UNIVERSAL STATES PATENT OFFICE.

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ENGINE-CYLINDER CONSTRUCTION.


To all whom it may concern:

Be it known that I, William L. Corson, a subject of the King of Great Britain, residing at Alameda, in the county of Alameda and State of California, have invented certain new and useful Improvements in Engine-Cylinder Construction, of which the following is a specification.

The present invention relates to a cylinder for internal combustion engines.

Hereinafter described invention has for its principal objects, the production of an engine cylinder, the side or main wall body portion of which, or other parts subject to wear, if desirable, may be constructed of greater heat resisting metals than the head or other parts which are not subject to wear; to provide a cylinder which is formed in a plurality of parts and thence assembled for permanent attachment to form a substantially integral non-separable structure, and which construction enables the head to be finished and the required portions of the same to be machined at little cost, due to the accessibility of the interior of the cylinder head before the securing of the same to the cylinder proper. A further object is to provide a construction wherein a permanent non-leakable joint is obtained between the cylinder head and body member when the same are assembled.

To more fully comprehend the invention, reference is directed to the drawing wherein is illustrated a side elevation, partly in section, of the preferred embodiment of my invention, illustrating in dotted lines the attaching ring after being heated and slipped over the cylinder body prior to positioning of the head on to the body.

In carrying out my invention, the cylinder head 1 and the body 2, are constructed separately, the head preferably in the form of a casting, and the body a forging, the head being provided with the usual intake and exhaust channels 3, and valve guides 4 for the usual type of over-head valve engine.

It is to be understood, that while I have illustrated an engine cylinder of the overhead valve type, I do not desire to be limited to such construction, as the invention is equally as well adapted to either what are commonly termed T or L head motors.

The side-wall 4 of the cylinder head 1, surrounding the combustion chamber 5, is provided on the outer side of its lower peripheral edge with a peripheral recess 6, the outer surface of which, is adapted to be threaded as at 7 for attachment to the cylinder body 2.

To provide increased strength at this point, where it is most essential, due to the making of the joint with the cylinder head and the taking place of the combustion of the explosion charge within the cylinder adjacent this point, the upper portion of the cylinder body which is open at both ends is of an increased thickness, as at 8 over the lower portion of the cylinder, and if desirable, a removable jacket (not shown) may be positioned over the head cylinder with its lower end, resting on a suitable member 8' cast, shrunk or otherwise attached to the lower portion of the cylinder body. The upper inner edge surface of the cylinder body 2, is threaded as at 9, for attachment to the cylinder head 1.

Prior to assembling the cylinder head 1 and body 2, a suitable clamping ring 10 having an inner diameter equal to or slightly less than the outside diameter of the upper threaded portion 8 of the body member 2 is expanded, by the application of heat thereto, and when in said heated expanded condition is slipped downwardly over the body wall below the thickened portion 8, to loosely surround the cylinder as in dotted lines in the drawing. The cylinder head 1 and body member 2 are then assembled as in the drawing, by means of clamping ring 10 which may have cooled during this operation is again expanded by the application of heat thereto and is raised from the position of dotted lines in drawing to the full line position over-lapping the over-lapping joining portions A of the cylinder head and body member. The ring 10 is temporarily retained in this position in any suitable manner and in cooling, said
ring shrinks in position thereon. The ring 10, after shrinking over the joint coupling A engages the outer surfaces of both the cylinder head 1 and the body 2 and prevents any separation of the two cylinder members or the leaking of the same at the joint connection.

It may be desirable, although not essential, in the assembling of the cylinder member, to weld the same by any of the well known methods employed, and permit the weld to cool prior to shrinking the ring 10 in position over the joint connection.

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

An internal combustion engine cylinder comprising separately formed and finished cylinder head and body wall members threaded together at their interengaging edges to form a headed leak-proof cylinder, the head member provided with inlet and exhaust ports and independent valve guides for receiving valves for controlling said ports, the exterior diameter of the upper end of the body member corresponding to that of the lower end of the head member and greater than that of the body member below its upper end, and an unbroken ring loosely surrounding the body member and of a normal interior diameter less than that of the upper end of the body member, said ring adapted for expansion and shrinking over the joint connection of said head and body wall members to permanently unite the same, whereby a substantially integral headed cylinder structure is formed.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM L. CORSON.

Witnesses:
O. H. FISCHER,
GEO. W. EMERSON.