

Sept. 21, 1926.

1,600,733

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TOY TURBINE ENGINE

Filed April 28, 1924

Fig. 1

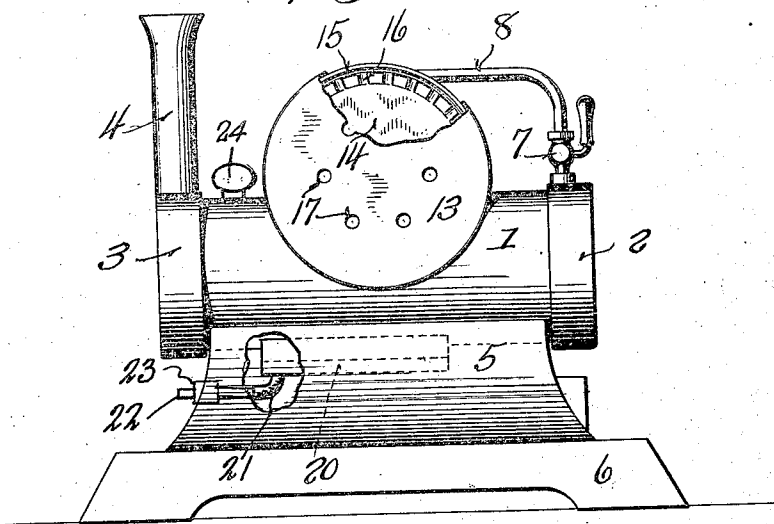
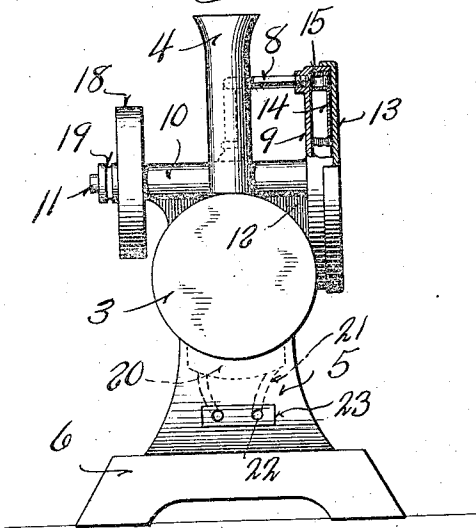


Fig. 2



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UNITED STATES PATENT OFFICE.

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TOY TURBINE ENGINE.

Application filed April 23, 1924. Serial No. 709,618.

This invention relates to toy turbine engines.

Objects of this invention are to provide a toy steam engine which may be made with a minimum of expense, which does not require extreme accuracy in its manufacture, and which may be most readily and simply produced.

Further objects are to provide a toy turbine engine in which the parts are so associated with the boiler that condensation is reduced to a minimum and in which the parts are so proportioned and occupy such a relative position, that complete symmetry both as to mechanical stresses and appearance is attained.

An embodiment of the invention is shown in the accompanying drawings, in which:—

Figure 1 is a side elevation of the engine with a part of the turbine casing broken away.

Figure 2 is a front view of the structure shown in Figure 1, with a part of the turbine in section.

The device comprises a cylindrical boiler 1 provided with end caps 2 and 3 and provided with a filling plug 24. From one of these end caps, for instance, the forward one 3, a dummy chimney 4 may extend upwardly. This boiler is carried by a hollow support 5 adapted to receive an electric heating element, and this support is preferably carried upon an ornamental relatively wide base 6 to attain the necessary security against tipping.

It is to be noted that the end caps are provided with flanges and consequently reinforce the boiler structure at the ends. Through one of these flanges a control valve 7 communicates with the interior of the boiler and a pipe 8 leads from such valve forwardly and laterally into the turbine casing. This turbine casing is provided with an inner hollow cup shaped portion 9 into which the pipe 8 is threaded, preferably adjacent its upper periphery. This casing is rigidly attached to an elongated transverse bearing 10 which carries the turbine shaft 11. A web 12 is joined to the bearing and to the body portion 1 of the boiler to secure the utmost rigidity. The casing is completed by an outer cap 13 which is pro-

vided with flanges pressed or otherwise secured to the flange of the main cup shaped portion 9 of such casing. A turbine wheel consisting of a disk 14 is rigidly carried by the shaft 11 and mounted between the portions 9 and 13 of the casing. It is provided with a peripheral reinforcing rim 15 and with a plurality of transverse dished vanes 16 carried between the body portion and such peripheral rim. It is to be noted from Figure 2 that the pipe 8 discharges straight across the turbine or rotor and directly against the vanes 16. The steam passes between the disk 14 of the rotor and the outer casing 13 and escapes through a plurality of apertures 17 formed in such outer casing. A fly wheel 18 and a small pulley 19 are rigidly attached to the other end of the shaft 11 from the turbine rotor.

It is to be noted that the boiler is provided with an electric heater 20 mounted thereunder which is connected by means of conductors 21 to prongs 22 carried by an insulating member 23 mounted on the support 5.

It will be seen that a turbine toy engine has been provided which attains the utmost simplicity in construction, which has the parts so positioned that maximum stability is attained as, for example, by locating the center line of the shaft 11 in the central vertical plane of the boiler support and base.

It will further be seen that the necessity for reciprocatory parts, valves or oscillated cylinders is wholly avoided in this toy, and that a very smooth and rapid rotation of the apparatus is secured.

Although the invention has been described in considerable detail, it is to be understood that the invention may be variously embodied and is, therefore, to be limited only as claimed.

I claim:

A toy turbine engine comprising a tubular boiler, an elongated horizontal shaft carried thereby, a casing having a cup shaped inner portion carried by one end of said bearing, a steam pipe leading into the peripheral portion of said cup shaped casing and joined to said boiler, an outer casing closing said cup shaped casing and provided with a plurality of apertures therethrough, a shaft car-

ried by said elongated bearing, said casings extending downwardly adjacent one side of said boiler, and said cup-shaped casing and bearing being braced from said boiler, a disk
5 rotor rigidly carried by said shaft and positioned within said casing and having a plurality of vanes across which steam supplied by said pipe is adapted to pass, said shaft projecting through said bearing and out- wardly beyond the opposite end thereof from
10 said casing, and a fly wheel and pulley carried by the outer end of said shaft.

In testimony that I claim the foregoing I have hereunto set my hand at Manitowoc,
in the county of Manitowoc and State of
15 Wisconsin.

JOSEPH KOENIG.