

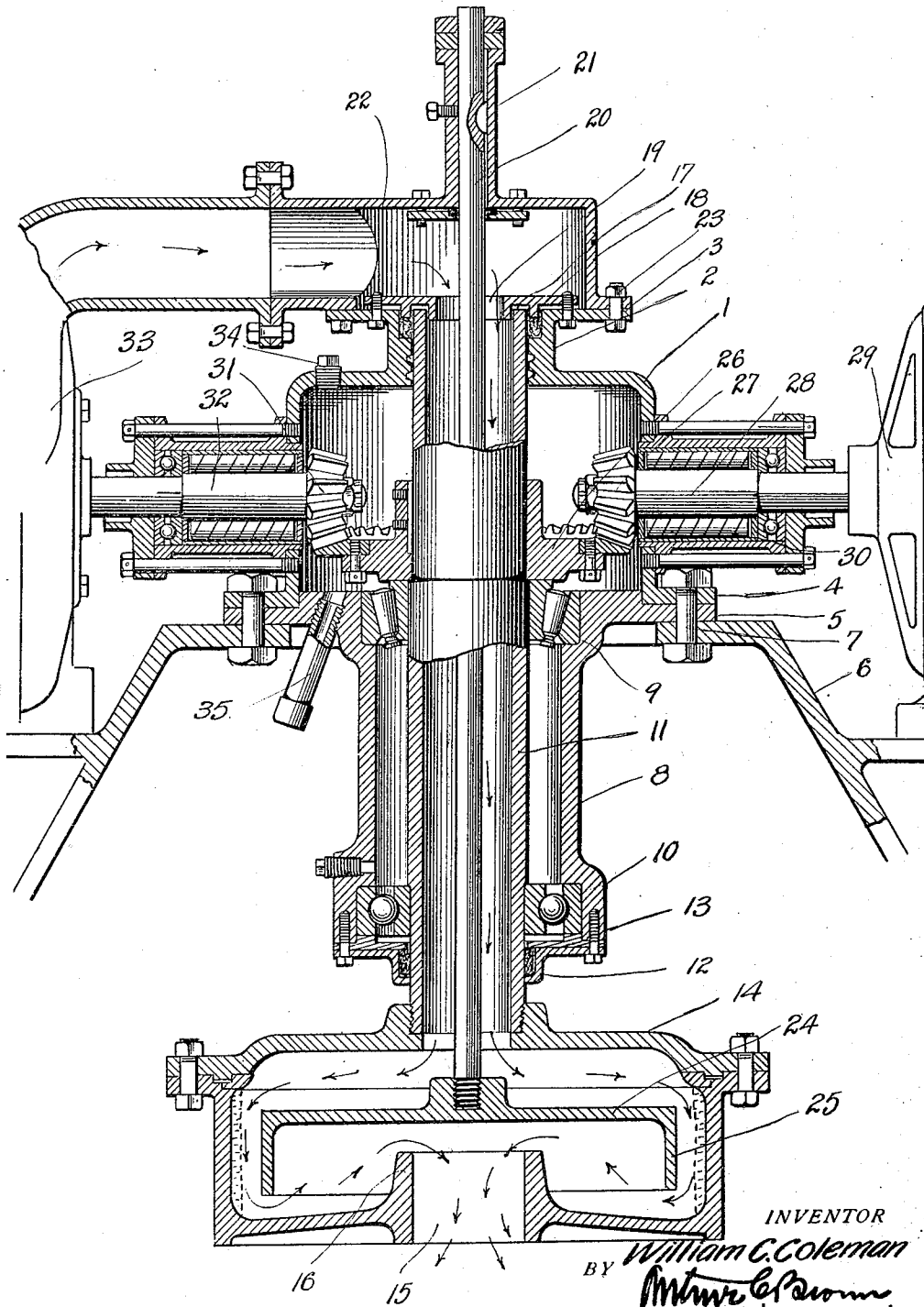
Oct. 7, 1924.

1,510,657

W. C. COLEMAN

DRIVEHEAD FOR CENTRIFUGAL MACHINES

Filed June 9, 1923



## UNITED STATES PATENT OFFICE.

WILLIAM C. COLEMAN, OF WICHITA, KANSAS.

DRIVEHEAD FOR CENTRIFUGAL MACHINES.

Application filed June 9, 1923. Serial No. 644,345.

*To all whom it may concern:*

Be it known that I, WILLIAM C. COLEMAN, a citizen of the United States, residing at Wichita, in the county of Sedgwick and State of Kansas, have invented certain new and useful Improvements in Driveheads for Centrifugal Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to drive heads for centrifugal separators or amalgamators, and the primary object thereof is to provide a simple, efficient means for imparting motion to the movable part of the separator. Centrifugal machines of the type contemplated by this invention include a rotor and a stator, one within the other. Either may be driven, but I have shown the inclosing member or casing as the driven part, or rotor, while the inclosed member is the stator. The rotor has a tube or hollow shaft upon which it is mounted, serving as a passage way for the pulp or sludge containing the mineral to be separated, and means is provided for introducing the pulp or sludge into the centrifugal machine. In so far as this particular invention is concerned, the specific construction of the separator is unimportant, but I have shown a form of separator in connection with the driving head in order better to illustrate the invention.

The novelty of the invention will be apparent by reference to the following description in connection with the accompanying drawings in which:

The figure is a vertical, longitudinal, sectional view through a drive head constructed in accordance with my invention, the rotor shaft being shown partly in elevation. The head is shown as comprising a hollow casting or cap member 1 having a constricted bearing portion 2 with an outwardly disposed flange 3. The casting 1 has a lower open end and it is provided with an outwardly extending flange 4, which rests upon a flange 5 supported upon a support 6. The support 6 and flanges 4 and 5 are fastened together by suitable fastening

devices 7. The flange 5 carries a depending cylinder or hub 8 in which are mounted bearings 9 and 10 to receive the rotor shaft 11, whereby the rotor shaft may be driven by suitable gearing to be hereinafter mentioned. It will be noted that the bearing 9 is at one end of the member 8, and that the bearing 10 is at the other end so that the hollow rotor shaft 11 will be supported by bearing 9 and therefore will be kept in alignment. The rotor shaft 11 extends below the lower end of the cylinder or hub 8 and it is packed by a packing cap 12 having recess in which is located packing material 13. Rigidly secured to the lower end of the rotor shaft 11 is a separator casing 14 which constitutes the rotor of the separator. The rotor 14 is cylindrical and it has at its bottom a central opening 15 provided with a circumferential flange 16 so that the material may pass out through the opening 15 while slightly opposed by the flange 16, it being desirable to maintain the material treated within the casing until the mercury which has an affinity for the metal may have time to attract the metal from the ore sludge. It is understood, of course, that the rotor will contain a certain quantity of mercury, and that when the rotor is driven at high enough speed the mercury will form a band within the rotor so that as the material passes over the surface of the mercury the metal will be taken up by the mercury to be later removed therefrom. The shaft 11 extends through the neck 2, its upper end being received in a groove 17 in the plate 18, the plate 18 being fastened to the flange 3 and having an opening 19 concentric with the shaft 11. The opening 19 is to permit the passage of a stator shaft 20. This is a shaft mounted in the fixed bearing 21 at the top of the cap 22, fastened to the flange 3 by the fastening device 23. The shaft 20 extends through the entire hollow shaft 11, and at its lower end it carries a disc 24 having at its periphery a depending flange 25 in spaced relation with the walls of the rotor. The shaft 11 carries a bevel gear 26 driven by a pinion 27 on the drive shaft 28 of the motor 29. The shaft 28 is mounted in bearings 30 carried by the casting 1. The gear 26 drives a pinion 31 on the shaft 32, the shaft 32 being the driving element for the pump impeller in pump casing 33. The pump casing

is designed to discharge pulp or sludge into the cap 22 so that it can flow through the opening 19, down the hollow shaft 11 into the centrifugal separator. It will be apparent, of course, that as the pulp or sludge passes into the centrifugal separator it will be deflected against the wall of the rotor, as is indicated by the arrows. The mercury being against the inner face of the vertical wall of the rotor will provide a surface over which the sludge or pulp passes so that the mineral may be abstracted in the usual way, the treated sludge passing out through the opening 15. When the machine stops the mineral containing mercury will gravitate to the bottom of the casing 14 where it can be drawn off to be treated in order to recover the mineral. The mechanism may be oiled by introducing oil through an opening closed by the plug 34 and the oil may be drawn off through the part 35. Other refinements may be made without departing from the spirit of the invention.

I am aware that centrifugal machines have been used prior to my invention, and that a means has been provided for driving them, but I am not aware that a novel combination of parts, such as is shown in this application, has been used prior to my invention.

What I claim and desire to secure by Letters-Patent is:

1. A driving head for separators, comprising two concentric shafts, one of which

is fixed and the other rotatable means for driving the rotatable shaft, means for feeding material through the driving head, including a conduit, a pump for accelerating the flow through the conduit, and means receiving its motion from the driving means for the rotatable shaft so as to impart functional movement to the flow accelerating means.

2. A driving head for centrifugal separators comprising a vertical bearing cylinder having an outwardly projecting flange, a support on which the flange rests, a gear case member supported on the flange, having a bearing neck at one end, a vertical hollow shaft rotatable within the neck, bearings in the bearing member in spaced relation and cooperating with the shaft, means for delivering material through the hollow shaft, and a fixed shaft extending through the hollow shaft.

3. A driving head for centrifugal machines comprising a hollow shaft, bearing members for the hollow shaft, means for rotating the hollow shaft, a material introducing conduit communicating with the top of the hollow shaft, means receiving motion from the hollow shaft to accelerate flow through the material introducing means, and a fixed shaft projecting through the hollow shaft.

In testimony whereof I affix my signature.

WILLIAM C. COLEMAN.