F. J. WILKE.

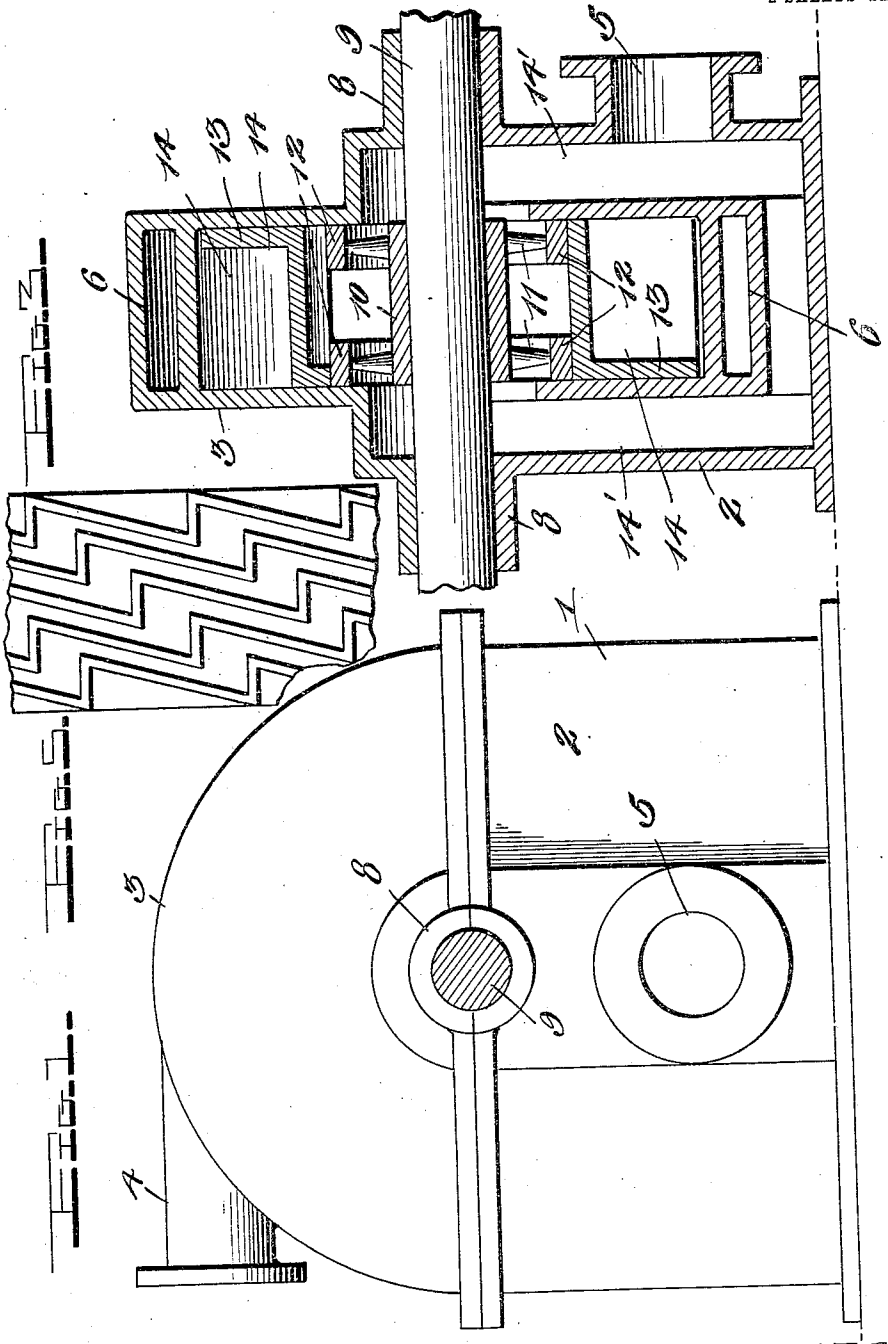
ELASTIC FLUID TURBINE.

APPLICATION FILED MAR. 16, 1912.

1,049,185.

Patented Dec. 31, 1912.

2 SHEETS—SHEET 1.



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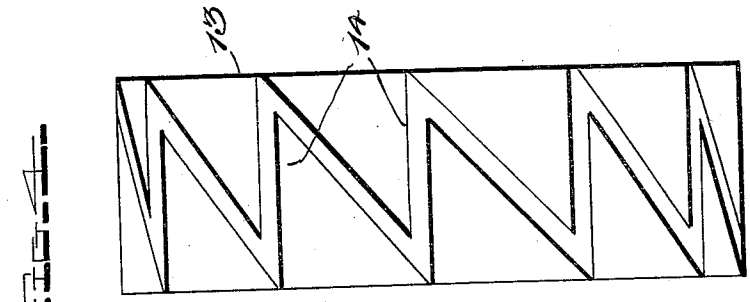

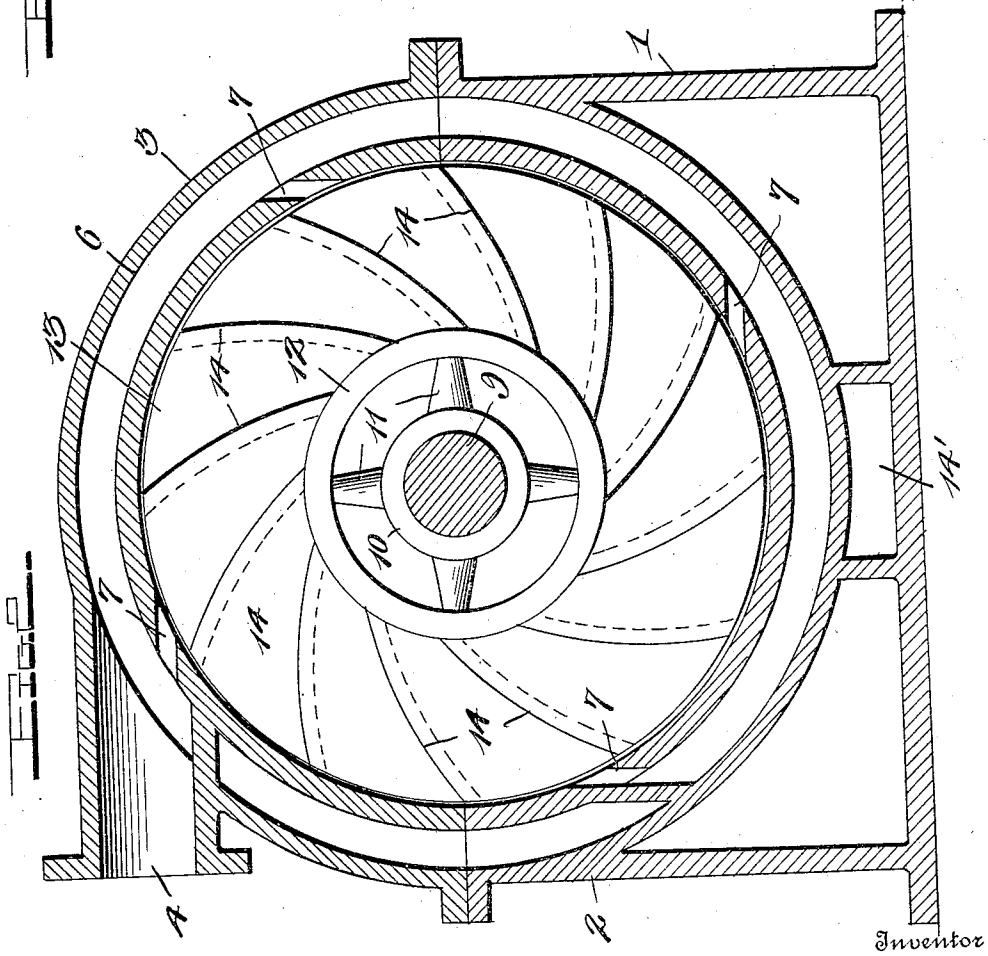

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UNITED STATES PATENT OFFICE.

FRANK J. WILKE, OF LITTLE ROCK, ARKANSAS.

ELASTIC-FLUID TURBINE.

1,049,185. Specification of Letters Patent. Patented Dec. 31, 1912.

Application filed March 16, 1912. Serial No. 684,330.

To all whom it may concern:

Be it known that I, FRANK J. WILKE, a citizen of the United States, residing at Little Rock, in the county of Pulaski and State of Arkansas, have invented certain new and useful Improvements in Elastic-Fluid Turbines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to new and useful improvements in elastic fluid turbines and more particularly to a turbine having radial flow, and my object is to provide a device of this character which is extremely simple and economical in construction, inexpensive to manufacture and one which is very efficient in operation.

A further object of the invention resides in providing a device having an improved form of rotor formed of a single sheet of material, the vanes of which are formed by the substantial corrugations or convolutions of the same.

With these and numerous other objects in view, the invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claims.

In the accompanying drawings forming a part of this application, Figure 1 is a side elevation of the device. Fig. 2 is a vertical longitudinal section therethrough. Fig. 3 is a vertical transverse section through the device; and Fig. 4 is an end elevation of the rotor. Fig. 5 is a fragmentary end elevation of a slightly modified form of rotor showing a plurality of disks in use.

In describing my invention, I shall refer to the drawings in which similar reference characters designate corresponding parts throughout the several views, and in which—

1 indicates a casing formed of the upper and lower sections 2 and 3 respectively, said upper section being provided with an inlet conduit 4, while the lower section is provided with an exhaust conduit 5. It might be here stated that the device is adapted for use with either steam, water, air or any other elastic fluid and the inlet conduit 4 communicates with an annular steam, water or air space 6 formed in the sections 2 and 3 of said casing, said space 6 communicating with the inner hollow space within the casing through the medium of a plurality of inlet ports 7.

Extending through the axial center of the casing 1 and rotatably mounted in the bearings 8 formed in the sides of the casing is a shaft 9, upon which is mounted a hub or the like 10 from which radiates a plurality of arms 11, said arms being secured to a pair of bands or rings 12. Between these bands 12 is secured the inner periphery of a disk-like rotor 13 which is preferably formed of metal having a plurality of radial vanes or the like 14 thereon which are formed by substantially convoluting or corrugating the same. These vanes or substantial abutments formed on the faces of the disk-like rotor 13 are designed radially arcuate so that pressure entered through the inlet ports 7 will not alone cause the rotor to be rotated within the casing, but will permit the steam, water, or air, as the case may be, to be conducted toward the axial center of the device where the same may pass to a pair of vertically extending exhaust channels 14′ formed in the casing 1, said channels 14′ in turn leading to the exhaust conduit 5. While I have only shown a single disk forming the rotor in the drawings, it will be understood that a plurality of these disks may be provided, if desired, as shown in Fig. 5, the same being held in spaced alinement with one another and the vanes thereof arranged accordingly, whereby the power of the turbine will be considerably increased.

In practice, steam, water or air under pressure, is passed through the inlet 4 which fluid will pass through the various inlet ports 7 leading from the annular space 6 to contact with the radial vanes of the rotor 13. The pressure will be sufficiently great to cause said rotor on the shaft 9 to be revolved, the vanes 14 being so curved with respect to the inlets as to conduct the fluid to the space between the radial arms 11 formed on the hub or sleeve 10 from where said fluid may be conducted to the exhaust outlet 15 through the medium of the channels 14.

From the foregoing, it will be seen that I have provided a simple, inexpensive and efficient turbine which will be most efficient in carrying out the objects for which the same is designed, and while I have particularly described the elements best adapted to perform the functions set forth, it will be obvious that various changes in form, proportion and in the minor details of construction may be resorted to without departing from

the spirit or sacrificing any of the novel features of the invention.

Having thus described this invention, what is claimed is:—

1. In an elastic fluid turbine, the combination with a casing having an inlet and outlet formed therein, said casing having an annular space formed therein communicating with said inlet and also provided with an additional vertical space extending from the axial center thereof and communicating with said outlet; of a rotor mounted within said casing, communicating means between the annular space in the casing and the space within which said rotor is disposed, and arcuate radial vanes integrally formed on said rotor and adapted to conduct pressure received thereon to the axial center of the casing.

2. In an elastic fluid turbine, the combination with a casing having inlet and outlet openings formed therein, and provided with an annular space surrounding the main compartment thereof, said space communicating with said inlet opening and also with said main compartment at regular intervals thereabout, said casing being provided with a pair of vertical channels extending from the axial center thereof and communicating with said outlet opening; of a rotor mounted within the main compartment of the casing, said rotor being provided with radially arcuate vanes formed integral thereon and adapted to conduct pressure to the axial center of the casing.

3. In an elastic fluid turbine, a rotor comprising a disk provided with a central opening having the faces thereof radially offset to form vanes, each of said offset portions describing an arc from the periphery of the opening to the outer periphery of said disk, and means to mount said disk on a shaft.

4. A rotor of the class described comprising a disk provided with a central opening and having the faces thereof radially offset to form vanes, each of said offset portions describing an arc from the periphery of the opening to the outer periphery of the disk, a pair of bands secured to the periphery of the opening and spaced from one another, a sleeve, and sets of arms radiating from the sleeve and secured respectively to the aforesaid bands.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

FRANK J. WILKE.

Witnesses:
J. E. England, Jr.,
Poole E. Russ.