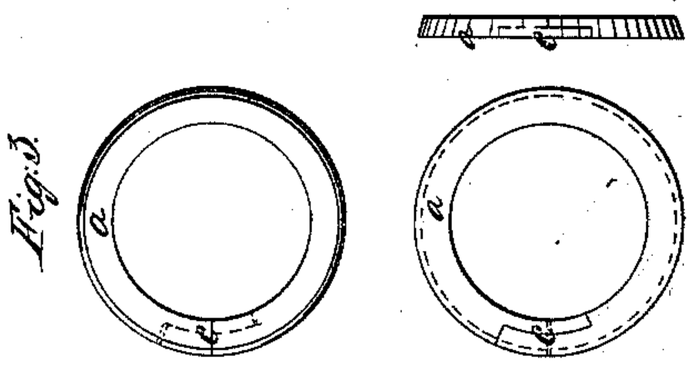
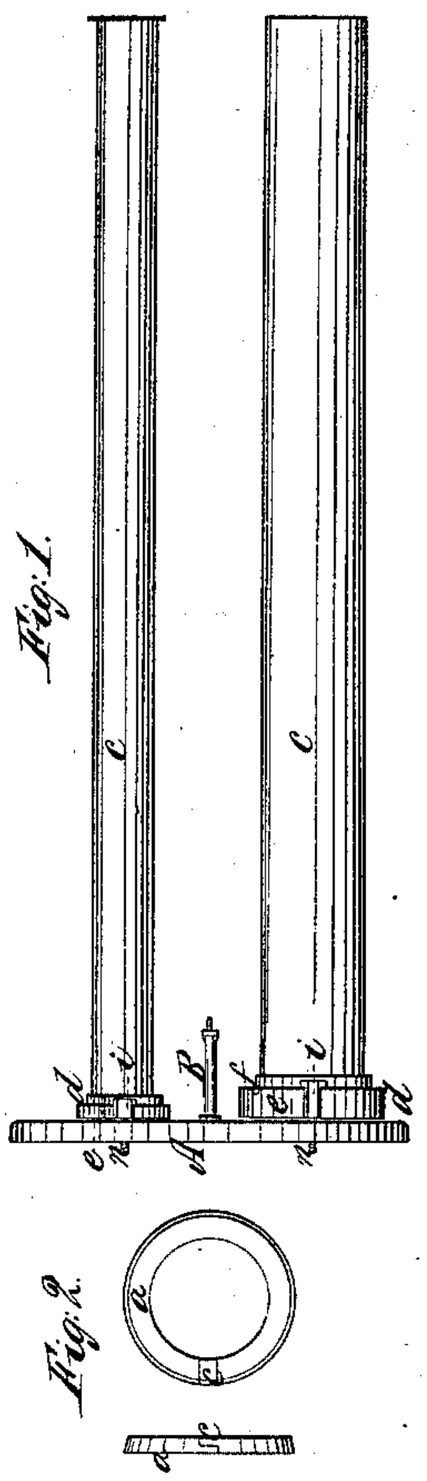
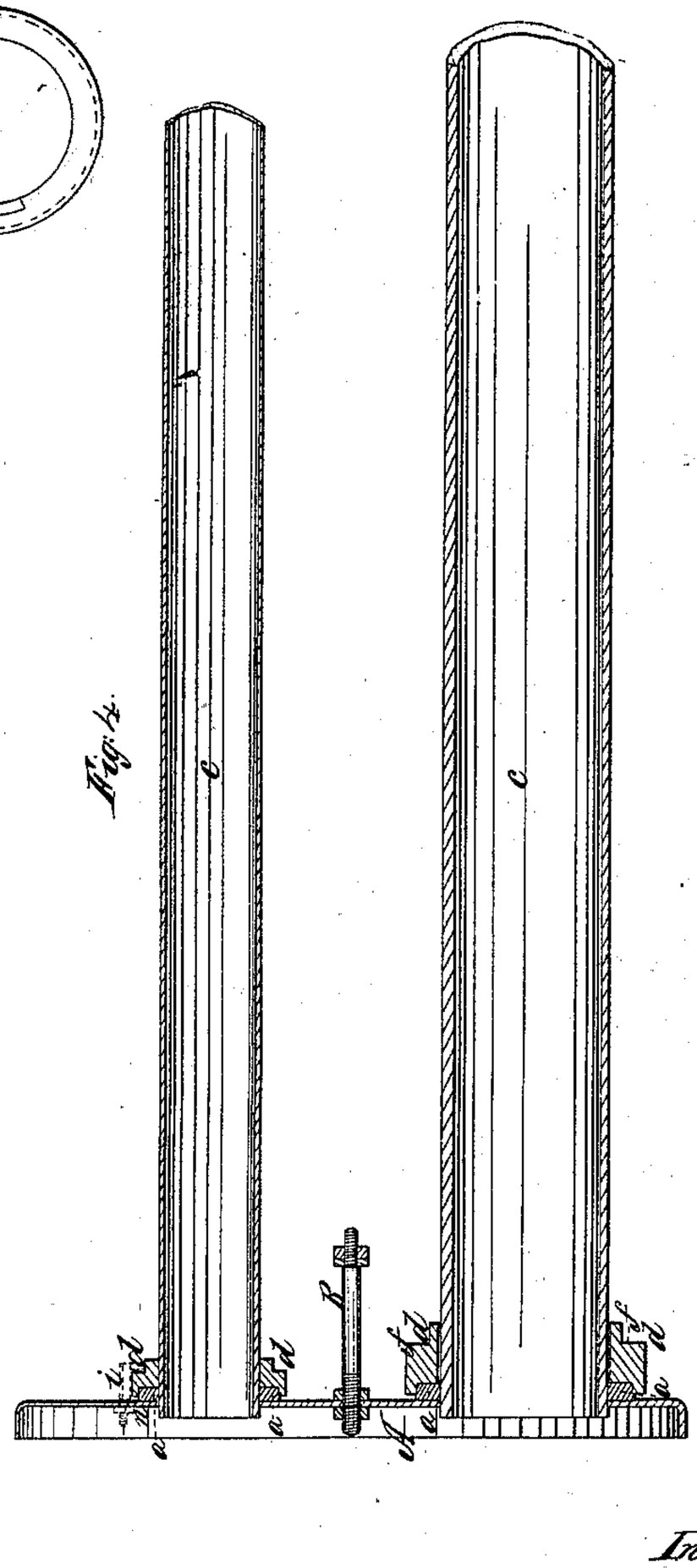
J. Newkirk,

Boiler-Tube Packing.

No. 49,295. Patented Aug. 8, 1865.







Witnesses:

J. W. Hillborn
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Inventor:

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UNITED STATES PATENT OFFICE.

JACOB NEWKIRK, OF FACTORYVILLE, NEW YORK.

IMPROVED PACKING FOR TUBES OF BOILERS OR CONDENSERS.

Specification forming part of Letters Patent No. **49,295,** dated August 8, 1865.

To all whom it may concern:

Be it known that I, JACOB NEWKIRK, of Factoryville, in the county of Tioga and State of New York, have invented certain new and useful improvements in the manner of uniting tubes to their heads in steam boilers or condensers; 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, making a part of this specification, in which—

Figure 1 represents an external view of portion of boiler-head with tubes connected thereto. Figs. 2 and 3 represent detached views of the rings by which the tubes are held and packed to the head, while the tubes may have end play to compensate for the expansion and contraction they are subjected to. Fig. 4 represents a section made on an enlarged scale, to better show the holding and packing rings in place.

Similar letters of reference, where they occur in the separate figures, denote like parts in all cases.

My invention consists in holding steam-tubes to their heads in boilers or condensers by means of holding and packing rings, which allows the tubes to expand and contract and still remain tight, or by which they can be made tight should they at any time leak or get too loose.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A represents a boiler or condenser head, trussed, as at B, to give it strength and firmness.

C are steam or flue pipes, which I propose to unite to the head so that they may expand and contract freely and yet remain steam-tight, and if not tight, may be readily made so. The tubes have around them, where they pass through the heads, a packing-ring, *a*, of a conical form, which is cut and has a lap-joint, as at *c;* or there may be two or more rings that break joint with each other to pack the joint. This packing-ring I propose to make of some metal softer than steel or iron, such as brass, copper, or other alloyed metal. Over this packing-ring *c* there is a holding-ring, *d*, also split, as at *e*, and shouldered, as at *f*, so that hook-headed bolts *i* may take over said shoulders, the other ends thereof passing through the head A, and capable of being drawn up tight by screw-nuts *n* thereon. The recess in the outer ring, *d*, in which the inner or packing ring, *a*, is received, is also conical, and is, or should be, deep enough to receive more or less of the packing-ring, as may be required, as it is tightened up.

The ends of the tubes beyond the head may have any kind of a stop upon them to prevent them from being drawn out of the head, but they expand and contract freely independent of the head, and form therewith a slip steam-joint.

By the conical form of the packing-ring and its recess in the outer ring the taking up of the screw-bolts presses the packing against the head and against the tubes, and thus makes a tight joint.

What I claim as my invention is—

The combination of a conically-recessed holding and a conical-shaped packing ring fitting therein, both rings being held and tightened up against the head and the tube by screw-bolts for holding and packing tubes to the heads of steam boilers or condensers, substantially in the manner and for the purpose described.

JACOB NEWKIRK.

Witnesses:

A. B. STOUGHTON,

XAVER FENDRICH.