Nov. 30, 1954 J. L. GRAY 2,695,494

POWER INPUT CONTROL MECHANISM FOR LINKING TURBINE ACCESSORY DRIVE TO REACTION TYPE ENGINES

Filed Dec. 27, 1950

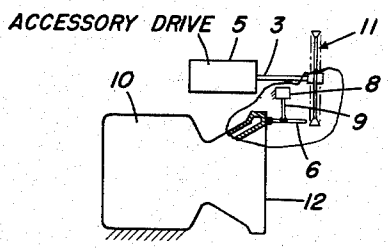


FIG. 1

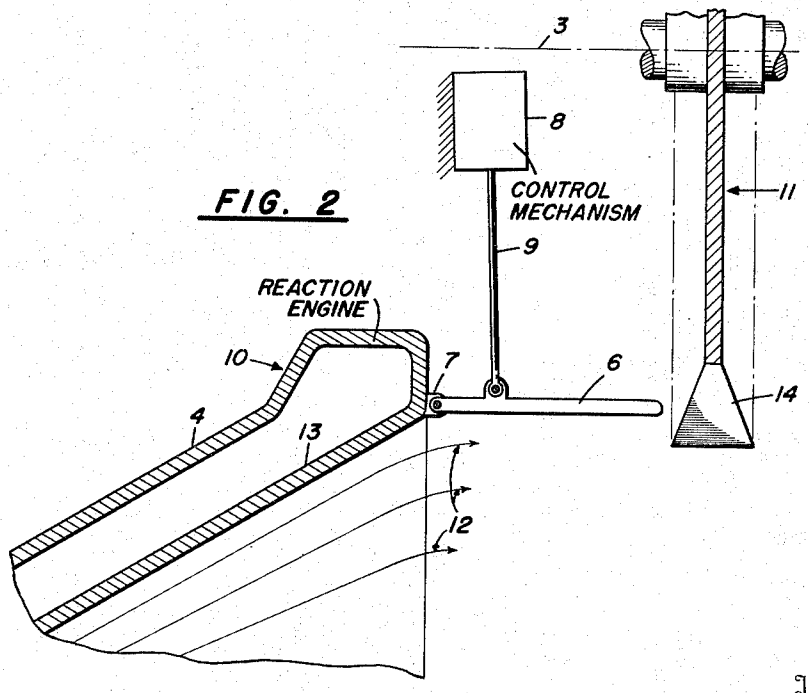


FIG. 2

Inventor
JOSEPH L. GRAY

By F. J. Schmett
Walter S. Pavel
Attorneys

United States Patent Office 2,695,494 Patented Nov. 30, 1954

2,695,494

POWER INPUT CONTROL MECHANISM FOR LINKING TURBINE ACCESSORY DRIVE TO REACTION TYPE ENGINES

Joseph L. Gray, St. Joseph, Mo., assignor, by mesne assignments, to the United States of America as represented by the Secretary of the Navy

Application December 27, 1950, Serial No. 202,957

1 Claim. (Cl. 60—35.6)

This invention relates to reaction power apparatus and more particularly to reaction power apparatus having mechanism for linking a turbine accessory drive to a reaction type engine.

It has frequently been found desirable in the use of reaction type engines to employ a turbine accessory drive. Prior art devices and methods for adjusting the power applied to the turbine usually employ a turbine so mounted with respect to the jet motor that the turbine runner may be moved laterally to the axis of the jet blast to dip the blade further into the blast for greater power, or to remove it from the blast for a decrease of power. This requires an adjustable mounting for the turbine and the associated equipment, such as pumps that depend upon the turbine for power, flexible high pressure metal tubing, and control mechanism for moving the turbine blades relative to the jet.

The apparatus embodying the instant invention overcomes the aforementioned disadvantages by the use of a fixed mounting of the turbine relative to the jet motor. The turbine blade, or runner, is inserted in the jet blast so that the peripheral portion of the blade is in the jet stream. The axis of rotation of the blade is fixed with respect to the jet motor so that the turbine may be rigidly mounted with respect thereto.

Accordingly, it is a primary object of the invention to provide new and improved reaction power apparatus.

Another object is to provide new and improved power input control mechanism.

Other objects and advantages will become apparent after a consideration of the following specification when taken in connection with the accompanying drawing, in which:

Fig. 1 is a schematic view of a reaction engine and accessory drive constructed according to the present invention; and

Fig. 2 is a fragmentary view on an enlarged scale, partly in section, of a portion of the apparatus of Fig. 1.

Referring now more particularly to the drawings for a more complete understanding of the invention, there is shown a reaction type engine generally designated by the reference numeral **10**, and having an exhaust vent with inner and outer walls **13** and **4** respectively, and, when in operation, delivering an exhaust gas stream or blast **12**. Hingedly or otherwise suitably connected to the vent by

suitable swivel joint **7** is a tab or vane **6**, connected by push rod **9** to a tab position control mechanism **8**, which may be of any convenient design, such for example as a hydraulic operated device or electrically operated step solenoid device. The device **8** is fixed with respect to engine **10**. Suitably mounted, and fixed with respect to motor **10**, is an accessory device generally designated by the reference numeral **5**, and which may be a generator. Device **5** has a turbine runner **11** which has an axis of rotation **3**, and which has blades **14** for receiving power from the jet blast **12**. Preferably the blades are so constructed as to minimize heat conduction.

In the operation of the above described mechanism, movement of the tab or vane **6** in response to control **8** changes the volume of gas passing thru turbine **11**, thereby controlling the power supplied to accessory device **5**.

Obviously many modifications and variations of the present invention are possible in the light of the above teaching. It is therefore understood that within the scope of the appended claim the invention may be practiced otherwise than as specifically described.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

Reaction power apparatus of the character disclosed comprising in combination a reaction engine having an opening at the after end through which a stream of propulsive gases is discharged during operation; an accessory driving means including a turbine runner mounted at one side of and to the rear of the opening with its axis of rotation parallel to the longitudinal axis of the engine, said runner having vanes about its periphery disposed in the gas stream; and control means for selectively directing the impinging gas stream over a greater or lesser area of the vanes, thereby imparting a greater or lesser rotative force to the runner, said control means including a tab spanning the distance between the opening and the vanes with one end hinged to the engine adjacent the opening and the other end free, a position control mechanism having a push rod pivoted to the upper surface of the tab, whereby upon actuation of said mechanism said push rod moves the free end of the tab toward or away from the center of rotation of the runner thus directing the gas stream over a greater or lesser area of the vanes.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,356,557	Anxionnaz et al.	Aug. 22, 1944
2,375,852	Kilchenmann	May 15, 1945
2,397,941	Birkigt	Apr. 9, 1946
2,435,836	Johnson	Feb. 10, 1948
2,498,910	Camfield	Feb. 28, 1950
2,507,970	Goddard	May 16, 1950
2,523,009	Goddard	Sept. 19, 1950
2,562,742	Rowe et al.	July 31, 1951
2,569,497	Schiesel	Oct. 2, 1951