

No. 707,691.

Patented Aug. 26, 1902.

E. GERRARD.  
HEATING APPARATUS.

(Application filed Apr. 3, 1901.)

(No Model.)

Fig. 1.

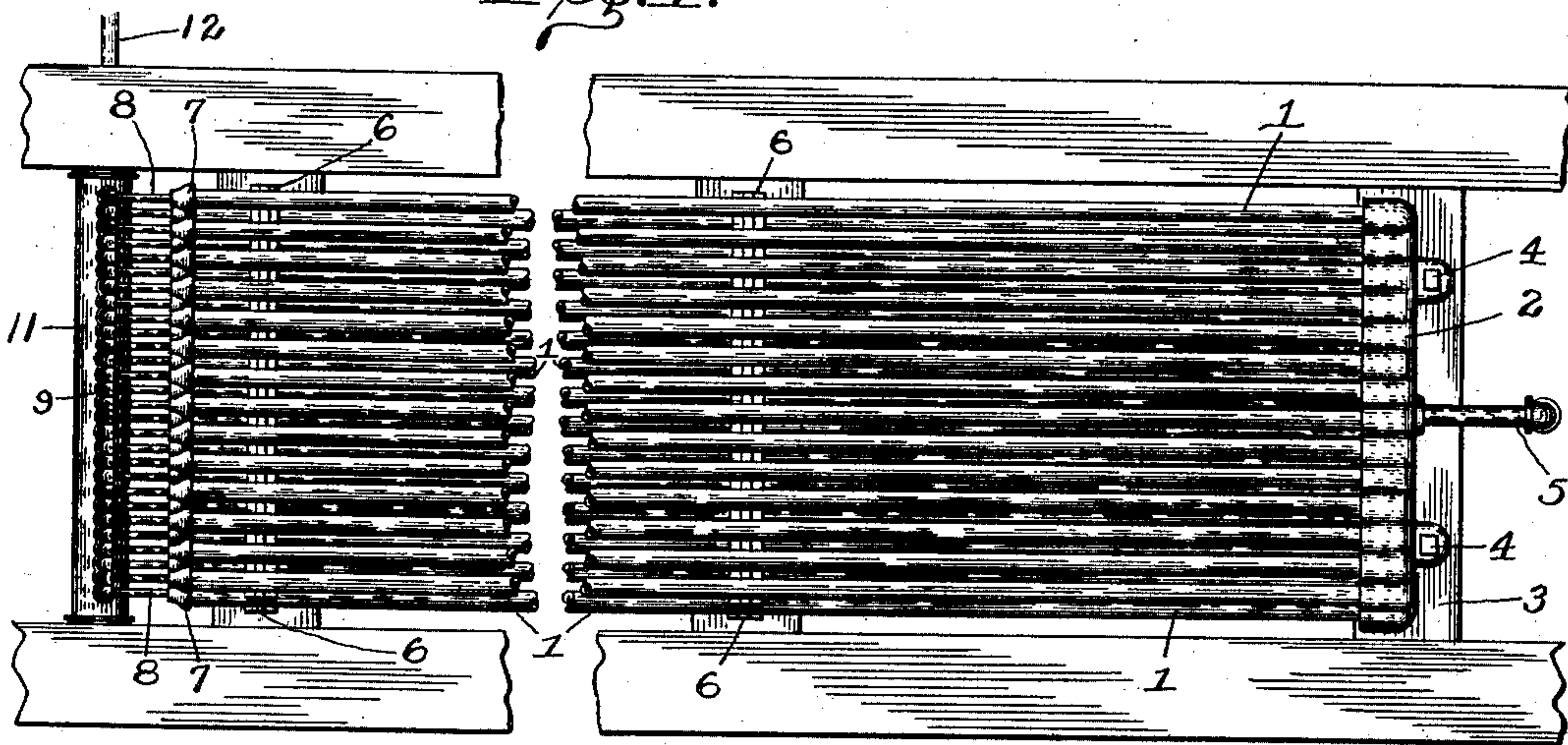


Fig. 2.

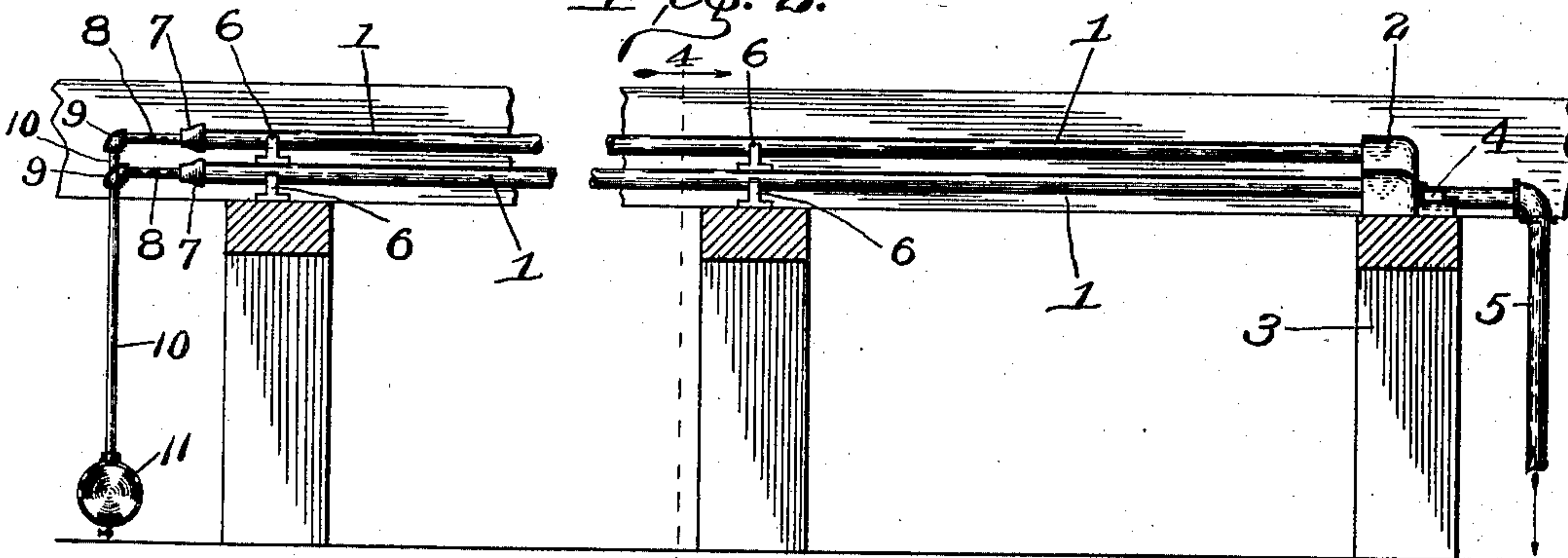


Fig. 5.

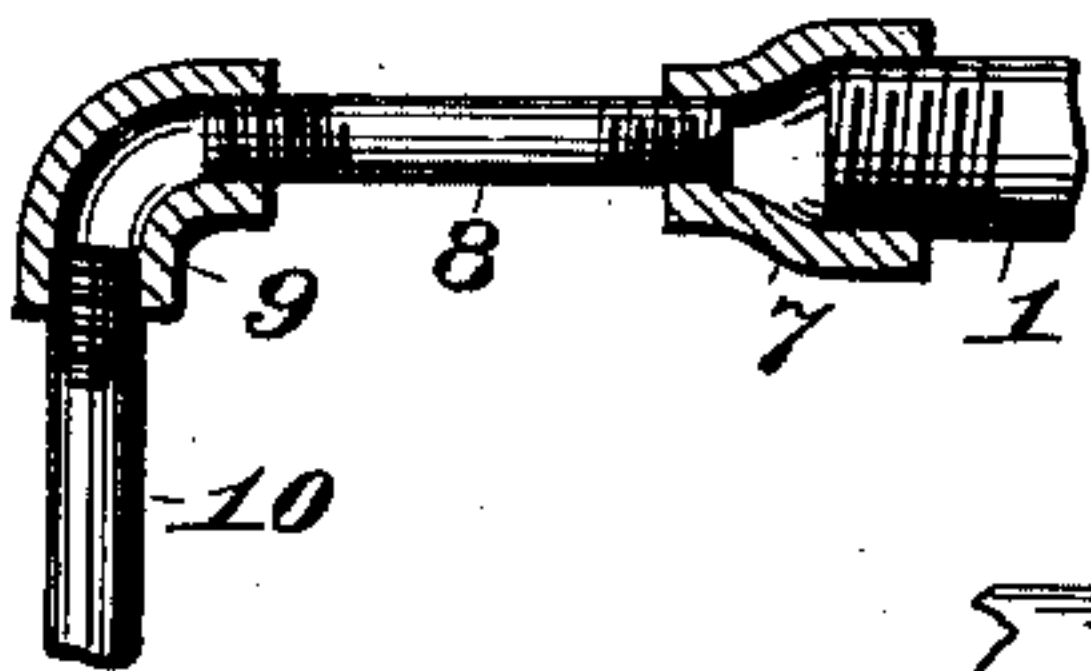


Fig. 3.

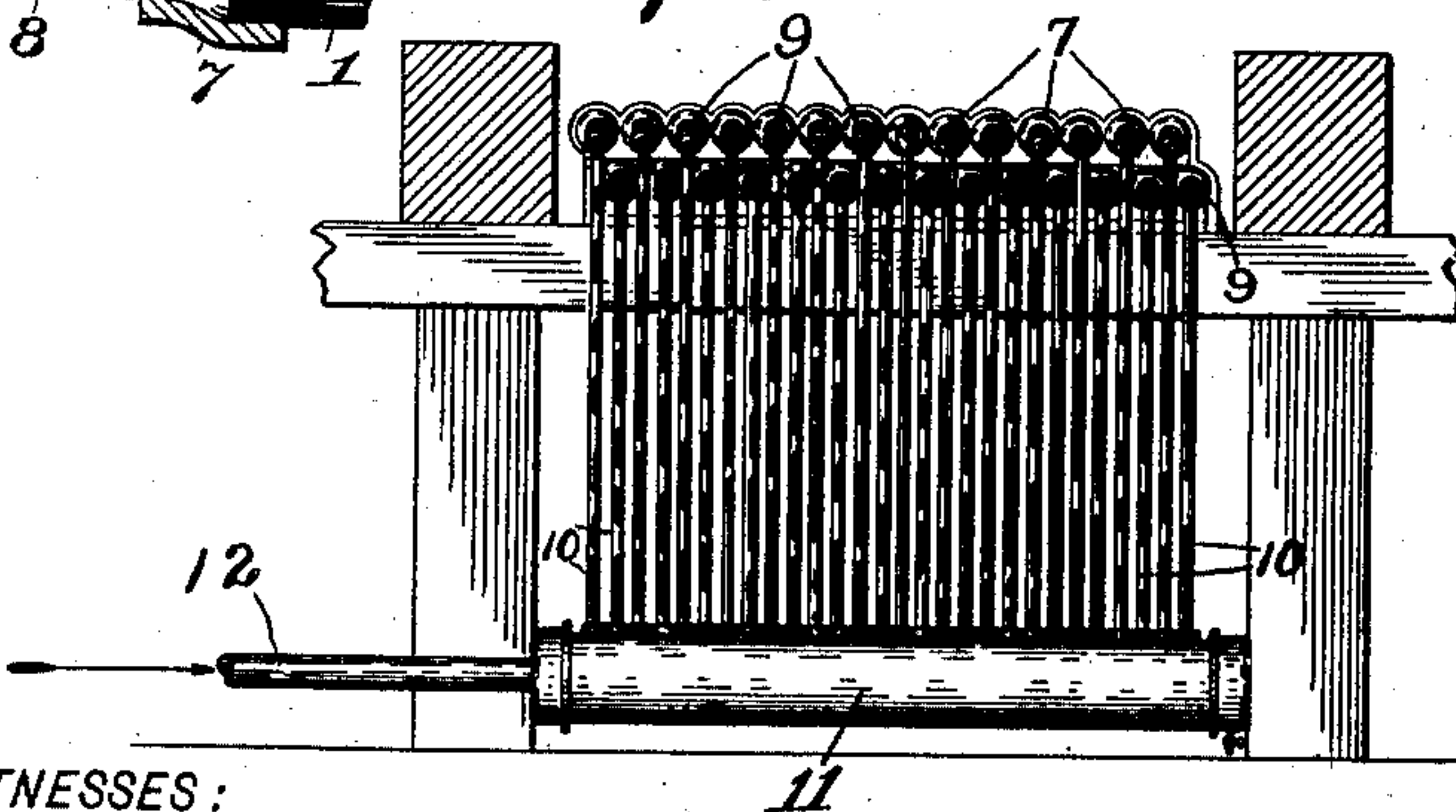
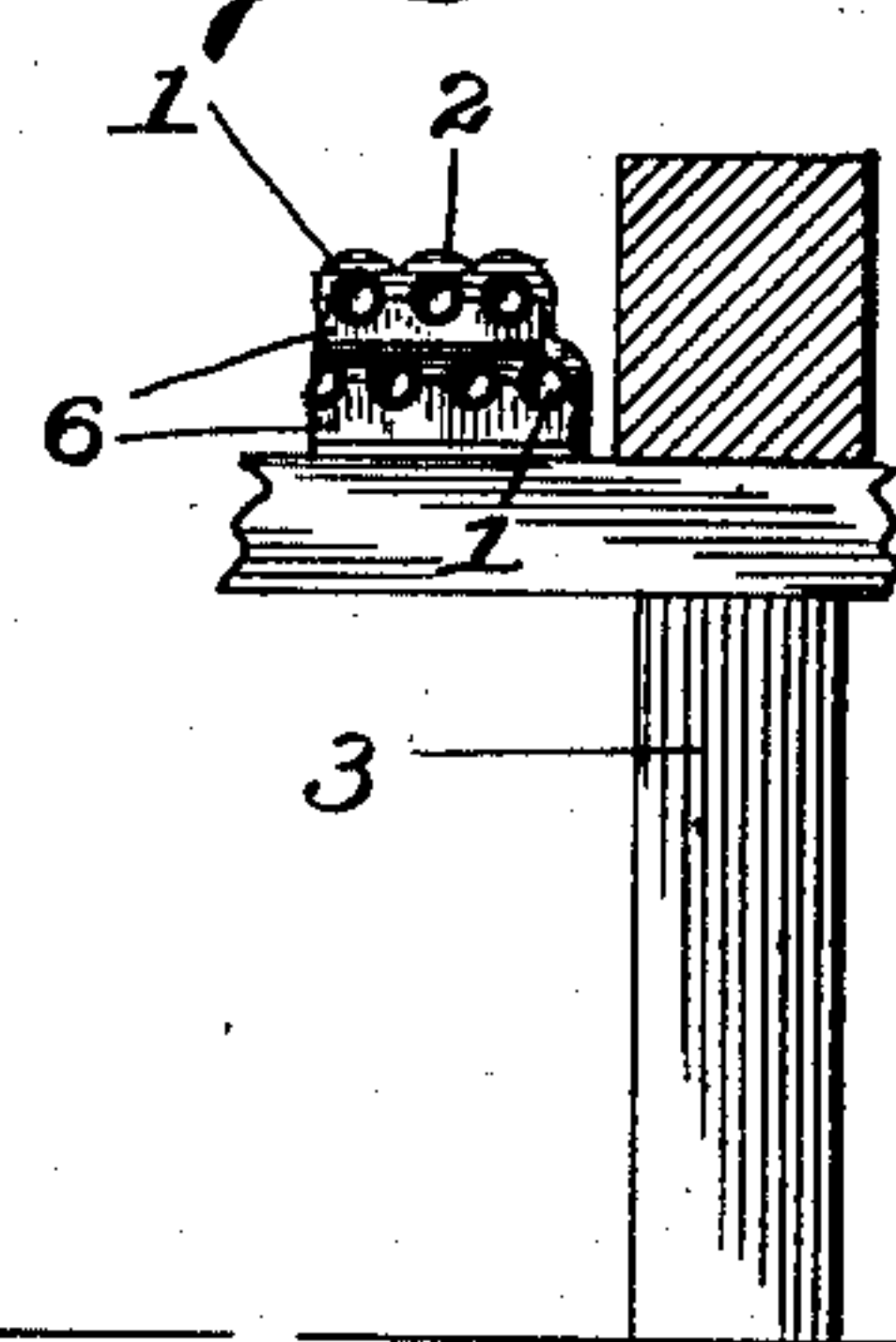


Fig. 4.



WITNESSES:

C. S. Frye.  
R. Colvin.

INVENTOR

Edward Gerrard,

BY

Chester Bradford,  
ATTORNEY



# UNITED STATES PATENT OFFICE.

EDWARD GERRARD, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO THE NATIONAL DRY KILN COMPANY, OF INDIANAPOLIS, INDIANA, A CORPORATION OF INDIANA.

## HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 707,691, dated August 26, 1902.

Application filed April 3, 1901. Serial No. 54,110. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD GERRARD, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Heating Apparatus, of which the following is a specification.

The object of my said invention is to provide an inexpensive, efficient, and easily-constructed heating apparatus especially for dry-kiln use which is not liable to get out of order.

A heating apparatus embodying my said invention will be first fully described and the novel features thereof then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof, and on which similar reference characters indicate similar parts, Figure 1 is a top or plan view of a heating apparatus embodying my said invention, the middle portions of the pipes being broken away to enable the drawing to be made on a larger scale; Fig. 2, a side elevation thereof; Fig. 3, an end elevation; Fig. 4, a fragmentary transverse sectional view as seen from the dotted line 4 4 in Fig. 2; and Fig. 5 a detail sectional view showing a nipple, fragments of the adjacent pipes, and the fittings connecting the same, illustrating more clearly how said parts are connected together.

Many heating systems as heretofore constructed have been composed of pipes of a large number of varying lengths and running in many different directions, the object being in all cases to provide an efficient heating system, allowing the movement incident to contraction and expansion, while maintaining proper drainage, and securing the highest degree of heat in a given area. Manifestly the use of many lengths of pipe and running the same at many various angles adds largely to the expense of erection and increases the liability of leakage, while interfering with the capacity of the pipe system to accommodate itself to expansion and contraction.

In my improved heating system the main pipes 1 are all of exactly equal lengths. At one end, preferably the discharging end, they are connected permanently to a rigidly-posi-

tioned header 2, which is strongly secured to a heavy framework 3 by bolts 4 and is thus practically immovable. This header is hollow and receives the water of condensation from the said main pipes, which runs off therefrom through the drain-pipe 5 and is discharged wherever may be desired. At suitable points intermediate of their ends and at a point near the opposite ends the pipes 1 rest loosely upon suitable supports 6, carried by the framework, and are capable of whatever movement on said supports may be caused by expansion and contraction. Upon the ends of these pipes 1 are reducing-couplings 7, and to these are connected the nipples 8, formed of small pipe, and said nipples are respectively provided with elbows 9, which connect them with small vertical pipes 10, leading down to the steam-receiving header 11, into which the hot or live steam is received through a pipe 12 from any suitable source of supply. As will be readily understood, the pipes 10, being quite small, are sufficiently flexible, so that they will bend to accommodate the expansion and contraction of the pipes 1 without affecting the joints or causing any leaks. In case, however, of any defect in any of the pipes any one of them may be removed without disturbing any of the others by simply taking out the nipple 8 which is connected thereto. These nipples have right and left hand screw-threads on their ends, so that they are capable of being coupled and uncoupled without disturbing any of the other pipes. This arrangement, too, provides for the greatest possible number of pipes in any given area, as the small pipes 10 can all stand in line in the header, as shown, while the large pipes 1 may be arranged in two banks, one above the other a sufficient distance apart, so that any single pipe can be easily handled, while the entire space is still substantially occupied, one bank of pipes overlapping or being arranged intermediately of the pipes of the other bank.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a heating system, of heating-pipes of uniform length, a dis-



charging-header at one end to which said pipes are connected, a steam-receiving header at the other end, small pipes leading from said header and running substantially at right angles to and communicating with the ends of said heating-pipes, elbows and couplings connected to the small pipes and the heating-pipes respectively, and right and left hand threaded nipples uniting said couplings and said elbows, substantially as and for the purposes set forth.

2. The combination, in a heating system, of a framework, a discharging-header for the pipes fixedly secured to said framework, two series of comparatively large heating-pipes connected to and held by said header and ar-

ranged in two horizontal planes, suitable supports for said heating-pipes on which they are loosely mounted, a steam-receiving header arranged in a different plane from that wherein said heating-pipes are positioned, and slender flexible pipes run in the same vertical plane connecting said header with said heating-pipes, substantially as and for the purposes set forth.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 28th day of March, A. D. 1901.

EDWARD GERRARD. [L. S.]

Witnesses:

CHESTER BRADFORD,  
L. HARVEY COLVIN.