

12

EUROPEAN PATENT APPLICATION

21 Application number: 84850119.3

51 Int. Cl.³: **F 26 B 15/16**
F 26 B 9/06, F 26 B 3/04

22 Date of filing: 12.04.84

30 Priority: 19.04.83 FI 831331

43 Date of publication of application:
 24.10.84 Bulletin 84/43

84 Designated Contracting States:
 AT BE CH DE FR GB LI LU NL SE

71 Applicant: TEKMA OY

SF-15100 Lahti(FI)

72 Inventor: Uimonen, Matti
 Monontie 13
 SF-15950 Lahti(FI)

74 Representative: Onn, Thorsten et al,
 AB STOCKHOLMS PATENTBYRA Box 3129
 S-103 62 Stockholm(SE)

54 Drive-through chamber type timber drying kiln.

57 A drive-through chamber drier for timber where the timber loads (P) to be dried are carried on a roller track (10) through a front door (11) into the drying chamber. From the drying kiln, the timber loads (P) are removed after drying from the opposite side of the drying kiln through a rear door (13). The drying kiln comprises two or more drying chambers (K₁, K₃; K₂, K₄) connected in series. Of these chambers (K₁, K₃; K₂,

K₄) connected in series, each chamber operates independently in such way that when the timber loads are moved from a first chamber (K₁, K₃) to the second chamber (K₂, K₄), the drying will be carried on in this chamber (K₂, K₄) starting substantially at the point which had been reached in the drying process in the first chamber (K₁, K₃).

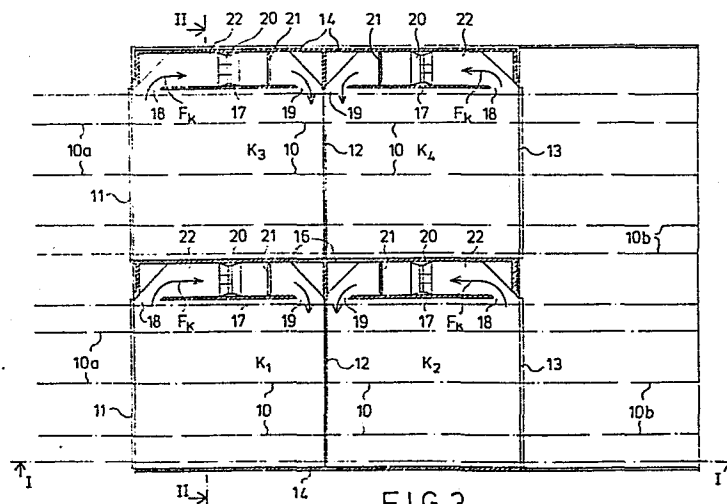


FIG.3

Drive-through chamber type timber drying kiln

The present invention concerns a drive-through chamber type timber drying kiln, where the timber loads to be dried are conveyed on a roller track or equivalent through a front door into the drying kiln, and from which drying kiln, subsequent to drying, the timber loads are removed on the opposite side of the drying kiln through a back door.

So-called drive-through chamber type drying kilns are known in prior art. Their structure is such that drying kiln loads assembled of drying kiln packages are carried into the drying chamber on a roller track in front of them, whence the loads are pushed into the drying chamber. The dried loads are taken out through the opposite door of the drying chamber. It is an advantage of these chamber-type drying kilns known in the art that in them the load changing time is comparatively short. However, a disadvantage is the expensive realization of such drying kilns, because they require two opposite doors, and roller tracks on both sides of the drying chamber. The object of the present invention is to provide a simple design by which the drawbacks mentioned can be substantially reduced, and to provide a chamber-type drying kiln in which the advantageous characteristics of the chamber-type drying kiln, mentioned above, are preserved.

For attaining these aims and those to be disclosed below, the invention is mainly characterized in that in the drying kiln two or more drying chambers are connected in series and that of these chambers connected in series each chamber operates independently in the way that when the timber loads are transferred from a first chamber to a next chamber, in this latter chamber the drying is carried on substantially from that point of the drying schedule which had been reached in the drying process in the first chamber.

In the following, the invention is described in detail reference

being made to an embodiment example of the invention presented in the figures of the drawing attached, to the details of which the invention is not confined.

Fig. 1 presents in elevational view a chamber-type drying kiln of the invention. Fig. 1 is at the same time the vertical section along the line I-I indicated in Fig. 3.

Fig. 2 shows the vertical cross section II-II in Fig. 3.

Fig. 3 shows the horizontal section III-III in Fig. 2.

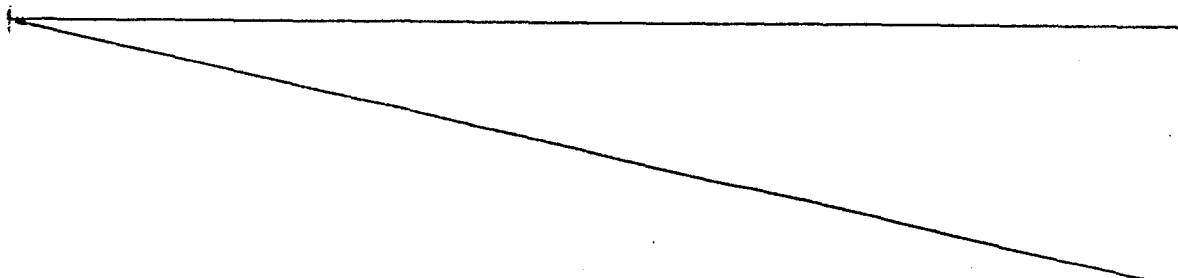
As shown in the figures, the chamber-type drying kiln comprises four drying chambers K_1, K_2, K_3 and K_4 . The chambers K_1 and K_2 among themselves and the chambers K_3 and K_4 among themselves are connected in series. Thus, the chambers K_1 and K_2 in combination and the chambers K_3 and K_4 in combination constitute two chamber groups, both of them having only one front door 11 and one back door 13. Through the chamber groups K_1, K_2 and K_3, K_4 pass the roller tracks 10. The initial parts 10a of these roller tracks are located outside the doors 11, and similarly the ultimate ends 10b of the roller tracks 10 are located outside the rear doors 13. The timber loads P_1 to be dried are brought to the initial ends 10a of the roller tracks, and the finished dried loads P_4 are taken off the ultimate ends 10b of the roller tracks 10.

The chamber-type drying kiln comprising two drying kiln groups is composed of outer walls 14 and partitions 16, of a roof 15, and of the front doors 11 and rear doors 13 mentioned. Between the first chambers K_1 and K_3 and the second chambers K_2 and K_4 are provided light-weight partitions 12, for instance made of flexible fabric-type material, because these partitions 12 need not be thermally lagging. The partitions 12 are advantageously of such kind that it is possible to push the drying kiln loads P_2 through them from the first chamber K_1, K_3 to the second chamber K_2, K_4 .

Each drying chamber K_1-K_4 is provided with means by which

circulation F_k of drying air through the timber loads P_2 and P_3 composed of packages provided with spacers is achieved. Said means comprise one or more blowers 20 and a heating radiator 21 placed in a duct 22. On the intake side of the blowers 20 in the duct 22 is introduced through ventilation ducts 26 an inlet air flow F_{in} from outdoors, and similarly, on the pressure side of the blowers 20, an outlet air flow F_{out} is taken off through ventilation ducts 25. In connection with the ventilation ducts 25 and 26 are provided control dampers 23 and 24, by the aid of which, combined with regulation of the radiators 21, the drying capacity of the circulating air F_k is influencable. Said means are separated from the load space by a partition 17, which is open on both sides (apertures 18 and 19). Through one aperture 19 the circulating air can pass to one side of the load, and through the other aperture 18 it is enabled to return to the blowers, having in the meantime passed through the loads. The direction in which the air circulates is reversed at regular intervals, usually automatically.

The drive-through chamber type drying kiln described in the foregoing operates as follows. The first chambers K_1 and K_3 and the second chambers K_2 and K_4 of the chamber groups operate independently. When loads P_2 are transferred from the first chambers K_1, K_3 into the second chambers K_2, K_4 , drying is carried on subsequent to this transfer as if no transfer had taken place, in other words, after the transfer, one begins to follow the drying schedule in the second chambers K_2, K_4 starting at that point in the drying process which had been reached in the drying in the first chambers K_1, K_3 . It is advantageous, to this end, if the circulating air flows F_k in the first chambers K_1, K_3 and in the second chambers K_2, K_4 have opposite direction.



As has been set forth, each group of chambers contains two drying chambers $K_1, K_2; K_3, K_4$. In certain applications there may be even more such chambers in series, for instance three or four.

It is thus understood that in accordance with the invention a drive-through chamber type drying kiln has been obtained in which for each chamber group K_1, K_2 and K_3, K_4 there are still only two doors 11 and 13 and only one roller track 10 or equivalent track system passing through the chambers.

In the following are stated the claims, various details of the invention being allowed to vary within the scope of the inventive idea thereby defined and to deviate from those presented in the foregoing.

Claims

1. A drive-through chamber type timber drying kiln, where the timber loads (P) to be dried are conveyed on a roller track (10) or equivalent through a front door (11) into the drying chamber, and from which drying kiln the timber loads (P) subsequent to drying are removed on the opposite side of the drying kiln through a rear door (13), characterized in that in the drying kiln two or more drying chambers ($K_1, K_2; K_3, K_4$) are connected in series and that among these series-connected chambers ($K_1, K_2; K_3, K_4$) each chamber operates independently in the way that when the timber loads are being transferred from the first chamber (K_1, K_3) to the next chamber (K_2, K_4), in this chamber (K_2, K_4) the drying process is carried on substantially from that point of the drying schedule which had been reached in the drying process in the first chamber (K_1, K_3).
2. Chamber drying kiln according to claim 1, characterized in that drying chambers (K_1, K_3) and (K_2, K_4) have been provided at least two in series and that chamber groups thus produced are disposed one or several in parallel with each other.
3. Chamber drying kiln according to claim 1 or 2, having on one side of the drying chamber an air circulation duct (22) with blower means (20), a heating radiator (21) and intake air intake and exhaust means (23, 24, 25, 26), characterized in that in the chambers ($K_1, K_3; K_2, K_4$) connected in series the circulating air flows (F_K) have been arranged to be opposite in direction.
4. Chamber drying kiln according to any one of claims 1 to 3, characterized in that between the drying kiln chamber groups (K_1, K_3) and (K_2, K_4) there is a partition (12) with light-weight structure, preferably a partition made of flexible fabric-like material, which when raised permits the running through of its drying kiln charges from the first chambers (K_1, K_3) to the second chambers (K_2, K_4).

1 / 2

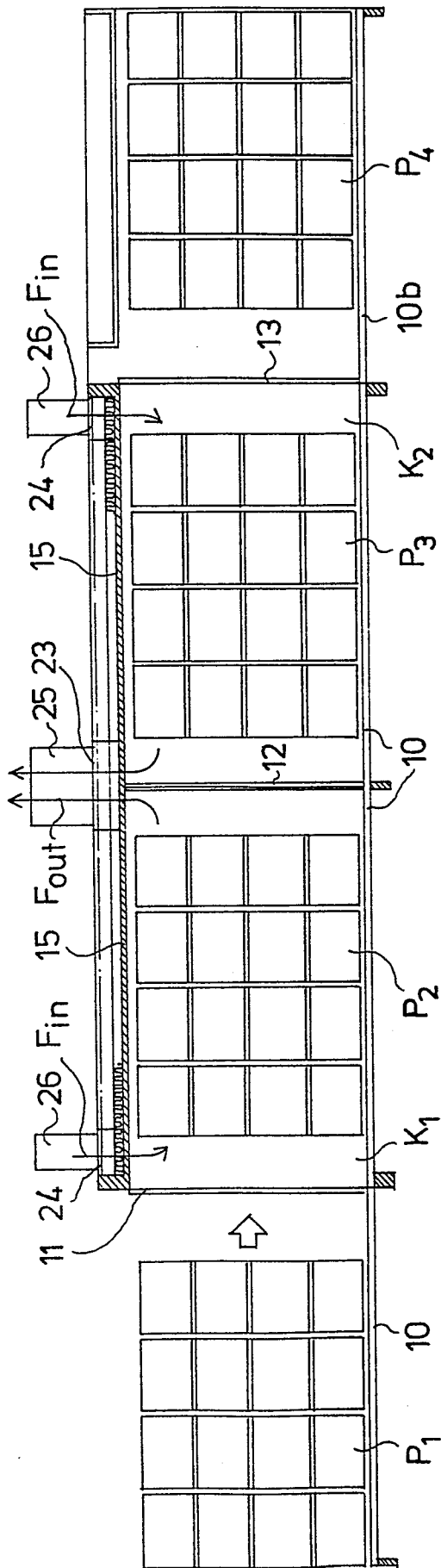


FIG. 1

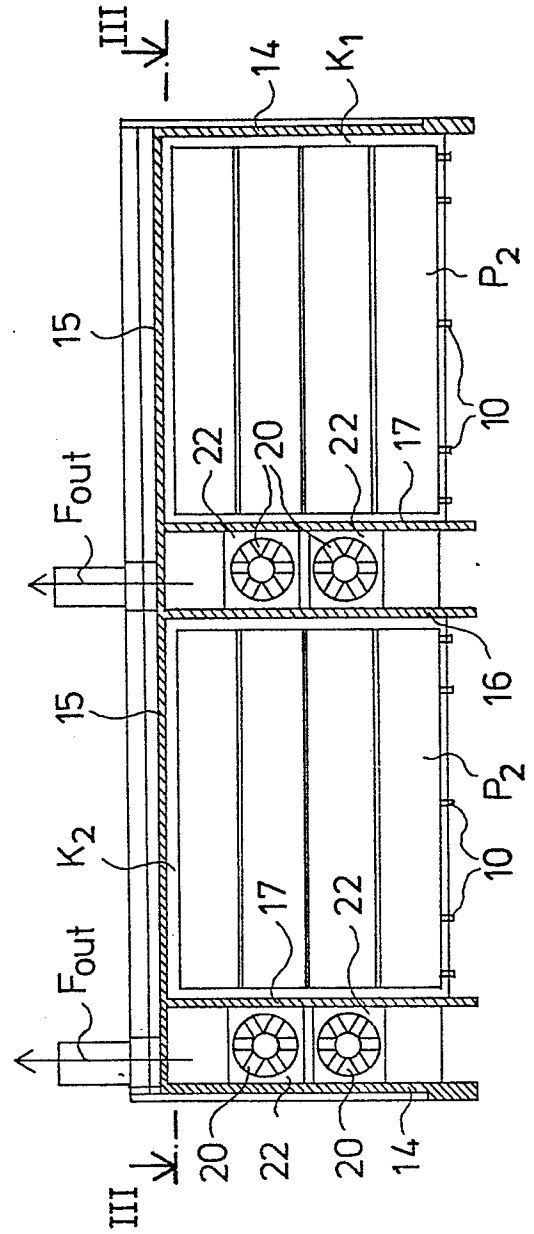


FIG. 2

