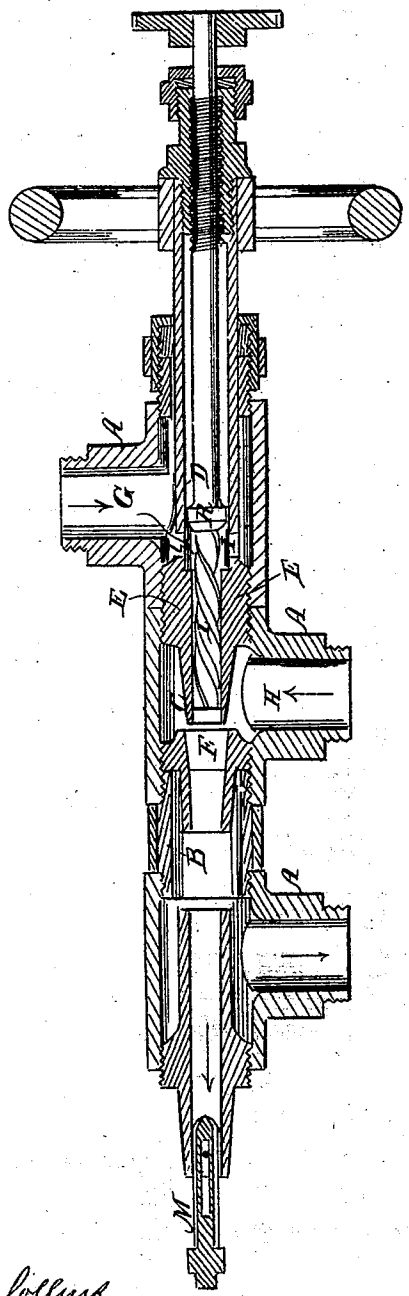
No. 92,313. PATENTED JULY 6, 1869.

C. HUGHES.
INJECTOR.



Witnesses:
E. Greenefollens
John F. Brooks

Inventor:
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drawing in this patent is not in print.

United States Patent Office.

CHRISTIAN HUGHES, OF NILES, OHIO.

Letters Patent No. 92,313, *dated July* 6, 1869.

IMPROVEMENT IN INJECTORS

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, CHRISTIAN HUGHES, of Niles, in the county of Trumbull, and State of Ohio, have invented a new and useful Improvement in Injectors; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

This invention relates to improvements in injectors for feeding steam-boilers, designed to simplify and cheapen the construction of the same; also to produce improvements in the operation thereof.

The invention consists in the arrangement of the T-pipe connections composing the shell. Also, in the construction and arrangement of an extension of the steam-pipe. Also, in the combination of the steam-valve with other contiguous parts, as will be hereinafter more fully described.

The drawing represents a longitudinal sectional elevation of my improvement.

For constructing the shell and forming the connections for the steam, supply, and waste-water pipes, I employ common gas T-connections, A, and join them together by ferrules, B, by which I am enabled to construct the said shells, with pipe-connections of this character, very cheaply.

I form the water-valve C permanently upon the end of the steam-tube D, which is provided with a screwed enlargement, E, working in corresponding threads in the interior of the shell, for adjusting it to or from the nozzle F, the said enlargement being arranged between the steam-pipe G and water-pipe H, constituting the packing between them, and thereby avoiding the necessity of other packing, as now commonly used, which frequently gets out of order.

The said tube D projects through a stuffing-box at the end, and is provided with a hand-wheel for operating it.

I represents the steam-passages, and K, the steam-valve, the stem of which projects through another stuffing-box, in the end of the tube D, and is also provided with a hand-wheel, for rotating it for adjustment.

The valve is provided with a spirally-fluted extension, L, projecting in the steam-tube nearly to the water-space, causing the steam-jet to be set into a spiral course previous to the contact with the water, which, I consider, makes a more compact jet, less liable to be broken and dispersed from any cause.

I provide, in the inner end of the second funnel, a check-valve, M, to prevent the water returning into the injector, which I find to be a better arrangement than where the check-valve is placed beyond the end of the said tube or funnel.

Having thus described my invention,

I claim as new, and desire to secure by Letters Patent—

1. The construction and arrangement of the enlarged extension E, of the steam-pipe D, as specified.

2. The arrangement of the T-pipe connections, substantially as described.

3. The combination, with the steam-valve K and steam-tube D, of the spirally-fluted extension, substantially as specified.

Witnesses: CHRISTIAN HUGHES.

EUGENE HARTOCK,

JOHN BATTEL, Jr.