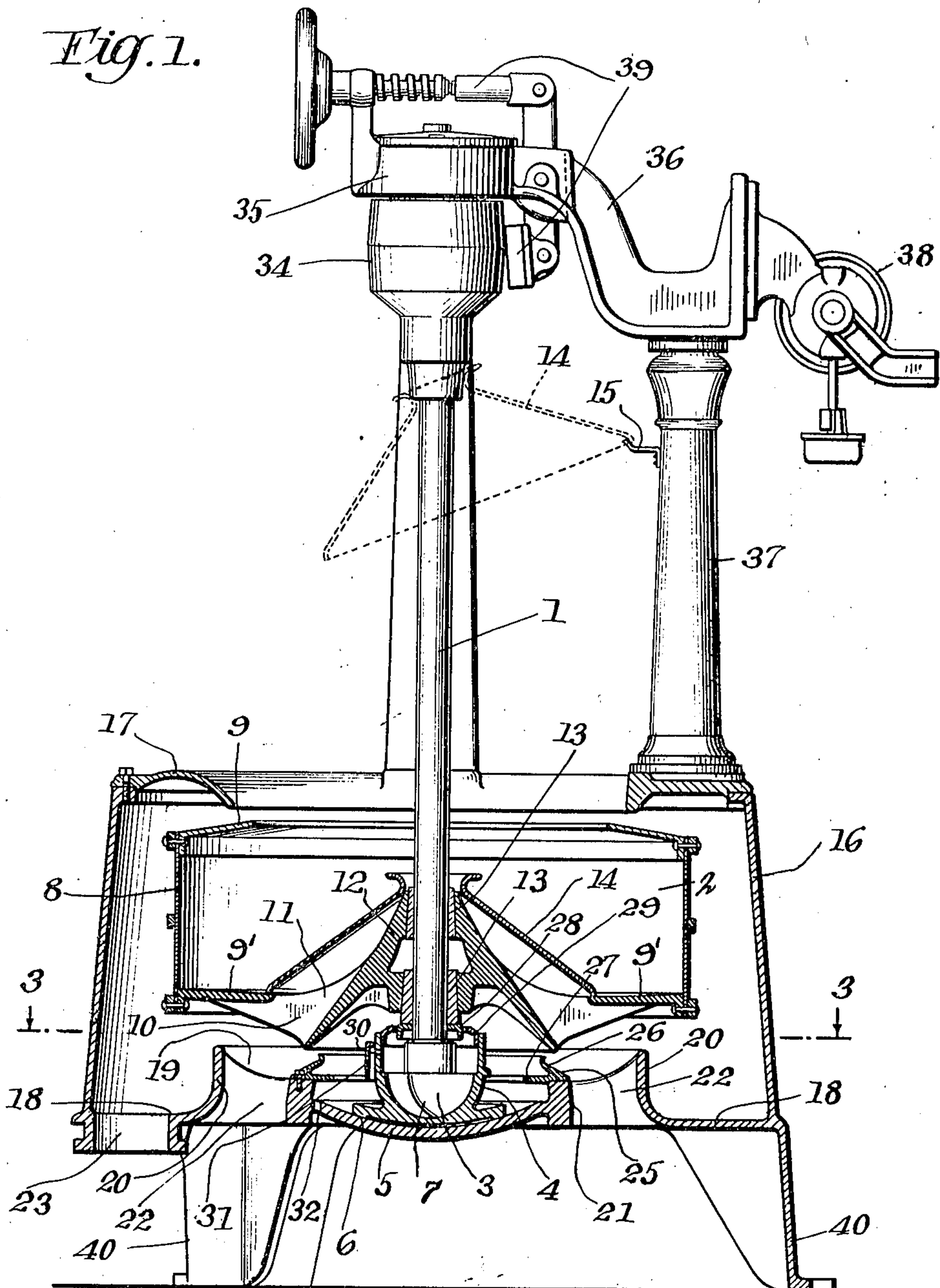


T. A. BRYSON.  
CENTRIFUGAL MACHINE.  
APPLICATION FILED MAY 14, 1915.

1,298,451.

Patented Mar. 25, 1919  
2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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Fig. 2.

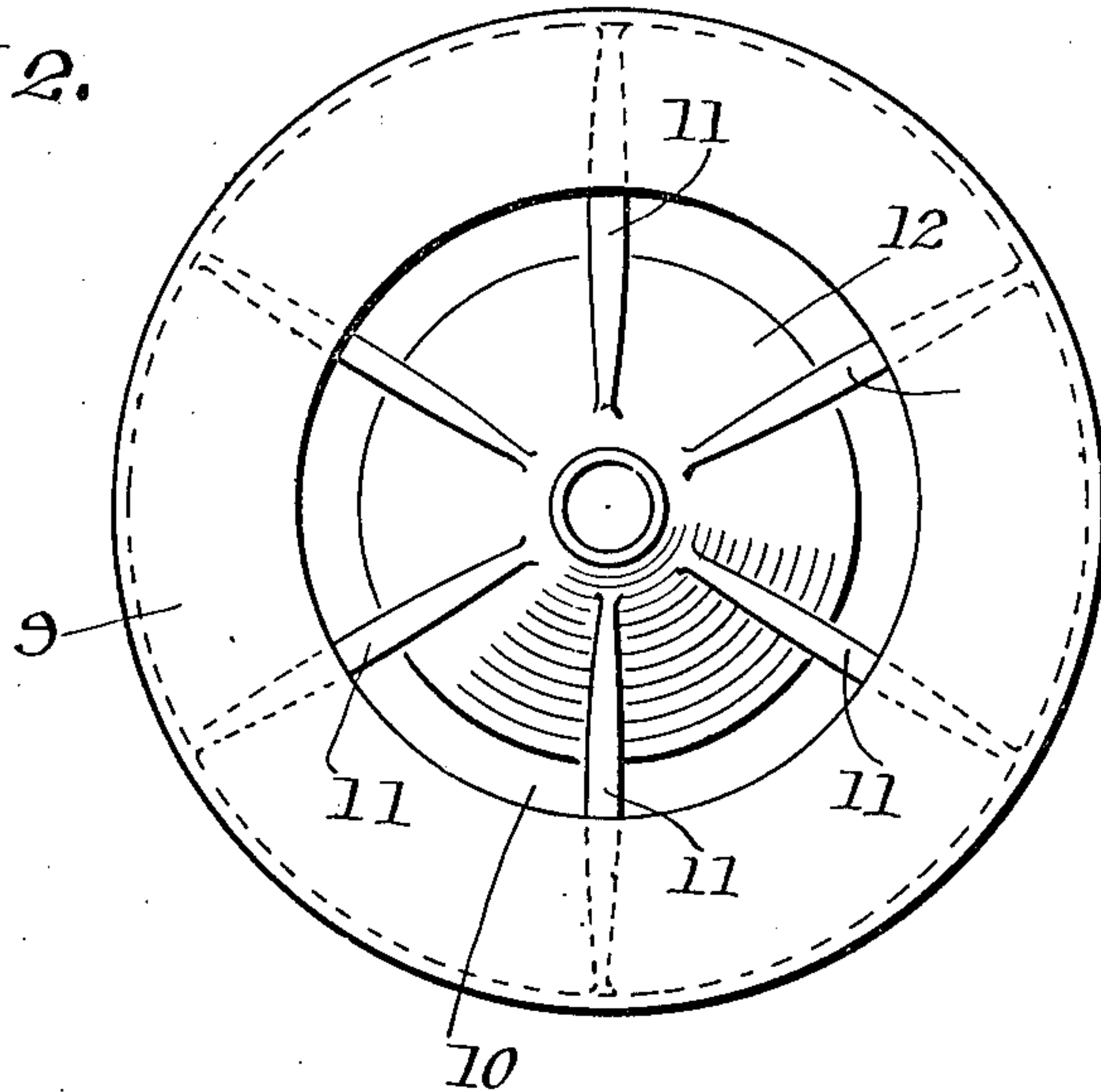
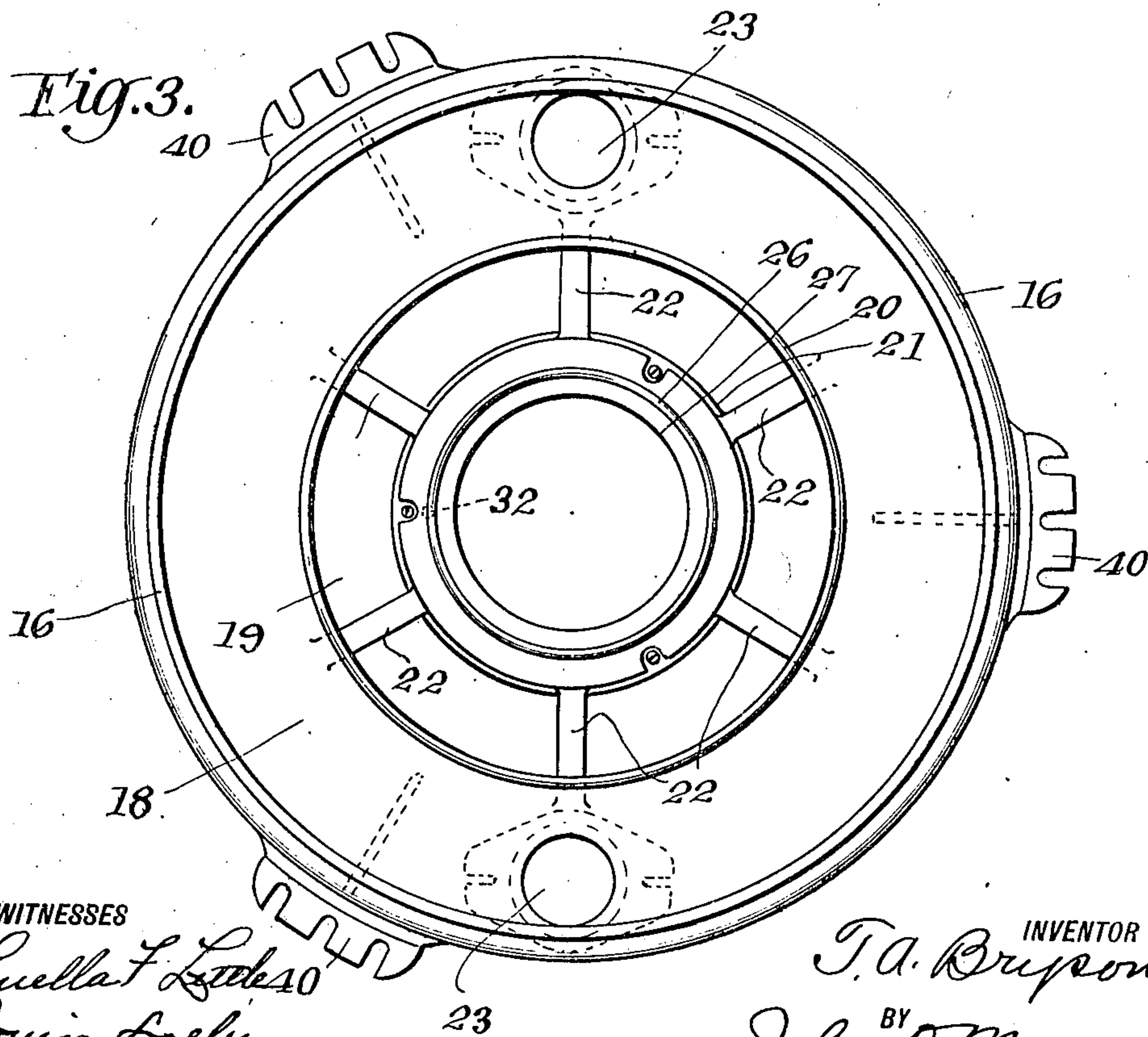


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## CENTRIFUGAL MACHINE.

1,298,451.

Specification of Letters Patent.

Patented Mar. 25, 1919.

Application filed May 14, 1915. Serial No. 28,012.

*To all whom it may concern:*

Be it known that I, TANDY A. BRYSON, a citizen of the United States, and a resident of Troy, New York, have invented new and useful Improvements in Centrifugal Machines, of which the following is a specification.

The invention relates to centrifugal machines, used for drying and for other purposes, and more particularly to means for effecting the rapid, easy, and successful discharge of the materials after drying or otherwise being operated upon from the centrifugal, without the material or the mechanism interfering with or injuring each other, and without contamination of the dried material by lubricating oil.

The invention in certain of its features relates more particularly to centrifugals wherein the centrifugal shaft is supported from beneath rather than hung from above. These and other objects, features and advantages of the invention will be set forth more fully hereinafter in part, and in part will be obvious herefrom.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings herein referred to, and constituting a part hereof, illustrate one embodiment of the invention, and together with the description serve to explain the principles thereof.

Of the drawings:

Figure 1 is a substantially vertical, central section of a centrifugal machine constructed in accordance with the principles of the invention;

Fig. 2 is a top plan of the basket, and

Fig. 3 is a top plan of the outer casing with the basket and top of the casing removed.

Referring to the embodiment of the invention illustrated by way of example in the accompanying drawings, a substantially vertical shaft 1 is provided, to which shaft is fixed the basket 2, the basket 2 receiving its rotary motion for effecting the centrifugal action by rotation of shaft 1. In accordance with certain features of the invention, the shaft 1 is carried or supported from or at its bottom end, and preferably in such construction the supporting bearing

for the shaft is of such form as to permit a more or less gyratory movement of the lower end of the shaft and of the basket to compensate for inequalities in the disposition within the basket of the load or material to be operated upon.

In the embodied form of supporting bearing for the shaft 1, the lower end of that shaft is carried upon a thrust bearing 3 of substantially hemispherical form. This hemispherical thrust bearing for shaft 1 rests in a free or movable support or cup 4, formed substantially hemispherically internally to fit the lower end of bearing piece 3. Bearing 3 may have one or more oil channels 7 formed therein. This freely moving support or cup 4 for the shaft 1 is itself supported upon a suitable bearing surface or saucer 5, which is in fixed position, either as a part of the machine frame, or of the foundation therefor. Said support is likewise preferably of spherical form, the exterior part of said freely moving support or cup 4 being of such spherical contour or shape as to fit within and upon said fixed support 5, and has an annular projecting bearing surface 6, the included surface being cut away or relieved, thereby decreasing the bearing surface and increasing the lubricating action, the cup 4 being free to effect its gyratory movement or adjustment while being so supported.

The basket 2 is constructed and arranged to receive its load from above, the load of material to be operated upon being put into the basket by simply dumping the material into the basket. The basket is constructed and arranged also to discharge the dried or otherwise finished material by gravity and without shifting or handling the material within the basket, and this quickly and readily without interference of the material and the basket support and the lubricant therefor, the one with the other. As embodied, the basket has the usual external, substantially vertical peripheral or retaining wall 8, which wall may be provided with perforations or other means or devices for conveying away liquid or otherwise effecting or cooperating in the drying operation. Any suitable or convenient form of top closure may also be provided, and as shown, a partial closure consisting of a ring 9 extending and inclined



inwardly from the top of the side wall 8 of the basket is provided.

The bottom 9' of the basket 2 has formed therein, toward the center of the basket, a  
5 circular or annular aperture 10, through which the dried material is discharged or dropped. Fixed to the bottom 9 of the basket 2, or integral therewith are struts 11 substantially radially disposed and connect-  
10 ing from the basket bottom to the central, vertically disposed sleeve or hub 12 of the basket. The basket is thus carried by hub 12 through the radially extending struts 11 connecting to the floor or bottom 9 of the  
15 basket. The hub or sleeve 12 is fixed to the shaft 1 in a suitable manner, and as shown, internally cylindrically apertured collars 13 are sweated onto shaft 1, said collars 13 being conically shaped on their exteriors, the  
20 hub or sleeve 12 of the basket being correspondingly shaped interiorly to constitute a friction tight fit between the basket 2 and the shaft 1.

The hub or sleeve 12 expands or flares  
25 outwardly and downwardly, and preferably of inverted coniform shape, to cover and protect the bearing for shaft 1, as shown in Figs. 1 and 2.

Means are provided for holding the ma-  
30 terial in the basket for drying and for causing or effecting its automatic discharge upon the completion of the drying operation, and the exemplified form of such means includes a valve or shield 14 of hollow coniform  
35 shape, the upper end thereof fitting about the top of hub 12, and the lower edge thereof fitting against the bottom of the basket 2 exteriorly to the apertures 10, the valve or shield in this position serving as a closure  
40 for the bottom of the basket 2 to keep the material from dropping down or being discharged through the apertures 10 during the drying operation.

The valve or shield 14, when in closed  
45 position, at its top fits closely about the shaft 1 or preferably about sleeve 12, and its bottom edge fits against the floor 9' of the basket 2.

When the drying operation is completed  
50 the shield or valve 14 is wholly or in part removed to permit the gravitational discharge of the dried material through the apertures 10. In the exemplified form the shield 14 is hoisted upwardly about the  
55 shaft 1 to the dotted line position shown in Fig. 1 and is held by a hook 15 on the machine frame. Thus in accordance with one feature of the invention the valve or closure 14 may be very simply constructed, be-  
60 ing of one piece with no movable parts or mechanisms, and in its upper position it is out of the way during any operations or manipulations conducted from above the basket in connection with the discharge of  
65 the material.

As heretofore indicated, means are pro-  
vided, in connection with the bottom or gravitational discharge from the basket 2 and the means for supporting shaft 1 from  
the bottom, for preventing interference of 70 the material or of the mechanism and its lubricant, the one with the other. About the basket 2 is a casing 16, which may be of known and approved form, and which may be provided with a top closure likewise of 75 any desired or convenient form. A partial closure is shown in the form of a curved ring 17 fixed to the top of casing 16 and extending inwardly therefrom. Formed in  
the bottom 18 for the outer casing 16 are 80 apertures or passages 19 for receiving and guiding the material which is released or dropped through the apertures 10 in the bot-  
tom of the basket 2. The passage for the 85 discharged material from the basket through the casing bottom is further formed, as embodied, by substantially vertically arranged annular flanges 20 and 21. Connecting arms  
22 extend across to unite the structure. The support or saucer 5 is fixed or integral 90 within the frame flange 21. Outlets 23 are formed in the bottom of the casing exteriorly to the vertical annular wall or flange 20.

At the upper end of this guiding passage 95 19 through the floor of the casing 16 are devices for preventing the dried chemicals or other materials from getting into the bearing mechanism for the shaft 1, and for pre-  
venting the oil or other lubricant contained 100 in said mechanism from getting upon the dried materials or upon the guide passages or surfaces. The embodied form of such means comprises two rings or an angled ring 25 positioned at the outward edge of 105 the upwardly extending annular flange 21. One of the walls or angled parts 26 of said ring 25 is upwardly disposed and extending just within and close to the bottom of the  
hub 12, and acts principally to insure the 110 dried materials passing down through the apertures 19 and to prevent the dried materials getting into the bearings. The other wall or angled part 27 is inwardly and more  
or less horizontally arranged and extends 115 over the space within the fixed spherical support or saucer 5 and acts principally to prevent the oil or other lubricant from flying out and contaminating the dried mate-  
rials or the surfaces over which such mate- 120 rial passes, although the part 26 acts in this capacity also.

Means are also provided for preventing  
the oil or other lubricant within the free or movable bearing or cup 4 from flying up- 125 wardly against the bottom of the basket and from rising around the shaft, and in the embodied form of such means there are provided a flanged ring 28 fixed to the shaft 1, and a cooperating flanged ring 29 fixed to 130



the upper edge of the moving spherical support or cup 4. An oil overflow between the moving support 4 and the fixed support 5 for the shaft 1 are provided and as shown  
 5 comprise an aperture 30 through the wall of the spherical support 4 and inclosing the exterior of said aperture and extending downward therefrom a hood or pipe 31, which guides the oil directly downwardly  
 10 into the inner bowl of the fixed support 5. The fixed support 5 is provided with an oil overflow aperture 32. It will be understood that these devices as constructed and arranged serve to retain the oil at the bear-  
 15 ings, notwithstanding the high speed of rotation and the gyratory action.

Suitable driving means for the shaft 1 are provided, comprising preferably a ball and socket joint or bearing and a pulley 34 upon  
 20 the shaft 1 near the bearing 35 for the upper end of said shaft, said bearing being carried in the frame arm 36, which arm is carried on pillar 37, and is also supported by braces 41, mounted on casing 16. The belt passing  
 25 about pulley 34 on shaft 1 runs over guiding pulleys 38 and is driven from a power pulley (not shown). Said power pulley may have any suitable starting and stopping devices, such as a fast and loose pulley with  
 30 a belt shifter (not shown). A brake 39 may also be employed if desired. The machine is shown supported on feet 40.

The invention in its broader aspects is not limited to the precise form shown and de-  
 35 scribed, but variations may be made therein without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim as my invention and desire  
 40 to secure by Letters Patent is:—

1. A centrifugal machine including in combination the basket having discharge apertures in its bottom, and its shaft, a spherical bearing for the basket shaft in  
 45 which the lower end of said shaft rests, an annular guard disposed about said shaft bearing and between it and the discharge apertures in the bottom of the basket, said guard comprising an annular member ex-  
 50 tending inwardly toward the bearing, and an annular member outside said inwardly extending member and disposed upwardly toward the apertures in the bottom of the basket.

2. A centrifugal machine including in combination the basket having discharge apertures in its bottom, and its shaft, a concave spherical bearing for the basket shaft in which the lower end of said shaft rests,  
 60 an annular guard disposed about said shaft bearing and between it and the discharge apertures in the bottom of the basket, said guard comprising an annular horizontally disposed plate extending inwardly toward  
 65 the bearing, and an annular member outside

said inwardly extending plate and disposed upwardly toward the apertures in the bottom of the basket.

3. A centrifugal machine including in combination a basket, a supporting and ro-  
 70 tating shaft therefor, a thrust bearing supporting the bottom end of said shaft closely beneath the basket, a sleeve in the bottom of said basket and arranged about said shaft, said sleeve overhanging said bearing, the  
 75 sleeve acting as a floor for the discharging material and as a cover for the bearing, there being a discharge orifice in the basket bottom without said sleeve, and a closure there-  
 80 for from above.

4. A centrifugal machine including in combination a basket, a supporting and ro-  
 tating shaft therefor, a thrust bearing sup-  
 porting the bottom end of said shaft, said bearing comprising a gyratory member and  
 85 an upwardly disposed hollowed supporting member therefor, and a sleeve in the bottom of said basket and arranged about said shaft, said sleeve being just above and sub-  
 90 stantially completely overhanging said upwardly disposed hollowed supporting member, there being a discharge orifice in the basket bottom without said sleeve, and a closure therefor from above, slidable verti-  
 95 cally along the shaft to open and close the orifice.

5. A centrifugal machine including in combination a basket, a supporting and ro-  
 tating shaft therefor, a thrust bearing sup-  
 porting the bottom end of said shaft, said  
 100 bearing comprising a gyratory member and an upwardly disposed hollowed supporting member therefor, and a conical sleeve in the bottom of said basket and arranged about said shaft, said sleeve being just above  
 105 and substantially completely overhanging said upwardly disposed hollowed supporting member, there being an annularly disposed orifice in the basket bottom about said conical sleeve, and a conical closure for said  
 110 orifice upwardly slidable about said shaft.

6. A centrifugal machine including in combination a basket, a supporting and ro-  
 tating shaft therefor, a thrust bearing sup-  
 porting the bottom end of said shaft closely  
 115 beneath the basket, a sleeve in the bottom of said basket and arranged about said shaft, said sleeve overhanging and just above said bearing, there being a discharge orifice in the basket bottom without said sleeve, and  
 120 a splash ring arranged about said bearing and between it and said sleeve.

7. A centrifugal machine including in combination a casing having a bottom pro-  
 vided with discharge passages for the dried  
 125 material spaced away from the center of the casing, a rotating basket within the casing, and having discharge passages in its bottom, a shaft on which the basket is mounted,  
 130 a gyratory bearing beneath said shaft

and located centrally of said casing and substantially in horizontal alinement with the discharge passages in the casing bottom, and a sleeve about said shaft forming  
5 a partition between the bottom passages in the basket and the bearing for the shaft.  
In testimony whereof, I have signed my

name to this specification, in the presence of two subscribing witnesses.

TANDY A. BRYSON.

Witnesses:

M. K. BUSKIN,  
H. A. KEARNS.