No. 853,124. PATENTED MAY 7, 1907.

E. L. SCHAUN.

TURBINE.

APPLICATION FILED APR. 14, 1905.

2 SHEETS—SHEET 1.

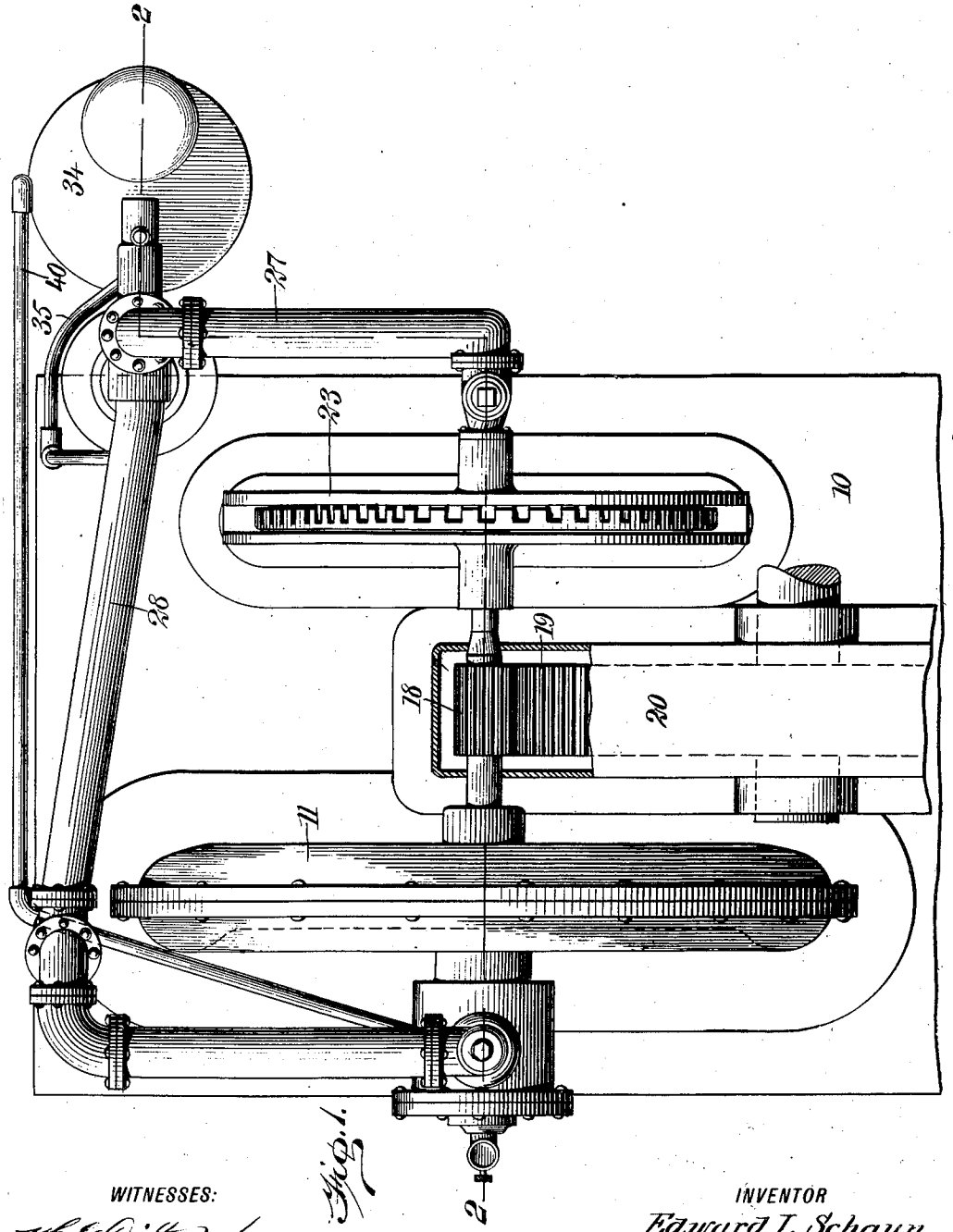

Fig. 1.

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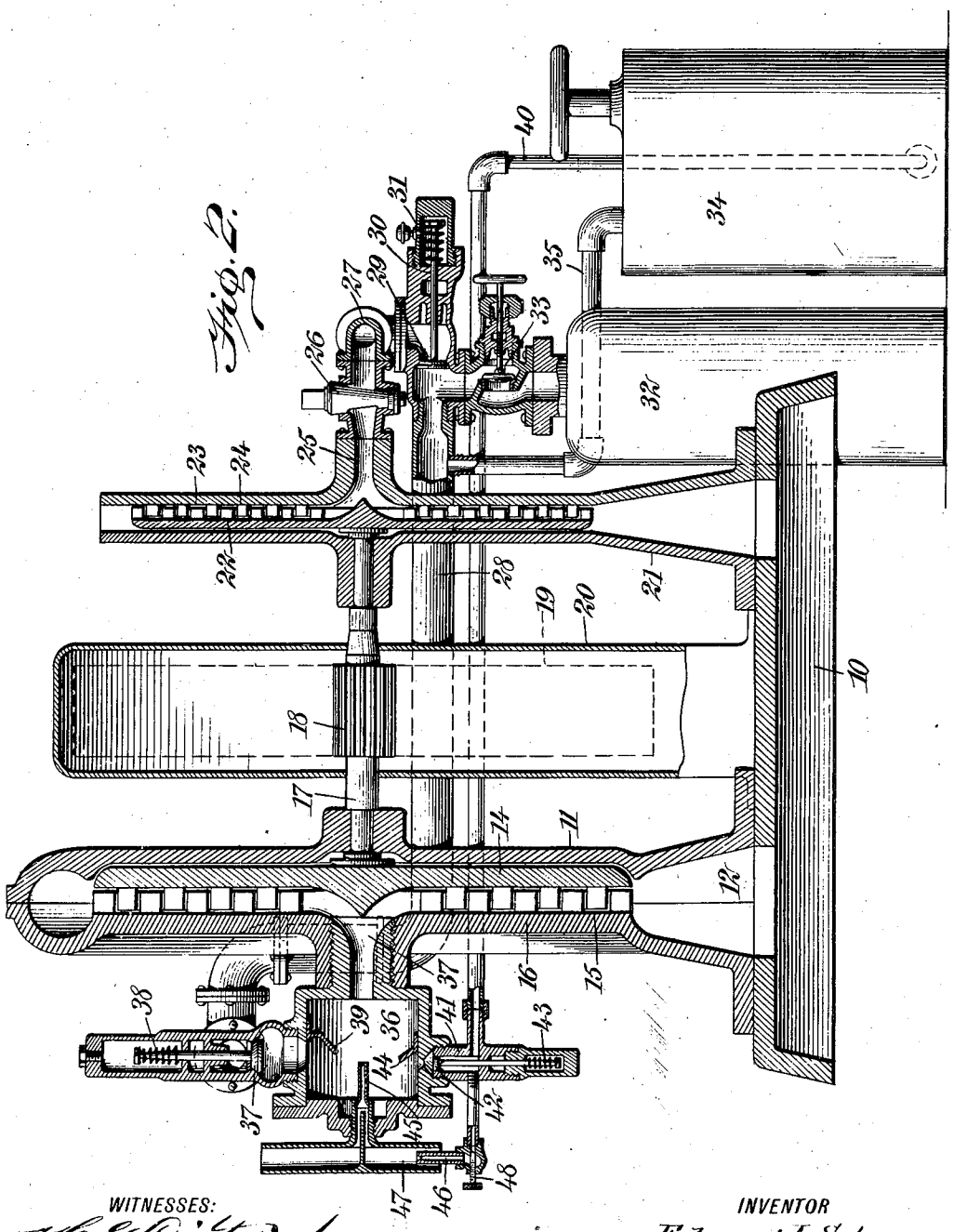
2 SHEETS—SHEET 2.

Fig. 2.



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TURBINE.

No. 853,124. Specification of Letters Patent. Patented May 7, 1907.

Application filed April 14, 1905. Serial No. 255,492.

To all whom it may concern:

Be it known that I, EDWARD LEOPOLD SCHAUN, a citizen of the United States, and a resident of Baltimore, in the State of Maryland, have invented a new and Improved Turbine, of which the following is a full, clear, and exact description.

The invention relates to certain peculiar features of construction and organization residing in a turbine operated by the expansive force of the gases of combustion.

Broadly stated, the apparatus involves a turbine of the radial flow type and which is coupled with an air compressor arranged to store air under pressure, which air is utilized for starting the turbine, and when that operation becomes normal the air is employed to mix with a fuel forming a combustible compound which is burned in the combustion chamber of the apparatus, the expanding gases resulting from such combustion being directed through the turbine to drive the same.

The invention resides in certain special features of construction and combinations of parts, which will be fully set forth hereinafter and particularly pointed out in the claim.

Reference is to be had to the accompanying drawings which illustrate as an example one manner in which my invention may be practically embodied, in which drawings like characters of reference indicate like parts in the several views, and in which

Figure 1 is a plan view of the form of the apparatus involving a radial flow working turbine, and a radial flow turbinal compressor; and Fig. 2 is a vertical section of the same on the line 2—2 of Fig. 1.

The apparatus is provided with a base 10, on which is arranged a stator 11 of the radial flow working turbine, said stator exhausting the waste gases through the hollow base 12 of the stator. 14 indicates the rotor of the turbine which is fitted with concentric rows of buckets 15 lying between concentric rows of vanes 16 on the stator, the buckets and vanes being of the usual construction, and the motive gases being adapted to travel radially from the center of the turbine driving the rotor, as will be fully understood from the prior art.

17 indicates the shaft on which the rotor of the turbine is mounted. This shaft serves to transmit the effective work of the apparatus, and this is done preferably by a reducing gear comprising, as shown in Fig. 2, a pinion 18 on the rotor shaft meshing with the spur 19 mounted on the side thereof.

20 indicates a case for the gears. The shaft 17 serves also to drive the turbinal compressor, which comprises a stator 21 mounted on the bed 10 and open at its periphery to receive the air.

22 indicates the rotor arranged within the stator and provided with concentric rows of buckets 23 coacting with the vanes 24, of such form as will upon the movement of the rotor cause the air surrounding the compressor to be drawn in at the periphery of the stator and progressively advanced radially to the center thereof.

The stator 21 of the compressor has an axially located outlet 25 controlled by a cock 26. From the cock 26 a pipe connection 27 leads to an air pipe 28. This pipe is fitted with a puppet valve 29, the stem 30 of which has a spring 31 engaged therewith to hold the valve yieldingly seated. The valve 29 is arranged, however, to open into the pipe 28 and its connections by the air pressure developed in the conduit formed by the parts 25 and 27.

32 indicates an air reservoir which is in communication with the pipe 28, and this communication is controlled by a hand valve 33.

34 indicates a liquid fuel tank to the upper part of which the pressure in the pipe 28 is communicated by a pipe 35.

36 indicates the combustion chamber of the working turbine which communicates with the center of the stator by a throat 37. The air pipe 28 leads to the combustion chamber 36, the communication therewith being controlled by a puppet valve 37 which opens into the combustion chamber, and is yieldingly seated by a spring 38.

39 indicates a deflector or baffle which is placed in the combustion chamber opposite the outlet from the pipe 28, and which serves to deflect the entering air toward the igniting device, which will be hereinafter described. From the bottom of the liquid tank 34 a fuel pipe 40 passes, this pipe entering the bottom of the combustion chamber through a fitting or union 41 in which is placed a relatively small puppet valve 42 opening into the combustion chamber and yieldingly seated by a spring 43.

44 indicates a deflector placed in the combustion chamber opposite the fuel inlet and

serving the same purpose which is served by the deflector 39. As here shown the igniting device is of the incandescent tube type.

45 indicates a tube which is projected into the combustion chamber, and against which the air and fuel are directed as they enter the combustion chamber. The entering air and atomized fuel form a combustible mixture which is instantly ignited by the hot tube 45. The burning of the fuel brings about a rise in pressure and temperature of the gases, and the expanding gases passing through the turbine drive the rotor and its attachments. The tube 45 is heated by a burner 46 and hood 47, which burner is fed from the connection 41 and controlled by a needle valve 48, as shown.

Having thus described the preferred form of my invention, what I claim as new and desire to secure by Letters Patent is:

In a turbine, the combination with a shaft, and a turbine thereon, of a combustion chamber secured to the casing of the turbine at the center thereof and communicating with the interior of the said casing by an unobstructed passage, said chamber having oppositely arranged inlet openings and an outwardly inclined deflector adjacent to each opening, an igniting device in the combustion chamber and to which the air and fuel are directed by said deflectors, a compressed air tank, a valved connection between the said tank and one of the inlet openings of the combustion chamber, a liquid fuel tank, and a valved connection between the said tank and the other inlet opening of the combustion chamber, substantially as shown and described.

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

EDWARD LEOPOLD SCHAUN.

Witnesses:

ROBERT H. REALL,

F. WILLIAM SCHAUN.