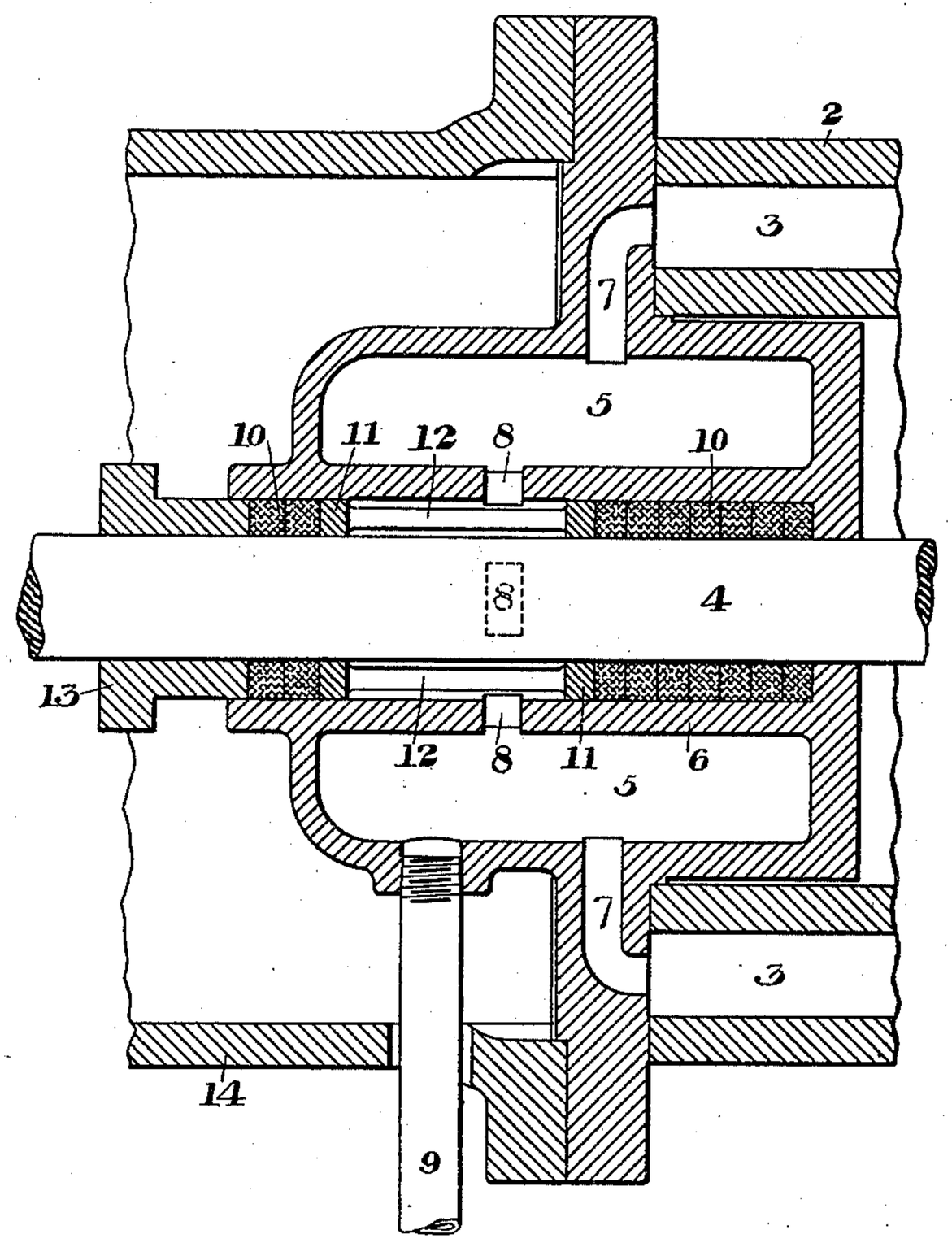
No. 685,921. Patented Nov. 5, 1901

J. S. KLEIN.

ROD PACKING.

(Application filed May 18, 1900.)

(No Model.)



WITNESSES

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JOHN S. KLEIN, OF OIL CITY, PENNSYLVANIA.

ROD-PACKING.

SPECIFICATION forming part of Letters Patent No. 685,921, dated November 5, 1901.

Application filed May 18, 1900. Serial No. 17,115. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. KLEIN, of Oil City, in the county of Venango and State of Pennsylvania, have invented a new and useful Improvement in Rod-Packings, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which the figure is a partial longitudinal section of a gas-engine provided with my improved device.

My invention relates to the packing of reciprocatory piston-rods, and more particularly to the packing and cooling of the piston-rod of tandem gas-engines, wherein the two pistons are connected by a common piston-rod.

Heretofore in this class of gas-engines it has been difficult or impossible to prevent excessive heating of the piston-rod, since the products of combustion directly contact with it. My invention overcomes this difficulty; and it consists, broadly, in applying cooling water or liquid directly to the piston-rod and packing, in combination with a cooling-chamber which surrounds the chamber containing the packing.

It also consists in the construction and arrangement of the parts, as hereinafter more fully described, and set forth in the claims.

In the drawings, 2 represents a portion of a cylinder of a tandem gas-engine, this cylinder having the usual water-jacket space 3. The head of this cylinder, through which the piston-rod 4 extends, is provided with an annular water-cooling space 5 and with a packing-chamber within the center of the head and separated from the water-cooling space by the annular wall 6. The water-cooling space 5 in the head connects with the water-jacket 3 of the cylinder through an annular series of ports 7 and also with the inner stuffing-box or packing-chamber through a set of ports 8. The water is supplied to the water-space 5 through an inlet-pipe 9 and may be taken off from the cylinder-jacket at any desired point.

Within the end portions of the stuffing-box I provide packing-rings 10 or packing material of any suitable kind, and these end packings are spaced apart by means of rings 11, having connecting-bars leaving an annular space around the piston-rod between the packing-rings. The rings are compressed by the usual gland 13, which communicates an end pressure to the packing-rings and the spacer between. The second cylinder, which is in line with the shoulder 2, is separated from it by a stretcher 14, of annular form, the piston-rod 4 extending into this second cylinder and being also secured to the piston therein.

In the operation of my improved device water being continuously supplied through the pipe 9 enters the space 5 and thence circulates within the space between the packing-rings and in contact with the piston-rod and packing and flows from the chamber 5 into the water-jacket of the cylinder. At each stroke the heated portion of the piston-rod, which has been in direct contact with the heated products of combustion from the explosion, passes through the cooling-chamber and is cooled by the water directly contacting with it. The rod is thus maintained at a low temperature, preventing excessive heating and the difficulties arising therefrom.

The device may be applied to other engines than that shown, and many changes may be made in the form and arrangement of the direct-cooling chamber without departing from my invention.

By the term "gas-engine" as used in my claims I mean all internal-combustion motors or engines.

I claim—

1. A gas-engine having an annular stuffing-box surrounding the piston-rod, packing interposed between the annular wall of said stuffing-box and the piston-rod, a cooling-chamber within the stuffing-box and giving direct access to the piston-rod, and an annular jacket surrounding the annular wall of the stuffing-box around the packing, and having a direct connection with the cooling-chamber in the stuffing-box to allow liquid from

the cooling-jacket to enter the stuffing-box and contact with the piston-rod; substantially as described.

2. A gas-engine having a water-jacket surrounding the cylinder, a stuffing-box in its head and containing a cooling-chamber within its annular wall, a cooling-jacket surrounding the stuffing-box and the cooling-chamber, and connected with said chamber, and connections between the cooling-jacket and the water-jacket of the cylinder; substantially as described.

In testimony whereof I have hereunto set my hand.

JOHN S. KLEIN.

Witnesses:
S. B. DAUGHERTY,
A. B. STEEN.