

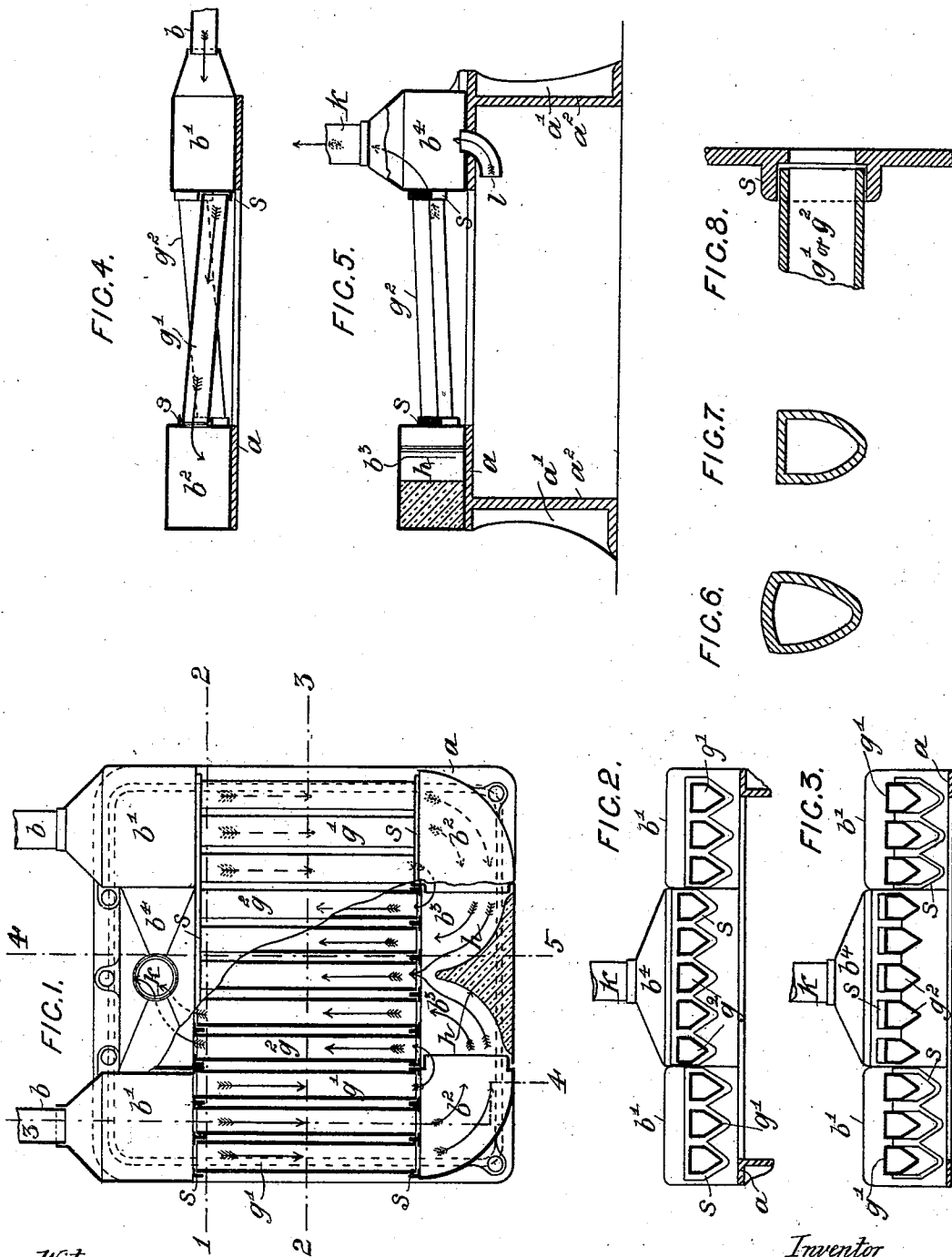
(No Model.)

H. W. JOYCE.

AIR HEATING APPARATUS FOR HOP, MALT, OR OTHER DRYING KILNS
OR STOVES.

No. 549,197.

Patented Nov. 5, 1895.



Witnesses
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UNITED STATES PATENT OFFICE.

HORACE W. JOYCE, OF HEREFORD, ENGLAND.

AIR-HEATING APPARATUS FOR HOP, MALT, OR OTHER DRYING-KILNS OR STOVES.

SPECIFICATION forming part of Letters Patent No. 549,197, dated November 5, 1895.

Application filed May 16, 1895. Serial No. 549,587. (No model.)

To all whom it may concern:

Be it known that I, HORACE WILLIAM JOYCE, a subject of the Queen of Great Britain, residing at Clantane House, Hereford, in the county of Hereford, England, have invented certain Improvements in Apparatus for Heating Air for Distribution in Hop, Malt, or other Drying-Kilns or Stoves, of which the following is a specification.

The object of my invention is to provide simple and inexpensive apparatus for heating to effective temperature the air required for distribution and dissipation of the reek in hop, malt, and other drying-kilns and stoves and for drying hops, malt, or other substance on the kiln-floors or when packed away in stoves.

I effect my object by the arrangement of apparatus illustrated in the accompanying drawings, in which—

Figure 1 is a plan partly in section. Fig. 2 is a cross-section on line 1 2 of Fig. 1. Fig. 3 is a cross-section on line 2 3 of Fig. 1. Fig. 4 is a longitudinal section on line 3 4 of Fig. 1. Fig. 5 is a central longitudinal section on line 4 5 of Fig. 1. Figs. 6 and 7 are cross-sections of hollow bars, and Fig. 8 is a longitudinal section through end of one bar and its socket.

Similar letters refer to similar parts in all the figures.

I construct the fire-grate of a series of not less than three separate sections of suitable area, respectively. Each section is composed of inclined hollow fire-bars communicating at each end with air-chambers. The table or bed *a*, with standards *a'* and closing-plates *a''*, constitutes the support of the air-heating apparatus. In this, *b'* *b'* are two rear chambers, to which atmospheric air is admitted through pipes *b* *b*. From the lower part of front surface of each side box *b'* a set of hollow grate-bars *g'* inclines upward to and communicates with the upper part of the rear surface of front air-chambers *b''* *b''*, at each side similarly constructed, and with internal air-deflecting plate or devices *h* *h*. The air is deflected, as shown by the arrows, round and downward through a central front chamber or pair of chambers *b''* to a central set of op-

positely-inclined hollow bars *g''*, proceeding from the lower part of the rear surface of the said central front chamber or chambers *b''* and inclining upwardly to and communicating with the upper part of the front surface of a rear central air-chamber *b''*. To this chamber, which has preferably a coned roof, is fixed the uptake *k*, through which the hot air passes up to the upper part of the kiln in the well-known manner and to suit individual kilns and situations.

To the lower part of the air-chamber *b''* a supplementary air-supply, heated to some extent by passing beneath the fire-bars in the closed support thereof, may be admitted, as at *l*, Fig. 5.

The grate-bars *g'* *g''* are of any suitable uniform hollow section, preferably such as shown in Figs. 2, 3, 6, and 7, their ends fitting well into the sockets *s* of their respective boxes *b'* *b''* *b''*. The inclination of the bars may be about one in twenty-four, and they support the usual coke or smokeless-fuel fire, which serves to heat the air passing through the whole apparatus sufficiently to dry it and effect its purpose of dissipating reek in the drying-chambers above the kiln.

The air-chambers are set level across the supporting-table *a*, as illustrated.

I am aware that hollow fire-bars are old, and I do not claim them; but

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

An apparatus for heating and drying air for distribution in hop, malt, and other drying kilns and stoves consisting in the combination of the similar side air inlet chambers *b'* *b'*, upwardly inclined side sets of hollow fire-bars *g'* *g'*, similar side front air chambers *b''* *b''*, central front air chamber or chambers *b''*, central group of upwardly inclined hollow fire bars *g''*, and rear chamber *b''* with uptake or hot air distributing pipe *k*, all substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

HORACE W. JOYCE.

Witnesses:

WM. A. W. PRICE,
O. L. BRADLEY.