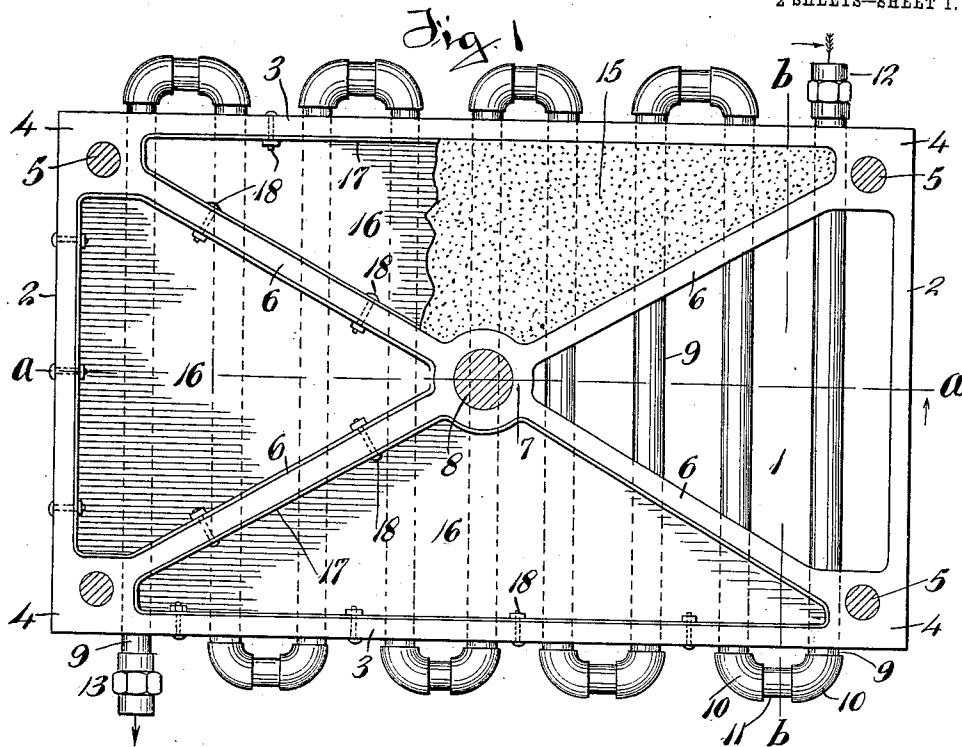
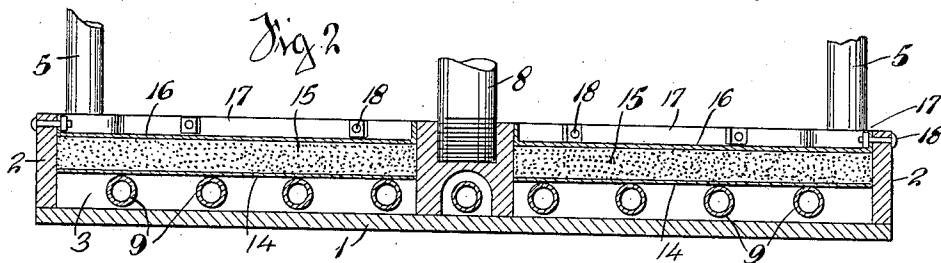
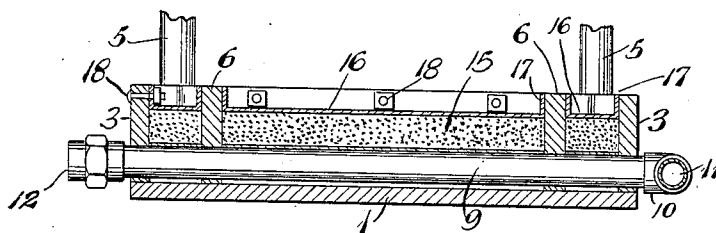


J. F. CRANE.
 DRIER FOR USE IN MANUFACTURING CORRUGATED MAILING BOARD AND THE LIKE.
 APPLICATION FILED APR. 19, 1913.

1,086,898.

Patented Feb. 10, 1914.

2 SHEETS—SHEET 1.



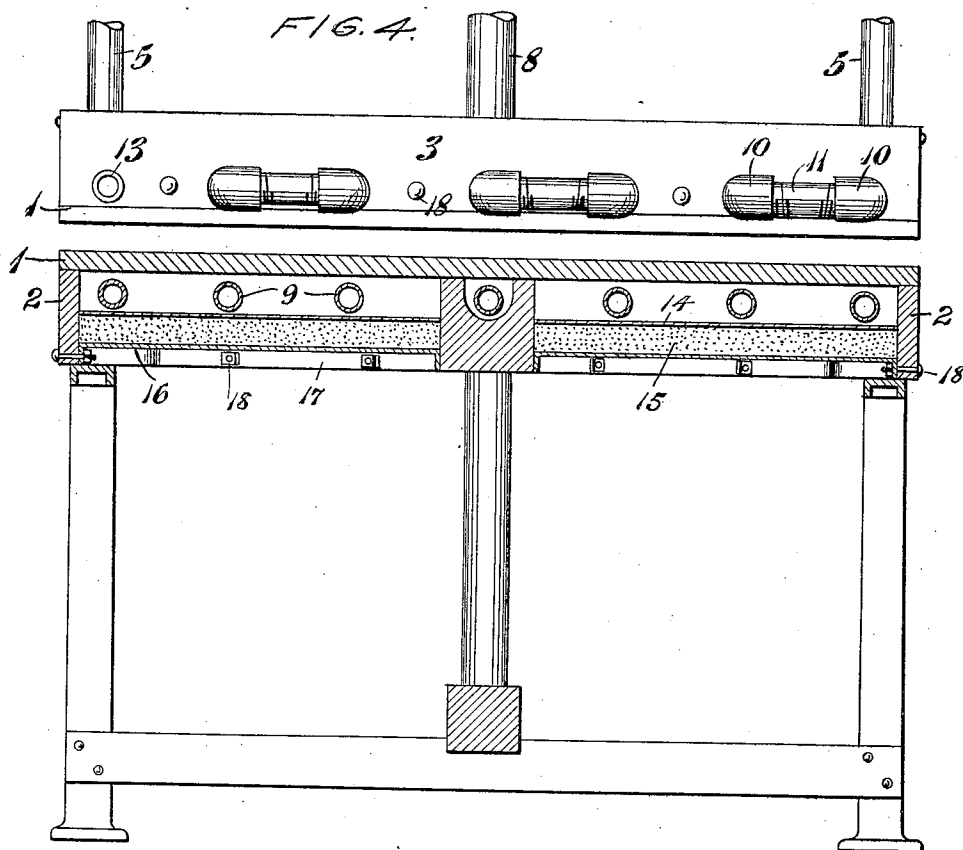
Witnesses
 Oliver J. Farnham
 Loretta Luck

Fig 3

Inventor
 Josiah Franklin Crane,
 by John Elias Jones,
 Attorney

J. F. CRANE.
 DRIER FOR USE IN MANUFACTURING CORRUGATED MAILING BOARD AND THE LIKE,
 APPLICATION FILED APR. 19, 1913.

1,086,898. Patented Feb. 10, 1914.
2 SHEETS—SHEET 2.



Witnesses
 Oliver S. Harman
 Loretta Luck

Inventor
 Josiah Franklin Crane,
 by John Elias Jones,
 Attorney

UNITED STATES PATENT OFFICE.

JOSIAH FRANKLIN CRANE, OF CINCINNATI, OHIO.

DRIER FOR USE IN MANUFACTURING CORRUGATED MAILING-BOARD AND THE LIKE.

1,086,898.

Specification of Letters Patent.

Patented Feb. 10, 1914.

Application filed April 19, 1913. Serial No. 762,203.

To all whom it may concern:

Be it known that I, JOSIAH FRANKLIN CRANE, a citizen of the United States of America, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented a certain new and useful Improvement in Driers for Use in Manufacturing Corrugated Mailing-Board and the like, of which the following is a specification.

This invention relates to heaters or driers used more particularly in connection with the peculiar line of machinery adapted to the manufacture of double-faced corrugated paper or straw-board used for packing and mailing or shipping various articles of merchandise and especially those articles that are of a fragile or easily breakable nature, or subject to defacing or injury in transit or handling, and the object of the invention herein is to provide a simple, economical and highly effective form of drier that is adapted to concentrate the radiation of the heat in the direction of the passing product and to suitably insulate or resist any wasting radiation of the heat in the opposite direction, and a further object of the invention is to enable the ready insertion and withdrawal of the coils of pipe that carry the heating element, when it is desired not only to make up the heater initially but to repair it or disassemble it subsequently.

The details of the invention will be fully hereinafter described and then duly covered in the claims that follow.

In the accompanying sheet of drawings, Figure 1 is a plan view of the device, showing the suspending-rods thereof in cross-section and with part of the structure broken away to disclose the internal fire-clay filling and, also, some of the coils of the heater-pipe; Fig. 2, a longitudinal sectional elevation taken on the dotted-line *a, a*, of Fig. 1, but with all the parts intact; Fig. 3, a transverse sectional elevation taken on the dotted line *b, b*, of Fig. 1, but with all the parts intact; and Fig. 4, a sectional elevation showing the upper and lower driers and the supporting-frame for the lower drier.

1 indicates the base or body portion of a rectangular casing or frame that has vertical end-walls 2 and vertical side-walls 3. The said base or body portion 1 is really the ironing or heat-radiating surface of the drier and has a smooth face for facilitating the easy passage of the product in contact

or closely adjacent therewith. The casing or frame is provided with solid or enlarged corners 4 from which spring the vertical suspending or supporting rods 5 that are duly mounted in an adjustable manner in the peculiar line of machinery that is used to manufacture said corrugated paper or straw-board product. Said suspending or supporting rods 5 are shown broken off in the several views as it is not deemed necessary to show the entire machine itself in order to any better explain the invention herein. Oblique partitions 6 extend from said corners 4 to a common center or hub 7 and a vertical, central adjusting-screw 8 extends from said hub 7. The central adjusting-screw 8 and the corner suspending or supporting rods 5 are the same as those used in the said peculiar line of machinery employed in the manufacture of corrugated paper or straw-board product, and form no part of the claims herein. The partitions 6, however, form not only strengthening ribs for the structure but, also, a substantial backing for the coils of heater-pipe and the radiating heater base or plate 1.

9 indicates each one of a series of parallel tubes or pipes whose opposite ends extend through the side-walls 3 of the frame and are oppositely coupled in pairs by means of elbows 10, 10 and intermediate short tubes or lengths of pipe 11. The pipes 9 and their couplings 10, 11 form a continuous coil through the device from the steam or other heating-element inlet 12 to the steam or other heating-element outlet 13, as best seen in Fig. 1. The pipes 9 are located in the bottom of the chamber formed by the base or plate 1 and the walls 2, 3, so that the heat therefrom is directly radiated or transmitted into the said base or plate 1.

A strip or plate 14 of sheet-metal or the like is inserted in each chamber formed between the partitions 6 and the sides or walls 2, 3 of the casing, such plates 14 resting directly on the pipes 9 and serving to confine the heat from said pipes within the bottom-chambers between such plates 14 and the base or plate 1 and thereby concentrating such heat at the proper place in the drier for due radiation in the direction of the passing product against the outer face of said plate 1. The hot-air chambers provided beneath the plates 14 form important features of the invention herein, as the space around the pipes is such that there

is no loss of heat in the drier such as there is when said pipes pass through solid walls as in the structures heretofore in use.

To prevent backward radiation of the heat from the chambers beneath the plates 14 I provide a filling 15 of fire-clay or like heat-retaining material in each of the compartments between the partitions 6 and the sides 2, 3, such filling being supported by said plates 14 and then capped by means of sheet-metal plates 16 that are preferably flanged at 17, whereby bolts 18 may be employed in fastening such capping-plates 16 in place on the filling 15. Said bolts 18 pass through the partitions 6 and, also, the ends and sides 2, 3, for securing the flanged portion 17 of the capping-members 16 in place and from which they can be readily removed for inspecting or replacing the filling beneath.

In describing the drier above I have referred to it in connection with its upper position in connection with the passing product to be dried but it is obvious that the same structure is intended for use in connection with the lower surface of the product as the latter passes between a pair of such driers in the peculiar line of machinery above referred to and as shown in Fig. 4. The lower drier will not need the same suspension-rods 5 in the machine, as it is customary to support it in a manner that is not necessarily adjustable vertically, it being necessary only to adjust the upper drier vertically in the setting of the machine in condition for use. The high efficiency of the structure herein is attained by means of the filler 15 principally, such filler being preferably of fire-clay or similar heat-retaining material that is readily inserted in place in a plastic condition so as to be thoroughly spread out in the chamber that it is to occupy between the bottom-plates 14 and the capping-plates 16. It is, therefore, obvious that owing to the retention of heat within the drier with its principal

point of radiation being practically from the outer face of plate 1 only, great economy results in the use of steam or other heating-element in the pipes 9. It is further obvious that there is no waste of heat upward from the upper drier, nor downward from the lower drier, owing to the low transmitting character of the filled portions of the pairs of driers between which the product passes in its wet and pasty condition for submission to the concentrated heat in the drying process.

I claim:—

1. A device of the character described comprising a base or drier-plate having flanges or sides projecting from the back thereof, a series of heat-conducting pipes mounted on the back of said base or drier-plate within said flanges and having inlet and outlet orifices, a filler of fire-clay or like heat-retaining material covering said pipes on the back of said drier-plate within said flanges, and couplings for said pipes to form a continuous passage through the device for the heating-element.

2. A device of the character described comprising a base or drier-plate having side and end flanges or walls on its rear face or back, a central hub, partitions extending from said central hub to said flanges or walls to form chambers on the back of said drier-plate, a series of pipes or coils extending along the back of the drier-plate within said flanges and having inlet and outlet orifices, plates laid on said coils of pipe, fillings of fire-clay or like heat-retaining material laid on said last-named plates, and flanged capping members or plates surmounting said fillings in the compartments between said partitions and having suitable means of fastening to the flanges or walls of the drier-plate.

JOSIAH FRANKLIN CRANE.

Witnesses:

IRVING R. OVERLEY,
JOHN ELIAS JONES.