No. 627,665. Patented June 27, 1899.

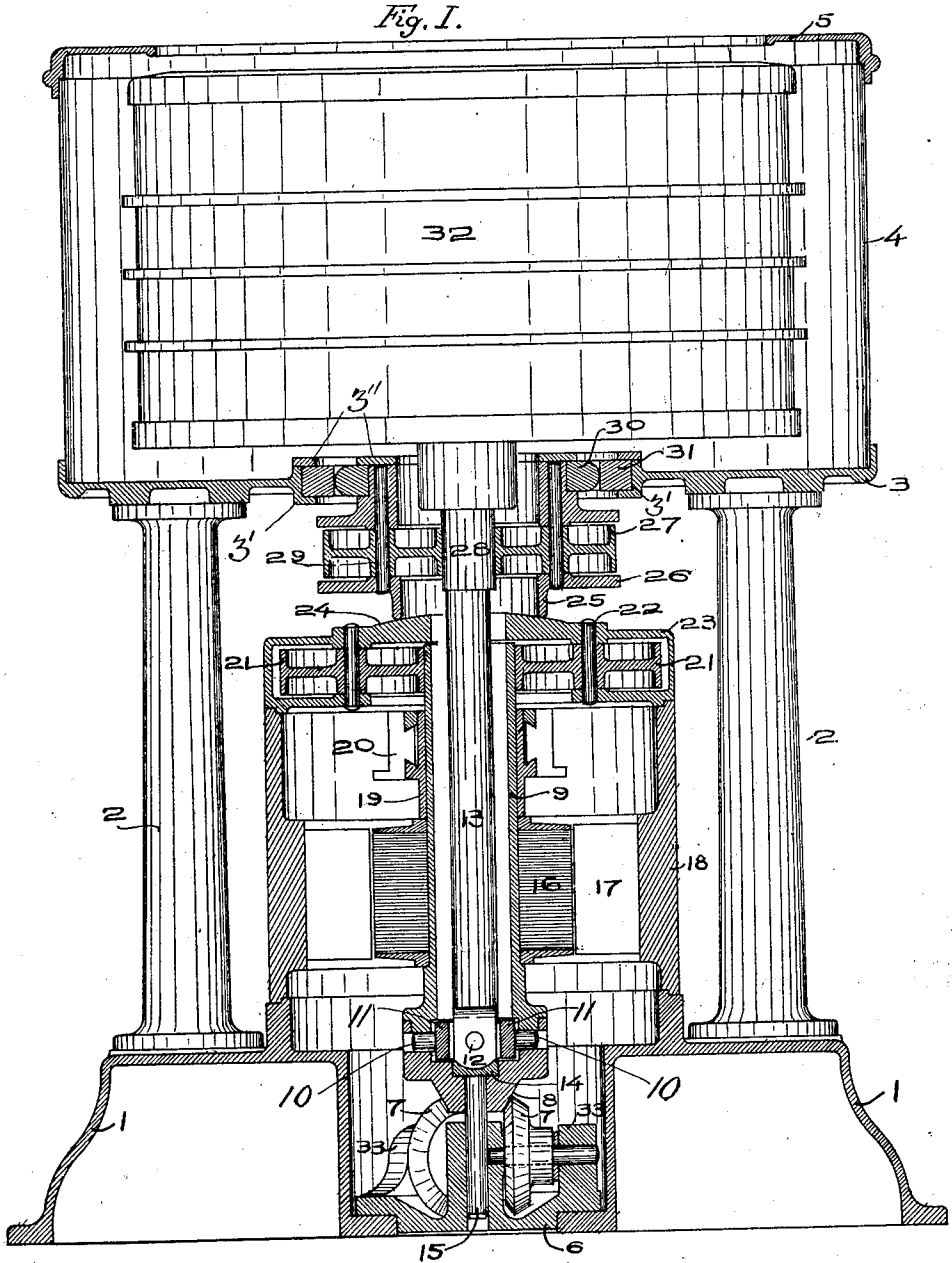
W. F. BRAUN.

DRIVING MEANS FOR CENTRIFUGAL MACHINES.

(Application filed Aug. 30, 1898.)

(No Model.) 4 Sheets—Sheet 1.

Fig. I.



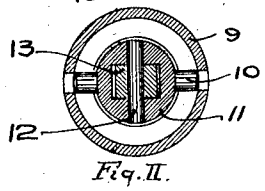


Fig. II.

Witnesses
Otto Lissau.
Rudolf Hoffeth

Inventor
William F. Braun.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. III.

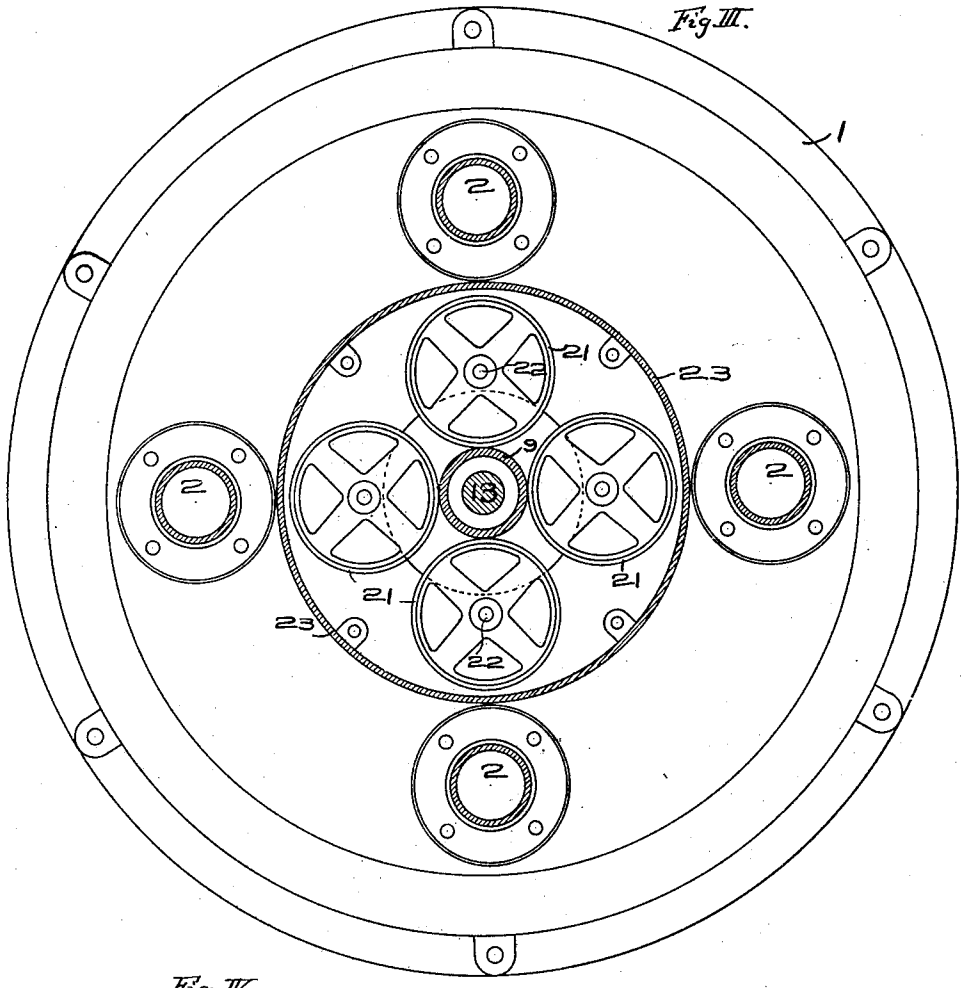


Fig. IV.

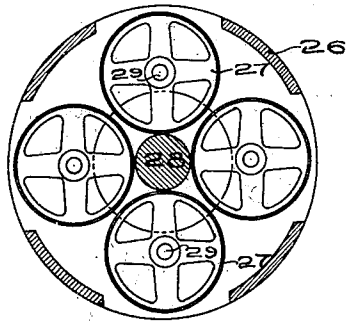
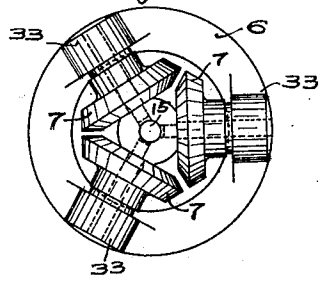


Fig. V.



Witnesses
Otto Lissau
Rudolf Speth

Inventor
William F. Braun.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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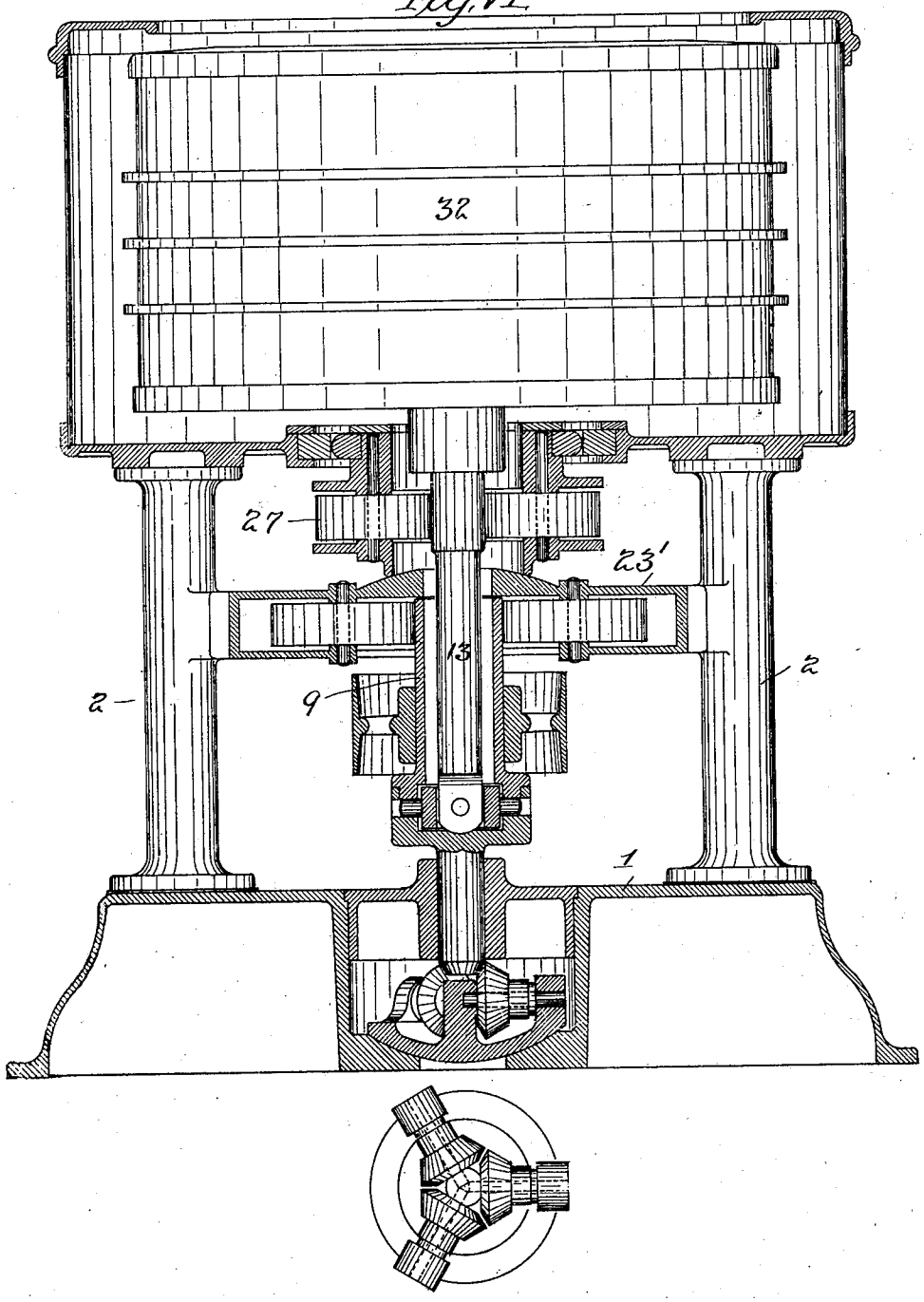
W. F. BRAUN.

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(Application filed Aug. 30, 1898.)

(No Model.) 4 Sheets—Sheet 3.

Fig. VI.



Witnesses
Otto Lissau
Rudolf Speth

Inventor
William F. Braun

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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W. F. BRAUN.

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(No Model.) 4 Sheets—Sheet 4.

Fig. VII

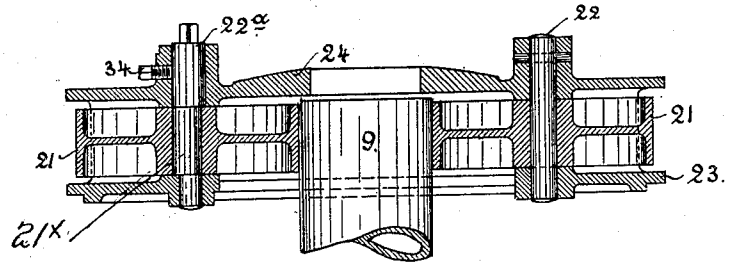
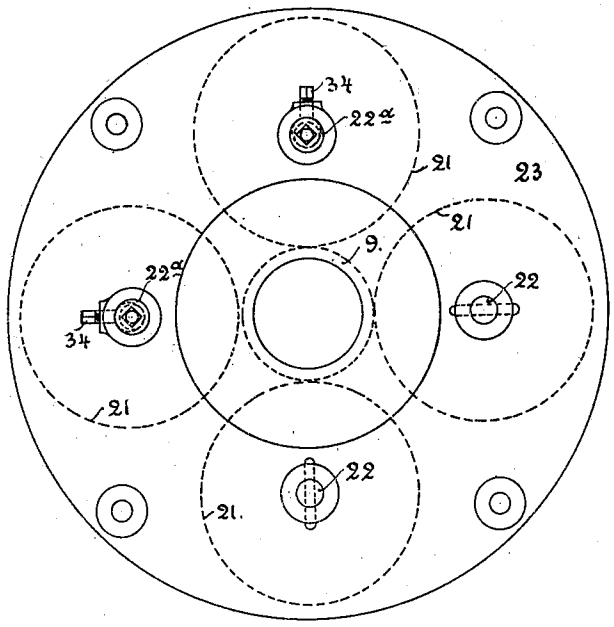


Fig VIII



Witnesses
Otto Lissow.
Rudolf Hoett

Inventor.
William F. Braun.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM F. BRAUN, OF CHICAGO, ILLINOIS.

DRIVING MEANS FOR CENTRIFUGAL MACHINES.

SPECIFICATION forming part of Letters Patent No. 627,665, dated June 27, 1899.

Application filed August 30, 1898. Serial No. 689,882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. BRAUN, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Driving Means for Centrifugal Machines, of which the following is a specification.

My invention relates to centrifugal machinery; and it has for its object to provide such an arrangement of driving means as will not be affected by the vibration of the basket or containing-receptacle. The machine may be driven either electrically, by belt, by rope, or in any other desired way; but however driven the means will remain in true position, and its alinement will not be destroyed by any oscillation or vibration of the basket.

In my machine I employ a step roller-bearing of special construction to reduce friction, and all the parts are supported by this bearing.

In the drawings, Figure 1 is a vertical section of the machine with parts in elevation, the driving means in this instance being an electric motor. Fig. 2 is a horizontal sectional view through the universal coupling. Fig. 3 is a plan view of a section through the middle roller-bearing. Fig. 4 is a plan view of a section through the upper roller-bearing. Fig. 5 is a plan view of the step roller-bearing. Fig. 6 is a view similar to Fig. 1 of a modification in which a band-pulley is used as the driving means. Figs. 7 and 8 are views of a detail adjustment.

Referring to Fig. 1, the base-plate 1 supports the posts 2, which in turn support the upper plate 3 with the outer casing 4 and top plate 5 of the centrifugal machine. The base-plate 1 has a depressed center, and at the bottom thereof a step-plate 6 is held, having bearings 33, in which the axles of conical rollers 7 are journaled. The inner conical surfaces of these rollers engage the lower conical end 8 of a sleeve 9, to which is attached the driving means, in this instance the armature 16 of electric motor, the fields 17 of which are supported upon the casing 18, extending up from the base-plate 1. The sleeve 9 is connected with the shaft 13 of the centrifugal basket or receptacle by a universal coupling located at the bottom of the sleeve and within the same, said coupling comprising the ring 11, having lugs 10 extending into openings in the thickened part of the sleeve and a cross-pin 12 extending at right angles to the pivotal lugs 10 and through the ring 11 and the lower end of the shaft 13, which is located within the ring. The end of the shaft 13 is spherical and bears on a plate 14, having a similarly-curved bearing-face. From the use of this universal coupling it will be seen that the shaft 13 of the centrifugal basket will be free to oscillate slightly in all directions as the basket vibrates or oscillates, the sleeve 9, containing the shaft 13, being of sufficiently large interior diameter to permit this. The sleeve 9 is held in position at its lower end by the pin 15, extending downwardly therefrom into the central part of the step-plate 6. At its upper end the sleeve 9 is held centrally and unyieldingly in position by a series of antifriction-rollers 21, Figs. 1 and 3, bearing thereon, and these rollers have their axles 22 journaled in a cap or shell 23, supported on the shell 18.

The upper end of the centrifugal shaft 13 is held yieldingly in position by antifriction-rollers 27, the axles 29 of which have their bearings in a casing 26, the said rollers contacting with the outer surface of the enlarged part 28 of the shaft.

The casing 26 has a depending flange 25, which rests upon the spherical upper surface 24 of the shell or casing 23. The curve of the surface 24 is struck from the center of the pivot-pin 12.

A rubber ring 30 is interposed between the outer side of the casing 26 and an iron ring 31, which latter is carried by a flanged ring at the center of the plate 3. The iron and rubber rings are held in place by the rings 3''.

20 denotes the commutator of the electric motor.

The sleeve 9, carrying the driving means, it will be seen, is held centrally and true at both its upper and lower ends by the rollers 21 and the cone-bearing 8 and conical rollers 7, respectively. The rotation of this sleeve is imparted to the shaft 13 of the cage or basket 32 by the lugs or pins 10.

As the basket 32 rotates any vibrations thereof due to uneven loading will be allowed for by the yielding bearing at its upper end formed by the rubber ring 30, in conjunction

with the rollers 27 and laterally-movable shell 26, the shaft 13 swinging or oscillating on its pivot 12 at the universal coupling.

The entire weight of all the parts is taken up by the conical step bearing-rollers 7.

In Fig. 6 I show a band-pulley as the driving means, attached to the hollow shell or sleeve 9, and the shell 23′ is slightly modified from the form shown at 23 in Fig. 1 in that it is supported on the posts 2 2.

In Figs. 7 and 8 I show means by which the position of the antifriction-rollers 21 21 may be adjusted relatively to the sleeve 9, said means consisting of the eccentric portions $21^{\times}$ on one or more of the axles of the rollers. These axles may be turned slightly by a wrench applied to the square end 22^{a} to secure the proper adjustment, and set-screws 34 may then be tightened to hold the axles in adjusted position.

In Fig. 8 I show two of the rollers out of four as being adjustable. When three rollers are used, only one of them need be adjusted.

The machine may be used for laundry purposes to throw off the water, or it may be used in bleaching and dyeing works.

The special use to which I have intended the machine is in sugar-refineries to throw out from the sugar the syrup.

I claim as my invention—

1. In combination with the centrifugal basket or receptacle, a rotary sleeve, driving means connected therewith means for holding the sleeve against oscillation and a connection between the sleeve or hollow shell and the basket to permit oscillation of the same, substantially as described.

2. In combination with the basket, a sleeve held against oscillation, driving means thereon, a shaft connected with the sleeve at one end to run true therewith and means for controlling the other end of said shaft so that it with its connected basket may vibrate, substantially as described.

3. In combination, the basket, the shaft carrying the same and adapted to vibrate at its upper end with the basket and the sleeve held against vibration and connected with the shaft, a universal coupling forming said connection, said coupling being within the sleeve, substantially as described.

4. In combination, the basket adapted to rotate, the shaft connected therewith, the sleeve surrounding the shaft, a universal coupling at the lower end and within the sleeve, the driving means carried by the sleeve and means for holding the sleeve centrally, substantially as described.

5. In combination, the basket, the sleeve carrying the driving means, the shaft for the basket extending into the sleeve and connected therewith at its lower end, a universal coupling forming said connection, said sleeve having a conical bearing at its lower end, and the conical rollers engaging the same, substantially as described.

6. In combination, the basket, the shaft, the sleeve connected with the shaft, the driving means on the sleeve, the conical bearing at the lower end of the sleeve and the conical rollers having bearings against which the conical rollers are forced laterally under the weight of the parts, substantially as described.

7. In combination, the basket, the shaft carrying the same, driving means, a universal coupling between the same and the shaft and the yielding supporting means at the upper end of the shaft comprising the rollers, the supporting means therefor and the yielding means for holding the support in position, substantially as described.

8. In combination, the basket, the shaft therefor, the driving means, the universal coupling connecting the shaft and driving means, the plate 3, the supports therefor, the shell 26, the rollers therein bearing on the shaft of the basket, and the yielding ring between the shell and the plate 3, substantially as described.

9. In combination, the basket, the shaft, the sleeve connected with the shaft, a universal coupling forming said connection, the bearing for the lower end of the sleeve and the roller-bearing for the upper end of the sleeve, substantially as described.

10. In combination, the basket, the shaft therefor, the driving means, the universal coupling between the shaft and sleeve, the yielding bearing for the upper end of the shaft and the spherical surface for supporting the said bearing, said surface being struck from the lower pivot, substantially as described.

11. In combination, the basket, the shaft therefor, driving means for the shaft, the rollers for holding the upper end of the shaft, the shell carrying the rollers, the rubber ring 30, the iron ring 31, and the fixed plate 3 supporting the rings, substantially as described.

12. In combination, the basket, the sleeve, the shaft connected thereto and adjustable means for centering the sleeve, said sleeve carrying the driving means, substantially as described.

13. In combination, the basket, the oscillating shaft carrying the same, the sleeve, the universal coupling between the sleeve and shaft, the support for the lower end of the sleeve and the adjustable bearing for the upper end of the sleeve comprising the rollers with adjusting means therefor, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM F. BRAUN.

Witnesses:
OTTO LISSAU,
RUDOLF SPETH.