No. 868,102. PATENTED OCT. 15, 1907.

L. LARSSON.

DEVICE FOR ARRESTING THE EXPLOSION DISCHARGE FROM BLAST FURNACES.

APPLICATION FILED JUNE 12, 1907.

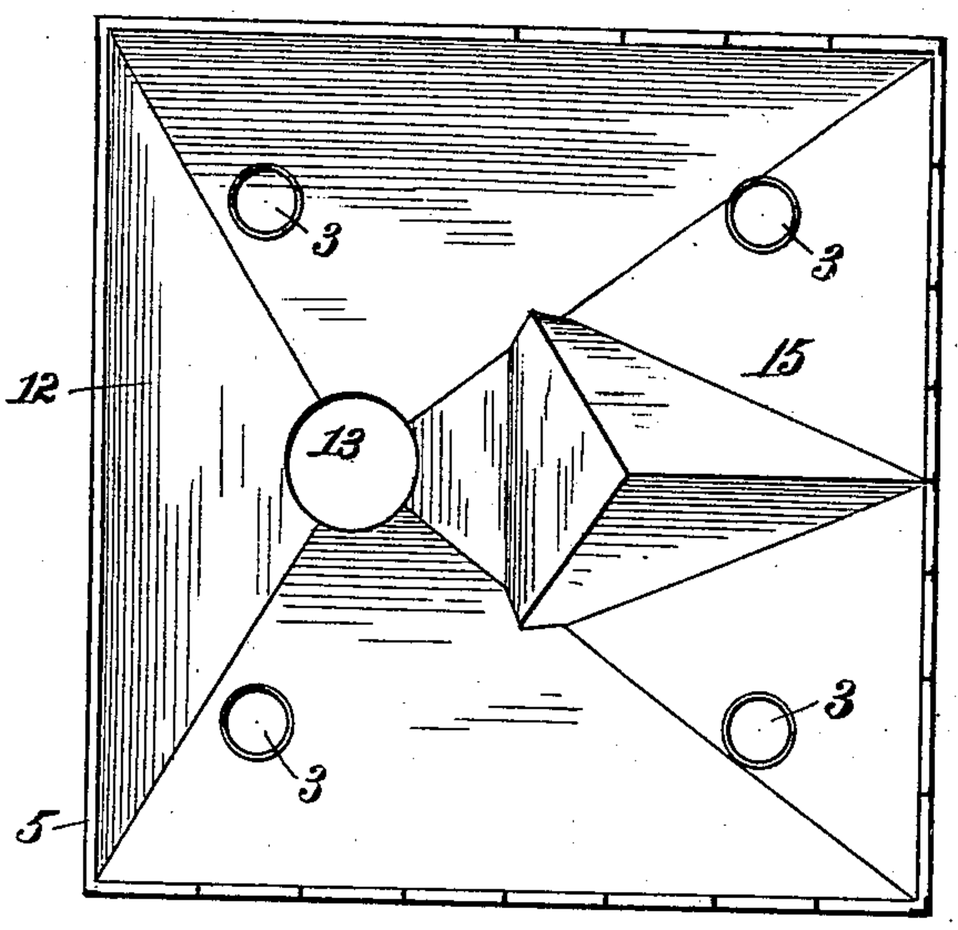
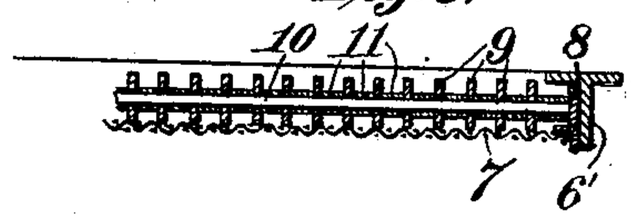


Fig. 2.

Fig. 3.



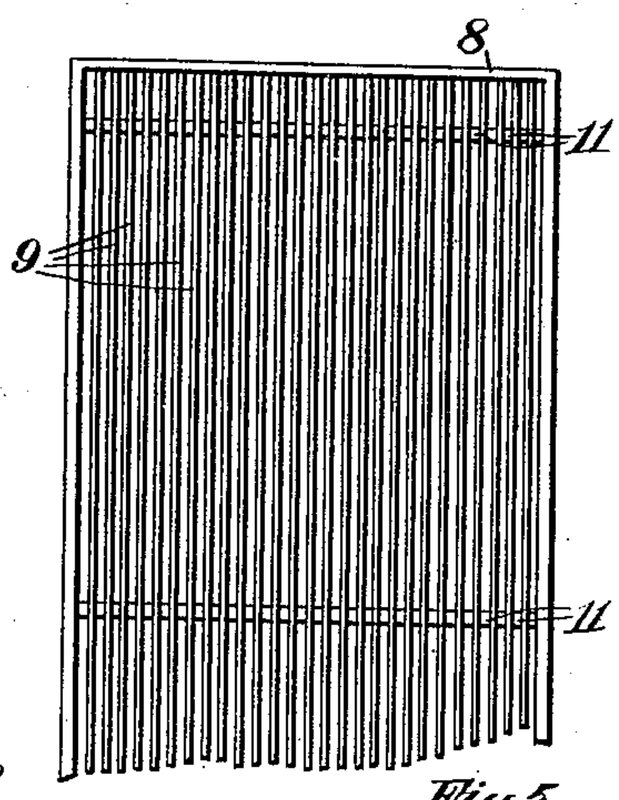


Fig. 5.

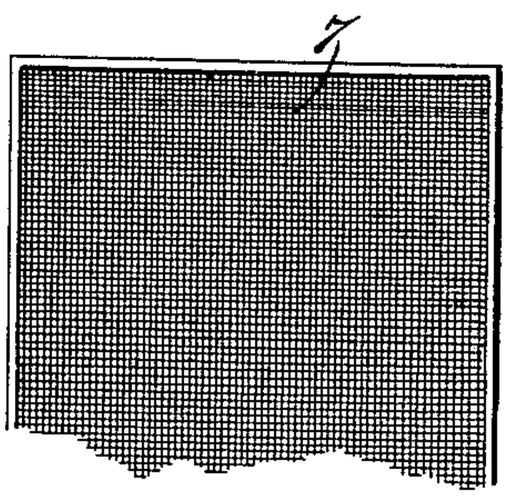


Fig. 4.

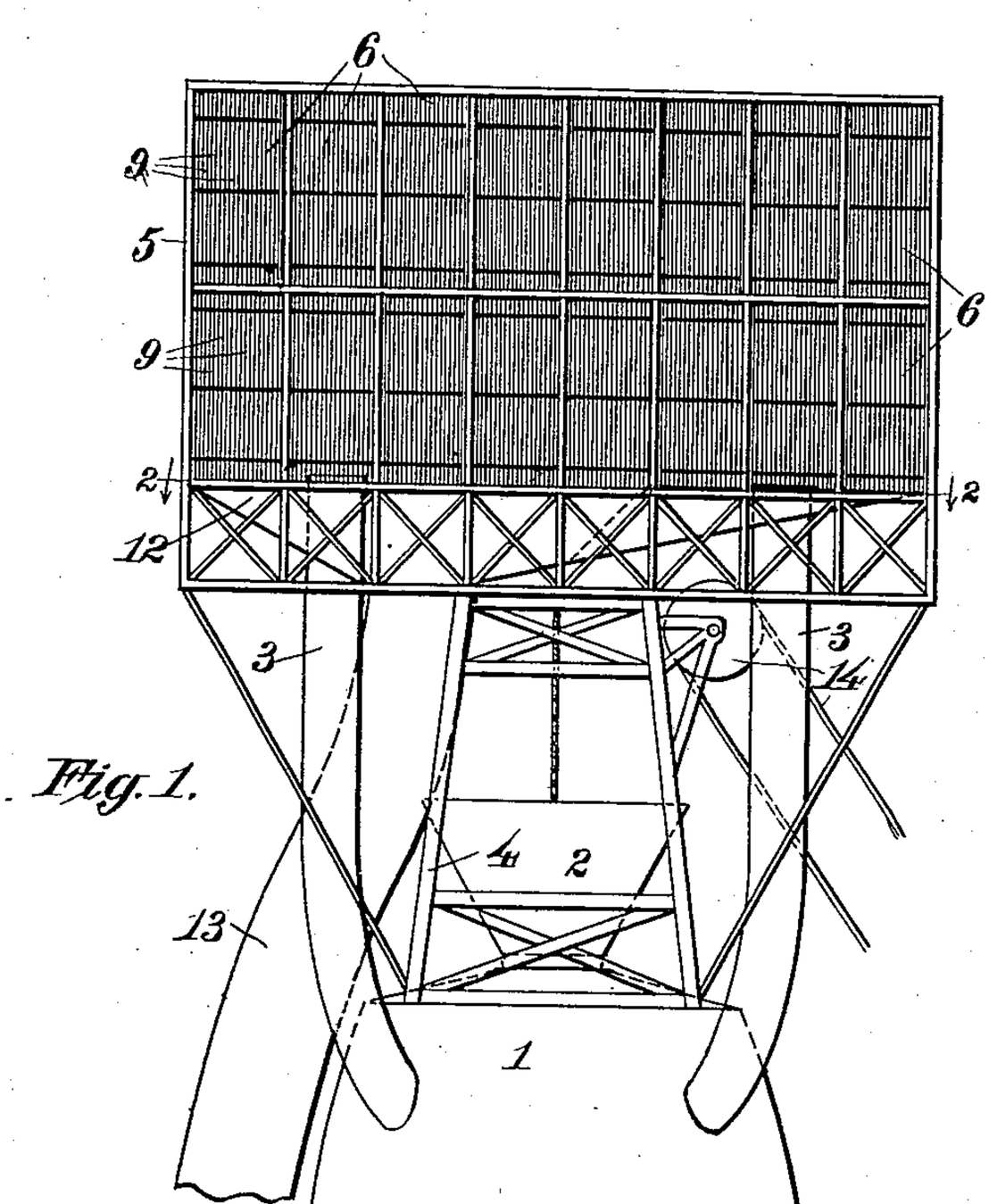


Fig. 1.

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UNITED STATES PATENT OFFICE.

LARS LARSSON, OF CHICAGO, ILLINOIS.

DEVICE FOR ARRESTING THE EXPLOSION DISCHARGE FROM BLAST-FURNACES.

No. 868,102. Specification of Letters Patent. Patented Oct. 15, 1907.

Application filed June 12, 1907. Serial No. 378,607.

To all whom it may concern:

Be it known that I, LARS LARSSON, a citizen of the United States, residing at 7915 Muskegon avenue, in the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Devices for Arresting the Explosion Discharge from Blast-Furnaces, of which the following is a specification.

My invention relates to blast furnaces and has particular reference to devices such as are adapted for use upon blast furnaces to arrest the material which is discharged at each "explosion" therein.

The object of my invention is to provide a device of the class mentioned for blast furnace, to arrest the pieces of coke, stones and cinders thrown off by the internal explosions which occur at each "slippage" of the molten or semi-molten mass within the furnace. At such times a large quantity of coke, etc., is thrown off through the explosion pipes and scattered widely about the furnace.

My invention consists generally in a large metal cage supported above the furnace and into which the explosion pipes discharge. The walls, and preferably the top also, are formed of coarse mesh grating, suitably reinforced to prevent injury from the large pieces of coke or stone ejected forcibly against them. The bottom is hopper or funnel shaped to receive the ejected material and empty it into a discharge pipe which reaches nearly to the ground.

My invention also consists in various constructions, arrangements and combination of parts, all as will be fully described hereinafter.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification and in which,

Figure 1, is a side elevation of a discharge arrester embodying my invention in its preferred form, Fig. 2, is a horizontal section on the line, 2—2, of Fig. 1, Fig. 3, is a detail section of one side of a panel of grating and its reinforcement, Fig. 4, is a detail of one end of the panel of grating, and Fig. 5, is a similar view of the reinforcing member.

Referring to the drawings, 1, indicates the top of a blast furnace, and 2, the fuel feed hopper equipped with the usual bell feed, (not shown). Projecting from the sides of the furnace, and extending quite a distance above the top thereof, are the explosion pipes, 3. These are of the usual type, and any desired number may be provided. In the drawings, I have illustrated four.

During the melting of the ore in the furnace, the mass therein slips down at intervals, due to the liquefaction of the bottom portion thereof. At each such slippage there occurs an explosion of the pent gases, which throws off great quantities of coke, stone and cinders through the pipes, 3, said pipes acting in the nature of safety valves to prevent rupture of the furnace. It is to prevent the scattering of this material, and to gather the same into a convenient pile for future use, that I provide the novel device forming the subject matter of this application.

Supported upon a suitable, frame, 4, arranged upon the top of the furnace, is a cage, 5, into which the explosion pipes, 3, discharge. The cage, 5, may be of any preferred construction, but I prefer the same to have the form of a rectangular box, constructed of the ordinary structural steel. The sides, and preferably the top, are divided into panels, 6, which are filled in with frames of coarse grating, 7, reinforced by other frames, formed of steel bars rigidly spaced apart. The reinforcing gratings each comprise a rectangular frame, 8, in which are arranged a plurality of steel bars, 9. The bars, 9, are arranged upon rods, 10, passing transversely through the frame, and are spaced apart by short sections of tubing or pipe, 11, arranged upon the rods, 10, and between the bars as shown in Fig. 3, wherein 6′ indicates one of the members, which divide the sides of the cage into panels, and to which the gratings, 7 and 8 are fixed.

The bottom, 12, of the cage is funnel or hopper shaped, and empties into a large discharge pipe, 13, which may extend nearly to the ground. 14 indicates an automatic fuel feeding device, by means of which fuel is placed in the hopper, 12. If necessary the bottom, 12 of the cage may be formed as shown to provide a hood, 15 over the fuel feed, 14, or over the gangway, (not shown), if the furnace is filled by hand.

It is obvious that numerous modifications of my invention may be made without departing from the scope thereof, hence, I do not limit myself to the precise construction shown and described.

Having described my invention what I claim as new and desire to secure by Letters Patent is,

1. In a device of the class described, a furnace having the usual explosion pipes, in combination with a cage arranged above said furnace and into which said explosion pipes discharge and a discharge pipe extending from said cage, substantially as described.

2. In a device of the class described, a furnace having the usual explosion pipes, in combination with a cage arranged above said furnace, and into which said explosion

pipes discharge, a funnel shaped bottom for said cage, and a discharge pipe leading from said cage, substantially as described.

3. In a device of the class described, a blast furnace, having the usual explosion pipes, in combination with a cage arranged above said furnace and into which said pipes discharge the sides, and top of said cage being divided into a plurality of panels, a coarse mesh grating closing each of said panels, and a reinforcing device for said grating, a funnel shaped bottom for said cage, and a discharge pipe leading therefrom, substantially as described.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

LARS LARSSON.

Witnesses:

HELEN F. LILLIS,

H. S. AUSTIN.