

PATENT SPECIFICATION

Application Date: Jan. 31, 1936. No. 3004/36. 469,615

Complete Specification Left: Nov. 26, 1936.

Complete Specification Accepted: July 29, 1937.



PROVISIONAL SPECIFICATION

Improvements in or relating to Power Plants for Aircraft

We, THE FAIREY AVIATION COMPANY LIMITED, of North Hyde Road, Hayes, in the County of Middlesex, a British Company, and ARCHIBALD GRAHAM FORSYTH, of "Venlaw", Burdon Lane, Cheam, in the County of Surrey, a British Subject, do hereby declare the nature of this invention to be as follows:—

This invention has for its object very readily to enable an aircraft to be maintained in an efficient condition and for this purpose and in accordance with the present invention an aircraft is provided with a self-contained power plant detachable therefrom, so that in the event of repairs to any part of said plant being necessary, it can be removed and a like plant substituted therefor. Preferably the detachable power plant incorporates an engine, an engine cooling system, an oil cooling system, a supercharging system and means for preheating air. Preferably also the power plant as a whole is secured to the front end of the fuselage by mounting the engine on the latter in accordance with the invention set forth in the Specification of our concurrent Application for Letters Patent No. 3003 of 1936, (Serial No. 469,614) the remainder of the plant being attached to the engine.

According to one form of the invention an engine including a supercharger, an enclosing cowling and a propellor is secured to the front end of an aircraft fuselage as just mentioned; the engine has

secured thereto a header tank for the engine cooling system which is connected with a radiator disposed beneath the engine in a tunnel or recess in the bottom of the engine cowling and the radiator is connected with a pump arranged in the circuit. An oil cooler is arranged in said tunnel in rear of the radiator and the air which passes through said oil cooler is led to the air intake of the carburettor.

The engine may be of the double type having two rows of cylinders side by side and preferably two superchargers are provided, one at each side of the engine and arranged alongside the cylinders at the rear end of the engine. This arrangement permits a gun to be disposed between the two rows of cylinders.

In some cases the top of the tunnel in which the radiator is disposed may be formed with a downward sweep between the radiator and the oil cooler so that only a part of the air which has passed through the radiator can flow through an aperture or apertures to the oil cooler.

It is to be understood that the engine controls are detachably jointed so that the power plant as a whole can be disconnected readily from the fuselage and another plant substituted therefor if and when engine repairs become necessary.

Dated this 31st day of January, 1936.

A. M. & WM. CLARK,

Chartered Patent Agents,

53 & 54, Chancery Lane, London, W.C.2.

COMPLETE SPECIFICATION

Improvements in or relating to Power Plants for Aircraft

We, THE FAIREY AVIATION COMPANY LIMITED, of North Hyde Road, Hayes, in the County of Middlesex, a British Company, and ARCHIBALD GRAHAM FORSYTH, of "Venlaw", Burdon Lane, Cheam, in the County of Surrey, a British Subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

With the object of providing combined landing-gear and power plant forming

readily detachable power-units for use with aeroplanes and other types of aircraft it has been proposed that the engine, propellor and oil tanks or multiples of these parts should be carried in a frame extended downwards to the bearings of one or more landing wheels so that such a power-unit could be balanced on its wheel or wheels and be wheeled into position up to the aircraft which is ready to receive it. It has also been proposed to combine a motor with all its accessories including the radiator plant, fuel tanks

and the like in such a manner as to form a compact unit, whereby the mounting and dismounting of the motor can be effected without it being necessary to sever or establish any tube or pipe connections.

According to the present invention the parts associated with the engine proper, such as the engine cooling system, an oil cooling system, a supercharging system and means for preheating the air supply to said engine are formed integrally with, or attached to, the crankcase of the engine itself, and said crankcase alone is adapted for attachment to the aircraft, for example, by mounting the engine on the front end of the fuselage in accordance with the invention set forth in the Specification of our concurrent Application for Letters Patent No. 3003 of 1936 (Serial No. 469,614).

One form of the invention is illustrated by the accompanying diagrammatic drawings wherein Figure 1 is a side view of an engine unit; Figure 2 is a sectional side view showing the path of the water cooling system; Figure 3 is a fragmentary section on the line 3—3, Figure 2; Figures 4 and 5 are sections on the lines 4—4, and 5—5, Figure 1, respectively, and Figure 6 is a rear view.

As shown, the engine *a* is of the double type having two rows of cylinders side by side and two superchargers *b b* one at each side of said engine *a* and arranged alongside the cylinders at the rear end of said engine (Figures 1 and 6). This arrangement permits a gun indicated at *c*, Figures 5 and 6, to be disposed in a passage *d* between the two rows of cylinders.

The engine *a* together with an enclosing cowling *e* and a propeller (not shown) is secured to the front end of an aircraft fuselage indicated at *f g f*, Figure 1, in accordance with a modified form of our said concurrent Application for Letters Patent, by members such as *h, j, j*, the members such as *h* being connected with trunnions such as *k* on the engine *a*, whilst the members such as *j j* are connected with the rear end of the crankcase of said engine, the points of attachment being indicated at *m . . .*, Figure 6. The engine *a* has secured thereto a header tank *n* for the engine cooling system

which is connected by a pipe *o* and conduit *q* with a radiator *r* disposed beneath the engine *a* in a tunnel or recess *s* in the bottom of the engine cowling *e* and the radiator *r* is connected by a conduit *t* with a pump *u* arranged to deliver water by a pipe *v* to a water jacket indicated at *w*, Figure 2, whence it passes by passages *x . . .* to a pipe *y* and back to the header tank *n*. An oil cooler *ll* is arranged in the tunnel *s* in rear of the radiator *r* and the air which passes through said oil cooler *ll* is led by a pipe *12* Figures 1 and 6 to the air intake of the carburettor *13*.

In some cases the top of the tunnel *s* may be formed with a downward sweep as shown at *14* between the radiator *r* and the oil cooler *ll* so that the air which has passed through the radiator *r* is deflected and a part thereof only flows through the oil cooler *ll*.

An oil suction pump is indicated at *15* Figure 2 for drawing oil from the cooler *ll* and delivering it through suitable passages (not shown) to the bearings in accordance with usual practice.

It is to be understood that the engine controls are detachably jointed so that the power plant as a whole can be disconnected readily from the fuselage and another plant substituted therefor if and when engine repairs become necessary.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

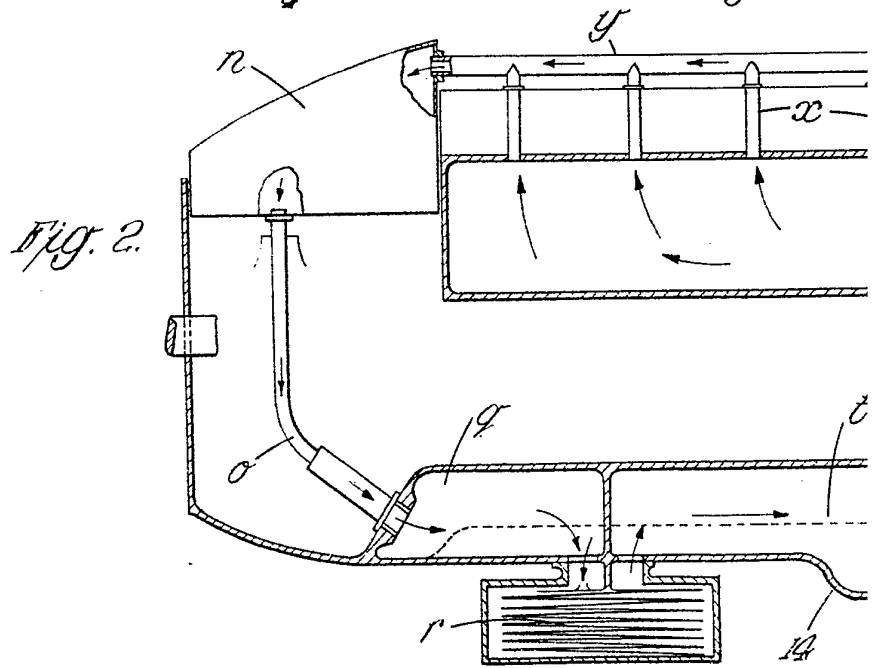
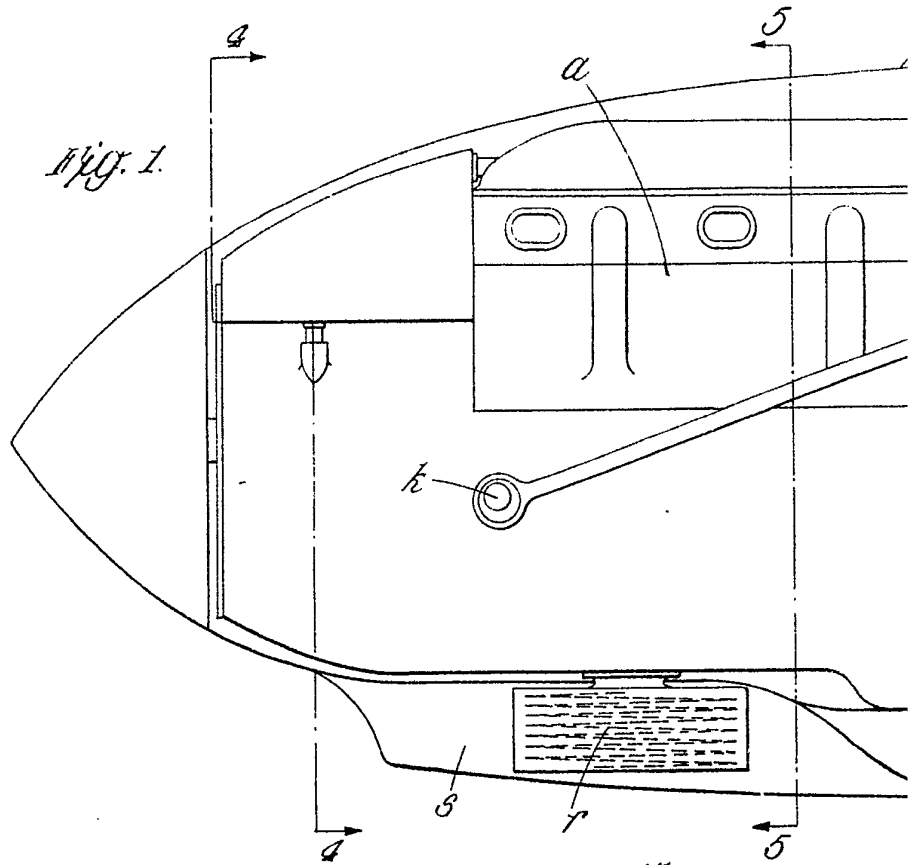
1. A power plant for an aircraft comprising an engine with the crankcase of which are associated, an engine cooling system, an oil cooling system, a supercharging system and means for preheating the air supply to said engine, some of said associated parts being formed integrally with, and others being attached to said crankcase, whilst the latter alone is adapted for attachment to the aircraft.

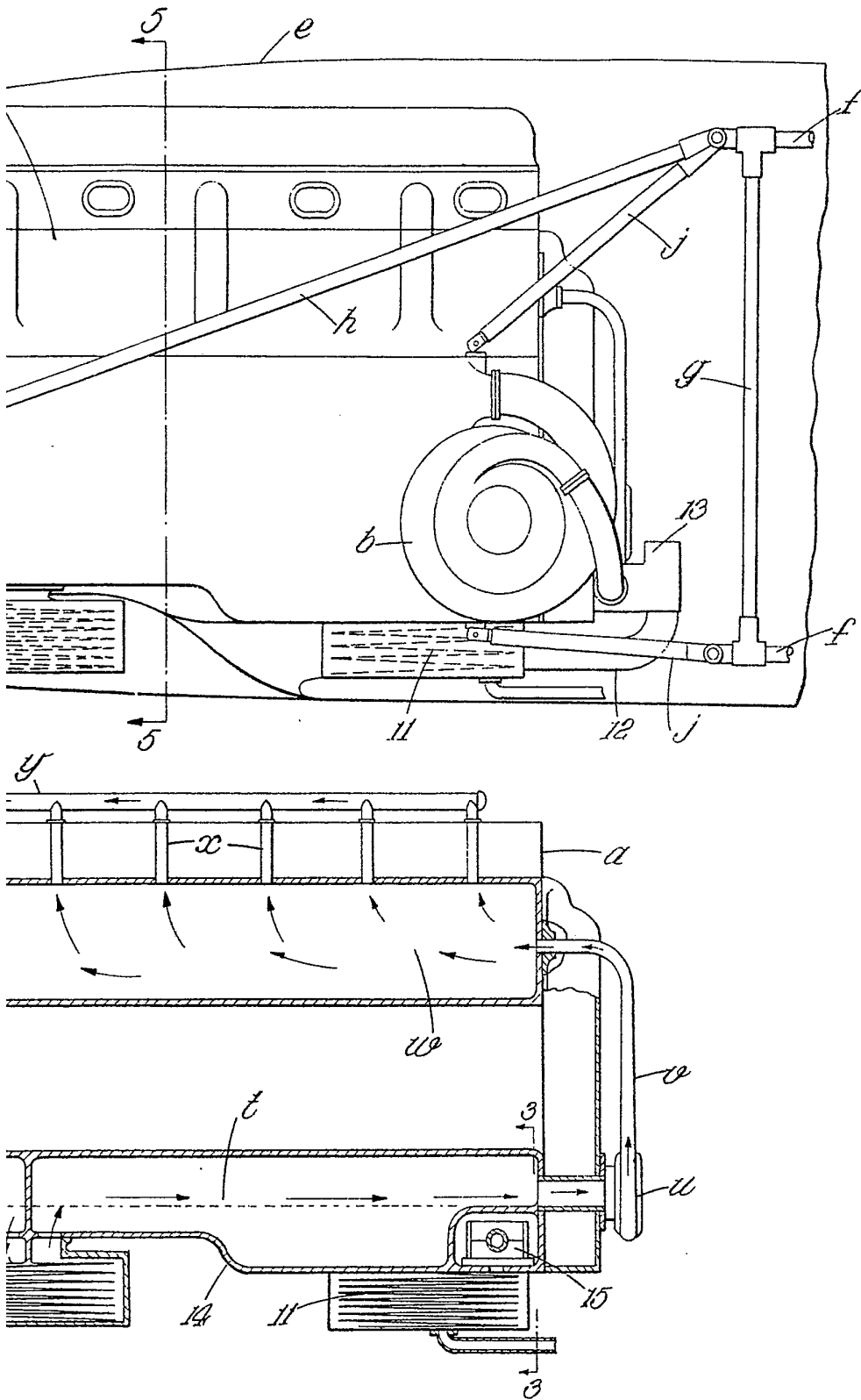
2. A power plant which is complete in itself and is constructed and arranged substantially as hereinbefore set forth with reference to the accompanying drawings.

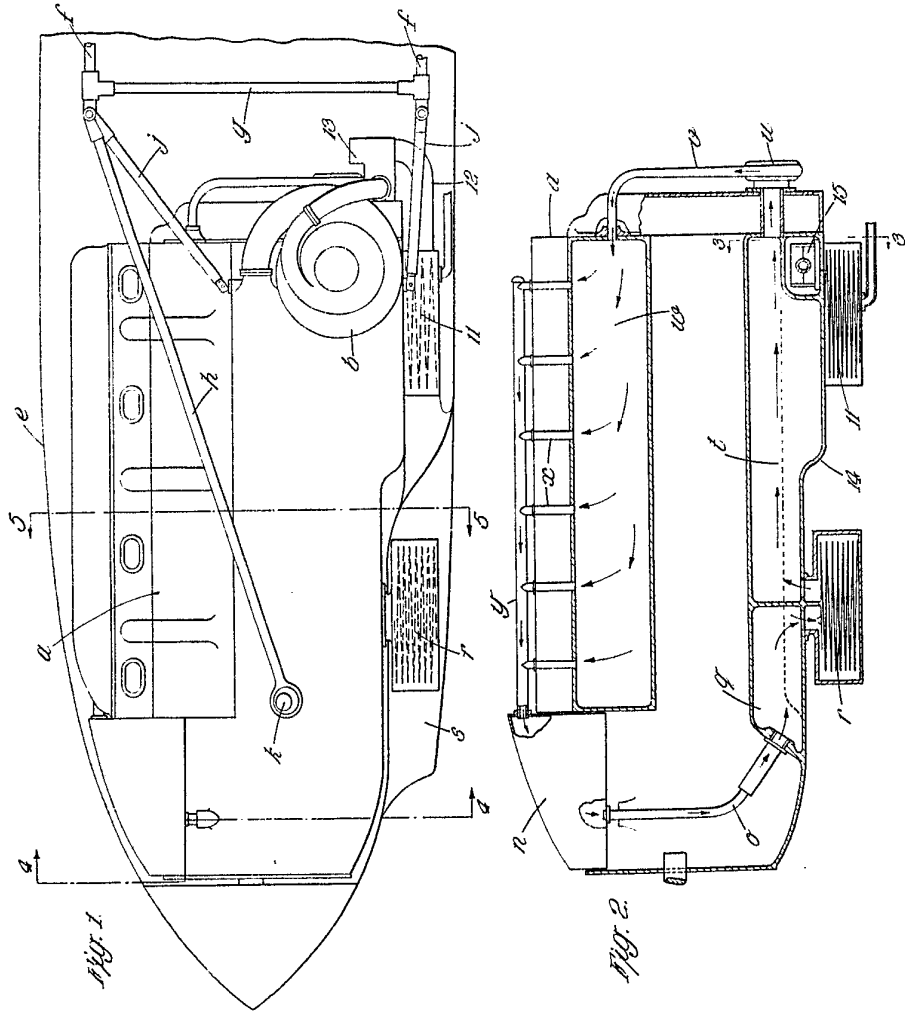
Dated this 26th day of November, 1936.

A. M. & WM. CLARK,
Chartered Patent Agents,
53 & 54, Chancery Lane, London, W.C.2.

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Fig. 4.

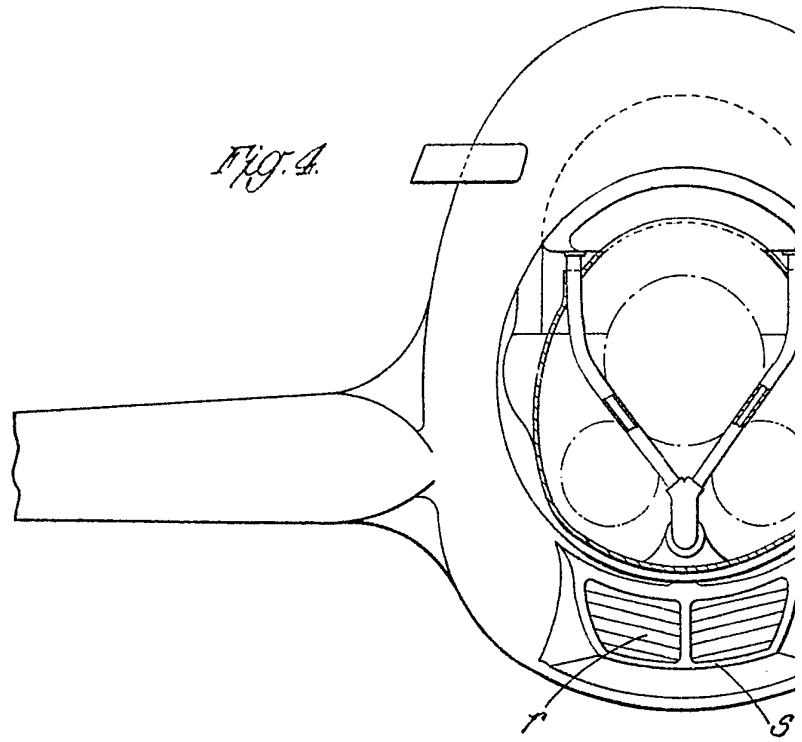
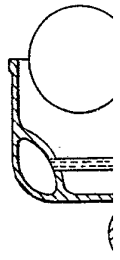
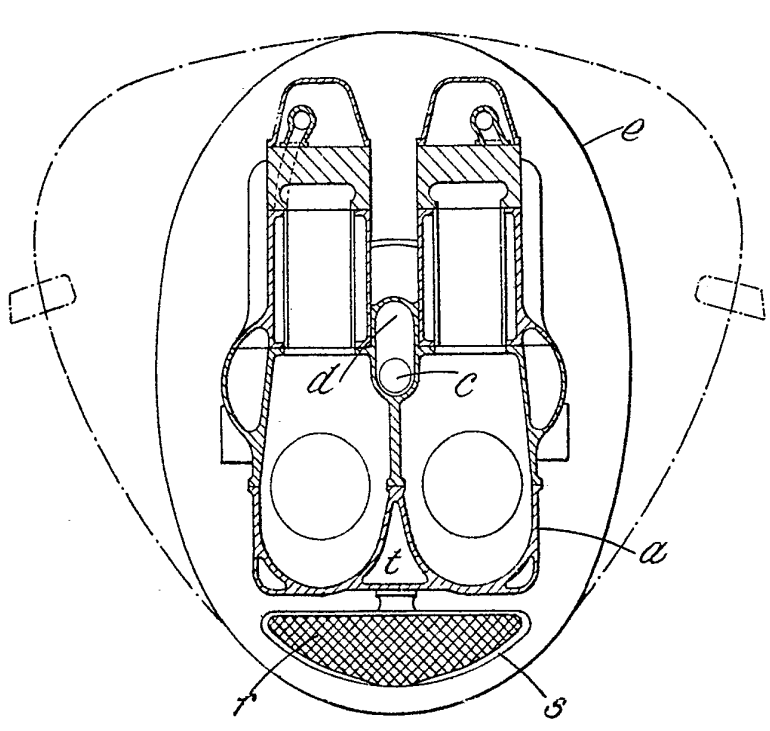


Fig. 5.



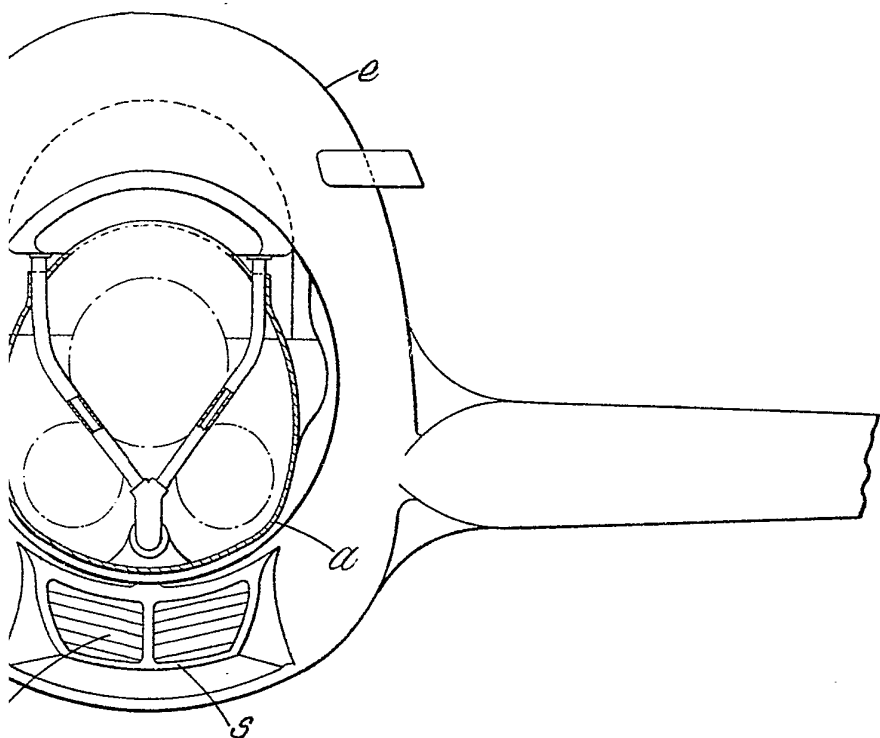


Fig. 3.

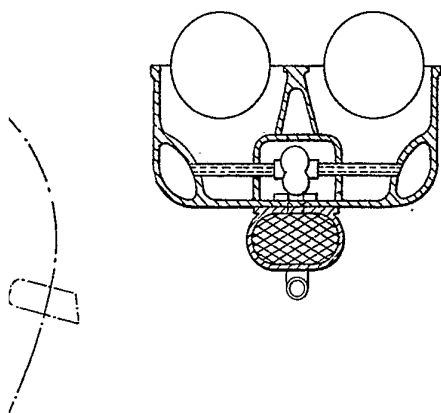
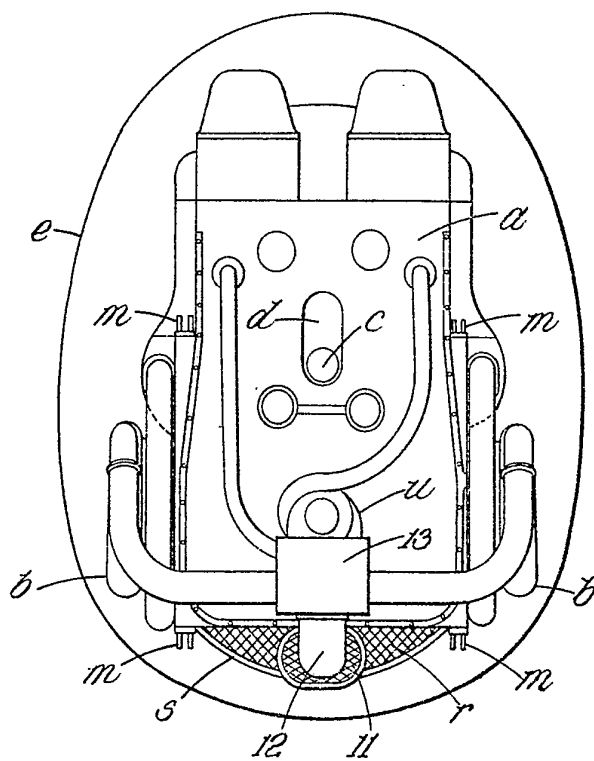
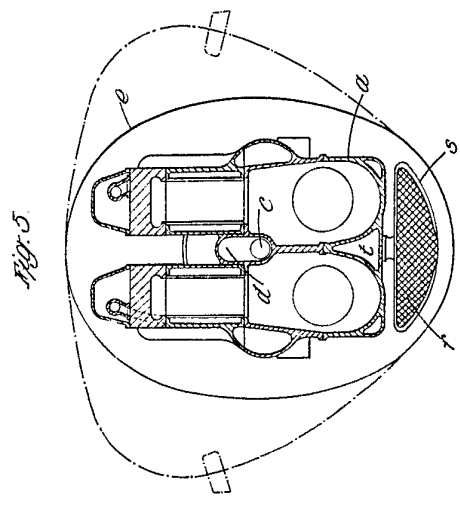
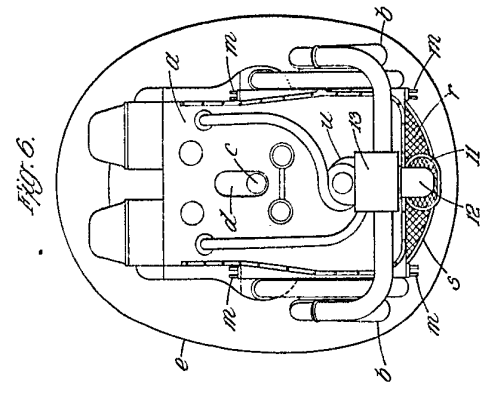
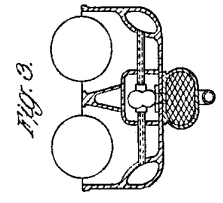
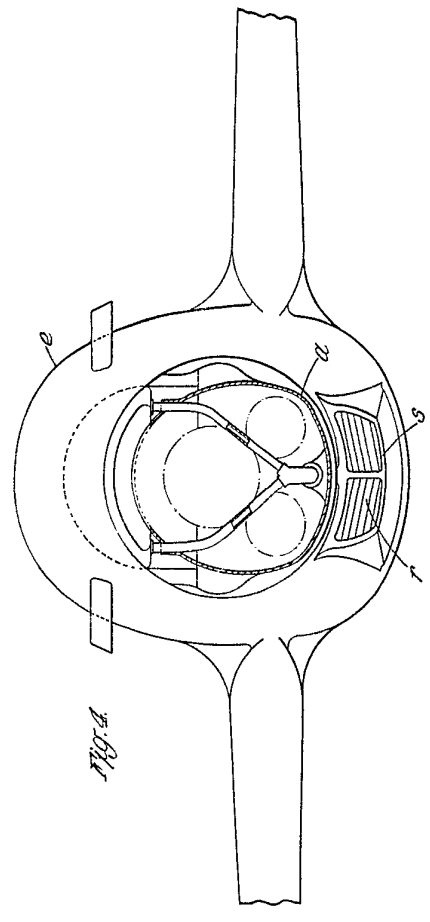


Fig. 6.





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