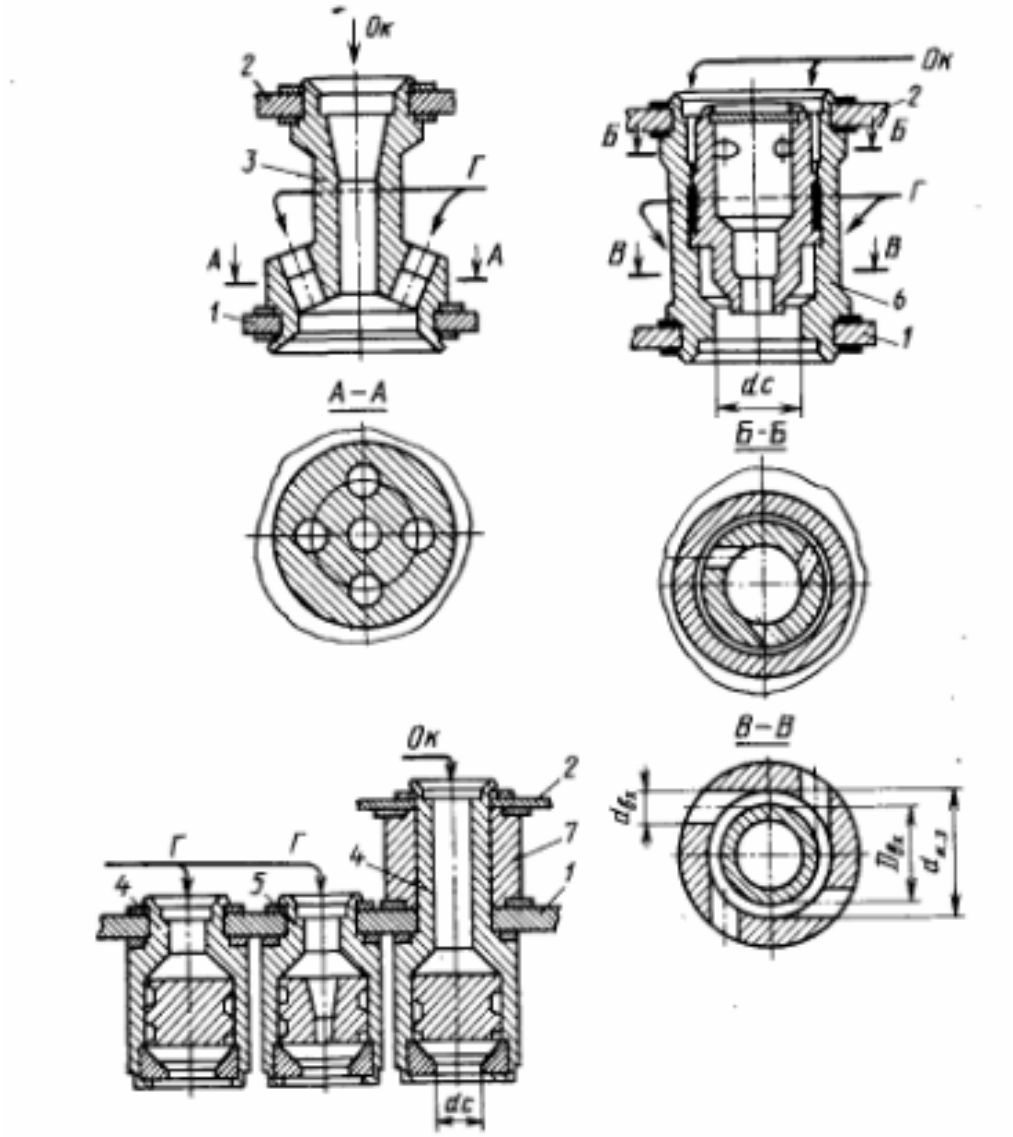


Alternatives of design of fluid-flow injectors and their joints with the plates:

1 - the front plate (forward dome);

2 - the middle plate (partition);

3 - the bicomponent spray injector;

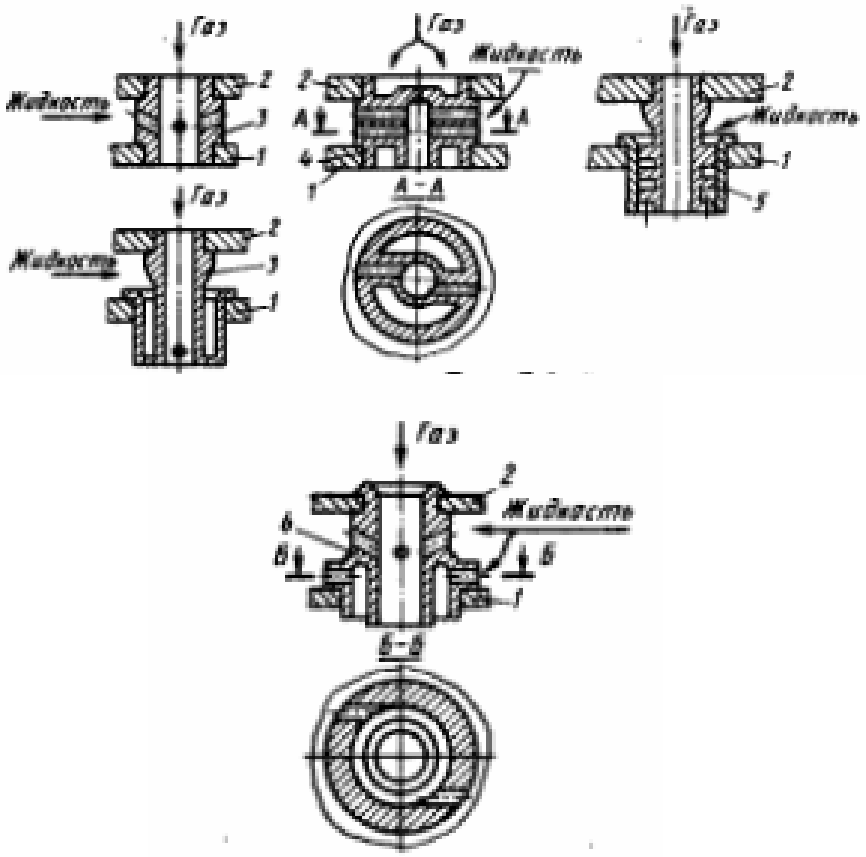
4 - a unicomponent swirl-type injector with a vortex generator (screw);

5 - the unicomponent spray -centrifugal (combined) injector;

6 - a bicomponent swirl-type injector with tangential holes;

7 - a distance sleeve;

$d_{кз}$ - diameter of the chamber of curling.



Alternatives of design of gas-liquid injectors and their joint with the plates:

1 - the front plate;

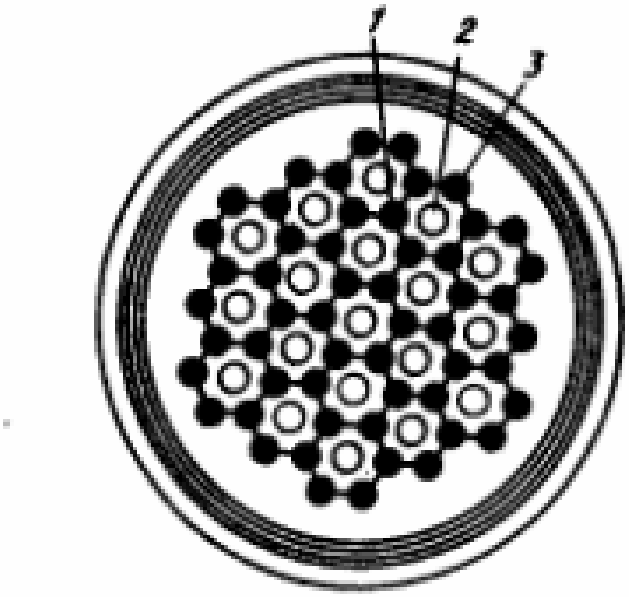
2 - the middle plate;

3 - the spray -spray injector;

4 - a spray -swirl-type burner with tangential holes;

5 - a spray -swirl-type burner with screw vortex generator;

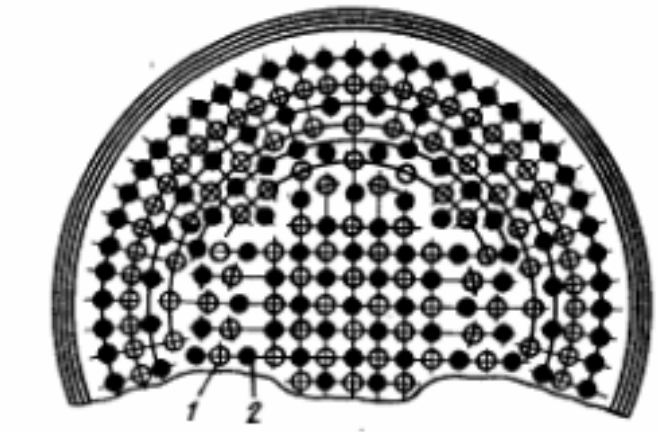
6 - two- cascade (combined: a first cascade – gas-liquid the spray -spray injector; the second cascade - fluid-flow centrifugal with tangential holes) injector



Cellular arrangement of injectors:

1 - spray -swirl-type burners;

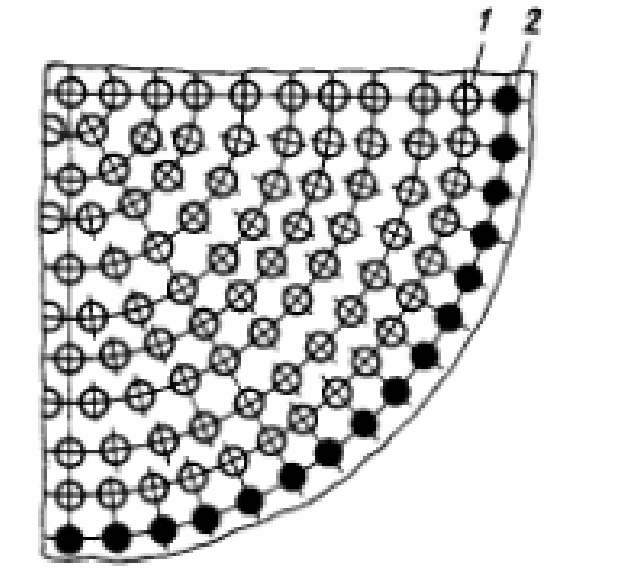
2, 3 – swirl-type burners.



Chess arrangement of injectors with transition to a round:

1 - an injector of oxidizing agent;

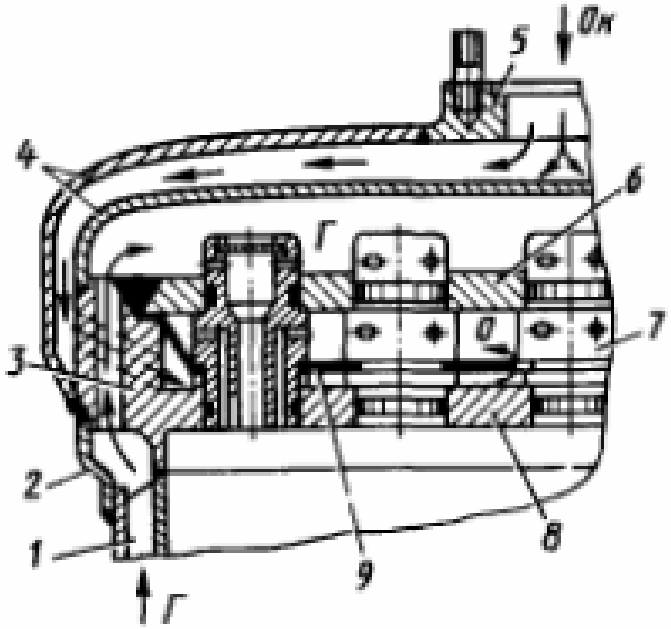
2 - an injector of fuel



Arrangement of injectors on concentric rounds:

1 - a doublet injector;

2 monopropellant injector



The head with doublet injectors:

1 - a combustor casing;

2 - a connective ring;

3 - a body of the mixing head;

4 - the outside end plates;

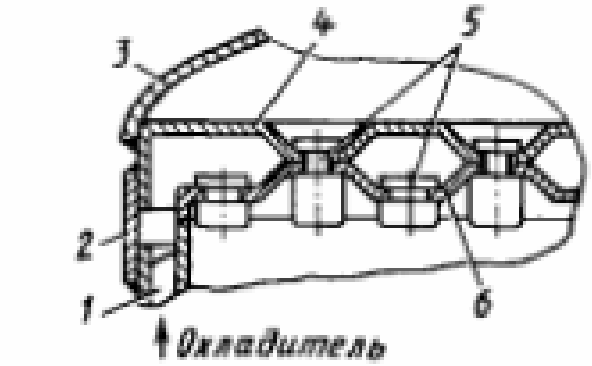
5 - flange of input of oxidizing agent;

6 - the middle plate;

7 - injectors;

8 - front plate;

9 - deflector



The head of the simplified design with monopropellant injectors:

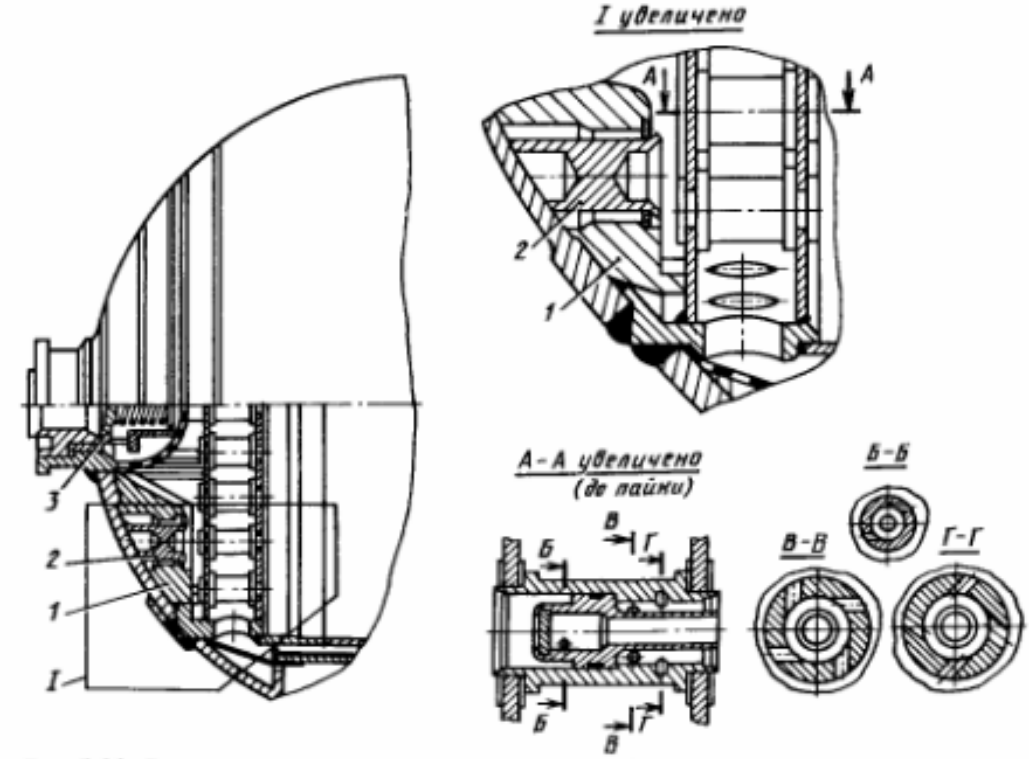
1 - a body of the chamber;

2 - a connective ring;

3, 4 - the outside and middle plates (aft dome and partition) ;

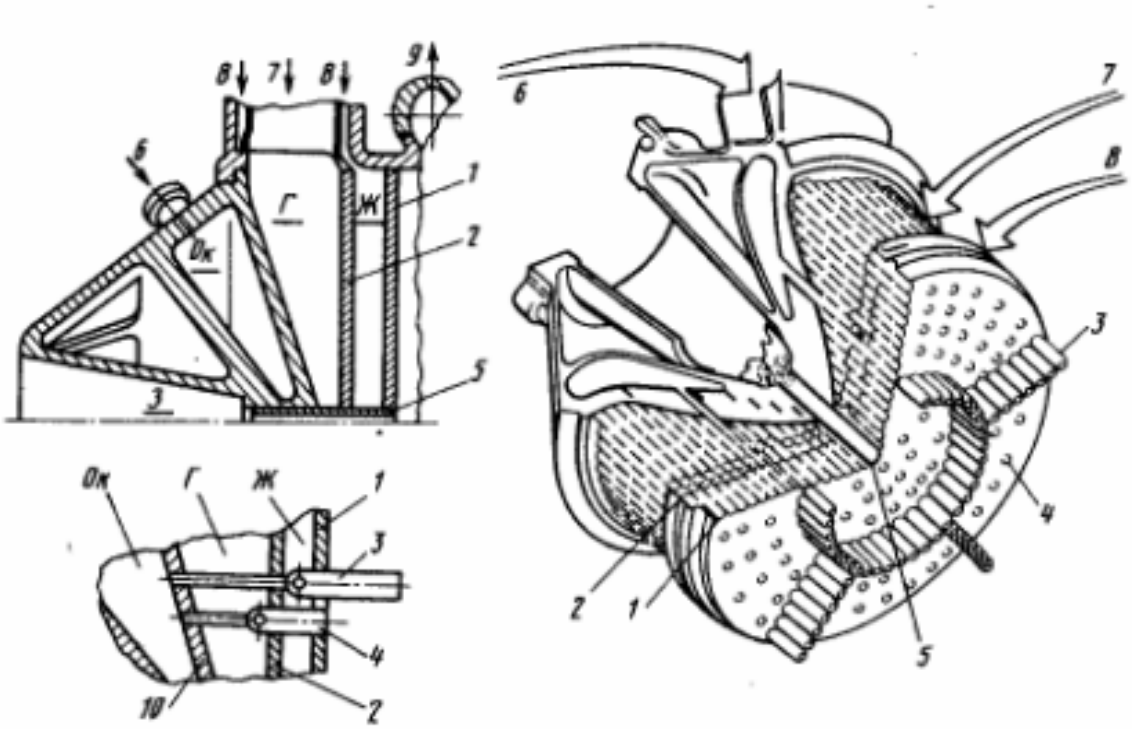
5 - injectors;

6 - the forward plate (forward dome)



The mixing head with a diminished volume of an outside cavity:

1 - filler of a cavity; 2 - a pin; 3 – a reverse valve



The head of SSME:

1 - forward dome;

2 - partition;

3 - the injectors which formed antipulsation partitions (baffles);

4 - main injectors;

5 - a channel for an ignition unit;

6 - input of oxidizing agent;

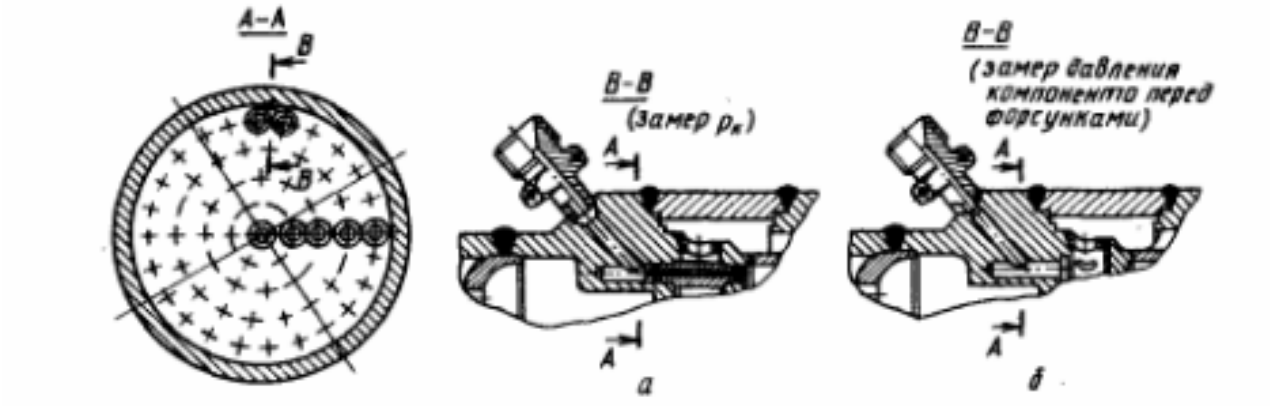
7 - gaseous feed from turbines;

8 - the hydrogen cooling gas pipes;

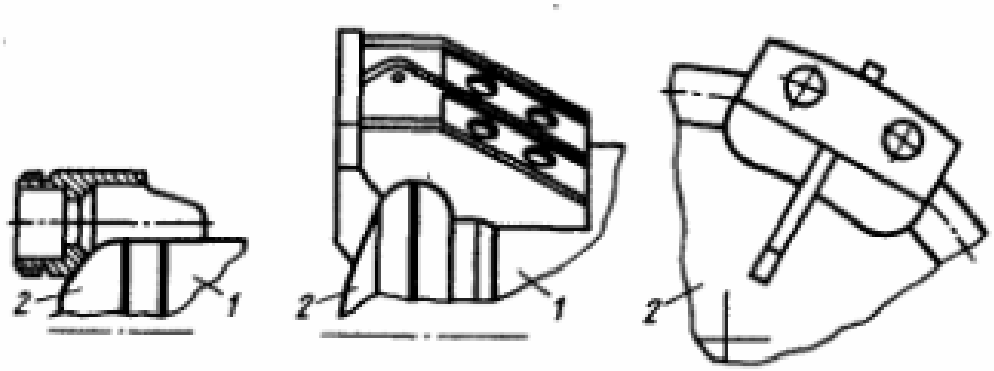
9 - removal of the cooling agent from a channel of the chamber;

10 - the outside cooling agent plate (aft dome);

Cavities: Ок - oxidizing agent; Г - gas is a lot of hydrogen; Ж - hydrogen; З - a cavity for the installation of the unit of a spark ignition



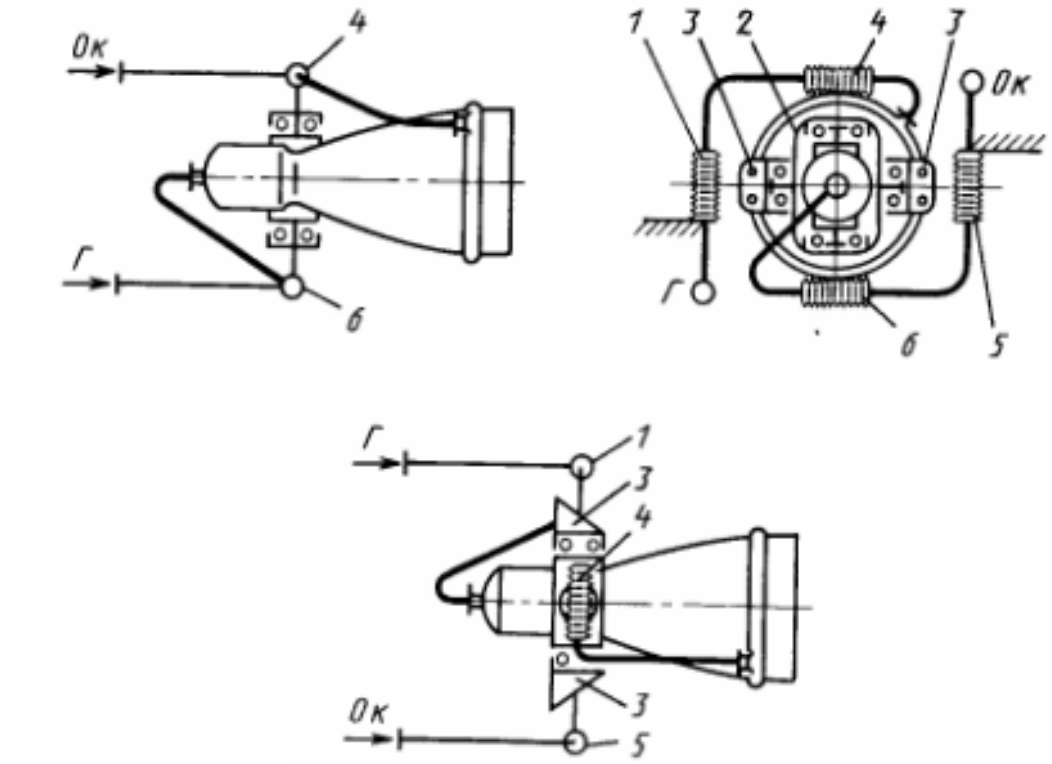
The installation of the pipe connector of pressure sensing



Mounting brackets of the chamber:

1 - a combustor camber;

2 - the mixing head



The gimbal mount of LPRE chamber without afterburning:

1 - a bellows c, fastened with a frame;

2 - a frame of the gimbal mount;

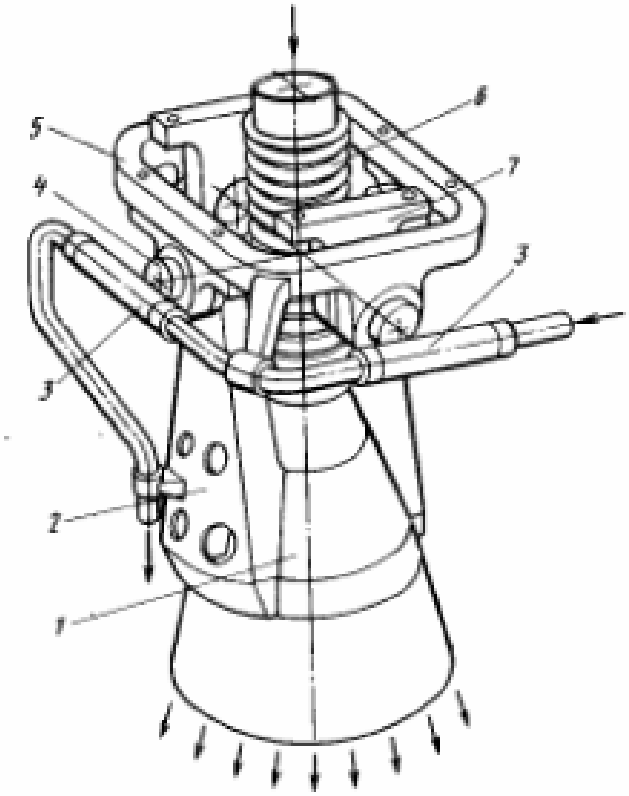
3 - a mounting bracket to a frame;

4 - a bellows of fuel, fastened with the chamber;

5 - the bellows of oxidizing agent fastened with a frame;

6 - the bellows of oxidizing agent fastened with the chamber;

Ок - oxidizing agent; Г - fuel



The gimbal mount of LPRE chamber with afterburning

1 - the chamber;

2 - a bracket (2 piece);

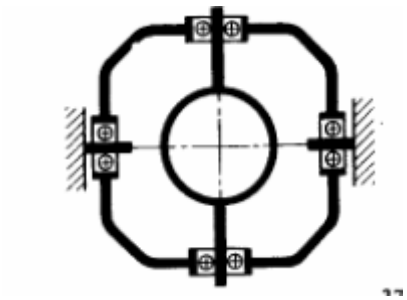
3 - a flexible element on the pipeline of a fuel component (2 piece);

4 - a journal (2 piece);

5 frame of the gimbal mount;

6 - a flexible element of the gas pipe;

7 - a journal of an engine frame (2 piece)



The principal diagram of the gimbal mount