

PATENT SPECIFICATION

463,501

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PROVISIONAL SPECIFICATION

Improvements in or relating to Gaseous Fuel Induction Pipes for Internal Combustion Engines

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:—

10 This invention relates to means for conveying gaseous fuel to the inlet valves of an internal combustion engine and has for its object a compact arrangement of the necessary passages which will also ensure an even distribution of the fuel.

15 In accordance with the present invention an induction passage is formed longitudinally in, and at one side of a crank case, and from said passage extend, e.g. at right angles, a series of branch induction pipes, also formed in the crank case preferably one for each pair of cylinders, said branch pipes being intended to lead to passages in the cylinder block which lead to passages, preferably bifurcated, in the cylinder head.

20 The main induction pipe may have intermediate of the length thereof, one or more openings with which may be connected the outlet end of a carburettor or supercharger.

30 The invention is particularly applicable to an internal combustion engine of the

H type. In such an engine the crank case is divided on a median horizontal plane and at each side of each half of said crank case there is formed, during casting, a longitudinal passage and a series of branch passages at right angles thereto, one for each pair of cylinders of the engine each of said longitudinal passages having two lateral openings intermediate of its length, whilst the branch passages be bouch at those faces of the crank case against which the cylinder blocks are to be bolted.

45 The halves of the crank case have cast thereon at each side a seating against which a supercharger may be bolted, the outlet end of the volute of said superchargers being connected with the lateral openings of the longitudinal induction passages.

50 Owing to the compactness of the induction system of an H type engine when arranged in accordance with this invention, it becomes possible to form the crank case at the top and bottom of the central part of its width with recesses or grooves for the reception of a gun and an oil cooler.

60 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 Gaseous Fuel Induction Pipes for Internal Combustion Engines

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:—

70 This invention relates to means for conveying gaseous fuel to the inlet valves

of an internal combustion engine and has for its object a compact arrangement of the necessary passages which will also ensure an even distribution of the fuel.

75 In the specification of our prior Letters Patent No. 406,118 is described a multi-cylinder internal combustion engine of the Vee-type in which the induction manifold is cast integral with the upper half of the crank case and with the water jackets, said manifold being disposed at the bottom of the channel formed between the inclined rows of cylinders, whilst

branches from said manifold, also cast integral with the water jackets run upwards at the adjacent sides of the rows of cylinders and lead to corresponding passages cast integral with the cylinder heads.

In accordance with the present invention an induction passage is formed longitudinally in, and at one side of, a crank case, and from said passage extend, e.g. at right angles, a series of branch induction pipes, also formed in the crank case, preferably one for each pair of cylinders, said branch pipes being intended to lead to passages in the cylinder block which lead to passages, preferably bifurcated, in the cylinder head, whilst the main induction passage has intermediate of the length thereof, one or more openings with which may be connected the outlet end of a carburettor or supercharger.

The invention is particularly applicable to an internal combustion engine of the H type, and is illustrated by way of example in the accompanying drawings whereof Figure 1 is a side elevation of such an engine arranged in accordance with the present invention; Figure 2 is a sectional plan view thereof, the section being taken on the line 2-2, Figure 1; Figure 3 is a sectional end view, the section being taken on the line 3-3, Figure 1, whilst Figures 4 and 5 are fragmentary sections on the lines 4-4, and 5-5, Figure 1, respectively. As shown the crank case *a* is divided on a median horizontal plane and at each side of each half of said crank case *a* there is formed, during casting, a longitudinal passage *b* and a series of branch passages *c* at right angles thereto, one for each pair of cylinders of the engine, each of said longitudinal passages *b* having two lateral openings at *d-d* intermediate of its length, whilst the branch passages *c* debouch at those faces of the crank case *a* against which the cylinder blocks *e* are to be bolted.

f-f are two induction pipes, each of which is formed, intermediate of its length, with branches *g* adapted for connection with the crankcase *a* at the lateral openings at *d*, and at its end *h* is adapted for connection with the outlet end of the volute of a supercharger (not shown).

Each branch passage *c* leads to a

passage *j* cast in a cylinder block *e* and leading to bifurcated passages such as *k-k* (Figure 2) in a cylinder head *m*, whilst exhaust passages such as *n*, some of which are bifurcated are also cast in each cylinder head *m*.

The halves of the crank case *a* have cast thereon at each side a seating as at *o* (Figure 1) against which a supercharger (not shown) may be bolted, the outlet end of the volute of said superchargers being connected with the lateral openings at *d* of the longitudinal induction passages *b* by the induction pipes *f*.

Owing to the compactness of the induction system of an H type engine when arranged in accordance with this invention, it becomes possible to form the crank case *a* at the top and bottom of the central part of its width with recesses or grooves as shown in Figure 3 for the reception of a gun and an oil cooler.

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. An internal combustion engine having an induction passage formed longitudinally in, and at one side of, the crankcase, and a series of branch induction pipes extending from said induction passage, e.g. in a direction at right angles thereto, said branch induction pipes being also formed in the crankcase, preferably one for each pair of cylinders, and being intended to lead to passages in the cylinder block which lead to passages, preferably bifurcated, in the cylinder head, the longitudinally arranged main induction passage having intermediate of the length thereof, one or more openings with which may be connected the outlet end of a carburettor or supercharger.

2. An internal combustion engine having an induction system constructed and arranged substantially as hereinbefore set forth.

3. An internal combustion engine constructed and arranged substantially as hereinbefore set forth with reference to the accompanying drawings.

Dated this 12th day of November, 1936.

A. M. & WM. CLARK,
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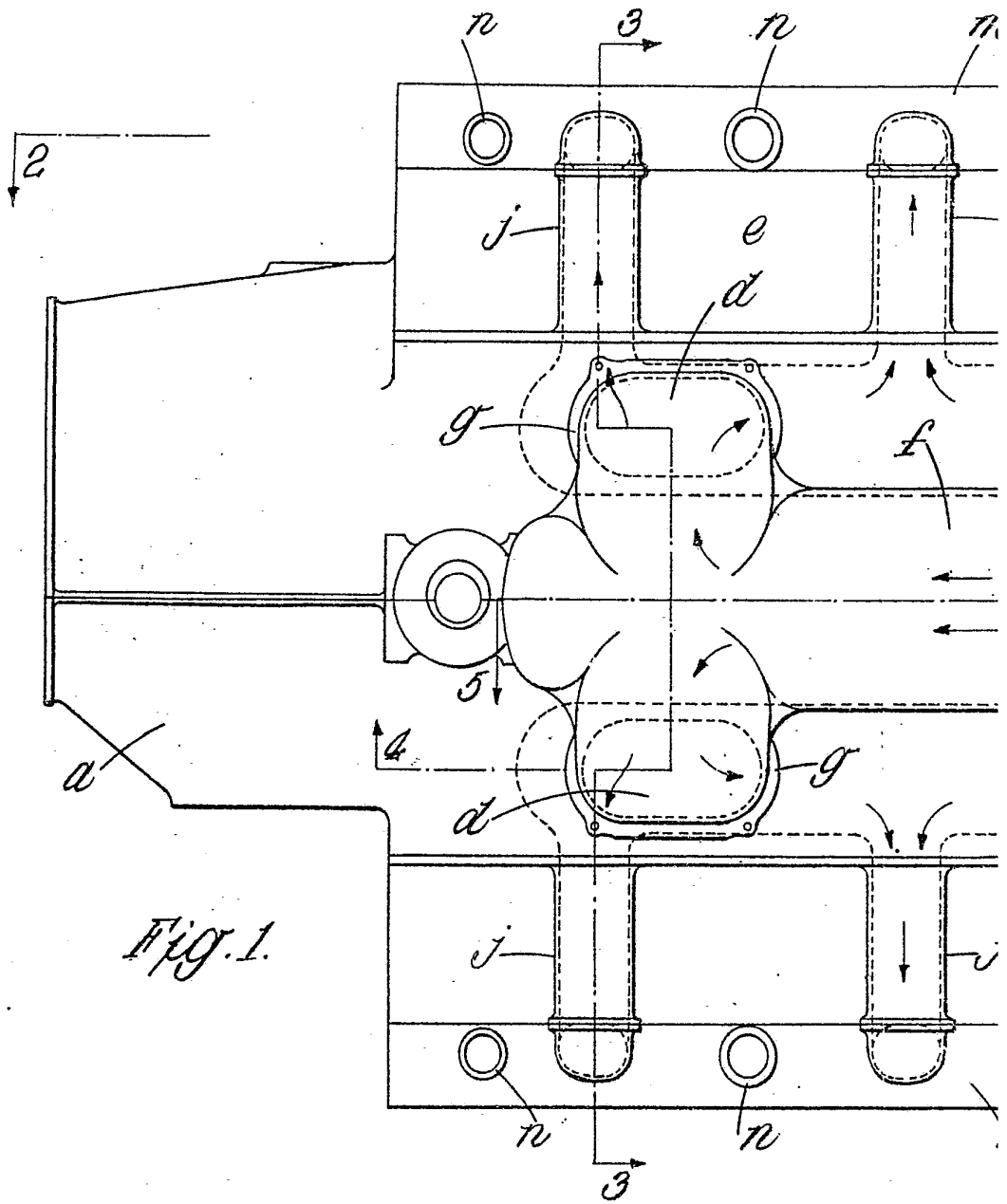


Fig. 1.

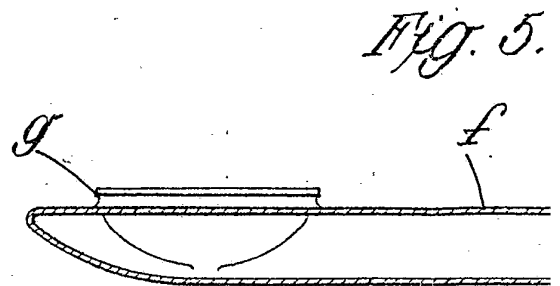


Fig. 5.

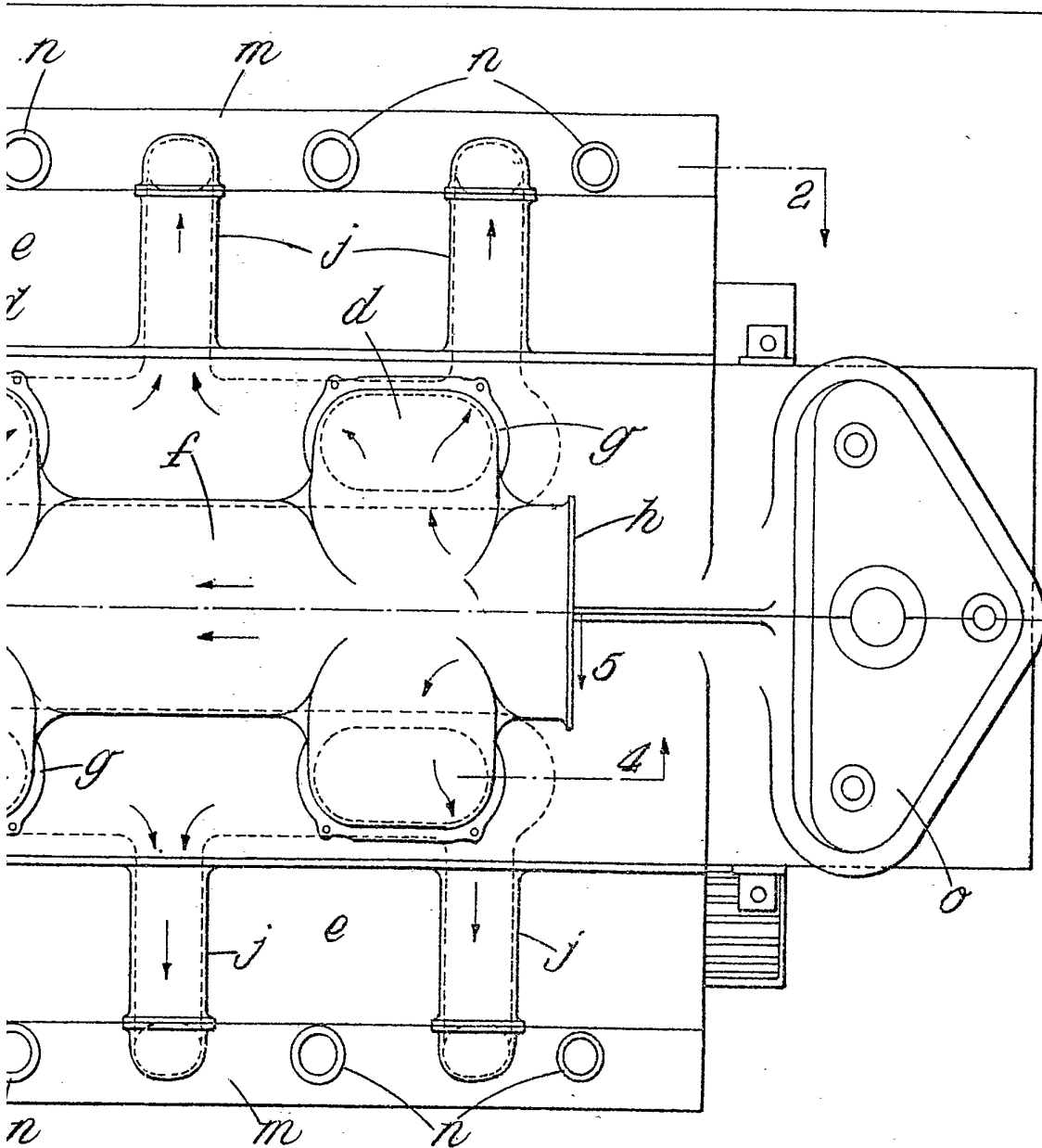
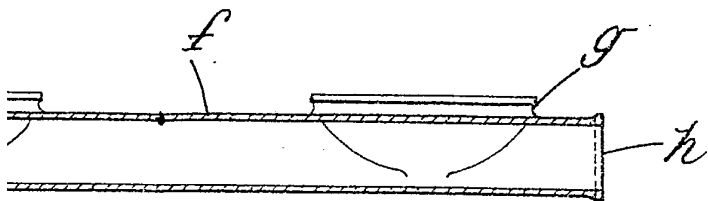


Fig. 5.



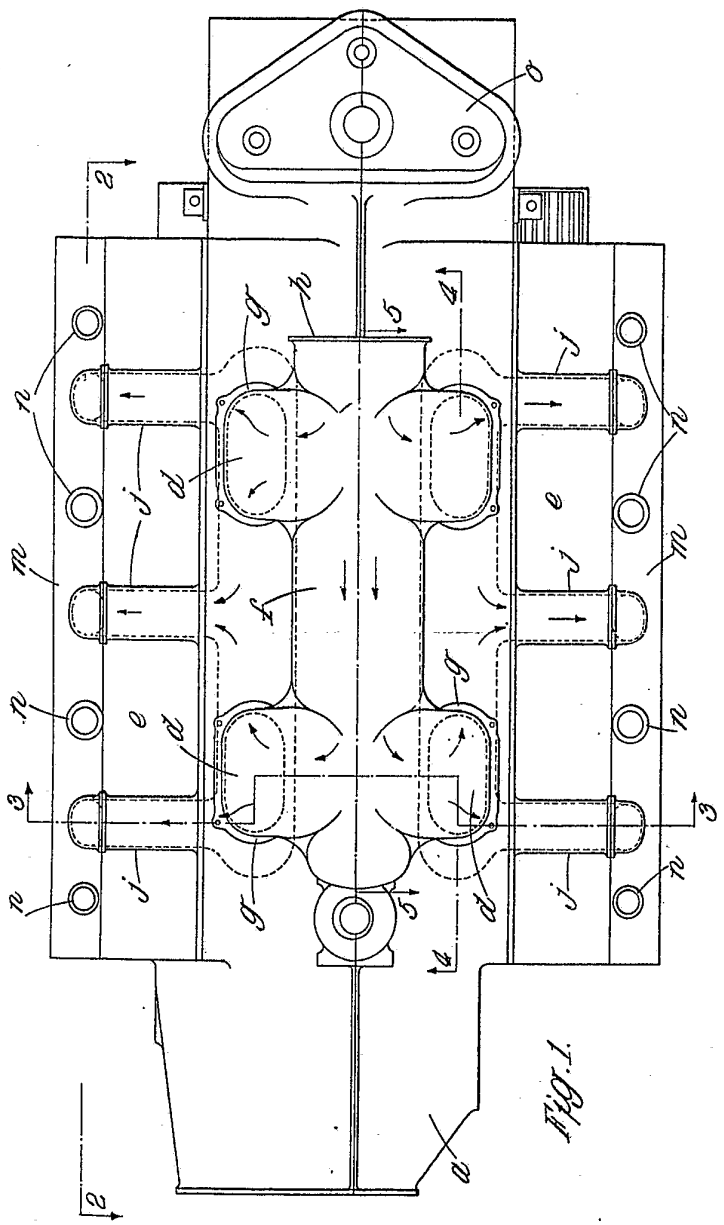
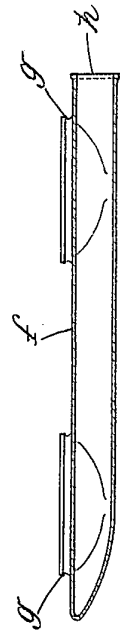


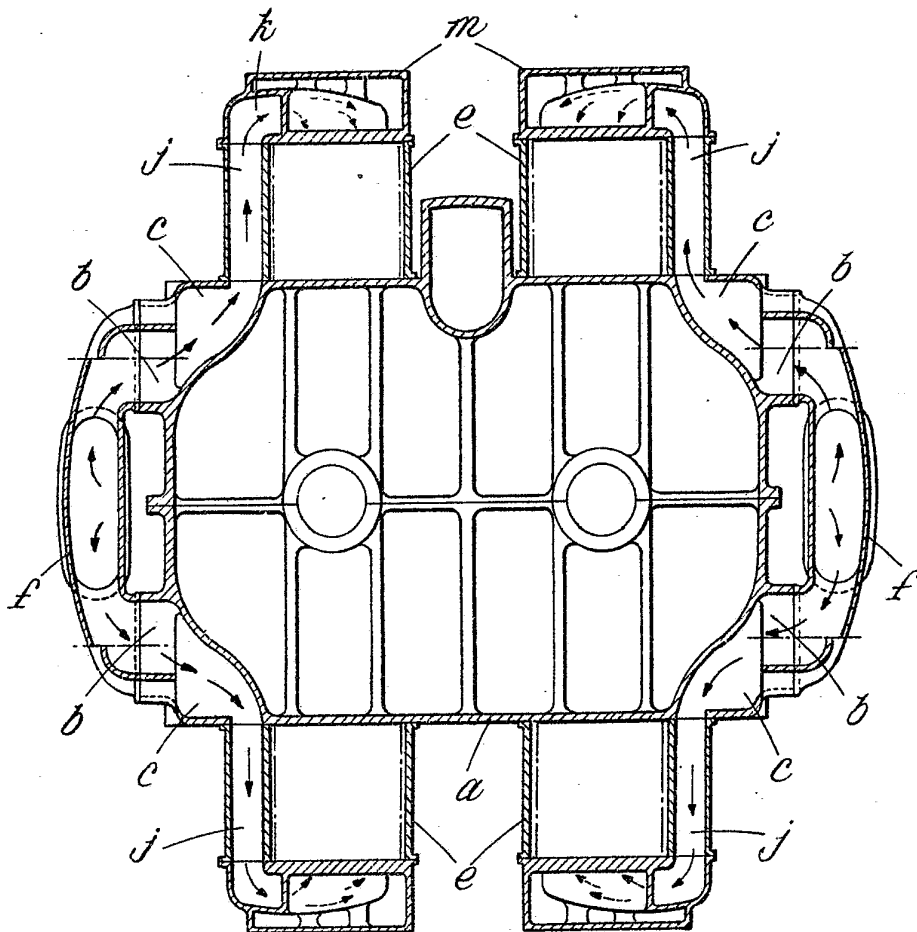
FIG. 5.



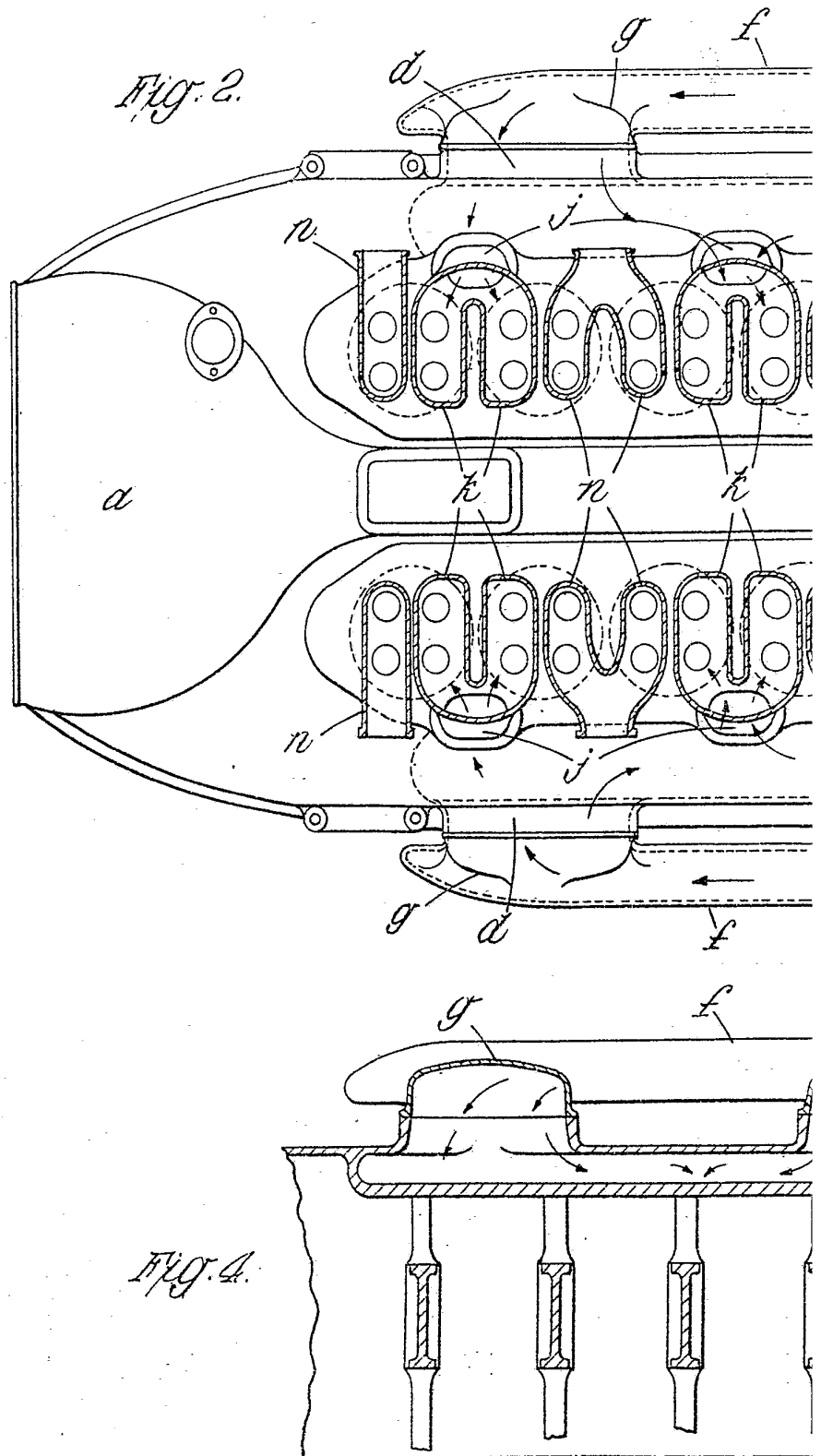
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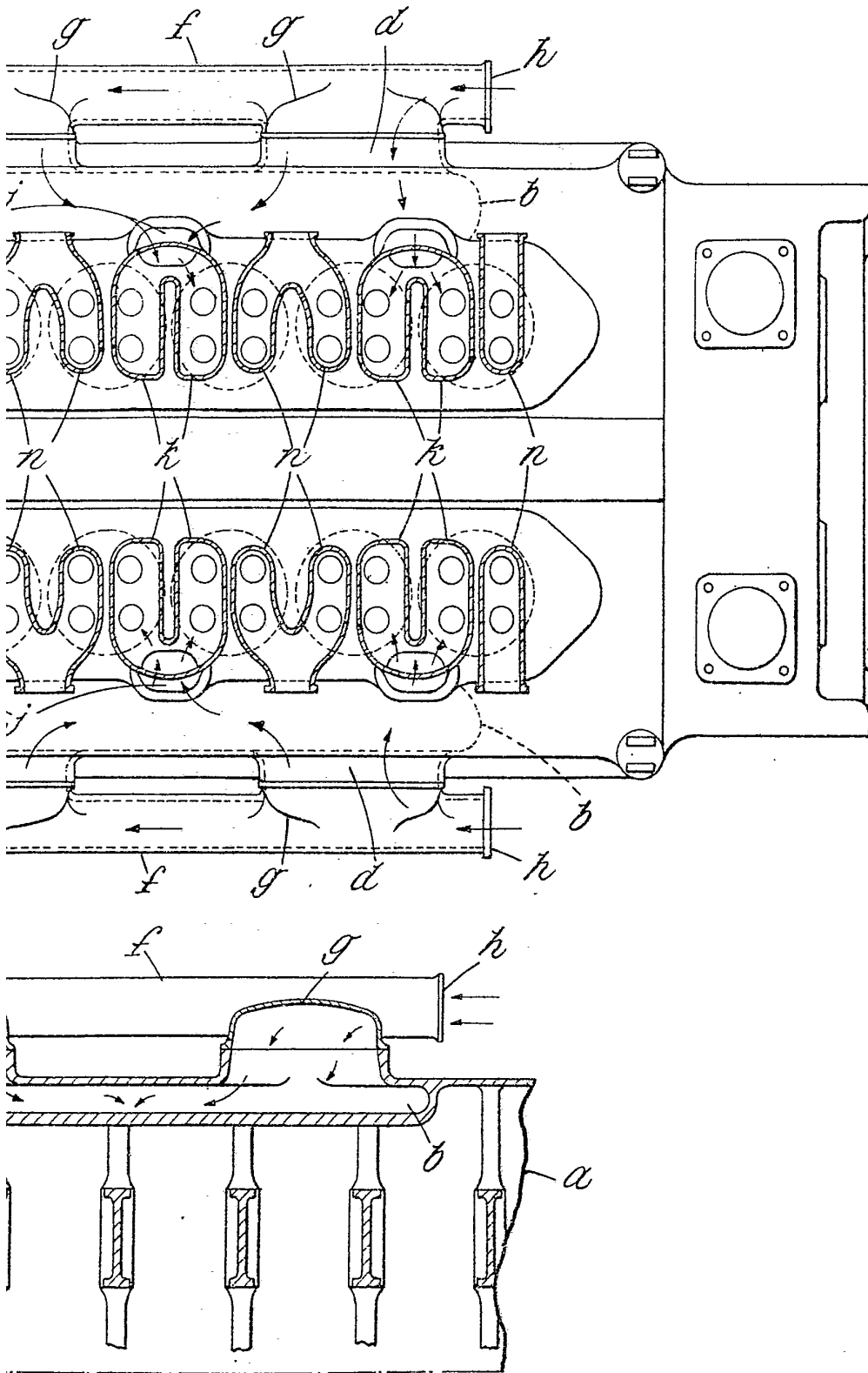
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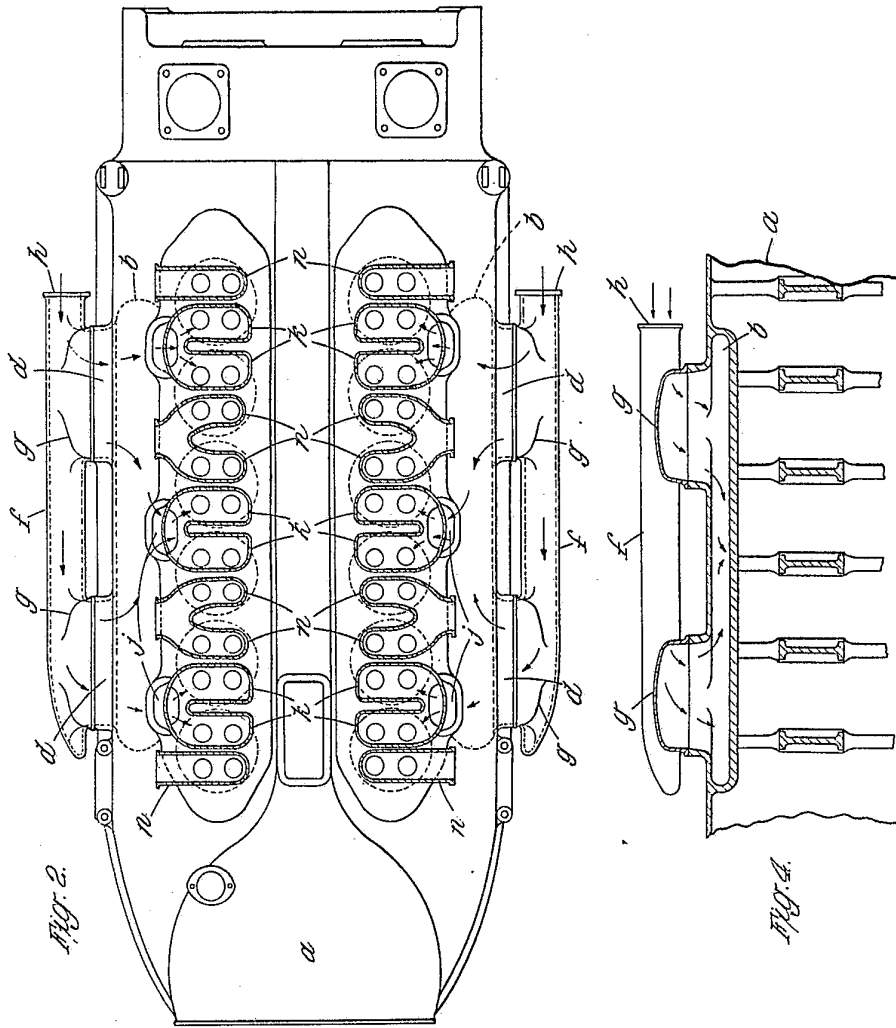
FIG. 3.



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