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(56) Documents cited

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- GB 855859
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(58) Field of search
G6P

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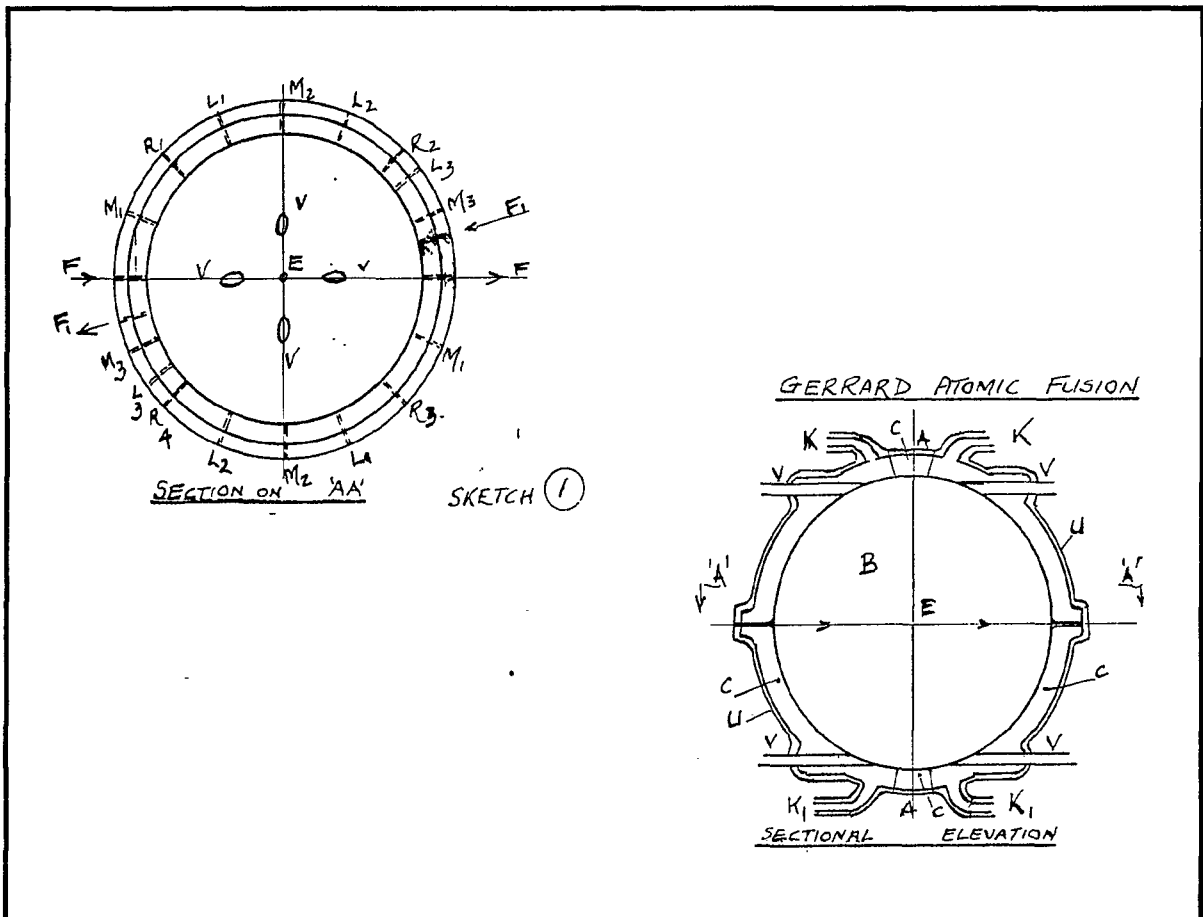
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None

(54) Atomic fusion, Gerrard atomic fusion

(57) The heat produced in a fusion reaction, which is induced in a chamber E by the interaction of laser beams and U.H.F. electromagnetic beams with atom streams, is transferred to a heat exchanger for electricity generation by a coolant flowing through a jacket U surrounding the chamber.

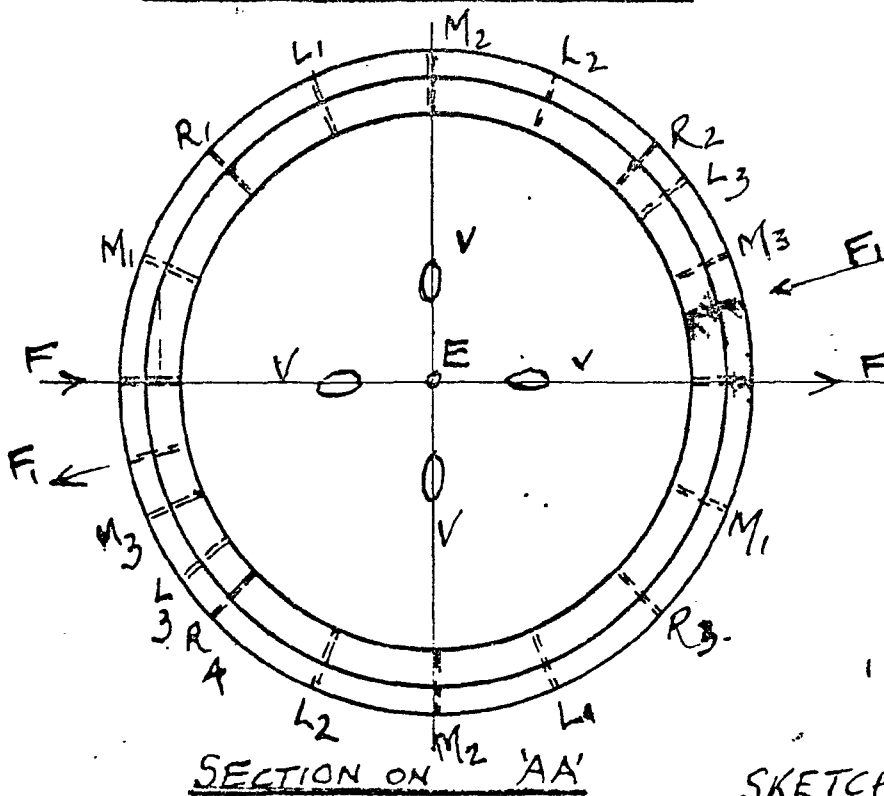
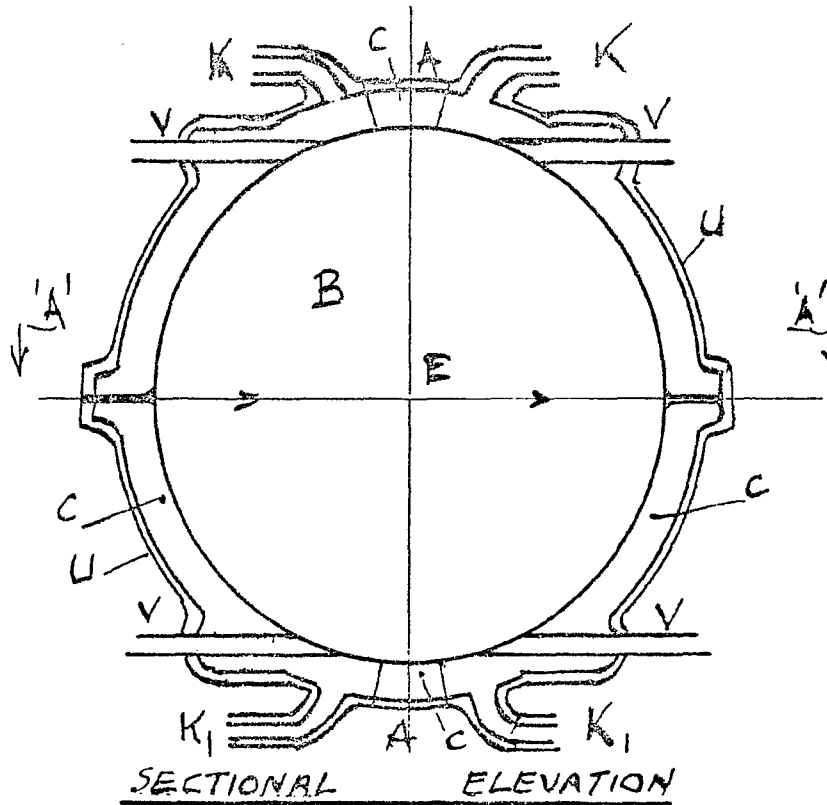


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GERRARD ATOMIC FUSION



SKETCH (1)

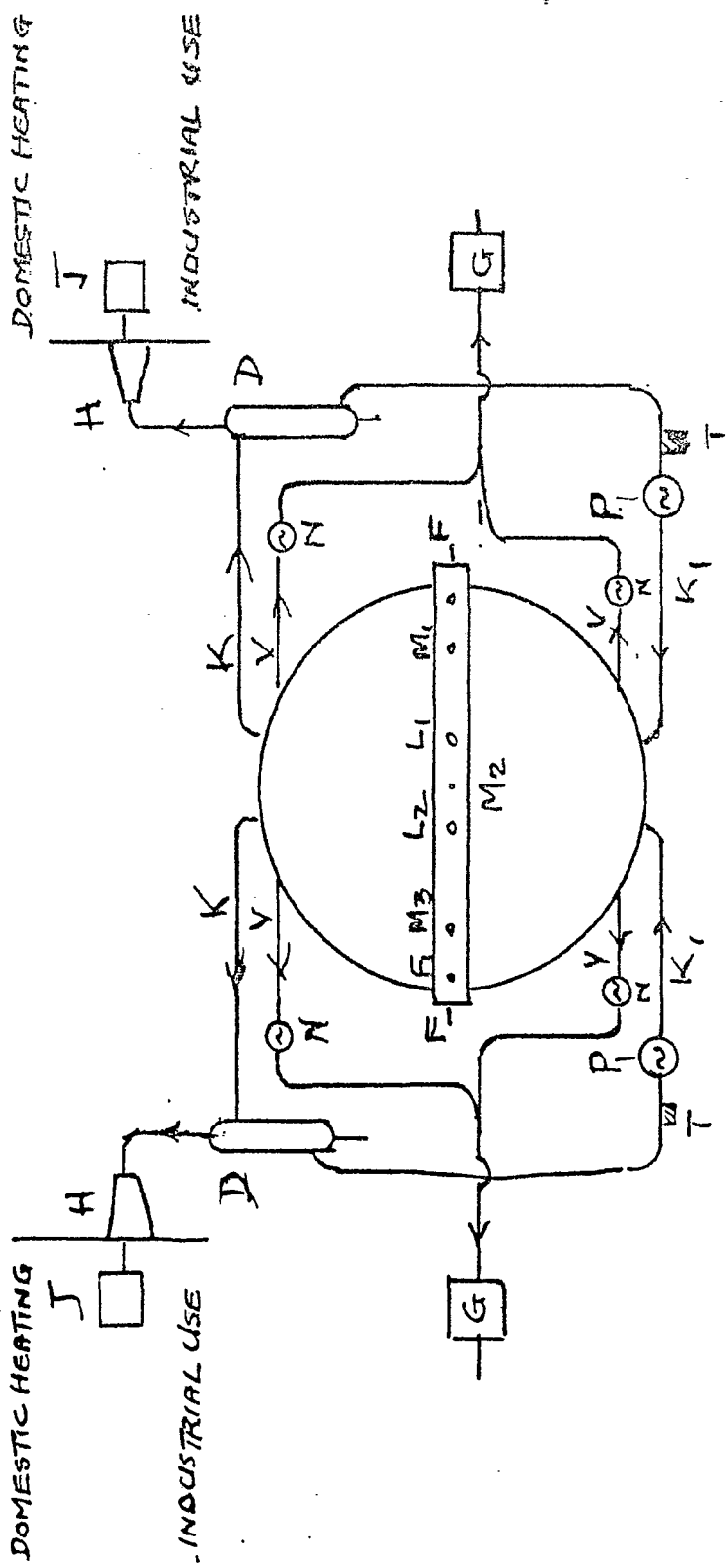


DIAGRAM OF CONNECTIONS

SKETCH 2

G. A. F. GERRARD ATOMIC FUSION.

PAT. No. 35925

SPECIFICATION

Gerrard atomic fusion, plant

5	Ref.	Description.	Sketch No.	5
	A	Access Door	No. 1	
10	B	Fusion Chamber Void	No. 1	10
	C	Coolant NaK	No. 1	
	D	Heat Exchanger	No. 2	
	E	Fusion Zone	No. 1	
	F	Atom Injector L To R	No. 1	
15	F1	Atom Injector R To L	No. 1	15
	G	Atom or Molecule Trap	No. 2	
	H	Steam Turbine	No. 2	
	J	Electrical Generator	No. 2	
	K	Coolant Outlet	No. 1 and No. 2	
20	K1	Coolant Inlet	No. 1 and No. 2	20
	L1	Laser Beam Injector	No. 1 and No. 2	
	L2	Laser Beam Injector	No. 1 and No. 2	
	L3	Laser Beam Injector	No. 1 and No. 2	
	M1	UHF Magnetic Injector	No. 1 and No. 2	
25	M2	UHF Magnetic Injector	No. 1 and No. 2	25
	M3	UHF Magnetic Injector	No. 1 and No. 2	
	N	Vacuum Pumps	No. 2	
	P	Coolant Pump NaK	No. 2	
	R1	Dividing Ribs	No. 1	
30	R2	Dividing Ribs	No. 1	30
	R3	Dividing Ribs	No. 1	
	R4	Dividing Ribs	No. 1	
	T	Scum Traps	No. 2	
	U	Insulation	No. 1	
35	V	Vacuum Terminals	No. 1 and No. 2	35

Sketch No. 1 shows a sectional elevation of the spherical jacketed FUSION VESSEL, indicating the relative positions of the injection points as well as the vacuum connections and the coolant terminals. 40

The plan section shows the relative positions of the injection points for Atom flow, U.H.F. magnetic impulses, and Laser beams.

Sketch No. 2 shows the inter-connecting pipework to the necessary plant items outside the FUSION VESSEL, which form part of the plant to convert the heat generated into useful power for the GRID. 45

Gerrard atomic fusion, plant

The proposed atomic fusion plant is designed to inject a number of electro UHF magnetic beams across the fusion-vessel directed in such a manner that their paths intersect in the centre of the void. This is intended to create a very hot zone in the dead centre, remote from the inner chamber wall. 50

Similarly LASER beams are directed with paths intersecting in the centre of the vessel.

Having induced the necessary high temperature in the most efficacious location we now inject a stream of atoms from left to right from point F. and at the same time inject a second stream from right to left point F1 which cross in the hot zone in the centre of the vessel. Those striking each other under the suitable temperature conditions should establish fusion, in the centre of the vessel. The UHF influence on these atoms or molecules shall in itself generate heat. 55

The heat generated by this fusion would be radiated to the inner walls of the vessel. The thickness of the inner wall would be designed as thin as possible to assist rapid heat transfer. The cooling sections are shown as four separate chambers, but this number can be increased further to reduce the wall thickness, without the danger of collapse under very high vacuum. 60

It will be essential to use a coolant suitable for rapid heat transfer, which might be similar to that used in a fast reactor viz. NaK. Should there be a better medium for our service it could be considered. Any atoms or molecules which might have escaped the outlet channels opposite to F and F1 would be evacuated by the vacuum pumps N-sketch No. 2. 65

The captured atoms or molecules handled by the vacuum pumps N would ultimately be trapped in the collectors G Sketch No. 2.

Atoms or molecules circulating along F and F1 paths which need to be arrested would also be captured, by centrifuging or other separation machinery.

5 The heat generated and transferred to the coolant would in turn be used to build up high steam pressure in heat exchangers D Sketch No. 2. 5

Steam turbines driving electric generators would complete the usefulness of the project, especially if the latent heat is expended in space heating and some industrial needs.

10 CLAIMS 10

1. I claim by this invention to submit an approach to atomic fusion suitable for power generation. The coolant surrounding the fusion chamber able to carry away the fusion heat to heat-exchangers, for the production of steam. Sketch No. 1 shows how this is achieved. Sketch No. 2 shows how the heat is circulated for power production.