

Feb. 5, 1929.

1,701,103

G. C. EGY

ROTARY PUMP

Filed Feb. 14, 1927

Fig. 1.

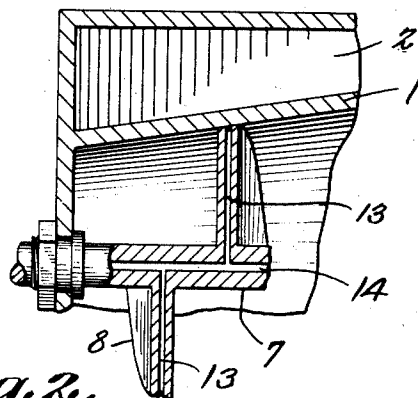
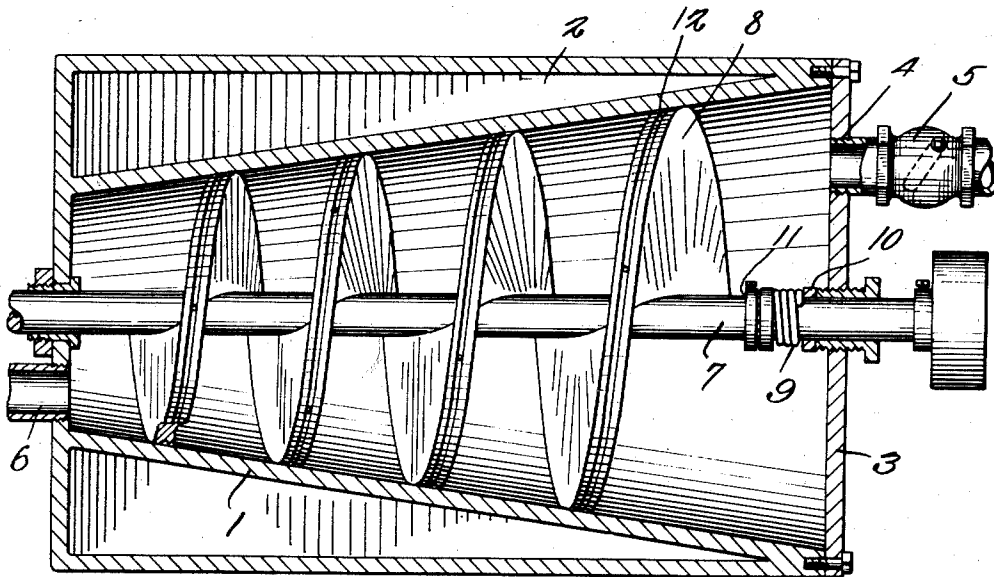


Fig. 2.

Inventor

George C. Egy

334 C. A. Snow & Co.

Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE C. EGY, OF KANSAS CITY, MISSOURI.

ROTARY PUMP.

Application filed February 14, 1927. Serial No. 168,112.

This invention relates to a rotary pump, one of the objects being to provide a device of this character having an impeller of novel construction whereby various substances, such as gas, liquids and semi-fluids can be forced in a continuous stream, means being employed for automatically compensating for wear upon the working parts, maintaining the parts at the proper temperature during the operation of the pump, and keeping the working parts properly lubricated.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings, the preferred form of the invention has been shown.

In said drawings,

Figure 1 is a central longitudinal section through the housing of the pump, the impeller being shown in elevation.

Figure 2 is a section through a portion of the structure.

Referring to the figures by characters of reference 1 designates a frusto-conical stator provided with a cooling jacket 2 into which water, air or any other suitable cooling medium can be directed in the usual or any preferred way. The stator has a removable head 3 at its large end and this head has an inlet 4 provided with a check valve 5 whereby flow of fluid in one direction is prevented. An outlet 6 is provided at the other or small end of the stator. A shaft 7 is journaled in the two ends of the stator and is mounted for limited sliding movement. Formed on or secured to this shaft is a spiral blade 8 the margin of which is adapted to fit snugly against the inner surface of the frusto-conical stator, said blade being held against the stator by a spring 9 mounted on the shaft and bearing at one end against an adjustable sleeve 10 and at its other end against a collar 11 carried by the shaft 7. Sleeve 10 is supported by one of the heads of the stator. Shaft 7 and blade 8 con-

stitute the impeller of the pump and in the structure illustrated in Figure 1 is provided with a continuous groove 12. At any suitable point this groove communicates with radial passages 13 extending from a longitudinal bore 14 in the shaft 7. A lubricant may be supplied to this bore in any suitable manner and will be fed through the passages 18 to the marginal groove 12 so that the blade 8 will be maintained properly lubricated where it contacts with the inner surfaces of the frusto conical stator. Obviously other means than those shown and described can be utilized for lubricating the cooperating faces of the rotor and the stator.

As before pointed out all portions of the periphery of the spiral blade 8 are maintained constantly in contact with the inner surface of the stator and when lubricant is supplied to the cooperating faces of these parts, a tight fit is insured so that there will be practically no leakage between the impeller and the stator. The substance to be pumped is supplied to the stator through the valved inlet 4 and as the shaft 7 rotates in one direction the spiral blade 8 will force material longitudinally of the stator. As the stator diminishes in diameter toward the outlet 6, the area receiving the material being pumped will be correspondingly reduced so that, in addition to the impelling action set up by the spiral blade 8, there will be a forcing action due to the compression of the material as it approaches the outlet. As the cooperating faces of the impeller and the stator become worn, the spring 9 will force the impeller longitudinally to compensate for the wear. The generation of heat due to friction and compression will not be detrimental because the cooling jacket 2 will prevent the heat from becoming excessive.

What is claimed is:

The combination with a cooling jacket, of a frusto-conical stator, surrounded by the jacket, having an outlet at one end and a removable head at its other end, there being a valved inlet within the head, a shaft slidably and rotatably mounted within the head and the opposed end of the stator, a spiral blade carried by the shaft and bearing at its margin against the stator, there being a

groove extending from one end to the other of the edge of the blade for holding a lubricant, a collar rotatable with the shaft adjacent one end, a spring on the shaft for thrusting
5 against the collar thereby to transmit a longitudinal thrust against the shaft to maintain the margin of the blade pressed against the

stator, means extending through the head for varying the tension of the spring, and means within the shaft and blade for distributing a
10 lubricant to the groove in the blade.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

GEORGE C. EGY.