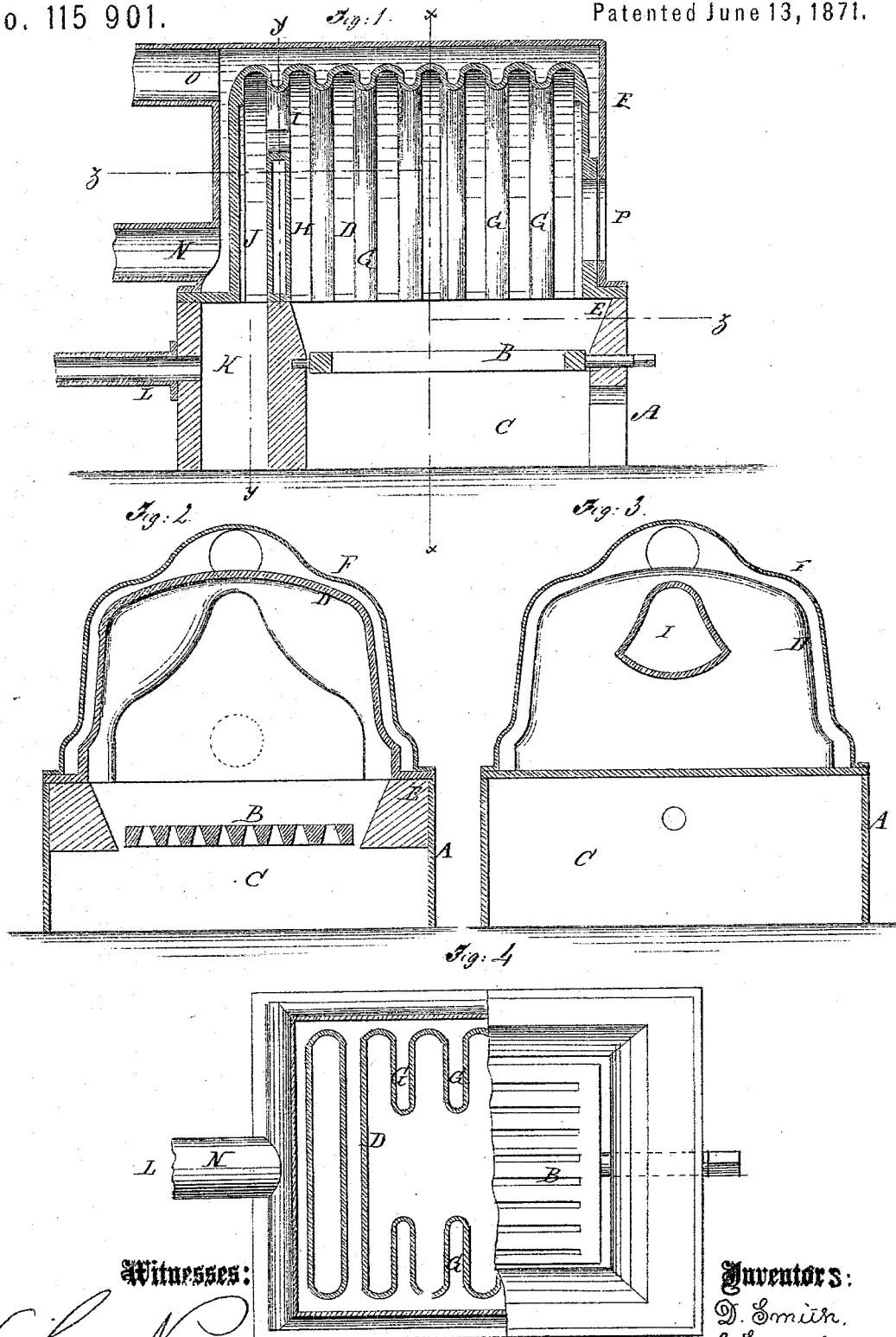


D. SMITH & J. LYNCH.

Improvement in Water Heaters.

No. 115 901.

Patented June 13, 1871.



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UNITED STATES PATENT OFFICE.

DAVID SMITH AND JOHN LYNCH, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN WATER-HEATERS.

Specification forming part of Letters Patent No. 115,901, dated June 13, 1871.

To all whom it may concern:

Be it known that we, DAVID SMITH and JOHN LYNCH, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Water-Heater; and we 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 a new and useful improvement in apparatus for heating water, designed more especially for warming green-houses with hot water, but applicable to other purposes; and it consists, mainly, in a celled fire-box made in a single piece. It also consists in the general construction, arrangement, and combination of parts hereinafter more fully described.

In the accompanying drawing, Figure 1 represents a vertical longitudinal central section of the apparatus. Fig. 2 is a vertical section of Fig. 1 taken on the line *xx*. Fig. 3 is a vertical section of Fig. 1 taken on the line *yy*. Fig. 4 is a horizontal and vertical section of Fig. 1 on the line *zz*.

Similar letters of reference indicate corresponding parts.

A is the base, which incloses the grate B and ash-pit C. D is the fire-box, cast in a single piece, attached to the base by a water-tight joint, as seen at E. F is the shell surrounding the fire-box. G represents the cells of the fire-box, seen in cross-section in Fig. 4. This formation of the fire-box gives a very large area of heating surface and enable us to make our heater very compact. H is a water-back or bridge-wall cast with the fire-box,

which is in communication with the rear cells of the fire-box, as seen in Fig. 1. I is the flue-orifice above the water-back H. J is the driving-flue behind the water-back. K is a smoke-box, back of the ash-pit, into which the smoke and products of combustion are discharged by the flue J. L is the exit-flue, which conducts the smoke to the chimney. The water is introduced into the heater at N and discharged at O.

When the heater is employed for heating water simply, a water-cock may be attached at any convenient point. For warming green-houses or buildings, the two pipes N O are united and a circulation is thus produced.

P is the door-aperture for the introduction of the fuel. A water-tight joint is made around the door as well as at the base of the fire-box.

By this arrangement it will be seen that the water surrounds the fire-box in a thin sheet, entering the cells and the back or bridge-wall and absorbing heat from a very extended surface, and that fuel in the fire-box can be used to the very best advantage.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The fire-box D, (with the cells G and water-back H,) cast in a single piece, substantially as and for the purposes described.

2. The combination of the shell F and base A with the fire-box D, arranged substantially as and for the purposes herein shown and described.

DAVID SMITH.
JOHN LYNCH.

Witnesses:

JAMES MORRISON,
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