No. 868,416.

PATENTED OCT. 15, 1907.

J. W. DEETRICK.

BLAST CONNECTION FOR FURNACES.

APPLICATION FILED FEB. 18, 1907.

FIG. 1.

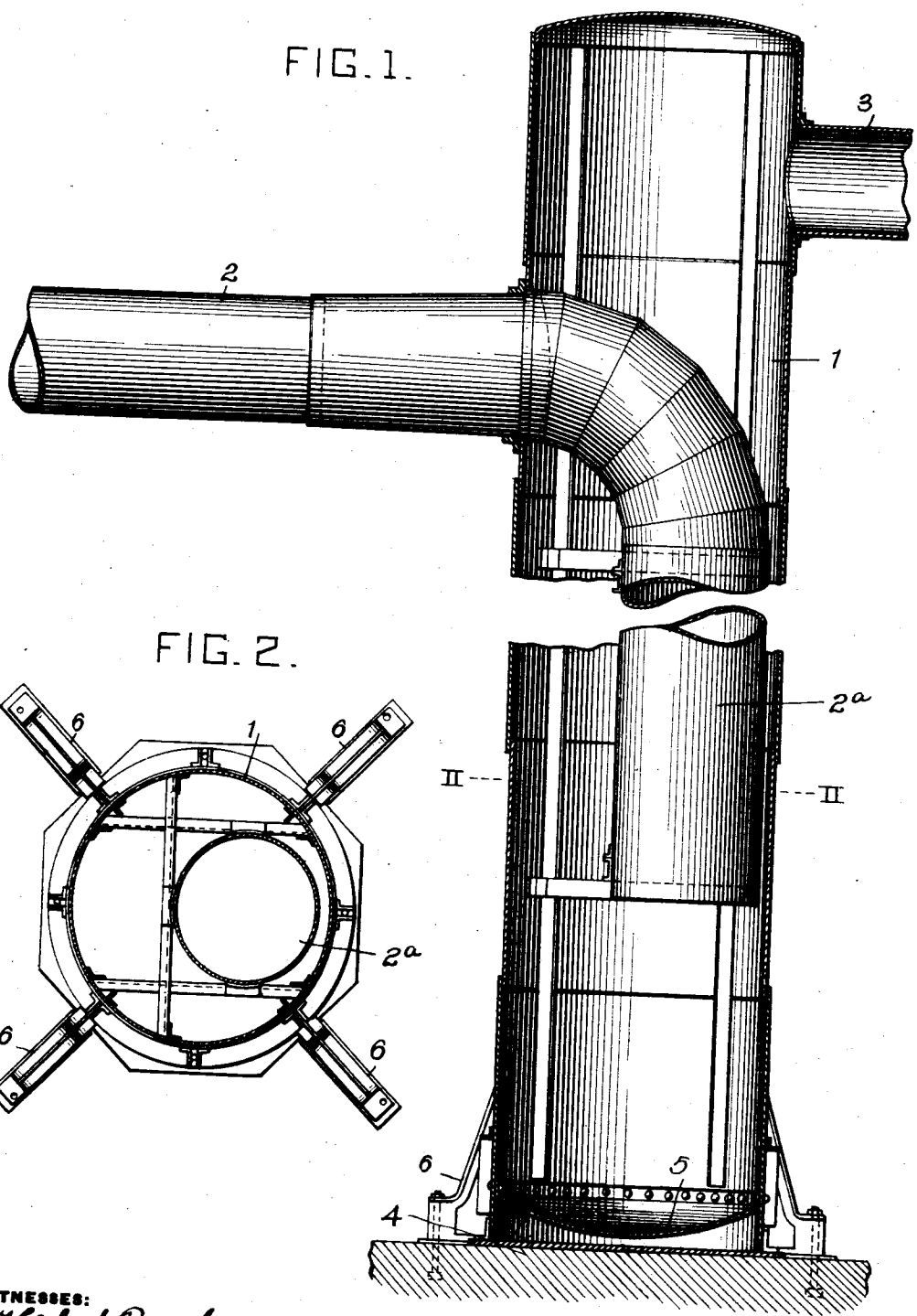


FIG. 2.

WITNESSES:

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BLAST CONNECTION FOR FURNACES.

No. 868,416. Specification of Letters Patent. Patented Oct. 15, 1907.

Application filed February 13, 1907. Serial No. 358,027.

To all whom it may concern:

Be it known that I, JAMES W. DEETRICK, residing at Youngstown, in the county of Mahoning and State of Ohio, a citizen of the United States, have invented or discovered certain new and useful Improvements in Blast Connections for Furnaces, of which improvements the following is a specification.

In the operation of blast furnace plants, it is necessary to arrange the blowing engines at a considerable distance from the furnace proper, to which the engines are connected by large pipes, usually supported on the walls of buildings or on specially constructed trestles. The blowing engines are of the reciprocating type so that the air is caused to move through the connecting pipes irregularly, having a pulsating movement rather than a steady continuous flow. This pulsating movement causes such a vibration to the pipes or connecting tubes as to render it exceedingly difficult to hold the same in position, and frequently the vibration imparted to the tubes is such as to throw down the supporting walls or trestles.

The present invention has for its object a construction whereby the thrust exerted by the air being fed to the furnaces is taken up by a solid wall or abutment, and an enlarged chamber is provided, whereby a more steady and continuous flow of air to the furnace is obtained. The invention is hereinafter more fully described and claimed.

In the accompanying drawings forming a part of this specification, Figure 1 is a view partly in section and partly in elevation showing portions of the connecting pipes extending from the blowing engine of the furnace, and having my improvement applied thereto, and Fig. 2 is a sectional plan view on a line indicated by the line II—II Fig. 1.

In the practice of my invention, I provide at any suitable point along the line of pipe designed to connect the blowing engine with the blast furnace, a vertical chamber 1, of dimensions considerably larger than the pipe 2 connecting the chamber with the blowing engine or the pipe 3 connecting the chamber with the blast furnace. This chamber can be formed in any suitable manner, but preferably of metal plates riveted together and arranged upon a base or foundation 4. The pipe 2, extending from the engine enters the vertical chamber at a suitable point above its lower end, and the portion within the chamber is turned at an angle so that it will discharge the air in a direction parallel or approximately parallel with the axis of the chamber. While not necessary, it is preferred that the vertical portion 2^a of the pipe 2 should be arranged adjacent to a portion of the wall of the vertical chamber, or in other words with the axis of the chamber. Adjacent the bottom of the chamber, it is preferred to arrange a metal plate, preferably having a concave upper surface and riveted to the shell of the chamber 1. The pipe 3 leading to the furnace is connected to the chamber, preferably at a point above the point of entrance of the supply pipe 2. In the construction shown, the shell forming the chamber 1 is supported laterally by angular braces or knees 6 bolted to the foundation.

In use, the air rushing in through the pipe 2—2^a will be directed down upon the plate which will transmit shocks or blows imparted by the air, to the foundation through the shell of the chamber 1. By reason of the concavity of the plate the air, after impact, will be deflected, and caused to flow up through the chamber, along the side opposite that against which the vertical portion 2^a of the engine pipe is arranged. By reason of the greater size of the chamber 1 the air will flow steadily or with very slight pulsation from the chamber to the blast furnace.

In addition to providing a firm abutment for receiving the impact of the air, my improvement contemplates changing the direction of flow of the air, so that the thrust in one direction due to friction of the air on the walls, will be neutralized in part at least by the opposite flow.

I claim herein as my invention:

1. A blast furnace plant having in combination a line of pipe for conducting air under pressure from the blowing engine to the furnace, and a wall or abutment arranged transversely of the line of flow and adapted to receive the impact of the stream of air without interrupting its flow.

2. In a blast furnace plant the combination of a chamber provided with an inlet and having a firmly supported portion or shock absorbing abutment, a connection from the blowing engine adapted to direct air under pressure against the solidly supported portion, and an outlet to the furnace extending from the chamber at an angle to the inlet.

3. In a blast furnace plant the combination of a chamber, a pipe extending from the blowing engine connected to the chamber, means within the chamber for changing the direction of the flow of air, and an outlet connected with the blast furnace.

4. In a blast furnace plant, the combination of a vertically arranged chamber having a solidly supported abutment for absorbing the impact of the air, a pipe extending from the blowing engine to the chamber and having the portion within the chamber arranged to direct the inflowing air against said abutment and an outlet connected to the blast furnace.

In testimony whereof, I have hereunto set my hand.

JAMES W. DEETRICK.

Witnesses:
FRANK C. CUNNINGHAM,
JOHN W. WRIGHT.