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ELASTIC FLUID TURBINE

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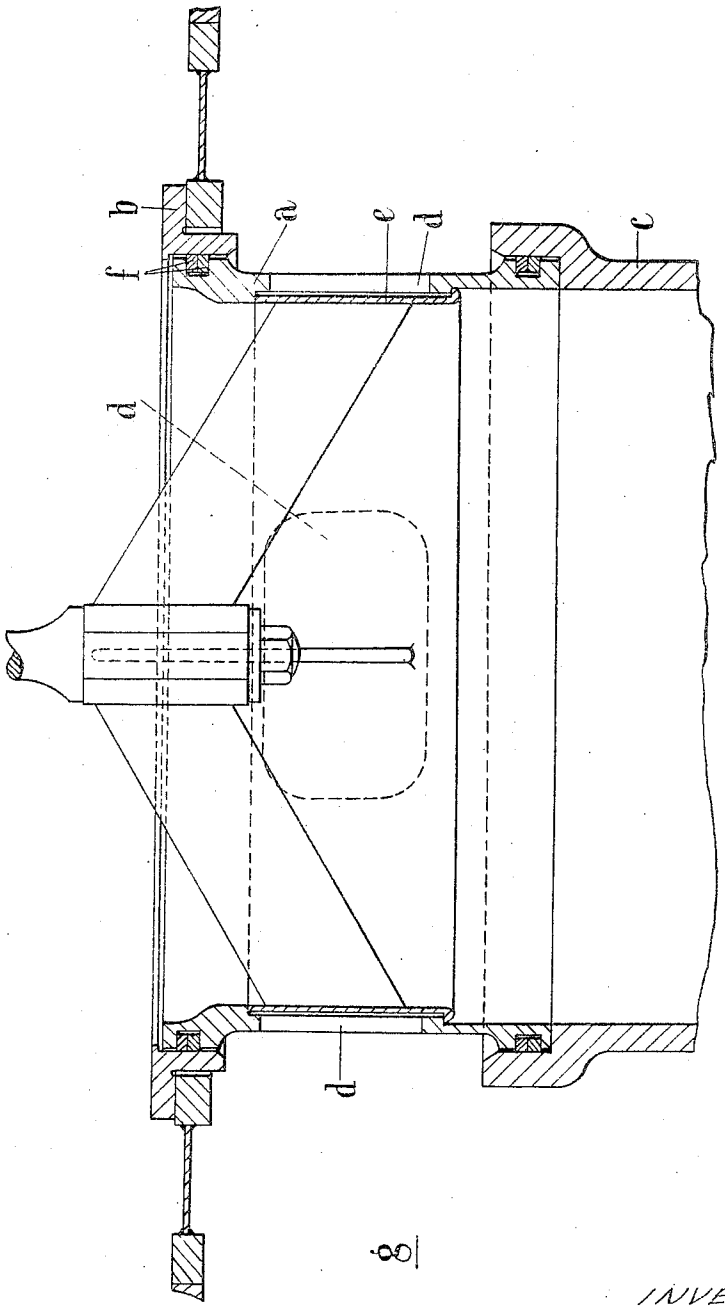

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ELASTIC FLUID TURBINE

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2 Claims. (Cl. 253—39)

1

This invention relates to elastic fluid turbines. Owing to the high temperature at which such turbines operate, considerable expansion of the casing takes place which is liable to impose severe stresses upon the turbine casings containing the rotors and upon pipes or other elements rigidly connected with such casing.

Means are proposed in co-pending application Serial No. 740,248 to minimise the above stresses comprising a sleeve element yieldably supported at its two ends, e. g. by a spigot and socket connection, by the casing and by the end of the piping or the like to which the casing is connected.

The object of the present invention is to provide modified arrangements thereof incorporating means whereby the elastic fluid may be caused to by-pass the turbine.

The invention consists in an elastic fluid turbine having features set out in the claims appended hereto.

The accompanying diagrammatic drawing illustrates in vertical sectional view part of the casing of an elastic fluid turbine embodying the present invention.

In carrying the invention into effect according to one convenient form as illustrated by way of example in the accompanying drawing, a yieldable sleeve *a* is provided between a flanged ring *b* to which an elastic fluid inflow pipe (not shown) is adapted to be connected and the rotor casing *c* of an elastic fluid turbine, said yieldable sleeve being furnished with a plurality of ports *d* adapted to be opened or closed by a slidable internal sleeve *e* fitted within the said yieldable sleeve.

The sleeve *a* is furnished with piston rings *f f* to ensure a fluid-tight connection to the flange *b* and to the rotor casing *c*. The inner sleeve *e* is actuated by a power piston (not shown) operated by the admission of air or other fluid, e. g. the working fluid, this fluid being admitted to either side of the piston according to whether the valve is to be opened or closed.

With the valve in the closed position as shown, the working fluid is permitted to pass through

2

the pipe flange *b* to the rotor casing *c* and with the valve in the open position the turbine is by-passed by way of the ports *d* since, when the valve is open, the elastic fluid may pass directly to the outflow space *g* defined externally by an outer casing member *h* and internally by the rotor casing *c*.

In applying the invention in one form to a gas turbine having two turbines of which one drives the compressor or compressors and exhausts to the other (the power turbine), either directly or through a combustion chamber, an inner sleeve and valve are fitted in one or in each supply pipe of the power turbine, and is preferably arranged to open downwards so that when starting up the valve will automatically open under its own weight and thus by-pass the power turbine even though pressure fluid is not available to operate the valve operating piston.

I claim:

1. An elastic fluid turbine incorporating an outer casing, elastic-fluid-inlet-pipe-connecting means attached thereto, a rotor casing within and spaced apart from said casing, a sleeve element yieldably supported at one end in said pipe-connecting means and at the other end in said rotor casing, ports in said sleeve element communicating with the elastic fluid outflow space and an inner slidable sleeve in said sleeve element for controlling the opening and closing at will of said ports.

2. An elastic fluid turbine as claimed in claim 1 wherein said sleeve element is supported in said rotor casing by means of a spigot and socket connection.

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The following references are of record in the file of this patent:

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