(No Model.) 2 Sheets—Sheet 1.

# S. C. COLLIN.

## CONVERTER.

No. 372,302. Patented Nov. 1, 1887.

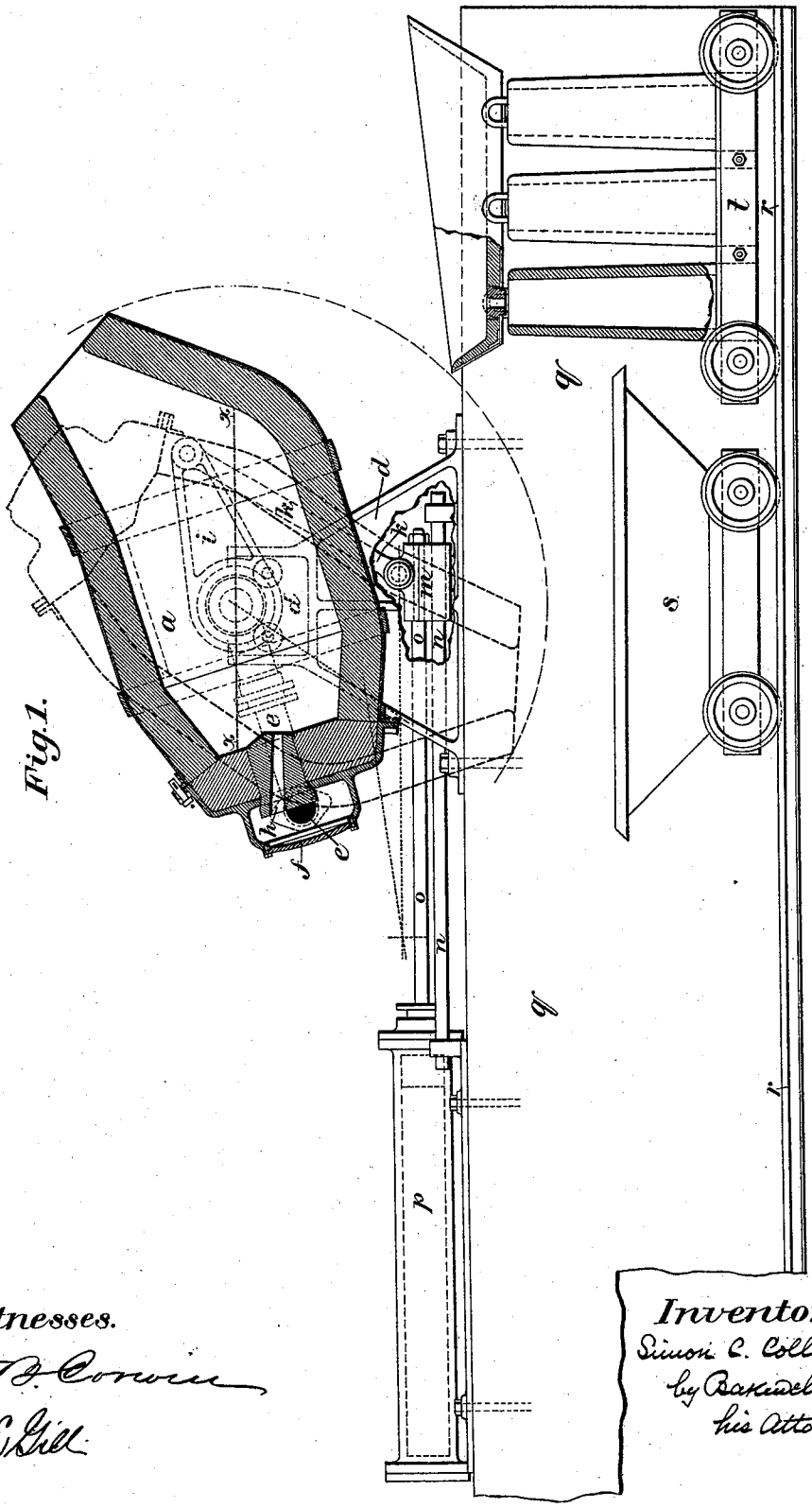


Fig. 1.

Witnesses.

W. B. Corwin

H. L. Gill

Inventor:

Simon C. Collin

by Bakewell & Kerr

his Attorneys

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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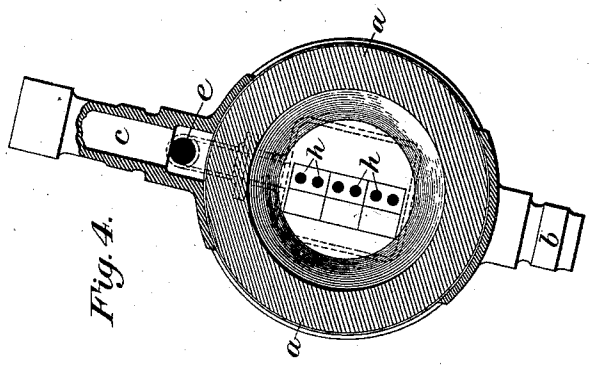



Fig. 4.

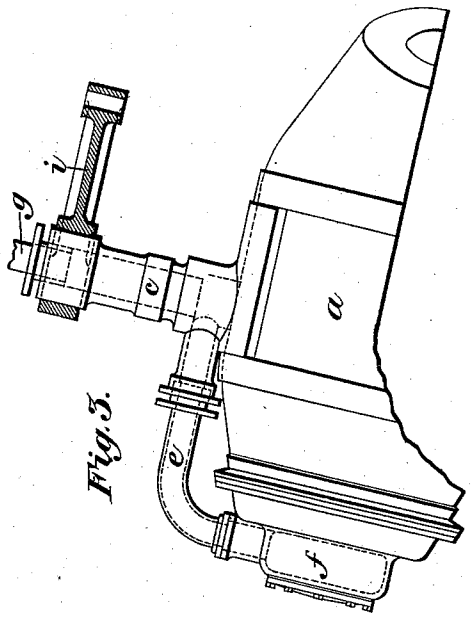



Fig. 5.

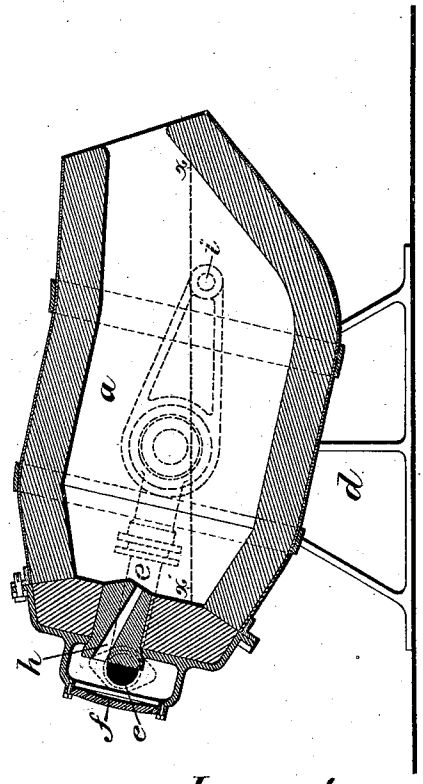



Fig. 2.

Witnesses.

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# UNITED STATES PATENT OFFICE.

SIMON C. COLLIN, OF BRADDOCK, PENNSYLVANIA.

## CONVERTER.

SPECIFICATION forming part of Letters Patent No. 372,302, dated November 1, 1887.

Application filed November 3, 1886. Serial No. 217,856. (No model.)

*To all whom it may concern:*

Be it known that I, SIMON C. COLLIN, of Braddock, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Converters; and I do hereby declare the following to be a full, clear, and exact description thereof.

My improvement in pneumatic steel-plant appliances relates to the converter and the means for supporting and operating the same, whereby the pouring-ladle is dispensed with and the operations of the converter greatly facilitated.

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

Figure 1 is a sectional view of the converter, with a side elevation of the casting-pit, molds, slag-car, and devices for operating the converter. Fig. 2 is a sectional view of the converter with the tuyeres turned up out of the metal. Fig. 3 is a plan view of the converter, and Fig. 4 is a cross-section of the same.

Like letters of reference indicate like parts in each.

The converter *a* is provided with trunnions *b c*, by which it is pivoted or journaled on the frames or supports *d d*. The trunnion *c* is hollow, and is connected by a tube, *e*, with the blast-box *f*, whereby the blast from the blast-pipe *g*, which is connected to the outer end of the trunnion, is led to the blast-box, whence it passes through the tuyeres *h* into the vessel. Connected to the trunnion *c* is a crank, *i*, which is pivotally connected by a link, *k*, to a slide or head, *m*, mounted on guide-rods *n*. This slide is reciprocated on the guide *n* by the piston-rod *o* of a steam or other cylinder, *p*, and by means of the link *k* and crank *i* its movement causes the converter *a* to tip or turn on its trunnions. The converter stands across a pit, *q*, one of the supports *d* being on one side and the other support being on the other side, so that the converter may swing in the pit, as illustrated in Fig. 1. A tramway, *r*, is laid on the floor of the pit, upon which the slag-car *s* and mold-car *t* are placed, so that the converter may be tipped over and pour directly into them, thereby obviating the necessity for using a ladle and saving the expense of a separate crane therefor, as well as avoiding incumbering the space around or near the converter, which in itself is a great desideratum. The tramway *r* may extend to any place to which it is desired to convey the slag or ingots.

In Fig. 1 I show the converter in the position occupied in blowing the metal, the metal-line being indicated by the broken line *x x*. Here the tuyeres *h* are immersed in the bath, and the blast operates upon the metal at or near the surface, giving it a vertical swirl, which causes it to act mildly and effectively on all parts of the same. The tuyeres *h* are arranged in a row or otherwise disposed in the end or bottom of the converter, and are directed toward the belly side of the converter, which is placed at one side of the longitudinal axis, while the nose is on the other side.

In Fig. 2 I show the vessel in position occupied in charging, the tuyeres being turned up above the level of the metal when charged. This position would also be occupied in holding the bath in the vessel in various operations, such as in making additions to the charge and the further treatment of the metal. In tipping, the nose of the converter describes the arc of a circle. (Shown by broken lines in Fig. 1, where the position occupied in discharging the slag, skulls, &c., remaining in the vessel after a blow is also shown by broken lines.) In filling the molds an intermediate position would be assumed.

The invention possesses the advantages of cheapness in construction and facility and certainty in operation. The ladle is dispensed with, the slag and molds are easily and conveniently handled, the advantage of a mild blast is secured, and the cylinder piston and crank connection of the same with the converter is a certain and efficient means for moving the converter and holding it in position.

I am aware that a movable tipping converter is not new, and I do not desire to claim the same, broadly; nor do I desire to claim a cylinder piston and crank, broadly, as a mechanical device; but

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

1. A tipping converter mounted on fixed bearings and provided with a cranked axle, in combination with a cylinder and piston, and a pivoted link or connection between said pis-

ton and the converter-crank, whereby the converter can be turned on its axle by the operation of the piston, substantially as and for the purposes described.

2. A tipping converter having a nose at one side of the longitudinal axis of the converter, so as to form a belly or bed at the opposite side thereof when the converter is in a horizontal position, and tuyeres in the end extending in the direction of said bed, so as to blow into the bath of metal thereon, and tipping devices, substantially as described, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 28th day of October, A. D. 1886.

SIMON C. COLLIN.

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