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PATENTED FEB. 20, 1906.

E. H. DUTCHER.

SPEED CONTROLLING MECHANISM FOR CENTRIFUGAL MACHINES.

APPLICATION FILED OCT. 7, 1905.

2 SHEETS—SHEET 1.

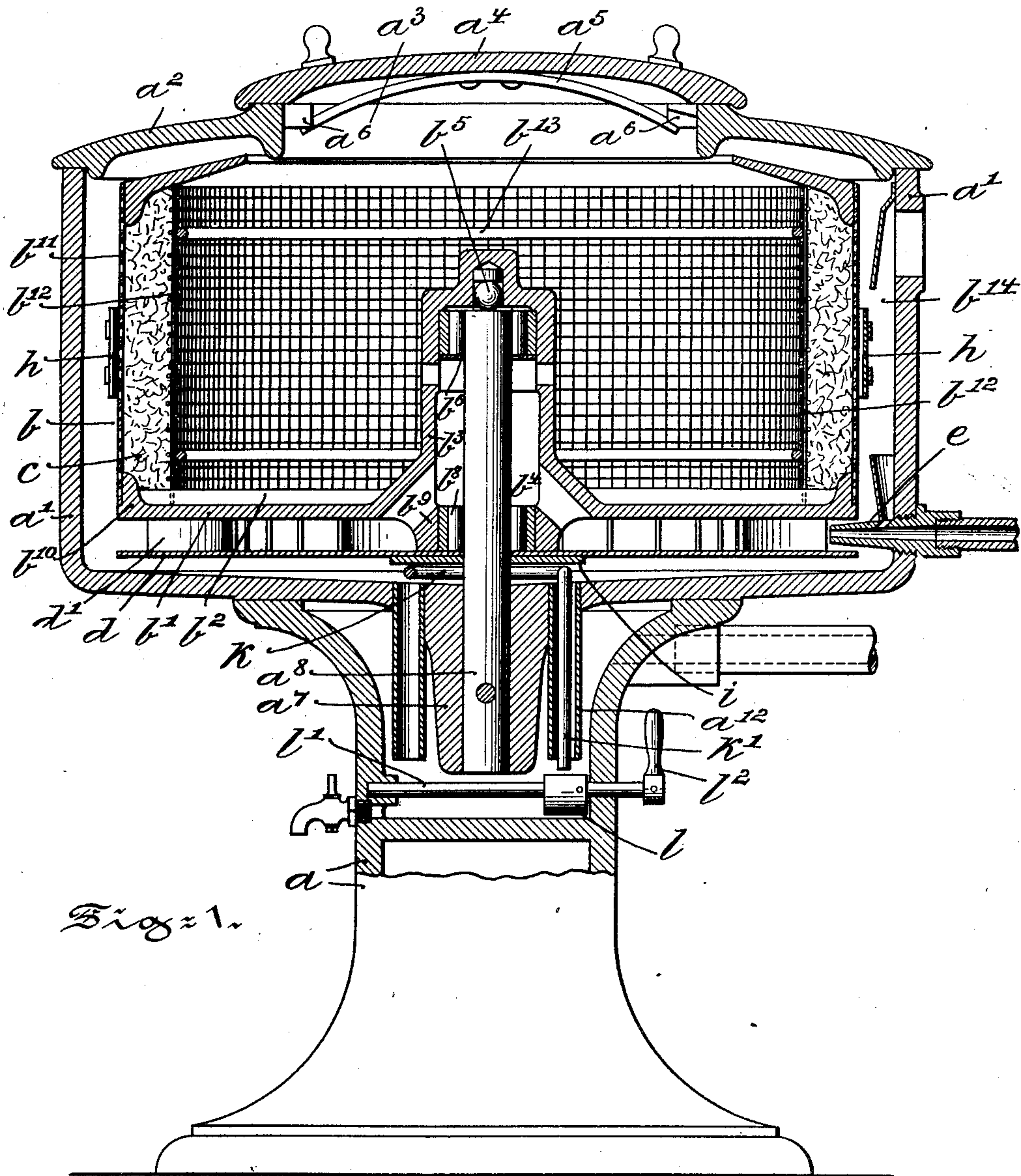


Fig. 1.

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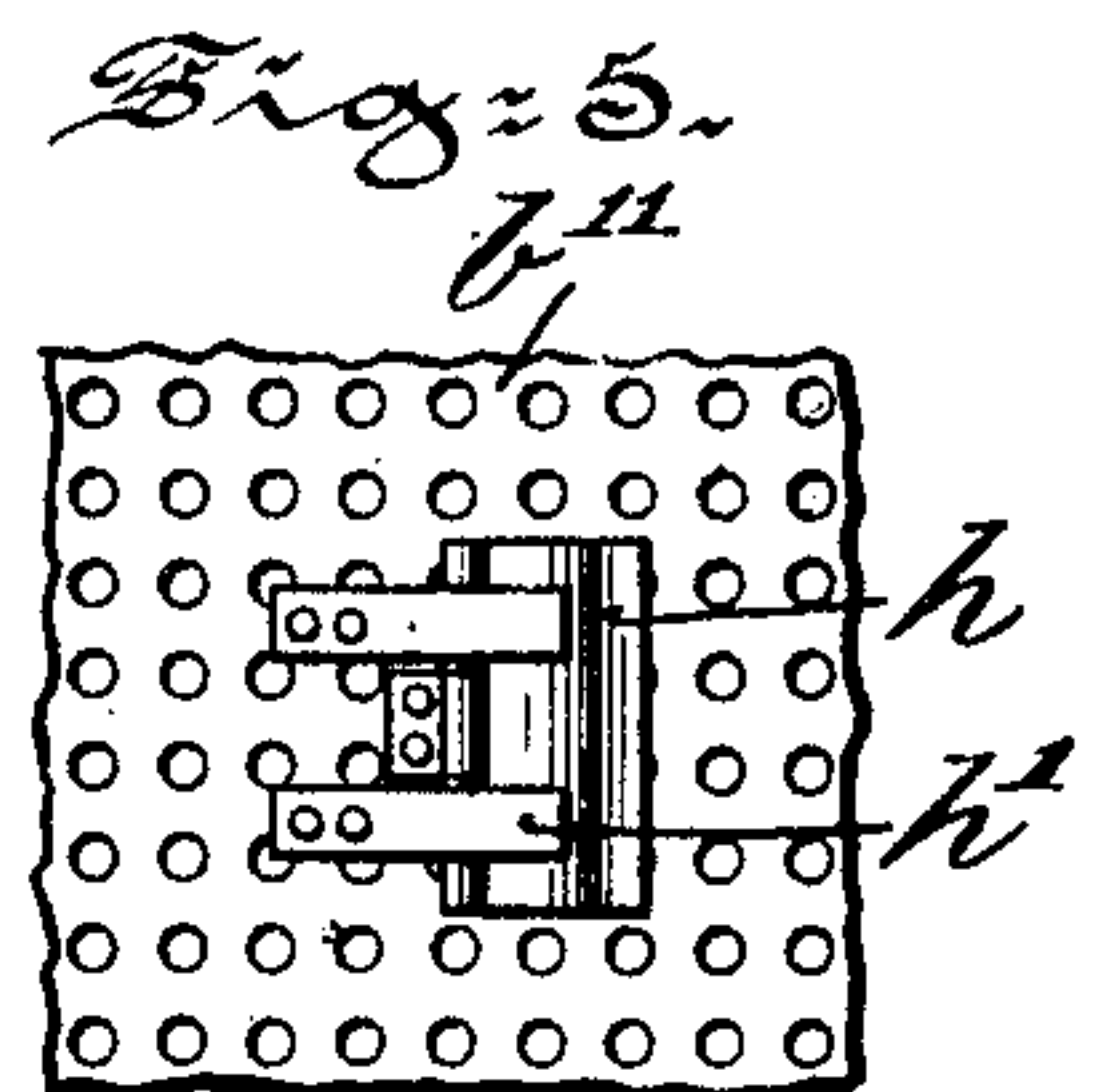
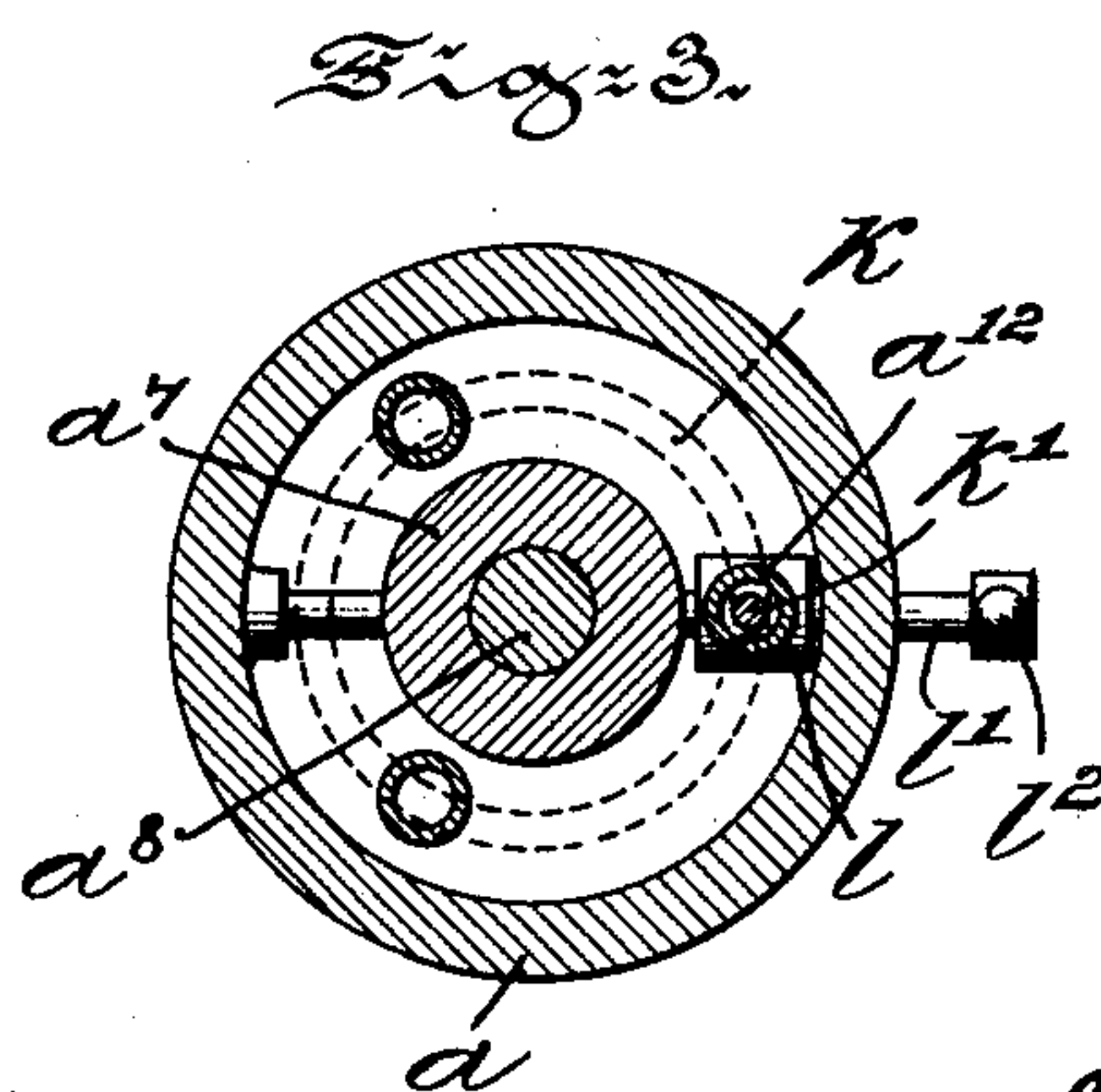
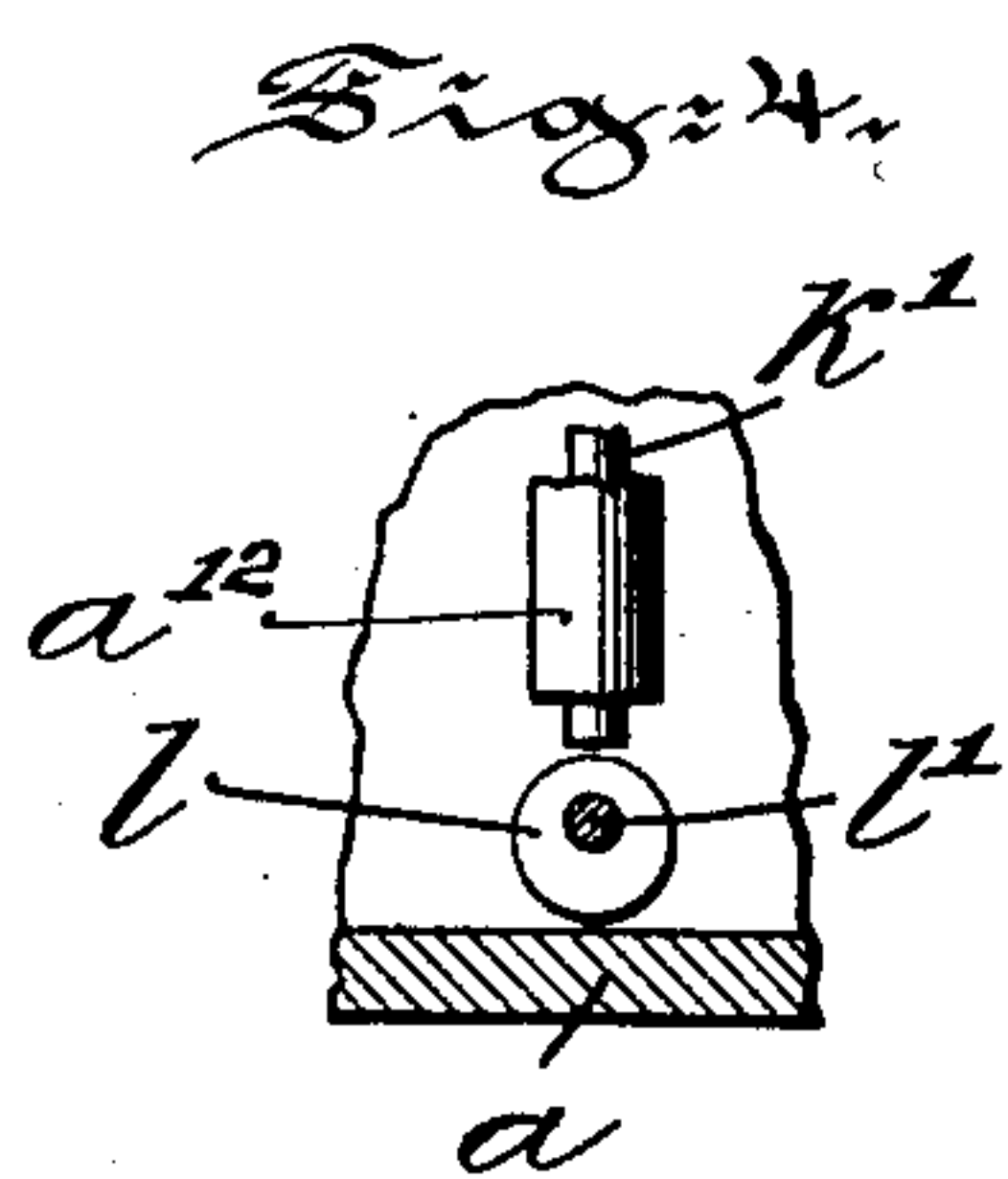
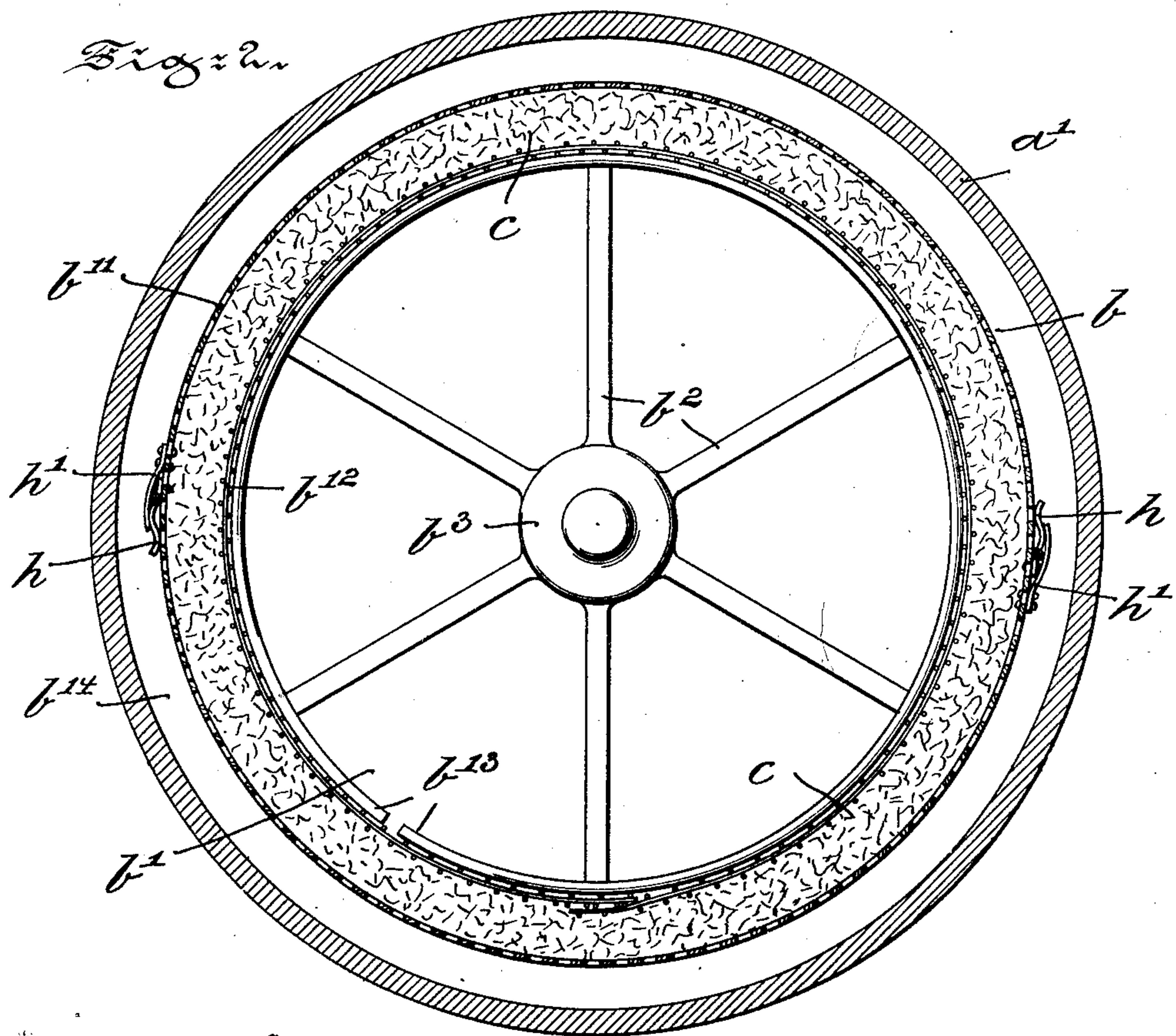
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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SPEED-CONTROLLING MECHANISM FOR CENTRIFUGAL MACHINES.

No. 813,283.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Original application filed July 3, 1905, Serial No. 268,105. Divided and this application filed October 7, 1905. Serial No. 281,741.

To all whom it may concern:

Be it known that I, EDWARD H. DUTCHER, a citizen of the United States, residing at Siegfried, in the county of Lehigh and State of Pennsylvania, have invented certain new and useful Improvements in Speed-Controlling Mechanism for Centrifugal Oil Extracting and Filtering Machines; of which the following is a specification.

My invention has relation to a speed-controlling mechanism for a centrifugal oil extracting and filtering machine; and in such connection it relates more particularly to the construction and arrangement of such a mechanism and being a division of an application for a patent filed by me under date of July 3, 1905, under Serial No. 268,105.

The principal objects of my invention are, first, to provide a basket for extracting oil by centrifugal force with means for automatically and manually retarding and stopping the rotation of the basket; second, to provide the basket for the oily material with wings actuated partially by air and partially by centrifugal force to prevent excessive speed of rotation of the basket, which speed by tending to shift the oily material therein causes an uneven distribution of the weight of the material in the basket, and thereby shaking of the same and an uneven wear of the bearings thereof, and, third, to provide the basket with means to permit of the retarding and stopping of the basket when required.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a view, partly in front elevation and partly in vertical central section, of a basket for the oily material within a stationary housing and wings pivotally connected therewith to automatically retard the rotation of the basket and a ring normally held out of engagement with the basket adapted, when manually raised, to engage the same to retard and stop the basket, constituting features of my present invention. Fig. 2 is a horizontal sectional view of the upper portion of the housing of the machine of Fig. 1 and the basket for oily material arranged therein and also illustrating the construction and ar-

range-ment of the wings connected with the outer perforated wall of the basket and held in engagement therewith by springs. Fig. 3 is a horizontal sectional view of the upper end of the standard of the machine and illustrating in top or plan view the means for raising the ring to manually retard and stop the rotation of the basket. Fig. 4 is a detail view illustrating, partly in section and partly in side elevation, a cam and rod for actuating the ring; and Fig. 5 is a detail view of a portion of the basket, illustrating in side elevation one of the wings connected therewith and springs for holding the same normally in an inoperative position.

Referring to the drawings, *a* is the standard of the machine, to the upper end of which is suitably secured a housing *a'*, annular in cross-section, having a cover *a²*, provided with an opening *a³*. This opening is normally closed by a lid *a⁴*, which, by means of a leaf-spring *a⁵*, secured to the under side of the lid *a⁴*, is normally connected with the housing *a'* by engaging projections *a⁶* thereof, as shown in Fig. 1. The housing *a'* is provided with a centrally-arranged projection *a⁷*, extending into the standard *a*, which serves as a support for a shaft *a⁸*. The shaft *a⁸* within the housing *a'* serves as a support for a basket *b*, adapted to receive material more or less saturated with oil, which is to be extracted therefrom. The basket *b* preferably consists of an annular disk or bottom plate *b'*, strengthened by ribs *b²*, having a central upwardly-projecting portion *b³*, forming a chamber *b⁴*, and a support for a ball-bearing *b⁵*, centrally engaging the upper surface of the shaft *a⁸*, and a roller-bearing *b⁶*, surrounding the shaft adjacent to the ball-bearing *b⁵*. These bearings, in conjunction with a roller-bearing *b⁸*, arranged in an extension *b⁹* of the projection *b³*, serve to support the plate *b'* on the shaft *a⁸* and to permit of an easy turning thereon. The plate *b'* adjacent to its perimeter is provided with a flange *b¹⁰*, which holds a perforated cylinder *b¹¹*, carried by the plate *b'* in its proper position. In addition to the perforated cylinder *b¹¹* the plate *b'* is provided with a second cylinder *b¹²*, preferably formed of coarse-meshed wire-netting, which, in conjunction with the cylinder *b¹¹*, forms an annular chamber for the reception of a suitable filtering material *c*, as shown in Figs. 1

and 2. The wire-netting, forming an inner side wall b^{12} , is preferably held in position by annular springs b^{13} , which tend to force the same against the filter material c . In this basket b is placed the material from which oil is to be extracted, and below the bottom plate b' and secured to the extension b^9 of the projection b^3 is arranged an annular disk d , which is provided with blades d' , against which a jet of steam is directed, issuing from the nozzle e and impinging against the blades d' . This steam, by the intervention of the blades d' , sets the disk d and the basket b in rapid rotation, and by the same and centrifugal force all oil in the material placed in the basket b , as well as impurities and other extraneous matter in the same, are liberated therefrom and forced into the filtering material c by readily passing through the inner wall b^{12} . The filtering material c , however, arrests all these impurities, not alone of the oil extracted from the waste material, but also those previously held by the oily material, and only permits the extracted oil to pass through the openings in the outer wall b^{11} . At a certain speed of rotation of the basket b the oily material packed therein becomes dislodged and tends to unbalance the basket by crowding together at certain points. The uneven distribution of the weight of the material causes a shaking of the basket during rotation, and thus an uneven wear of the bearings b^5 , b^6 , and b^8 thereof. In order to overcome this objectionable feature, the basket b is provided with wings h , pivotally secured to the perforated side wall b^{11} and held in engagement therewith by leaf-springs h' , as shown in Figs. 1, 2, and 5. The free end of each wing h is slightly curved outward, and thus forms an obstruction to the air in the chamber b^{14} , formed by the basket b and housing a' , which air, when the speed of rotation of the basket b becomes too great, offers sufficient resistance to open the wings h , assisted by centrifugal force. The resistance of the air against the now open wings h is sufficient to reduce the speed of rotation, and this eliminates the danger of shifting of the oily material in the basket b .

Beneath the turbine-disk d and secured thereto is arranged a plate i , surrounding the shaft a^8 . Opposite the disk i is arranged a ring k , having a projection k' , preferably passing through a pipe a^{12} and terminating above a cam l , carried by a shaft l' , supported by the standard a . When the shaft l' is turned by means of a handle l^2 , the cam l is brought into engagement with the projection k' , which, by raising the ring k , brings the same into engagement with the plate i , and thus

retarding the speed of rotation of the basket b . By the manipulation of the cam l the ring k is brought to bear with greater or less force against the disk i , and thus the speed of rotation of the basket can be controlled at will and the basket brought to a standstill when desired.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a speed-controlling mechanism for centrifugal oil extracting and filtering machines, a stationary housing having a basket for oil-containing material rotatably arranged therein, wings held in alinement and connected with said basket and adapted to be moved radially thereto by centrifugal force and by air acting upon a portion thereof, to automatically retard excessive speed of rotation of said basket by exposing the entire surface to the resistance of the air.

2. In a speed-controlling mechanism for centrifugal oil extracting and filtering machines, a stationary housing having a basket for oil-containing material rotatably arranged therein, wings held in alinement and connected with said basket and adapted to be moved radially thereto by centrifugal force and by air acting upon a portion thereof, to automatically retard excessive speed of rotation of said basket by exposing the entire surface to the resistance of the air, and means supported by said housing and adapted, when manually actuated, to engage said basket to retard and stop rotation thereof.

3. In a speed-controlling mechanism for centrifugal oil extracting and filtering machines, a stationary housing having a basket for oil-containing material, means connected with said basket adapted to actuate the same, wings held in alinement and connected with said basket and adapted to be moved radially thereto by centrifugal force and by air acting upon a portion thereof, to automatically retard excessive speed of rotation of said basket by exposing the entire surface to the resistance of the air, a ring arranged below the actuating means for said basket having an extension and a cam adapted, when actuated, to raise said ring by engaging said extension, to force the same against the actuating means of said basket to retard and stop rotation thereof.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

EDWARD H. DUTCHER.

Witnesses:

JOHN G. KOCH,
R. L. COPE.