(No Model.)

H. SCHULZE-BERGE.

BESSEMER CONVERTER.

No. 294,684. Patented Mar. 4, 1884.

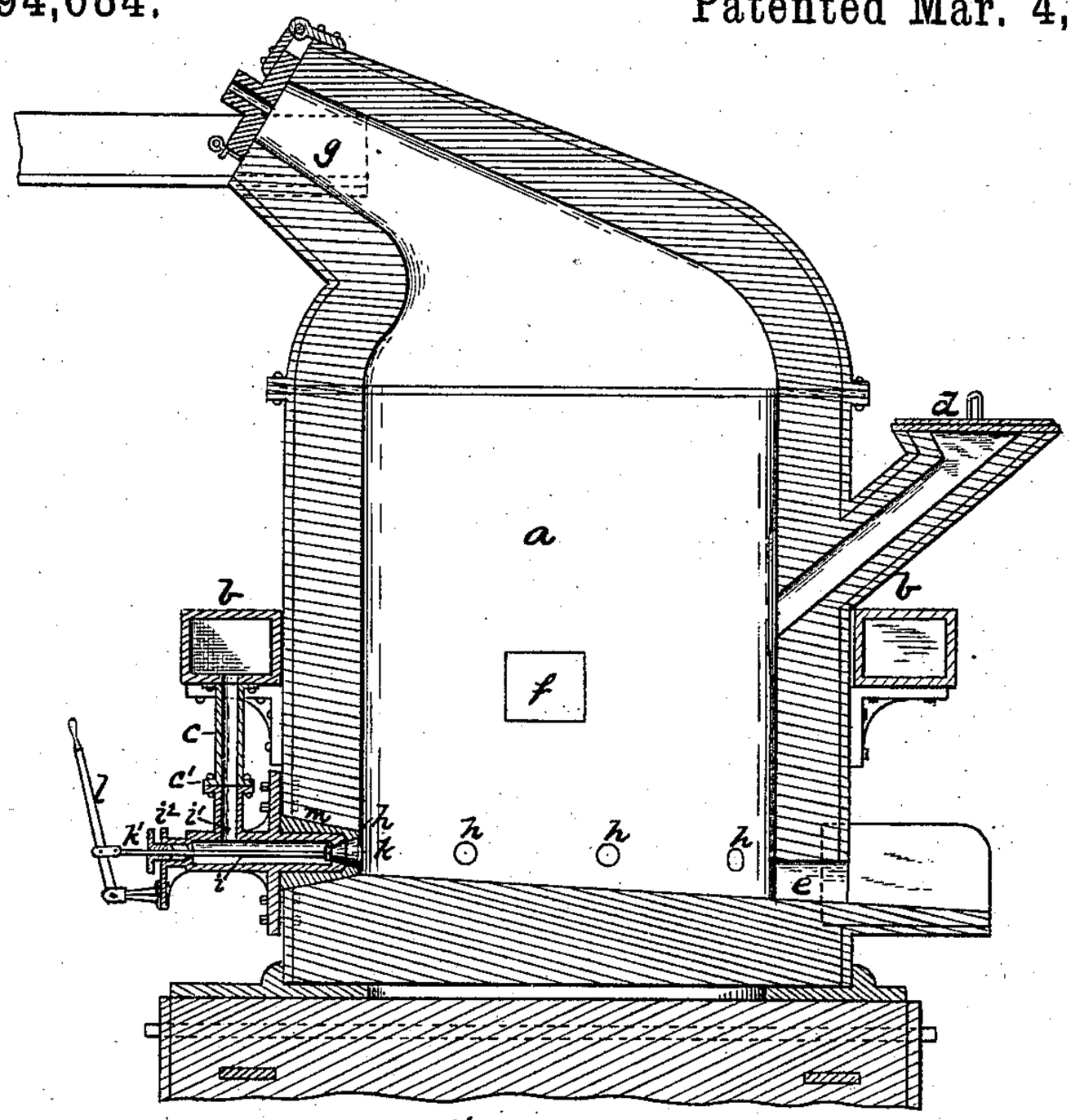

Fig. 1.

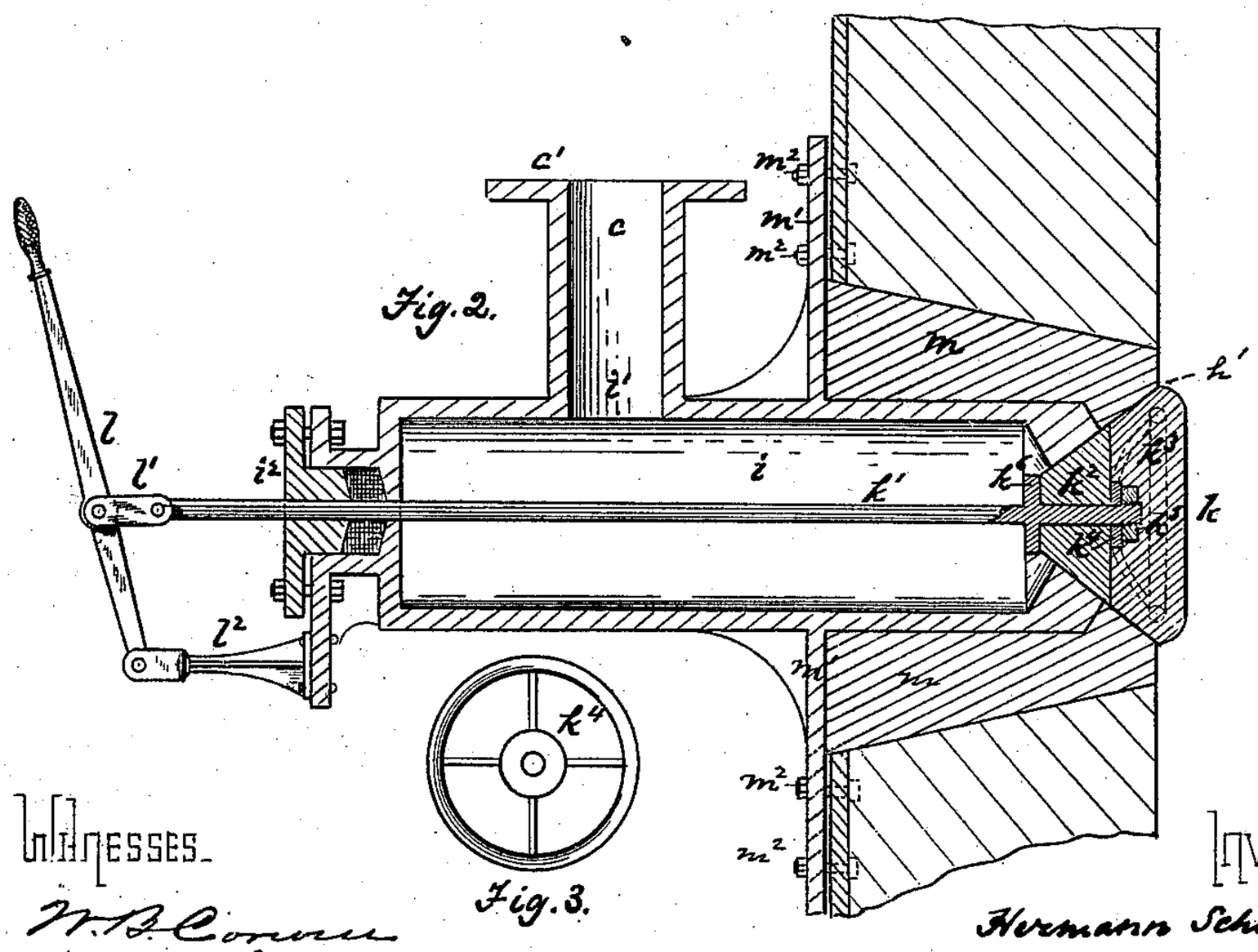

Fig. 2.

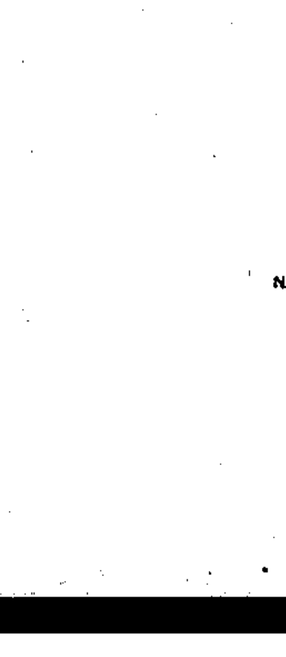

Fig. 3.

WITNESSES.

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UNITED STATES PATENT OFFICE.

HERMANN SCHULZE-BERGE, OF ROCHESTER, PENNSYLVANIA.

BESSEMER CONVERTER.

SPECIFICATION forming part of Letters Patent No. 294,684, dated March 4, 1884.

Application filed December 1, 1883. (No model.)

To all whom it may concern:

Be it known that I, HERMANN SCHULZE-BERGE, of Rochester, in the county of Beaver and State of Pennsylvania, have invented a new and useful Improvement in Bessemer Converters; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates, particularly, to that class of Bessemer converters known as "fixed" or "Swedish;" and it consists in an improved apparatus for regulating and controlling the blast through the tuyeres, and of preventing the passage of the molten metal therethrough.

To enable others skilled in the art to make and use my invention, I will now describe it by reference to the accompanying drawings, in which—

Figure 1 is a vertical section of a converter. Fig. 2 is a longitudinal view of the tuyere and stopper, also in vertical section. Fig. 3 is a view of a detail of construction.

Like letters of reference indicate like parts in each.

The converter *a* is provided with a wind box or trunk, *b*, blast-pipes *c*, feed-spout with cover *d*, tapping-hole *e*, cinder-notch *f*, and throat *g*, all of the usual construction. The tuyeres *h* are each provided with an external chamber or pipe, *i*, secured to the outside of the shell of the converter, and having a suitable opening, *i'*, to which the blast-pipes *c* are connected. The inner ends of the tuyeres *h* are of flaring or other form, as at *h'*, to form a seat for the stopper *k*. The stopper *k* is of proper form to close tightly against the seat *h'*, and is provided with a stem, *k'*, which extends through to the pipe or chamber *i*, and through a stuffing-box, i^2, situated at its outer end. The outer end of the stem *k'* is pivotally connected to the lever *l* by means of the link *l'*, the lever being pivoted to a bracket, l^2, or other suitable support. As shown, the stopper *k* is constructed with a cast-iron part, k^2, to which is attached a facing, k^3, of refractory material. The facing is a brick formed with a metallic core, k^4, and a nut, k^5, molded in. The end of the stem *k'* is threaded, so that it can be screwed into the nut, and is provided with a collar, k^6, against which the metallic part k^2 is tightly drawn when the stem is properly screwed into the nut.

I do not limit myself to the form and construction of stopper shown and described, because, if desired, it may be made entirely of refractory material and of other forms, and the stem *k'* secured thereto in other ways, as is obvious to one skilled in the art.

By the use of this improvement the size of the tuyere-openings can be regulated as required, and the tuyere may be tightly closed when desired, so as to prevent the passage of the molten metal therethrough. The tuyeres may be placed in the bottom of the converter, if desired.

To facilitate the insertion and removal of the stoppers, the tuyere is composed of or surrounded by a taper-shaped brick, *m*, which is preferably made longer than the recess in which it is placed, so that it may be forced and held tightly to place by its retaining flange or plate *m'* and bolts m^2, or other suitable fastening devices.

Other means of securing the sections *m* in place may be adopted, as will be evident to those skilled in the art, which will enable the removal of the internal stoppers.

The blast-pipes *c* are provided with a union, *c'*, or other joint, so as to permit the detachment and removal of the blast-chambers *i* when it is desired to take out the tuyeres and valves.

The retaining flange or plate *m'* can be provided with an inward shoulder or projection, to bear against the end of the tuyere-section *m*, in which case the end of the latter need not project beyond the side of the converter, but would be forced tightly to its seat by the inward projection when the bolts m^2 were screwed up tight. Instead of nuts, these bolts may have slots and tapered keys, or other adjustable fastenings may be used.

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

1. A Bessemer converter provided with wind-box and tuyeres, in combination with internal stoppers for stopping and regulating the size of the tuyere-openings, and means for operating such internal stoppers, so as to

seat or unseat them at will during the operation of the converter, substantially as and for the purposes described.

2. In a Bessemer converter, the combination of removable tuyeres or tuyere-sections with internal stoppers operated through the tuyeres, and means for operating such stoppers, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 24th day of November, A. D. 1883.

HERMANN SCHULZE-BERGE.

Witnesses:
W. B. CORWIN,
THOMAS B. KERR.