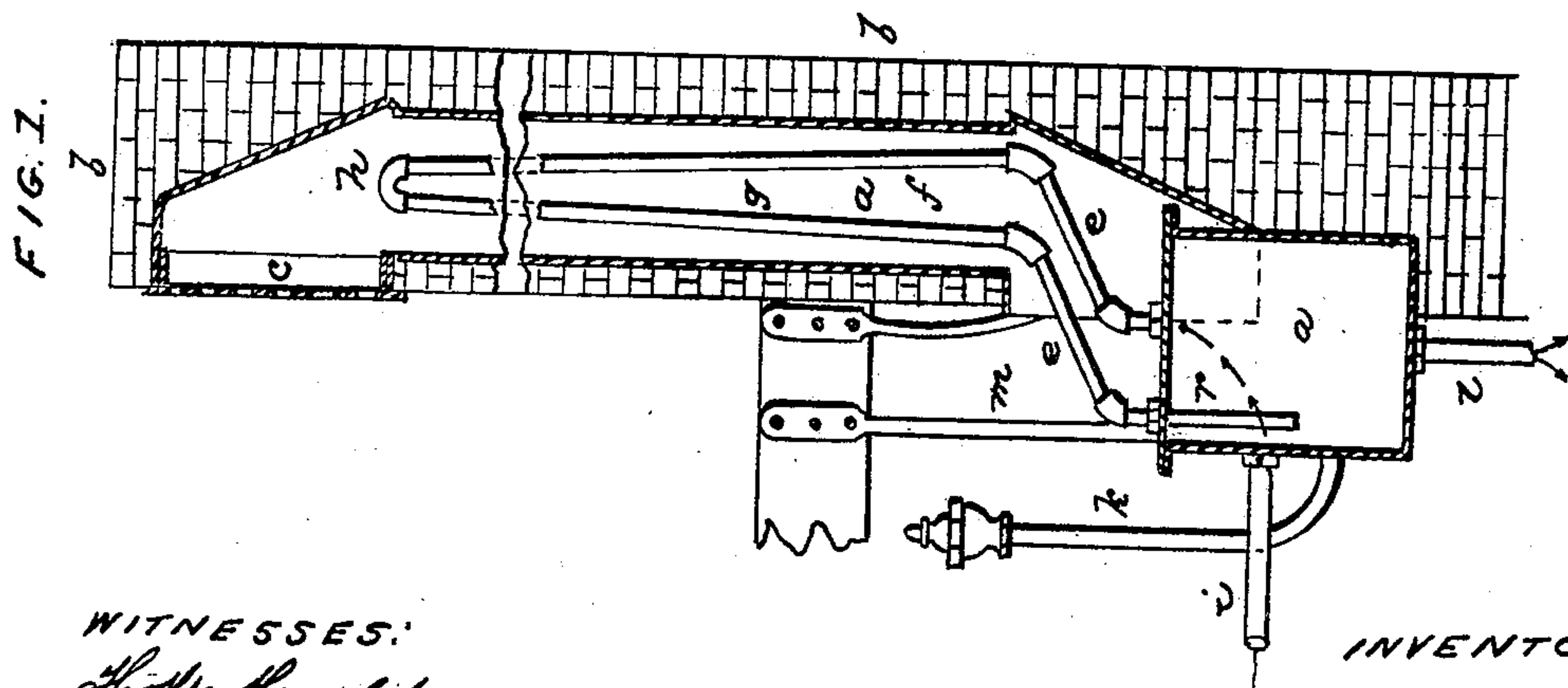
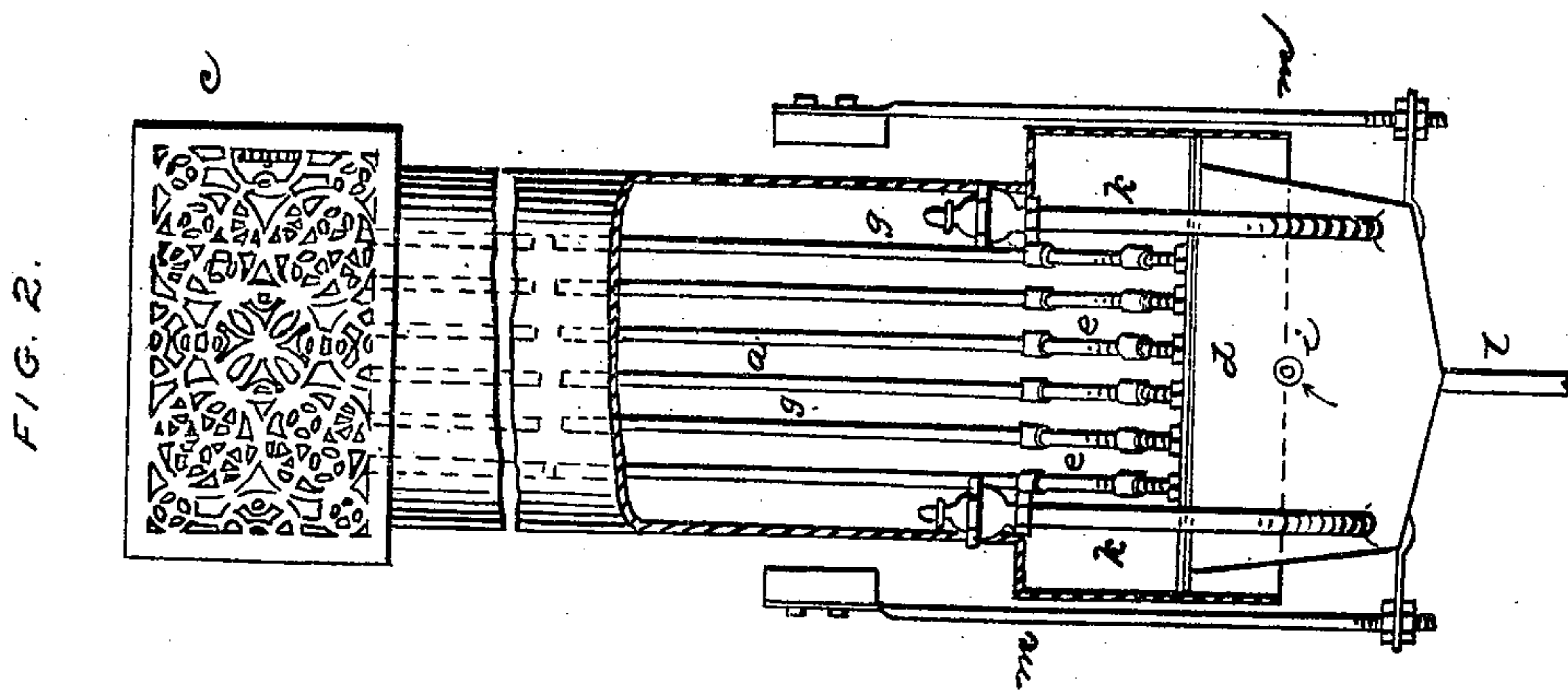


J. ELDER, Jr.
Steam Heater.

No. 59,198.

Patented Oct. 30, 1866.



WITNESSES:
Thos. H. Harold
Ces. D. Walker

INVENTOR.
John Elder Jr.

UNITED STATES PATENT OFFICE.

JOHN ELDER, JR., OF NEW YORK, N. Y.

STEAM-HEATING APPARATUS.

Specification forming part of Letters Patent No. 59,198, dated October 30, 1866.

To all whom it may concern:

Be it known that I, JOHN ELDER, Jr., of the city and State of New York, have invented, made, and applied to use a certain new and useful Improvement in Steam-Heating Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a vertical transverse section of my improved apparatus; and Fig. 2 is an elevation of the same, the air-pipe being partially removed to show the other parts.

Similar marks of reference denote the same parts.

Steam-coils have heretofore been introduced within a casing through which air passes to tubes running up through the walls to the rooms above. Such coils have usually been composed of a series of nearly horizontal pipes, connected together at the alternate ends, so that the steam circulates through them, and the condensation is returned to the boiler or passes off through a trap. This character of coil in very cold weather is liable to injury in consequence of the water of condensation freezing in the pipes; and besides this, considerable space is occupied by the coil in the cellar or lower story of the building.

The nature of my said invention consists in a steam coil or heater formed of a series of pipes passing vertically, or nearly so, into the air flue or pipe, and connected at their lower ends with a steam and condensation box, fitted in such a manner that the steam is forced to circulate through the said vertical coil, and all the condensation runs back immediately into the box, and passes into the boiler or a water-trap.

By this construction the liability of the apparatus becoming injured by the frost is entirely avoided, and much less space is occupied than with the coils heretofore made.

In the drawings, A represents the air flue or pipe, passing up through the wall or partition of the building, as at *b*, and provided with one or more registers, *c*, or outlets, from which the heated air passes into the building or room.

d is a metal box, of any desired size or shape, fitted with a cover, having bosses for receiving the ends of the pipes forming the vertical

steam-coil. There may be any desired number of these pipes, according to the size of the apparatus.

The lower portions of the pipes pass off at an inclination, as shown at *e e*, Fig. 1, and the pipes *f* and *g* pass up nearly vertically from them and unite at the bend *h*.

The usual screw-sockets or bends are to be employed for uniting the respective pieces of pipe.

i is the steam-pipe, and *l* is the pipe at the bottom of the box *d*, for the water of condensation to pass off.

k k are pipes, with air-cocks upon their upper ends, to allow of the escape of air from the apparatus when it is started, and *m m* are hangers to support the coil from the beams or otherwise.

The steam, when admitted through the pipe *i*, blows against the back of the box *d*, and rises, passing first up through the back pipes, *f*, of the coil; thence driving out the air before it as the steam continues to pass up *f* and gradually fill the pipes *g*, the air being allowed to blow off through the pipes and cocks *k*.

In order to insure the freeing of the apparatus from air, I prefer that the short pipes *r* be provided, extending from the lower ends of *e* and *g* below the steam-inlet pipe *i*, so that the steam will be compelled to pass up the pipes *f* and down the pipes *g*, driving out the air before it.

The box *d* and its cover may all be cast in one piece, if desired, so as to avoid the necessity of attaching the separate cover. The pipes *f* and *g* may pass directly up from the box *d*, instead of having the inclined pipes *e*, the air-flue passing up directly over said box *d*.

What I claim, and desire to secure by Letters Patent, is—

The coil of pipes *f g*, extending up in the air-pipe *a*, and connected with the steam-box at the lower end of the said coil, substantially in the manner specified.

In witness whereof I have hereunto set my signature this 4th day of September, A. D. 1866.

JOHN ELDER, JR.

Witnesses:

THOS. GEO. HAROLD,
GEO. D. WALKER.