No. 654,318. Patented July 24, 1900.

J. H. MEHRTENS.

FIRE GRATE.

(Application filed Feb. 12, 1900.)

(No Model.)

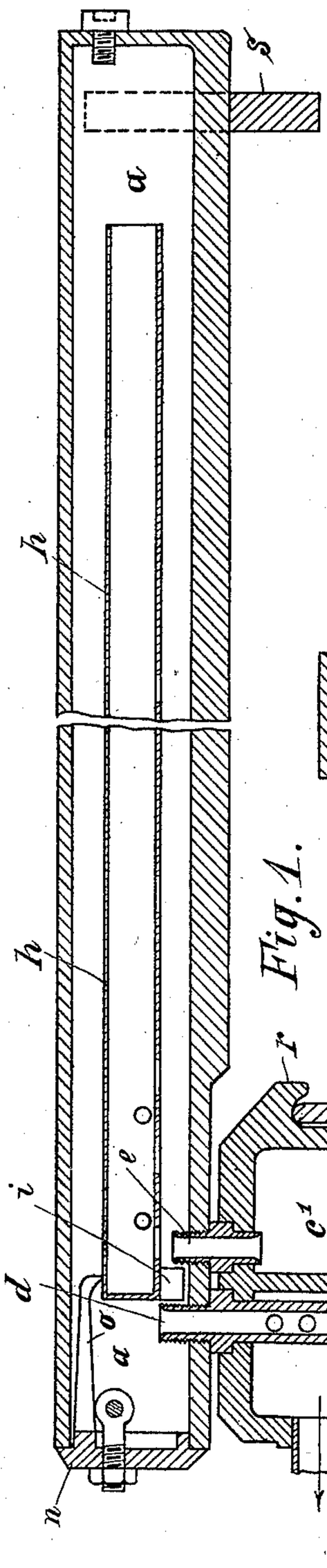

Fig. 1.

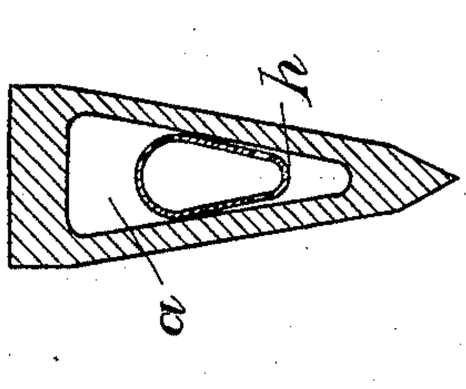

Fig. 2.

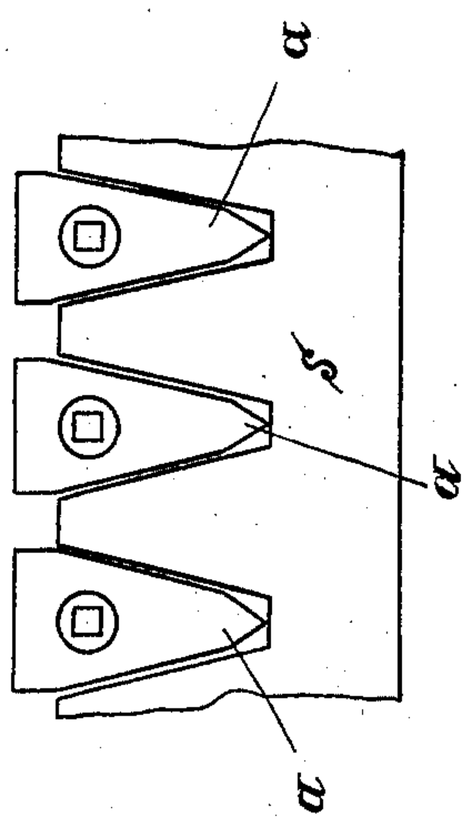

Fig. 4.

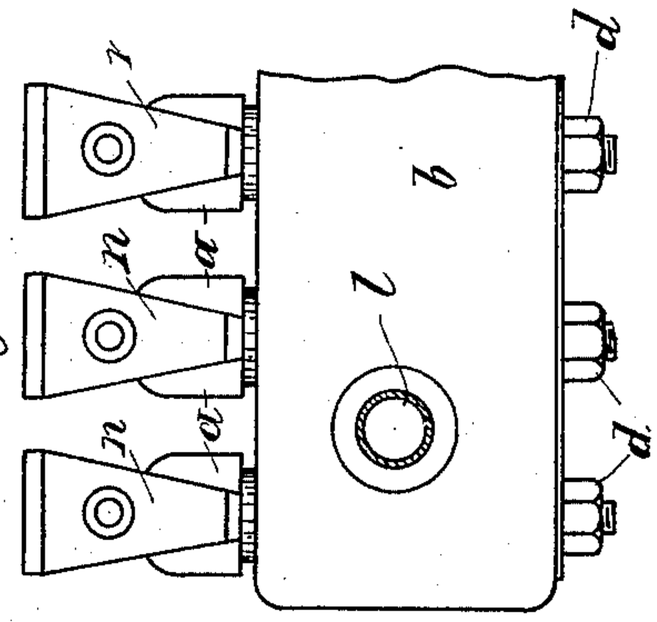

Fig. 3.

Witnesses:
William Miller.
William Schulz.

Inventor:
Johann Heinrich Mehrtens
by his attorneys
Roeder & Briesen

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UNITED STATES PATENT OFFICE.

JOHANN HEINRICH MEHRTENS, OF HASPE, GERMANY.

FIRE-GRATE.

SPECIFICATION forming part of Letters Patent No. 654,318, dated July 24, 1900.

Application filed February 12, 1900. Serial No. 4,892. (No model.)

To all whom it may concern:

Be it known that I, JOHANN HEINRICH MEHRTENS, engineer, a subject of the King of Prussia, German Emperor, residing at Haspe, Westphalia, in the Empire of Germany, have invented certain new and useful Improvements in Fire-Grates, of which the following is a specification.

My invention relates to an improved construction of that kind of fire-grates in which the bars are made hollow and have water circulating through them for keeping them cool.

I will describe the said improved construction with reference to the accompanying drawings, in which—

Figure 1 shows a longitudinal section through the fire-grate. Fig. 2 shows a cross-section of one of the bars. Fig. 3 is a part outer end view, and Fig. 4 a part inner end view.

The improvements consist, first, in the connection of the double collecting-box *b* with the hollow bars *a* by means of a single screw; secondly, in a loosely-inserted tubular partition *h* in the bars for obtaining a definite circulation of water; thirdly, in a readily-detachable cover *n* at the end of the grate-bar for rapidly introducing and withdrawing the partition *h* and at the same time for securing the latter in position, and, fourthly, in one or more hook-shaped ledges or shoulders *r*, provided on one side of the collecting-box *b* for supporting the grate upon a fixed transverse rail *k*.

The water serving to cool the grate-bars enters through the pipe *m* into the compartment *c'* of the collecting-box *b*. It passes thence through the inlet-pipe *e* into the lower part of the grate-bar *a* and into the interior of the partition *h* through the openings *h'*, and after filling the latter it rises thence into the upper part of the bar *a*, whereupon it flows downward through the tubular outlet-bolt *d* into the compartment *c* of the collecting-box *b*, and finally it flows from the latter through the pipe *l*.

The tubular bolt *d*, passing through the compartment *c*, has its upper threaded end screwed into the grate-bar, while its lower threaded end receives a nut, by which the bar *a* is drawn down tightly to the box *b*. The inlet-tube *e* is also secured water-tight in the top of the box *b* by the screwing up of the nut of bolt *d*.

The walls of the tubular partition *h* are very thin and are made of steel preferably drawn in a cold condition. The partition is advantageously made of a wedge-shaped cross-section, as represented in Fig. 2. The partition is provided either below or at the sides with small openings *h'* for insuring a permanent filling thereof through the pipe *e*, or it may be furnished with a sufficiently-large slot extending in the whole length of the partition. It is closed at the front end and provided with a downwardly-projecting stud *i*, by means of which it is held in its position between the inlet-pipe *e* and the outlet-pipe *d*.

The cover *n* of the grate-bar facilitates the cleaning of the interior thereof and the introduction and withdrawal of the partition *h*. By means of the projecting arm *o*, cast on or riveted to the cover and extending over the end of the partition *h*, the cover prevents the latter from being raised.

By supporting the front end of the fire-grate by means of the hook-shaped ledge *r*, resting upon the transverse bearer *k*, a sure and rapid fitting up of the fire-grate with a suitable inclination toward the fire-bridge can be effected.

The inner ends of the bars *a* are supported in a suitable notched transverse bearer *s*, by raising or lowering which the inclination of the bars can be readily varied, as the box *b* can freely turn with its ledge *r* on the bearer *k* in following the adjustment.

The above-described improved construction of fire-grate affords the important advantages of greater simplicity and strength of construction, greater cheapness, and perfect working.

I claim—

1. A hollow grate-bar combined with an inclosed slotted tube, a flanged reservoir communicating with a grate-bar, and a rail engaged by the flanged reservoir, substantially as specified.

2. A hollow grate-bar combined with an inclosed slotted tube, a chambered and flanged reservoir communicating with the grate-bar, and a cover having a hook that engages the tube, substantially as specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHANN HEINRICH MEHRTENS.

Witnesses:

WOLDEMAR HAUPT,

HENRY HASPER.