# E. Koons,

## Tuyere,

No. 52,508. Patented Feb. 6, 1866.

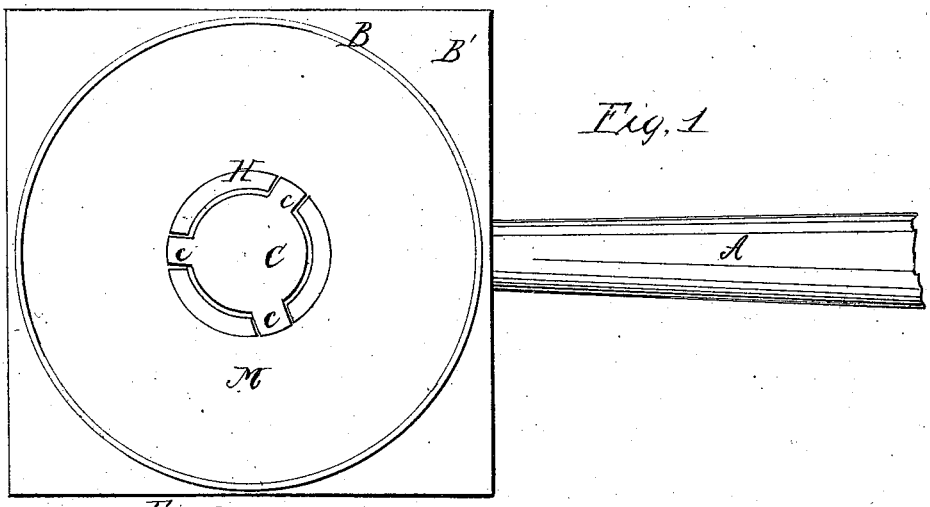



Fig. 1

Fig. 2.

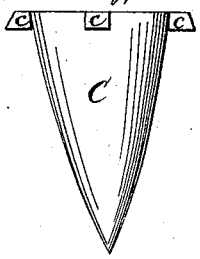



Fig. 4.

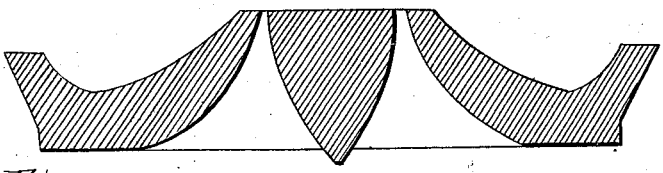
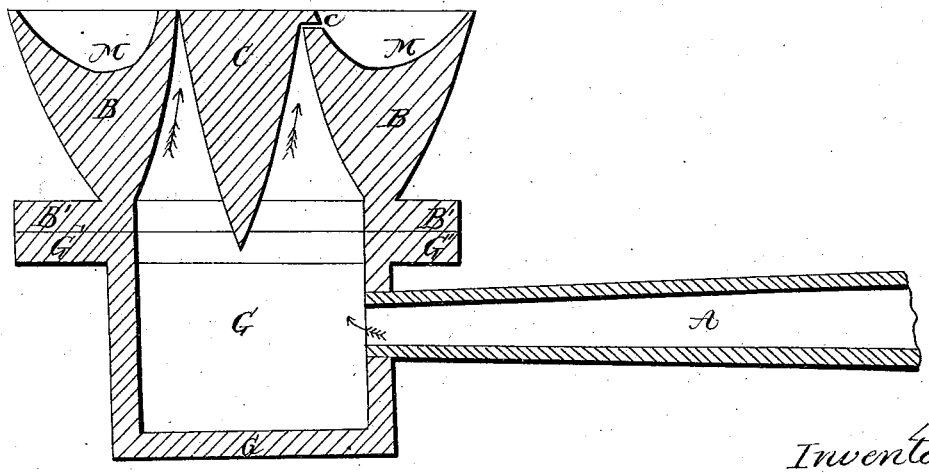


Fig. 3.

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# UNITED STATES PATENT OFFICE.

EVEN KOONS, OF FUNKSTOWN, MARYLAND.

## IMPROVEMENT IN TUYERES.

Specification forming part of Letters Patent No. **52,508**, dated February 6, 1866; antedated August 28, 1865.

*To all whom it may concern:*

Be it known that I, EVEN KOONS, of Funkstown, in the county of Washington and State of Maryland, have invented a new and useful Improvement in Fire-Irons for Blacksmiths' Forges; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists in making a fire-iron or tuyere with a nozzle projecting above or beyond a surrounding cavity or cup, and also in the use of a peculiar weighted and removable plug inserted into the nozzle.

In the accompanying drawings, Figure 1 is a top view of my improved fire-iron or tuyere. Fig. 2 is a detached view of the plug. Figs. 3 and 4 are vertical sections through the center of the iron and plug.

The main object of my invention is to prevent the cinders and fused slag from closing the nozzle of the fire-iron or tuyere, and thus avoid the necessity of frequently removing such matters.

Another advantage of my improvement is the use of an outer rim to the cup or dish of the fire-iron for the purpose of preventing the fused slag from flowing against the masonry, and thus avoiding the breaking of the hearth or brick-work in breaking out the cooled slag or cinders.

My tuyere or fire-iron may be best made of cast-iron with a cup or dish nearly of the form shown in Fig. 4, though I at first made and used a wrought-iron one.

The nozzle H projects considerably above the surrounding cup or dish, and better rise above the outer rim of the same, as is seen in Fig. 4. As the fused cinders form in the fire the same will flow away from the nozzle down into the annular cavity M, where they may accumulate for a long time without obstructing the blast or adhering to the masonry.

The form of tuyere shown in Fig. 4 I have used in many blacksmiths' forges, and it is found unnecessary to interrupt the fire during the entire day, the removal of the cinders in the morning, when the forge is cold, being quite sufficient.

Into the nozzle of the fire-iron is inserted a weighted plug, C, of conical form, resting on projections or lugs *c*. The shape and weight of this plug prevent it from being forced out of place by the blast, and yet it may be easily removed for the purpose of cleaning out any dust or ashes that may fall into the air-chamber G through the air-discharge opening H.

The main portion B of the fire-iron and the flange B′ may be cast in one piece and fastened to the flange G′ of the air-chamber.

The blast enters the air-chamber G, in the usual manner, through the air-tube A, and follows the course indicated by arrows in Figs. 3 and 4.

The shape of the fire-iron or tuyere and of the annular cavity M may be varied according to the circumstances of the forge or furnace where the tuyere is used without departing from my invention.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The cup or dish formed fire-iron or tuyere constructed in the manner described, for the purpose of allowing the cinders to flow away from the air-discharge openings, and for the purpose of preventing the same from flowing out against the brick-work, substantially as described.

2. The use of the conical weighted plug, constructed as and for the purposes herein described.

EVEN KOONS.

Witnesses:

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