(No Model.) 2 Sheets—Sheet 1.

E. N. GATES.

HEAD OR COLLAR FOR SUPPORTING TUBES IN MASONRY.

No. 422,881. Patented Mar. 4, 1890.

FIG. 1.

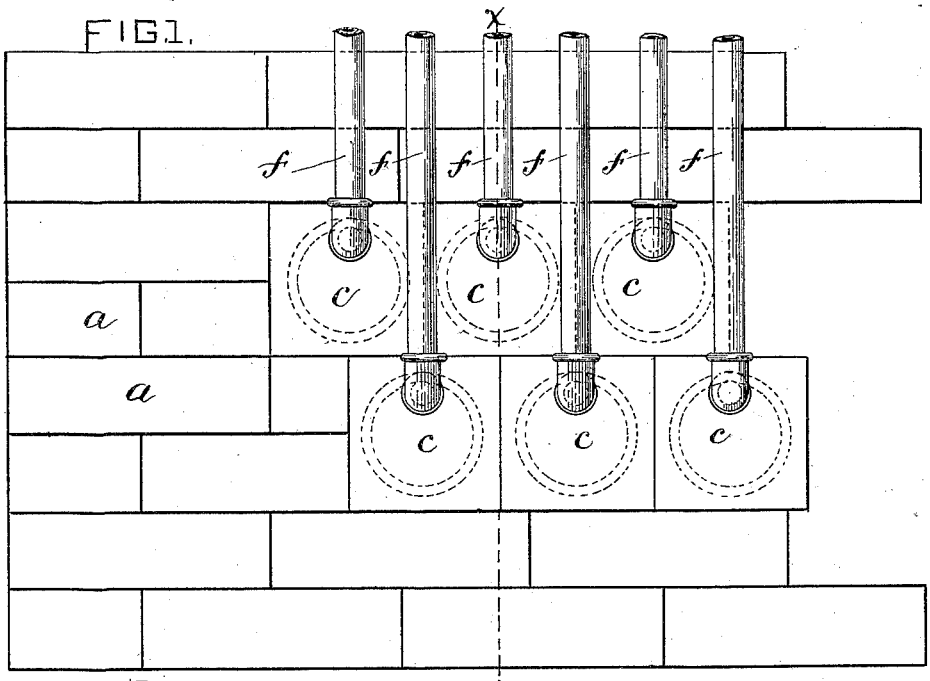


FIG. 2.

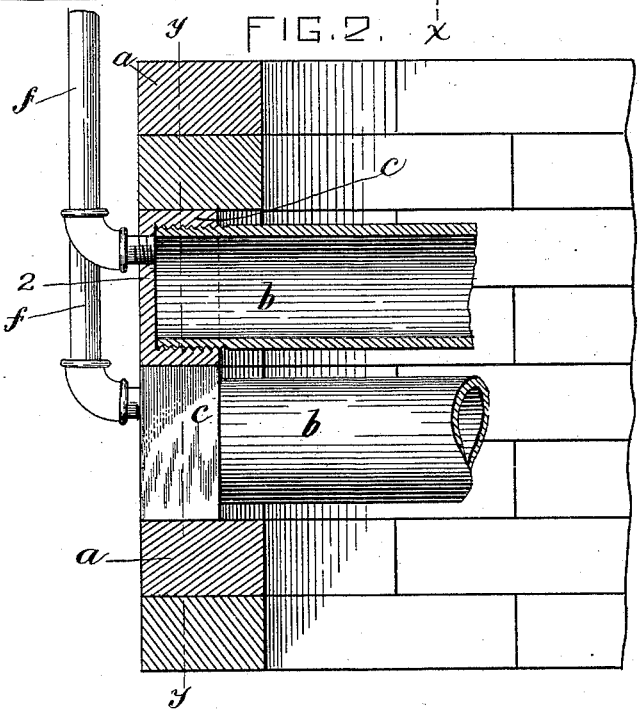


FIG. 3.

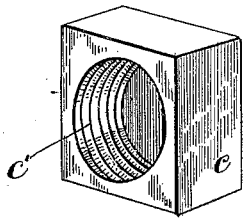
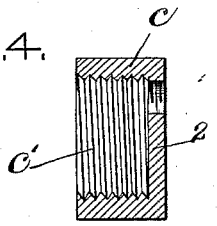


FIG. 4.



WITNESSES:
H. Brown
K. E. Brown

INVENTOR
E. N. Gates.
by Wm. Brown & Crossley.
Attys.

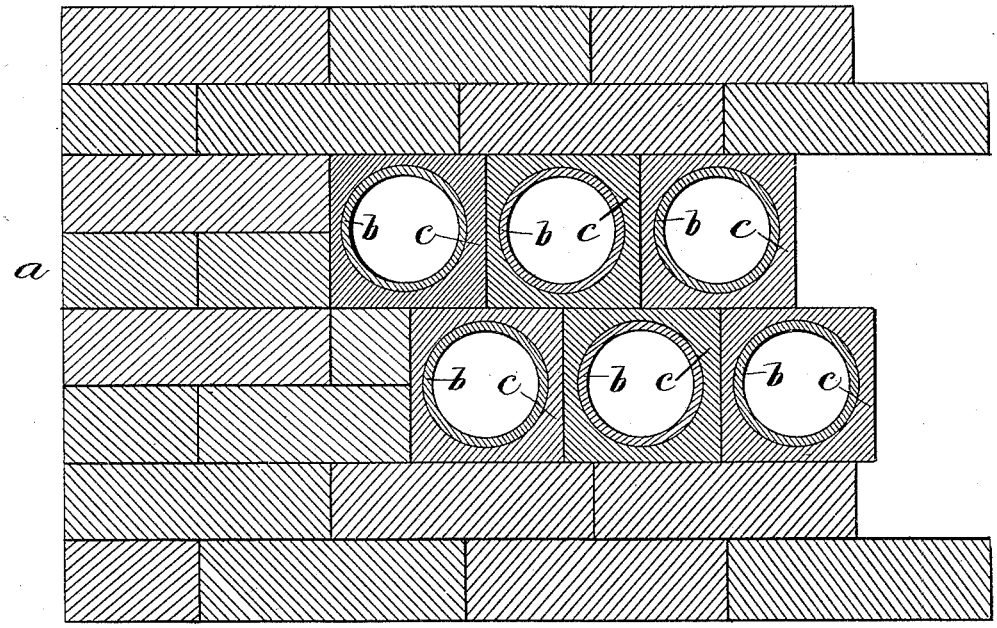
(No Model.) 2 Sheets—Sheet 2.

E. N. GATES.

HEAD OR COLLAR FOR SUPPORTING TUBES IN MASONRY.

No. 422,881. Patented Mar. 4, 1890.

FIG. 5.



WITNESSES:
H. Brown.
A. E. Brown

INVENTOR:
E. N. Gates.
by Wright Brown & Crossley.
Attys.

UNITED STATES PATENT OFFICE.

EUGENE N. GATES, OF FITCHBURG, MASSACHUSETTS.

HEAD OR COLLAR FOR SUPPORTING TUBES IN MASONRY.

SPECIFICATION forming part of Letters Patent No. 422,881, dated March 4, 1890.

Application filed August 10, 1889. Serial No. 320,335. (No model.)

To all whom it may concern:

Be it known that I, EUGENE N. GATES, of Fitchburg, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Heads or Collars for Supporting Tubes in Masonry, of which the following is a specification.

The invention relates chiefly to steam generating or heating apparatus in which a series of substantially horizontal tubes are arranged over a grate in a fire-box or furnace inclosed in a brick casing, said tubes being inserted in and supported by the end walls of said casing and connected outside of said walls with circulating-pipes extending to and from heating-radiators.

Heretofore the operation of fitting bricks around cylindrical tubes passing through the walls composed of said bricks has been attended with much difficulty and inconvenience, much time and labor being involved in cutting the bricks and fitting them to the curved peripheries of the tubes.

My invention has for its object to obviate this difficulty; and it consists in a series of rectangular heads or collars chambered out or socketed on one side to receive the ends of the tubes, said heads or collars having flat external surfaces, whereby they are adapted to be incorporated into a brick wall nearly or quite as easily as ordinary bricks.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a front elevation of a portion of a brick casing or setting having my improvement. Fig. 2 represents a section on line *x x*, Fig. 1. Fig. 3 represents a perspective view of one of said collars or heads. Fig. 4 represents a sectional view of the collar or head shown in Fig. 3. Fig. 5 represents a section on line *y y*, Fig. 2.

The same letters and numerals of reference indicate the same parts in all of the figures.

In the drawings, *a a* represent the bricks composing the casing or setting of a furnace, and *b b* represent horizontal tubes, which are supported by said casing and extend through the fire-box within the casing, said tubes containing water, which is heated by the fire in the fire-box.

c c represent the heads or collars which constitute my improvement. Said collars are rectangular metal blocks, each provided with an internally-threaded socket *c'*, Fig. 3, extending into it from one side, the other side of the block being left closed and constituting an end wall 2 for said socket. The socket *c'* is formed to receive the end of one of the tubes *b*, the latter being screw-threaded and adapted to be screwed into said socket up to the wall 2, as shown in Fig. 2. The heads or collars *c*, presenting flat rectangular external surfaces, are adapted to be easily and rapidly built into the casing with the ordinary bricks, no cutting of the bricks to adapt them to curved surfaces being necessary. The heads or collars are secured to each other and to the surrounding bricks by any suitable cement. The end walls 2 of the heads or collars receive the pipes *f*, which conduct the heated water or steam from the tubes *b* to the radiators and return the cooled water or the water of condensation from the radiators to the tubes. It will be seen that the rectangular heads engaged with the tubes do not detract from the strength of the wall, of which they form a part, but constitute full equivalents for bricks in the formation of the wall, besides serving to support the tubes and connect them with the circulating-pipes *f*.

Owing to the strength and stability of the structure, as many superposed rows of tubes may be employed as may be desired, there being practically no limit to the number of rows that may be built up. On the other hand, when the tubes are built into a brick wall, the bricks being fitted to the cylindrical surfaces of the tubes, it is not practicable to employ more than two rows of tubes. My improvement therefore enables the power of the apparatus to be greatly increased.

I claim—

1. The combination of a series of tubes and a casing or setting composed in part of bricks and in part of rectangular metal heads or collars secured to the tubes and built with said bricks into the casing, as set forth.

2. A metal head or collar of rectangular form, having a threaded socket *c'* opening at one side of the head, and a wall 2 at the opposite side adapted to receive a pipe *f*, as set forth.

3. The combination of a series of substan-

tially horizontal tubes, a series of rectangular metal heads or collars having sockets receiving the ends of said tubes, a supporting-wall composed in part of said heads or collars, and circulating-pipes secured to said heads or collars, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 31st day of July, A. D. 1889.

EUGENE N. GATES.

Witnesses:
ALICE M. LAMB,
CHAS. E. WARE.