M. R. WILD & E. O. EHRENBERG.

DRYING APPARATUS.

APPLICATION FILED SEPT. 22, 1913.

1,085,230. Patented Jan. 27, 1914.

2 SHEETS—SHEET 1.

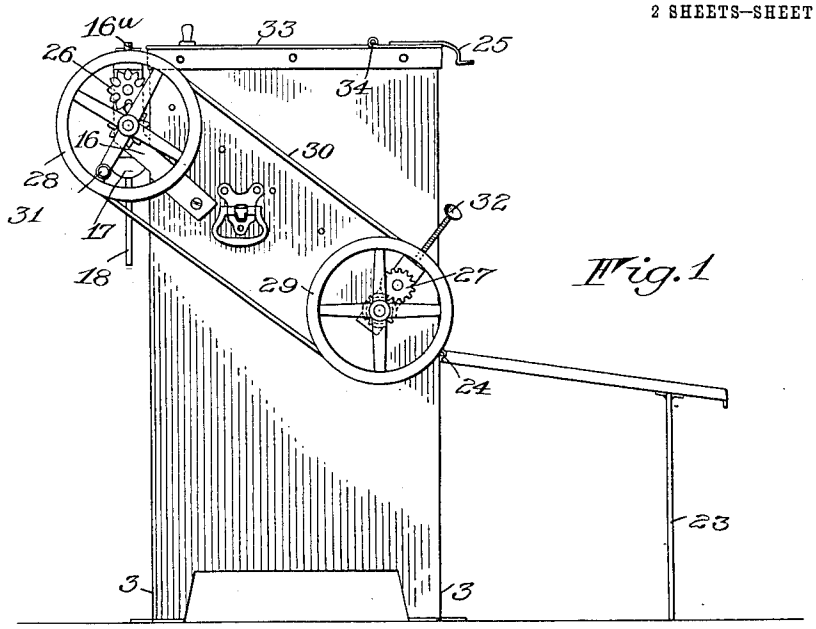

Fig. 1

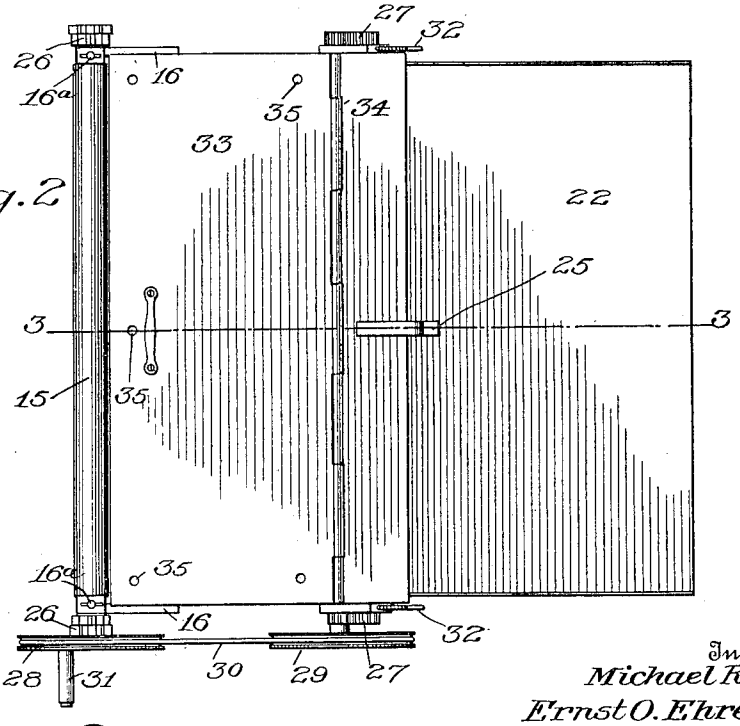

Fig. 2

Witnesses

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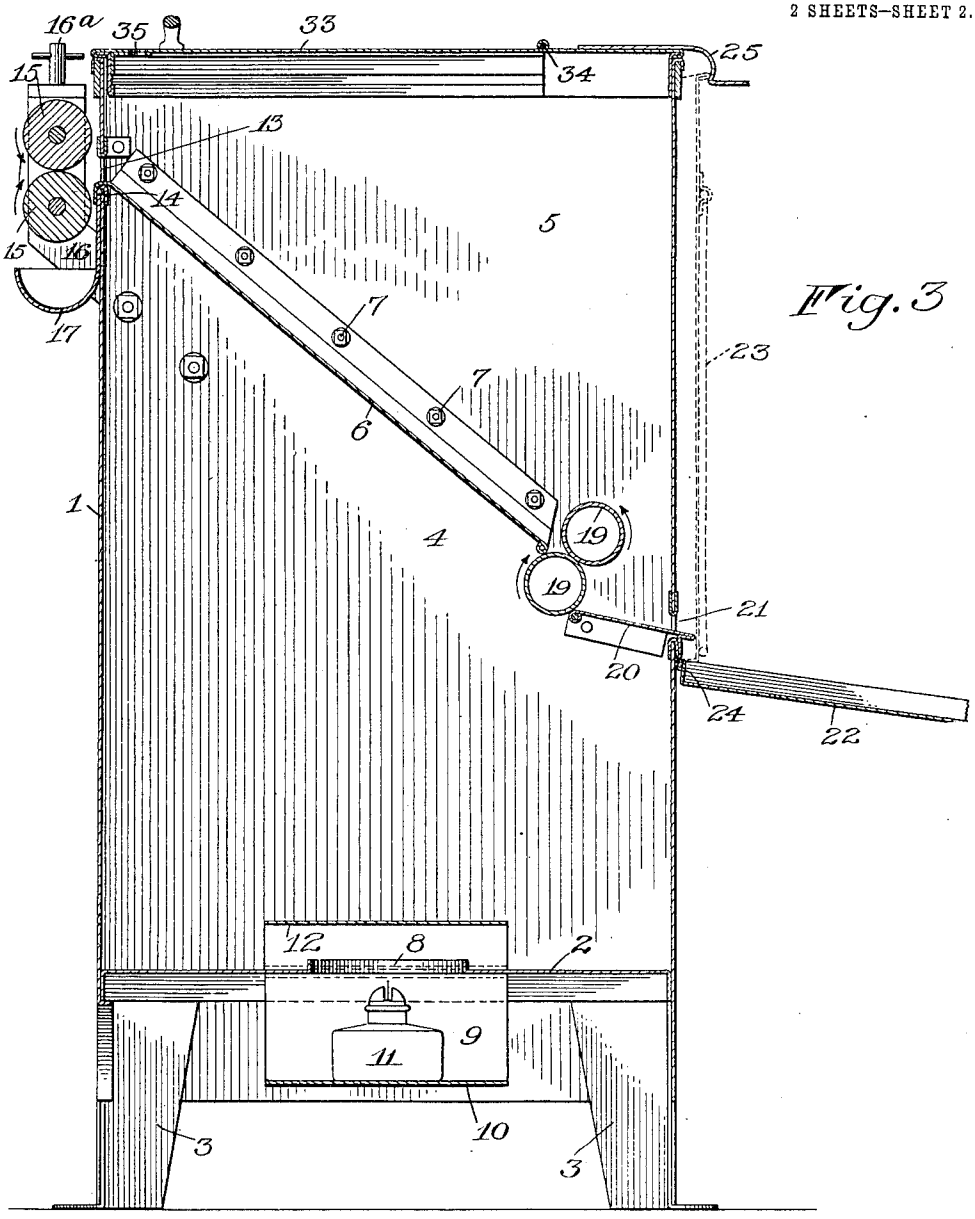

Fig. 3

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DRYING APPARATUS.

1,085,230. Specification of Letters Patent. Patented Jan. 27, 1914.

Application filed September 22, 1913. Serial No. 791,116.

To all whom it may concern:

Be it known that we, MICHAEL R. WILD and ERNST O. EHRENBERG, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Drying Apparatus; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

Our present invention relates to drying machines and it has for its object to provide a simple, cheap and efficient apparatus for drying sheet material and particularly cut sheets as distinguished from material in a continuous web.

Our improvements are more particularly adapted for use in connection with the drying of such articles as photographic prints and sheets of photographic paper which it is fitted to handle very rapidly and in quantity, one of the principal features of our machine being its ability to rapidly and automatically deliver the work after the drying operation and yet to slow it up during its passage through or over the drying medium so that the drying operation will be complete and satisfactory.

To these and other ends the invention consist in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings: Figure 1 is a side elevation of a drying machine constructed in accordance with and illustrating one embodiment of our invention. Fig. 2 is a top plan view thereof. Fig. 3 is a vertical central section taken substantially on the line 3—3 of Fig. 2.

Similar reference numerals throughout the several figures indicate the same parts.

In the present embodiment of our invention we provide a vertically disposed preferably sheet metal casing 1 having a bottom 2 supported at an elevation on legs 3. The interior of this casing is divided into a lower heating chamber 4 and the upper drying chamber 5 by an inclined drying table 6 extending from side to side and supported in any suitable manner as by the bolts 7 on the side walls of the casing. The bottom 2 of the casing is provided with an opening 8 surrounding which is a lamp casing 9 the bottom 10 of which supports a lamp 11 while the top provides a deflector or baffle plate 12 above the opening 8. In this way the chamber 4 is heated by the lamp throughout its interior although any other equivalent heating medium may be employed.

At the upper end of the drying table 6 is a feed opening or mouth 13 in the wall of the casing 1 through which a lip 14 on the table preferably extends and through which the work pieces are fed from a pair of wringer rolls 15 journaled in brackets 16 on the exterior of the casing. The pressure of the rolls may be varied by providing adjustable bearings to the upper one that are tightened or loosened by a hand screw 16 in a familiar manner. Below these wringer rolls we hang a trough 17 having a drain pipe 18 to receive and carry off the liquid expressed by the rolls.

At the lower end of the drying table 6 we arrange a pair of rolls 19 in such manner as to receive the work pieces between them from the table and to deliver them first upon a ledge 20 that further serves to separate the two chambers 4 and 5 between the rollers 19 and the adjacent side of the casing 1 and then through a discharge opening 21 in the latter. Adjacent to this discharge opening 21 we prefer to provide a receiving tray 22 for the finished work that is supported on a folding leg 23 and which may itself fold against the side of the casing as shown in dotted lines of Fig. 3 on a hinge connection 24. The tray is detained in this position by a spring clip 25 also shown in Fig. 3.

We prefer to construct the rollers 19 with smooth, hard surfaces and of a non-corroding and heat-conducting material such as brass or bronze and to arrange them substantially as shown so that their point of tangency would be common to the supporting surface of the table if extended. The members of each set of rolls 15 and 19 are driven together, the former by intermeshing gears 26 and the latter by intermeshing gears 27 and the two sets may also be driven synchronously by a driving connection embodying in the present instance pulleys 28 and 29 on the bottom rolls of the respective sets over which passes a belt 30. The pul-

ley 28 may be provided with a handle 31 for turning it or any other source of power may be obviously used.

In operation the photographic print or other wet or damp sheets are first fed between the wringer rollers 15 which express a majority of the liquid that saturates them, the same being drawn off by the trough 17. From the rolls the work pieces pass onto the heated table 6 at its upper end and being damp or moist they have a tendency to cling thereto until at least partially dried. As they become drier they proceed down the table at an increasing rate of speed and but for the rolls 19 would in most cases issue onto the receiving tray 22 before they had become thoroughly dry. The rolls 19, however, being driven slowly arrest their progress and hold them for an additional length of time on the table at the lower end thereof so that the drying operation becomes complete. In fact if the work is of a character to long resist the drying action the revolving of the rolls may be stopped after a batch of work is fed onto the upper end of the table and the same held indefinitely on the latter by their tendency to back against the rollers 19. At any time, however, these last named rollers can be rotated to quickly deliver the sheets onto the ledge 20 and thence through the discharge opening 21 to the receiving tray 22 in a finished condition.

The lower roll 19 being exposed to the heat in the chamber 4 as shown and being of a heat-conducting material, both rolls become heated and therefore become in a measure drying elements that further the functions of the table 6, besides which they serve to iron or flatten the work in the present embodiment and to burnish the work and give it an acceptable finished appearance. For these and other reasons the bearing of the upper roll 19 is also made adjustable similarly to the corresponding wringer roll 15 by means of a hand screw 32.

A cover 33 for the casing 1 hinged at 34 gives access to the interior of the drying chamber 5 when required and also serves as a means for quickly ventilating the chamber although under ordinary conditions the saturated condition of the air therein is relieved by a small opening 35 provided in the cover or top and which completes the circulation of air entering at the lower openings such as the openings 8 and 21.

A drying machine constructed in accordance with our invention may be produced at low cost and by its aid large quantities of work, such, for instance, as postal photos, may be expeditiously dried quickly and in a satisfactory manner at a low cost of maintenance.

We claim as our invention:

1. In a drying apparatus of the character described, the combination with an inclined drying table down which the work pieces will gravitate, of means for heating the table and means for slowing up the descent of the work pieces.

2. In a drying apparatus of the character described, the combination with an inclined drying table down which the work pieces will gravitate, of means for heating the table and a revolving element arranged in the path of the work pieces for slowing up their descent.

3. In a drying apparatus of the character described, the combination with an inclined drying table down which the work pieces will gravitate, of means for heating the table and a pair of revolving rolls arranged in the path of the work pieces and adapted to receive the latter between them to slow up their progress through the apparatus.

4. In a drying apparatus of the character described, the combination with an inclined drying table down which the work pieces will gravitate, and means for heating the table, of a pair of revolving rolls at the lower end of the table between which the work pieces pass before they leave the table.

5. In a drying apparatus of the character described, the combination with an inclined drying table down which the work pieces will gravitate and means for heating the table, of a pair of wringer rolls at the upper end of the table adapted to deliver to the latter, a pair of rolls at the lower end of the table between which the work pieces pass before they leave the table to check their descent and driving connections between the two sets of rolls.

6. In a drying apparatus, the combination with a casing and an inclined drying table extending transversely thereof and dividing the casing into an upper drying chamber and a lower heating chamber, of a heating medium for the heating chamber and a pair of rolls at the lower end of the table between which the sheets are received before they leave the table, one of said rolls being exposed to the heat of the heating chamber.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."