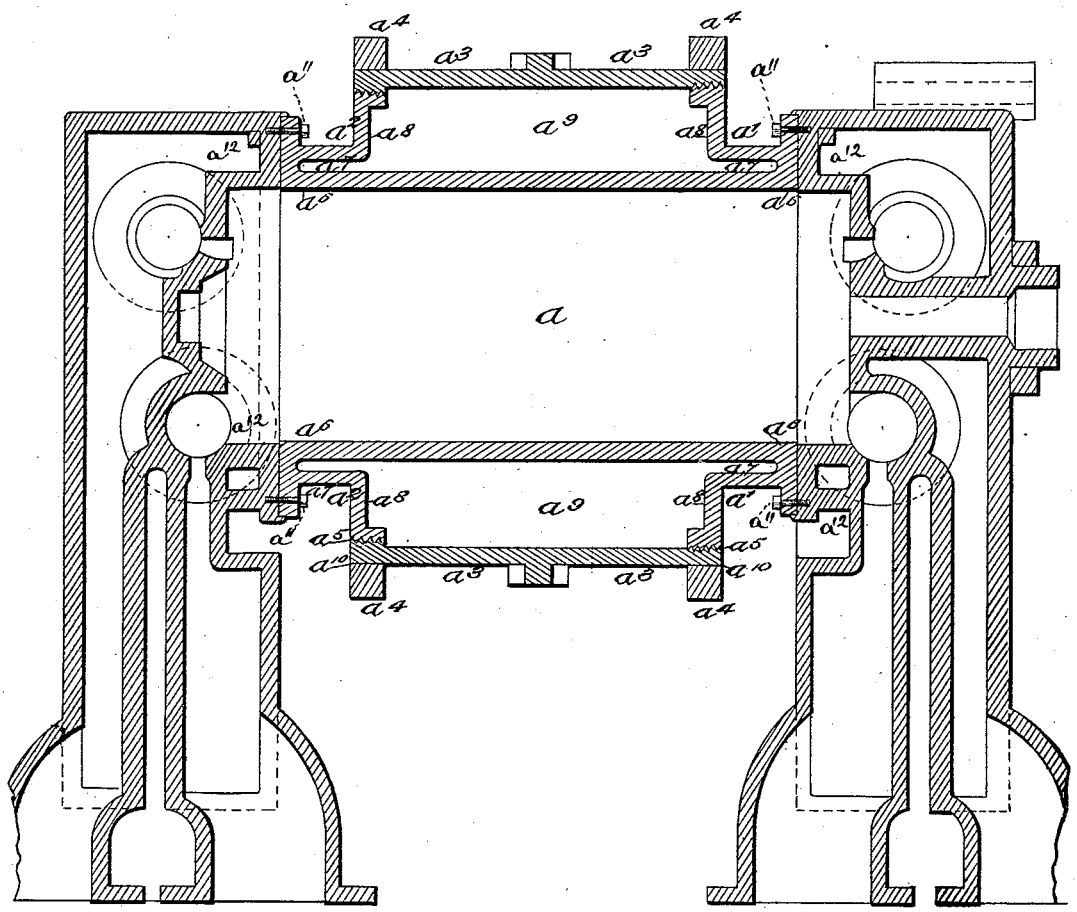
G. H. CORLISS.

Cylinder of Steam-Engines.

No. 215,807. Patented May 27, 1879.



WITNESSES:

E. B. Bolton

W. Colborne Brookes

INVENTOR:

George H. Corliss

by his attorney

Thomas D. Stetson

UNITED STATES PATENT OFFICE.

GEORGE H. CORLISS, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN CYLINDERS OF STEAM-ENGINES.

Specification forming part of Letters Patent No. **215,807**, dated May 27, 1879; application filed February 6, 1879.

To all whom it may concern:

Be it known that I, GEORGE H. CORLISS, of the city and county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements relating to the Cylinders of Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My improved cylinder is provided with a flange at each end, constructed and arranged for making a steam-tight joint with an exterior cylinder or casing, whereby an annular space is obtained between the two, which, being filled with steam, constitutes a so-called "steam-jacket."

The flanges are so formed that by their flexibility they can accommodate themselves, without danger of breaking, to the expansion and contraction due to considerable differences in temperature between the outer and inner cylinders.

I make the steam-cylinder and casing in separate pieces mainly to secure with greater certainty reliable castings of uniform thickness.

Screw-threads are cut upon the periphery of the flanges, corresponding to interior threads cut upon the casing.

In order to facilitate the placing of the casing upon the cylinder, the diameter of one of the threaded flanges is made less than that of the other by an amount slightly exceeding the depth of the thread, the corresponding threaded ends of the casing being similarly modified, so as to fit the same

After the casing is screwed upon the flanges, like a nut upon a bolt, the thread-joints are perfected by compressing-bands applied upon each end of the casing directly over the threaded parts.

The flanges at each end of the cylinder present a section in the form of an elbow, one extremity of which section joins to the ordinary flange of the steam-cylinder, while the other makes joint with the casing. One part of the section is parallel to the main cylinder-section, while the other stands at right angles to it. The first-mentioned part of the flange is flexible in one direction and the second in the other. The one accommodates expansion in a transverse direction and the other in a longitudinal direction.

Steam is admitted to the annular space or steam-jacket, and an exit is provided for the water of condensation by suitable pipe-connections.

The accompanying drawing forms a part of this specification, and represents what I consider the best means of carrying out the invention.

a is the body of the steam-cylinder, and a^1 a^2 the elastic flanges. a^3 is the outer casing, and a^4 a^4 the compressing-bands. Screw-threads are cut upon the periphery of the elastic flanges, as shown at a^5 a^5, corresponding to interior screw-threads cut upon the casing a^3.

In order to facilitate the placing of the casing upon the cylinder in the process of construction, I make the diameter of the elastic threaded flange a^1 larger than that of the corresponding flange a^2 by an amount slightly in excess of the depth of the screw-thread a^5, the corresponding ends of the casing being fitted to the same. After the casing a^3 has been screwed upon the flanges a^1 a^2, like a nut upon a bolt, the screw-thread joints a^5 are perfected by the compressing-bands a^4 a^4, applied upon each end of the casing directly over the threaded parts a^5 a^5.

It will be observed that the flanges a^1 a^2 at each end of the cylinder present a section in the form of an elbow, one extremity of the elbow being joined to the ordinary flange of the cylinder at a^6, while the other extremity makes joint with the casing at a^5.

I will mark the ordinary flange a^6 at each end of the cylinder. It is adapted to perform its usual function of holding the bolts a^{11}, which confine the cylinder ends a^{12}, in addition to its function of joining to the elastic flange a^1 or a^2, and forming one end of the thin extension of the steam-jacket a^9, which by my invention is allowed to extend to the flange a^6 without interfering with the ordinary uses and functions of the latter.

One part, a^7, of the section is parallel to the cylinder-body section a, while the other part, a^8, stands at right angles to it. The part a^7 is flexible in one direction, and the part a^8 in

the other direction. The part a^7 accommodates expansion and contraction in a transverse direction, and the part a^8 in a longitudinal direction.

Steam is admitted to the annular space or steam-jacket a^9, and an escape is provided for the products of condensation by suitable pipe-connections. (Not shown.)

Modifications may be made in the form of many of the parts.

The flanges a^1 a^2, joining the cylinder a and casing a^3, may be corrugated or otherwise varied in form.

The compressing-bands a^4 a^4 may be applied by shrinking them on or by forcing them on. In the latter case it will be understood that the bearing-surfaces a^{10} a^{10} should be slightly conical.

I claim as my invention—

1. A steam-cylinder, a, and an outer casing, a^3, joined by elastic flanges a^1 a^2, formed with an elbow-section, a^7 a^8, adapted to allow of yielding elastically both in the radial and longitudinal direction, as herein specified.

2. A jacketed cylinder for a steam-engine, constructed with the exterior part, a^3, in a piece separate from the cylinder and united by screw-threads a^5, as herein set forth and described.

3. A steam-cylinder having flanges a^1 a^2 joined to the ordinary flanges a^6, in the positions shown, and adapted to allow the steam-jacket to extend quite to the end of the cylinder, and to allow the ordinary flange to serve its usual functions, as herein specified.

4. In combination with the cylinder a, outside casing, a^3, elastic flanges a^1 a^2, and screw-threads a^5, the compressing-bands a^4, adapted to serve as herein specified.

In testimony whereof I have hereunto set my hand this 1st day of February, 1879, in the presence of two subscribing witnesses.

GEO. H. CORLISS.

Witnesses:
JESSE WALRATH,
GEORGE A. DODGE.