

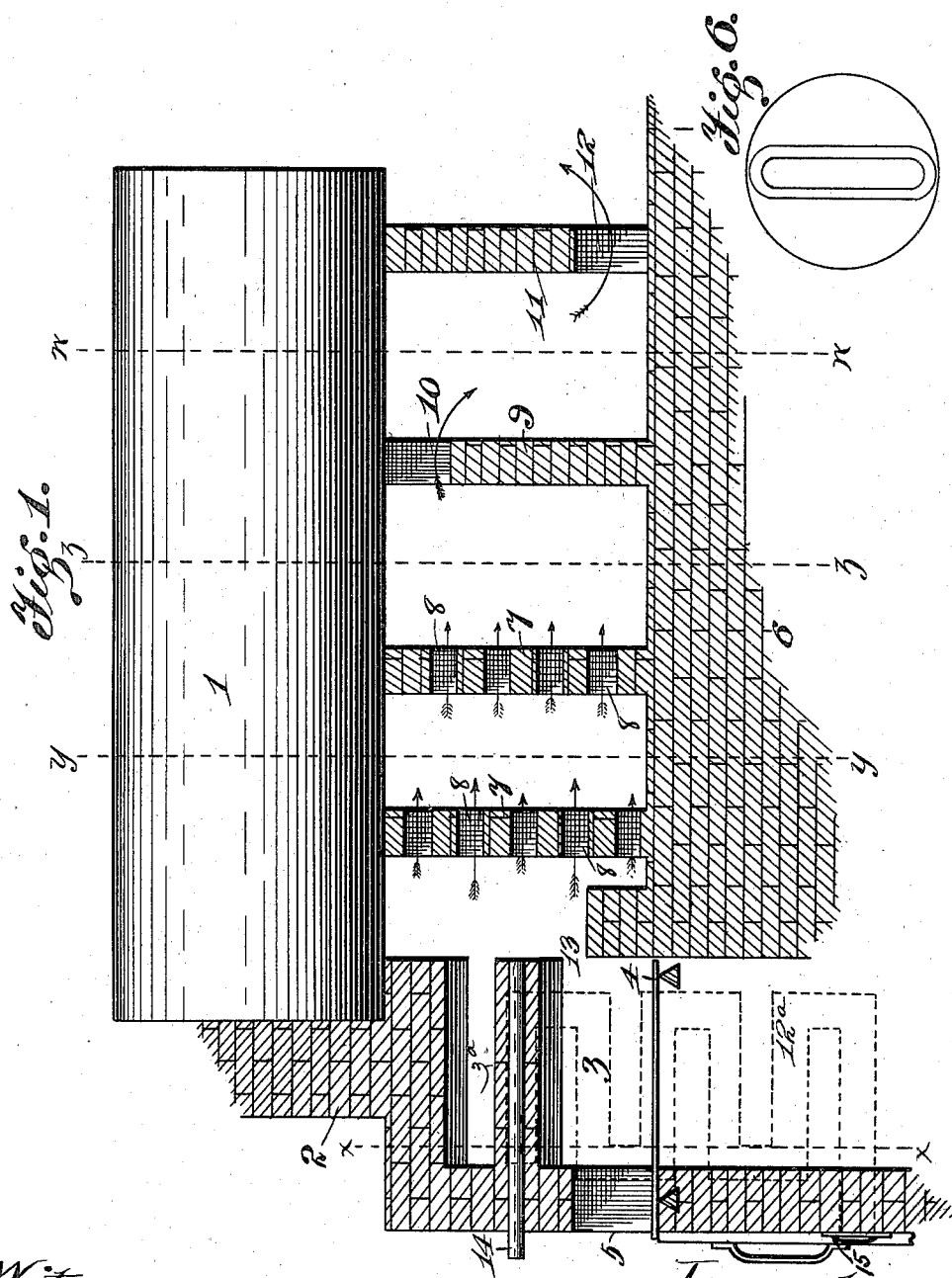
(No Model.)

2 Sheets—Sheet 1.

W. E. ELBERS.
SMOKE CONSUMER.

No. 577,915.

Patented Mar. 2, 1897.



Witnesses:
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A. M. Wilson

Inventor:
William E. Elbers.
By Henry C. Over
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

Fig. 3.

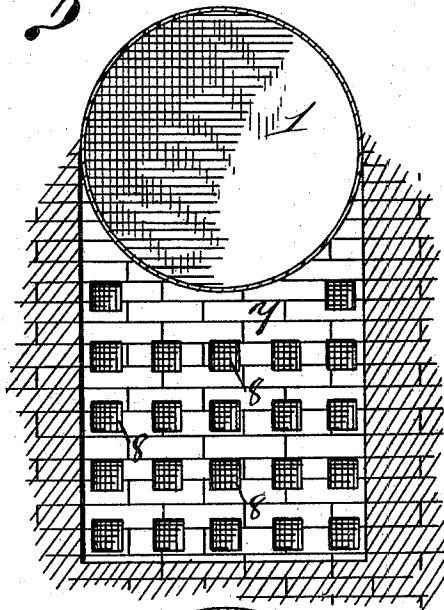
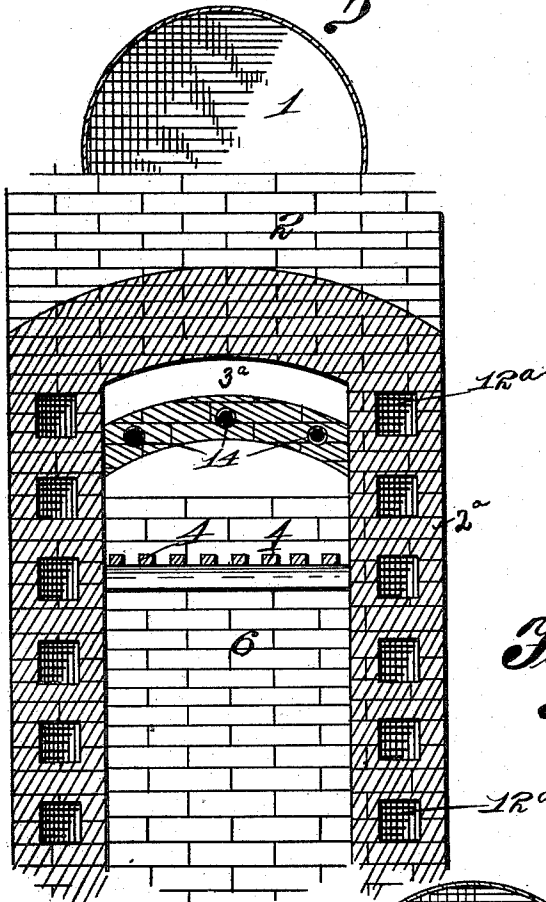


Fig. 4.

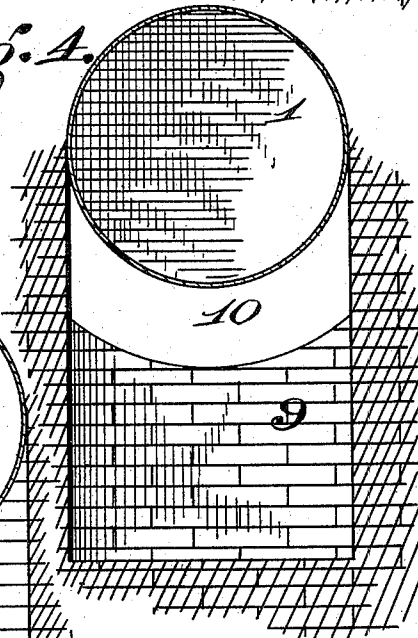
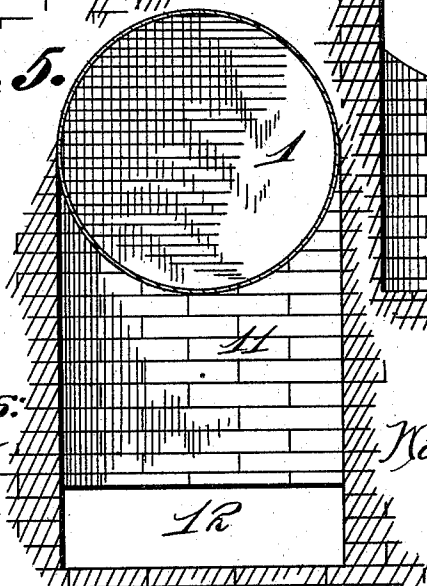


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM E. ELBERS, OF HAGEN, GERMANY.

SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 577,915, dated March 2, 1897.

Application filed October 29, 1895. Serial No. 567,289. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. ELBERS, a subject of the German Emperor, residing at Hagen, in the Province of Westphalia, Prussia, Germany, have invented certain new and useful Improvements in Smoke-Consumers, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain new and useful improvements in smoke-consumers, and has for its object the provision of novel means whereby the unconsumed products of the coal will not be permitted to escape, but will be consumed in the furnace and a complete combustion of the fuel obtained.

A further object of the invention is to construct a device of the above-referred-to class that will be extremely simple in its construction, durable, and effectual in its operation; furthermore, one that will be comparatively inexpensive to construct.

A still further object of the invention is that by the use of my improved smoke-consumer a greater degree of heat with less fuel will be obtained, thereby gaining advantages that will be readily apparent. Furthermore, the device aims to retain the heat for a greater length of time than can now be accomplished with similar devices.

With the above and other objects in view the invention finally consists in the novel construction, combination, and arrangement of parts to be hereinafter more specifically described, and particularly pointed out in the claim.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like figures of reference indicate similar parts throughout the several views, in which—

Figure 1 is a longitudinal section of my improved smoke-consumer. Fig. 2 is a view taken on the line X X of Fig. 1. Fig. 3 is a side view taken on the line Y Y of Fig. 1. Fig. 4 is a side view taken on the line Z Z of Fig. 1. Fig. 5 is a view taken on the line W W of Fig. 1. Fig. 6 is a detail view of the end of blowpipe.

In the drawings, 1 indicates the boiler, which is supported at its forward end by wall 2. Side walls 2^a 2^a are provided, which have

channels 12^a 12^a, said channels terminating in the arch 3^a.

In the draft are fireproof walls or partitions 7 7, 9, and 11. The partitions 7 7 are provided with apertures 8 8, and the partition 9 is provided between said partition and the boiler with an aperture 10, and the partition 11 is provided with an aperture 12 between the said partition and the base 6. Suitable grate-bars 4 4 are provided, and pipes 14 are arranged in the wall 2 and connected to a fan located at any suitable position. A door 5 is provided in front of the furnace, and the channels 12^a are provided with a suitable slide 15.

The operation of my improved smoke-consumer is as follows: In lighting the fire on the grate-bars 4 4 the door 5 in front of the grate-bars is left open for a short time to admit the air necessary for combustion. As soon as the fire burns well the door 5 is closed, and the air then enters into the zigzag channels 12^a, which are in the side walls. As the side walls become very hot by reason of the fire on the grate-bars 4 4, the air in the channels 12^a also becomes heated and enters the arch 3^a. The pressure of the air at its entrance to the channels 12^a is regulated by the slides 15 15, which are located in front of the furnace. The gases caused by the burning of the fuel and the hot air meet at 13, when the combustion takes place. At this point the flame from the furnace strikes against the partition 7 and, heating the same, passes through the openings 8 8 in the second partition 7 and thence through the openings 10 and 12 to the smoke-stack. The front side—that nearest the furnace—of the partition 7 is provided with a thin coating of any suitable fireproof material, and it will be noted that this partition is placed such a distance from the point 13 that it gets into the hottest part of the fire and serves the purpose of burning the small particles of coal, and the partitions 9 and 11 serve the purpose of narrowing the passage of the gases, the result of which will be fully noted hereinafter. As the first partition 7 becomes heated by the flame of the gases, the unconsumed particles of coal are burned as soon as they come in contact with the fireproof coating of the partition, and the partitions 9 and 11, in addi-

tion to the above purposes, also serve to retain any unconsumed particles of coal, and as the smoke gases suddenly come out of a small opening into a larger space the soot and unconsumed particles that may be remaining readily settle at once and can be removed through suitable doors provided in the side walls.

It will be noted that on account of the apertures 8 8 in the partitions 7 7 not being in alinement with each other the steam from the pipes will not force the unconsumed products through the said two partitions before it has a chance to be consumed and will allow any unconsumed sediment to be deposited, as heretofore described.

It will be noted that as many pipes can be used as desired, and thereby giving the same service where a battery of boilers is used or where the one pipe may not be found sufficient.

It will be noted that various changes may be made in the details of construction of my

improved smoke-consumer without departing from the general spirit of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a smoke-consumer, a series of irregular flues in the side walls of a furnace communicating with a space above the arch, a fuel-chamber below the arch and a combustion-chamber at the end of the arch; the air-space and fuel-chamber being connected with the combustion-chamber, blast-pipes leading through the arch and communicating with the combustion-chamber, supporting-walls for the boilers having irregular openings acting as baffle-plates, as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM E. ELBERS.

Witnesses:

H. E. SEIBERT,
H. C. EVERT.