Feb. 19, 1924. 1,484,240

W. J. STILL

CONSTRUCTION OF INTERNAL COMBUSTION ENGINE CYLINDERS

Filed May 28, 1923

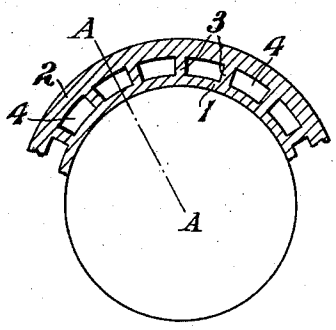


Fig. 1.

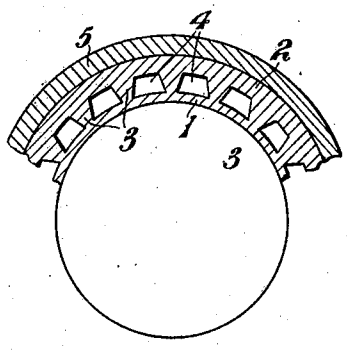


Fig. 2.

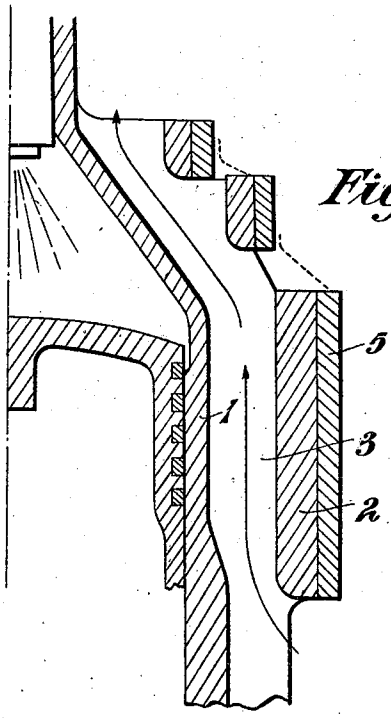


Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM JOSEPH STILL, OF LONDON, ENGLAND.

CONSTRUCTION OF INTERNAL-COMBUSTION-ENGINE CYLINDERS.

Application filed May 28, 1923. Serial No. 641,986.

To all whom it may concern:

Be it known that I, WILLIAM JOSEPH STILL, a subject of the King of Great Britain, and resident of London, England, have invented certain new and useful Improvements in the Construction of Internal-Combustion-Engine Cylinders, of which the following is a specification.

This invention relates to the cylinder constructions of internal combustion engines and has reference particularly to cylinders of large size.

As is well known in such cylinders there are two forms of stress which have to be accounted for. There is the stress due to the pressure within the cylinder and there are the stresses due to heat conditions. The former can be met by increasing the thickness of the cylinder wall but this thickening up cannot be extended too far because, of course, it aggravates the heat stress.

If a thin cylinder wall be used and this is supported by an external hoop the hoop must be very accurately fitted over the ribs or other projections on which it is fitted or it will either fail to support the wall or else will crush it.

The object of this invention is to provide easier manufacture by casting the cylinder with a thin inner wall or shell and a thick outer wall or shell, the inner and outer walls or shells being connected by radial webs or partitions which form channels for the circulation of the cooling water or fluid and also serve to transmit the strains from the inner wall or shell to the outer wall or shell. In some cases this outer wall or shell will afford sufficient support for the inner wall without being hooped but for the larger sizes it will require to be compressed by a steel hoop the compression of which it will resist when the cylinder is not stressed by internal pressure thus relieving the thin inner wall of a stress which it may, unaided, be too thin to safely carry. It will be understood that the longitudinal passages through which the cooling water or other fluid circulates will all be in communication at their ends so that a free circulation of the cooling fluid is provided for.

In the accompanying drawings I have illustrated the invention diagrammatically Figure 1 being a transverse section of a cylinder constructed in accordance with my invention in its simplest form and Figure 2 is a similar view of a modified construction where an outer strengthening hoop is employed.

Figure 3 is a longitudinal section on an enlarged scale on the line A—A of Figure 1.

Referring to these drawings the numeral 1 designates the thin inner wall of the cylinder casting and 2 designates the thick outer wall while 3 designates the partitions which connect the inner and outer walls, the spaces 4 serving for the circulation of the cooling water or other fluid. In Figure 2 an outer strengthening hoop 5 is shown which surrounds the pressure zone of the cylinder. It will of course be apparent that the section of the ribs or partitions 3 may vary as desired.

What I claim and desire to secure by Letters Patent:—

1. A cylinder for internal combustion engines comprising a simple casting having a thin inner wall and a thicker outer wall the inner and outer walls being integrally connected by partitions the spaces between which form passages for the circulation of the cooling water or other fluid.

2. A cylinder for internal combustion engines according to claim 1 and having a reinforcing hoop surrounding the pressure zone of the cylinder.

In witness whereof I affix my signature.

WILLIAM JOSEPH STILL.