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G. E. WILSON & W. J. FRAWLEY.

CYLINDER STEAM JACKET.

APPLICATION FILED FEB. 6, 1906.

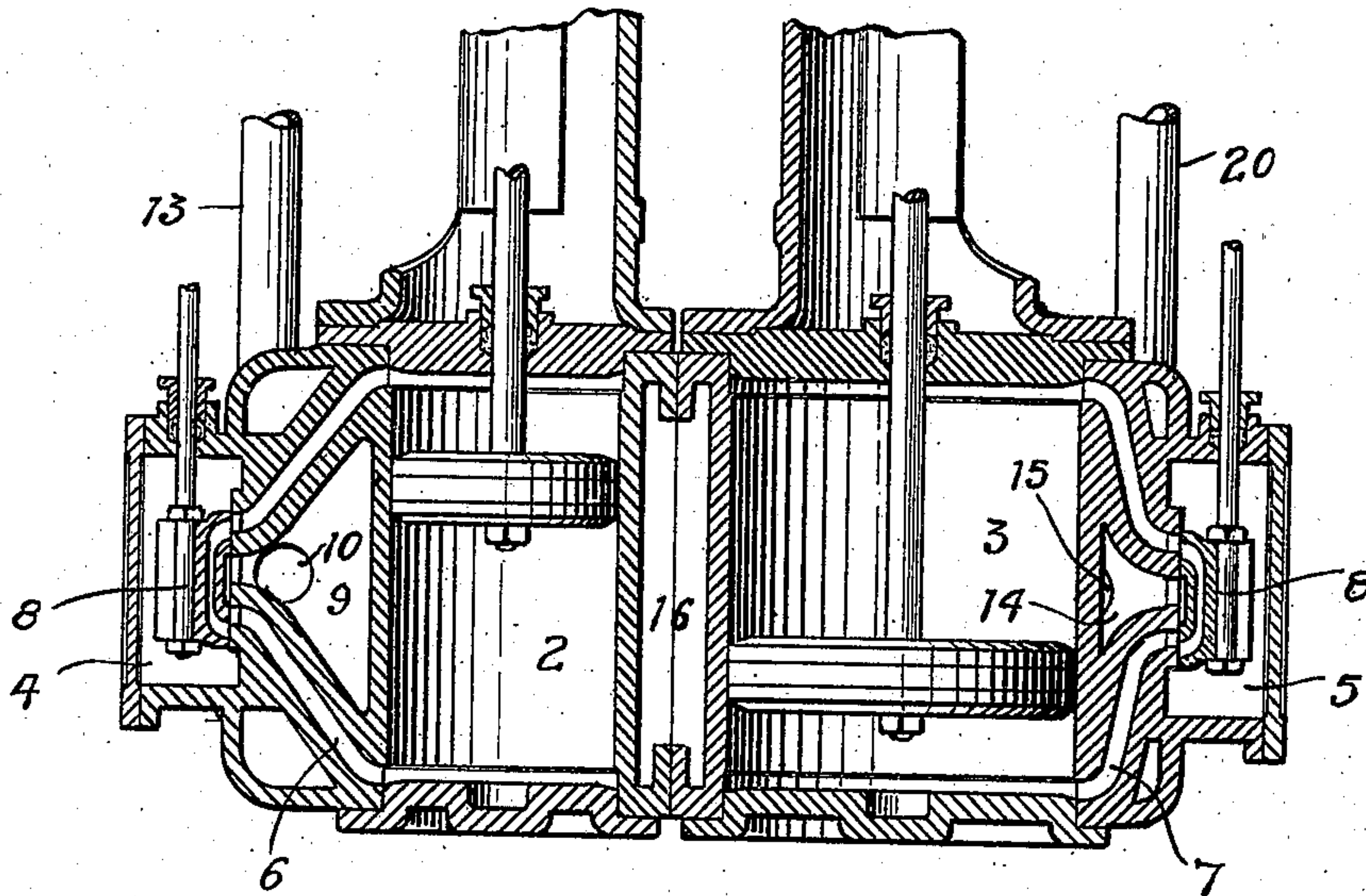


Fig 1.

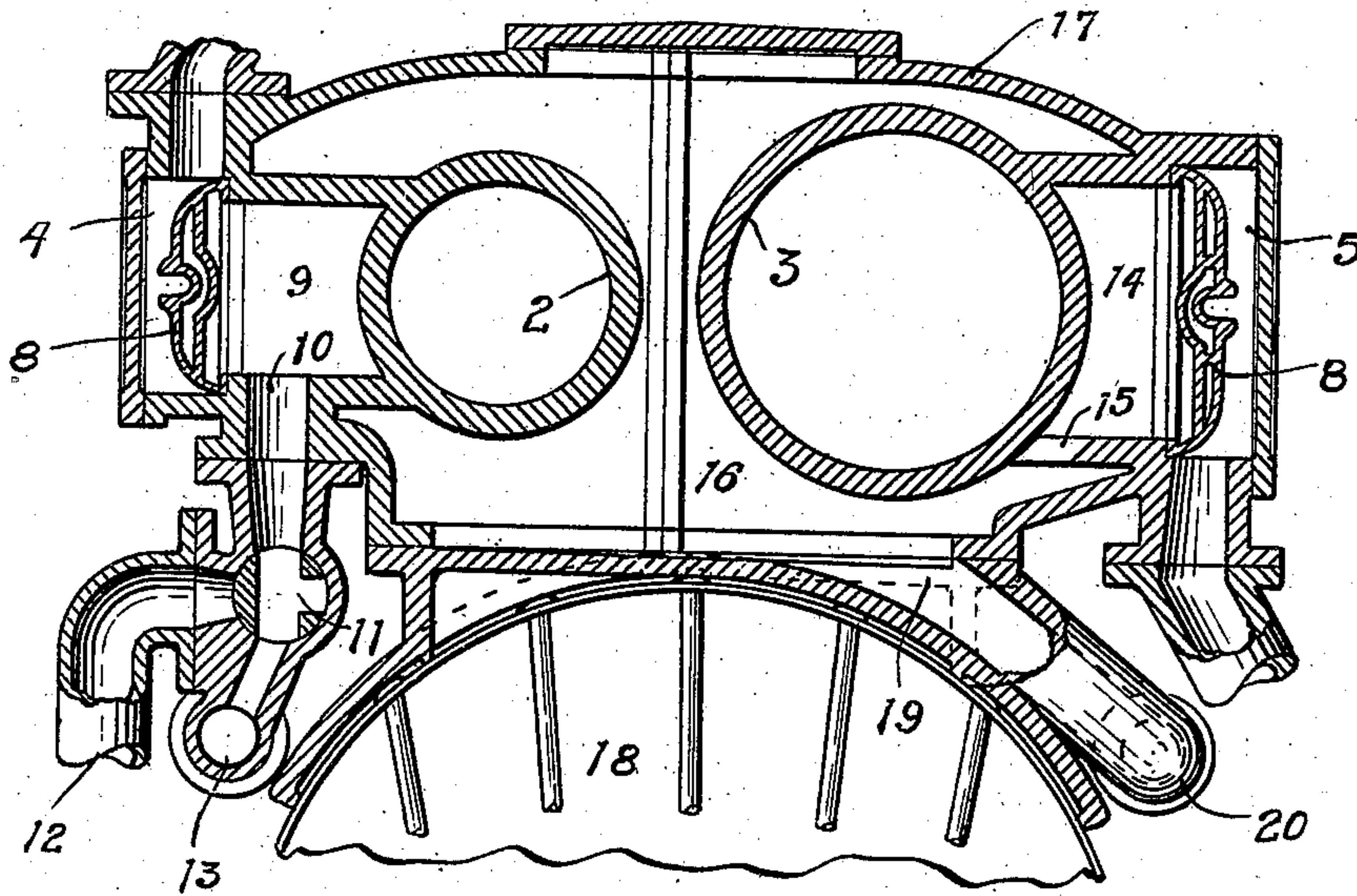


Fig 2.

WITNESSES
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GEORGE E. WILSON AND WILLIAM J. FRAWLEY, OF STILLWATER,
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CYLINDER STEAM-JACKET.

No. 847,712.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed February 6, 1906. Serial No. 299,802.

To all whom it may concern:

Be it known that we, GEORGE E. WILSON and WILLIAM J. FRAWLEY, both of Stillwater, Washington county, Minnesota, have invented certain new and useful Improvements in Cylinder Steam-Jackets for Traction-Engines, of which the following is a specification.

It is a well-known fact that in the operation of a traction-engine there is considerable loss of power through the rapid condensation of the steam in the cylinders, such condensation varying in degree with the temperature. The steam entering the cylinder that is cold, as when first starting the engine, or one that is exposed directly to the air, will condense rapidly instead of expanding, and it is customary in starting an engine to open the cylinder-cocks to draw off the water of condensation. As soon as the cylinder becomes hot the cocks may be closed. There is, however, even after the cylinder becomes hot, more or less condensation, depending upon the weather and the character of the jacket or covering employed for the cylinder. The condensation deprives the engine of power and robs it to a considerable degree of its efficiency. It is customary, therefore, to provide a jacket or covering of some kind around the cylinder to reduce condensation as far as possible, or, in other words, prevent the steam from becoming wet, delivering it to the cylinder in as dry a state as possible. The cylinder-coverings usually employed consist of wood, asbestos, or some such non-conductor of heat, which is presumed to prevent radiation from the cylinders and direct contact of the cold outer air therewith. These covering devices have been found, however, to be only a partial preventative of condensation; and the object of our invention is to provide a jacket which will not only prevent contact of the cool outer air with the surface of the cylinder, but will permit a heating agent to be circulated around the cylinder for the purpose of maintaining or raising the temperature of its outer walls.

The invention consists generally in providing a jacket inclosing the high and low pressure cylinders of a cross compound traction-engine between which, the jacket and the cylinders, a chamber or space is provided, wherein the exhaust from the low-pressure cylinder is discharged and allowed to circulate freely before passing to the stack.

Further, the invention consists in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a horizontal sectional view of the high and low pressure cylinders of a cross-compound traction-engine and the steam-jacket inclosing the same. Fig. 2 is a transverse vertical sectional view of the same.

In the drawing, 2 and 3 represent the high and low pressure cylinders, having steam-chests 4 and 5 communicating, respectively, with steam-passages 6 and 7, leading to the cylinders, and provided with slide-valves 8, arranged to move back and forth across the ports leading to said passages in the usual way. The steam-chest 4 also communicates with a cavity 9, having an exhaust-port 10 leading to a three-way valve 11, which controls the discharge of the exhaust from the high-pressure cylinder to pipes 12 and 13. The pipe 12 extends through the fire-box (not shown) to the steam-chest 5 of the low-pressure cylinder, and the pipe 13 extends to the stack, so that the operator of the engine can direct the high-pressure-cylinder exhaust to the low-pressure cylinder or to the stack, as desired. The steam-chest of the low-pressure cylinder communicates with a cavity 14, having a port 15, through which the exhaust from the low-pressure cylinder is allowed to flow into a chamber 16, provided within a shell or jacket 17, and extending entirely around and between the high and low pressure cylinders. The jacket 17 may be formed in any suitable way, but is preferably cast integrally with the cylinders.

The exhaust-steam from the low-pressure cylinder will enter and fill the chamber 16, and flowing around and contacting with the walls of the cylinders will keep them hot and very materially reduce condensation therein as long as the engine is in operation.

The jacket inclosing the cylinders is supported upon the boiler 18, and a port 19 is provided in its lower walls leading to a pipe 20, which extends forward to the stack for the purpose of finally discharging the exhaust therein. By this means condensation in the cylinders and wet steam is practically eliminated. The outer surfaces of the cylinders will be kept hot by the exhaust-steam flowing around them, and the steam entering

the cylinders can be kept in a much drier state than usual in engines of this type, and a greater efficiency can be attained in the operation of the engine.

5 We claim as our invention—

The combination, with a traction-engine boiler, of a casing mounted thereon, high and low pressure cylinders arranged side by side in said casing and spaced from one another
10 and from the walls of said casing, said cylinders having steam-chests and valves therefor in the outer side walls of said casing and cavities located between said valves and cylinders and communicating with said chests
15 through said valves, the chamber or space within said casing extending partially around said cylinders and cavities, the cavity of said high-pressure cylinder having a pipe leading

to the steam-chest of said low-pressure cylinder, and said low-pressure-cylinder cavity 20 having a port leading to the interior of said casing whereby the exhaust of said low-pressure cylinder will be admitted to the chamber or space within said casing and conducted around said cylinders to reduce radiation and 25 condensation thereof, and a pipe leading from said casing to the boiler-stack and whereto the exhaust is finally delivered, substantially as described and for the purpose specified.

In witness whereof we have hereunto set 30 our hands this 30th day of January, 1906.

GEORGE E. WILSON.

WILLIAM J. FRAWLEY.

Witnesses:

S. BLAIR McBEATH,

L. J. TAZENDIN.