April 17, 1934. D. P. OGDEN 1,955,250

FAN SCROLL

Original Filed Dec. 17, 1929

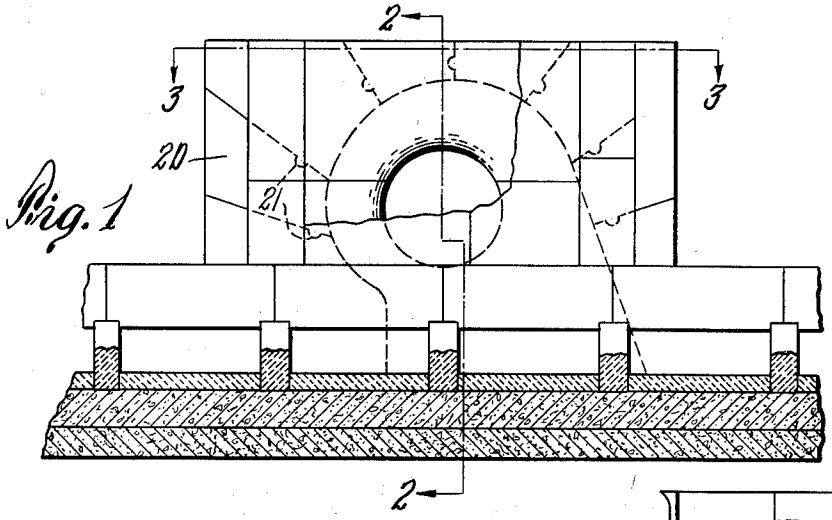


Fig. 1

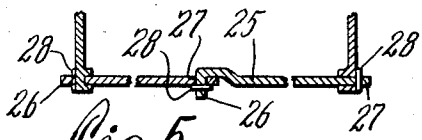


Fig. 5

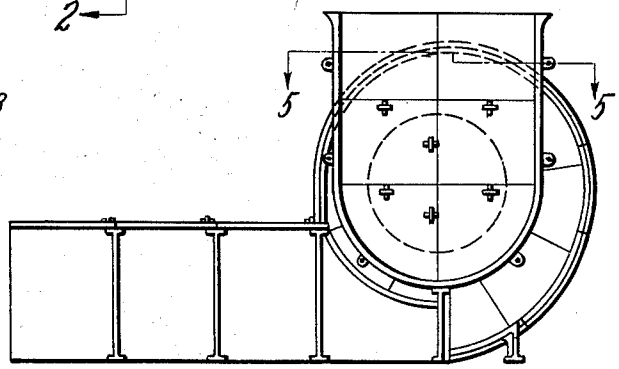


Fig. 4

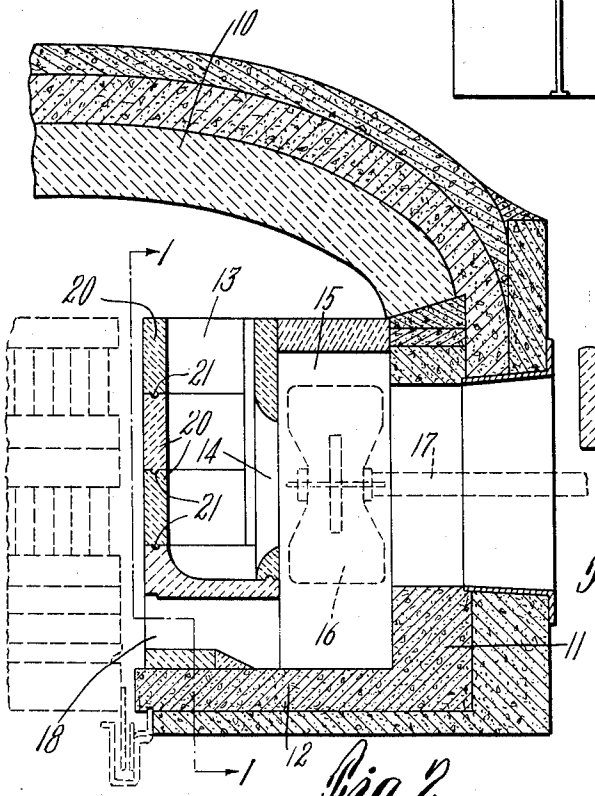


Fig. 2

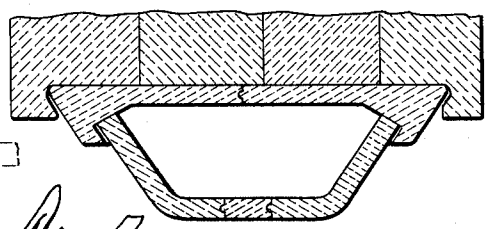


Fig. 3

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1,955,250

FAN SCROLL

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Original application December 17, 1929, Serial No. 414,641. Divided and this application April 13, 1931, Serial No. 529,734

2 Claims. (Cl. 230—133)

This application is a division of my copending application Serial No. 414,641, filed December 17, 1929. The invention relates to a scroll for a fan to be used in promoting the circulation of hot gases in kilns for drying and firing bricks or other ceramic material or any other apparatus where the scroll and fan may be subjected to direct contact with gases having temperatures of the order of 2000° F. In order to withstand such high temperatures, the fan and scroll must be made of high-temperature resistant material. According to the invention the scroll is preferably built up from pre-formed units, either of fire brick or of high temperature resistant metal such as chromium-nickel alloys of iron or so-called "calorized" iron which has been packed in aluminum dust and heated for a considerable time. The construction of scrolls by building them up from pre-formed units is preferred since standard masonry, plastic fire brick and other usual furnace construction material are usually unsatisfactory in that pieces are liable to break off under the extreme conditions of use and fall into and wreck the rotating fan within the scroll.

For a more complete understanding of the invention reference may be had to the description which follows and to the drawing, of which,—

Figure 1 is an elevation, partly in section on line 1—1 of Figure 2, of a fan scroll embodying the invention, portions being broken away.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is a section on the line 3—3 of Figure 1.

Figure 4 is an elevation of a different embodiment of the invention.

Figure 5 is a section on the line 5—5 of Figure 4.

Referring to Figure 2 of the drawing, a tunnel for the treatment of ceramic ware is shown in fragmentary cross section, this tunnel including an overhead arch 10 of suitable refractory material, a side wall 11, and a base 12 projecting inwardly from the side wall to support the scroll. The scroll itself comprises an inlet passage 13 opening upwardly toward the roof of the tunnel and having a discharge vent 14 into the fan chamber 15 within which is rotatably mounted a suitable fan 16, this fan being carried by a shaft 17 which projects through a wall of the tunnel. The fan chamber 15 is provided with a number of ports 18 opening into the lower portion of the tunnel, so that gases sucked from the upper portion of the tunnel through the passage 13 and opening 14 are discharged into the lower portion of the tunnel, the temperature distribution over any cross section of the tunnel is maintained substantially uniform, and the ware passing through the tunnel is uniformly treated.

The scroll is preferably built up from pre-formed units such as the blocks or tiles 20, these blocks having tongues and grooves 21 by which they are locked with each other. This mode of construction provides a durable scroll and the pre-formed bricks are not subject to chipping, so that the danger of pieces being chipped off by the severe operating conditions and falling into the rotating fan is thus obviated.

If it is desired to economize space within the tunnel, the fan scrolls may be made of suitable heat-resisting metal parts, as indicated in Figures 4 and 5. For temperatures of the order of 1400 to 1600° F. calorized iron is satisfactory and for higher temperatures up to 2000° F. or so, special chromium-nickel alloys are satisfactory such, for example, as an alloy consisting of chromium 30%, nickel 15% and iron 55%. An alloy of this kind is difficult to roll into sheet form so that the parts of objects made of such alloys are usually cast. In making a scroll of such metal, the various component parts are preferably cast in such a way as to facilitate interlocking of adjacent parts. As shown in Figure 5, the scroll may be constructed of plates 25 of heat-resisting metal, each plate having suitable tongues 26 and openings 27. The tongues and openings are so positioned as to interengage properly when the parts of the scroll are assembled. The tongues 26 are preferably perforated to receive locking pins 28. This structure is rugged, is easily assembled, and is easily taken down for repairs or renewal.

I claim:

1. A fan scroll made up of pre-formed units of high temperature-resistant material, certain of said units having tongues projecting therefrom and integral therewith, certain of said units having openings therethrough to receive tongues of adjacent units, and means for securing said tongues in said openings.

2. A fan scroll made up of pre-formed units of high temperature-resistant material, certain of said units having projecting portions extending through openings in adjacent units, said projecting portions having perforations beyond said adjacent units, and locking elements in said perforations for preventing separation of said units.

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