

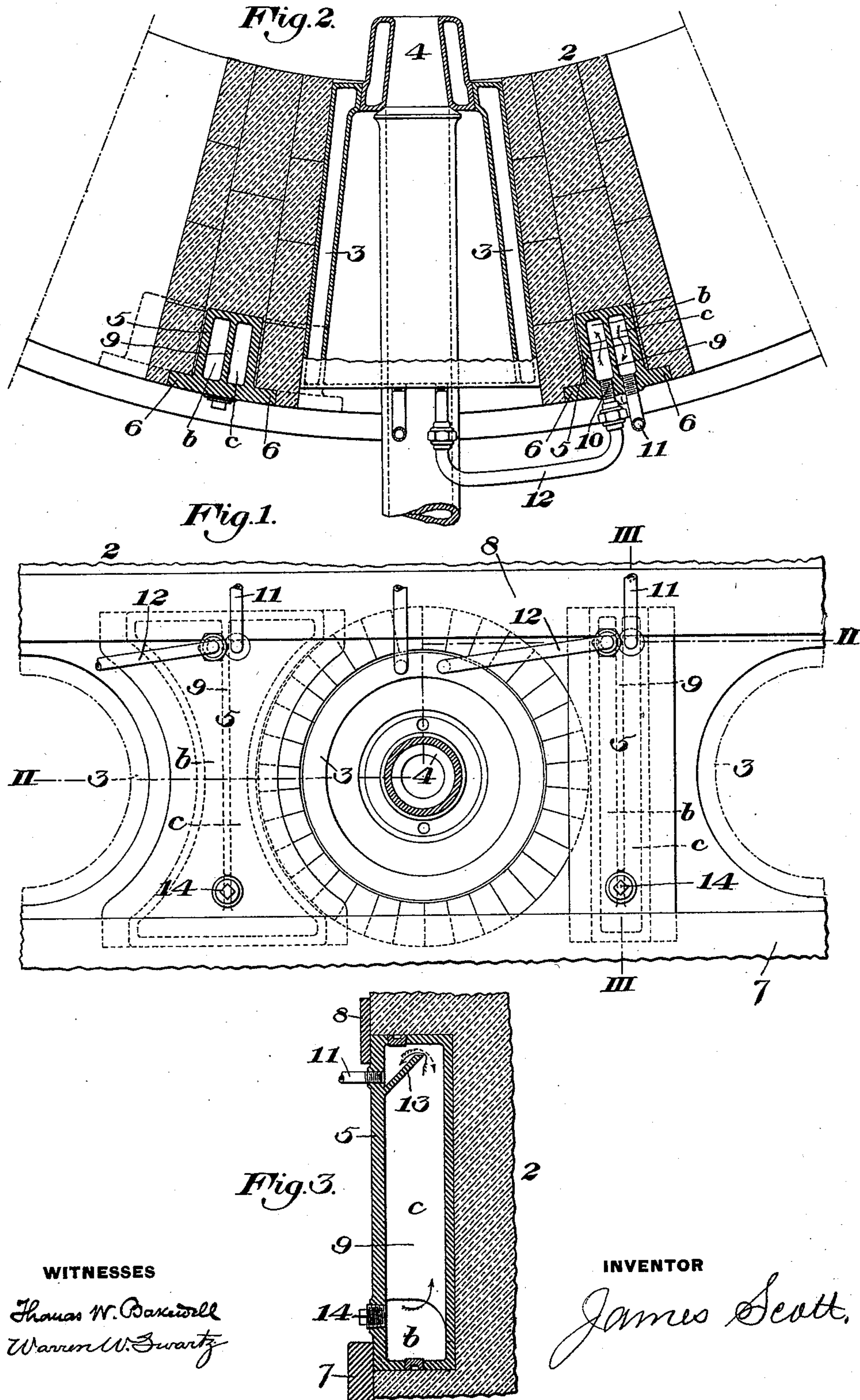
(No Model.)

J. SCOTT.

MEANS FOR PROTECTING FURNACE WALLS.

No. 601,759.

Patented Apr. 5, 1898.



WITNESSES

Thomas W. Baxwell
Warren W. Swartz

INVENTOR

James Scott.

UNITED STATES PATENT OFFICE.

JAMES SCOTT, OF PITTSBURG, PENNSYLVANIA.

MEANS FOR PROTECTING FURNACE-WALLS.

SPECIFICATION forming part of Letters Patent No. 601,759, dated April 5, 1898.

Application filed December 28, 1896. Serial No. 617,162. (No model.)

To all whom it may concern:

Be it known that I, JAMES SCOTT, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Means for Protecting Furnace-Walls, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—
10 Figure 1 shows in front elevation a part of the wall of a blast-furnace constructed in accordance with my invention. Fig. 2 is a horizontal section on the irregular line II II of Fig. 1, and Fig. 3 is a vertical section on the
15 line III III of Fig. 1.

The purpose of my invention is to provide means for strengthening and preserving the walls of blast-furnaces between the twyer-coolers. It is of general application, but it is
20 of peculiar use in blast-furnaces constructed according to the recent practice—with a great number of twyers—in which, by reason of the small space between the twyer-coolers, the brickwork for supporting the upper bosh-walls of the furnace and for resisting the out-
25 ward pressure on the furnace-walls is reduced.

To this end my invention consists in a combined buckstay and cooler having a hollow body portion set vertically in the brickwork
30 between the twyer-coolers, so as to render support to the upper bosh-walls, and having external lateral flanges which fit against the furnace-wall on the outside and thus brace it against outward pressure. A current of water
35 is maintained through the body of the buckstay, and it is thus cooled and the furnace-wall is prevented from being cut out between the twyer-coolers.

In the drawings, 2 represents the furnace-wall, and 3 3 are the twyer-coolers, in which the twyers 4 are set. In the furnace-wall between the adjacent twyer-coolers are set the water-cooled buckstays 5, made in the form of hollow oblong boxes having external
45 vertical flanges 6, which fit against the furnace-wall. The buckstays are held securely in place by being fitted under the hearth-plates 7 at their lower ends and under a band 8, which encircles the furnace, at their upper

ends. To provide more effectually for the
50 water-cooling of these buckstays, I construct each with a vertical partition 9, dividing the buckstay into two parallel chambers *b c*, connected at the bottom by an opening through or under the partition. A water-inlet pipe
55 10 enters at the top of one chamber. An outlet-pipe 11 is connected with the top of the other, and for convenience the water-pipe 10 is preferably connected with and derives its water from the outlet-pipe 12 of the twyer-
60 cooler, so that the water shall flow from the twyer-cooler to and through the buckstay. Opposite to the end of the inlet-pipe 10 I prefer to form an upwardly-directed lip 13, which causes the entering water to impinge upon
65 the end of the inlet-chamber of the buckstay and prevents the excessive heating of the wall and casting at that point which otherwise might be occasioned by the collection of air-bubbles. At the lower end is an opening
70 closed by a removable plug 14, adapted to facilitate the washing out of the buckstay when occasion requires the same.

In the drawings I show two forms of construction of the buckstay. In the one at the
75 left the buckstay flares in width from the middle toward each end, being preferably curved substantially on the radii of the adjacent coolers. This construction gives a broader support at the ends for upholding the furnace-
80 walls and exerts a more widely extended cooling action. At the upper end the buckstay is enlarged, so that it protects the cooler from the weight of the masonry. The other buck-
85 stay at the right is made of uniform width from top to bottom and likewise serves as a column to support the wall and as a cooler to preserve it from being burned out.

The advantages of my invention will be appreciated by those skilled in the art. 90

Within the scope of the invention as defined in the claims modifications may be made in the form and construction of the parts, since

What I claim is— 95

1. A furnace-wall having between the twyer-coolers hollow buckstays set in upright position and provided with passages for a cool-

ing medium, and a band confining the same to the furnace-wall.

2. A furnace-wall having between the two coolers oblong hollow buckstays set in upright position and provided with passages for a cooling medium, and bands confining the same above and below.

3. A water-cooling box contracted at the

middle portion and flaring in width toward top and bottom.

In testimony whereof I have hereunto set my hand.

JAMES SCOTT.

Witnesses:

G. I. HOLDSHIP,

THOMAS W. BAKEWELL.