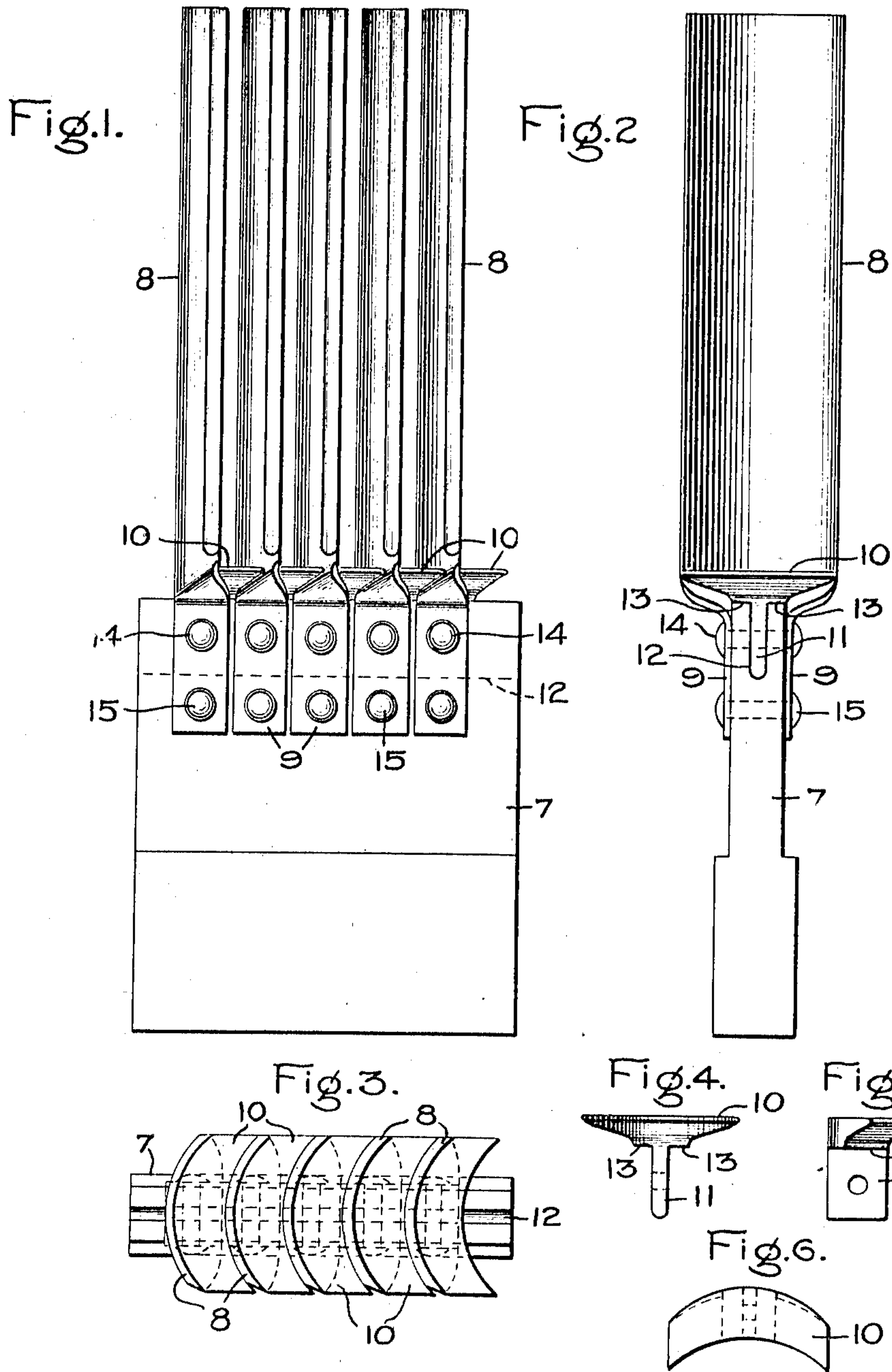


W. FRITZ.
 BUCKET FOR ELASTIC FLUID TURBINES.
 APPLICATION FILED MAR. 31, 1911.

994,254.

Patented June 6, 1911.



Witnesses:
Phanas W. Norman
Helen Oxford

Inventor:
 Walter Fritz,
 by *Alfred Davis*
 His Attorney.

UNITED STATES PATENT OFFICE.

WALTER FRITZ, OF BERLIN, GERMANY, ASSIGNOR TO GENERAL ELECTRIC COMPANY,
A CORPORATION OF NEW YORK.

BUCKET FOR ELASTIC-FLUID TURBINES.

994,254.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed March 31, 1911. Serial No. 618,107.

To all whom it may concern:

Be it known that I, WALTER FRITZ, a subject of the German Emperor, residing at Berlin, Germany, have invented certain new and useful Improvements in Buckets for Elastic-Fluid Turbines, of which the following is a specification.

This invention relates to buckets for elastic-fluid turbines and the object of the invention is the provision of an improved bucket structure that is simple, acts in an efficient manner on the motive fluid, prevents loss of energy by eddy-currents or leakage past the buckets, is securely attached to the turbine members, and can be economically manufactured.

In the accompanying drawing illustrating an embodiment of my invention, Figure 1 shows an assembled group of buckets; Fig. 2 is an end view of the buckets of Fig. 1; Fig. 3 is a top view of the group of buckets; Fig. 4 is a front view of the filling piece for closing the inner end of the bucket space; Fig. 5 is a side view of the filling piece; and Fig. 6 is a top view of the filling piece.

Referring to the drawing, 7 designates any typical turbine bucket-carrying member. The surfaces of the buckets or vanes 8 are curved in a well-known manner. The buckets illustrated are of uniform thickness but the form of the bucket cross-section can be varied from that shown. The bases or inner ends of the buckets are provided with integral ears 9 that engage the parallel outer faces of the rim or edge of the member 7, the metal of the buckets being curved inwardly and downwardly from the active portion of said buckets to the ears. In order to confine the motive fluid to the active portion of the buckets where it performs useful work and to prevent leakage and eddy-currents and the consequent loss of energy, filling pieces 10 are arranged between the inner ends of the buckets. The outer or upper faces of the filling pieces are substantially perpendicular to the elements of the bucket surfaces. Said faces are also located beyond the periphery of the member 7 at a point where the active surface of the buckets terminates and the bodies of the buckets begin to curve downwardly and inwardly to the ears 9. The outer ends of the buckets can be provided with a suitable shroud or cover if desired.

In the structure described, the flow of motive fluid through the bucket space is confined to a region between accurately shaped surfaces designed to secure efficient operation. The front face of the head of the filling piece is shaped to fit closely against the back of the adjoining bucket and the back face is similarly fitted to the front of the next bucket. The width of the head is the same as the width of the bucket. The filling piece is provided with a tongue or projection 11 that engages a groove or slot 12 in the edge of the member 7 having straight parallel walls, while the shoulders 13 engage the periphery of said member at each side of the groove. Rivets 14 pass through the upper portions of ears 9, the tongues 11 and the rim of the member 7 to secure the bases of the buckets to said member. Other rivets 15 passing through the lower portion of the ears and the rim further secure the buckets to the member 7.

The buckets and filling pieces, together with their securing means, are relatively simple and compact in structure, economically manufactured and assembled, and are efficient in performing their functions.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is only illustrative, and that the invention can be carried out by other means.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. The combination of a bucket-carrying member having a groove in its periphery, buckets having their inner ends mounted on the member outside of the groove, and filling pieces between said ends that are provided with tongues that enter the groove.

2. The combination of a bucket-carrying member having a groove in its periphery whose side walls are plane surfaces, buckets mounted on said member, and filling pieces between the inner ends of the buckets that are provided with tongues that fit into said groove.

3. The combination of a bucket-carrying member having a groove in its periphery provided with straight parallel side walls, buckets mounted on said member, and filling

pieces that close the inner ends of the bucket spaces and are provided with tongues that fit into the groove.

4. The combination of a bucket-carrying member having a straight-walled groove in its periphery, buckets on said member having active surfaces and bases into which said surfaces merge, and filling pieces between the bases that close the bucket spaces at the inner ends of said surfaces and are provided with tongues that enter the groove.

5. The combination of a bucket-carrying member having a groove in its periphery, buckets having bases provided with ears that engage opposite sides of the member, and filling pieces having heads that engage the adjoining faces of adjacent bases above said ears and tongues that enter the groove.

6. The combination of a bucket-carrying member having a groove in its periphery, buckets having bases mounted on the member, filling pieces between the bases that close the inner ends of the bucket spaces, said filling pieces having tongues that fit into the groove and shoulders that engage the edge of the member at each side of said groove, and means for securing the bases and filling pieces to said member.

7. The combination of a bucket-carrying member having a slot or groove in its periphery, buckets having ears projecting from their bases and engaging opposite faces of said member, filling pieces between the bases that close the inner end of the bucket spaces, said filling pieces having tongues that enter the groove and shoulders that engage the edge of the member at each side of said groove, and means for securing the bases and filling pieces to said member.

8. The combination of a bucket-carrying member having parallel outer faces and a groove in its periphery whose side walls are parallel to said faces, buckets having bases that engage said faces, filling pieces between said bases that close the inner ends of the bucket spaces and are provided with tongues that fit into the groove, and means for securing the buckets and filling pieces to said member.

In witness whereof, I have hereunto set my hand this 11th day of March, 1911.

WALTER FRITZ.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.