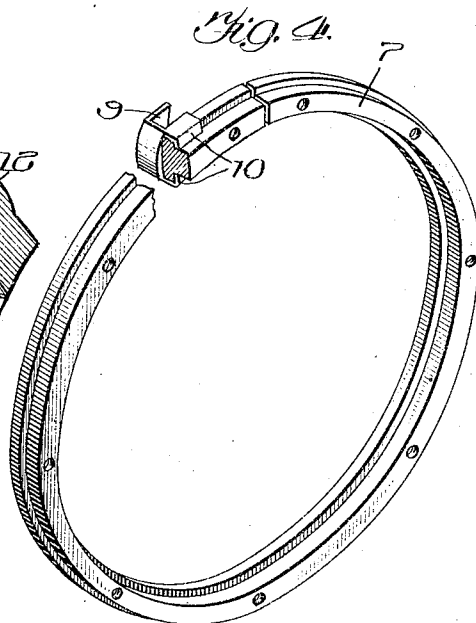
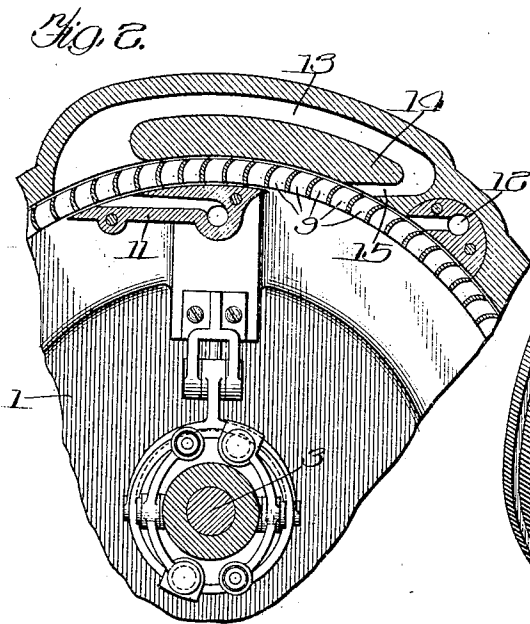
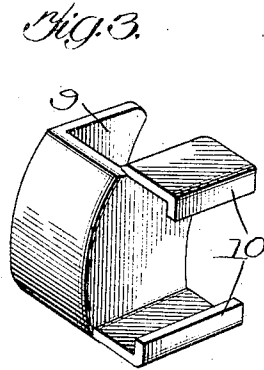
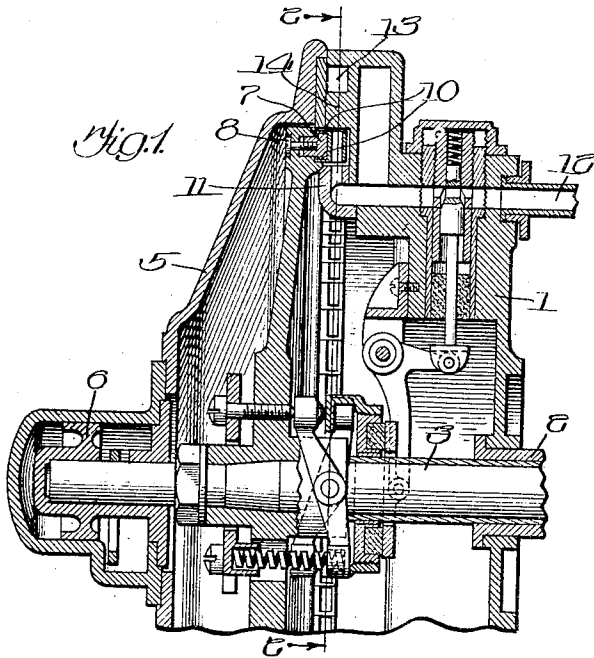


M. A. ROSS.
FLUID TURBINE.
APPLICATION FILED JAN. 20, 1913.

1,065,316.

Patented June 17, 1913.



Witnesses:
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UNITED STATES PATENT OFFICE.

MARK A. ROSS, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO HARRY P. BAYLEY,
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FLUID-TURBINE.

1,065,316.

Specification of Letters Patent.

Patented June 17, 1913.

Application filed January 20, 1913. Serial No. 743,006.

To all whom it may concern:

Be it known that I, MARK A. ROSS, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Fluid-Turbines, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention has for its object the provision of a ring carrying the buckets of the turbine wheel and separably secured to the turbine wheel whereby the buckets may readily be assembled independently of the turbine wheel and may be readily removed and replaced without the necessity of returning the body of the turbine wheel to the factory.

In the preferred embodiment of the invention, the buckets are separately made and applied to the ring.

My invention will be fully explained by reference to the accompanying drawing showing the preferred embodiment thereof and in which—

Figure 1 is a sectional view of sufficient of a turbine to illustrate the nature of the invention; Fig. 2 is a sectional view on line 2 2 of Fig. 1; Fig. 3 is a perspective view of a bucket; and Fig. 4 is a perspective view of the mounting ring with one bucket in position and a part broken away.

Like parts are indicated by similar characters of reference throughout the different figures.

The turbine structure includes a suitably supported main frame 1 having a stuffing box 2 through which the shaft 3 of the turbine wheel or rotor 4 projects. The frame 1 constitutes a portion of a housing for the wheel 4, a cap piece 5, which is secured to the frame 1, constituting a complementary housing portion. The cap piece 5 supports a bearing 6 for the shaft 3. The rotor 4 carries a ring 7 that is separably secured at a face of the rotor lying in its plane of rotation by means of a plurality of screws 8, this ring constituting a mounting ring for the turbine buckets 9. The turbine buckets are thus located to one side of the rotor and are substantially within its circle. The buckets are provided with rearwardly extending in-turned ears 10 that are assembled upon the ring, to which end the ring may be split at

one portion to permit of the access of the mounting portions of the buckets to the ring, the buckets being slipped along the ring as they are placed thereupon and projecting laterally from the outer side of the ring so as to be substantially within the circle of the rotor. By means of this construction the assembly of the turbine buckets and the turbine wheel 4 is facilitated. The turbine buckets may readily be replaced when required without the necessity of returning the complete wheel to the factory. The operating fluid, such as steam, is admitted to the turbine buckets through the primary nozzle 11, steam finding access to this primary nozzle through the steam pipe 12. The steam impinges upon the buckets to rotate the wheel 4 in a counter-clockwise direction, as seen in Fig. 2, the steam upon leaving the buckets being guided in its somewhat natural direction by means of the passage 13 in a secondary nozzle 14, the discharge end 15 of the secondary nozzle 14 being located to the rear of the primary nozzle in order that the steam may be permitted to have its somewhat natural direction of flow, the receiving end of the secondary nozzle passage 13 being located in position immediately to receive the steam supplied by the primary nozzle after it has passed from the buckets.

Those features involving other portions of the turbine beside the bucket are claimed in my co-pending applications Serial No. 750,850 filed February 26, 1913 and Serial No. 750,851, filed February 26, 1913, pursuant to a requirement of division of the present application.

While I have herein shown and particularly described the preferred embodiment of my invention I do not wish to be limited to the precise details of construction shown as changes may readily be made without departing from the spirit of the invention.

Having thus described my invention I claim as new and desire to secure by Letters Patent the following.

1. A turbine including a turbine wheel; buckets for the turbine wheel; and a mounting ring separably secured to the turbine wheel and to which mounting ring the buckets are separably secured, said buckets having rearwardly extending ears embracing the ring.

2. A turbine including a rotor; turbine buckets; and a mounting ring separably

secured to the rotor at a face thereof that lies in the plane of rotation of the rotor and upon which mounting ring the buckets are separably secured to one side of the rotor, the mounting ring and buckets having inter-connection permitting the buckets to be moved along the mounting ring, while supportingly engaged therewith, for the purpose of mounting and demounting the buckets.

3. A turbine including a rotor; turbine buckets; and a mounting ring carried by the rotor at a face thereof that lies in the plane of rotation of the rotor and upon the outer side of which mounting ring the buckets are separably secured to one side of the rotor and ring, the mounting ring and buckets having interconnection permitting the buckets to be moved along the mounting ring, while supportingly engaged therewith, for the purpose of mounting and demounting the buckets.

4. A turbine including a rotor; turbine

buckets; and a mounting ring carried by the rotor at a face thereof that lies in the plane of rotation of the rotor and upon the outer side of which mounting ring the buckets are separably secured to one side of the rotor and ring, said buckets having rearwardly extending ears embracing the ring.

5. A turbine including a rotor; turbine buckets; and a mounting ring separably secured to the rotor at a face thereof that lies in the plane of rotation of the rotor and upon the outer side of which mounting ring the buckets are separably secured to one side of the rotor and ring, said buckets having rearwardly extending ears embracing the ring.

In witness whereof, I hereunto subscribe my name this fifteenth day of January, A. D. 1913.

MARK A. ROSS.

Witnesses:

E. L. WHITE,
G. L. CRAGG.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."