A. H. Hart,

Tuyere,

No. 5,479. Patented Mar. 21, 1848.

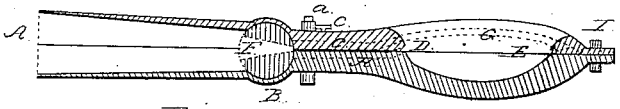


Fig. 4.

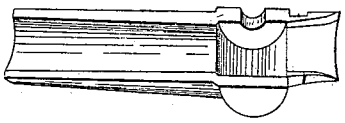


Fig. 5.

Fig. 7.

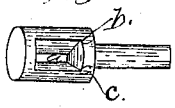
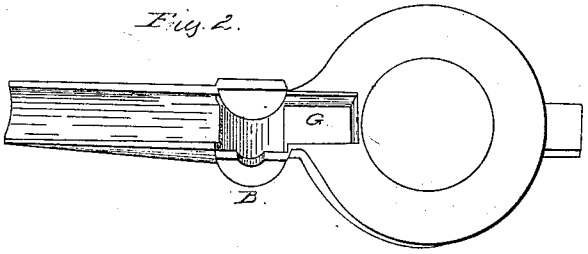


Fig. 3.

Fig. 2.



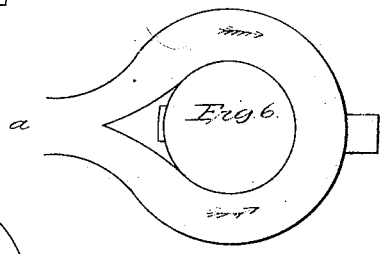
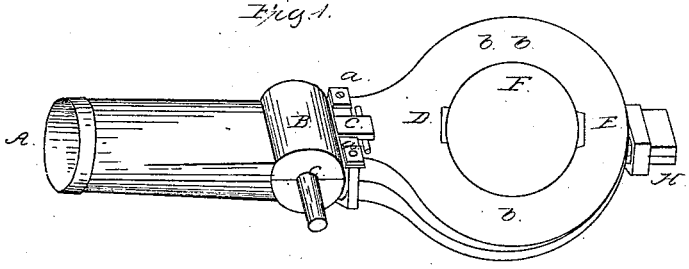


Fig. 1.



UNITED STATES PATENT OFFICE.

ALEXR. H. HART, OF CHAGRIN FALLS, OHIO.

TWYER.

Specification of Letters Patent No. 5,479, dated March 21, 1848.

To all whom it may concern:

Be it known that I, ALEXANDER H. HART, of Chagrin Falls, in the county of Cuyahoga and State of Ohio, have invented a new and Improved Mode of Constructing Twyer-Irons for Blacksmiths' Forges; and I do hereby declare the following is a full and exact description.

The nature of my invention consists in constructing a twyer which forms a bed or lap for the burning coals, furnished with two orifices for the escape of the wind opposite to each other, which orifices are so connected with a revolving valve by which the blast can be directed in whole or in part through one or both of the orifices at the same time, or otherwise regulated to suit the convenience of the artisan.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation reference being had to the annexed drawings making a part of his specification.

Figure 1 represents the twyers with all the parts in their proper places and ready for use. Fig. 2 represents the lower section of the twyer. Fig. 3 represents the dividing plate or diaphragm. Fig. 4 represents the upper half of the tube or nozzle of the twyer. Fig. 5 is a ring for binding the two halves of the tube. Fig. 6 represents the under surface of the upper section of the twyer. Fig. 7 represents the circular valve. Fig. 8 is a section of the twyer in a vertical direction.

Letter A Figs. 1 and 8 represents the opening into which is to be inserted the nose of the bellows pipe; letter B is the chamber containing the revolving circular valve, letter D Figs. 1 and 8 and letter E Figs. 1 and 8 are the orifices for the blast.

Letter F Fig. 1 is the bed or lap for containing the coals and letter C Fig. 1 is the stem of the valve.

The twyer is made of metal, cast-iron is preferred and is composed of three principal sections Figs. 2, 4 and 6. Fig. 2 represents the main or bottom section, letter B the lower half of the valve chamber, letter G the channel through which the blast is conveyed to the orifice D Figs. 1 and 8. This channel is separated from the one which conveys the blast to the orifice E Figs. 1 and 8 by a diaphragm C Figs. 3 and 8 made of a thin plate of metal the end marked *a* Fig. 3 coming in contact with the surface of the cooling valve Fig. 7. The operation of these two parts will be further explained hereafter. Fig. 4 represents the upper portion of the pipe and valve chamber A B Figs. 1 and 8. This part Fig. 4, is fitted to the lower half air-tight and secured by a band Fig. 5 which embraces the ends of both parts shown at A Fig. 1, the other end being secured to the under section by a clasp which embraces both parts immediately forward of the valve chamber, the cap of this clasp is secured by nuts shown at *a a* Fig. 1 and at *a* Fig. 8. Fig. 6 represents the under side of the upper section of the bed or lap. This section is represented in its proper place in Fig. 1 letters *b b;* the under side is grooved out thus forming a channel for the passage of the air to the orifice E Figs. 1 and 8, the groove is shown in section at G Fig. 8. This section is secured to the bottom piece by the end or point *a* Fig. 6 passing under a portion of the cap and secured by a key as shown at *c* Figs. 1 and 8. The outer ends are clasped together by a band passing around a projection on both sections as shown at H Fig. 1 and at I Fig. 8. The valve, Fig. 7 is a solid cylinder with the exception of a mortise through the center which mortise is wedge shaped as represented at *a b c* Fig. 7 and in section at F Fig. 8. The stem of this cylinder valve passes through the front side of the valve chamber as shown at C Fig. 1 for the purpose of revolving the valve.

The operation of this twyer is a follows: If the blast is desired at the orifice D Figs. 1 and 8 the cylinder is turned so that the upper edge of the small end of the mortise is below the diaphragm C Figs. 3 and 8 the air is thus conveyed along the channel G Fig. 2 and H Fig. 8 to the aperture D Figs. 1 and 8. If the blast is required at the orifice E, the cylinder valve is turned upward so that the lower edge of the small end of the mortise is even with the upper side of the diaphragm. The air is thus conveyed along the groove or channel cut or cast in the under side of the section Fig. 6 in the direction of the arrows, this groove is shown in section by the dotted lines G Fig. 8 and opening in the orifice E Figs. 1 and 8. If it is desired to divide the blast into two equal parts issuing at the same time from both orifices D and E Figs. 1 and 8 the cylinder or revolving valve is turned so that the small

end of the mortise is divided by the diaphragm. The blast is directed into each of the channels and escapes into the fire at both orifices. The blast can also be varied in regard to quantity or strength by partially closing the channels or turning the valve, or the blast may be entirely cut off by turning the cylinder so as to bring the mortise perpendicular should the section Fig. 6 become injured by heat it can at a trifling expense be replaced. By loosening the key at *c* Figs. 1 and 8 and the band at H Fig. 1 and I Fig. 8 the injured part can be removed and a new one returned.

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

The construction of a twyer having two orifices for the escape of the blast, in combination with a revolving valve and diaphragm, so that the blast may be light or heavy through one or both of the orifices, the whole forming a bed or lap for the burning coals, substantially as herein described.

A. H. HART.

Witnesses:
A. UPHAM, Jr.,
F. POOLE.