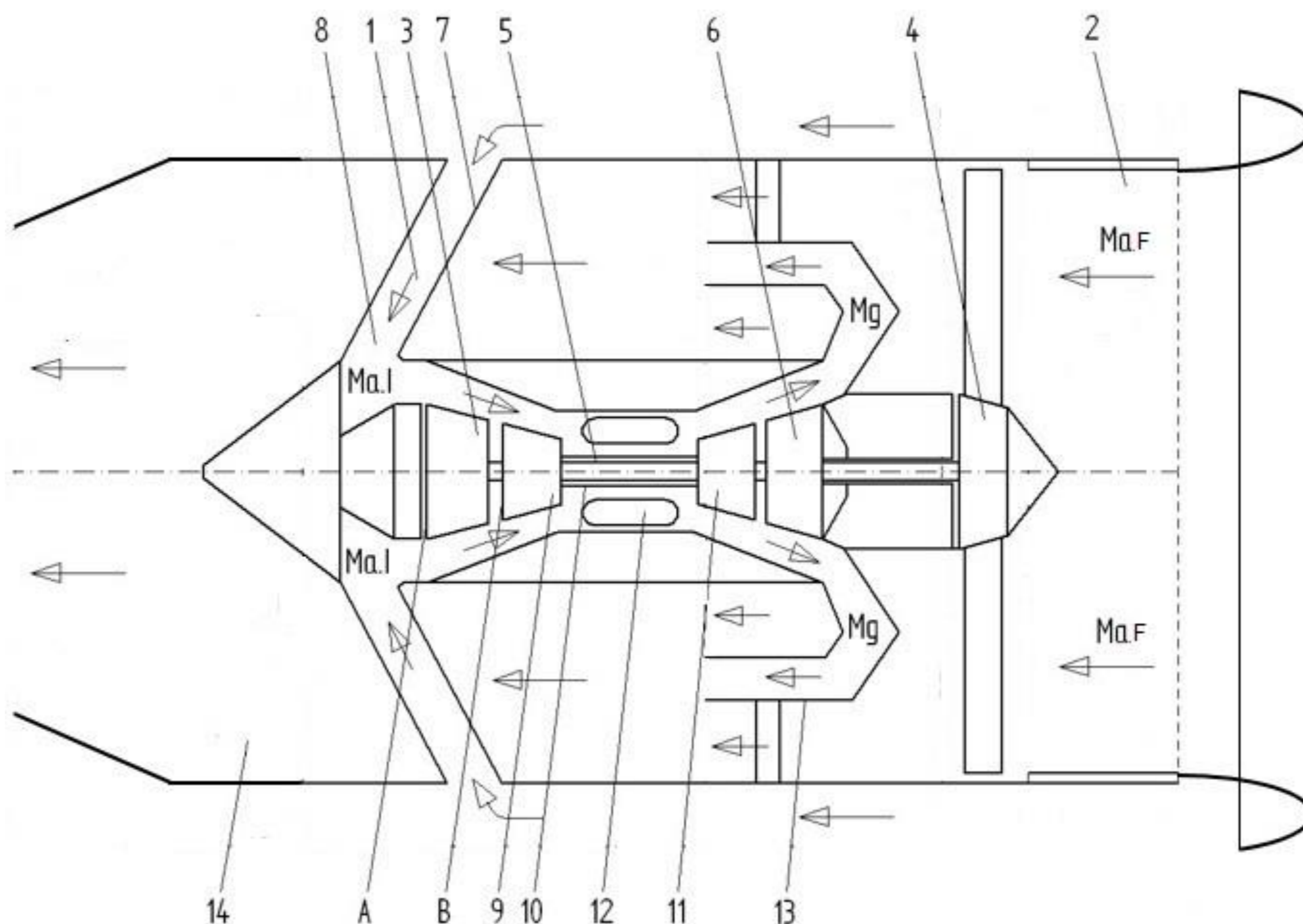


General Description:

The invention is referring to a new turbofan engine model, with a specific gasodynamic and spool configuration, a mixed flow turbofan, where the air mass for the primary flow is dragged separately than the air mass for the secondary flow, on different directions, and from different engine rotors, designed to increase the thrust, to reduce the engine noise level, and to reduce the specific fuel consumption.

Technical Description:

The mixed turbofan is a two spool engine configuration, with a low pressure spool **A**, formed by a low pressure turbine **6** that drives the low pressure compressor **3** and the fan **4**, and a high pressure spool **B**, formed by a high pressure turbine **11** that drives only the high pressure compressor **9**. The mixed turbofan engine, with primary reverse flow, has a specific intake configuration. The engine contains the intake **1** for the primary flow, and the intake **2** for the secondary flow. The air mass $Ma.I$ for primary flow is dragged at an angle direction, through the profiled mounts **7**, by the low pressure compressor **3**. The compressed air, by low and high compressor, mixed with the fuel, is burned in the combustor chamber **12** and produces combustion gases that are expanded into the high turbine **11** and low turbine **6**. The gases mass Mg are discharged, through the reverse profiled mounts **13**, on the secondary flow. The air mass for secondary flow $Ma.F$ is dragged, on axial direction, by the fan rotor **4**.



Particularities:

- 1.The increasing of engine thrust is performed by increasing the air mass of secondary flow.
- 2.The low pressure spool **B** has a typical configuration; the low pressure turbine **6** is mounted at the back of the fan **4**.
- 3.The primary flow has a reverse flow direction, by discharging the primary flow on the secondary flow.
- 4.The engine pressure ratio is only the compressor ratio because the fan and the compressor has different intakes.
- 5.Because the fan overall pressure ratio does not participate to the engine pressure ratio, the fan can be designed for a lower pressure ratio and a higher air mass flow, that means a higher diameter and a lower fan speed.
- 6.Currently a similar technical solution of invention, about gasodynamic and spool configuration, was applied for GE Catalyst turboprop, an advanced engine patented by General Electric engine manufacturer

Advantages: The new turbofan type provides some advantages over the classical turbofan, including:

- 1.The fan use all the air mass for the thrust, because the fan air mass is not divided as in classical turbofan case.
- 2.The turbofan has a higher bypass ratio, because the inlet of secondary air flow is separated from the primary flow.
- 3.The noise level is reduced because the hot gases mass of the primary flow are discharged in a cold bigger air mass of the secondary flow.
- 4.Following a global calculation, in some ideal conditions, it is determined that:
 - the thrust increases up to $\approx 10 \div 20 \%$
 - the specific fuel consumption decreases up to $\approx 5 \div 10 \%$
 - the noise level decreases up to $\approx 5 \%$