

No. 745,410.

PATENTED DEC. 1, 1903.

G. ZAHIKJANZ.
STEAM TURBINE.

APPLICATION FILED MAY 21, 1903.

NO MODEL.

Fig. 1.

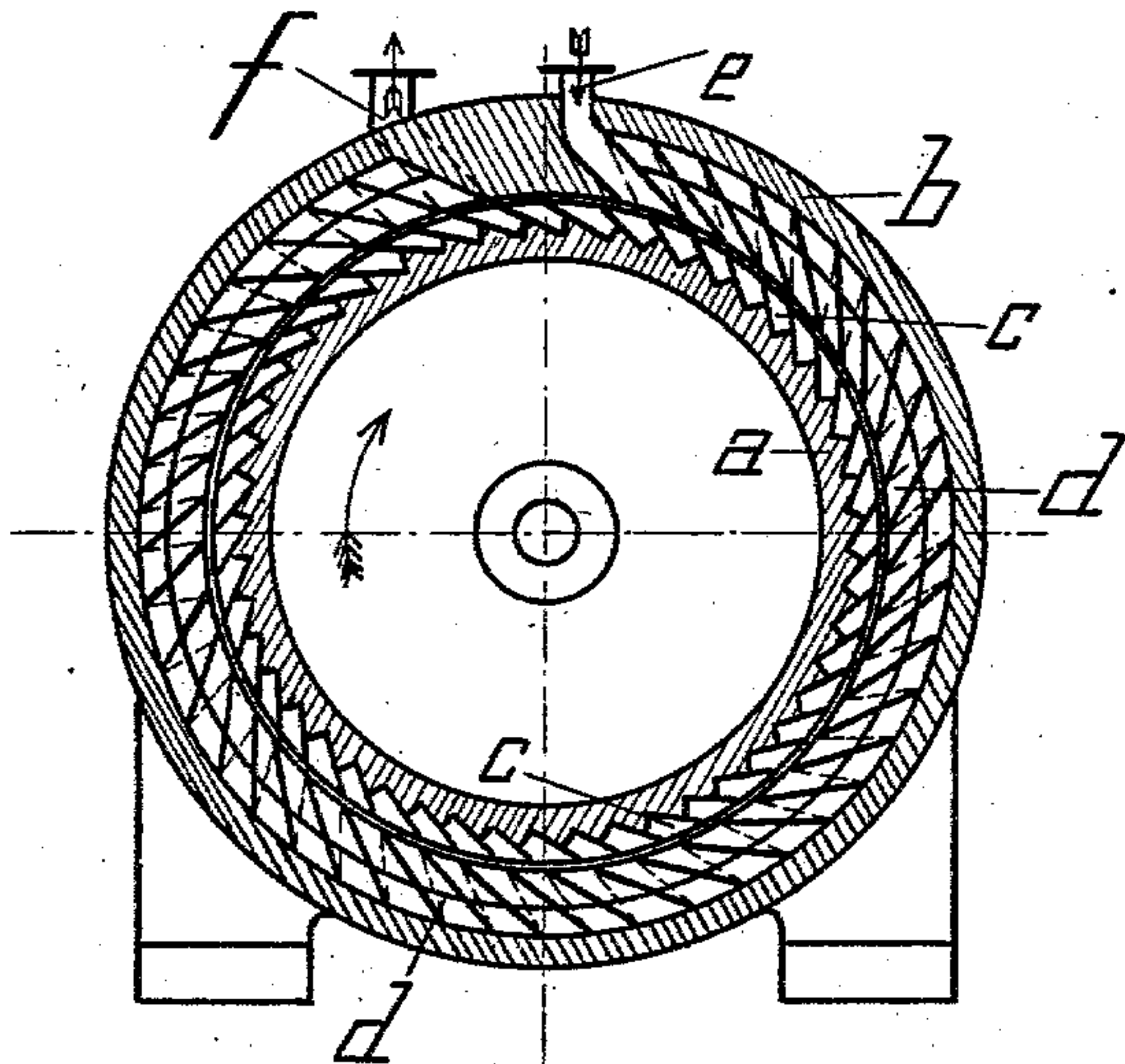


Fig. 2.

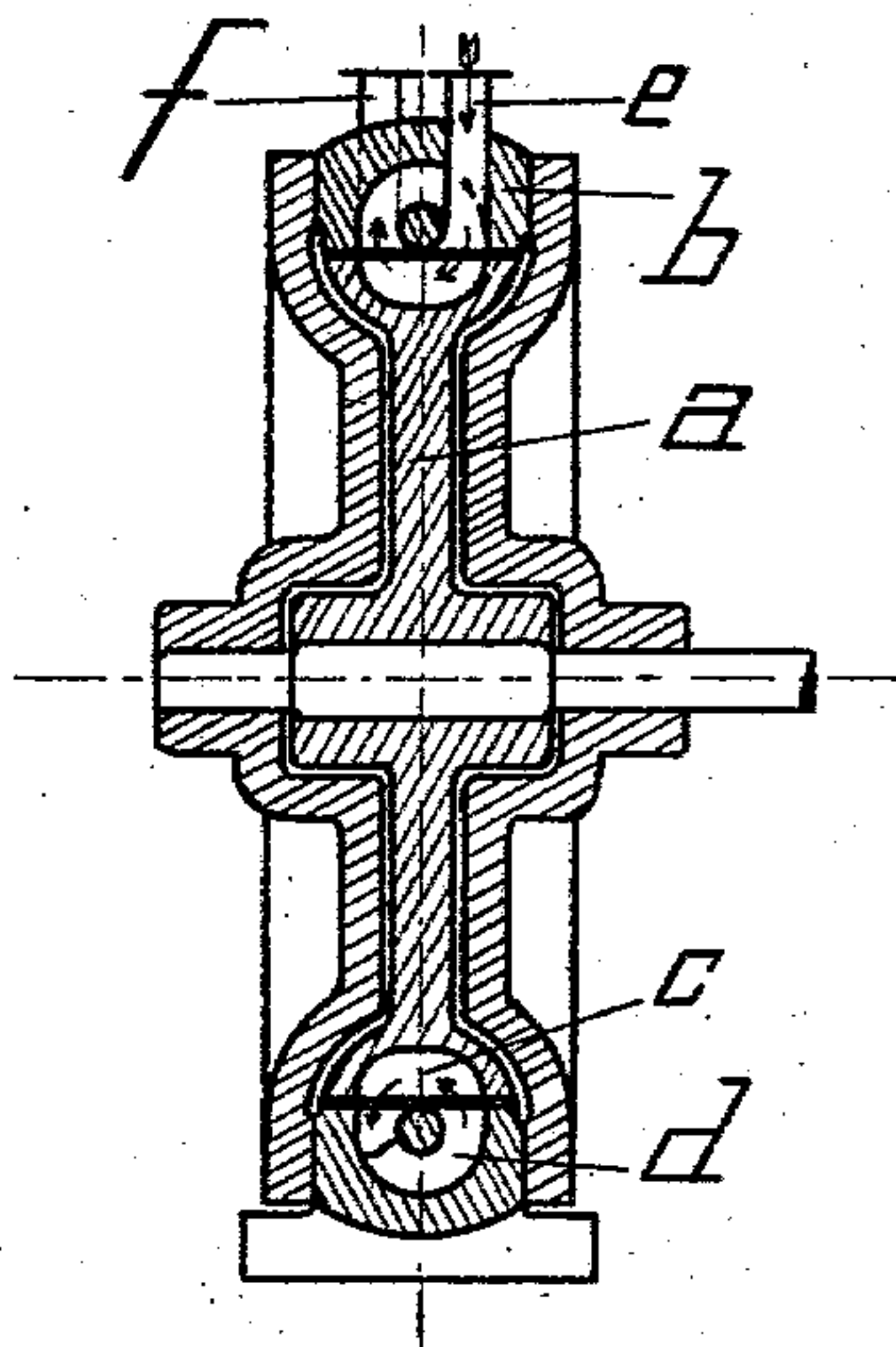
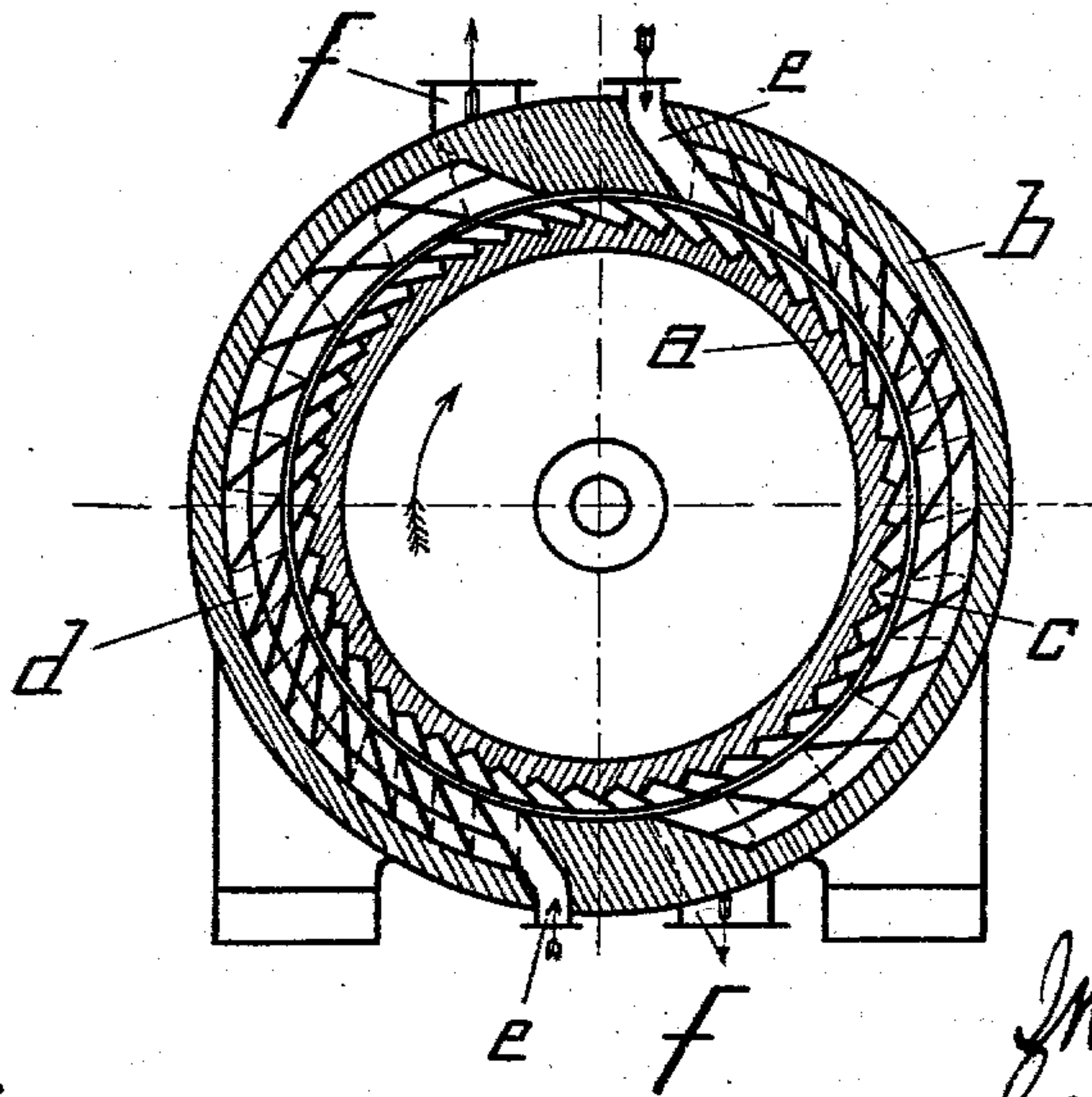


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

GABRIEL ZAHIKJANZ, OF BERLIN, GERMANY, ASSIGNOR TO BERGMANN-ELEKTRICITÄTS-WERKE, AKTIENGESELLSCHAFT, OF BERLIN, GERMANY, A CORPORATION OF GERMANY.

STEAM-TURBINE.

SPECIFICATION forming part of Letters Patent No. 745,410, dated December 1, 1903.

Application filed May 21, 1903. Serial No. 158,068. (No model.)

To all whom it may concern:

Be it known that I, GABRIEL ZAHIKJANZ, a subject of the Emperor of Russia, and a resident of Berlin, Germany, have invented certain new and useful Improvements in Steam-Turbines, of which the following is a specification.

My invention relates to turbines intended to be driven by steam, gases, vapors, or liquid under pressure.

It has for its object a turbine in which the guide and rotary channels are adapted to form a spirally-coiled passage for the driving medium; and it consists of certain novel features hereinafter described and claimed.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a sectional front view of my turbine with channels of constant cross-section. Fig. 2 is a sectional side view of the same. Fig. 3 is a sectional front view of my turbine with gradually-widening channels.

My turbine, Figs. 1 and 2, consists of a rotary wheel *a* and a guide-wheel *b*. The rotary wheel *a* receives in its rim semicircular cells or similar curvilinear cavities *c*, while the guide-wheel *b* receives U-shaped channels *d*, with ends twisted apart, so as to connect consecutive rotary cells, and thus form a spirally-coiled passage in the rim of the turbine. Each rotary cell constitutes, as it were, a bridge between the outlet of a guide-channel and the inlet of another guide-channel for the passage of the driving medium, which, entering at *e*, winds spirally through the turbine-rim and escapes at *f*. To gradually increase the cross-section of the path, the rotary wheel receives cells of constant cross-section, while the guide-channels are gradually widened, as shown in Fig. 3.

My invention enables me to reduce the length and the resistance of the rotary channels, while simplifying the manufacture of the rotary wheel.

It is obvious that the construction may be reversed—i. e., the rotary wheel may be provided with U-shaped channels and the guide-wheel with semicircular or similar cells. Further, the cells may be arranged obliquely,

so as to connect the outlet of a U-shaped channel with the inlet of a following one, and, finally, the rotary and the guide wheels may be arranged side by side instead of being situated one over the other, as represented.

What I claim as new, and desire to secure by Letters Patent, is—

1. A turbine comprising two members one rotatable relatively to the other, and provided in their opposing faces, one with recesses or cells open toward the other member, and the other with U-shaped channels having one end located in advance of the other and arranged to register with and to connect two adjacent cells, forming a path for the driving medium.

2. A turbine comprising two members one rotatable relatively to the other, and provided in their opposing faces, one with recesses or cells open toward the other member, and the other with a series of tubular channels succeeding one another in the arc of a circle, both ends of such channels facing toward the companion member, said channels and cells being arranged to form a path for the driving medium.

3. A turbine comprising two members, one rotatable relatively to the other and provided in their opposing faces, one with recesses or cells open toward the other member, and the other with U-shaped channels having one end located in advance of the other and laterally thereof, said channels being arranged to register with and to connect consecutive cells forming a spiral path the axis of which encircles the axis of rotation.

4. A turbine comprising two members one rotatable relatively to the other and provided in their opposing faces, one with recesses or cells open toward the other member and the other with tubular channels both ends of which face toward the companion member, said channels and cells being arranged to form a path for the driving medium, the said spiral path increasing in cross-section toward the exhaust.

5. A turbine comprising two members one rotatable relatively to the other, and provided in their opposing faces, one with recesses or

cells open toward the other member, and the other with tubular channels both ends of which face toward the companion member, said channels and cells being arranged to
5 form a path for the driving medium, one of the two elements of the spiral path (the cells and the channels) being of constant cross-section, and the other increasing in cross-section toward the exhaust.
10 6. A turbine comprising two members one rotatable relatively to the other, and provided in their opposing faces, one with recesses or cells open toward the other member, and the other with tubular channels both ends of

which face toward the companion member, 15 said channels and cells being arranged to form a path for the driving medium, the cells being of equal cross-section and the channels increasing in cross-section toward the exhaust. 20

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

GABRIEL ZAHIKJANZ.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.