

(No Model.)

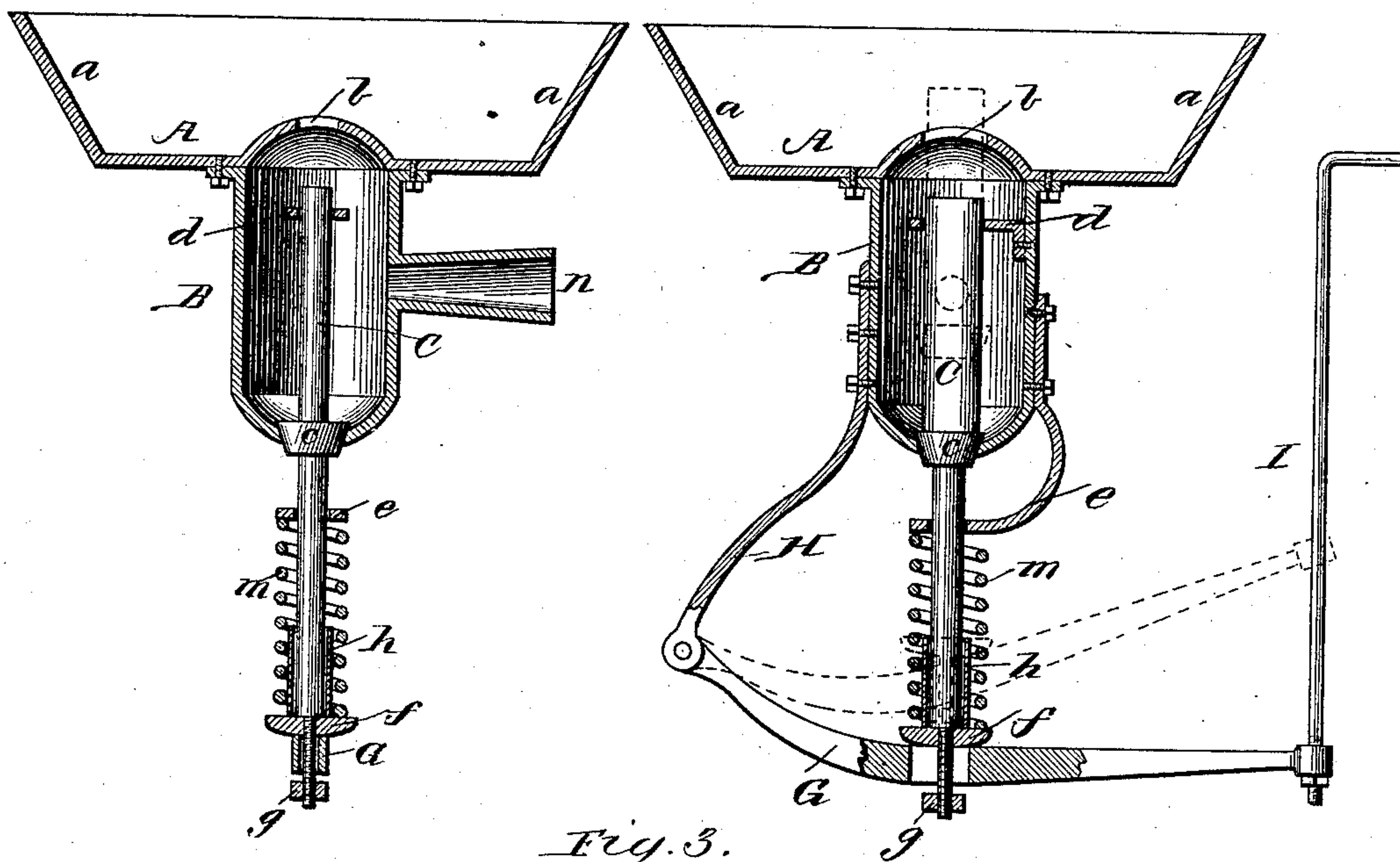
H. T. NIELSEN.  
TUYERE FOR FORGES.

No. 385,723.

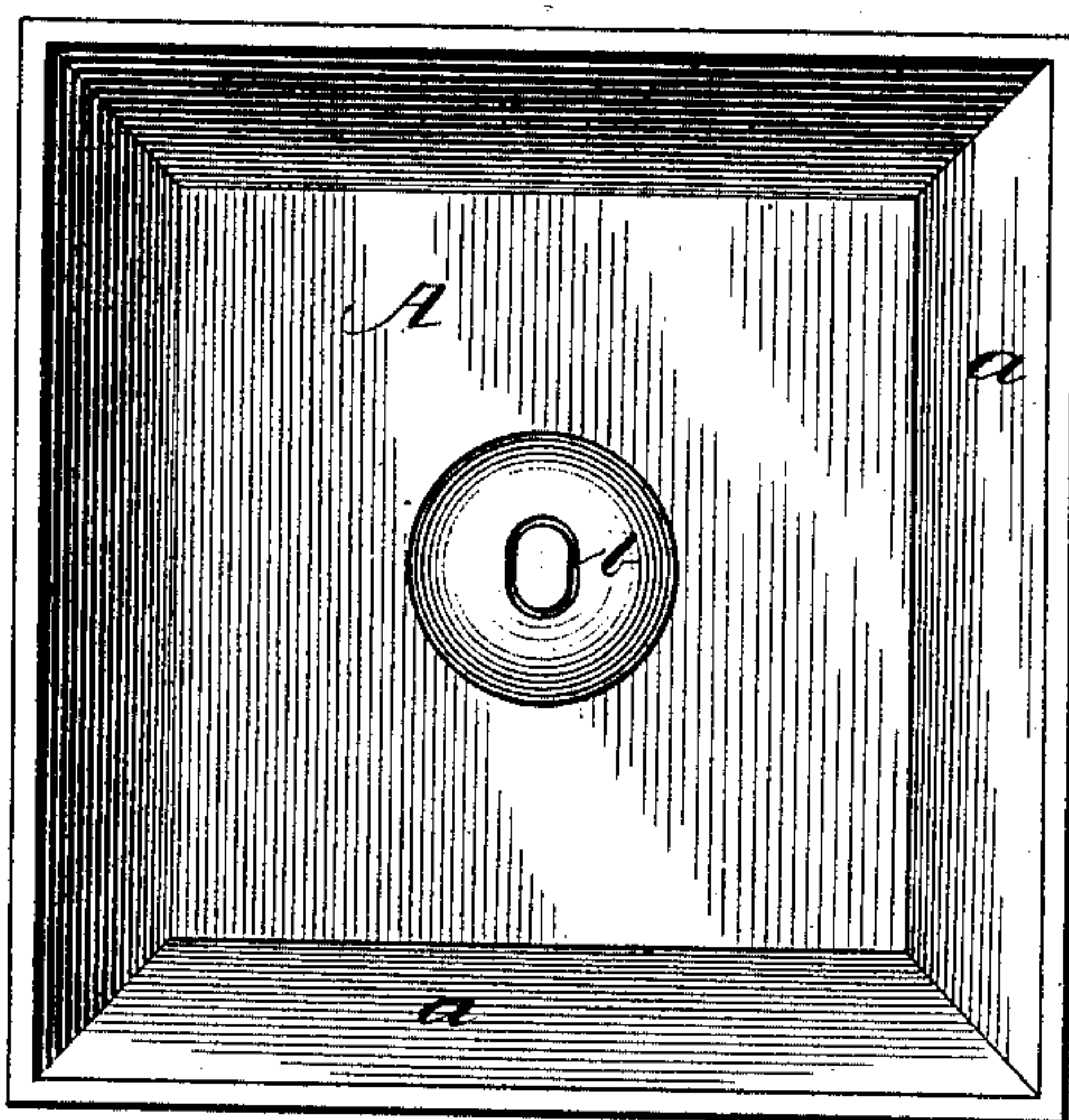
Patented July 10, 1888.

*Fig. 1.*

*Fig. 2.*



*Fig. 3.*



*Fig. 4.*

Witnesses  
*W. Fossiter.*  
*Wm. Lubkerd.*



Inventor,  
*Hans T. Nielsen.*  
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Atty.



# UNITED STATES PATENT OFFICE.

HANS T. NIELSEN, OF CHICAGO, ILLINOIS.

## TUYERE FOR FORGES.

SPECIFICATION forming part of Letters Patent No. 385,723, dated July 10, 1888.

Application filed April 7, 1888. Serial No. 269,994. (No model.)

*To all whom it may concern:*

Be it known that I, HANS T. NIELSEN, a subject of the Emperor of Germany, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tuyeres for Forges, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has for its object to provide a tuyere for forges the mouth or wind-opening of which can be readily cleaned of slag or other obstructions adhering thereto without disturbing the fire or stopping the blast; and with that object in view my invention consists of the novel devices and combinations of devices hereinafter described and specifically claimed.

In the accompanying drawings, Figure 1 represents a longitudinal vertical section, and Fig. 2 a vertical cross-section, of the tuyere complete; Fig. 3, a plan of the coal-box, and Fig. 4 a plan of the lever for lifting the plunger-bar.

Corresponding letters in the several figures of the drawings designate like parts.

A denotes the coal-box of the forge, having inclined flanges *a* to its sides, and the flat bottom of which is convexed in its middle, where the wind-opening *b* is provided. Below the convex portion of this coal-box A is rigidly secured a cylindrical shell, B, having a semi-globular bottom provided with a central conical opening forming the seat for the conical collar *c* of a vertical plunger-bar, C. This bar C above collar *c* is shaped oval to correspond with the wind-opening *b*, and below such collar *c* the bar C has a cylindrical extension of smaller diameter. The upper oval portion of bar C is guided in the eye of a bracket, *d*, secured against the inside of shell B, and the lower cylindrical portion of bar C is guided in the eye of a downwardly-curved bracket, *e*, bolted against the shell B. The lower extremity of bar C is reduced in diameter and screw-threaded, with a washer, *f*, passed over such screw-threaded end and resting against the upper shoulder of the same. This screw-threaded end is passed through the slotted middle portion of a curved lever, G, butting against washer *f*, and is held from dis-

engagement by a screw-nut, *g*. The fulcrum end of lever G is eyed, and is pivotally coupled with the lower bifurcated hub end of an arm, H, also secured to shell B. The opposite end of lever G is also eyed for connecting a vertical handle-bar, I, by which the lever G is operated. Upon the cylindrical portion of bar C, above washer *f*, is placed a tube, *h*, which will limit the vertical movement of lever G and bar C by butting against bracket *e*, and over this tube *h* is placed a spiral spring, *m*, resting with its lower end upon washer *f*, and butting with its upper end against bracket *e*. This spring *m* will be contracted with each vertical movement of lever G and bar C, and after releasing this lever G the spring *m*, by its elastic force, will return such bar C to its lower resting-place with collar *c*, finding its seat in the lower opening of shell B.

The shell B is provided with a tapering nozzle, *n*, for coupling the blast-pipe that leads from the bellows or fan-blower.

The bar C being vertically guided in brackets *d* and *e*, and being in line with the wind-opening *b* of coal-box A, a vertical movement of such bar C will project its upper end through such wind-opening, thereby demolishing and removing all obstructions impeding the blast by wholly or partly closing the opening *b*, and pieces of slag or coal dropping into shell B with the return movement of bar C will drop through the opening in the bottom of such shell with the next lift of bar C, while the collar *c* is on its elevated position.

With the above-described arrangement, as will be readily seen, the mouth or wind-opening *b* can be easily kept clean of slag or other obstructions without disturbing the fire.

What I claim is—

1. The combination, with coal-box A, having wind-opening *b*, and with shell B, secured below such box, of plunger-bar C, guided to move vertically through such box and through the wind-opening *b*, and provided with conical collar *c*, and of suitable means for reciprocating such bar, substantially as and for the purpose set forth.

2. The combination, with coal-box A, having wind-opening *b*, with shell B secured below such box A, and having blast-pipe nozzle *n* and a conical bottom opening, of vertically-

guided plunger-bar C, provided with conical collar *c*, lever G, and handle-bar I, all substantially as set forth, to operate as specified.

3. The combination, with coal-box A, having wind-opening *b*, with shell B secured below such box A, and having blast-pipe nozzle *n* and a conical bottom opening, of vertically-guided plunger-bar C, provided with conical collar *c*, washer *f*, tube *h*, and spring *m*, and of

lever G, with handle-bar I, all substantially as described, to operate as specified.

In testimony whereof I affix my signature in presence of two witnesses.

HANS T. NIELSEN.

Witnesses:

WILLIAM H. LOTZ,  
OTTO LUBKERT.