

L. S. FLATAU.

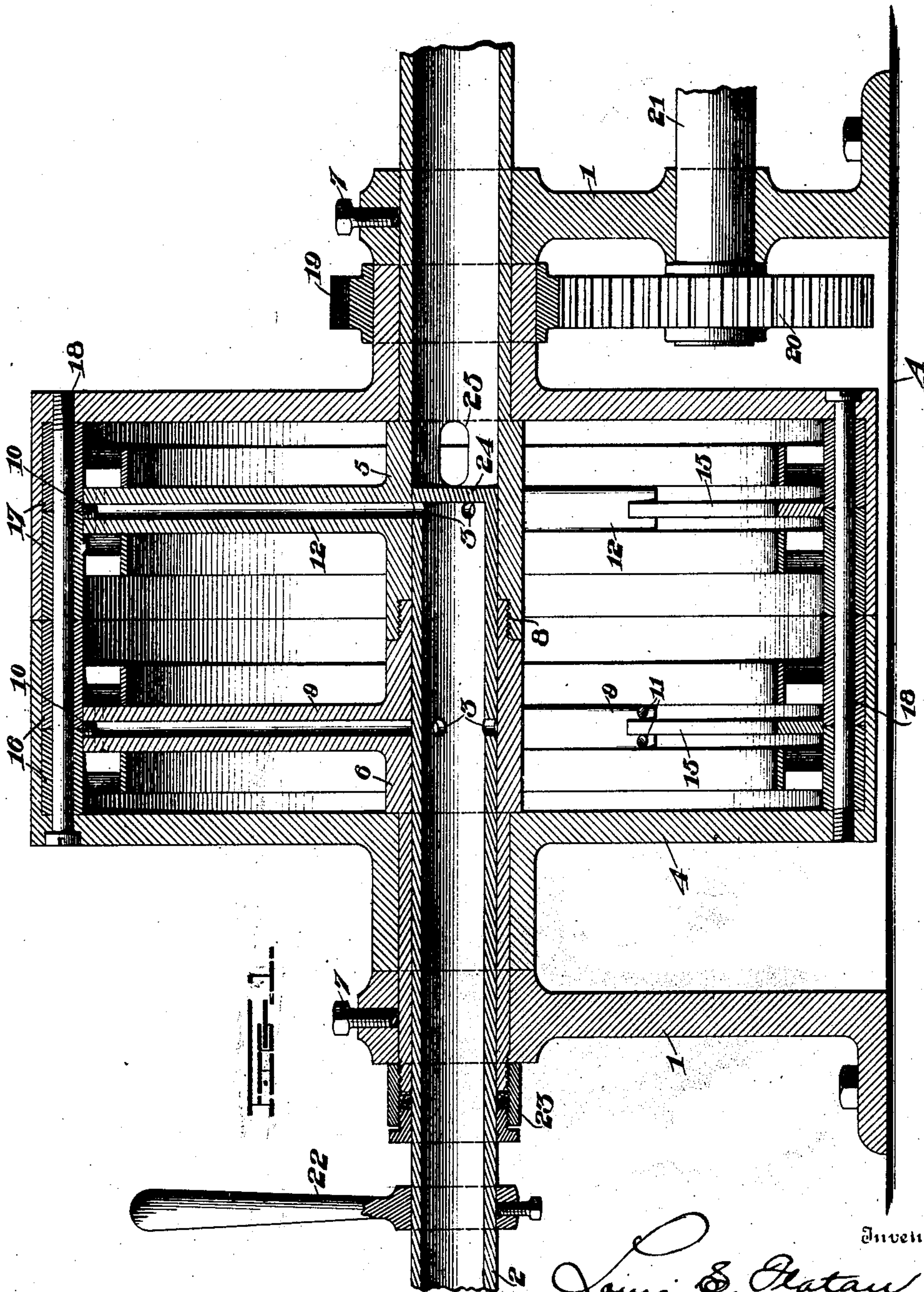
TURBINE.

APPLICATION FILED FEB. 11, 1908.

Patented Nov. 10, 1908.

2 SHEETS—SHEET 1.

903,694.



Inventor

Louis S. Flatau

By

Louis Bagge & Co
Attorneys

Witnesses

Lloyd W. Patch

M. K. Freeman

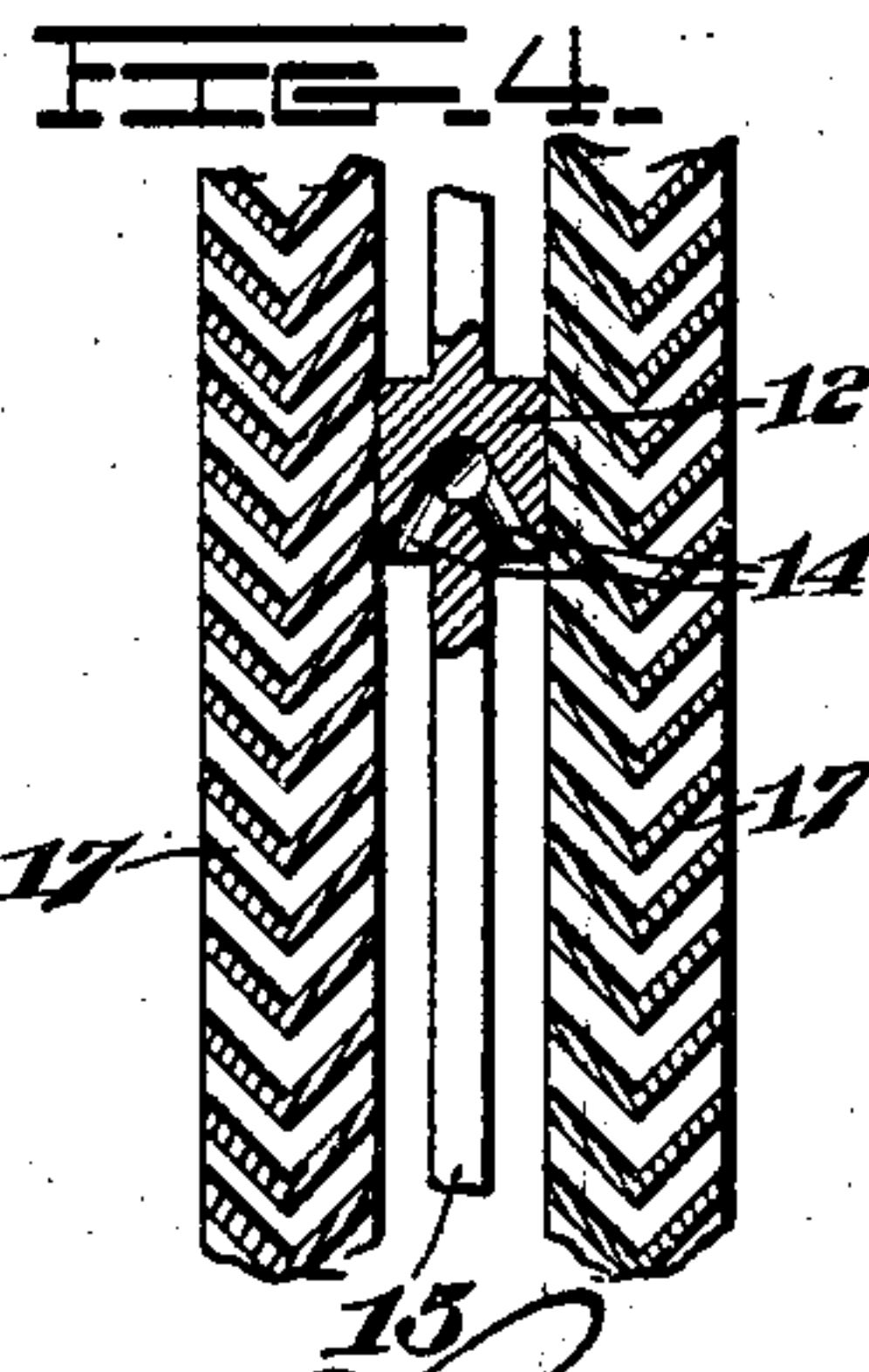
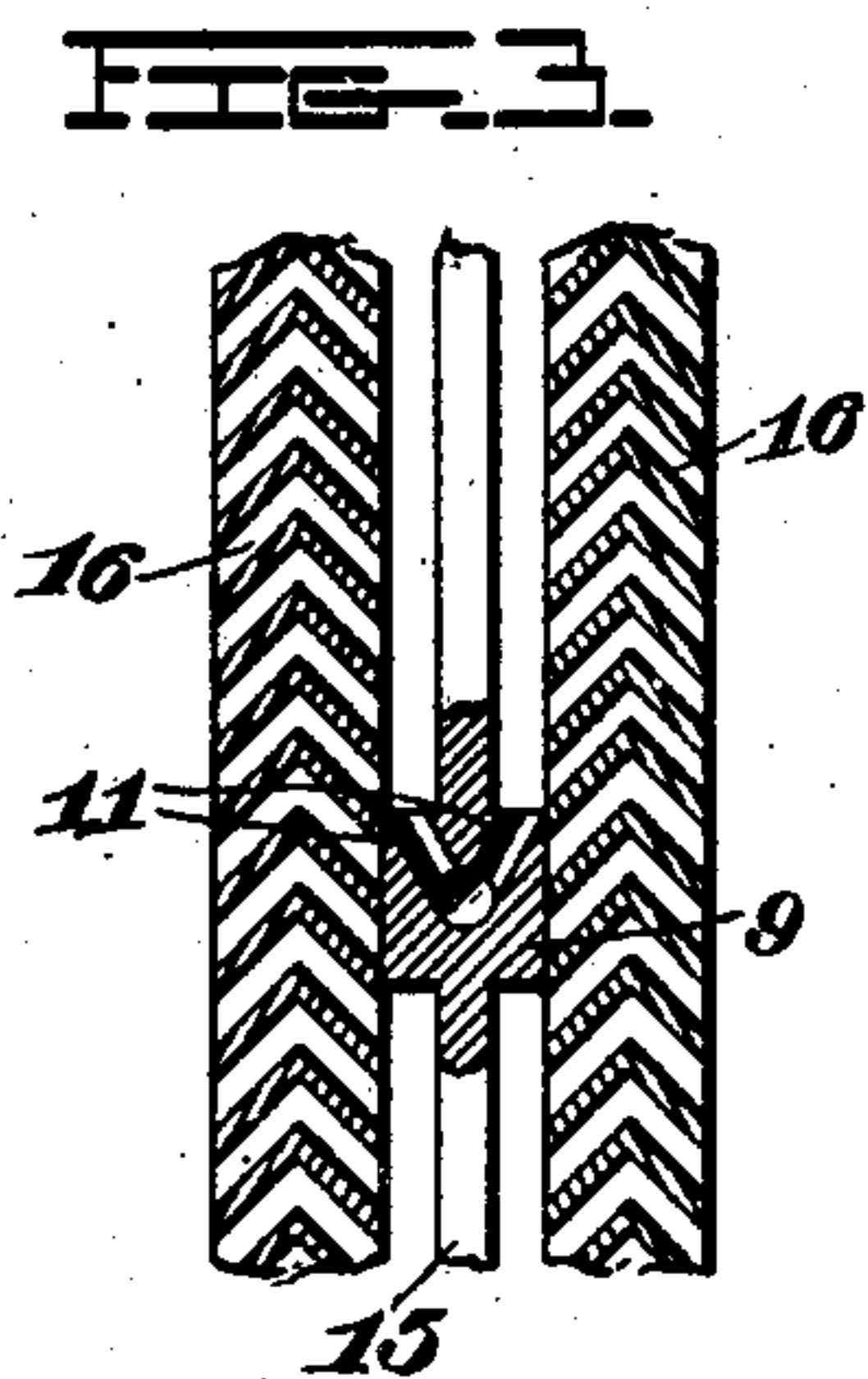
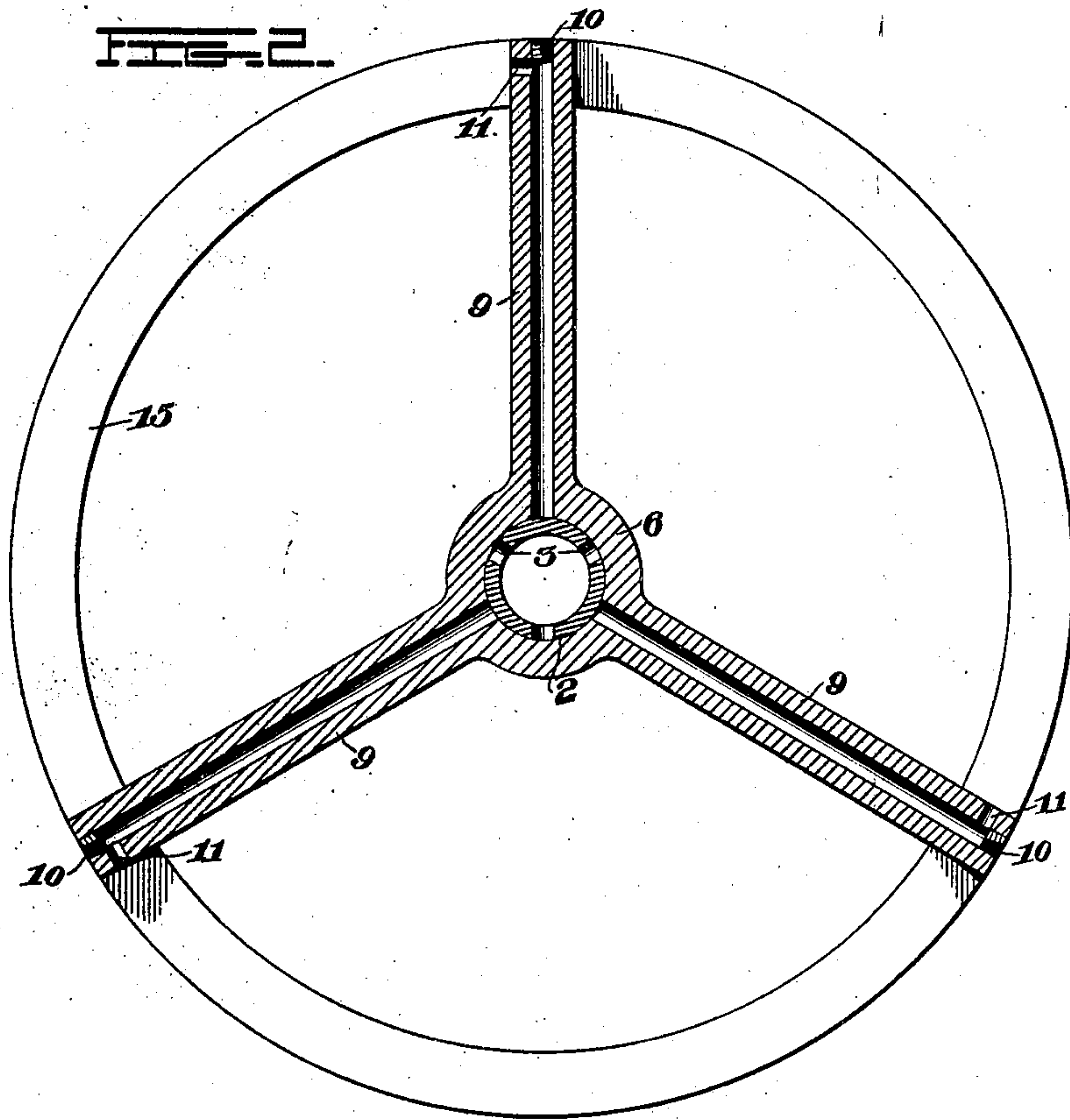
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UNITED STATES PATENT OFFICE.

LOUIS S. FLATAU, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO J. M. SCHOLFIELD,
OF NEW YORK, N. Y.

TURBINE.

No. 903,694.

Specification of Letters Patent.

Patented Nov. 10, 1908.

Application filed February 11, 1908. Serial No. 415,461.

To all whom it may concern:

Be it known that I, LOUIS S. FLATAU, a citizen of the United States, residing at St. Louis, in the county of St. Louis City and State of Missouri, have invented certain new and useful Improvements in Turbine-Engines, of which the following is a specification.

My invention relates to an improvement in a turbine engine which can be operated either by steam, water, or air, and the object is to provide an engine which will have the same power for a reverse motion as for the forward motion and which can be readily reversed or given its forward motion at the option of the operator.

Another object is to provide a central pipe having steam ports or outlets at different points therein which permit the steam to pass through hollow spokes which convey the steam to the vanes, which are connected to the casing of the engine, whereby to cause it to revolve.

The invention relates to certain other novel features of construction and combinations of parts which will be hereinafter described and pointed out in the claims.

In the accompanying drawings Figure 1 is a view in section; Fig. 2 is a vertical sectional view of the hollow spokes, and Figs. 3 and 4 are views of the wheel vanes for forward and reverse motion.

A, represents the base, and 1, 1 the standards. Journaled in the standards is a pipe 2, which is provided with outlets 3, 3 therein and forms or acts as a valve as well as a support. Mounted on the pipe 2 and between the standards 1, 1 is the shell or casing 4 of the turbine, which is preferably made in two sections. Mounted on the pipe and beneath the casing or shell 2 are the hubs 5 and 6 which extend into the standards and are held from rotation by set screws 7, 7. These hubs are connected to each other at their center by a screw-threaded connection as at 8.

Extending outwardly from the hubs 6 are hollow spokes 9, 9, which are closed at their outer ends by a plug 10 and are provided with outlet ports 11, 11. The hub 5 has similar spokes 12, 12 which are provided with plugs 7, 7 at their outer ends for closing the same. Outlet ports 14, 14 are formed in the sides of the spokes. A web 15 is con-

nected to the spokes at their outer ends, both to the spokes 9, 9 and 12, 12, which web extends a short distance from the top of the spoke toward the hub, and the outlets 14 and 11 in the spokes are on each side of the flange.

Wheel vanes 16 and 17 are connected to the shell or casing by means of bolts 18 passing through the side walls of the shell or casing. The vanes are preferably double, and the wheel vanes 16 extend in one direction for the forward movement of the turbine, and the vanes 17 extend in the reverse direction for the reverse movement. The spokes and hub are received between the double vanes.

Connected to the shell or casing on one side is a gear wheel 19, which meshes with a gear 20 on a shaft 21 journaled in one of the standards, whereby power is transmitted to the shaft when the turbine is rotated, and the power can be used for any purpose by suitable connections on the shaft 21.

Connected to the pipe 2 is a lever 22 for rotating the same. A packing joint 23 is connected to the hub 6 to prevent any loss of steam. The pipe 2 is preferably closed at 24, which is just beyond the openings 3 to the spokes 12, and beyond this closure 24 openings 25 are formed in the pipe 2 for the exhaust which passes out through these openings through the open end of the pipe.

The steam, air, or water is admitted into the pipe 2, and if it is desired to start the engine, the pipe is rotated until the openings 3 register with the openings in the spokes 9, thereby permitting the steam to pass through the spokes and out the openings 11 to the vane wheel 16, which strikes the vane wheel at an angle of about forty-five degrees, thereby causing the casing 4 to revolve, and by the web 15 extending between the double vanes assists in directing the steam to the vanes and by the vanes being on each side of the spokes balances perfectly, and there is no end thrust. Now to reverse the engine the steam is cut off by movement of the pipe 2, which is turned until the openings 3, 3 register with the openings in the spokes 12 when the steam enters the spokes and passes out at the outer ends thereof against the vanes of the vane wheel 17, causing the casing to revolve in the reverse direction.

Of course, when the engine is revolved motion is transmitted to the shaft 21, either a forward or reverse motion, and when it is desired to stop the engine and prevent any steam from entering the spokes 9 or 12, the pipe 2 is turned to zero, thereby preventing any of the apertures 3, 3 from registering with the openings in the spokes.

These engines can be made of any size and with a series of spokes, re-using the steam as in other turbines, or using the steam from different sets of spokes, reversing with a clutch instead of reversing the engine and running at a rapid rate of steam less the friction. By this improvement I am enabled to start the engine and reverse the same by merely throwing the lever causing the pipe which forms a support to rotate within the stationary hubs 5 and 6 until the openings 3 register with the openings in the spokes 9 or 12 for either a forward or reverse motion, and by having the web 15 on the spoke it forms a support or strengthening means for the supports and by the large opening between the hubs and the lower edge of the web the steam can pass through this opening or pass out through the outlet 25 to the outer air.

By having the two wheel vanes 16 and 17 made in sections and connected to the casing or shell 2 as shown, the hubs 5 and 6 could be materially reduced so that they would merely rest on the pipe through which the steam passes to the spokes as the double vanes afford support for the ends of the spokes.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the exact construction herein set forth, but:—

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a turbine engine, the combination with a casing, double vane wheels therein, of a pipe upon which the casing is journaled having apertures therein, stationary spokes mounted on the pipe and received between the double vanes of the vane wheels, and means for rotating the pipe, whereby the apertures in the pipe will register with the hollow spokes for admitting steam to the vane wheels for rotating the casing.

2. In a turbine engine, the combination with a casing, vane wheels therein, of a pipe upon which the casing is journaled having apertures therein, stationary spokes mounted on the pipe and in communication with the vane wheels, and means for rotating the pipe whereby the apertures in the pipe will register with the hollow spokes for admitting

steam to the vane wheels for rotating the casing.

3. In a turbine engine, the combination with a casing, of a pipe upon which the casing is mounted, vane wheels connected to the casing, hollow spokes mounted on the pipe and in communication with the vane wheels, said pipe having openings adapted to register with the hollow spokes, and means for operating the pipe whereby steam is admitted to the spokes and vane wheels to give a forward or reverse movement to the casing.

4. In a turbine engine, the combination with a casing, of a pipe upon which the casing is mounted having apertures therein, double vane wheels in the casing, hollow spokes mounted on the pipe and registering with the apertures therein, said spokes received between the double vanes of the vane wheels, and having openings therein leading to the vanes, and means for admitting steam to the spokes and vane wheels whereby a reverse or forward motion is transmitted to the casing.

5. In a turbine engine, the combination with a casing, of a pipe upon which the casing is mounted having openings therein, vane wheels connected to the casing for forward and reverse motion, stationary hollow spokes mounted on the pipe registering with the openings therein, said spokes having openings in communication with the vane wheels, and means for admitting steam to the spokes and vane wheels for either forward or reverse motion.

6. In a turbine engine, the combination with a casing, of a pipe upon which the casing is mounted having apertures therein, double vane wheels for forward and reverse motion connected to the casing, hollow spokes mounted on the pipe and registering with the openings therein, a web at the outer ends of the spokes received between the double vanes, said spokes in communication with the vane wheels, and means for admitting steam to the spokes for either a forward or reverse motion.

7. In a turbine engine, the combination with a casing, of a pipe upon which the casing is mounted having apertures therein, vane wheels connected to the casing, hollow spokes mounted on the pipe registering with the apertures therein, said spokes in communication with the vane wheels, said pipe having exhaust openings therein, and means for closing said pipe between the exhaust openings and apertures.

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

LOUIS S. FLATAU.

Witnesses:

HOMAN STARKE,
O. F. DAVIS.