J. W. MINER.

Gage for Building Coke-Ovens.

No. 223,372. Patented Jan. 6, 1880.

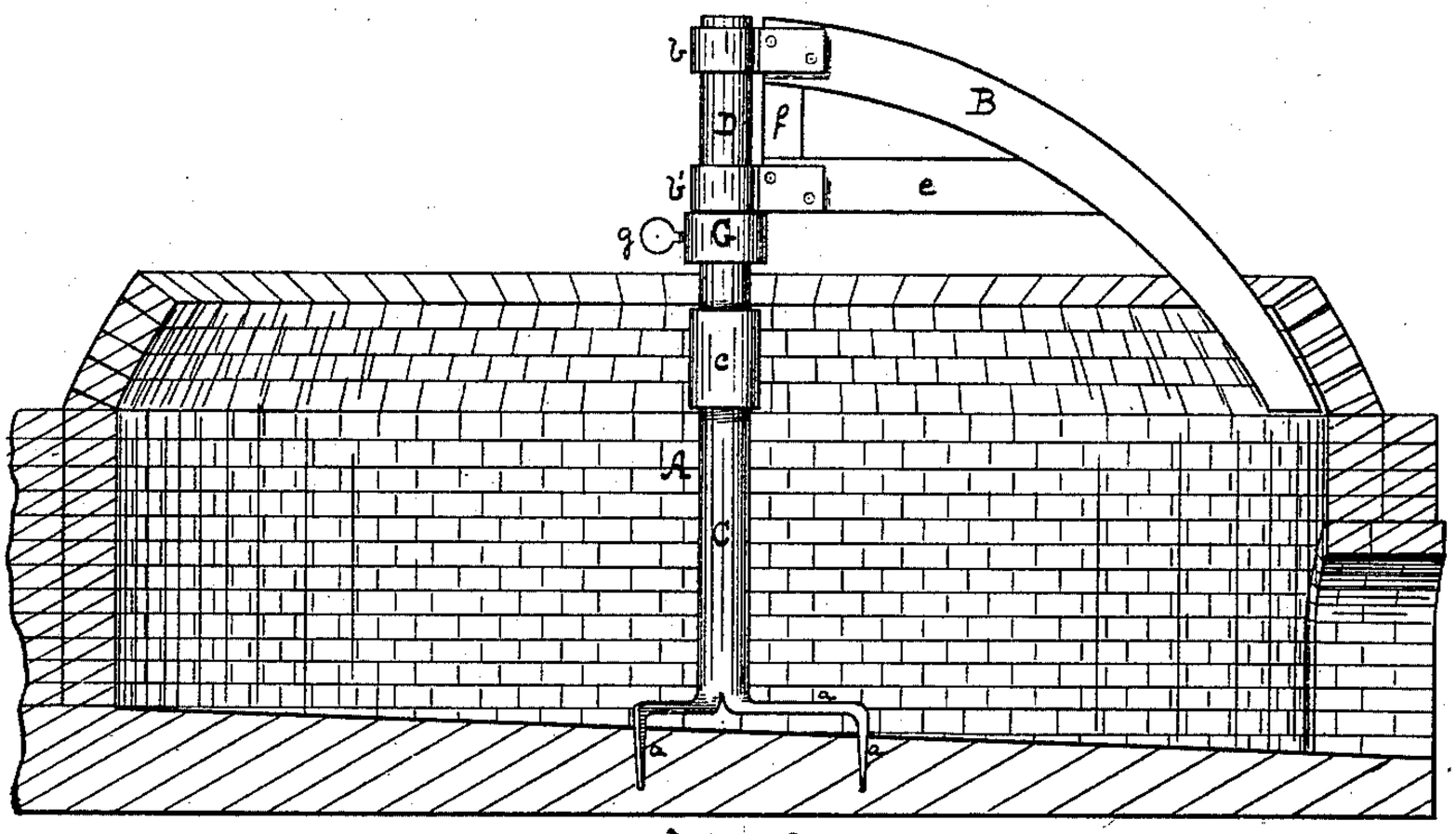


Fig. 1.

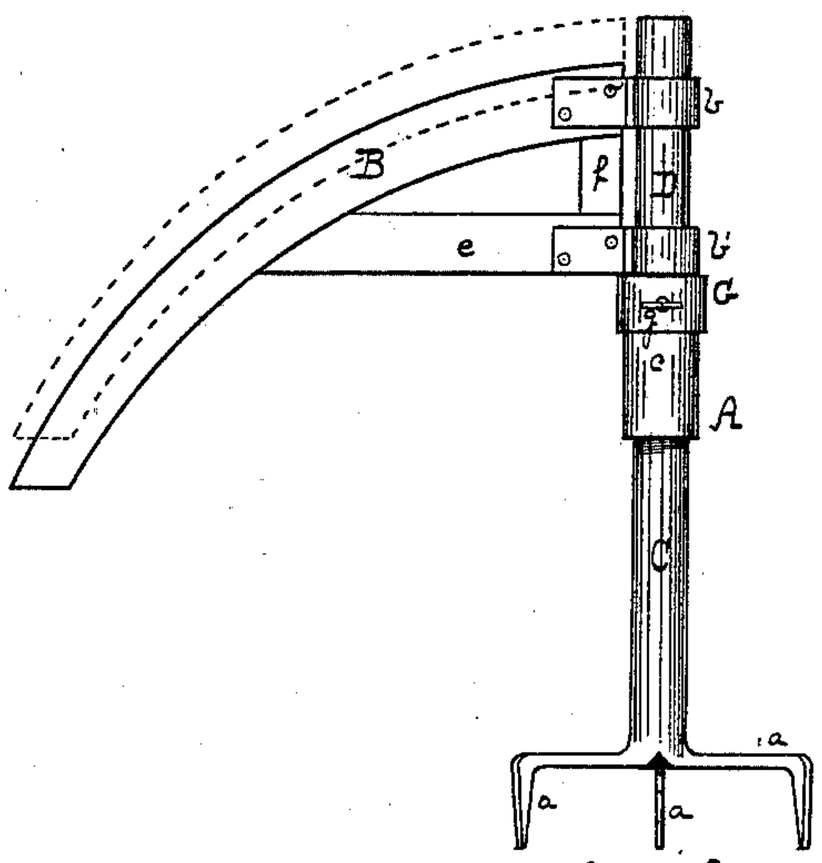


Fig. 2.

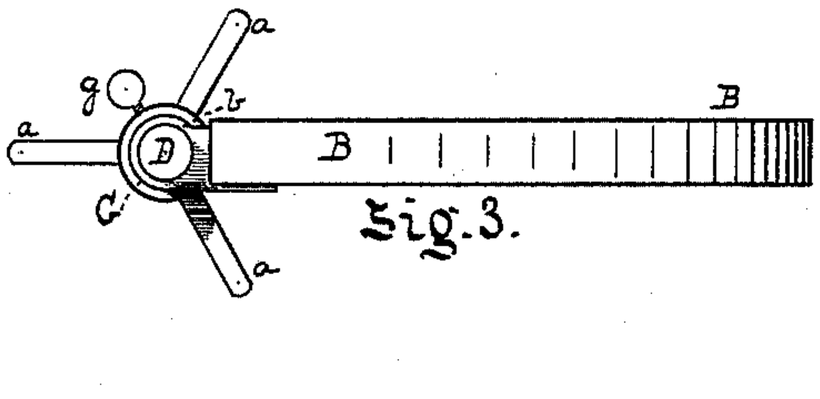


Fig. 3.

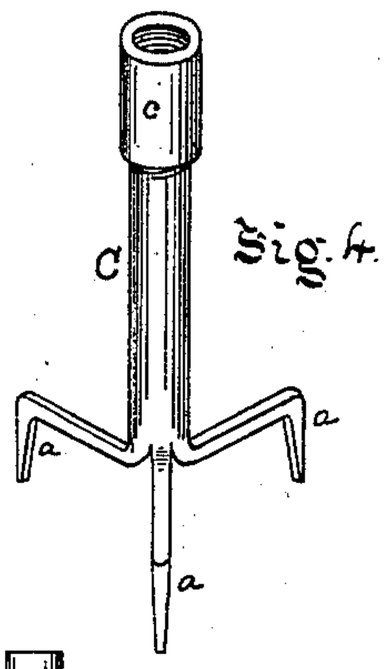


Fig. 4.

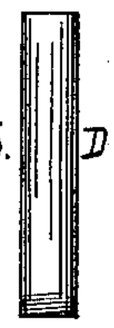


Fig. 5.


Fig. 6.

Witnesses

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# UNITED STATES PATENT OFFICE.

JOHN W. MINER, OF MOUNT PLEASANT, ASSIGNOR TO HIMSELF AND WILLIAM B. MINER, OF CONNELLSVILLE, PENNSYLVANIA.

## GAGE FOR BUILDING COKE-OVENS.

SPECIFICATION forming part of Letters Patent No. 223,372, dated January 6, 1880.

Application filed October 17, 1879.

*To all whom it may concern:*

Be it known that I, JOHN W. MINER, of Mount Pleasant, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Improvement in Gages for Building Coke-Ovens; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side view of my improvement fixed in a coke-oven partly built, showing the manner in which the gage is used. Fig. 2 is a like view of the gage, illustrating the method of removing it from the oven. Fig. 3 is a top view; and Figs. 4, 5, and 6 are detached views of some of the parts composing the gage.

Like letters of reference indicate like parts in each.

My invention relates to the building of coke-ovens and like furnaces in which the roof is formed in the shape of a circular dome. Heretofore these roofs or domes have been generally built by skilled and accurate workmen, who gaged the work in forming the dome by eye or by some small and partially inaccurate tools, and it was found almost impossible by this method of building to keep an accurate circle or give the same arch or curve to each of a series of domes. In building cisterns these difficulties have been partially obviated by means of gages provided with a sleeve mounted on a perpendicular standard driven in the center of the floor and supported at the top, to which sleeve was hinged a straight arm, which could be secured at any inclination or elevation, and would swing around the standard and act as a gage, its inclination being changed as the building of the dome progressed.

The object of my invention is to provide an accurate gage for building the dome of these ovens, which is simple in construction and need not be altered during the building of the oven, but being once mounted therein gages the work until the completion of the arch without any alteration or adjustment.

It consists, first, in an upright standard or frame adapted to be secured in the center of the oven, at or near the top of which standard is mounted a gage, which is formed to the curve or arch of the dome to be built, and swings around on the standard so as to act as a gage in building the dome; second, in means for regulating the height at which the swinging gage shall be mounted on the standard; and, third, in forming the standard on which the gage is mounted in two parts, to facilitate its removal from the finished oven.

To enable others skilled in the art to make and use my invention, I will describe its construction and operation.

In the accompanying drawings, A represents the standard or frame for supporting the swinging gage B, the said standard being formed of the post C and circular rod or shaft D. The post C is provided with the feet or spikes *a*, extending from its base, and sharpened so as to be driven into the floor and hold the post firm, or with other suitable means for supporting the post in the center of the oven. At the top of the post is the screw-socket *c*, by means of which the shaft D is attached to the post, said shaft being screwed firmly into the socket and extending to the top of the oven.

B is the gage for building the oven, being formed to the desired shape, curve, or arch of the inner surface of the dome. The gage is generally formed of wood, and is braced by the girder *e* and cross-bar *f*, to prevent its springing should any strain come upon it. It is provided with the metal sockets *b b'*, fitting over the shaft D, by means of which it is pivoted thereto so as to swing around on any side of the standard.

On the shaft D, below the gage B, is the sleeve G, which moves loosely on the shaft, and is secured at any desired height thereon by the thumb-screw *g*. The gage B rests on the sleeve, and by raising or lowering the sleeve the gage can be adjusted to any height on the shaft D.

The operation of my improved gage is as follows: The post C is placed in the center of the oven to be built, and is securely fastened thereto by means of the spiked feet *a*, or by other suitable means. The rod D is then secured in the screw-socket *c*, care being taken that the standard or frame thus formed stands perfectly perpendicular. The loose sleeve G is

then placed over the shaft D and the swinging gage B over the shaft above the sleeve. The inner height of the oven to be built is then measured on the standard, and the sleeve G raised so as to fix the gage at that height, and is fastened by the thumb-screw *g*. After the building of the perpendicular part of the wall, and when it is raised to the proper height to commence the arch or dome, the gage B serves to indicate to the workman the point to commence and the curve of the arch, and by swinging the gage around on its standard the workman can gage the work at any part of the arch or curve. The workman can keep the gage in front of the part he is working at, and thus see that each brick is in the proper place, the gage serving as a guide during the entire building of the dome of the oven. When the dome is finished, and it is desired to remove the gage and standard, the thumb-screw *g* is loosened, and thus permits the sleeve G and gage B, resting on it, to slide down the shaft a short distance until the sleeve rests on the screw-socket *c*. By this means the gage is drawn down from the wall, and the shaft D may then be detached from the post C, and with the gage may be removed from the oven through the door at the base. The post C is then loosened from the floor and removed in the same way, and the gage can be set up in the next oven to be built.

It is evident that two gages of the same shape, pivoted at the same height on the shaft, but working independently of each other, may be used to enable two men to work at the same oven.

The advantages of my invention are that it furnishes an accurate rule or gage to build the furnace, and enables the workmen using it to form the domes of all the ovens the same or any desired arch, shape, and height. It enables workmen not skilled in this particular and difficult branch of masonry to do better and more accurate work than the most skilled hands without it. It is simple in construction, and easy to set up, to use, and to remove from the oven.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In gages for building ovens and furnaces, the combination of the upright standard A, adapted to be secured in the center of the oven, and the gage B, formed to the curve or arch of the dome to be built, mounted at the top of the standard, and adapted to swing around thereon and form a gage in building the dome, substantially as described.

2. The combination of the standard A, the swinging gage B, mounted at the top of the standard and formed to the curve or arch of the dome, and the sleeve G, for regulating the height of the gage on the standard, substantially as described.

3. The combination of the post C and shaft D, forming the separable standard A, and the swinging gage B, formed to the curve of the dome to be built, substantially as and for the purposes set forth.

4. The combination of the post C, shaft D, sleeve G, and swinging gage B, formed to the curve of the dome to be built, substantially as and for the purposes set forth.

In testimony whereof I, the said JOHN W. MINER, have hereunto set my hand.

JNO. W. MINER.

Witnesses:

JOHN R. HARBISON,

JAMES I. KAY.