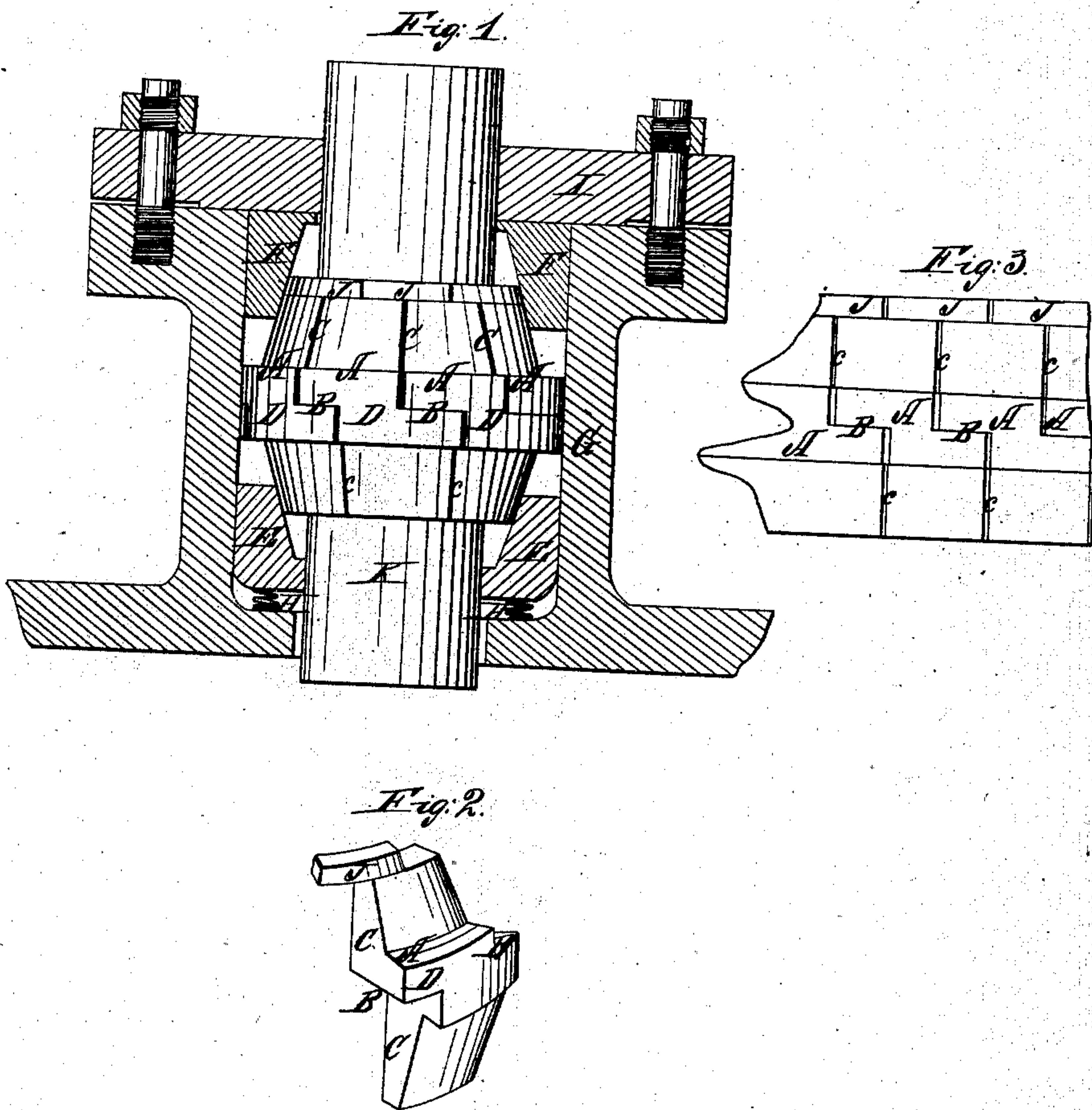


T. R. Grant,
Piston Packing.

N^o 59,907.

Patented Nov. 20, 1866.



Witnesses:

Thos. A. Connolly
Wm. L. Brown.

Inventor:

Thos. R. Grant
By his atty R. D. Smith

United States Patent Office.

IMPROVEMENT IN PISTON-ROD PACKING.

THOMAS R. GRANT, OF NEWARK, OHIO.

Letters Patent No. 59,907, dated November 20, 1866.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS R. GRANT, of Newark, in the county of Licking, and State of Ohio, have invented a new and useful Improvement in Metallic Steam Packing for Stuffing-Boxes, &c.; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section through the stuffing-box and portion of the cylinder head showing the packing in position.

Figure 2 is a perspective view of one of the sections detached.

Figure 3 is a diagram showing the operation and union of the sections.

The nature of my invention consists in constructing the sections of my metallic packing in the peculiar manner shown, so that all the joints shall be covered, and, under pressure of steam, closed and tight, while, when relieved of the steam pressure, they will slightly separate and permit the piston-rod to slide freely and with little friction.

That others may understand its construction and operation, I will particularly describe it.

My packing is composed of sections, one of which is shown in perspective in fig. 2. The several sections are lettered A. Each section has a horizontal shoulder or offset as at B, which corresponds to and fits with a steam-tight joint, the adjoining section. These offsets are designed to cover and break the perpendicular joints C, between the sections A, the latter joints necessarily being a little open to permit the sections to move toward the piston-rod when steam enters behind them. The internal face of each section forms a segment of a cylinder, the diameter of which is exactly equal to the diameter of the piston-rod K, so that when the several sections are pressed close to the piston-rod, they may conform exactly to its surface and prevent any escape of steam between said rod and sections. The external form of the sections, A, is that of a prolate spheroid, with a central band or flange, D. The two ends of this spheroid are encased in cups E, F, of a corresponding internal form, but externally forming portions of cylinder corresponding to the cavity of the stuffing-box, G, in which the packing is encased. The small springs, H, are introduced beneath the cup E, simply for the purpose of keeping the various parts of my packing in contact when there is no steam present, and to prevent rattling. The flange D is in exterior curvature about equal to the interior curvature of the stuffing-box. The upper surface of the cup F is turned off true so as to fit the under side of the cover I, with a steam-tight joint. The cover I is secured to the stuffing-box by bolts or screws in the ordinary manner. The orifice through the cover, I, to accommodate the piston-rod, is sufficiently large to permit the rod to pass freely without leaving any considerable space around it; while the orifice from the cylinder into the stuffing-box is considerably larger than the piston-rod, so that steam may enter below the cup E, and press it upward against the sections, A. The joint-pieces, J, may be employed, if it is thought to be desirable or necessary, to arrest any small leakage of steam due to an imperfect joint at B. The operation of my packing is very simple. When steam enters the cylinder in front of the piston, it also enters the stuffing-box and presses against the cup, E, forcing up into the box. The effect of this is, the inclined ends of the several sections, A, are forced deeper into the cups, E and F, the joints B are driven together, and the sections A are all compressed around the piston-rod. The cup F is forced up against the cover I, and thus all the joints are made tight so that no steam can escape. This condition continues to the end of the stroke, or as long as steam pressure exists in that end of the cylinder. When the exhaust is opened and the steam pressure is removed, the various parts of the packing relax and recede from each other slightly, just sufficient to relieve the piston-rod from pressure and consequent friction. From the above description it will be seen that there is friction and resistance in the stuffing-box only during the movement of the piston-rod in one direction. If found necessary in any case, springs may be introduced above the cup E, to ensure the relaxation of the sections when steam pressure is removed.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A metallic steam packing composed of the sections A, and cups E and F, constructed as described, in combination with the sections A, and the cups E and F, the springs H, as and for the purpose described.

THOS. R. GRANT.

Witnesses:

NORTON HAUGHEY,
SAMUEL TYHURST.