H. BAUCHET.

ENGINE CYLINDER.

APPLICATION FILED OCT. 11, 1917.

1,358,694. **Patented Nov. 16, 1920.**

Fig. 1

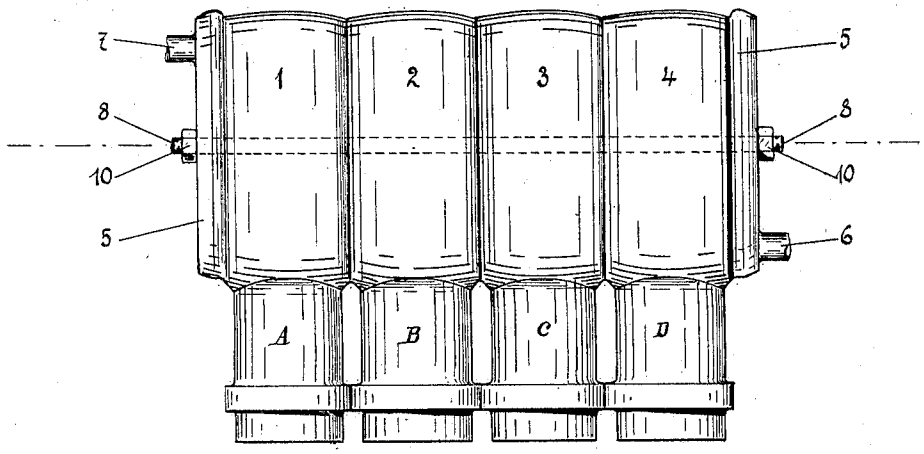
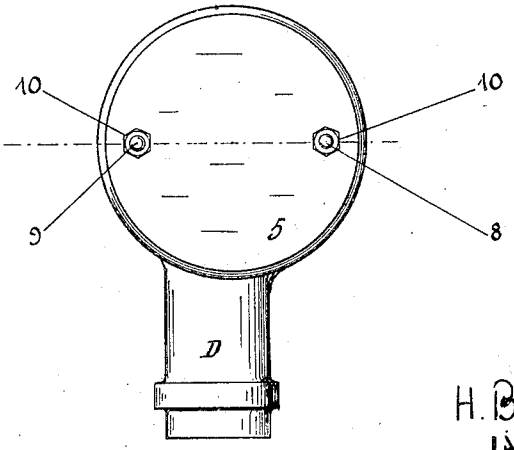


Fig. 2.



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ENGINE-CYLINDER.

1,358,694. Specification of Letters Patent. Patented Nov. 16, 1920.

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To all whom it may concern:

Be it known that I, HENRY BAUCHET, a citizen of the French Republic, residing at No. 63 Rue Chambertrand, at Sens, Yonne, in France, have invented certain new and useful Improvements in Engine-Cylinders, of which the following is a specification.

The type of cylinder forming the subject-matter of the present invention is characterized on one hand by an arrangement which protects it from bursting in time of frost, and on the other hand by a combination of forms which by rendering the molding particularly easy, effects a large economy in the manufacture of multi-cylinder engines.

In multi-cylinder engines of this type, the coupling together of the cylinders can be done without difficulty in a strictly concentric manner.

The edges of each water chamber are turned before the boring of the cylinder. These edges are only 6 to 7 mm. wide, so that their surface is sufficiently small to enable the tightening by means of two nuts to produce a sufficient pressure per sq. millimeter.

Owing to their circular shape, the faced edges require only a minimum machining and a minimum jointing surface while having a maximum dimension for insuring the parallelism of the assembling cylinders.

During the boring, each cylinder is placed on the faced edge and fixed in the boring machine, consequently the boring is absolutely parallel in all cylinders to the faced edge.

An embodiment of this invention is illustrated by way of example, in the accompanying drawings:—in which,

Figure 1 is the side elevation of an engine comprising four cylinders fixed together so to form as it were one piece, and

Fig. 2 is an end elevation thereof.

A, B, C and D are the several cylinders whose cooling water chambers 1, 2, 3, 4 when connected together form a single chamber. Each side of this chamber is closed by a plate 5, which is readily removable and interchangeable and has less strength than the other walls of the cylinders, so that in case of the cooling water becoming frozen, these plates alone will burst and thus prevent any damage to the other parts of the engine.

One of the plates 5, is provided with a cooling water inlet 6. 7 is the cooling water outlet, which may be provided either in the opposite plate or in the cylinder.

The circular marks of the turning tool will be pressed into the paper-jointing located between the edges of the water chambers when assembling the cylinders. A tightness is thus obtained perfectly and very simply.

When all the cylinders have been placed in position, the coupling rods 8 and 9, which extend through the water chamber, are placed in position, as likewise the circular plates 5 for closing the chamber.

The two rods 8 and 9 are tightened by means of close-ended nuts 10, in order to prevent any escape of water through the screw thread.

By screwing up the coupling nuts 10, all the cylinders will be tightened to a sufficient degree to assure water-tightness.

Before the coupling nuts are finally tightened up, the nuts for attaching the cylinders to the framing are screwed on. Then the coupling nuts 10 are screwed up tight, and finally the nuts attaching the whole to the engine framing are finally screwed up tight.

By this means, a group of 2, 3, 4, 6, or 8 cylinders with a common water chamber is made to form as it were one piece which has both the advantages of a single casting as well as the advantages of a group of separate cylinders, as regards the facility in casting, machining, erecting and repairing.

What I claim is:—

In a multi-cylinder engine, the combination of a plurality of separate cylinders each with a cooling water chamber open at each side of its cylinder, a faced circular edge on each open side of each water chamber, said separate cylinders being assembled at their faced circular edges, a separate cover of a weaker material than the cylinders with a cooling water inlet located at the outerside of one extreme cylinder, a separate cover of a weaker material than the cylinder with a cooling water outlet located at the outer side of the other extreme cylin-

der, long bolts extending through the two cover plates and the plurality of assembled cylinders, and bolts for attaching said combination to the engine framing whereby, when assembled, the separate cylinders will be absolutely parallel to one another, and the several cooling water chambers will constitute a common cooling water chamber for the engine, and the end covers should the cooling water freeze, will give way sooner than the cylinders and thus save the latter from bursting.

In testimony whereof I have signed my name to this specification.

HENRY BAUCHET.