Aug. 14, 1956 E. WESTERBERG 2,758,388

DRYING DEVICE

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FIG. 1.

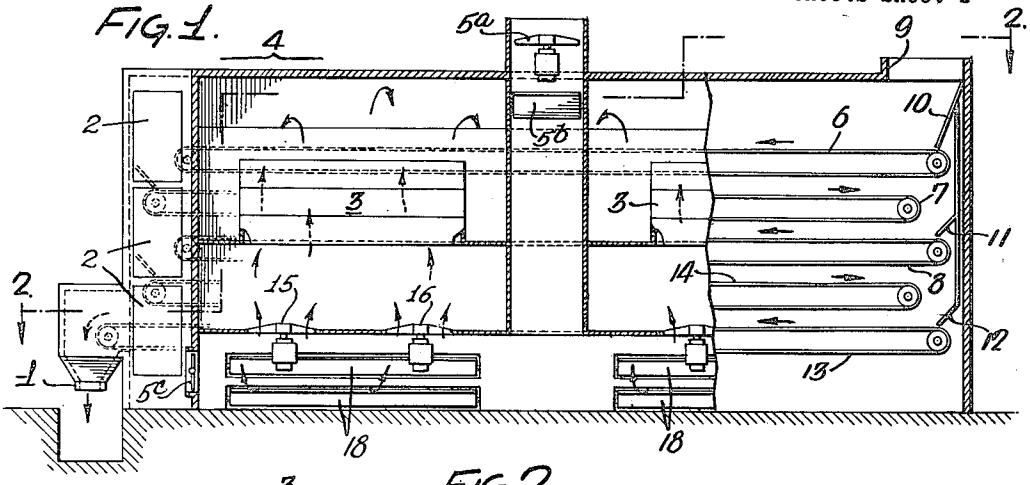


FIG. 2.

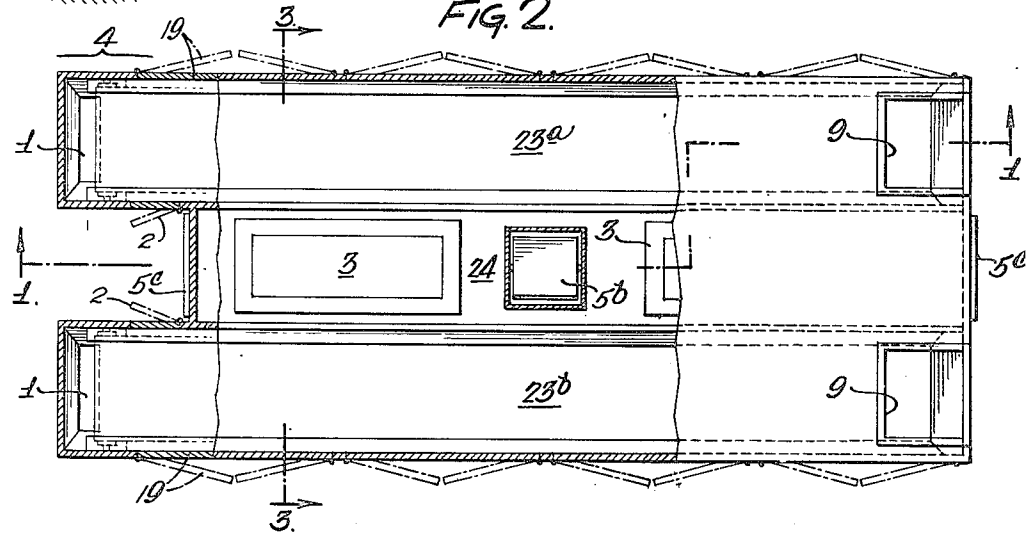


FIG. 3.

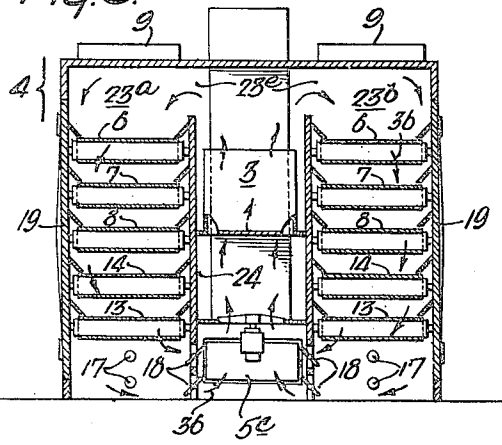
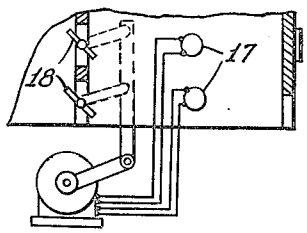


FIG. 3a



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FIG. 4.

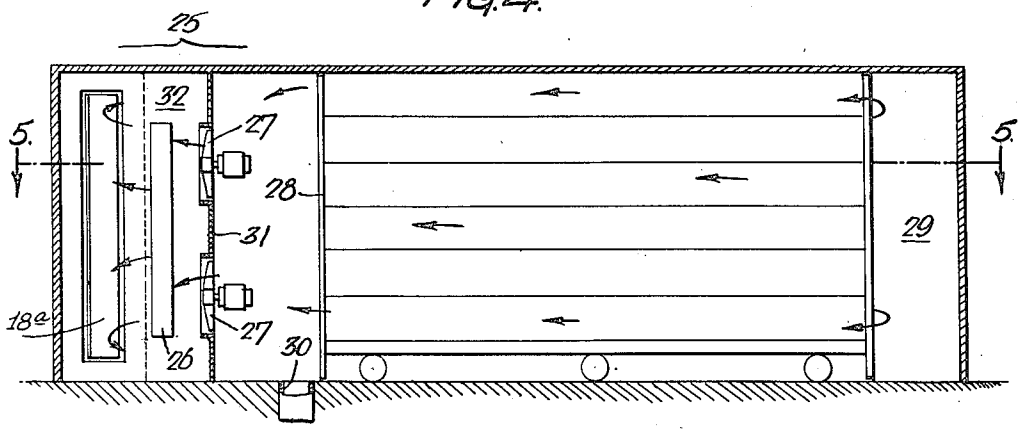
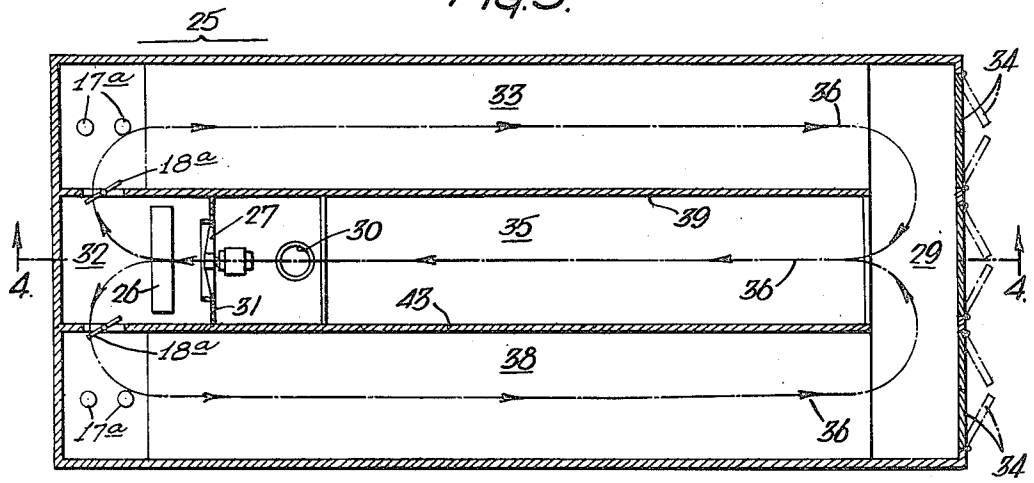


FIG. 5.



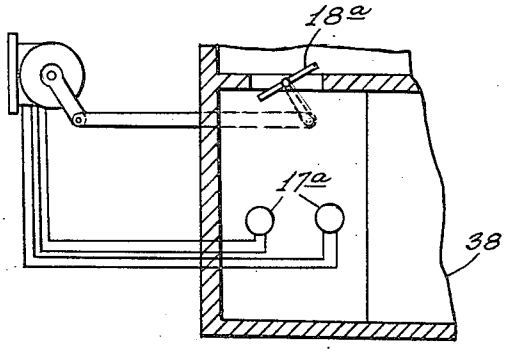


FIG. 5a

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DRYING DEVICE

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Application March 6, 1953, Serial No. 340,728

Claims priority, application Sweden March 8, 1952

3 Claims. (Cl. 34—54)

The present invention relates to a new and improved drying device, comprising a number of chambers for the drying goods, arrangements for conveying the goods and arrangements for circulating a gaseous drying medium through the device.

The invention is substantially characterized by an uneven number of chambers located at each side of a central chamber, which chambers are separated from each other by partitions with a passage way for the drying medium, the central chamber being provided with air circulating and heating means for the treatment of the recirculating drying medium during its passage through the central chamber.

A convenient modification of a drying device is characterized by an uneven number of chambers located at each side of a central chamber, which chambers are separated from each other by partitions with a passage way for the drying medium, the central chamber being provided with air circulating means and with openings for the inlet of a hot gaseous medium for heating the recirculating drying medium during its passage through the central chamber.

A further modification of a drying device is characterized by a housing divided by partitions into chambers and a central tunnel, each side-chamber being provided with heat and/or moisture sensitive devices and with dampers operable in response to the differences recorded thereby. The central tunnel can partly be adapted for receiving drying goods.

The invention will make it possible to save space for the total plant. The number of fans can be reduced and the drying effect of the drying medium can be utilized in a high degree. In such cases when the drying device is used for a vertical circulating of the drying medium and when the device is provided with dampers governed by devices for instance thermostats sensitive to temperature and/or moisture it is possible to use different quantities of drying medium in the two different parts of the device. This performance is preferable for the drying of matchboxes and similar goods in conveyor driers, especially when the drying medium is circulated in parallel flow with the drying goods. This will facilitate the obtaining of evenly dried products as a result. By arranging the drying device for a horizontal passage of the drying medium which is most convenient for brick driers and similar driers which are fed discontinuously it is not necessary to have ducts arranged under the floor or above the ceiling of the drying device.

The invention will now be more fully described in connection with the accompanying drawings where:

Fig. 1 shows a section on line **1**—**1** of Fig. 2 of a drying device.

Fig. 2 shows a view from above the drying device on the line **2**—**2** of Fig. 1, partly in section.

Fig. 3 shows a section on the line **3**—**3** of Fig. 2 of the drying device.

Fig. 3*a* shows at an enlarged scale controls for varying

the flow of the drying medium in the device shown in Figs. 1 to 3;

Fig. 4 shows a longitudinal section on the line **4**—**4** of a drying device in accordance with Fig. 5.

Fig. 5 shows a section on the line **5**—**5** of a drying device in accordance with Fig. 4.

Fig. 5*a* shows at an enlarged scale controls for varying the flow of the drying medium in the device shown in Figs. 4–5.

In Fig. 1, **4** designates a drying device provided with heating means **3** and fans **15**, **16**. Said drying device is intended preferably for a vertical circulation of the drying medium through the drying device. Said device is equipped with conveying means for the drying goods. The numerals **6**, **7**, **8**, **13**, **14** stand for different stages of a belt conveyor. The drying goods are fed into the drying device through the opening **9** and are discharged through the outlet **1** of the device. At each gable wall of the device there are guiding plates **11**, **12** for conveying the drying goods from a high stage to a low stage. **2** designates inspection doors to the interior of the device. A suction fan **5***a* is located in the central part of the device. For regulating the quantity of outdoor air and discharged wet air dampers **5***c* (see Fig. 2) and **5***b* are arranged.

In Fig. 2 the two side chambers are designated **23***a* and **23***b*. **24** designates the central chamber of the drying device. The inspection doors are designated **19**.

In Fig. 3 there are partitions **23***c*, **23***d* extending vertically through the drying device and provided with a free opening **23***e* above and two dampers **18** at the low part of the drying device. **17** designates devices sensitive to temperature and/or moisture which devices effect the dampers **18**, for example by a damper motor and connections shown in Fig. 3*a*. The circulating passage way of the drying medium through the drying device is assumed to be the same as the direction of the arrows **36**. The circulating passage way can be reversed by reversing of the fans in this case as well as in other described performances of the invention.

In Fig. 4 the corresponding drying device is designated **25**. This is intended preferably for horizontal currents of the drying medium. **26** designates heating means and **27** relates to fans for the circulation of the drying medium. In this case the conveying means for the goods is designated **28**. **29** is a free space at one of the gable walls of the device. **32** designates a corresponding space at the other end of the drying device. In this figure there are two fans. They are located over each other and are separated by partitions **31**. In the drawing **30** is an opening for the inlet of for instance hot gas which gas alternatively can be used for the heating of recirculating drying medium.

Condition-sensitive devices similar to the elements **17** are provided at **17***a*, and these elements are effective to vary the flow of gaseous medium through the individual chambers **33** and **38** by means of dampers **18***a*, controlled for example by means of a damper motor and connections shown in Fig. *5a*.

In Fig. 5 **33**, **38** designate two side chambers located at each side of the central tunnel **35**. In this tunnel the above mentioned fans **27** and heating means **26** are arranged. An inlet **30** for hot gas can also be arranged. **34** designates the doors of the device. The partitions between the side chambers and the central tunnel of the device are designated **43** and **39**. The central tunnel can in part be used for receiving of the drying goods. The partitions are so disposed in the drying device with respect to the circulating and heating means for the medium that a preferably horizontal circulating of the drying medium is effected. The flow of the drying medium through the device is in accordance with the arrows **36**.

I claim:

1. In a dryer comprising two parallel drying chambers disposed at opposite sides of an intermediate chamber; partition means defining said chambers; inlet and exhaust openings in said partition means for said drying chambers respectively at the opposite ends thereof; a heater disposed in said intermediate chamber and operable to heat a drying medium for said two drying chambers; means to circulate said heated drying medium from said intermediate chamber, through said inlet openings, in contact wth the drying goods in each of said drying chambers, said exhaust openings, and back to said intermediate chamber; damper means mounted in one of the openings of each drying chamber for varying the quantity of the drying medium flowing through its associated drying chamber; independent control means for each of said two drying chambers responsive to at least one of the conditions of temperature and humidity of the drying medium in its associated drying chamber, each control means being disposed adjacent the discharge openings of its associated chamber and operable to control the damper means of the associated chamber to thereby individually

vary the quantity of drying medium flowing through each drying chamber in accordance with the condition fo the medium exhausted therefrom, and thereby in accordance with the need of drying medium by the drying goods in each drying chamber.

2. A dryer according to claim 1 wherein said control means for each of said drying chambers is disposed within its associated drying chamber in the discharge end thereof.

3. A dryer according to claim 1 wherein the damper means for each drying chamber is mounted in the exhaust opening of its associated drying chamber.

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