(No Model.)

M. WAGNER.

CENTRIFUGAL PUMP.

No. 531,074. Patented Dec. 18, 1894.

Fig. 1.

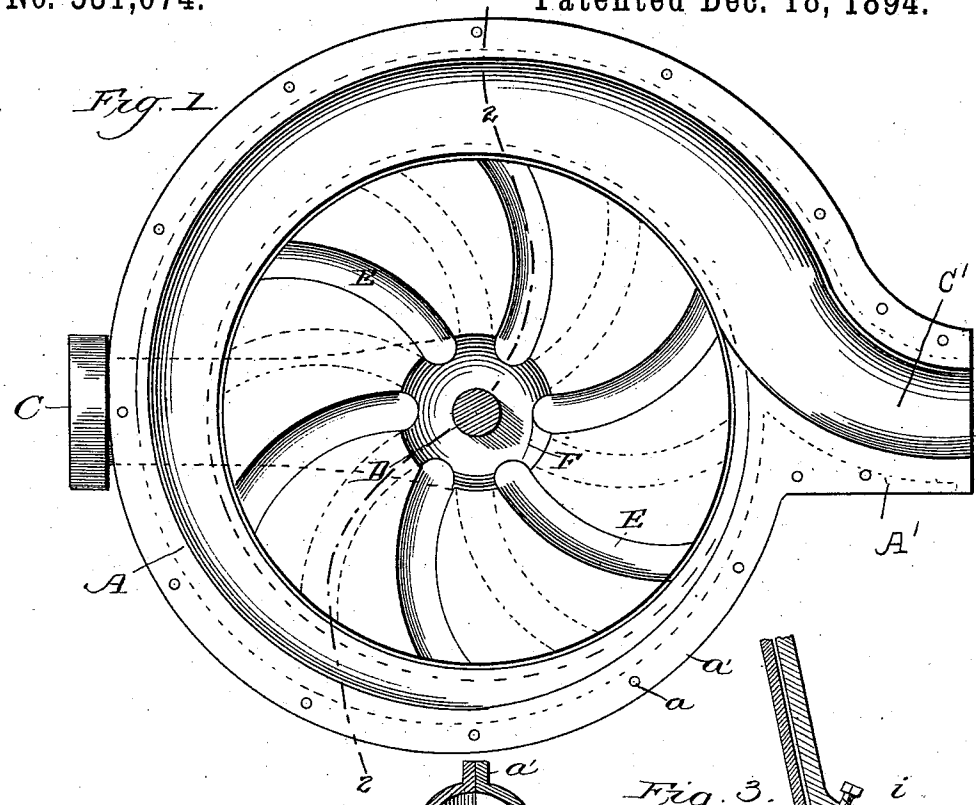


Fig. 2.

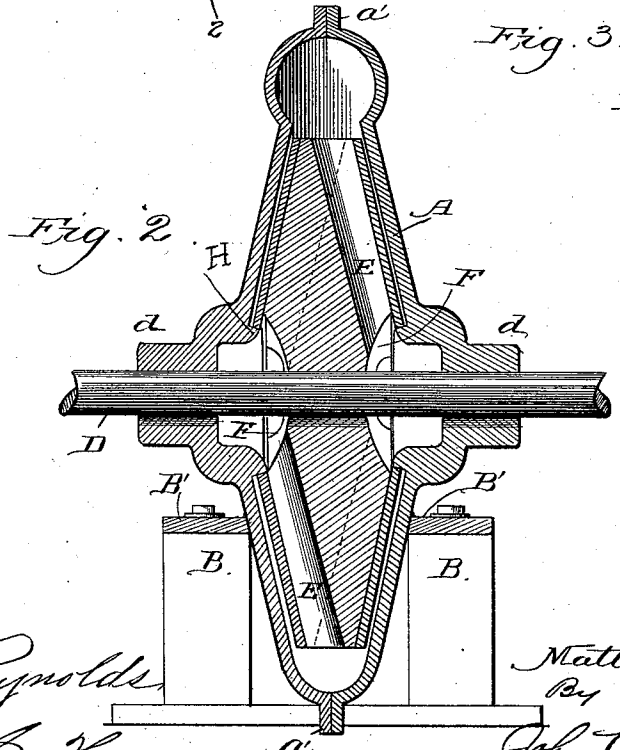
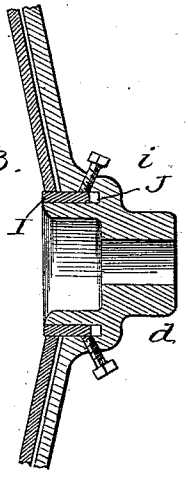


Fig. 3.



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MATT WAGNER, OF TACOMA, WASHINGTON.

CENTRIFUGAL PUMP.

SPECIFICATION forming part of Letters Patent No. 531,074, dated December 18, 1894.

Application filed June 22, 1894. Serial No. 515,336. (No model.)

To all whom it may concern:

Be it known that I, MATT WAGNER, a citizen of the United States, residing at Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Centrifugal Pumps; and I do hereby 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.

This invention relates to certain new and useful improvements in centrifugal pumps of that class in which the wheel is provided with pockets and confined within a suitable casing.

It has for its object among others to improve generally upon this style of pump whereby it is made more effective in operation, more durable and less liable to get out of repair. I provide means for preventing sand and other gritty substances from getting between the casing and the runner and thus the wear consequent upon the friction caused by such sand when it does enter is obviated. I further improve upon the prior constructions by forming the pockets of the wheel so they will each work independently instead of in pairs as heretofore, and thereby increase the suction and pressure of the pump and its operation necessarily improved and facilitated.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be specifically defined by the appended claim.

The invention in this instance resides in the peculiar combinations, and the construction, arrangement and adaptation of the various parts, all as more fully hereinafter described, shown in the drawings and then particularly pointed out in the claim.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a sectional elevation, transversely of the shaft, and showing only a portion of the outer casing. Fig. 2 is a sectional elevation of the same, on the line 2—2 of Fig. 1. Fig. 3 is a detail sectional view of the portion of the casing and runner showing the means for preventing access of sand, &c., between the same.

Like letters of reference indicate like parts throughout the several views.

Referring now to the drawings A designates the outer casing which is constructed in sections which are detachably connected together in any well known or approved manner, as for instance by bolts *a* passed through the flanges *a'* thereof, the same being supported upon the rests or pillar blocks B by means of the castings or brackets B'. This casing is provided with an inlet opening C arranged in line with the horizontal diameter and further with an outlet or passage C' which extends through the extension A' of the casing as seen best in Fig. 1.

At opposite sides the casing is provided with bearings *d* for the shaft D which extends through the center of the casing as shown transversely thereof and upon which shaft the wheel is keyed in any suitable manner. This wheel is formed with a plurality of pockets, preferably twelve in number, which pockets E are reversely arranged upon opposite sides of the wheel in spiral lines and running to the center and opening out therefrom. These pockets are disposed alternately; that is to say, one is first formed on one side of the wheel and the adjacent one upon the opposite side and at the center of the wheel an enlargement F is formed as shown in Fig. 2 to provide means of communication between the several pockets at the center upon opposite sides. Each of these pockets is designed to work independently, instead of in pairs as heretofore, and by this means the suction as well as the pressure of the pump is increased, and the efficiency is therefore proportionately increased and the operation of the pump necessarily improved and facilitated.

It is a well known fact that one of the most serious difficulties with this class of pumps is the wear occasioned by sand and other foreign substances getting between the runner and the casing where the wheel revolves close to the said casing. To avoid this difficulty and thereby add materially to the effectiveness of the pump as well as to the durability thereof I provide means which will prevent

this ingress of sand or other substance between the casing and runner. In Fig. 2 I have shown the casing as formed with a flange H which extends inward from opposite sides thereof as seen in said Fig. 2 so as to exclude the sand, &c., from the space between the casing and runner. In Fig. 3 I have shown the casing at these points as formed with an annular groove or channel *i* in which is fitted a ring I which is adjustable by means of a set screw or screws held in the hub of the casing as shown and by which means the rings may be adjusted as may be necessitated by wear or otherwise. Behind each ring in the channel or groove is an annular wedge J which serves to hold the ring in adjustment and prevent shock or blows or the vibration of the pump from releasing the ring and thereby the said ring is always held in its adjusted position. It will be readily seen how this means prevents the entrance of sand, dirt or other foreign matter between the casing and runner and the wear thereby greatly reduced.

What is claimed as new is—

In a centrifugal pump, the combination with the wheel having an annular flange on the sides thereof and its casing having an annular groove near the center thereof, an annular ring in said groove, an annular wedge back of the ring and a set screw engaging the ring, the said annular flange on said wheel adapted to fit against the sides of the annular ring in said groove to prevent the ingress of sand and the like, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

MATT WAGNER.

Witnesses:
R. P. GOODWIN,
JOHN WEISGERBER.