(No Model.) 2 Sheets—Sheet 1.

M. BOECKER.

REGENERATIVE HOT BLAST STOVE.

No. 422,905. Patented Mar. 11, 1890.

Fig: 1

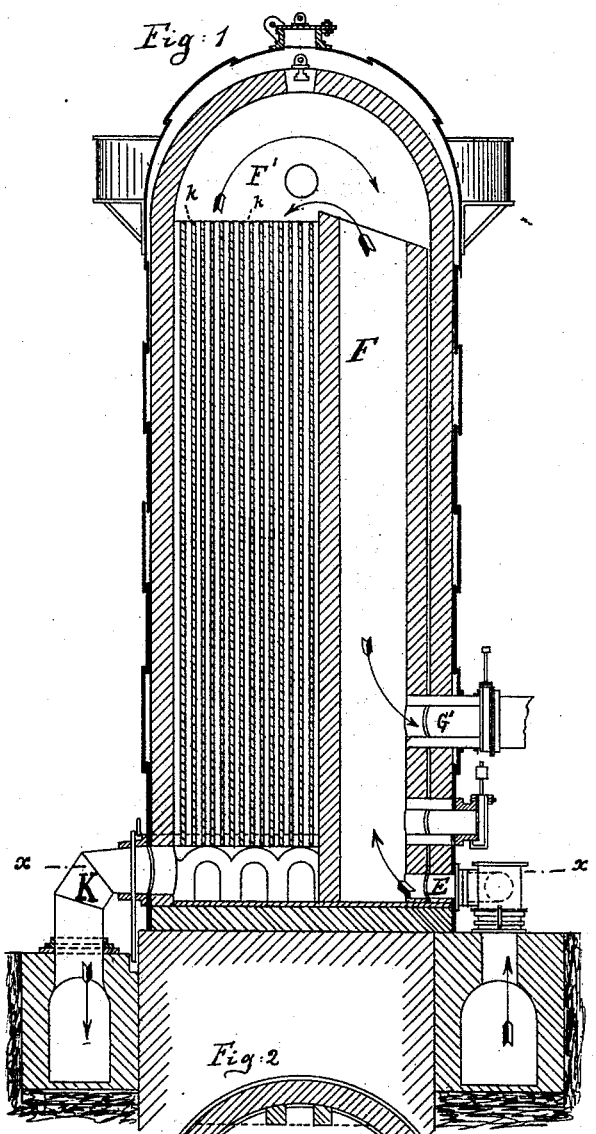
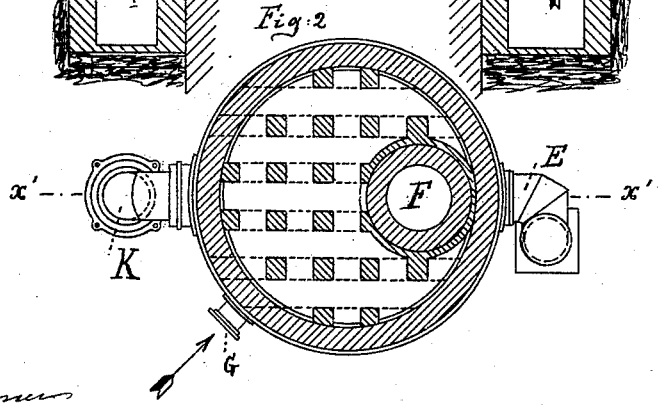


Fig: 2



Witnesses:
Wm. Wagner
A. Bonglimans.

Inventor:
M. Boecker
by his attorneys
Roeder & Briesen

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

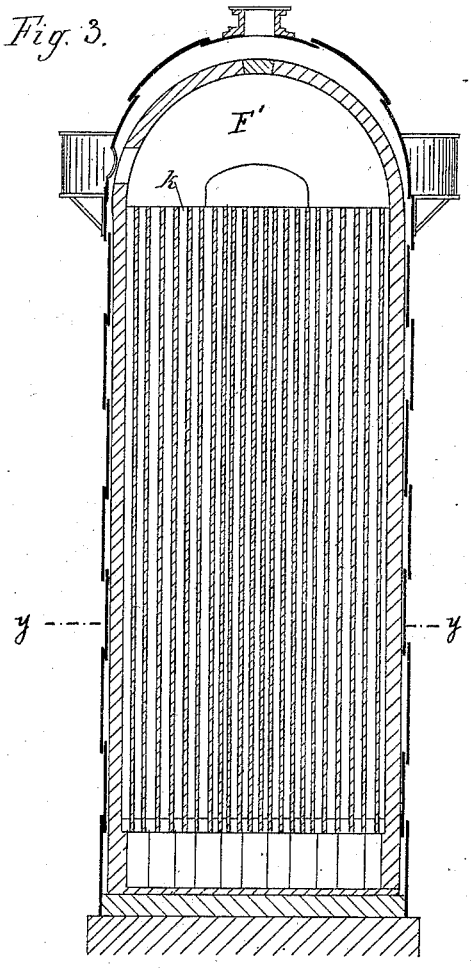


Fig. 5.

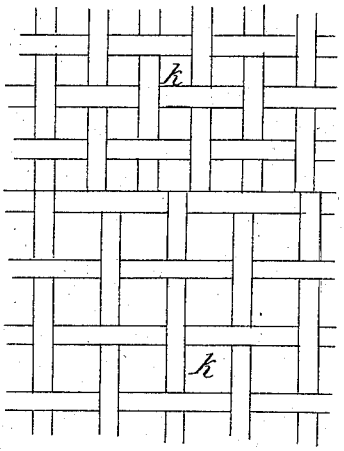
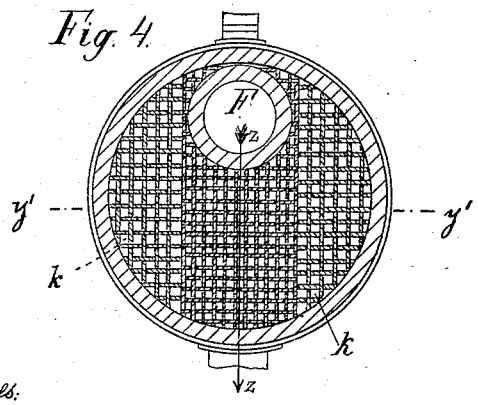


Fig. 4.



Witnesses:
Wm. Wagner
A. Jonghmans.

Inventor:
M. Boecker
by his attorneys
Roeder & Briesen

UNITED STATES PATENT OFFICE.

MARTIN BOECKER, OF FRIEDENSHÜTTE, PRUSSIA, GERMANY.

REGENERATIVE HOT-BLAST STOVE.

SPECIFICATION forming part of Letters Patent No. 422,905, dated March 11, 1890.

Application filed April 8, 1889. Serial No. 306,469. (No model.)

To all whom it may concern:

Be it known that I, MARTIN BOECKER, a subject of the King of Prussia, residing at Friedenshütte, near Morgenroth, in the Kingdom of Prussia, Germany, have invented an Improvement in Regenerative Hot-Blast Stoves, of which the following is a specification.

This invention relates to an improvement in regenerative hot-blast stoves; and it consists in the various features of improvement more fully pointed out in the claim.

In the accompanying drawings, Figure 1 is a vertical section of my improved hot-blast stove through the inlet and exit flues taken on the line x' x', Fig. 2. Fig. 2 is a horizontal section on line x x, Fig. 1. Fig. 3 is a vertical section taken on a plane at right angles to Fig. 1, through line y' y', Fig. 4. Fig. 4 is a horizontal section on line y y, Fig. 3. Fig. 5 is an enlarged horizontal section through portions of the checker-work.

The regenerative hot-blast stove shown in the accompanying drawings is heated by blast-furnace gases. These gases pass at E into the flue F, combine with the air-supply, and the resulting flames rise through F into the arched space F′ at the top of the stove, whence they descend through the passage *k*, formed in the filling, giving off their heat to the latter, and escape at the bottom through the opposite discharge-valve K to the chimney.

When the filling of the stove is sufficiently heated, the supply of blast-furnace gases and air for combustion is cut off and cold air is admitted at G, which air passes up through the channels of the highly-heated filling, taking up heat therefrom, and descends through the flue on its way to the blast-furnace at G′.

The original "Cowper" hot-blast stove with central inlet-passage had the disadvantage that the flame and heating-gases passing down through the filling left the outer portion thereof untouched, such portion being the greater the larger the diameter and the smaller the height of the stove. On account of this fact, such Cowper stoves have lately been constructed of smaller diameter and greater height, and with the inlet-flue arranged closely against the one side of the stove, so that the filling receives (in plan) the shape of a crescent; but even with this construction the objection exists that the heating-gases pass only imperfectly in contact with those portions of the filling that lie to one side of the direct line of draft of the chimney-flue, which still produces a more or less imperfect heating effect.

To accomplish a perfectly-uniform distribution it would be necessary to make the passage of gradually-increasing sectional area on each side of the direct line of draft indicated by the arrow Z Z, Fig. 4; but this arrangement would entail considerable inconvenience and expense, and it is therefore preferred to make only a few—say two or three—variations in the area of the passages, as this gives practically a very perfect result. The accompanying drawings show two such variations in the size of the passages, those situated in the middle in the line of the direct draft being made, for example, about six and three-fourths inches square, while those of the two side portions are made about seven and three-fourths inches square.

I am aware that in the specification of Cochrame and Cowper's English patent, No. 1,623 of 1874, it was proposed to effect a more uniform distribution of the flames over the passages of the filling by forming at the upper ends of such passages contractions, which are made of different areas, according to their position in the stove; and I do not claim such an arrangement as part of my invention, the passages constructed according to my invention being of uniform size throughout their length, whereby the advantage is gained of preventing any material deposit of dust, such as would occur if the passages were made with contractions.

What I claim is—

A regenerative hot-blast stove having inlet and outlet flues on opposite sides, a vertical flue or uptake communicating with the flues at one side and opening into a chamber at the upper part of the stove, and a filling of checker-work having vertical passages therethrough, each flue being of uniform size throughout its length, and the pas-

sages between the inlet and outlet flues being of the same size, but the several passages on each side of the central line of passages increasing in size from the central line of draft outward, as and for the purpose set forth.

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

MARTIN BOECKER.

Witnesses:
MORITZ KNABE,
FRIEDR. AUG. JACOBS.