

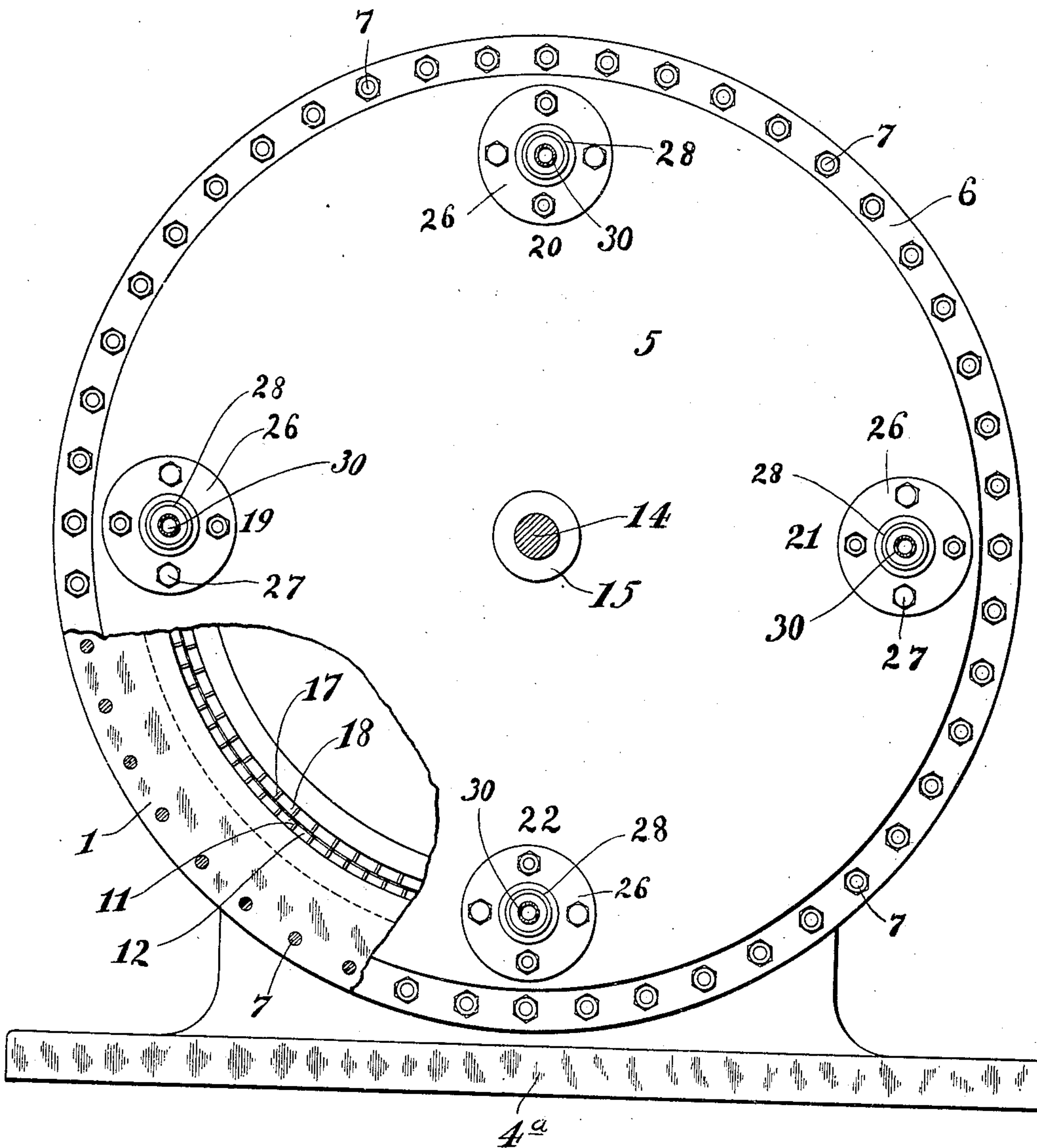
No. 829,744.

PATENTED AUG. 28, 1906

A. TSCHINKEL.
TURBINE ENGINE.
APPLICATION FILED JAN. 27, 1906.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

Chas. W. LaRue
Chas. L. Wolf

Inventor:

Alfred Tschinkel
by Charles A. Stephens
his Attorney

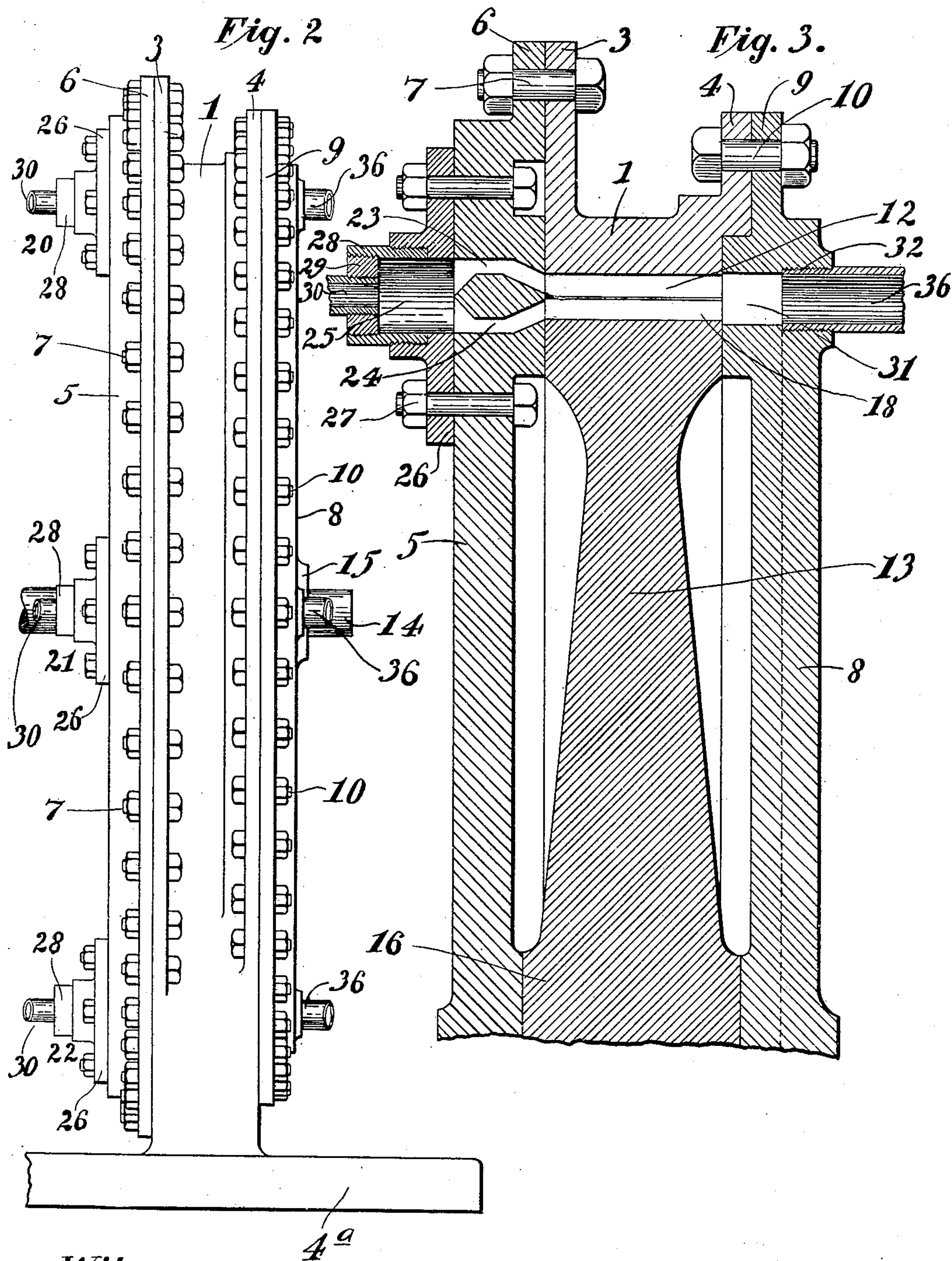
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 4.

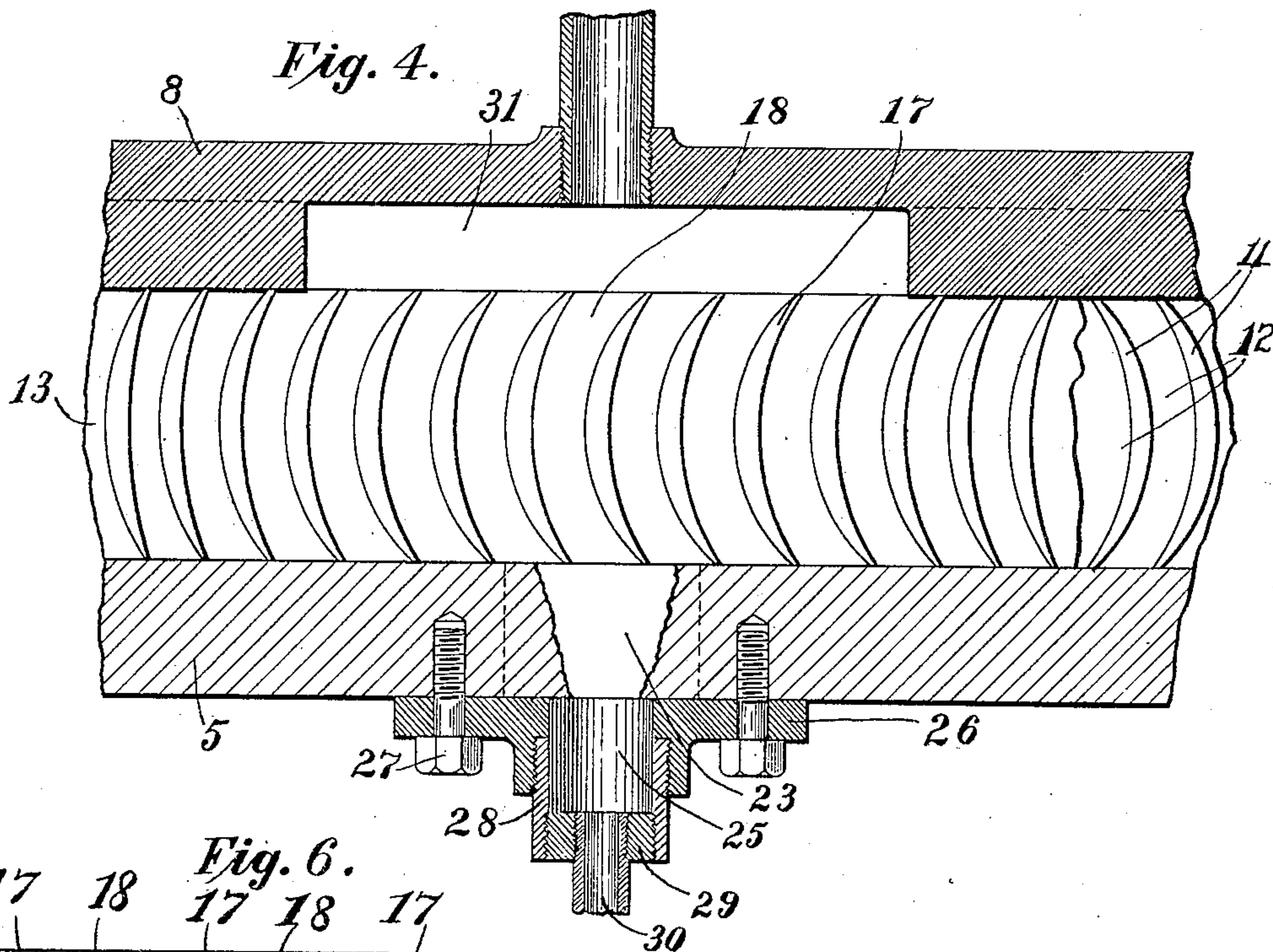


Fig. 6.

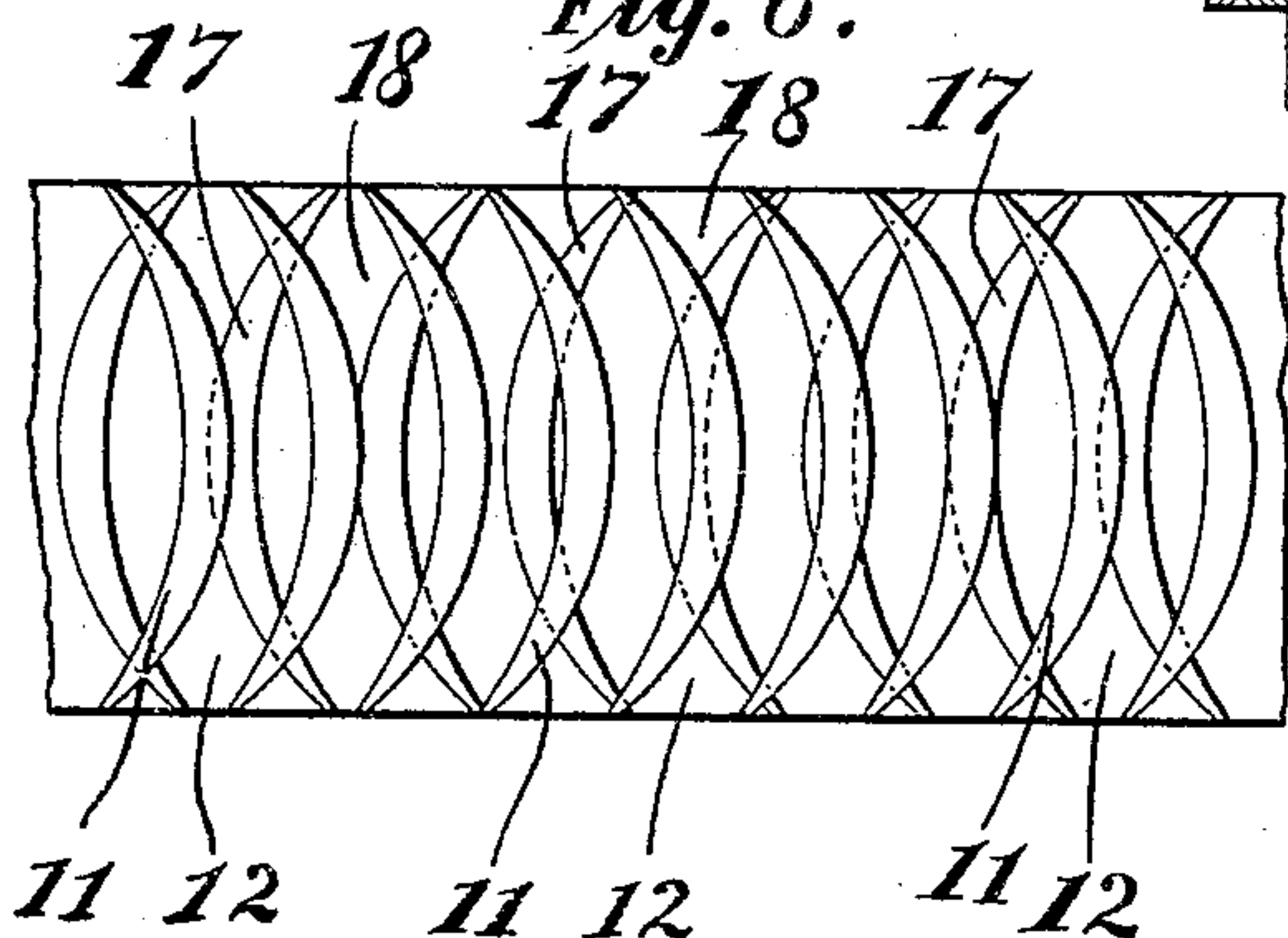
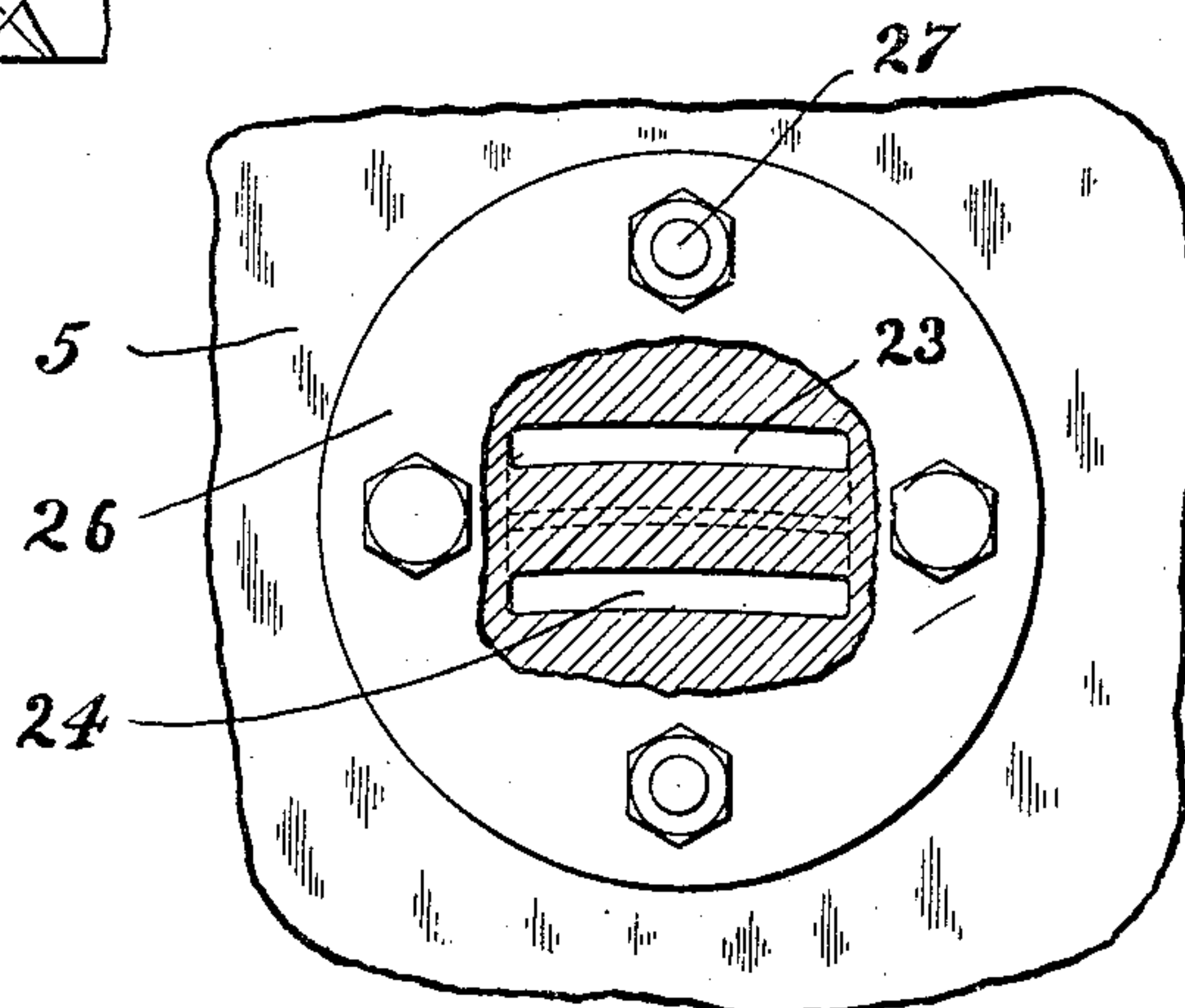


Fig. 5.



Witnesses:

Chas. W. LaRue
Chas. L. Wolf

Inventor:

Alfred Tschinkel
by Charles A. Stephens
his Attorney

UNITED STATES PATENT OFFICE.

ALFRED TSCHINKEL, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO
HERMAN A. METZ, OF NEW YORK, N. Y.

TURBINE-ENGINE.

No. 829,744.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed January 27, 1906. Serial No. 298,087.

To all whom it may concern:

Be it known that I, ALFRED TSCHINKEL, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Turbine-Engines, of which the following is a specification.

My invention relates to turbine-engines.

It has for its object to provide a turbine-engine embodying a stationary casing having a graduated line of pockets in its inner circumference, a rotatable wheel having a graduated line of pockets in its outer circumference adapted to intersect the pockets in the casing, multiple steam-inlets communicating with said pockets at one side of said casing, a common exhaust-chamber communicating with said pockets at the other side of said casing, and exhaust-ports from said chamber, whereby live steam will be caused to enter all the pockets simultaneously from one side in separate bodies, mix and expand at approximately a central point in the intersecting pockets in the order of their succession, exhaust into the chamber at the other side, and finally exhaust from the casing.

It has for a further object to provide a device of the character set forth embodying advantages in point of perfect operation, durability, and simplicity, and inexpensiveness of construction.

In the drawings, Figure 1 is a side view of my engine, one of the side plates being broken away to show the steam-pockets; Fig. 2, an edge view; Fig. 3, an enlarged fragmentary detail sectional view showing the relation between the pockets in the casing, the pockets in the wheel, the multiple inlets, the exhaust-chamber, and the outlets; Fig. 4, an enlarged fragmentary sectional detail view showing the shape of the ribs forming the pockets in the wheel and the relation between said pockets, the multiple inlets, the exhaust-chamber and the outlets; Fig. 5, an enlarged fragmentary detail sectional view showing one of the multiple inlets; Fig. 6, a diagrammatic view showing the relation between the pockets in the casing and the pockets in the wheel.

In all the figures of the drawings like reference characters designate corresponding parts.

Referring to the drawings, the casing of

my turbine embodies a central ring 1, provided with peripheral flanges 3 and 4, a base 4^a, a side plate 5, provided with a peripheral flange 6, bearing against and being secured to the flange 3 of the ring by bolts 7, having nuts thereon, and a side plate 8, provided with a peripheral flange 9, bearing against and being secured to the flange 4 of the ring by bolts 10, having nuts thereon.

The ring of the casing is provided on its interior circumference with a continuous line of transversely-curved approximately crescent-shaped ribs 11, forming between them curved pockets 12.

The wheel 13 is mounted within the ring of said casing and between the side plates thereof upon a shaft 14, journaled in bearings 15 in said side plates, said wheel having a hub 16 secured to said shaft 14 and bearing against the side plates to properly position it within the casing and a continuous line of transversely-curved approximately crescent-shaped ribs 17 on its outer circumference or periphery, curved in the opposite direction to the ribs 11 and forming between them curved pockets 18, also curved in the opposite direction to the pockets 12, and adapted when said wheel is revolved to intersect the pockets of the casing.

The side plate 5 is provided with multiple inlets 19, 20, 21, and 22, each having passages 23 and 24, the passage 23 leading into pockets 12 in the casing and the passage 24 leading into the pockets 18 in the wheel, thereby providing for the introduction of live steam into the pockets in the casing and the pockets in the wheel in separate bodies.

To provide means for simultaneously introducing live steam into the passages of each multiple inlet, a chamber 25 is provided opposite each of said inlets, said chamber being formed by a circular flanged plate 26, secured to the side plate 5 by bolts 27, having nuts thereon, said plate 26 having a threaded bore, one end of which leads into said inlets and the other end having an interiorly and exteriorly threaded ring 28 screwed therein, the outer end of said ring 28 being partially closed by a plug 29, screwed therein and having a pipe 30 leading therethrough into the chamber 25.

A circular groove 31 in the inner face of the side plate 8, opposite the pockets in the ring of the casing and the pockets in the

wheel, forms a chamber adapted to receive the exhaust or spent steam from all of the pockets.

The plate 8 is provided with screw-thread-
5 ed outlet-holes 32, leading from the exhaust-chamber 25, and pipes 36 are screwed into said outlet-holes.

From the foregoing description, consid-
10 ered in connection with the drawings, it will be readily understood that if steam be introduced into the multiple inlets in the plate 5 it will flow in separate bodies—viz., through the passages 23 into the pockets 12 in the casing and through the passages 24 into the
15 pockets 18 in the wheel as the pockets come opposite said inlets, meet in one body, and expand at a central point in said pockets as they intersect one another, thus causing the wheel to rotate, then exhausting into the
20 exhaust-chamber 25, and finally exhausting therefrom through the outlets in the plate 8.

I do not wish to be understood as limiting myself to the precise details and arrange-
25 ments of parts shown and described, but reserve the right to all modifications within the scope of my invention.

Having now described my invention, what I claim as new, and desire to secure by Let-
ters Patent, is—

30 1. In a turbine-engine, a stationary inclos- ing casing having inlets in one side and out- lets in the other side and a line of trans- versely-extending pockets in its interior cir- cumference open at each end, and a rotatable
35 wheel in said casing having a line of trans- versely-extending pockets in its outer cir- cumference open at each end and adapted to intersect the pockets in said casing whereby the motive fluid simultaneously enters the
40 pockets in the casing and the pockets in the wheel from one side in separate bodies, mixes therein when the pockets register and then exhausts from said pockets on the other side of said casing, substantially as described.

45 2. In a turbine-engine, a stationary inclos- ing casing having a line of transversely-ex- tending pockets in its interior circumference open at each end, a rotatable wheel having a line of transversely-extending pockets in its
50 outer circumference open at each end and adapted to intersect the pockets in said cas- ing, inlets in one side of the casing each hav- ing a passage communicating with the pock- ets in said casing, and a passage communi-
55 cating with the pockets in the wheel and out- lets in the other side of the casing whereby the motive fluid simultaneously enters the pockets in the casing and the pockets in the wheel from one side in separate bodies,
60 mixes therein when the pockets register and then exhausts from said pockets on the other side of said casing, substantially as described.

3. In a turbine-engine, a stationary inclos- ing casing having inlets in one side and out-
65 lets in the other side and a line of trans-

versely-extending curved pockets in its in-
terior circumference open at each end and a
rotatable wheel in said casing having a line
of transversely-extending curved pockets in
its outer circumference open at both ends 70
adapted to intersect the pockets in said cas-
ing whereby the motive fluid simultaneously
enters the pockets in the casing and the pock-
ets in the wheel from one side in separate
bodies, mixes therein when the pockets regis- 75
ter and then exhausts from said pockets on
the other side of said casing, substantially as
described.

4. In a turbine-engine, a stationary inclos-
ing casing having a line of curved pockets in 80
its interior circumference, a rotatable wheel
having a line of curved pockets in its outer
circumference adapted to intersect the pock-
ets in said casing, inlets in one side of the cas-
ing each having a passage communicating 85
with the pockets in said casing and a passage
communicating with the pockets in the wheel
and outlets in the other side of the casing,
whereby the motive fluid simultaneously en-
ters the pockets in the casing and the pock- 90
ets in the wheel from one side in separate
bodies, mixes therein when the pockets regis-
ter and then exhausts from said pockets on
the other side of said casing, substantially as
described. 95

5. In a turbine-engine, a stationary inclos-
ing casing having inlets in one side and out-
lets in the other side and a line of trans-
versely-extending curved pockets open at
each end and a rotatable wheel having a line 100
of transversely-extending pockets in its outer
circumference curved in the reverse direction
to the pockets in the casing and adapted to
intersect the pockets in said casing whereby
the motive fluid simultaneously enters the 105
pockets in the casing and the pockets in the
wheel from one side in separate bodies, mixes
therein when the pockets register and then
exhausts from said pockets on the other side
of said casing, substantially as described. 110

6. In a turbine-engine, a stationary inclos-
ing casing having a line of transversely-ex-
tending pockets in its interior circumference
open at each end, a rotatable wheel having a
line of transversely-extending pockets in its 115
outer circumference open at each end and
adapted to intersect the pockets in said cas-
ing, inlets in one side of said casing, outlets
in the other side of said casing, and a cham-
ber in said casing to receive the exhaust from 120
the pockets therein and the pockets in the
wheel whereby the motive fluid simultane-
ously enters the pockets in the casing and
the pockets in the wheel from one side in
separate bodies, mixes therein when the 125
pockets register and then exhausts from said
pockets on the other side of said casing, sub-
stantially as described.

7. In a turbine-engine, a stationary inclos-
ing casing having a line of pockets in its in- 130

terior circumference, a rotatable wheel having a line of pockets in its outer circumference adapted to intersect the pockets in said casing, inlets in one side of said casing, each having a passage communicating with the pockets in said casing and a passage communicating with the pockets in the wheel, outlets in the other side of the casing and a chamber in said casing to receive the exhaust from the pockets therein and the pockets in the wheel whereby the motive fluid simultaneously enters the pockets in the casing and the pockets in the wheel from one side in separate bodies, mixes therein when the pockets register and then exhausts from said pockets on the other side of said casing, substantially as described.

8. In a turbine-engine, a stationary inclosing casing having inlets in one side and outlets in the other side, a line of transversely-extending graduated pockets in its interior circumference open at each end and a rotatable wheel having a line of transversely-extending graduated pockets in its outer circumference open at each end and adapted to intersect the pockets in said casing, whereby the motive fluid simultaneously enters the pockets in the casing and the pockets in the wheel from one side in separate bodies, mixes therein when the pockets register and then exhausts from said pockets on the other side of said casing, substantially as described.

9. In a turbine-engine, a stationary inclosing casing having a graduated line of transversely-extending pockets in its interior circumference open at both ends, a rotatable wheel having a graduated line of transversely-extending pockets in its outer circumference open at both ends and adapted to intersect the pockets in said casing, inlets in one side of said casing each having a passage communicating with the pockets in said casing and a passage communicating with the pockets in the wheel and outlets in the other side of the casing whereby the motive fluid simultaneously enters the pockets in the casing and the pockets in the wheel from one side in

separate bodies, mixes therein when the pockets register and then exhausts from said pockets on the other side of said casing, substantially as described.

10. In a turbine-engine, a stationary inclosing casing having inlets in one side and outlets in the other side and interior circumferential ribs forming a line of transversely-extending graduated pockets open at each end and a rotatable wheel having exterior circumferential ribs forming a line of transversely-extending graduated pockets open at each end and adapted to intersect the pockets in said casing, whereby the motive fluid simultaneously enters the pockets in the casing and the pockets in the wheel from one side in separate bodies, mixes therein when the pockets register and then exhausts from said pockets on the other side of said casing, substantially as described.

11. In a turbine-engine, a stationary casing having inlets in one side and outlets in the other side and interior circumferential ribs forming a line of transversely-extending pockets open at each end, a rotatable wheel having exterior circumferential ribs forming a line of transversely-extending pockets open at each end adapted to intersect the pockets in said casing, inlets in one side of the casing each having a passage communicating with the pockets in said casing and a passage communicating with the pockets in the wheel and outlets in the other side of the casing, whereby the motive fluid simultaneously enters the pockets in the casing and the pockets in the wheel from one side in separate bodies, mixes therein when the pockets register and then exhausts from said pockets on the other side of said casing, substantially as described.

Signed at New York, in the county of New York and State of New York, this 19th day of January, A. D. 1906.

ALFRED TSCHINKEL.

Witnesses:

CHAS. L. WOLF,

ALBERT B. BLACKWOOD.