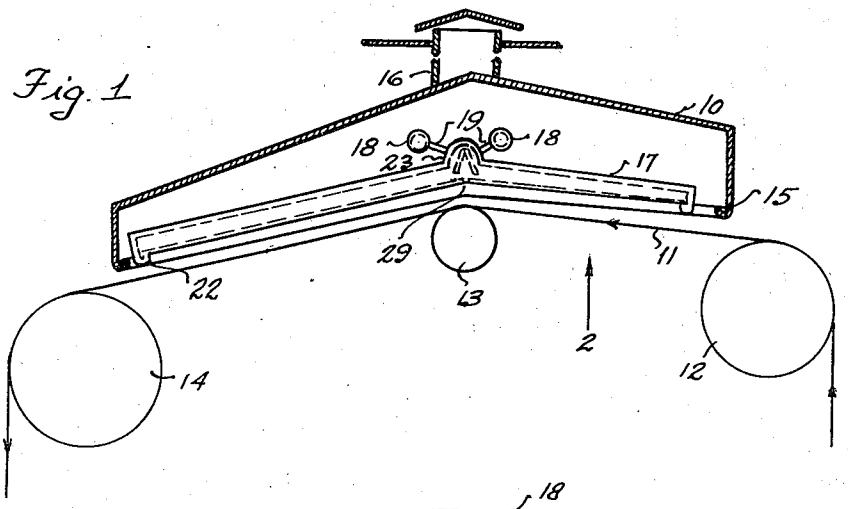
Nov. 30, 1948. K. WEIK 2,454,903

STEAMING OR VAPORIZING MEANS

Filed Oct. 8, 1945 2 Sheets-Sheet 1

Fig. 1



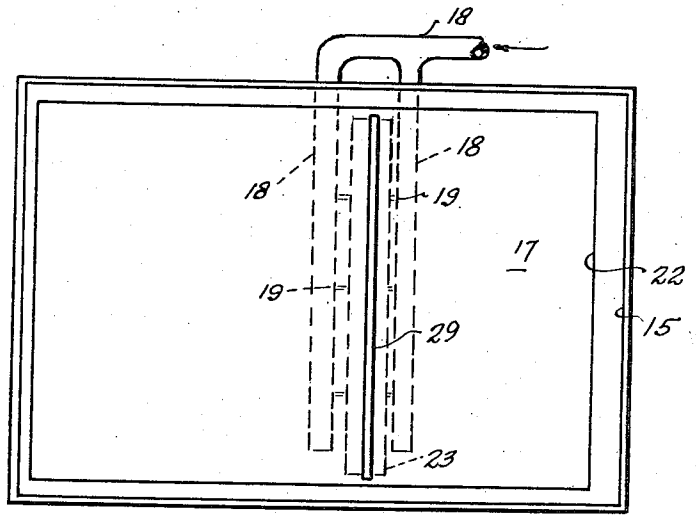


Fig. 2

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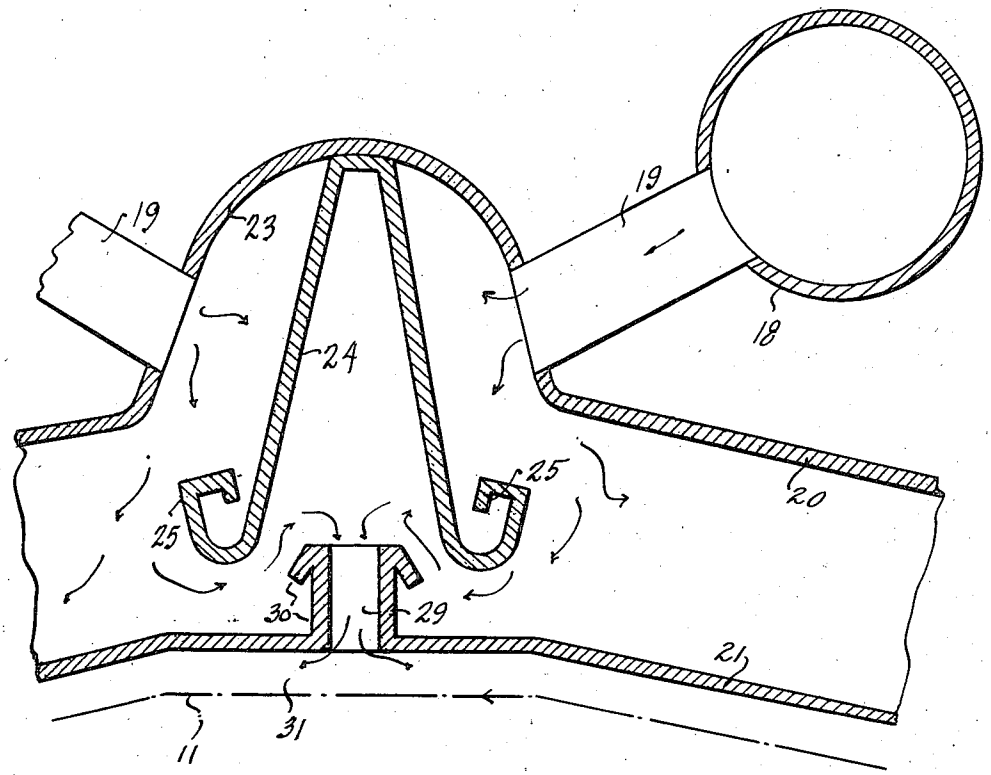

Fig. 3

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2,454,903

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2,454,903

STEAMING OR VAPORIZING MEANS

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Application October 8, 1945, Serial No. 620,948

1 Claim. (Cl. 34—79)

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This application relates to steaming or vaporizing means, particularly adapted for quick drying or quick setting of ink on a travelling web of paper or the like.

Ink is known which may be quickly dried or set after it is applied to a travelling web of paper or the like by the application of live steam or water vapor. Apparatus now known for applying steam to a recently inked travelling web or paper comprises nothing more than one or more perforated steam pipes from which live steam emerges to impinge directly on the travelling web. Such apparatus has not been found too satisfactory for the purpose. Live steam impinging directly on the paper, and condensate from live steam making contact with the paper produces isolated and numerous weak spots on the paper which considerably weakens the paper. The live steam tends to foul and rust the apparatus.

In this application I disclose an apparatus for steaming or vaporizing a recently inked travelling web of paper which is so constructed that no steam is impinged directly upon the paper nor is steam condensate permitted to spot the paper and create spots of weakness.

For an understanding of the apparatus herein disclosed reference should be had to the appended drawing. In these drawings,

Fig. 1 is a diagrammatic view showing a travelling web and my steaming or vaporizing apparatus directly above it;

Fig. 2 is a bottom plan view of the apparatus of Fig. 1, as if in the direction of the arrow 2 of Fig. 1, with the travelling web omitted;

Fig. 3 is an enlarged cross section view of a principal portion of the apparatus.

Referring to the drawings, it will be seen that Fig. 1 shows at 10 a sheet metal hood overlying a travelling web 11 of paper or the like as the latter passes from the printing or impression roller 12 over an idler roller 13 to a cooling roller 14 from which the web passes to a winding means not shown.

The hood has four sides and a top, but is open at the bottom. The lower edge of the hood, on all four sides, is flanged inwardly, as shown at 15, to form a gutter or drip trough, for condensate, and suitable drain pipes, not shown, are provided.

The hood 10 has an exhaust port 16 opening to a point remote from the printing machine in which the apparatus here shown is incorporated, preferably above the roof of the building housing the machine. Within the hood is a steam

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box referenced generally 17 and supplied with steam from the steam inlet pipes 18 which communicate with the interior of the box through a series of ports 19.

The steam box is shown in greater detail in Fig. 3. It is a shallow box of considerable area so as to have a considerable length along the web and so as to have a width at least equal to the inked part of the web. It consists of large shallow marginally flanged top and bottom plates 20 and 21 joined to form a large area hollow box of slight depth or height. Its lower edge is marginally flanged inwardly on all four sides, as shown at 22, to form a gutter or drip trough for condensate, and suitable drain pipes, not shown, are provided. Approximately midway between its front and rear ends, the top of the box is enlarged to form a hump or shell 23 extending across the box and containing deflectors 24. The lower edges of these deflectors 24 are also flanged, as at 25, also to provide gutters. The deflectors 24 prevent steam entering the shell 23 from impinging directly upon the web 11 which is exposed to the interior of the box through a narrow slot 29 formed in the lower plate 21, and extending across the web from one side edge of the box to the other. The slot admits live steam from within the box to the space 31 between the box and the web 11. The side edges of the slot 29 are flanged, as indicated at 30, to prevent steam entering the box through the ports 19 from impinging directly on the web exposed at the slot 29.

The box is completely sealed, except for the slot 29, and this slot is approximately midway between the forward and rear ends of the box to enable the web to be preheated by the forward part of the box before it reaches the slot and to enable the web, which is steamed at and near the slot, to be heated by the rear part of the box after it passes the slot.

The steam box prevents steam which enters the space 31 through the slot 29 from condensing in such space and producing weak spots on the web where the condensate drops onto the web.

Now having described the steaming or vaporizing apparatus herein disclosed, reference should be had to the claim which follows:

I claim:

Apparatus for steaming or vaporizing a recently inked travelling web of paper comprising a steam box having a considerable length along the web and having a width at least equal to the inked part of the web, said box being hollow, the wall of the box nearer the web being closely

adjacent the web and having a narrow slot extending across the web and communicating the interior of the box with the space between said wall and said web, said box being completely sealed except for said slot, means for introducing steam into the box, and deflectors in said box adjacent said means for preventing entering steam from impinging directly on said web through said slot, said deflectors including flanges at the edges of the slot projecting from the slotted wall of the box towards the opposite wall, and formations projecting from said opposite wall towards the flanges, said slot being approximately midway between the forward and rear ends of the box whereby the web may be preheated by the forward part of the box before it reaches the slot and whereby the web, steamed at the slot, may be heated after it passes the slot by the rear part of the box, and an exhaust hood closely surrounding said box for exhausting steam from the space between the web and the box.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
379,009	De Rycke	Mar. 6, 1888
1,914,024	Kasanoff	June 13, 1933
2,225,505	Offen	Dec. 17, 1940
2,298,803	Morris	Oct. 13, 1942
2,347,555	Greene	Apr. 25, 1944
2,402,237	Carder	June 18, 1946

FOREIGN PATENTS

Number	Country	Date
257,449	Great Britain	Sept. 2, 1926