

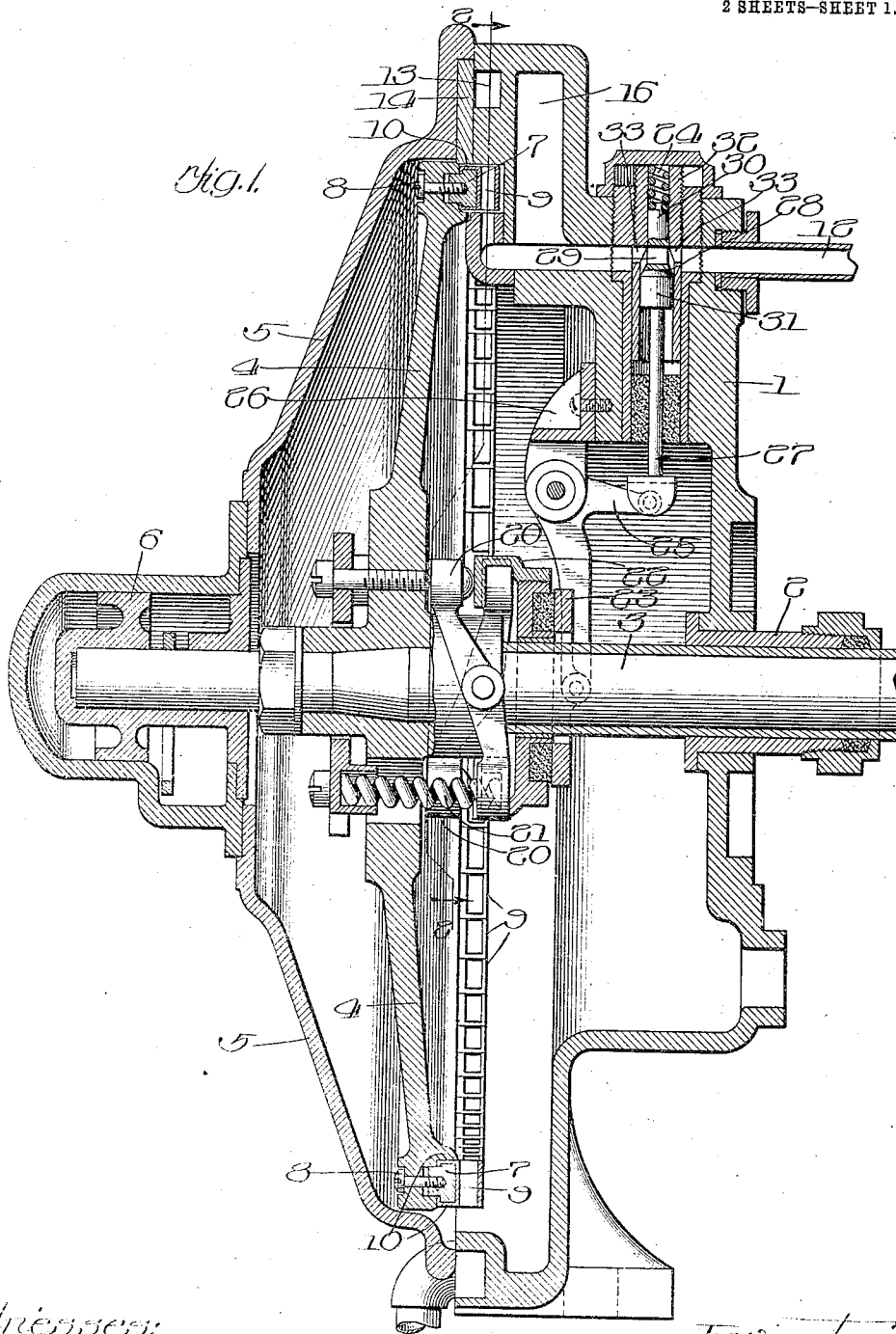
M. A. ROSS.
TURBINE.

APPLICATION FILED FEB. 26, 1913.

1,065,317.

Patented June 17, 1913.

2 SHEETS—SHEET 1.



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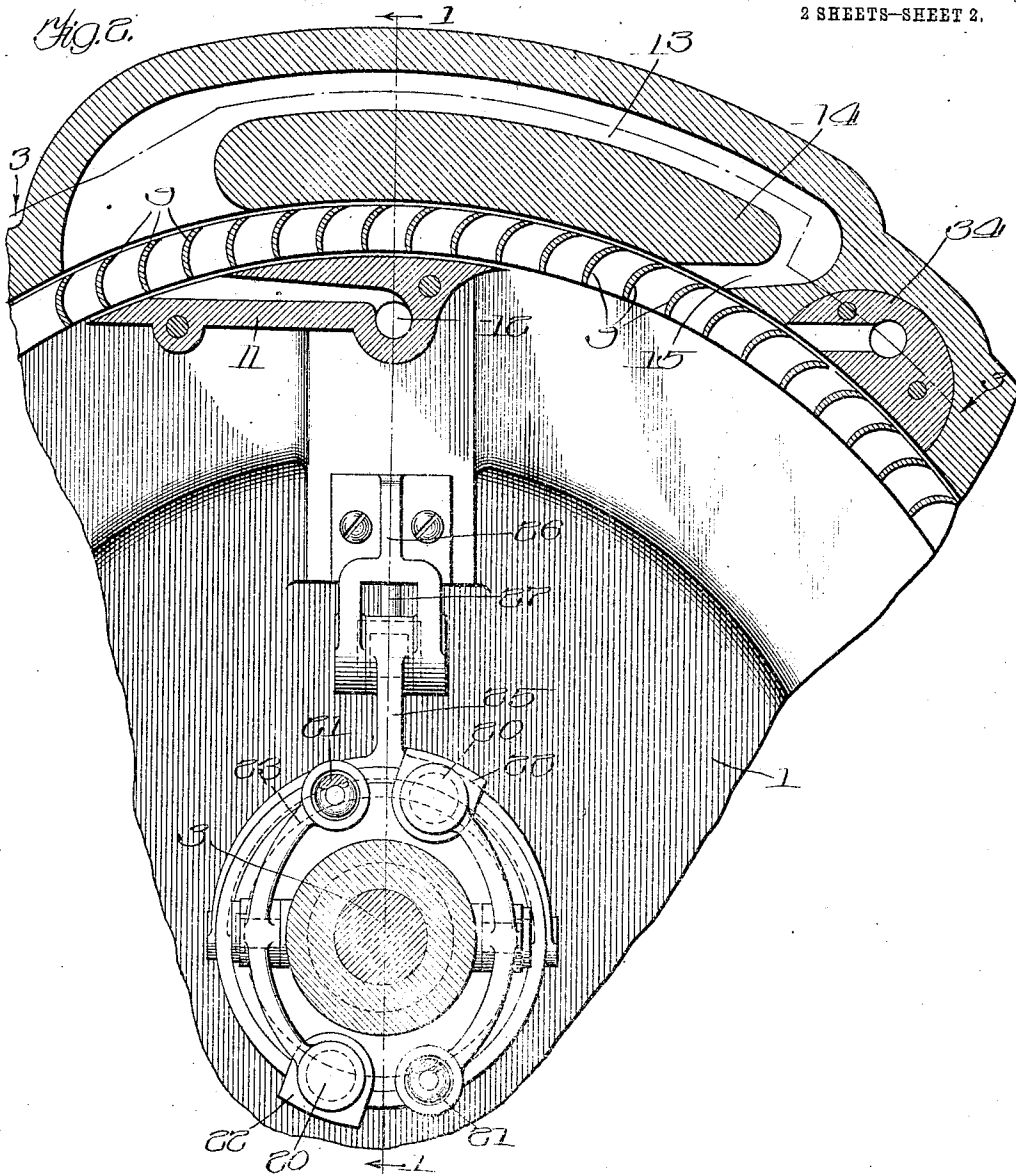
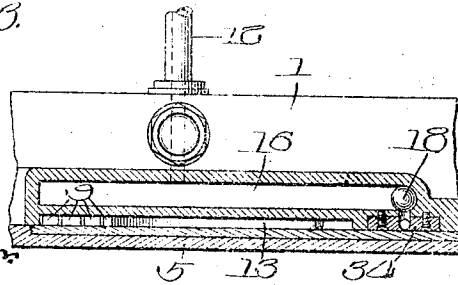


Fig. 3.



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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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TURBINE.

1,065,317.

Specification of Letters Patent. Patented June 17, 1913.

Original application filed January 20, 1913, Serial No. 743,006. Divided and this application filed February 26, 1913. Serial No. 750,850.

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 relates to fluid turbines, the present application being a division of my original application Serial No. 743,006, filed January 20, 1913, and will be fully explained by reference to the accompanying drawings, showing the preferred embodiment thereof, and in which—

Figure 1 is a view in sectional elevation, taken on line 1 1 of Fig. 2; Fig. 2 is a sectional elevation taken on line 2 2 of Fig. 1; and Fig. 3 is a sectional view on line 3 3 of Fig. 2.

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 thereto by means of a plurality of screws 8, this ring constituting a mounting ring for the turbine buckets 9. The turbine buckets are provided with rearwardly extending inturned 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. 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. The nozzle passage 13 is desirably formed directly in the casting of the main frame 1, in which casting there is desirably also provided a steam receiving space 16 closely approximating the position of the secondary nozzle and in communication with the pipe 12 whereby the secondary nozzle may be heated by the steam. In the case of operating fluid other than steam the temperature of the secondary nozzle is modified by the temperature of the operating fluid finding access to the space 16.

Any suitable form of governing mechanism may be employed. That shown includes a weighted lever 20 operating centrifugally, against spring 21, upon ring 22 that operates upon a non-rotating ring 23 against the spring 24. Lever 25 is pivoted upon bracket 26 and its lower end is articulated to the ring 23 and its upper end to the valve stem 27. The valve stem 27 carries a valve 28 having a passage 29 between guiding portions 30 and 31 that are received within a cylinder 32. Tube 32 has steam passages 33.

I have illustrated an auxiliary nozzle 34 which does not form the subject matter of the claims in the present case and will not, therefore, be described herein.

The governing mechanism is claimed in my co-pending application Serial No. 750,851, filed February 26, 1913 and the bucket structure is claimed in my original application Serial No. 743,006, filed January 20, 1913, of which latter application the present application is a division.

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:

5 A turbine including a turbine wheel; a primary nozzle for directing driving fluid upon the turbine wheel; a secondary nozzle whose receiving end is in position to receive the fluid passing from the primary nozzle after such fluid has been discharged from the turbine wheel and whose discharge
10 end again directs the driving fluid upon the turbine wheel; a fluid receiving portion closely approximating the position of the secondary nozzle and in communication with the source of driving fluid whereby the

temperature of the secondary nozzle may be 15 modified by the temperature of the driving fluid; and a supporting frame for the turbine wheel, in which supporting frame the passage way of the secondary nozzle and the fluid receiving space of the fluid receiving 20 portion are formed.

In witness whereof, I hereunto subscribe my name this twenty-fourth day of February A. D., 1913.

MARK A. ROSS.

Witnesses:

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