T. C. W. PULLINGER.

CONSTRUCTION OF WATER JACKETED ENGINE CYLINDERS.

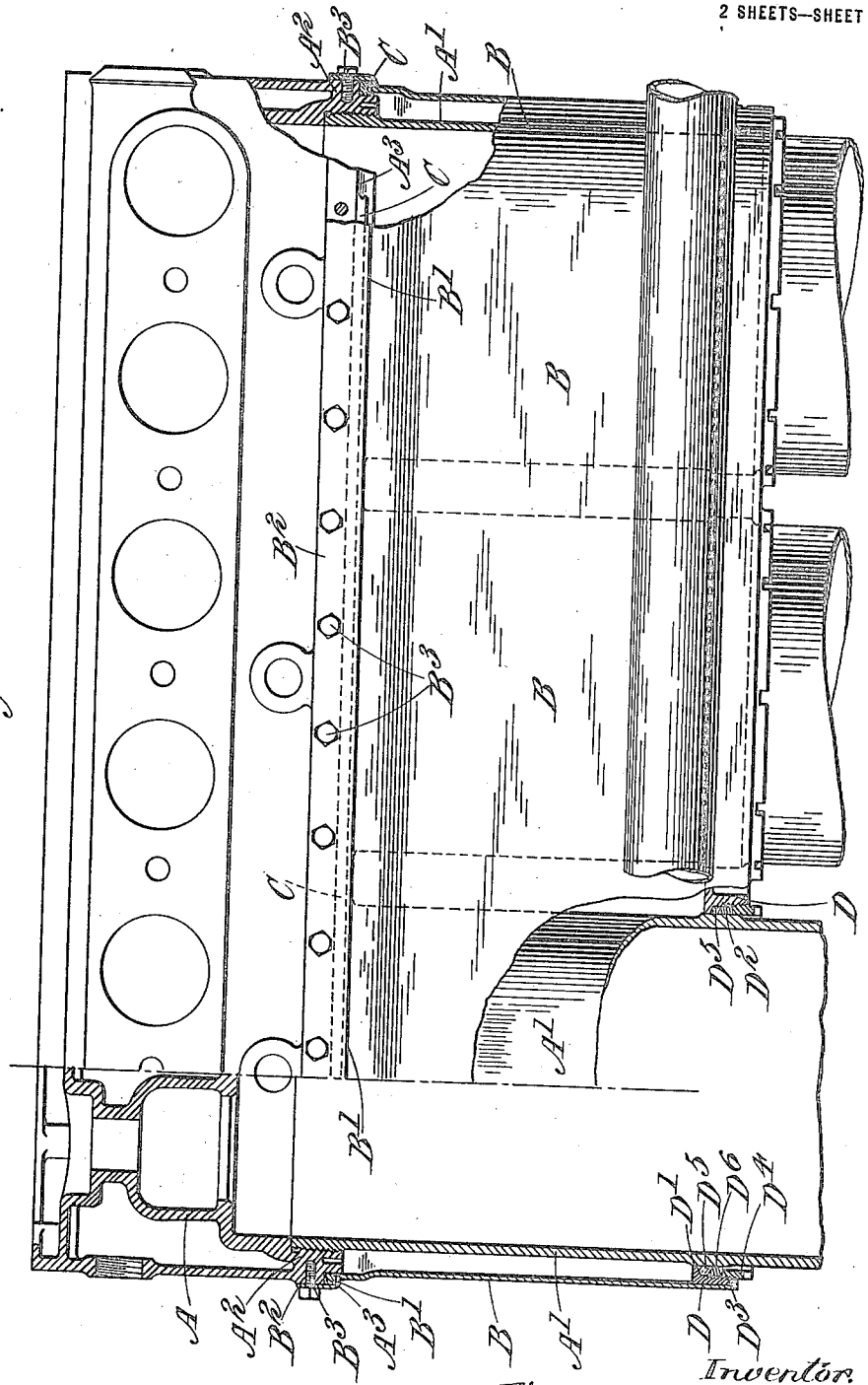
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1,301,740.

Patented Apr. 22, 1919.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

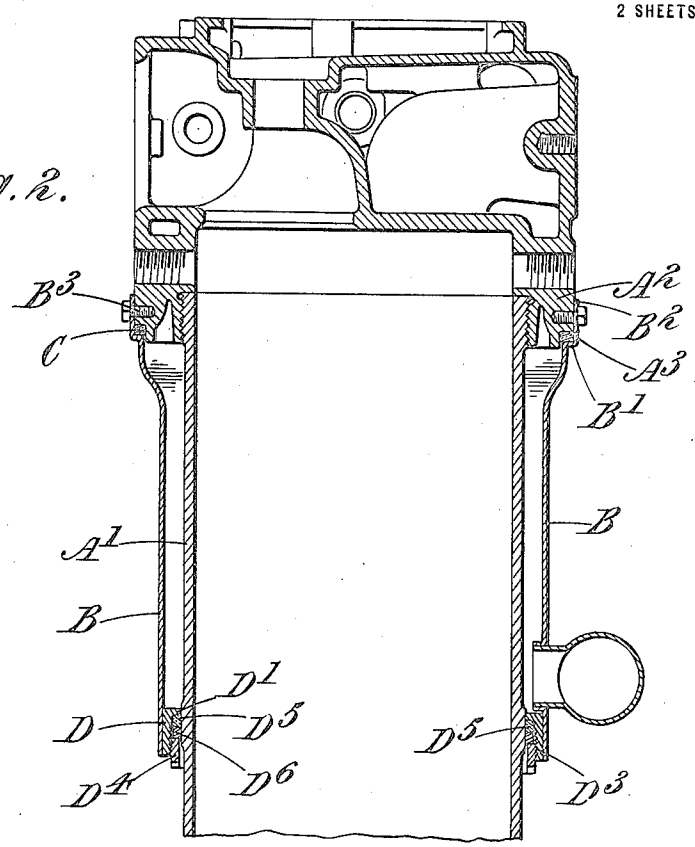
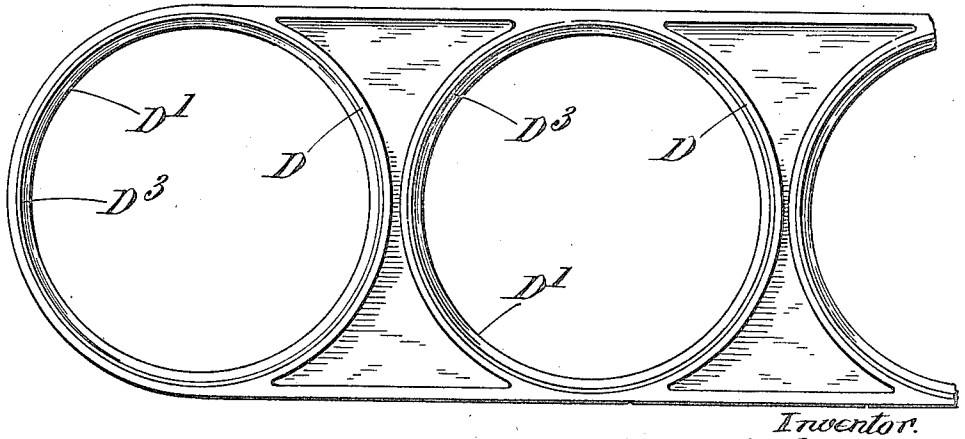


Fig. 3.



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UNITED STATES PATENT OFFICE.

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CONSTRUCTION OF WATER-JACKETED ENGINE-CYLINDERS.

1,301,740. Specification of Letters Patent. Patented Apr. 22, 1919.

Application filed April 4, 1918. Serial No. 226,735.

To all whom it may concern:

Be it known that I, THOMAS CHARLES WILLIS PULLINGER, a subject of the King of England, residing near Dumfries, Scotland, Great Britain, have invented certain new and useful Improvements in the Construction of Water-Jacketed Engine-Cylinders, of which the following is a specification.

This invention is for improvements in or relating to the construction of water-jacketed engine-cylinders, and has for its object to provide a light construction of water-jacketed engine, the invention having particular reference to the method of making the joint between the jacket and the part carrying the same.

According to this invention, the engine-cylinder has rigid with it an outwardly-projecting shoulder at one end which shoulder faces toward the other end of the cylinder, and the water-jacket has a corresponding internal shoulder at that end and a portion which extends beyond the said shoulder to engage the side face of the shouldered portion on the engine-cylinder in order that it may be secured to the cylinder-portion by such extension, for the purpose of holding the jacket "in" endwise against the end-thrust of packing placed between the two shoulders.

Preferably the end of the jacket not secured as described above, is provided with a gland for packing which bears against a circular portion rigid with the engine-cylinder.

In the accompanying drawings which illustrate one method of carrying out this invention:—

Figure 1 is an elevation in part section of a cylinder-block with jacket attached;

Fig. 2 is a vertical section through the block of cylinders at right-angles to the section shown in Fig. 1 and centrally with one of the cylinders, and

Fig. 3 is a plan of the gland-plate for closing the lower end of the jacket.

Like reference letters indicate like parts throughout the drawings.

The block of cylinders shown in the drawing comprises the usual head A into which are secured by any convenient means cylinders A^1 which may be of forged steel. The head projects laterally beyond the cylinders at A^2 and in this projecting portion a continuous shoulder A^3 is provided which extends around the whole head and faces in the direction of the ends of the cylinders remote from the head.

A sheet-metal water-jacket B conveniently of steel is provided with a shoulder B^1 corresponding to the shoulder A^3 on the cylinder-head and beyond this shoulder is an extension B^2 which is shaped to fit around the projecting portion A^2 of the head which, as indicated, extends around the entire block.

Between the shoulders A^3 and B^1 a rubber packing-ring C is placed and in assembling the parts, the water-jacket is thrust endwise against this packing so that the packing is compressed and when so compressed the jacket is secured to the head by screws B^3 which extend through the portion B^2 of the jacket and engage the part A^2 of the head. A water-tight joint is thus provided by the packing C between this end of the water-jacket and the head of the cylinder-block.

The other end of the water-jacket is closed by a plate D shaped to fit the jacket and which may be secured thereto by welding. In this plate holes D^1 are provided one for each cylinder, so that the cylinders project therethrough and that portion of each cylinder-wall which lies opposite the plate D is thickened as at D^2, say, by securing a piece of metal around it, for example by welding a band thereon, and this thickened portion has its outer face turned true. The wall of each hole D^1 is recessed and screwthreaded as at D^3 to receive a ring-nut D^4.

In assembling the parts a rubber packing-ring D^5 is placed in each recess provided in the wall of each hole D^1. A compression-ring D^6 is then inserted and the ring-nut D^4 screwed home so that the packing-ring is forced inward against the wall of the cylinder thereby forming a watertight joint between the cylinders and this end of the water-jacket; the faces of the parts bearing against the packing-ring are sloped to drive the ring inward.

What I claim as my invention and desire to secure by Letters Patent is:—

The combination with a cylinder-block wherein the head end is provided with a continuous outwardly-projecting shoulder which faces toward the other end of the cylinders, of a water-jacket surrounding all the

cylinders, having a corresponding internal shoulder at the head end, a portion which extends beyond the said internal shoulder to engage the side face of the shouldered portion on the cylinder-block, the bottom of the water-jacket being filled in with a plate provided with holes to permit the extension through it of the cylinders and glands secured in the plate and engaging circular exterior faces which are circumferential to the cylinders, substantially as set forth.

In testimony whereof I affix my signature.

THOMAS CHARLES WILLIS PULLINGER.