

Jan. 4, 1927.

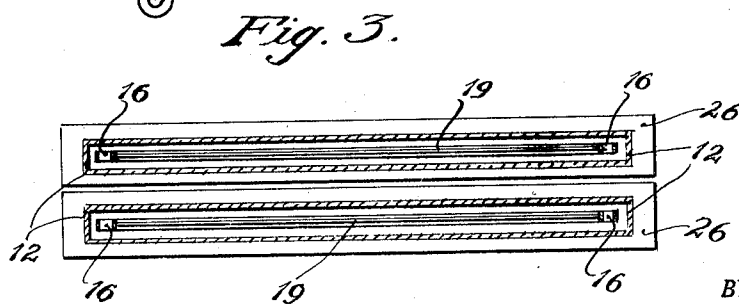
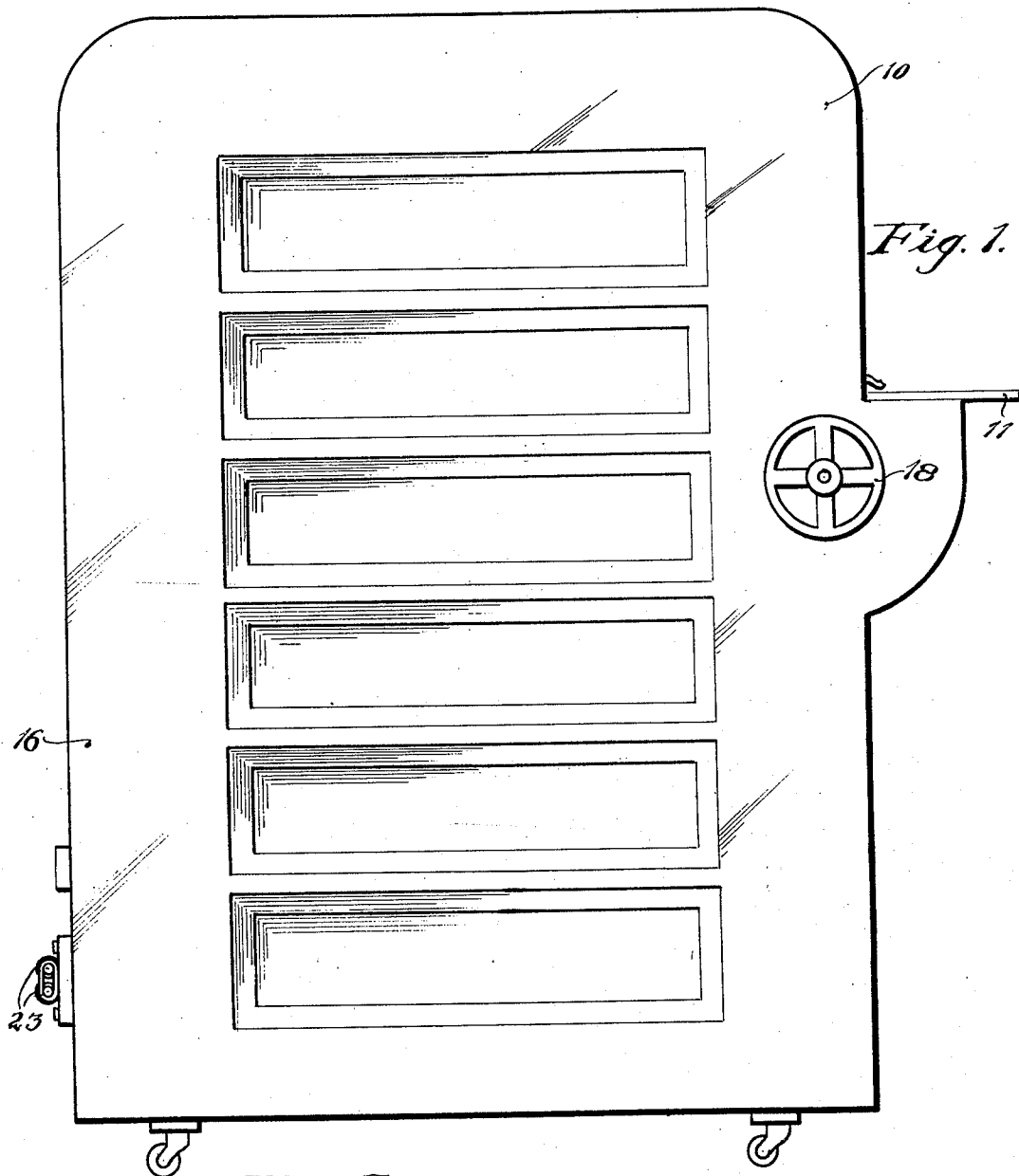
1,613,445

D. M. DAVIS ET AL

DRYING PLATE PRINTED SHEETS

Filed Dec. 30, 1924

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

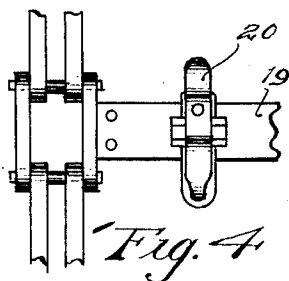
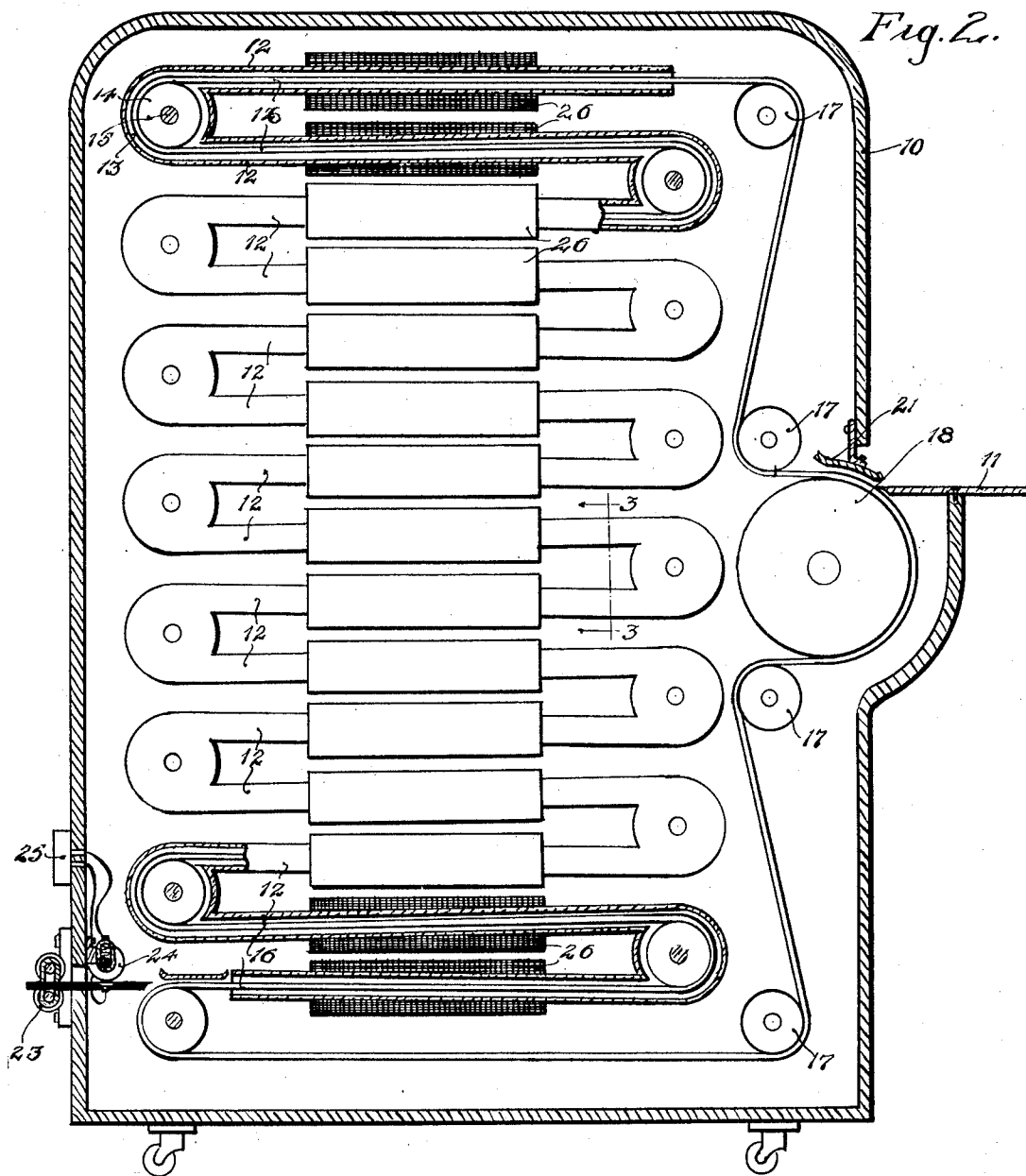


Fig. 4

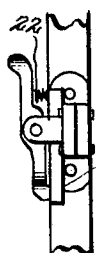


Fig. 5.

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3 Sheets-Sheet 3

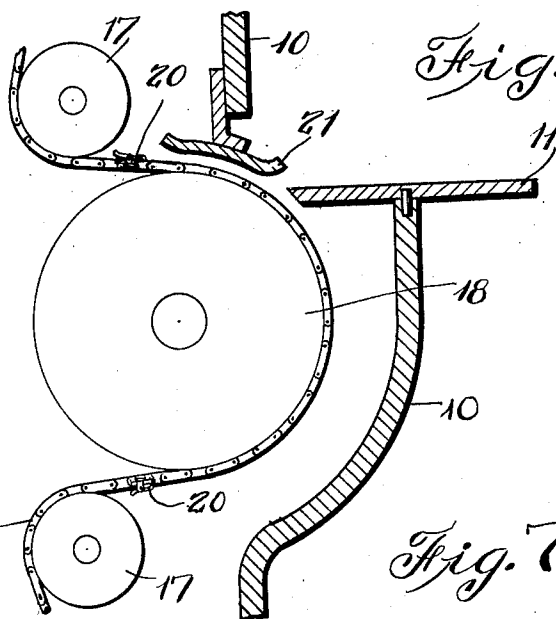


Fig. 6.

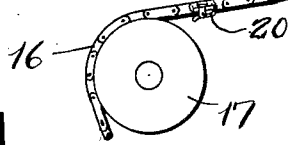


Fig. 7.

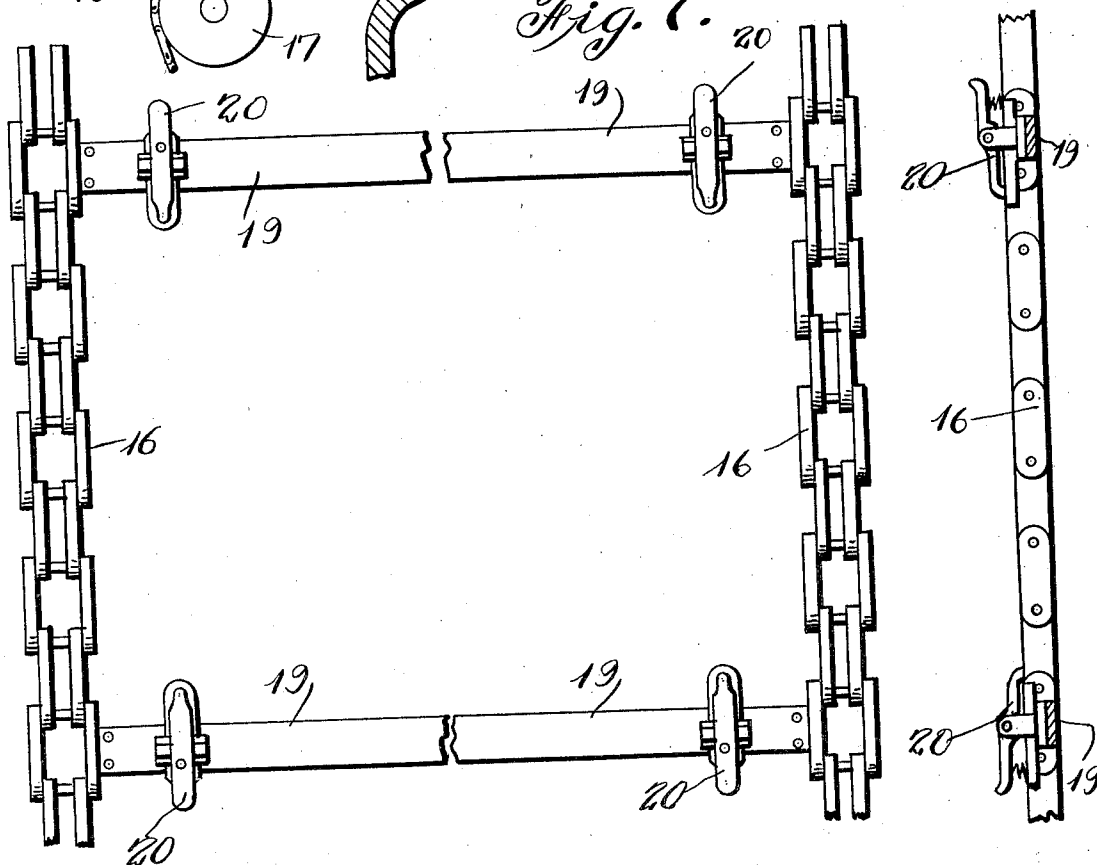


Fig. 8.

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UNITED STATES PATENT OFFICE.

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DRYING PLATE-PRINTED SHEETS.

Application filed December 30, 1924. Serial No. 758,850.

This invention relates to plate printing and has special reference to a method and apparatus for drying plate printed sheets.

In plate printing it is well known that the paper used for printing has first to be well wetted to ensure the proper dampness during the printing operation. Ordinarily the dampened sheets, after printing, are piled, one on top of the other, with tissue paper or, as technically called, "offset sheets" between them and subjected to pressure. The mass, thus formed, takes considerable time to dry.

The principal and most important objects of the present invention are to provide a novel method by which such drying operation can be quickly effected and also to provide a novel apparatus to carry this method into effect.

To do this, it is necessary to keep the separate sheets tautly stretched during the drying operation and to dry them quickly. To this end the invention consists in general of a method of and apparatus for accomplishing this purpose.

In the apparatus employed for the accomplishing of these objects there are certain novel details of construction and combinations of parts which will now be fully described, illustrated in the accompanying drawings and the method and mechanism will be hereinafter specifically claimed.

In the accompanying drawings like characters of reference indicate like parts in the several views, and:

Figure 1 is a side elevation of a machine designed to carry out this method.

Figure 2 is a vertical section thereof.

Figure 3 is a detail section on the line 3-3 of Figure 2.

Figure 4 is a detail of one of the chain attachments and a gripper.

Figure 5 is a second detail thereof.

Figure 6 is an enlarged section showing the receiving portion of the mechanism.

Figure 7 is a detail view of an enlarged scale showing a portion of the conveyor with its side chains, slats and grips.

Figure 8 is a detail section taken vertically through Figure 7.

In the present embodiment of the invention there is provided a casing 10 having at the middle of its front a feed table 11. Within this casing is a tubular chamber

12 the main portions of which are formed by flat tubes. This chamber is arranged so that these flat tubular portions are spaced vertically and terminate at connecting chambers 13, within which are idlers 14 mounted on shafts 15. These idlers support chains 16 which also run over other idlers 17 at the front of the casing and over a main drive wheel 18 located adjacent the table 11. The chains that run over these idlers are connected by cross bars 19, each of which supports two or more grippers 20 arranged for automatic opening by cams 21 adjacent the table 11 and to close by springs 22. Also at the lower rear part of the casing where the tubular chambers terminate are delivery rolls 23 and, in addition, there is provided a counting mechanism which may comprise contact roll 24 connected with a counter shown typically at 25. Each one of the chambers is surrounded by a suitable heater device 26 and it is to be noted that these heater devices are so graduated in heating intensity that they vary from one end to the other of the conduit.

Now, it will be seen that the cross bars 19 are so spaced that room is left between each pair for the sheet to be gripped and that the grippers 20 face alternately one way and the other. Consequently, when the sheets are fed in over the table 11, one set of grippers grip the top edge of such sheet while the next set grip the bottom edge thereof and hold the sheet under tension. Then the sheet is carried back and forth in the chamber and meanwhile is subjected to heat from the coils 26. The result is that, by the time the sheet passes out between the rolls 23, it is dried and stretched in a perfect condition. Furthermore, the counter 25 records the number of sheets passing through. Other grippers carried by the chains can grip the edges of the sheet also.

A current of air is preferably caused to flow upwardly through the tubular conduit, this being induced by the heating or, it can also be aided by a suitable form or blower if desired. Without restricting ourselves to details, we have found very satisfactory results to be secured by heating the upper part of the tube to 120 degrees Fahrenheit and the lower part thereof at 250 degrees Fahrenheit and allowing say $\frac{1}{2}$ to 2 minutes time for each sheet to pass through the drying apparatus.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that minor changes may be made in the form and construction of the invention without departing from the spirit thereof. It is not, therefore, desired to confine the invention to the exact form herein shown and described, but it is desired to include all such as properly come within the scope claimed.

If desired, the drive sprocket 18 can be run from the same source of power as the press, or can be run from the drive wheel of the press, although this is not necessary, and it can be run independently if desired.

The entire cabinet can be moved up to and away from a press, as desired, (e. g. for cleaning, repairs, etc.), this being facilitated by the casters shown.

Each of the heating elements is separately adjustable as is well known in the art.

Having thus described the invention, what is claimed as new, is:

1. That method of drying dampened printed sheets which consists in subjecting the sheets to stretching tension, and conveying the sheets through an air filled chamber heated at one end to a greater degree than at the other while maintaining the tension on said sheets throughout their passage through the chamber.

2. In combination, a conveyor having spaced and opposed sheet gripping fingers arranged thereon, an elongated chamber through which said conveyor passes, and means to heat said chamber.

3. In combination, a conveyor having spaced and opposed sheet gripping fingers

arranged thereon, an elongated chamber through which said conveyor passes, means to heat said chamber, a feed table leading to said conveyor, and gripping finger actuating means adjacent said table.

4. In a drier for dampened printed sheets, a conveyor including a pair of conveyor chains, means to support said chains, cross bars connecting said chains at spaced intervals, sheet grippers on alternate cross bars facing in opposite directions, a heated chamber through which said conveyor passes, and a feed table adjacent the conveyor.

5. In a drier for dampened printed sheets, a conveyor including a pair of conveyor chains, means to support said chains, cross bars connecting said chains at spaced intervals, sheet grippers on alternate cross bars facing in opposite directions, a heated chamber through which said conveyor passes, a feed table adjacent the conveyor, and means adjacent the feed tube for actuating said grippers.

6. In a drier for dampened printed sheets, a conveyor including a pair of conveyor chains, means to support said chains, cross bars connecting said chains at spaced intervals, sheet grippers on alternate cross bars facing in opposite directions, a heated chamber consisting of a sinuously arranged flat tube and through which said conveyor passes, a feed table adjacent the conveyor, and means adjacent the feed tube for actuating said grippers.

In testimony whereof we affix our signatures.

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