Jan. 5, 1932. R. W. A. BREWER 1,840,220

MANIFOLDING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Filed May 23, 1930 2 Sheets-Sheet 1

Fig. 1.

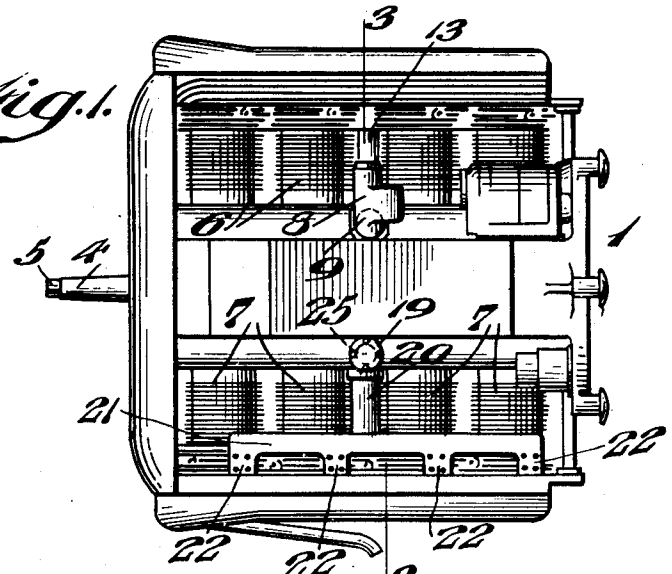
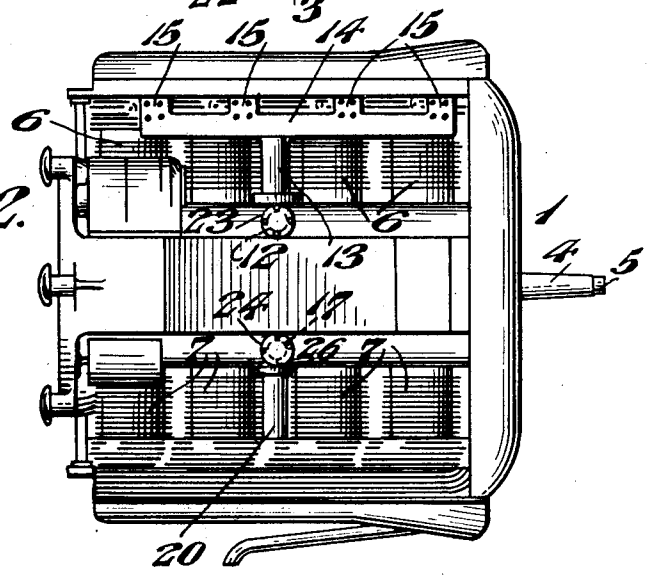


Fig. 2.



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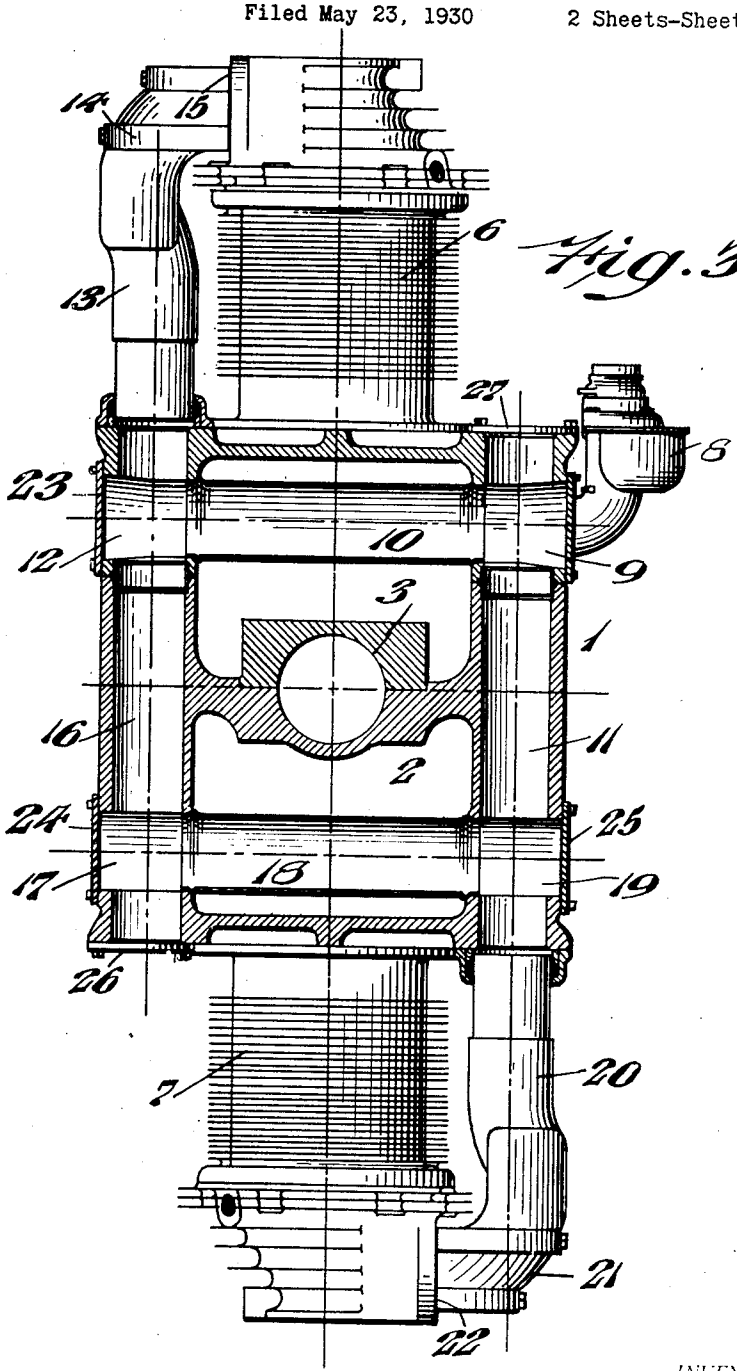


Fig. 3.

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MANIFOLDING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Application filed May 23, 1930. Serial No. 454,948.

My invention relates to a novel construction of manifolding system for internal combustion engines, wherein I effect in a novel manner the distribution of the explosive mixture to banks of cylinders remote from one another and supplied by one central carbureter or by a multiplicity of carbureters.

To the above ends, my invention consists of a novel substantially ring-shaped manifold or arrangement of passages positioned symmetrically around the crank case and provided with a plurality of junctions, at either one of which locations the explosive mixture can be fed into the ring.

It further consists in a novel construction of crank case, banks of cylinders symmetrically disposed adjacent thereto, and inlet manifolds attached to said cylinders and communicating symmetrically with a passage surrounding the crank case and supplied with explosive vapour.

It further consists of a novel collocation of a crank case, a manifolding system surrounding said crank case, and a novel arrangement of junctions therefor.

For the purpose of illustrating my invention I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described.

In the drawings:

Fig. 1, represents a side elevation of a manifolding system embodying my invention;

Fig. 2, represents a side elevation of Fig. 1, viewed from the opposite side;

Fig. 3, represents on an enlarged scale a vertical section on line 3—3 of Fig. 1, certain parts being shown in elevation.

Referring to the drawings, 1 designates an internal combustion engine comprising more than one bank of cylinders and having a body or block 2 equipped with my novel manifolding system, wherein 3 designates the centrally disposed crank shaft bearing for the crank shaft 4, to the end 5 of which the propeller is secured. The engine portrayed in the present instance is of the eight cylinder type having four upper cylinders 6 opposed to four lower cylinders 7, but the number of cylinders can obviously be increased if desired. The carbureter 8 conducts the fuel into the chamber 9, which leads into the horizontal and vertical passages 10 and 11. The passage 10 leads into the chamber 12 which discharges through the upright passage 13 into the manifold 14, which discharges at the points 15 into the upper bank of cylinders 6. 16 designates a vertical passage leading from the chamber 12 to the chamber 17 from which the horizontal passage 18 leads to the chamber 19, into which the vertical passage 11 also discharges. 20 designates a passage leading from the chamber 19 to the manifold 21, which discharges at the points 22 into the lower bank of cylinders 7. The chambers 12 and 17 are closed by the plates 23 and 24 respectively, and the chamber 19 is closed by the plate 25. The chamber 17 is also accessible through the bottom plate 26, and the chamber 9 is accessible through the top plate 27.

It will be seen from the foregoing that I am enabled to effect a suitable distribution of the explosive mixture to banks of cylinders remote from one another, and supplied by one central carbureter or a multiplicity of carbureters, by a substantially ring-shaped manifold of symmetrical design composed of the passages 10, 11, 18, and 16 and their connecting chambers or junctions, positioned around the crank case, and in the case of the eight cylinder engine, being provided with four junctions at either one of which locations explosive mixtures can be fed into the ring.

My novel arrangement further provides a very convenient means for local heating if desired by passing the vapour passages through the crank case or for the fitting of a vaporizer operated by exhaust heat. It will further be apparent that the banks of cylinders are symmetrically disposed adjacent to

the crank case and that the inlet manifolds attached to said cylinders communicate symmetrically with a passage surrounding the crank case and supplied with explosive vapour.

It will be understood from the foregoing that my invention, while capable of general adaption, is especially adapted for air craft, wherein it is essential that space and weight be economized to the fullest extent and that the various elements hereinbefore referred to, be symmetrically arranged with respect to the banks of cylinders and to each other, all of which I have accomplished by my novel devices.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a manifolding system for internal combustion engines, a crank case, a continuous ring-shaped passage for the explosive mixture surrounding said crank case, and a plurality of junctions for said passage at each one of which junctions means are provided for attaching explosive mixture introducing means.

2. In a manifolding system for internal combustion engines a crank case, banks of cylinders symmetrically disposed adjacent thereto, inlet manifolds attached to said cylinders, a ring-shaped passage for the explosive mixture surrounding said crank case, and connections from said ring-shaped passage to said manifolds.

3. In a manifolding system for internal combustion engines, a crank case, banks of cylinders symmetrically disposed adjacent thereto, inlet manifolds attached to said cylinders, a ring-shaped passage for the explosive mixture surrounding said crank case, a plurality of junctions in said passage closures for said junctions, and oppositely located connections leading from said junctions to said manifolds.

4. In a manifolding system for internal combustion engines, a crank case, a continuous ring-shaped passage for the explosive mixture surrounding said crank case, and a plurality of symmetrically arranged junctions for said passage at a plurality of which means are provided for attaching devices by which explosive mixtures can be introduced.

5. In a manifolding system for internal combustion engines, a crank case, banks of cylinders symmetrically disposed adjacent thereto, inlet manifolds attached to said cylinders, means providing a ring-shaped open passage for the explosive mixture surrounding said crank case, symmetrically arranged junctions in said passage means, and symmetrically arranged connections from said junctions to said manifolds.

6. In a manifolding system for internal combustion engines, a crank case, banks of cylinders symmetrically disposed adjacent thereto, inlet manifolds attached to opposite sides of said cylinders, a ring-shaped passage for the explosive mixture surrounding said crank case, a plurality of symmetrically arranged junctions in said passage, closures for said junctions, and oppositely located symmetrically arranged connections leading from opposite junctions to said manifolds.

7. In an internal combustion engine, comprising more than one bank of cylinders, a crank case, a manifolding header attached to each bank of cylinders, a passage positioned around said crank case and integral therewith, connections from said manifold headers to said passage, openings symmetrically arranged adjacent to the junction of the headers and said passage, and attachment means at said openings for the admission of air and local fuel.

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