

E. B. ANDREWS.
Blast-Furnaces.

No. 143,487.

Patented Oct. 7, 1873.

Fig. 1.

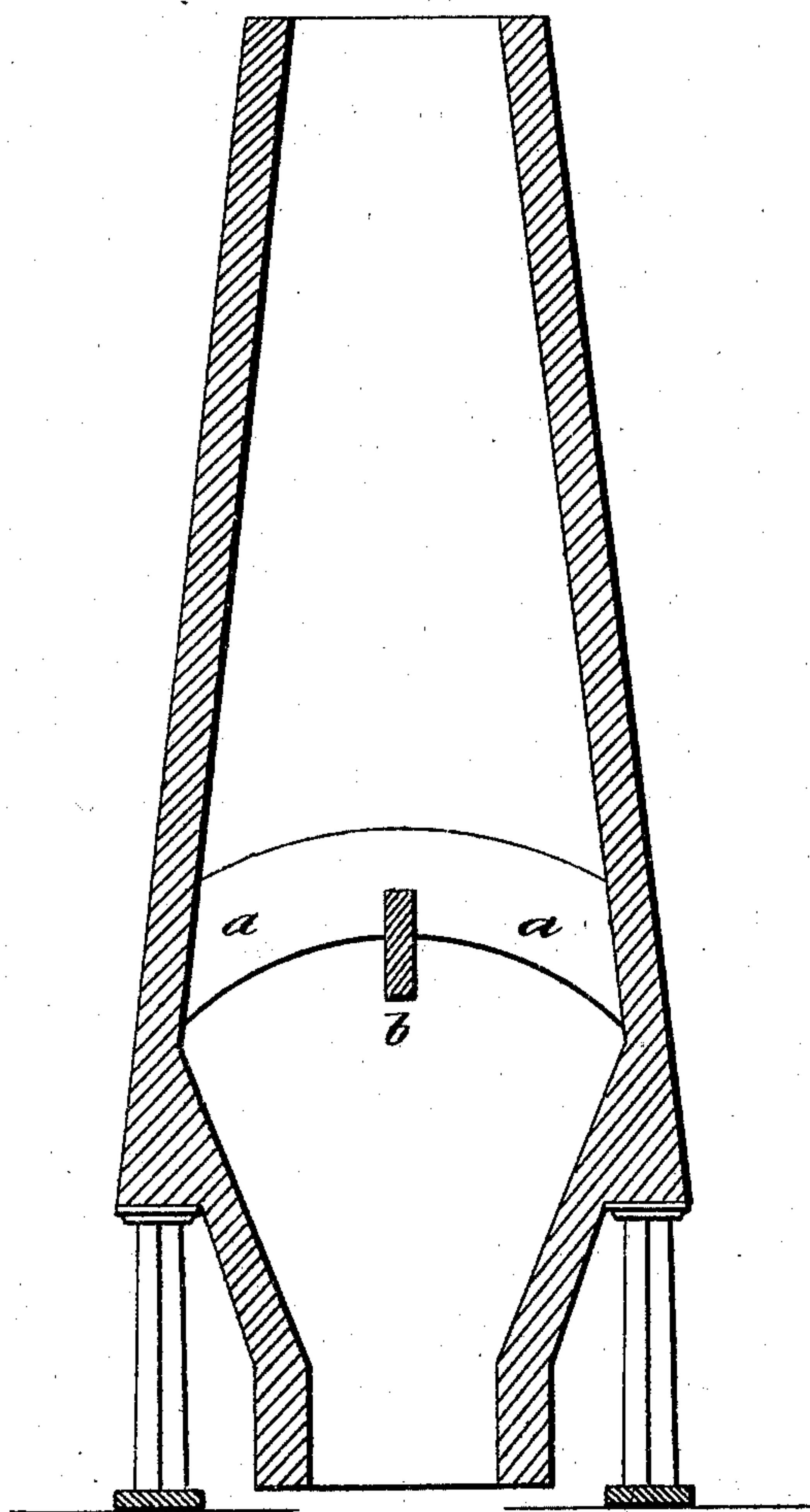
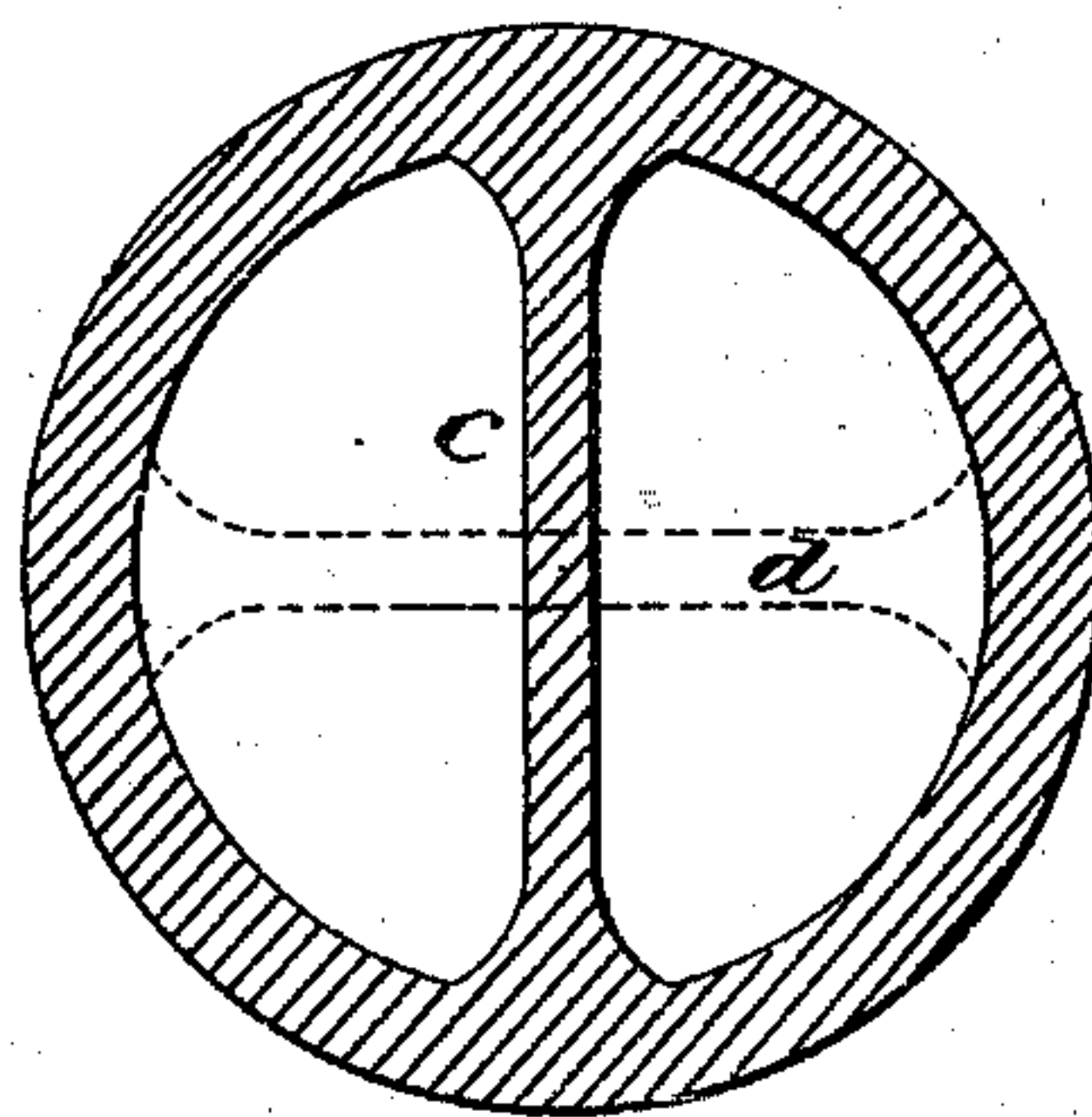


Fig. 2.



Witnesses.

Thomas L. Corcoran

Henry H. Burton

Inventor.

E. B. Andrews

UNITED STATES PATENT OFFICE.

EBENEZER B. ANDREWS, OF LANCASTER, ASSIGNOR OF ONE-HALF HIS
RIGHT TO JOHN G. DESHLER, OF COLUMBUS, OHIO.

IMPROVEMENT IN BLAST-FURNACES.

Specification forming part of Letters Patent No. **143,487**, dated October 7, 1873; application filed
May 15, 1873.

To all whom it may concern:

Be it known that I, E. B. ANDREWS, of Lancaster, State of Ohio, have invented a modified form of a Blast-Furnace, of which the following is a specification:

My invention consists in the introduction into the stack of a blast-furnace of a cross-wall or walls, arch or arches, bars or supports, of whatever form of construction, to be made of fire-brick, stone, or of other suitable refractory material. The design of the invention is, primarily, to relieve the pressure of the weight of the superincumbent column of furnace contents, or a part of it, upon the fuel in the lower part of the furnace-stack, and thus prevent the crushing or compacting together of any tender fuel which may be used, by which the circulation of the blast and the perfect and rapid combustion of the fuel are impeded, and to prevent a similar compacted condition in the lower part of the furnace resulting from pressure upon coals, or ores, or other materials, liable from any cause to be thus compacted. The invention has also for its design to break up the descending column of the contents of the furnace, so as to commingle more perfectly the fuel with the ore and limestone or other materials, and also to render more open the contents of the lower part of the furnace, which at the same time are relieved of a portion of the vertical pressure. The invention is designed to secure, by reason of the loosened condition of the materials, a better distribu-

tion of the ascending gases by which the ores are deoxidized and reduced, such better distribution being furthermore facilitated by the aid of the cavities naturally formed directly under such walls, or arches, or other supports, from which, as reservoirs, the gases will ascend along both sides of such walls or arches, and thus be enabled to reach more generally the ores above.

Figure 1 is designed to show the general plan of a furnace with such a cross-wall or arch inserted, marked *a a*.

The exact width of such wall, or its height, or its exact elevation above the bottom of the furnace, are left to be determined by circumstances. Should an additional wall or arch be needed it can be introduced, and a section of such wall is seen at *b* in the same figure.

Fig. 2 represents a horizontal section of the furnace, and shows the position of the cross-wall or arch by the letter *c*.

Should an additional wall or arch be needed its place is seen by the letter *d*.

What I claim in the above invention is—

A blast-furnace provided upon its interior with sustaining-walls *a b* of refractory material, substantially as and for the purposes set forth and shown.

EBENEZER B. ANDREWS.

Witnesses:

THOMAS C. CONNOLLY,
HENRY H. BURTON.