J. H. SMITH.

ENGINE.

APPLICATION FILED APR. 6, 1908.

914,760. **Patented Mar. 9, 1909.**

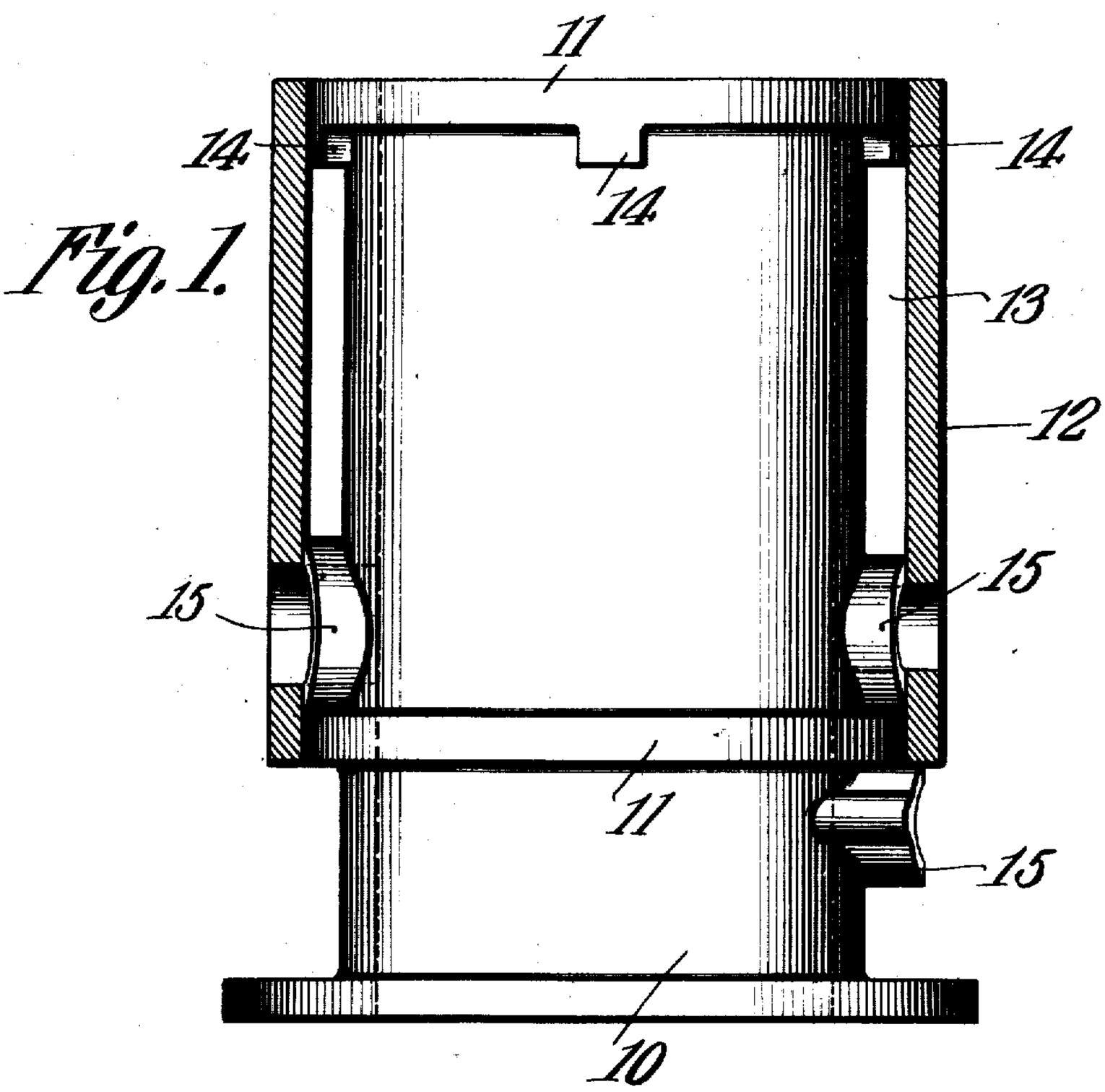

Fig. 1.

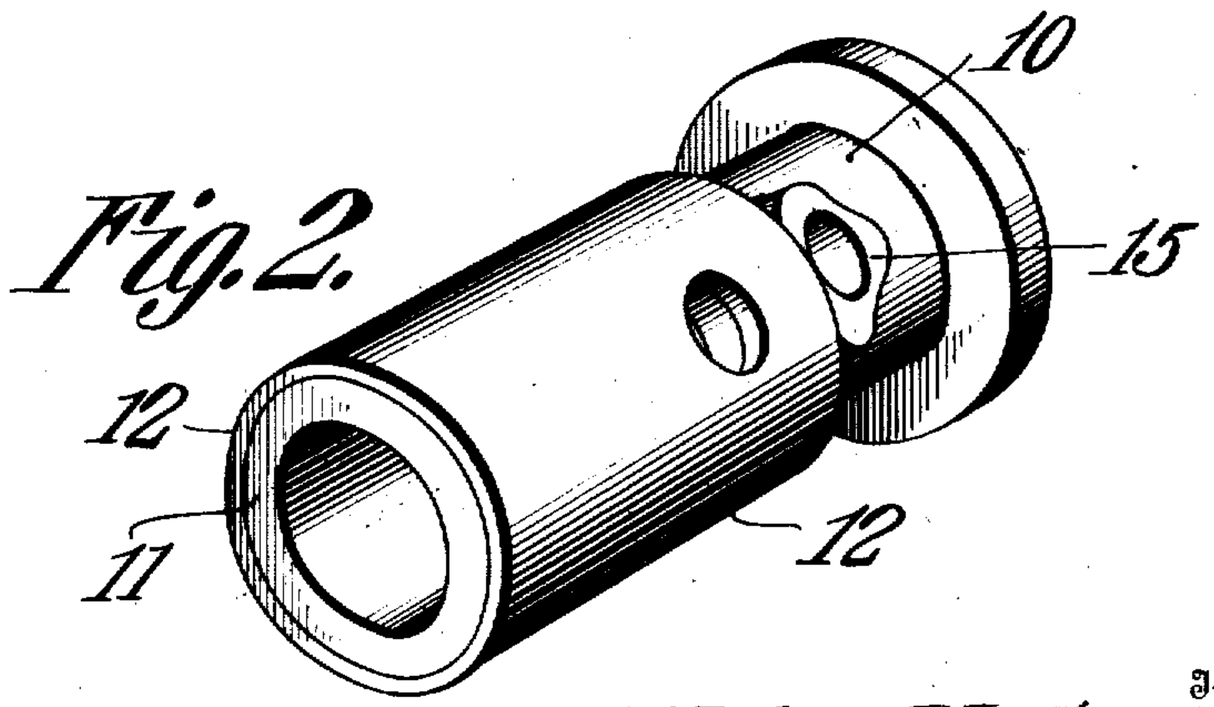

Fig. 2.

Witnesses

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JOHN H. SMITH, OF MANCHESTER, VIRGINIA.

ENGINE.

No. 914,760. Specification of Letters Patent. Patented March 9, 1909.

Application filed April 6, 1908. Serial No. 425,440.

To all whom it may concern:

Be it known that I, JOHN HENRY SMITH, a citizen of the United States, residing at Manchester, in the county of Chesterfield and State of Virginia, have invented a new and useful Engine, of which the following is a specification.

This invention relates to the manufacture of cylinders provided with a fluid jacket, such as gas engine cylinders and steam jacketed steam engine cylinders.

The invention further relates to the article produced by such manufacture.

It is a well known fact that where a fluid passage such as the water jacket of a gas engine cylinder, is attempted to be cast there is at all times more or less doubt about the exact position of the core during the casting. Neither chaplets nor any other means has been found efficient to maintain the cores of the water jacket in correct position and at times cylinders have been cast in which the cores were so far out of position as to greatly weaken the cylinder and cause the same to burst without warning.

One object of the present invention is to obviate the necessity for using cores in the construction of such a cylinder and to so construct the same that it may be cast with no other core than that of the cylinder bore.

A further object of the invention is to provide a cylinder of the character described with an exterior of high tensile strength. It is usual in cylinders of this description, and in fact necessary in the usual construction, to cast the cylinder out of metal having easy flowing properties when molten. This metal as a rule is not of great tensile strength, and it is to obviate the weakness occasioned thereby that is the second object of this invention as expressed above.

The invention consists in general of a cylinder provided with fluid jacket recesses on the exterior and a casing shrunk thereover.

In the accompanying drawings the views are merely typical of any form of cylinder of the above description, and are to be taken only as such. For the purpose of better understanding the device, however, a somewhat specific description is necessary and with this in view like characters of reference indicate like parts in the views.

Figure 1 shows an elevation of the views assembled, the outer cover being in section. Fig. 2 is a perspective view of the same.

In the type of cylinder here shown the numeral 10 indicates the body of the cylinder. Ribs 11 extend therearound, the rib 11 at the lower part of Fig. 1 being at the usual point at which the water jacket ends. At 12 is indicated the cover for the fluid jacket recesses or passages 13. At 14 are shown bosses on the cylinder which may be used as a means of securing a head thereto, while at 15 are the bosses wherein are made the usual inlet and exhaust passages.

In the method of constructing the device, the same body 10 is cast in such manner as to have the ribs 11 and bosses 14 and 15 project up from the main portion of the body and thus leave the recesses 13. The body portion 10 may then be turned up or left rough as desired, but it is essential that the ribs 11 should be so finished as to present a proper smooth surface and it is preferred that all of the projecting parts should lie in the same cylindrical surface. This body portion is preferably made of cast-iron, but it may be made of any other metal having easy flowing properties when molten. There is then prepared a cover 12 which is preferably made of slightly smaller diameter than the diameter of the cylinder in whose surface lie the surfaces of the ribs 11 and bosses 15. This cover is preferably made of wrought steel of high tensile strength and is heated to expand the same when placed over the body of the cylinder and cooled, thereby setting up initial tensile stress in the exterior and initial compressive stress in the body portion.

What is claimed is:—

An engine cylinder comprising a body portion having an annular rib at one end thereof, a second rib intermediate the ends, a lug projecting above the second rib adjacent the same, and a metal cover shrunk over said body supported on the ribs and bearing against the lug.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN H. SMITH.

Witnesses:
JAS. M. WALKER,
E. W. CADY.