

(No Model.)

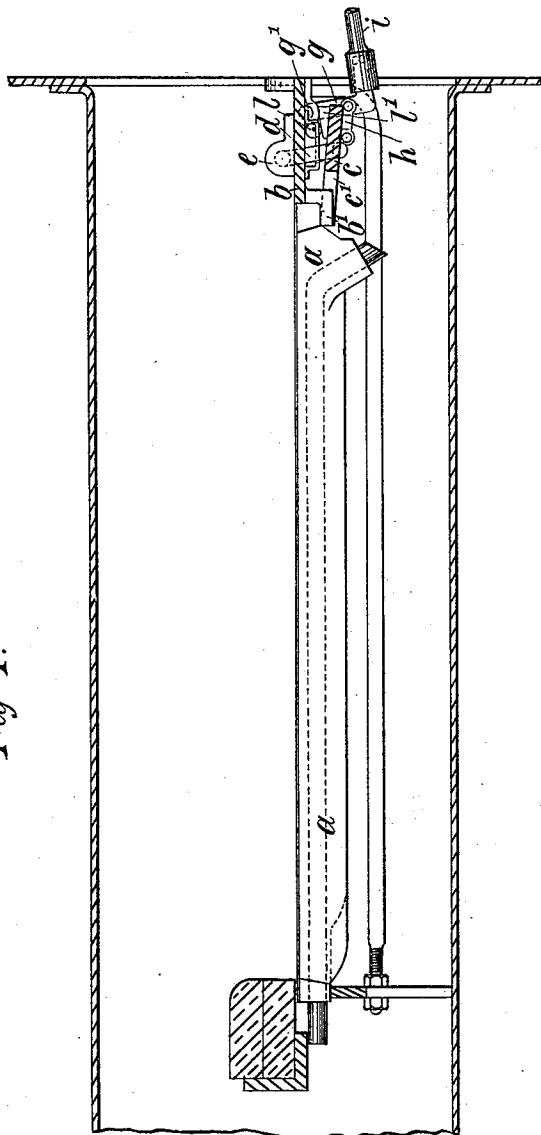
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T. E. CADDY.  
FURNACE.

No. 521,203.

Patented June 12, 1894.

Fig 1.



Witnesses

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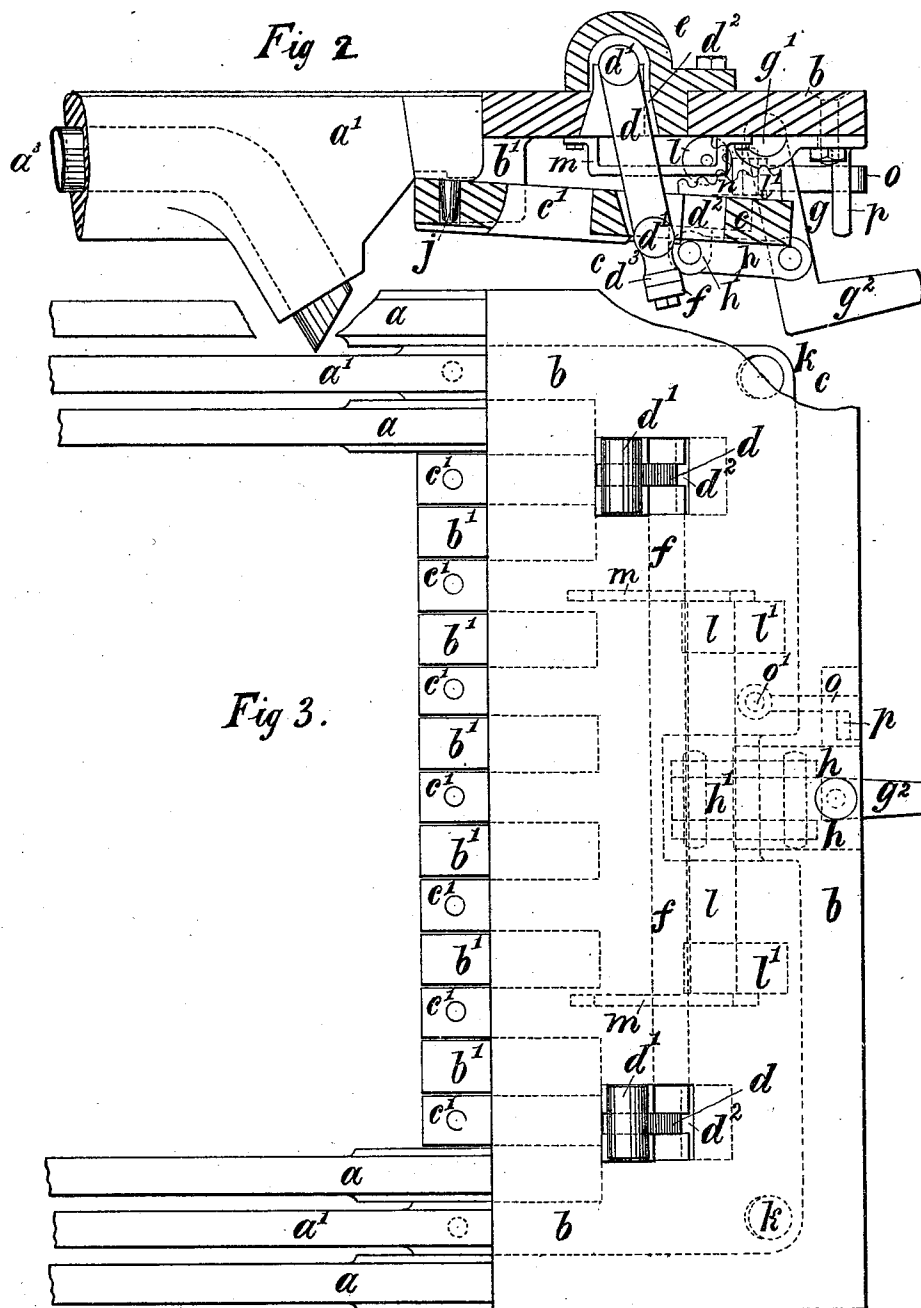
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No. 521,203.

Patented June 12, 1894.



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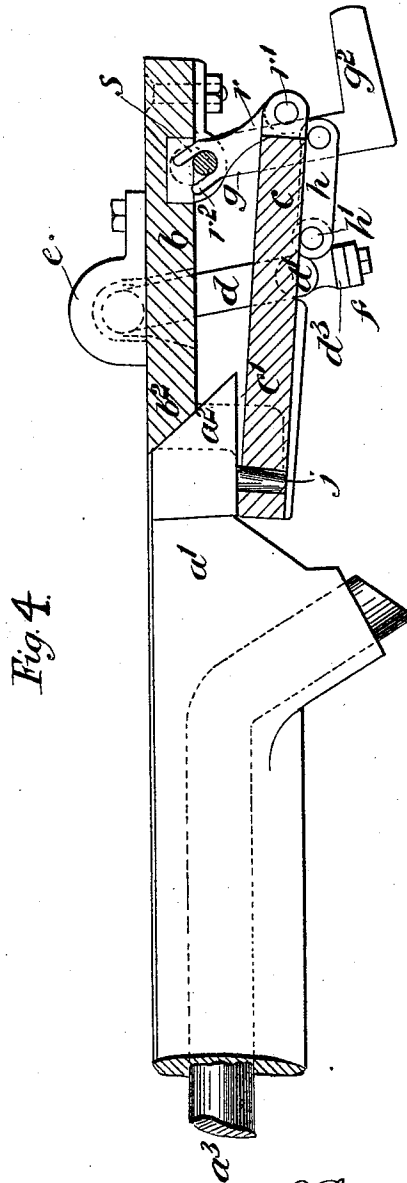
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# UNITED STATES PATENT OFFICE.

THOMAS EDWARD CADDY, OF NOTTINGHAM, ENGLAND.

## FURNACE.

SPECIFICATION forming part of Letters Patent No. 521,203, dated June 12, 1894.

Application filed September 4, 1893. Serial No. 484,793. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS EDWARD CADDY, a subject of the Queen of England, residing at Nottingham, England, have invented certain new and useful Improvements in or Relating to Furnaces, of which the following is a specification.

This invention relates more especially to apparatus applicable to furnaces generally for rocking the firebars in order to facilitate the removal of cinders and other refuse from the bars while the bars are in operation, and is applicable to furnaces in which tubular firebars are employed.

The invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 is a longitudinal section, and Fig. 2 is a detail view partly in section. Fig. 3 is a plan showing detail of movable bearer bar and operating mechanism, and Fig. 4 is a view, partly in section showing modification of detail.

Like letters indicate like parts throughout the drawings.

The front ends of alternate firebars *a* are carried by independent steps *b'* secured to or formed on the edge of the dead plate *b*, and the ends of the remaining bars *a'* by a plate *c* arranged on the under side of the dead-plate provided with projecting lugs *c'* which fit in between the steps *b'* and form bearers for the ends of the bars *a'*. The plate *c* is connected to the dead-plate *b* preferably near the ends of the fire-bars and at each side as shown by links *d* pivoted respectively in the dead-plate *b* and plate *c* so that the latter is movable; the links *d* may be formed with T heads *d'* which are passed through slots *d<sup>2</sup>* in the plates *b* and *c* and fit into recesses formed above the dead-plate *b* and below the plate *c*. The slots *d<sup>2</sup>* and recesses in the dead plate *b* and heads *d'* of the links *d* may be protected with covers *e* to prevent ashes and dust from interfering with the movement of the links.

The movable plate *c* and bars *a'* are reciprocated by a lever *g* pivoted at *g'* to the dead-plate *b* and connected by links *h* to the lug *h'* on the plate *c*. The free end *g<sup>2</sup>* of the lever *g* may be of sufficient length to be operated by hand or may be adapted as shown to engage with the end of a bar *i* which may be

removed when not required. The ends of the bars *a'* may be connected to the lugs *c'* on the plate *c* by pins *j* in the bars or lugs engaging in corresponding holes in the other part; or other convenient arrangement may be employed to retain them in position.

The plate *c* may be held and prevented from tipping by studs *k* on the upper side of and at the front of the plate *c* which studs *k* bear on the under side of the dead-plate *b*. Where it is however desired to give the bars more motion one or more rollers *l* may be placed between the dead-plate *b* and plate *c* inclined surfaces *l'* being formed on the plate *c* so that the plate is tipped by the action of the roller *l* as it is moved forward. The roller *l* is retained in position by brackets *m* secured to the dead-plate *b* and a rack or racks *n* on the plate *c* engages with teeth on the roller.

The plate *c* is retained in its normal position by a catch *o* pivoted at *o'* to the plate *c* the free end of which catch *o* engages with a bracket arm *p* secured to the dead-plate *b*.

The foregoing arrangement may be used in connection with tubular fire-bars for passing air through the bars.

In the modification shown in Fig. 4 the fore ends of the moving firebars *a'* are formed with inclined ends *a<sup>2</sup>* as shown the inclination of which is approximately parallel to the line of movement of those ends of the bars when they are rocked. The edge *b<sup>2</sup>* of the dead-plate *b* between the steps *b'* is also beveled to correspond so that the bars may be raised and simultaneously moved forward by the action of the plate *c* without any opening or gap occurring between the ends of the bars and the dead-plate, into which refuse might fall and prevent the return of the bars to their normal position. The plate *c* may also be held in position as shown by preferably two links *r* one only of which is shown pivoted at *r'* to the plate *c* and provided at their upper ends with forks *r<sup>2</sup>* engaging with pins or studs *s* secured to the dead plate *b*. This arrangement may be employed instead of the rollers *l* and inclined surfaces *l'* as the link *r* may be arranged to give the necessary tilt to the plate *c* and consequently to the bars.

I claim—

1. In a furnace the combination with the

dead plate carrying the stationary grate bars, of the rocking plate carrying the movable grate bars and means for rocking said last mentioned plate; substantially as described.

5 2. In a furnace, the combination with the dead plate, formed or provided with depending steps, the stationary bars carried by said steps, the movable plate carrying the rocking bars and means for rocking said plate; substantially as described.

10 3. In a furnace, the combination with the dead plate, the grate bars carried thereby, of the rocking plate pivotally connected to said dead plate carrying the reciprocating bars, and the lever pivotally connected to the dead plate and rocking plate, whereby said plate may be rocked and the grate bars reciprocated; substantially as described.

15 4. In a furnace, the combination with the dead plate, the bars carried thereby, of the rocking plate carried by the links pivotally connected to both said plates, the rocking lever pivotally connected to the dead plate and the link connecting the lever and rocking plate; substantially as described.

20 5. In a furnace, the combination with the dead plate, the bars carried thereby, the rocking plate pivotally connected to said dead plate, of the guide carried by said rocking plate for depressing the end of the plate when moved forward and means for rocking said plate; substantially as described.

25 6. In a furnace, the combination with the dead plate, the bars carried thereby, the rocking plate pivotally connected to said dead

plate, of the links pivoted to the rocking plate having bifurcated ends engaging with studs on the dead plate whereby when the rocking plate is moved forward, the lower end will be depressed and its forward end elevated, and means for rocking said plate; substantially as described.

7. In a furnace, the combination with the dead plate provided with depending steps carrying the stationary bars, of the rocking plate carried by links pivoted to both the dead plate and the rocking plate, and having beveled edges between the depending steps, and the reciprocating grate bars carried by said rocking plate having beveled ends cooperating with the beveled edge of the plate, and the lever and link connections for rocking said plate; substantially as and for the purpose set forth.

8. In a furnace, the combination with the dead plate, the grate bars carried thereby, the movable plate carrying the rocking bars, of the stud or stops on the upper front side of said plate bearing against the under side of the dead plate, whereby said movable plate will be held and prevented from tilting; substantially as described.

In testimony whereof I have hereto set my hand in the presence of two subscribing witnesses.

THOMAS EDWARD CADDY.

Witnesses:

H. C. SHELDON,  
M. C. BILLSON.