Oct. 6, 1959 G. KANE 2,907,119

DRIER FOR PRINTED WEBS

Filed March 5, 1957

Fig. 1

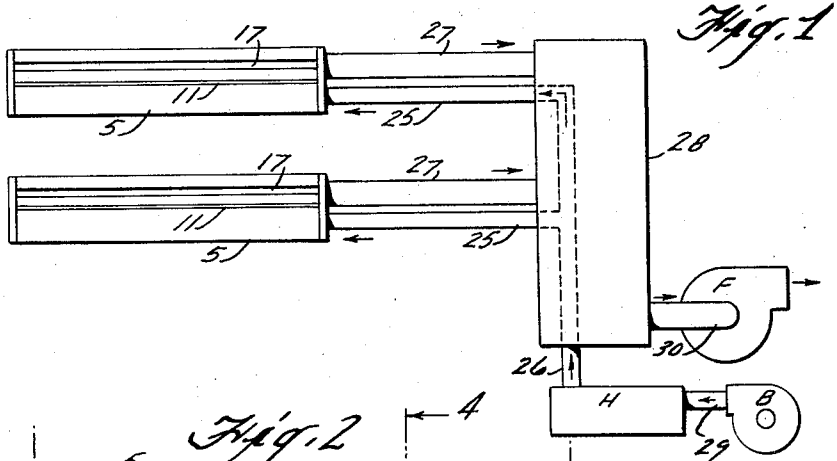


Fig. 2

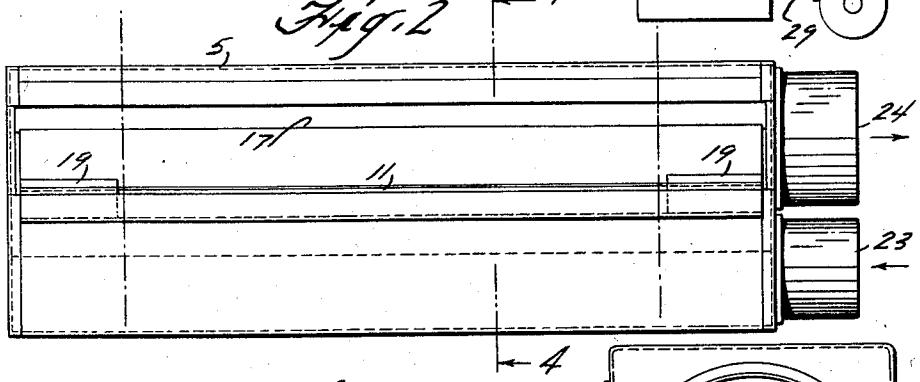


Fig. 4

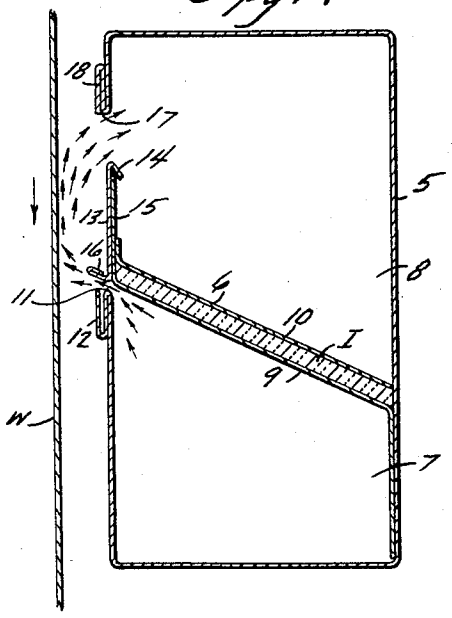
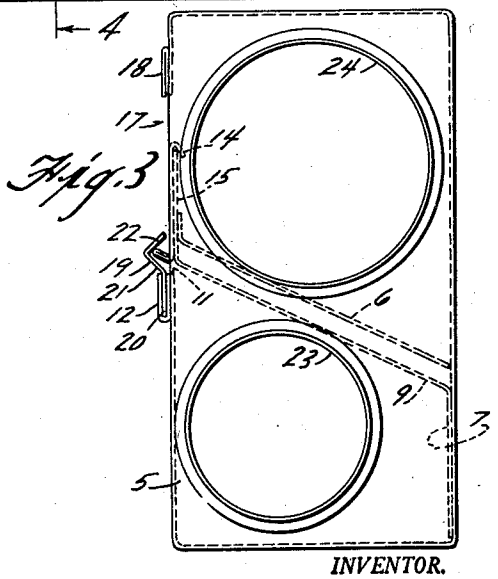


Fig. 3



INVENTOR.

Gideon Kane

BY

Louis O. French

Atty.

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DRIER FOR PRINTED WEBS

Gideon Kane, Green Bay, Wis.; Sylvena Kane administratrix of said Gideon Kane, deceased

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2 Claims. (Cl. 34—160)

The invention relates to web type printing presses and more particularly to a drying assembly for drying the printed web of paper or other flexible material as it proceeds through the press after being printed.

The main object of the invention is to provide a printed web drier having a housing provided with a heated air inlet chamber and an exhaust air chamber, the inlet chamber having a narrow slit or nozzle for directing heated air from the inlet chamber against the printed surface of the web and the exhaust air chamber having an elongated inlet opening, the inlet chamber being connected with a forced air supply of heated air and the exhaust air chamber preferably being connected to a power operated exhauster or suction fan.

The invention further consists in the several features hereinafter described and more particularly defined by claims at the conclusion hereof.

In the drawings:

Fig. 1 is a view of a pair of drier units connected in circuit with heated air supply and exhaust apparatus;

Fig. 2 is an enlarged front elevation view of a drier unit;

Fig. 3 is an end elevation view of the drier unit shown in Fig. 2;

Fig. 4 is a detailed vertical sectional view taken on the line 4—4 of Fig. 2 as it is disposed relative to the printed web to be dried.

Referring to the drawings, the drier unit includes a sheet metal housing 5 having an inclined partition 6 therein dividing it into a heated air chamber 7 and an exhaust air chamber 8. The housing 5 is longer than it is high and may have a rectangular form, though other forms may be used without departing from the invention. The partition 6 is formed by a pair of thin metal sheets 9 and 10 constructed and arranged as shown in Fig. 4 and having mounted between a board or block of suitable heat insulating material I. Adjacent the upper end of partition 6, the front wall of the housing is formed to provide a slit or nozzle opening 11. One side of this opening is formed by a reversely bent front side of the housing to provide a lengthwise extending channel 12. At the other side of the opening 11 a lengthwise extending metal plate 13 is provided having a hooked end 14 that engages over the upper end of a front wall extension 15 of the sheet 9, said plate extending down alongside this sheet and terminating in a flanged air deflector or guide edge 16 extending outwardly from the slit 11 in alinement with the inclined portion of the sheet 9. The width of the slit has been exaggerated in Fig. 4 and in practice is about one-sixteenth to one-eighth of an inch wide. The housing has a lengthwise extending exhaust slot or opening 17 formed at one edge by parts previously described and the upper flange reinforced edge 18 of the front face of the housing. The width of the opening 17 is several times greater than the width of opening 11, being in practice from six to twelve times greater.

The opening 11 is long enough to accommodate the widest printed webs met with in practice, and for lesser

widths of webs one or more blocking members 19 may be used. Each of these members has a tongue portion 20 adapted to engage in the channel 12, an obturating portion 21 and a flange portion 22 that is adapted to engage over the outer edge of the guide edge 16, whereby each blocking member is slidably mounted on the front face of the housing to adjustably determine the effective length of the opening 11. The nozzle opening 11 is preferably directed upwardly against the downwardly moving printed web W, the housing being suitably supported relative to the printing press for this purpose.

One end of the housing is provided with a tubular air inlet pipe fitting 23 and a similar exhaust air outlet fitting 24 which in practice are each connected by suitably flexible pipes (not shown) to the air supply and exhaust apparatus.

As shown in Fig. 1, the air inlet to the chamber 7 is connected in each instance by a pipe 25 to a supply pipe 26 and the exhaust air outlet to chamber 8 by a pipe 27 that connects with a regenerator housing 28. A heater H of any suitable construction, using gas, oil, coal or electricity as the heating medium, is connected with the pipe 26 and with a pipe 29 supplied with air from a motor driven blower B. The housing 28 has an exhaust pipe 30 that connects with a motor driven exhaust fan F.

With the above construction, air from the blower B is delivered under blower pressure to the heater H, and this heated air then passes through pipe 26 and pipes 25 to the air chambers 9 of the drier indicated in Fig. 1, and as shown in connection with one of the drier units, this air is forced out of the chamber 9 through the nozzle 11 against the web 10 in a direction opposite to the movement of said web to dry the same, and then through the action of the fan F, after traveling upwardly along the web, is drawn into the opening 17 of the chamber 8 and through the pipes 27 into the housing 28 and out through the pipe 30 past the fan to atmosphere. The inlet air may be quite highly heated in the heater, for example, the air issuing from the nozzle 11 may be at a temperature of 450° F. so that when this highly heated air strikes the web and its moisture carrying ingredients, such as printed ink, the web will be quickly dried and consequently, the web may be run at a high speed without danger of smudging, so that greater production of printed material may be had as compared to the usual printing presses. The capacity of the exhaust fan is twice that of the blower delivery so that all fumes in the drying area are carried away.

While the air chambers 7 and 8 are preferably formed as parts of a single housing, they could be formed as separate compartments arranged in juxtaposed position without departing from the invention.

I desire it to be understood that this invention is not to be limited to any particular form or arrangement of parts except in so far as such limitations are included in the claims.

What I claim as my invention is:

1. Drying apparatus for a freshly printed traveling web comprising an elongated housing having a front and a back wall, and a transversely extending partition extending upwardly from the back wall of said housing to the front wall thereof and dividing said housing into a lower inlet compartment and an upper outlet compartment, means for supplying said inlet compartment with heated air under pressure, means for exhausting air from said outlet compartment, said inlet compartment having a transversely disposed nozzle outlet coextensive with the web to be dried for directing heated air against and along the web in a direction opposed to its movement, a flange extending along the front wall of the housing and disposed along a transverse edge of the nozzle outlet

in alignment with the plane of the lower surface of said partition, said outlet compartment having an inlet in the front wall of the housing extending transversely of the web and of greater area than the nozzle for withdrawing air from the region where it passes along the web rearwardly of said nozzle.

2. Drying apparatus as defined in claim 1, said apparatus further comprising a transversely extending plate depending from said front wall at one edge of the inlet to said outlet compartment and having a flanged edge forming an outwardly extending inclined outer guide edge aligned with the lower surface of said partition.

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