

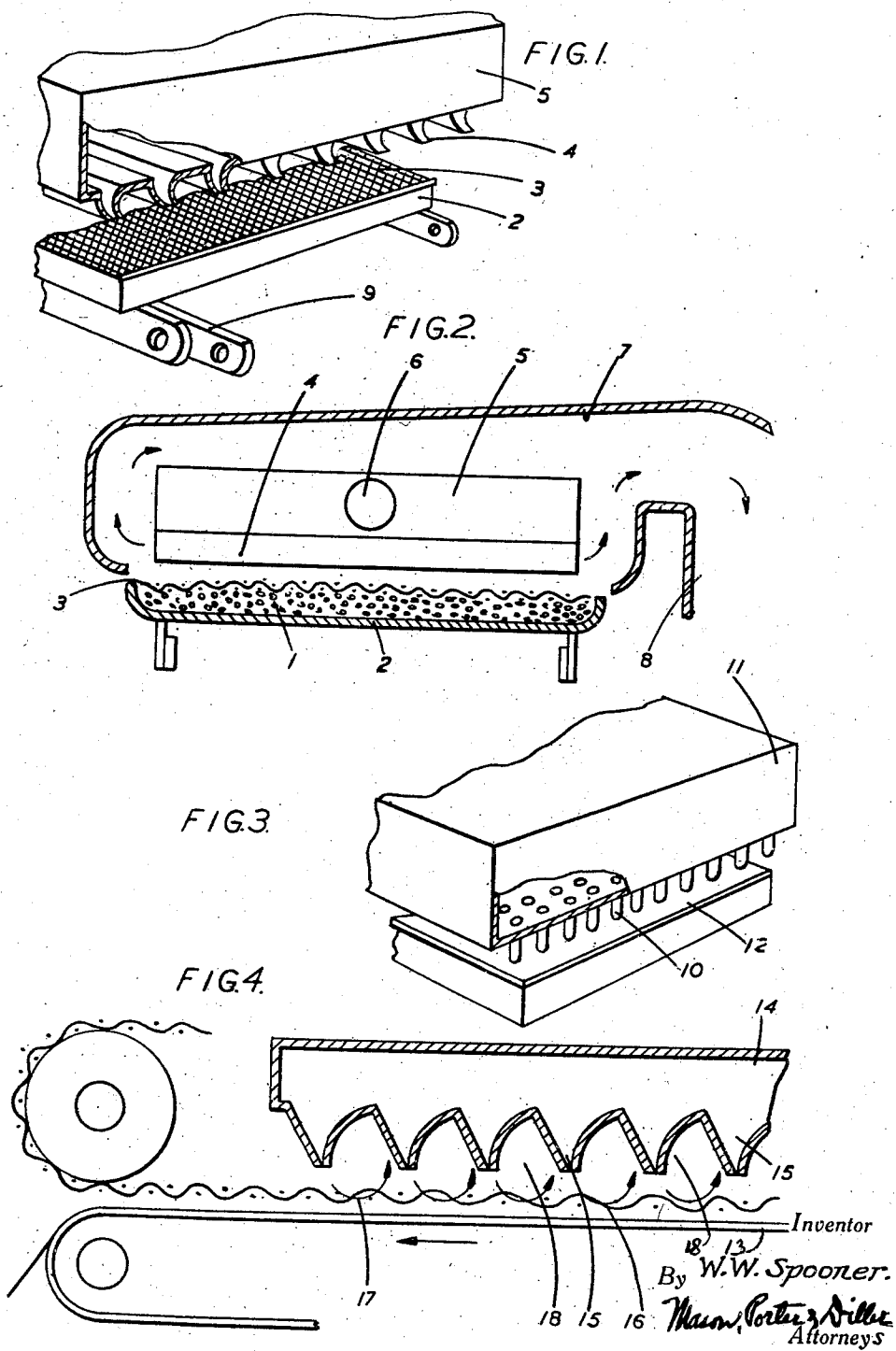
June 4, 1946.

W. W. SPOONER

2,401,520

DRYING OF MATERIAL

Filed March 14, 1944



UNITED STATES PATENT OFFICE

2,401,520

DRYING OF MATERIAL

William Wycliffe Spooner, Ikley, England

Application March 14, 1944, Serial No. 526,451
In Great Britain February 3, 1943

1 Claim. (Cl. 34—232)

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The present invention relates to improvements in the drying, baking or cooking of material, more particularly of material in powder or granular form.

It has been found that drying, cooking or baking of material proceeds with greater efficiency where the drying streams are impacted on the material at a high velocity. An object of the present invention is to enable powdered or granular material to be dried by means of high velocity streams without undue disturbance of this.

According to the present invention, powder or granular material is disposed under sets of nozzles or slits which allow a drying or baking fluid medium, such as hot air, to impinge over the material to be dried or baked, either at right angles to the surface of the material or at an angle approximate thereto, whilst said material is confined by sheets of reticulous material which splits up the fluid drying streams and distributes them in such a way that the grains are not materially disturbed.

The invention is more particularly described with reference to the accompanying drawing, in which—

Fig. 1 is a diagrammatic perspective view of one form of construction, partly in section,

Fig. 2 is a corresponding end sectional view,

Fig. 3 is a perspective view, partly in section, of an alternative arrangement,

Fig. 4 is an end sectional elevation of a further alternative.

Granular material, such as 1, to be dried or baked is confined upon a tray 2 by means of a sheet of reticulated material 3, such as wire gauze, and is disposed beneath a plurality of nozzles 4 on the lower side of a pressure chamber 5 fed from a fan (not shown) with hot air or the like dry fluid medium, the fan leading into a conduit 6. The nozzles 4 are so disposed that the streams emerging from them impact on the material and then are led away without interfering with the stream from neighbouring nozzles. For instance, the air or the like drying medium, after having impacted on the material in the trays 2 may escape laterally of the chamber 5 to be taken up in an enclosing hood 7 and led off by duct 8 to the inlet of the fan.

A number of trays, if desired, may be connected end to end by means of chains 9, so that they may be brought under the pressure chamber 5 in sequence to one another.

In the alternative construction of Fig. 3, in-

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stead of having nozzles of the form shown in Fig. 1, these nozzles may be in the form of short pipes 10 disposed vertically from the pressure chamber 11 to impinge directly upon the material on the trays 12, the spacing of these nozzles or tubes 10 being such that the air from any one nozzle does not interfere with the air from any neighbouring nozzle.

In the arrangement shown diagrammatically in Fig. 4, material to be dried or baked is fed continuously by a moving band conveyor 13 under a stationary pressure chamber 14 which is fed with hot air or other drying or baking fluid medium under pressure, the base of the pressure chamber 14 having a number of nozzles 15 directing the drying streams on to the material on the conveyor 13 and through the endless web of wire mesh or the like reticulated material 16 serving to confine the granular or powdered material on the conveyor 13 and so preventing it being blown away or following the path of the air streams from the nozzles 15, which air streams may pass upwards, as shown by the arrows 17, to be led away through ducts 18 formed between adjacent nozzles 15 to the inlet of a circulating fan.

The nozzles 4, 10 or 15 may each be of Venturi form, so that pressure energy in the chamber 5, 11, or 14, as the case may be, is converted to kinetic energy, so that the streams of hot air or the like drying or baking medium impinge on the powdered or granular material at high velocity, the intermediate sheet or web of reticulate material preventing their dispersal or undue disturbance.

I declare that what I claim is:

An apparatus for the heat treatment of material comprising a pressure chamber, a plurality of spaced rows of potential to kinetic energy conversion nozzles directed from one wall of said chamber, exhaust passages for the streams emerging from said nozzles when said streams are spent disposed between adjacent nozzles, a tray disposed beneath said chamber in spaced relationship thereto for the support of the material to be treated, a reticulous sheet disposed above said tray to confine material in said tray against dispersal by the streams emerging from said nozzles, and an enclosing hood disposed around the ends of the rows of nozzles to draw off the spent streams from said exhaust passages between said nozzles.

WILLIAM WYCLIFFE SPOONER.