No. 782,875. PATENTED FEB. 21, 1905.

H. PRICE.

FORGE.

APPLICATION FILED MAR. 14, 1904.

2 SHEETS—SHEET 1.

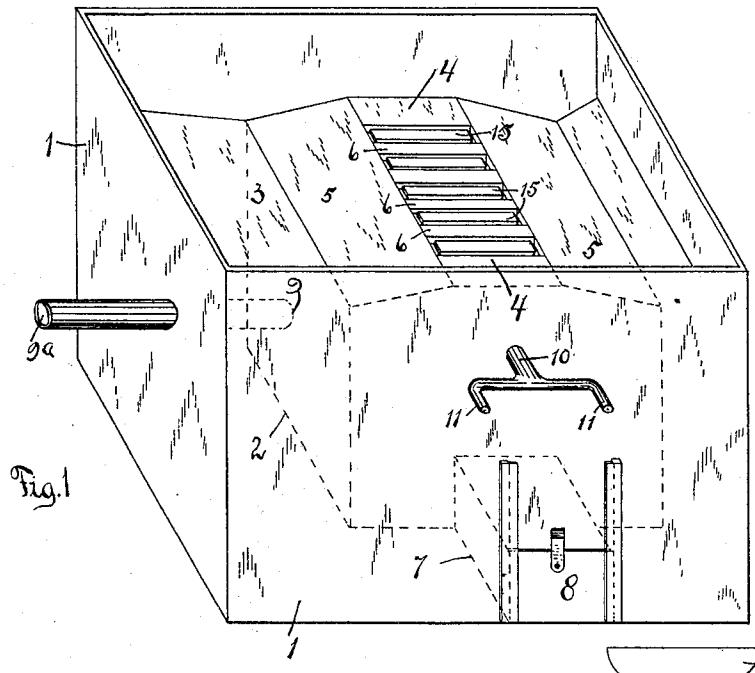

Fig. 1

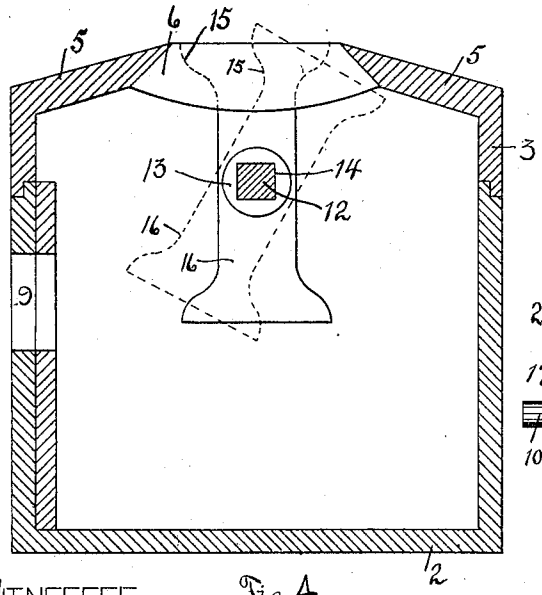

Fig. 4

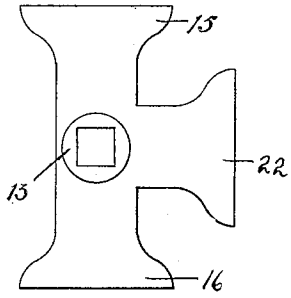

Fig. 5

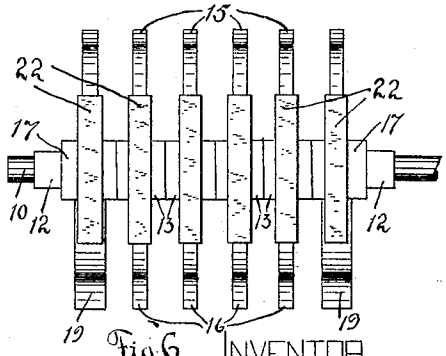

Fig. 6

WITNESSES

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2 SHEETS—SHEET 2.

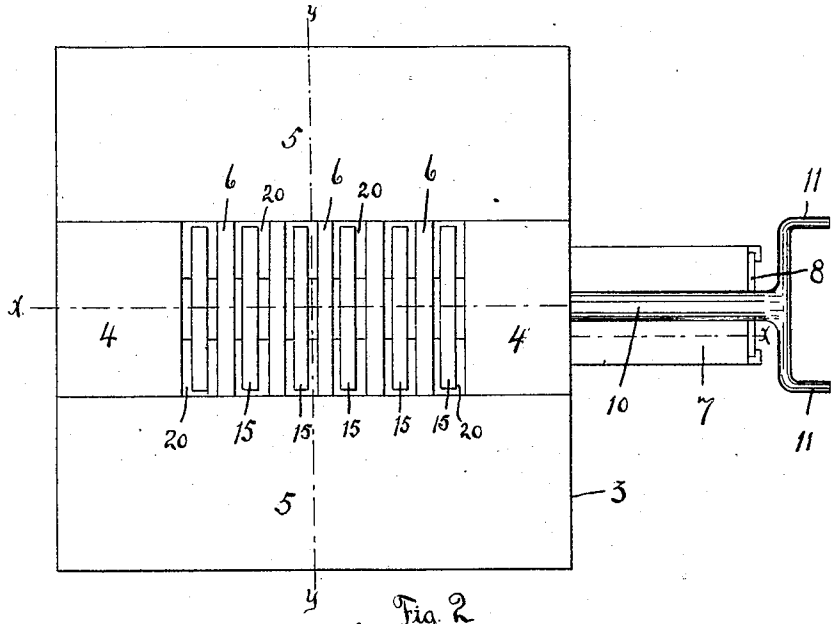

Fig. 2

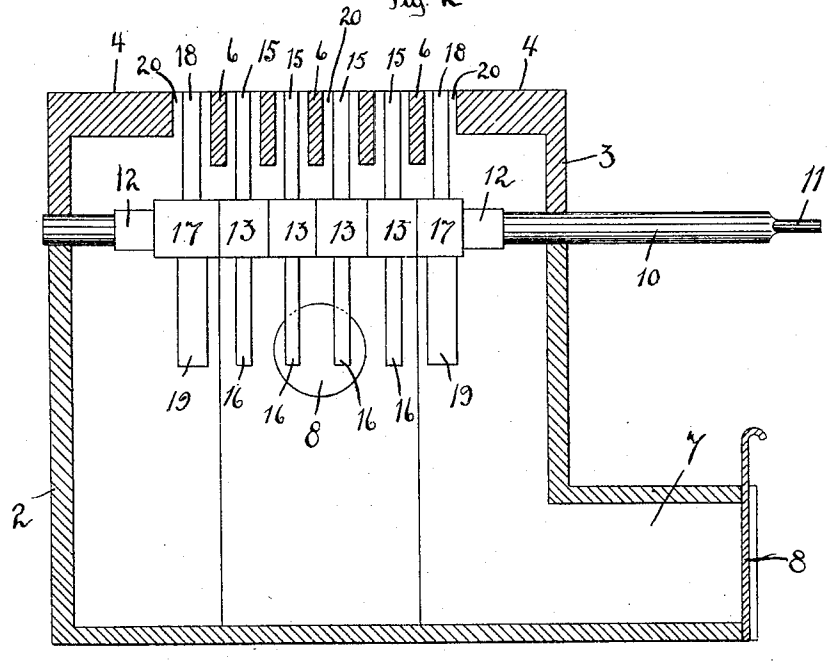

Fig. 3.

WITNESSES
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UNITED STATES PATENT OFFICE.

HENRY PRICE, OF BUFFALO, NEW YORK, ASSIGNOR TO CHILION M. FARRAR AND GEORGE M. TREFTS, OF BUFFALO, NEW YORK.

FORGE.

SPECIFICATION forming part of Letters Patent No. 782,875, dated February 21, 1905.

Application filed March 14, 1904. Serial No. 198,064.

To all whom it may concern:

Be it known that I, HENRY PRICE, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Forges; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in blacksmiths' forges, and has particular reference to the formation and arrangement of the grate-bars.

The object of my invention is to provide for the effective regulation of both the intensity and area of the blast, as well as the preservation of a clear and unobstructed path for such blast between and above the grate-bars.

To these ends my invention consists, first, in the combination, with a series of spaced permanent grate-bars, of a series of revoluble auxiliary grate-bars operating between the permanent grate-bars to vary the intensity and area of the blast; second, in the combination, with a series of spaced flat permanent grate-bars, of a series of flat revoluble auxiliary grate-bars operating between the permanent grate-bars to vary the intensity and area of the blast and to clear the space between and above the bars of obstructing material.

In the drawings, Figure 1 is a perspective view of my complete forge and its hearth. Fig. 2 is a top plan view of the forge. Fig. 3 is a vertical section of Fig. 2 taken in the line *x x*. Fig. 4 is a vertical section of Fig. 2 taken in the line *y y*. Figs. 5 and 6 are respectively side and end views of a modified form of the revoluble auxiliary grate-bars.

Referring to the drawings, 1 is the open-top bar or casing, within which my improved forge is centrally located, its upper portion forming the hearth or receptacle for the fuel. The forge proper consists of a casing 2, preferably rectangular in construction, with a cover 3, the top of which is divided into three longitudinal sections—the central horizontal section 4 and the two side inclined sections 5 5.

6 6 are a series of spaced grate-bars cast integral with the cover, their upper surface being flush with the section 4, in which they are centrally arranged.

7 is a passage communicating with the lower portion or ash-pit of the casing 2 and leading out to the sliding door 8 in the front wall of the hearth-box 1, through which the ashes may be removed.

9 is a circular orifice in the side wall of the casing 2, located above the ash-pit and adapted for the reception of the blast-pipe 9^a, which extends out through the wall of the hearth-box to the blower-fan. The blast-pipe 9^a enters the forge-casing at a point sufficiently high to avoid any possible contact of the blast with the ashes, which lie in the lower portion or pit of the casing. This has the effect of keeping the blast clean, which materially increases its effect upon the iron to be heated.

10 is a shaft journaled in the front and rear walls of the forge-casing 2. Its forward end extends out through the front wall of the hearth-box and is provided with the two handles 11 11 for turning the same. The portion 12 of the shaft within the casing 2 is square in cross-section and adapted for the removable reception of a series of revoluble auxiliary grate-bars constructed and arranged as follows: 13 13 are a series of hubs with square central openings 14, which fit snugly upon the square portion 12 of the shaft 10. These hubs are each provided with radial diametrically opposite grate-bars 15 and 16 of uniform thickness. The outer ends of these grate-bars widen out and have flat end surfaces which are flush with the permanent grate-bars 6 when they are swung up into operative position between the grate-bars 6, where they occupy a central position. 17 17 are end hubs, (see Fig. 3,) which are provided with upper bars 18 18 of the same thickness as the bars 15 and lower bars 19 19, which are of a thickness which will practically close the end spaces 20 20 between the permanent grate-bars 6.

In operation when the blast is on its full force may be utilized by swinging the auxil-

iary grate-bars 15 18 out from between the spaces 20. If a modified blast is desired, these auxiliary grate-bars may be swung back into operative position, as shown in Fig. 3, which has the effect of instantly reducing the intensity of the blast. When the lower auxiliary grate-bars 16 19 are swung up into position, the outer bars 19 will close the end openings 20, which will have the combined effect of reducing the blast and restricting its area.

In Figs. 5 and 6 I have illustrated a modified form of revoluble auxiliary grate-bars by adding to each hub an intermediate radial grate-bar 22 of a thickness less than the bars 19 and greater than the bars 15 16, which has the effect of still further reducing the intensity of the blast.

In Fig. 4 I have shown a dotted position of one of the auxiliary grate-bars, in which one corner of the same is raised above the plane of the permanent grate-bars in its revolution into and out of its operative position. A quick reciprocating movement of this nature will effectively clear the spaces between and above the grate-bars of clinker and ashes, thus giving to the blast a clear and unobstructed upward passage to the fuel. This condition is made possible by the flat construction of the permanent and revoluble grate-bars, as clearly illustrated in Fig. 4.

It will thus be seen from the foregoing that I am enabled to regulate in a simple and effective manner both the intensity and area of the blast, as well as to maintain a clear and unobstructed path for the blast between the grate-bars without interruption of the heating operation, as the grate-bars can be cleared while the blast is on.

The advantages derived from my improved construction are that considerable time is saved in cleaning the grate, that more perfect combustion is effected, resulting in a considerable saving of fuel, and that quicker results in heating are attained by reason of the cleaner fire.

I claim—

1. In a forge, the combination with a series of spaced permanent grate-bars flush with the cover of the grate, of a series of revoluble auxiliary grate-bars operating between the permanent grate-bars to vary the intensity and area of the blast.

2. In a forge, the combination with a series of spaced flat permanent grate-bars flush with the cover of the grate, of a series of flat revoluble auxiliary grate-bars, operating between the permanent grate-bars to vary the intensity and area of the blast and to clear the spaces, between and above the bars of obstructing material.

3. In a forge, the combination with a series of spaced permanent grate-bars, of two or more series of revoluble auxiliary grate-bars, arranged around a shaft, the grate-bars of each series varying in thickness from those of the other series, the different series separately operating between the permanent grate-bars to vary the intensity and area of the blast.

4. In a forge, the combination with a series of spaced flat permanent grate-bars of two or more series of flat revoluble auxiliary grate-bars arranged around a shaft, the flat grate-bars of each series varying in thickness from those of the other series, the different series separately operating between the permanent grate-bars, to vary the intensity and area of the blast and to clear the spaces between and above the bars of obstructing material.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY PRICE.

Witnesses:
JOHN C. TREFTS,
W. T. MILLER.