(No Model.)

A. DAVY.

APPARATUS FOR MAKING STEEL.

No. 333,286. Patented Dec. 29, 1885.

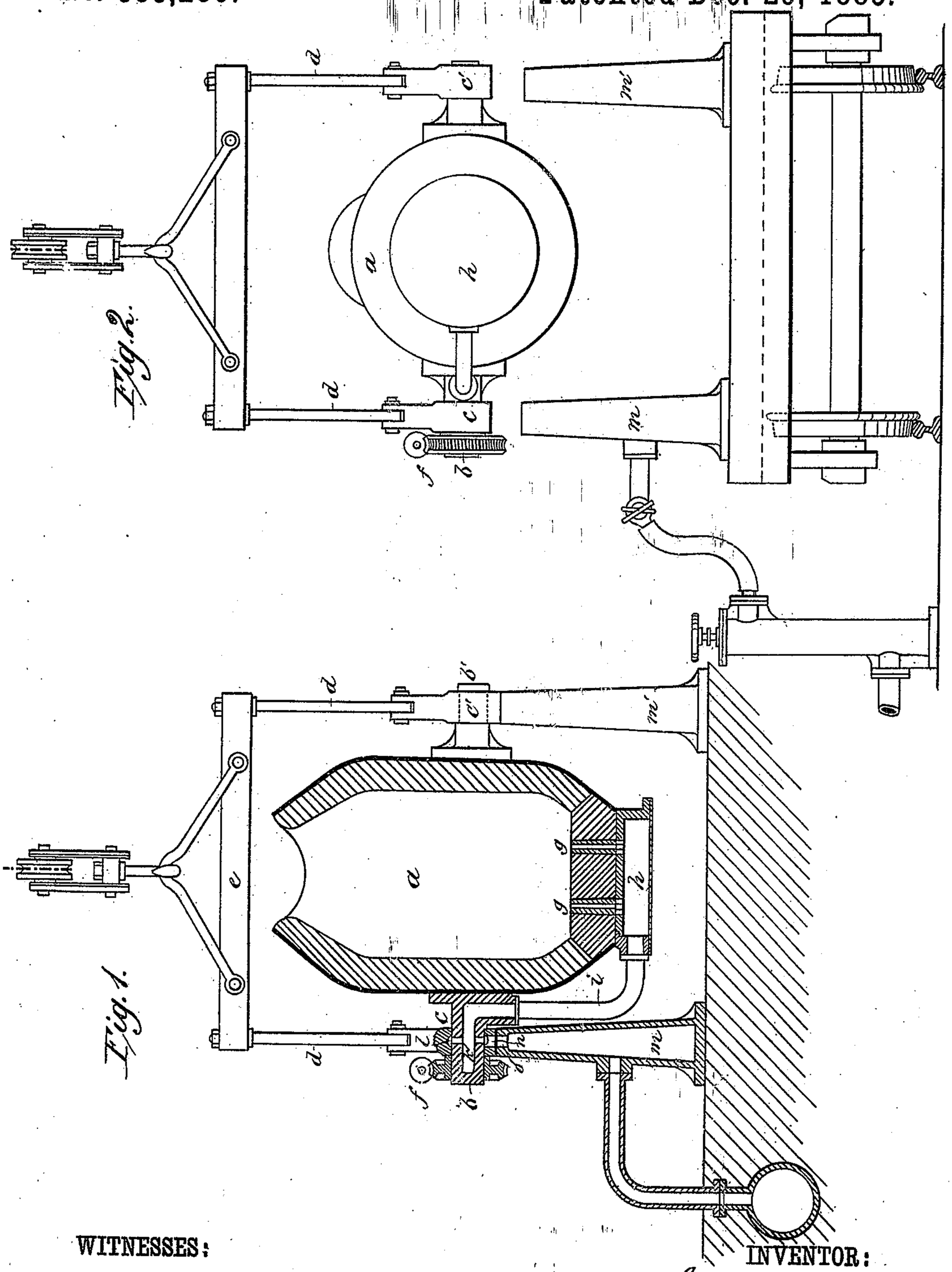

Fig. 2.

Fig. 1.

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APPARATUS FOR MAKING STEEL.

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To all whom it may concern:

Be it known that I, ALFRED DAVY, a subject of the Queen of Great Britain, residing at 14 New Exchange Buildings, Sheffield, in the county of York, England, engineer, have invented certain new and useful Improved Apparatus for Making Steel by the Bessemer Process, of which the following is a specification.

My invention relates to apparatus for making steel by the Bessemer process, and has for its object to provide arrangements for enabling the operation of steel-making to be carried on in a converter which is portable in the sense of being suspended from a crane or other overhead movable support, and which answers the double purpose of foundry-ladle and converter, so that the loss of heat by the transfer of the metal from one vessel to another is avoided.

The invention consists, essentially, in the combination, with a portable converter provided with air-inlets in its gudgeons and their bearings, of stand-pipes adapted to support the converter during the blow, and to make connection with the air-inlets to the tuyere, said stand-pipes being either fixed or mounted on a bogie, according as the operation of blowing is or is not carried on within the radius of the crane, and being either permanently or temporarily in connection by a pipe with the air-main for conveying the blast to the tuyere.

Reference is to be had to the accompanying drawings, forming part of this specification, which represent, in Figure 1, a vertical section of a converter as supported on standards in communication with the air-main and in position for blowing. Fig. 2 shows the converter raised off the standards, which in this case are mounted on a bogie.

The converter *a* is suspended by gudgeons *b b'*, fitted to turn in bearings *c c'* in a pair of side rods, *d*, connected by a cross-bar, *e*, and slung from an ordinary foundry crane or traveler. The converter is provided with the usual tipping gear, *f*, and may in other respects be similar to a Bessemer converter. It has tuyeres *g* in the bottom, and the tuyere-box *h* is in communication by a pipe, *i*, with one of the gudgeons, *b*, of the converter, which is made hollow and communicates by radial orifices *k* with a circumferential passage, *l*, made in the bearing *c*, in which the gudgeon turns. The bearings *c c'* are jointed to the side rods, *d*, and are faced up on the under side in order to adapt them to be seated upon the correspondingly-faced upper ends of a pair of standards, *m m'*, upon which the converter is thus supported during the operation of blowing, and the bearing *c* is provided with an inlet, *n*, leading into the circumferential passage *l* at the under side, the said inlet *n*, when the converter is thus supported, coinciding with an orifice, *o*, in the top of the standard *m*, on which it rests, and the bearing *c* making an air-tight joint with the said standard, so that the blast may be kept on while the converter is being raised from the inclined position in which it is brought from the furnace to the upright position for blowing and tilted back again after blowing. This standard is tubular, and is either permanently or temporarily connected with the air-main by a rigid or flexible pipe, as the case may be.

I have described one only of the gudgeons and standards as being hollow for the conveyance of air to the tuyere-box; but it will be obvious that both gudgeons and standards may be similarly constructed and placed in connection with the tuyere-box. When the operation of blowing is carried on within the radius or reach of the crane, the standards are fixed and the connection with the air-main is permanent, and the converter may or may not always remain attached to the crane, although resting on the standards, as above mentioned; but in other cases, when the blowing is performed out of reach of the crane, the standards are fixed upon a bogie-carriage, as shown in Fig. 2, and the converter, after being placed thereon, is detached from the crane and conveyed by the bogie to the blowing-stack, where temporary connection is made by a flexible or jointed pipe between the hollow standards *m* and the air-main.

I am aware that converters permanently mounted on a bogie, either directly or on standpipes thereon, are not new, but such converters can only be moved about upon their bogies, of which they form, as it were, a part, whereas mine is entirely separate and distinct, and can be lifted on and off and be dealt with independently by a crane, and be blown and poured therefrom as an ordinary foundry-

ladle, which is an essential feature of novelty in my invention.

I claim—

1. The combination, with a converter mounted to oscillate on gudgeons and provided with air-inlets therein, and in their bearings (or one of them) communicating with the tuyere or tuyeres, of a pair of hollow standards for the gudgeon-bearings to rest on, said standards being adapted to support the converter during the blow and to establish communication between the air-main and the hollow gudgeon bearing or bearings, and of means for suspending the converter and lifting it on and off the standards, substantially as herein described, for the purpose specified.

2. The combination, with a converter provided with air-inlets in one or both gudgeons, and in the bearings thereof in connection with the tuyeres, of standards fixed upon a carriage and adapted to support and to make connection with the bearings (one or both) of the converter during the blow, of a flexible or jointed and detachable pipe-connection between the air-main and the said standard or standards, and of means for suspending the converter and lifting it on and off the standards, substantially as specified.

3. The combination of a converter having a hollow gudgeon and a bearing in which the gudgeon rocks, adapted to be connected with a traveler or crane, and having an inlet on its under side, with a hollow separate and independent support or seat for the said bearing, the bearing and its seat being adapted to make an air-tight joint by the former merely resting on the latter, the orifice in the seat coinciding with that in the bearing for the conveyance of air through the hollow gudgeon, whereby the converter may be lifted on and off the support, substantially as specified.

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