R. A. Goodrich,

Tuyere,

No. 2,975. Patented Feb. 24, 1843.

Fig. 1.

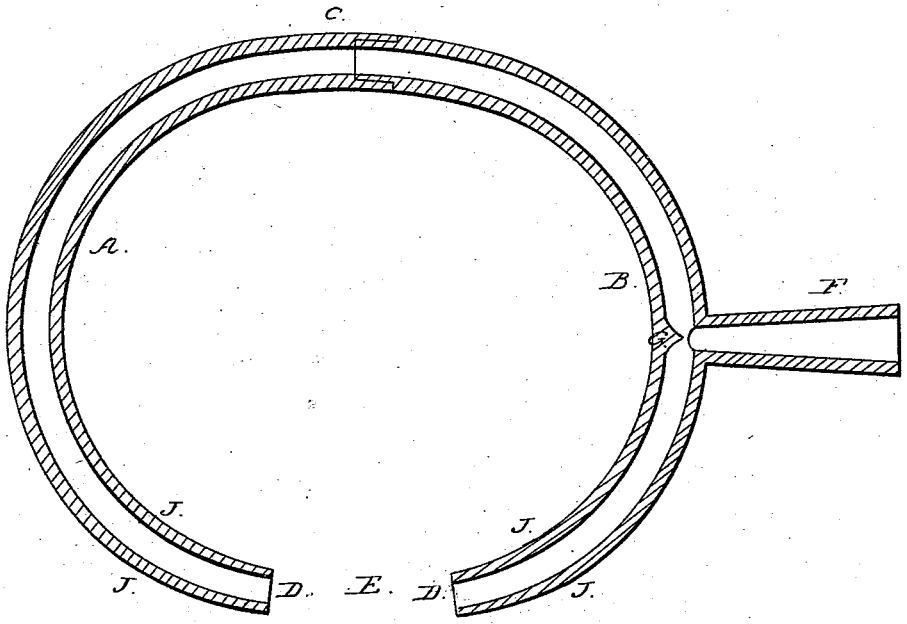

Fig. 2.

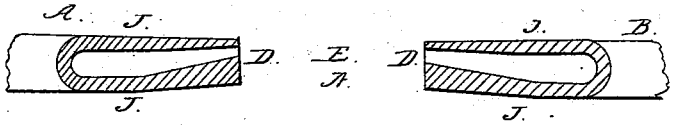

Fig. 3.

UNITED STATES PATENT OFFICE.

REUBEN A. GOODRICH, OF MILFORD, NEW YORK.

TWYER.

Specification of Letters Patent No. 2,975, dated February 24, 1843.

To all whom it may concern:

Be it known that I, REUBEN A. GOODRICH, of the town of Milford, in the county of Otsego and State of New York, have invented a new and useful Improvement in instruments used by Blacksmiths, called "Tue-Irons," or "Twyers," to be called "Goodrich's Improved Patent Counter-Blast;" which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a horizontal section. Fig. 2 is a vertical section. Fig. 3 is an end view of one of the outlets.

Similar letters refer to corresponding parts.

This instrument consists of two curved tubes A, B, made the segments of a circle, of about ten inches diameter united at two of their extremities by a lap joint C and separated at their opposite extremities in which the outlets D for the blast are made, by a space E of about six inches, in the middle of which and perpendicularly above the horizontal plane thereof the blast previously divided into two currents, are made to meet in the manner hereafter described. Near the middle of one of the sections of the aforesaid curved tube and in the convex side thereof is inserted a straight tube F of about five inches long and two inches diameter with a bore of one inch, and into which the nozzle of the bellows is inserted for introducing the blast to the curved tube which is divided into two currents by a triangular projection or bridge G placed in the aforesaid curved tube opposite the center of the straight tube with the apex pointing toward the center of the said straight tube.

The extremities of the curved tubes are gradually reduced in diameter from the points J J to the outlets. The ends of the sections of the tubes where they unite by the lap joint are made straight or nearly straight a distance of about 5½ inches. The diameter outside is about two inches. The bore of the tube from the points J to J (which are about two inches from the extremities) are made circular and of the same diameter of one inch throughout. From these points to the outlets the bore is changed in its form and direction being gradually altered from a circular to a rectangular form, which form it assumes at the outlets being parallelograms of about one inch by ¼ of an inch above the horizontal line of the center of the tube, said apertures or bores at the outlets being made gradually to converge from the points J J upward toward a point in the middle of the space between the ends of the tubes and about 2 or 3 inches perpendicularly over a point N on the horizontal plane of the bottoms of the tubes.

The current of air is received in the straight part of the tube in which it is equally divided into two currents by the triangular projection and from thence discharged into the curved tubes in an unbroken stream in each direction right and left until the branches of the stream arrive at the points J J where its direction is changed upward and is discharged at the rectangular orifices near the tops of the contracted portions of the tubes and meets at a point 3 or 4 inches above and perpendicular to the point N.

The instrument should be placed and bedded into the forge horizontally about 3 inches below the surface, in a situation to receive the nozzle of the bellows into the straight tube which should be covered with a fire stone. The extremities of the curved tube should be protected from the effect of the extreme heat by the proper formation of a place in the hearth to receive it. A suitable place should be prepared for the fire at the junction of the currents of air above the outlets or extremities of the curved tubes. The currents of air in the aforesaid counter blast are thus made to come in contact with the fire above the extremities of the tubes for the purpose of preventing the destruction of the tubes by the intenseness of the heat.

The instrument may be made of cast iron or any suitable material and of any size or proportion required variable at pleasure to suit circumstances.

I do not claim to be the inventor of a counter blast for blacksmiths' forges, but

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

The combination of the inclined apertures D with the circularly formed twyers A B, constructed as described and also in combination therewith the bridge G for dividing the blast in the manner and for the purpose set forth.

REUBEN A. GOODRICH.

Witnesses:

WILLIAM KIRBY,

GEORGE KIRBY.