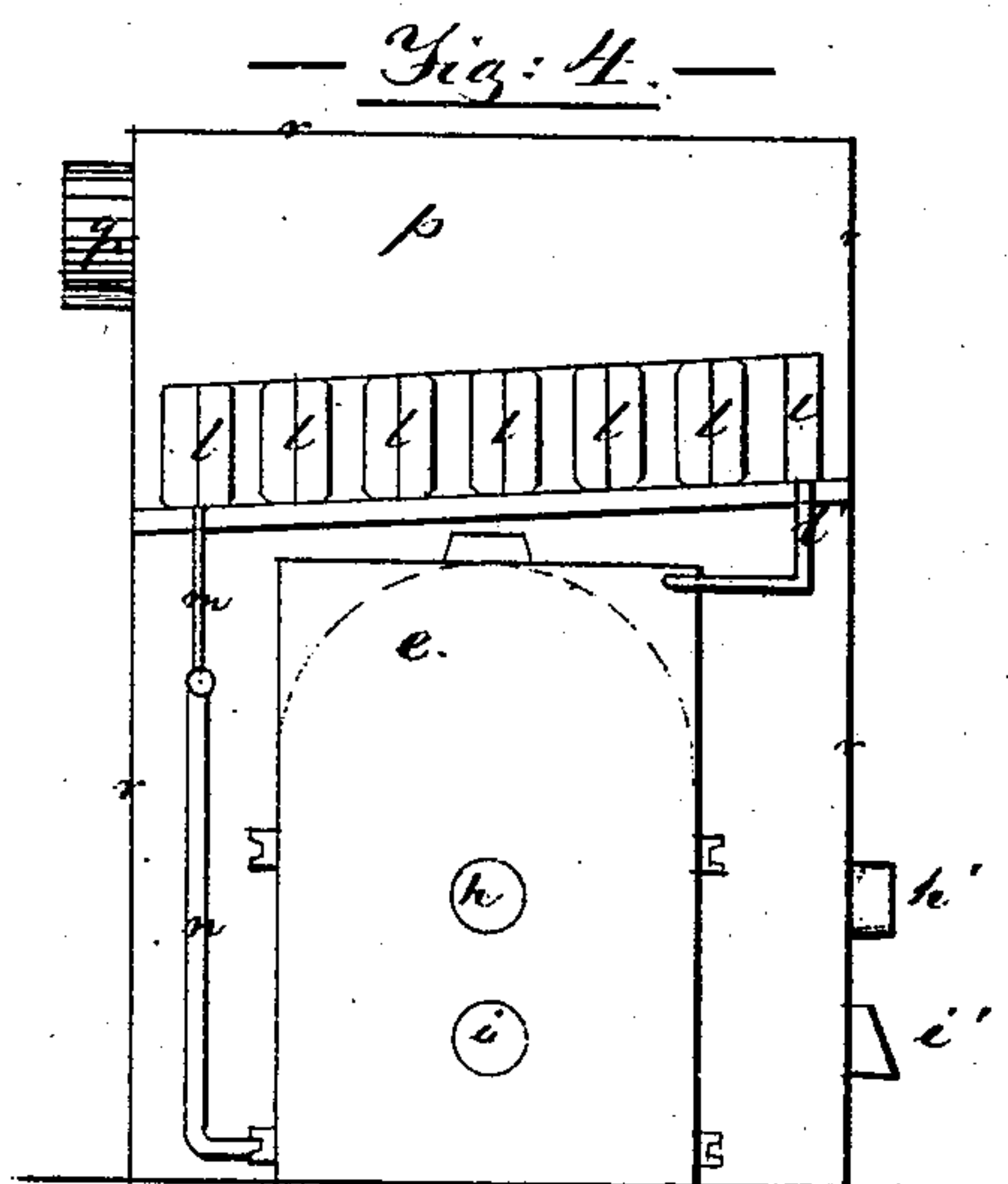
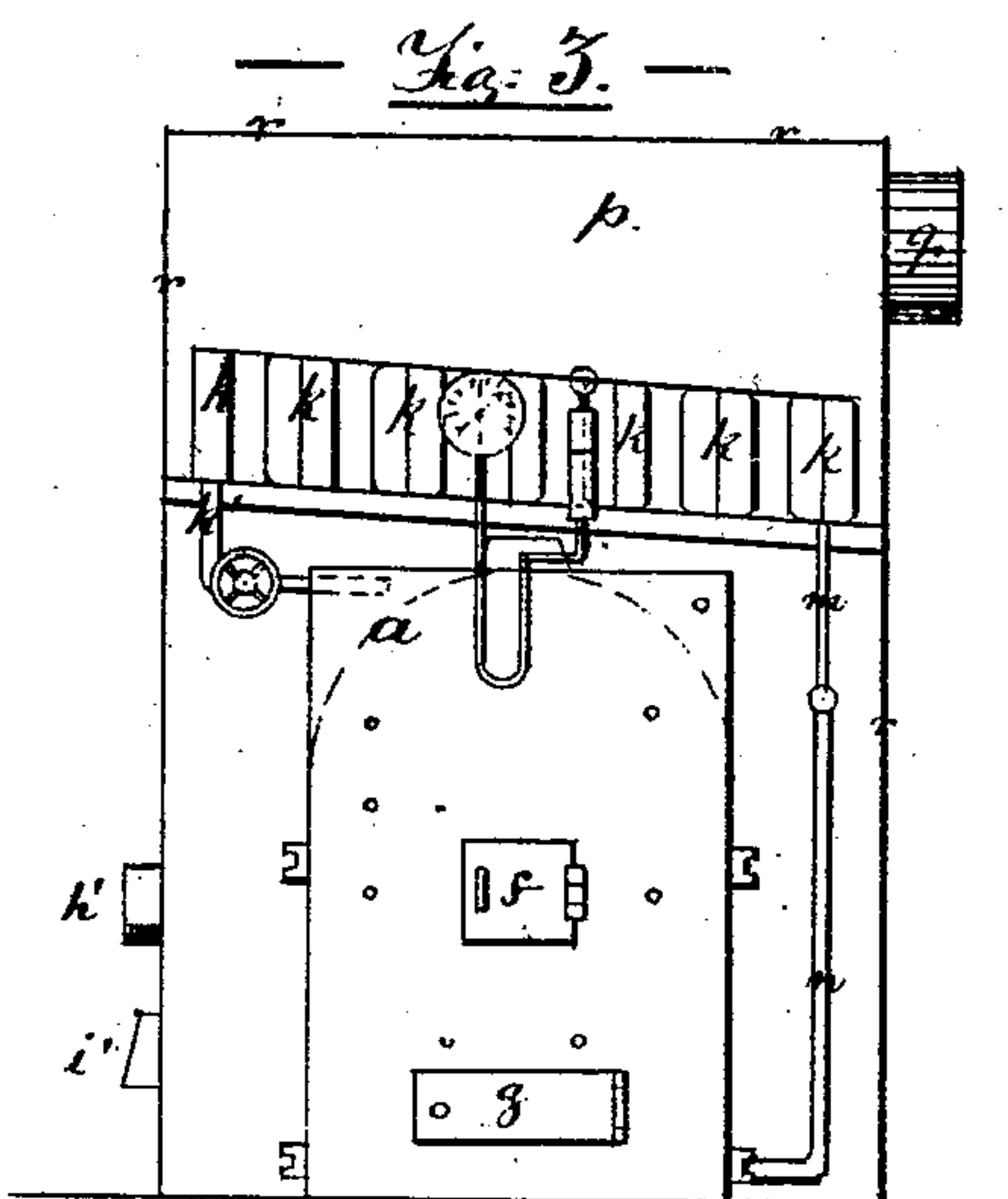
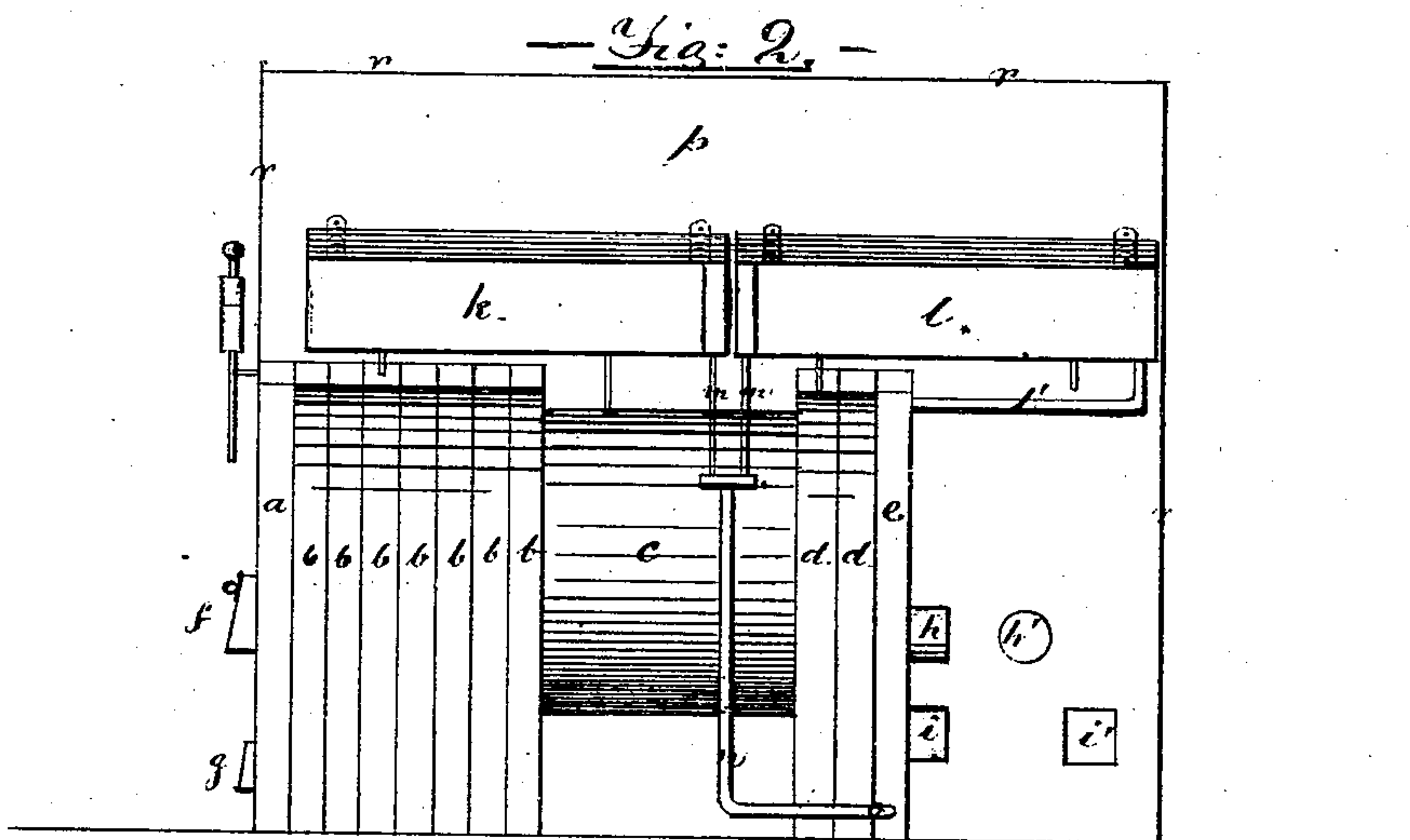
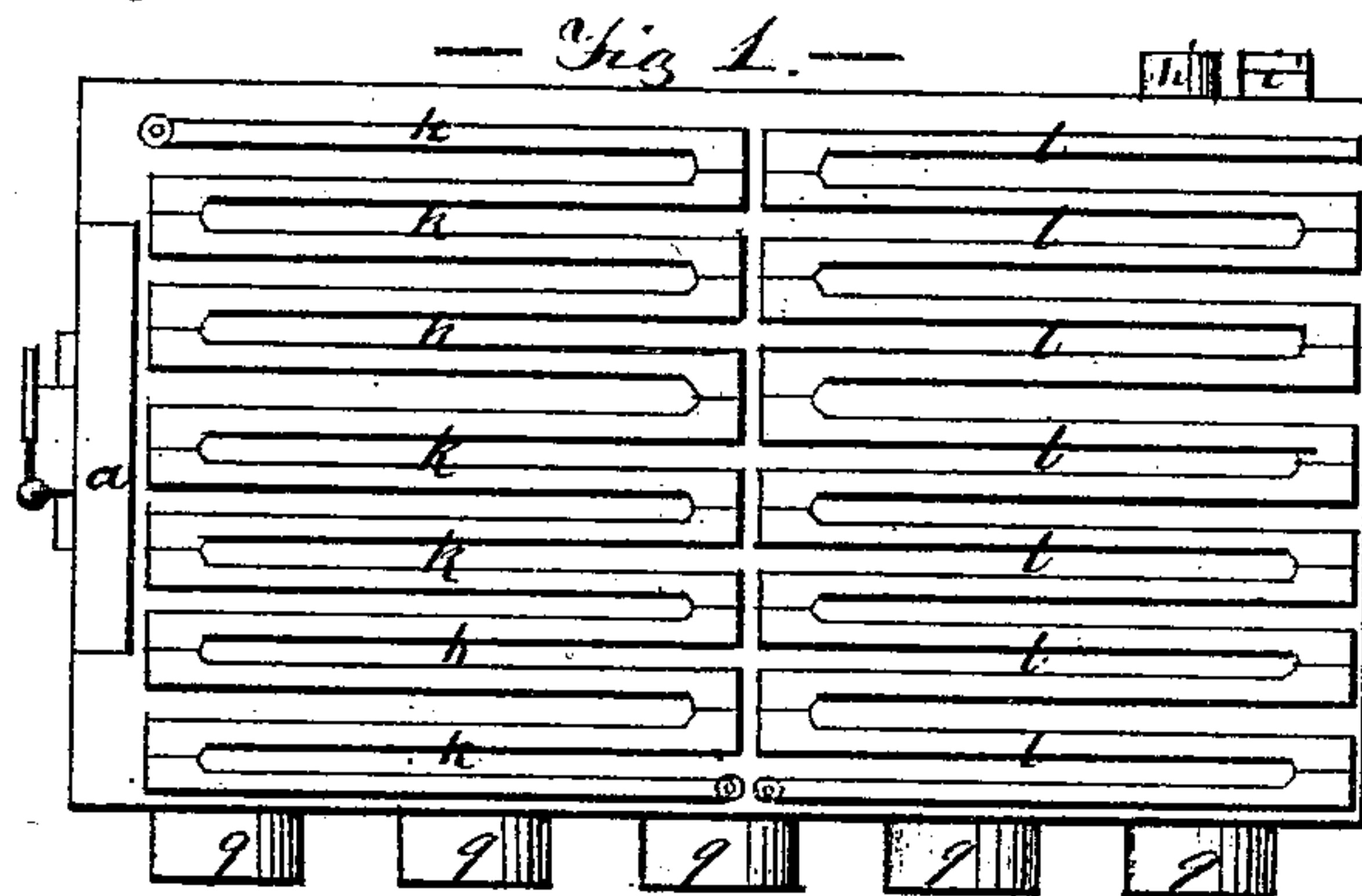


F. P. HALLBERG.

STEAM HEATER.

No. 101,612.

Patented Apr. 5, 1870.



— Witnesses: —

Alvan Andrién
V. M. Southwick

— Inventor: —

Fredrick H. Santos, Hallberg

United States Patent Office.

FREDRICK PONTUS HALLBERG, OF GOTTENBURG, SWEDEN.

Letters Patent No. 101,612, dated April 5, 1870.

IMPROVEMENT IN STEAM-HEATER.

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, FREDRICK PONTUS HALLBERG, of Gottenburg, in the Kingdom of Sweden, have invented a new and useful Improvement on Hot-Air Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, on which—

Figure 1 is a ground plan;

Figure 2 is a side view;

Figure 3 is a front view; and

Figure 4 is a rear view of said furnace.

The nature of my invention consists in arranging the different parts of a hot-air furnace in such a manner as to make it convenient for fitting together of the different parts, whereby a great deal of labor and material is saved.

Description.

Fig. 2 shows a side view of my furnace where the surrounding brick wall is supposed to be removed.

a is a rectangular part or section of the steam-boiler. The rectangular part *a* is bolted steam-tight together to a number of sections, *b b b*, which all have arched or half-circular tops.

The furnace is contained inside the sections *a* and *b b b*.

A circular shell, *c*, containing the tubes from the furnace, connects the forward end *b b b* to the rear end *d d*. The latter is constructed similar to the sections *b b b*, and ends in a rectangular section, *e*, similar to the one described at *a*.

f is the furnace-door, and

g is the ash-door.

h is the smoke-stack communicating with the chimney *h'*, and

i is a cold-air inlet-pipe communicating with the valve *i'*.

Above the steam-boiler *a b c d e* are the radiators *k k k* and *l l l*.

The steam generated in the boiler is communicated to the radiators by means of the steam-pipes *k'* and *l'*, from the respective rectangular front and rear parts *a* and *e*.

The radiators are fitted so as to slant to one side, as shown in figs. 3 and 4, for the purpose of draining from them the condensing water that flows off through the small pipes *m m* into the pipe *n*, and finally carried back to the boiler at *o*, in the lower end of the rectangular part *e*.

A space, *p*, above the radiators contains the air to be heated, that passes off through the pipes *q q q q* to the rooms that are to be warmed.

The lines *r r r* show the surrounding walls that separate the furnace from the outer air.

It will, therefore, be readily understood, that my furnace is altogether inclosed, with all piping and connections, in a surrounding wall; and also that very short connecting-pipes, *k'* and *l'*, are needed to connect the whole.

The projecting rectangular parts *a* and *e* render it very easy to make the connection between the boiler and the radiators.

The boiler is supplied with steam-gauges, water-gauges, safety-valves, inlet and blow-off valves, as usual.

Above the radiators *k k k* and *l l l* I also make provision for attaching another set of radiators, in a similar way, if needed.

The steam from the boiler passes through the pipes *k'* and *l'* to the radiators, and passes off, with the condensed water, through the pipes *m m n*, and enters the boiler again at *o*.

Having thus described the nature and operation of my invention,

I wish to secure by Letters Patent, and claim—

1. A steam-boiler consisting of rectangular parts *a* and *e* in each end, in combination with the arched parts *b b b* and *d d*, together with the central circular part *c*, as set forth.

2. In combination with the above, the connections *k'* and *l'*, between the rectangular boiler-ends and the radiators, as fully set forth and described.

February 25, 1870.

FREDRICK P. HALLBERG.

Witnesses:

ALVAN ANDRÉN,

I. M. SOUTHWICK.