



# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN DUMPING DEAD-PLATES FOR FURNACES.

Specification forming part of Letters Patent No. 216,888, dated June 24, 1879; application filed July 24, 1878.

### *To all whom it may concern:*

Be it known that I, NATHANIEL W. PRATT, of the city, county, and State of New York, have invented a certain new and Improved Dumping Dead-Plate for Furnaces, of which the following is a full and exact description.

My invention relates to an improved dumping dead-plate. According to my invention, I pivot one end of the dead-plate to the boiler-front by means of hinges or other suitable means, and I support the opposite end in position by means of a yoke or support composed of a compound lever so constructed and arranged that, when desired, by inserting a hand-spike or rod into a socket formed on part of the same the said yoke or support may be folded up and the dead-plate lowered toward the ash-pit, so as to allow of the ashes, clinkers, or the whole of the fire being dumped directly into the ash-pit in place of being drawn through the fire-door onto the floor of the furnace or boiler-room, thereby avoiding all danger of setting fire to the building in which the furnace is placed, and also the nuisance of smoke, arising from the old plan of raking the ashes and clinkers and drawing the fire onto the floor of the furnace-room.

The following is a description of what I consider the best means of carrying out the invention:

In the accompanying drawings, forming a part of this specification, Figure 1 represents a front view; Fig. 2, a vertical section of part of a furnace with my improvements applied thereto; Figs. 3, 4, and 5 represent detailed views of the same.

In each of the views similar letters of reference are employed to indicate corresponding parts wherever they occur.

A represents the furnace-front; B, the grate-bars; C, the fire-place; D, the ash-pit, and E my improved dumping dead-plate, which is pivoted at its front end to the furnace-front A by means of hinges *e e*, and at its rear end provided with lugs *e' e'*, to which is pivoted one end of a link, *f*, forming part of a yoke or support, F, by means of which the outer end of the dead-plate is supported in or lowered out of position.

To the lower end of the link *f* is connected,

by means of a pin-joint, *f'*, one end of a double lever, *f<sup>2</sup>*, forming part of the yoke or support F. The ends *f<sup>3</sup> f<sup>3</sup>* of the double lever *f<sup>2</sup>* are, by means of bolts or pins *f<sup>4</sup>*, connected to lugs or projections *a*, formed on or affixed to the furnace-front A. On the under side of the center portion of the double lever *f<sup>2</sup>*, I form a socket, *f<sup>5</sup>*, adapted to receive one end of a suitably-formed lever or bar, G, for the purpose of folding or moving the parts of the yoke or support F when desired, so as to raise the dead-plate E into the position shown in full lines by Fig. 2, or to lower it into the position shown by dotted lines in the same figure, in which latter position the fireman is enabled to rake the ashes or clinkers from the fire into the ash-pit, or to draw the entire fire directly into the ash-pit, without the necessity of any part of the ashes, clinkers, or fire coming or being drawn onto the floor of the furnace-room.

When the fireman requires to rake or draw the fire, he opens the door of the ash-pit (not shown) and inserts the bar G into the socket *f<sup>5</sup>*, and lowers the dead-plate into the position shown by dotted lines in Fig. 2. He then removes the lever G, closes the door of the ash-pit, and opens the fire-door. He is then able to draw any ashes, cinders, or the whole of the fire over the front end of the furnace-bars B, and drop or dump the same into the ash-pit D, where the same can remain until cold, if desired, or properly wetted down, thereby avoiding the great discomfort of raking or drawing the fire under the old plan. When the fireman has finished raking or drawing the fire, he immediately closes the fire-door, inserts the lever G into the socket *f<sup>5</sup>*, and raises the yoke or support F and the dead-plate E into the position shown by full lines in Fig. 2, until it is again required to rake or dump the fire.

*f<sup>6</sup>* is a lug formed on the under side of the link *f*, and *f<sup>7</sup>* is a similar lug formed on the double lever *f<sup>2</sup>*. These lugs are so formed that when their faces *f<sup>8</sup>* come together, when the yoke or support F is thrown up into the position shown by Fig. 2, the joint *f'* is thrown past its center, and the downward thrust of the dead-plate E is borne directly by the lugs

$f^6 f^7$ , thereby firmly holding the dead-plate in position until the yoke or support is unfolded by means of the lever G.

Modifications may be made in the details within wide limits by any competent mechanic. For instance, I can employ any other suitable form of hinge in place of those shown, or the lever for working the dead-plate may be inserted in a socket cast in any suitable part of the yoke or toggle F that will not necessitate the opening of the ash-pit door to work it, or the lever G may form a part of the same casting.

I am aware that toggles have been before used to support the drop doors or plates of cupola-furnaces. I do not claim such support broadly; but

I claim as my invention—

1. The combination, with the furnace-frame and dead-plate E, hinged to said frame, of the toggles  $f f^2$ , hinged to the dead-plate and frame at  $e'$  and  $f^4$ , respectively, and secured to each other by a pivot or hinge at  $f^1$ , substantially as described.

2. The combination, with the frame A and the dumping dead-plate E, hinged thereto, of the toggles  $f f^2$ , hinged respectively to the dead-plate and frame, and connected together by a hinged joint, the said toggles being provided with abutting pieces or shoulders  $f^6 f^7$ , substantially as described.

3. The combination, with the frame A, the dumping dead-plate E, hinged thereto, and the toggle  $f$ , hinged to the dead-plate at  $e'$ , of the toggle  $f^2$ , hinged to the toggle  $f^1$ , and provided with branched or forked arms hinged to the frame A at  $f^4$ , and provided also with a socket,  $f^5$ , at a point between said arms, substantially as described.

In testimony whereof I have hereunto set my hand this 22d day of July, 1878, in the presence of two subscribing witnesses.

NAT. W. PRATT.

Witnesses:

W. COLBORNE BROOKES,  
CHAS. D. MOLLER.