

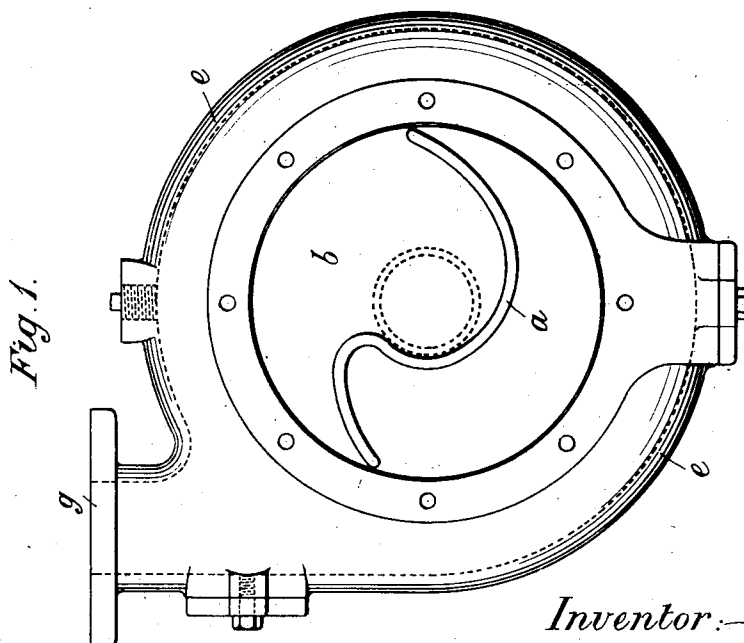
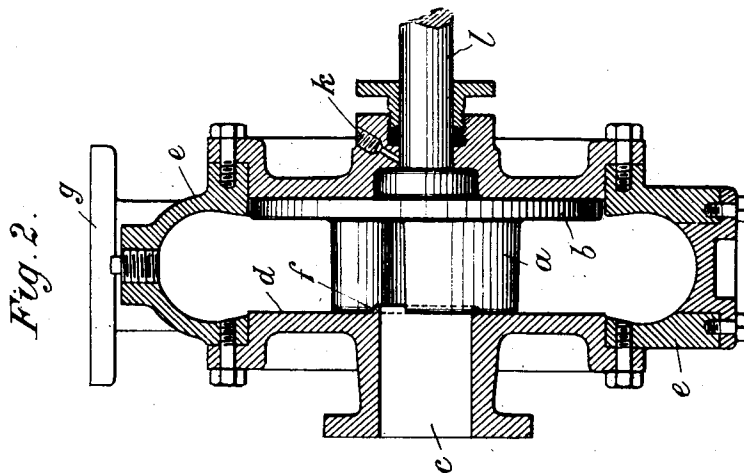
June 25, 1929.

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1,718,396

CENTRIFUGAL PUMP

Filed Jan. 7, 1925



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Patented June 25, 1929.

1,718,396

UNITED STATES PATENT OFFICE.

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CENTRIFUGAL PUMP.

Application filed January 7, 1925, Serial No. 1,077, and in Great Britain January 12, 1924.

This invention has reference to improvements relating to centrifugal pumps and has particular reference to that type wherein the vanes of the impeller are fixed to one side of a disc and in which the impeller is provided with a central cavity adjacent the pump inlet the liquid being forced by the said impeller through an outlet disposed tangential to the impeller.

10 The present invention has for its object improvements in this type of centrifugal pump whereby liquids or semi-liquids containing solid, fibrous or pulping matter can be efficiently dealt with without involving a clogging or choking of the pump.

The invention consists of an improved centrifugal pump of the kind hereinbefore referred to characterized by the formation of the impeller as a single vane secured to and extending completely across one face of a rotatable disc and provided in the central portion thereof with a section adapted to coincide with the periphery of the central inlet aperture formed in the pump casing.

25 In the drawings:—

Figure 1 is a side elevation with cover removed, and

Figure 2 is a cross section of a pump constructed in accordance with this invention.

30 In carrying the invention into effect as shown, a single vane *a* of suitable width is formed integrally with one side of the disc *b*, so that the vane extends across the disc. Alternatively the vane may be made separate from the disc and secured thereto in any convenient manner. The vane is preferably curved, for example, as shown and so disposed relatively to the axis of rotation of the disc *b* that a state of dynamic balance is maintained during rotation. In all forms however the vane has the central portion thereof located at a distance from the axis of rotation about equal to the radius of the adjacent central inlet aperture *c* in one side *d* of the case *e*. Preferably an annular extension or lip *f* is provided around the inner side of the inlet aperture. This extension projects slightly into the pump case, and is overlapped by the central portion of the vane. It will be seen that the vane divides into two parts the adjacent face of the disc *b* and also the space swept by the said vane during rotation.

55 The case is provided with a delivery aperture *g* in the usual way.

The width of the disc and vane, or impeller is made as nearly as is convenient equal to that of the case interior. When in action, the material to be dealt with is delivered, or drawn to the centre of the pump and is discharged by the vane through the outlet aperture.

In the pump shown the disc is rotated by a spindle *l*. A lubricator may be attached at *k*.

60 A pump as above described is of extremely simple construction, and due to the disposition of the single vane extending across the rotary disc entanglement or clogging is effectively avoided.

70 This freedom from clogging is obtained by reason of the absence of the multiplicity of chambers which results when a plurality of vanes are employed, and moreover the initial impetus obtaining at the inlet is not checked by the confinement of the liquid within relatively limited spaces. Further the arrangement of the vane is such as to permit it to function as a shearing edge in a more efficient manner than obtains when a multiplicity of vanes are employed, the edge of the vane serving to sever any foreign matter which tends to clog the operation of the pump.

I claim:—

85 An improved centrifugal pump comprising a casing, inlet and outlet apertures in said casing, a spindle rotatably mounted relative to said casing, a disc concentrically mounted on one end of said spindle and adapted for rotation within the casing, a single strip-like vane of a uniform depth throughout its length equal to the distance between the inner faces of the casing said vane being secured to one side of and extending completely across the face of the disc and being wholly contained during rotation within a cylindrical space having a diameter equal to the diameter of the disc so that the vane during rotation divides the said space into two distinct and separate sections, said vane being positioned relative to the axis of rotation of the disc so that the disc is maintained in a state of dynamic balance during rotation, and a central section formed in said vane adapted to coincide with the aforesaid inlet aperture.

105 In testimony whereof, I have signed my name to this specification.

HARRY WHEELER.