

May 20, 1930.

A. W. CAPS

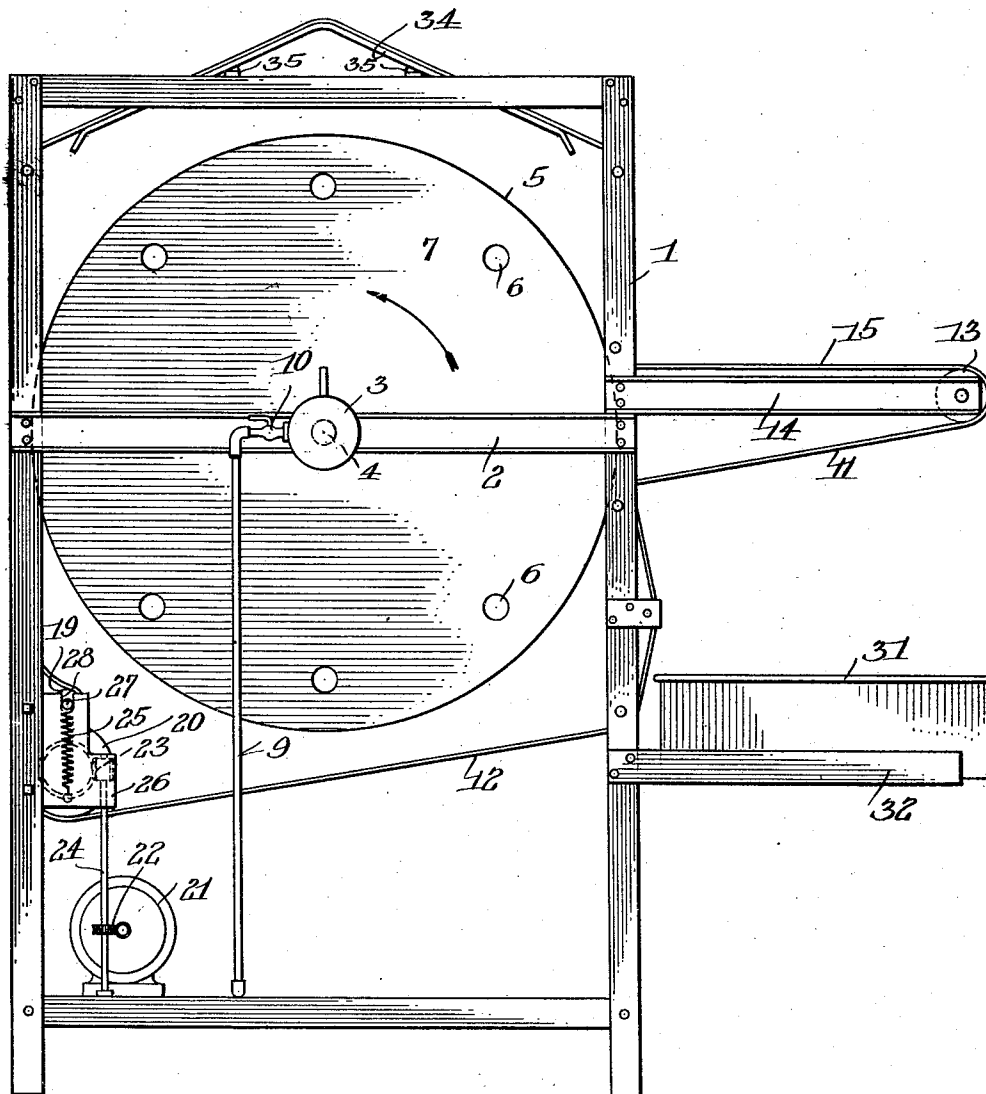
1,759,092

APRON DRIER

Filed July 31, 1928

2 Sheets-Sheet 1

Fig. 1



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2 Sheets-Sheet 2

Fig. 2

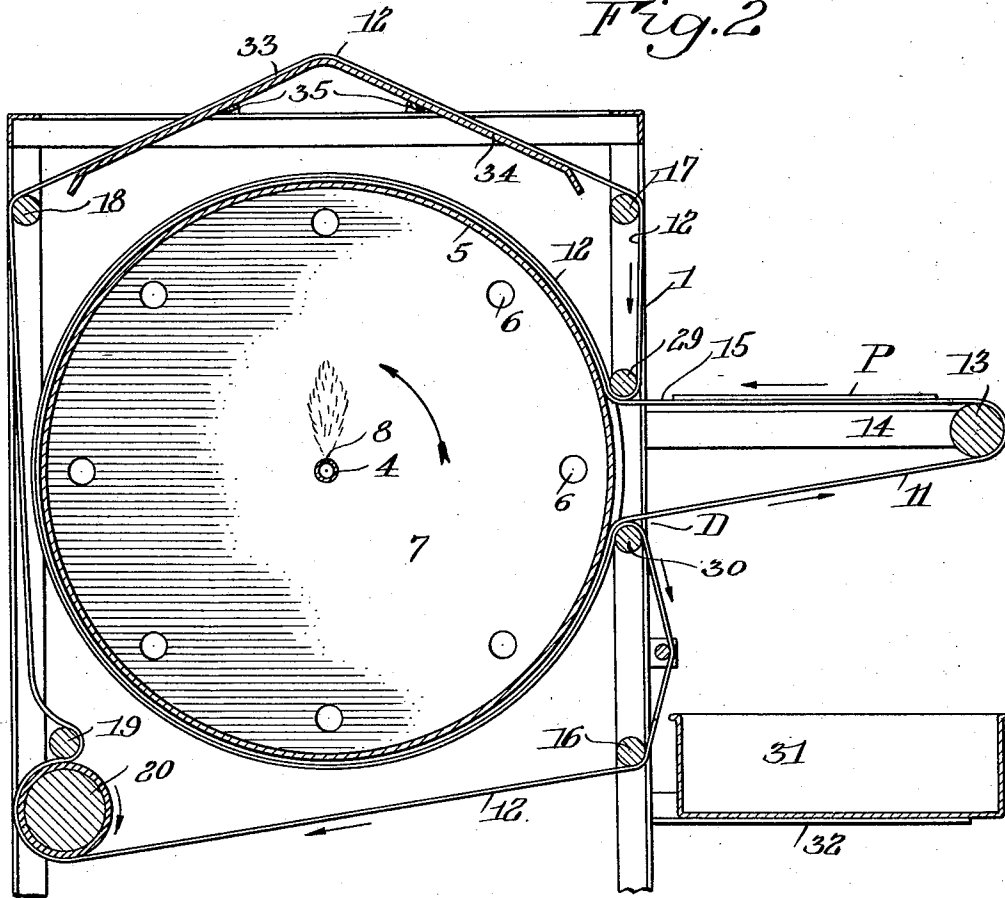
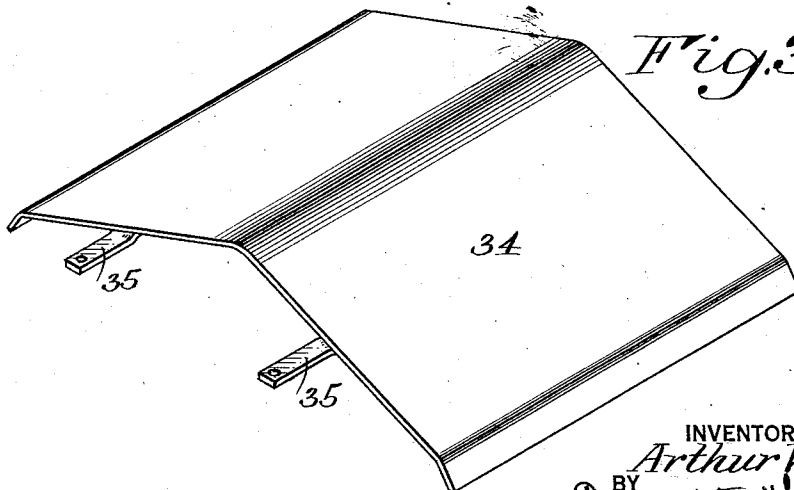


Fig. 3



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APRON DRIER

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My present invention relates to drying apparatus, and more particularly to apron driers of the type in which preferably two aprons travel endlessly about a heated drum and carry with them thin flat articles, such as photographic prints to be exposed to the heating and drying effect of the drum, and the invention has for its object to provide simple and efficient means for thoroughly drying one of the aprons after it has left the drum and is returning to its initial work receiving position; to protect the apron from further collecting moisture by reason of the vapors rising from the drum, and to condense the vapors. To these and other ends the invention consists 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 an end view of a drier constructed in accordance with, and illustrating one embodiment of my invention;

Figure 2 is a vertical central section through the drier, partly broken away taken in a direction from front to rear transversely of the axis of the drum and in a direction of travel of the aprons, and

Figure 3 is a perspective view of a baffle plate and guide which is used in the present embodiment to effect the objects of my invention.

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

The machine illustrated as an embodiment of the invention has been designed for the particular purpose of drying photographic prints after they have been developed and washed. It embodies a rectangular open frame work 1 having cross rails 2 in which are supported the boxes 3 of a transverse axle 4 carrying a hollow drum 5 provided with ventilating or flue openings 6 in its heads 7. The axle 4 is hollow and constitutes a gas burner for heating the drum being provided with jet openings 8 as shown in Figure 2. By a suitable connection this burner axle is supplied with gas from a pipe 9 provided with a shut off cock 10.

In the present instance, two conveyor aprons 11 and 12 are used for carrying the print around the drum. They may be of canvas cloth or other permeable flexible material of about the width of the baffle plate shown in Fig. 3. The loop of the inner belt 11 is supported at the front of the machine by a guide roller 13 carried by a bracket arm 14 extending from the frame 1. It travels in the direction shown by the arrows and its upper exposed flight as it passes from the roller 13 to the drum provides a flat horizontal table 15 upon which the wet print indicated at D is placed to be carried into the machine. This belt or apron, as will be seen, travels in direct contact with the surface of the drum 5.

The outer belt 12 is supported on guide rolls 16, 17, 18 and 19 and a drive roll 20, all turning in bearings in the frame 1. The driving roll 20 turns in the direction shown by the arrow and exerts its force in a drawing action that pulls the wet outer belt from the drum and drives both the latter and the other belt 11. It is itself operated, in the present instance, from a suitably arranged motor 21 on the frame through worm gearings, indicated generally at 22 and 23, on a shaft 24. The guide roll 19 just above this driving roll 20 is pressed against the latter through springs 25 connected to bearing brackets 26 on the frame and to the trunnions 27 of the guide roll 19 resting in open bearing 28.

As shown by the arrow, this outer apron 12 travels downwardly at the front converging toward and meeting the table portion 15 of the apron 11 at a guide roll 29 over which both aprons pass in superposed relationship onto the drum 5 with the prints P confined between them. The travel of the drum and aprons is relatively slow and the print is dried during one revolution. The print is delivered after such revolution at the point D where the aprons diverge to take their respective paths in jointly passing over a final guide roll 30 similar to and just below the guide roll 29. The dried print falls into a box or suitable receptacle 31 provided for the purpose and supported upon bracket arms

32 extending forwardly from the frame 1 or the prints may be otherwise removed.

Upon leaving the drum at the delivery point D, the outer apron 12 takes the outside path shown and after being drawn around the driving roll 20 passes slackly around the guide roll 19 and upwardly to where it is stretched in a flight indicated at 33 from guide roll 18 forwardly to guide roll 17 in spaced relation to and directly above the drum. At this point this flight of apron would ordinarily be exposed to the steam or vapors rising from the drum and accumulate moisture just at the place where it should be finally and effectively dried on its return to the feeding point to pick up another print. In the practice of my invention I avoid this result and work the escaping steam to advantage through the provision of a baffle plate and guide for the apron 12, shown in perspective in Fig. 3. This baffle plate is preferably of the tented or dome shape shown and is held in spaced relationship to the drum by means of bracket arms 35 by which it is supported on the frame 1. This baffle plate effectively protects the returning flight 33 of the outer apron from the steam rising from the drum which either escapes through the open ends of the baffle or is condensed thereon. Not only this but this rising hot vapor communicates its heat to the metallic baffle 34 which in turn communicates it to the apron travelling on its surface and further dries it at the last moment instead of moistening it as would otherwise be the case.

The result of this arrangement is that a hitherto deleterious effect is converted into an advantageous result whereby the belt 12 emerges for the following cycle of operation in a more thoroughly dried condition than it otherwise would.

I claim as my invention:

1. In a drier, the combination with an open frame and a heated drum rotatably mounted therein, of a pair of endless aprons having a superposed running relationship on said drum, supports for the respective aprons upon which they converge on passage to the drum and diverge upon leaving the drum, one of said aprons having a return flight above and in spaced relationship to the drum, means comprising a single relatively thin member beneath and relatively close to said return flight for condensing vapors rising from the drum before they reach said flight and for utilizing the heat resulting from such condensation for heating said flight, and means for driving the aprons.

2. In a drier, the combination with a heated drum, of a pair of endless aprons having a superposed running relationship on said drum, supports for the respective aprons upon which they converge on passage to the drum and diverge upon leaving the drum, one of said aprons having a return flight

above and in spaced relationship to the drum, a baffle plate interposed between the drum and said upper flight and upon and against which the latter rides, said baffle plate deflecting vapor rising from said drum and being heated thereby to heat said upper flight, and means for driving the aprons.

3. In a drier, the combination with a heated drum, of an endless apron travelling on the drum and having a self-drying path encircling the latter including an upper return flight above and in spaced relationship to the drum, a baffle plate interposed between the drum and said upper flight and upon and against which the latter rides, said baffle plate deflecting vapor rising from said drum and being heated thereby to heat said upper flight, and means for driving the apron.

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