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C. W. GRIMM

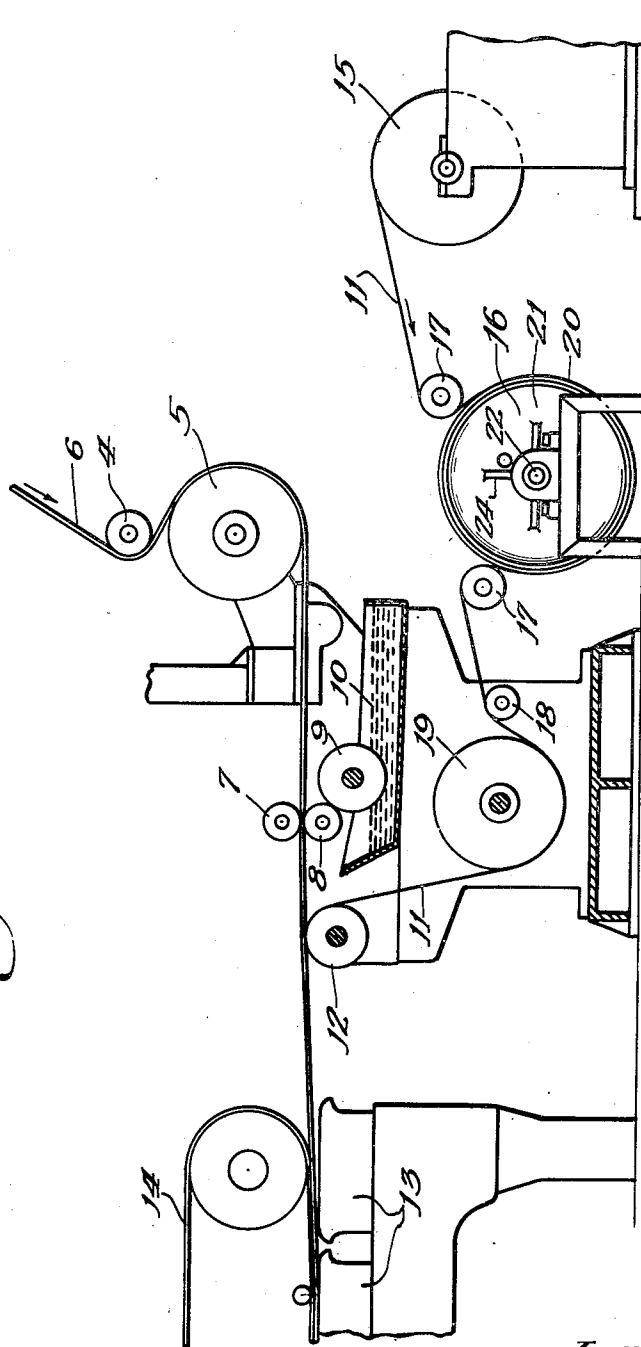
2,374,745

HIGH PRESSURE STEAM PREHEATER ROLL

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Fig. 1.



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Fig. 2.

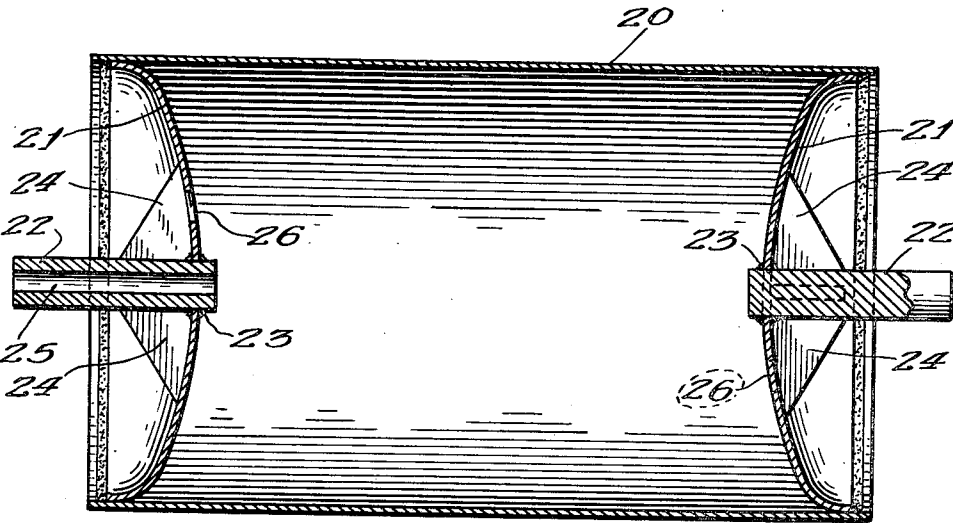
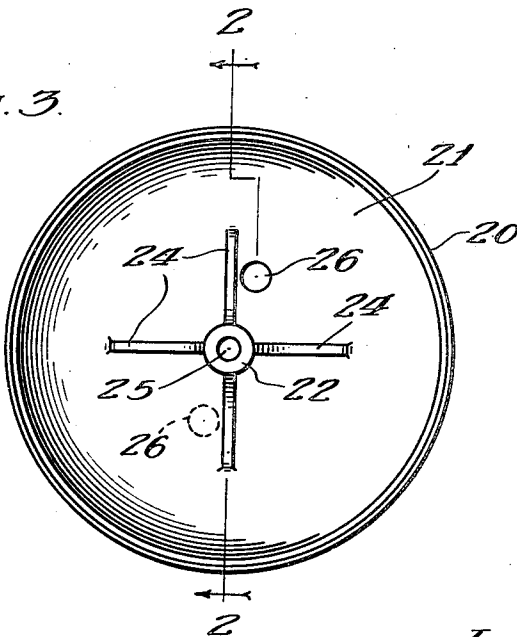


Fig. 3.



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UNITED STATES PATENT OFFICE

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HIGH-PRESSURE STEAM PREHEATER ROLL

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1 Claim. (Cl. 257—95)

This invention relates to apparatus for making strips of corrugated paper having a single or double paper facing, and more particularly to an improved roll for conditioning the paper before gluing, which is heated with high pressure steam. The roll is adapted to stand an internal pressure of 150 pounds per square inch, which corresponds with a temperature of about 359° F.

The primary object of the invention is to provide an improved preheater roll of strong but relatively light construction, wherein a smoothly polished cylindrical body is secured to concavo-convex heads having stub shafts which serve as journals for the balanced roll.

The invention is illustrated in a preferred embodiment in the accompanying drawings in which—

Figure 1 is a diagrammatic vertical sectional view of a portion of a corrugating unit, showing one position in which the improved preheater may be placed; Fig. 2, a vertical sectional view of the preheater roll taken as indicated at line 2—2 of Fig. 3; and Fig. 3, an end elevational view of the preheater roll.

As shown in Fig. 1, a corrugating unit may have a guide roll 4 and a heater roll 5, about which a corrugated strip 6 may be led, and a pressure roll 7 holds the strip in contact with a gluing roll 8, which is in contact with a roll 9 which dips into a pot of glue 10. The corrugated strip 6 is brought into contact with a facing strip of paper 11 at the roll 12, and the assembly is then passed over a heating unit 13, and is held in contact therewith by belt conveyor 14.

The paper strip 11 is borne from the roll 15 around the high pressure steam preheater and conditioner roll 16 by means of guide roll 17, and about a heating roll 18 to the roll 12.

The present invention is concerned primarily with the preheater 16 which heats the paper strip 11 by contact, and may evaporate some of its moisture so that it will adhere readily to the freshly glued portions of the corrugated strip 6. If there is sufficient room, heating roll 18 may be removed and the roll 16 inserted in its place.

As shown in Figures 2 and 3, the preheater roll has a cylindrical metal body 20, which is welded to a pair of inwardly dished heads 21. The center of each head is bored to receive a stub shaft 22, and said shafts are welded to the heads as indicated at 23, and are provided with welded

reinforcing ribs 24 to make a strong rigid connection.

After the roll has been assembled and the shafts 22 properly aligned, the outer face of the body 20 is turned down into alignment and then smoothly polished. This preheating roll is preferably from 26 to 36 inches in diameter, and from 6 to 8 feet in length. As it is designed to turn idly from the movement of the paper strip 11, it is balanced carefully about the journals by adding weights to the heads after the outer face of the roll has been finished.

One of the shafts 22 is hollow, as indicated at 25 to receive a high pressure steam connection (not shown). It will be understood that a stationary drain pipe is provided through the opening 25 to the bottom and inside of the roll 20, to remove water which condenses from the steam. If desired, each of the heads may be drilled and tapped, as indicated at 26, to receive a pipe plug.

It has been found that running speed of the stationery may be increased from 50 to 60 per cent by use of the preheating roll, which usually operates at a temperature from 180 to 200° F. Its larger diameter allows ample time for paper to be heated and conditioned while in contact with it, and its light and improved construction permits it to rotate idly without difficulty.

The foregoing detailed description is given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, for some modifications will be obvious to those skilled in the art.

I claim:

35 In a corrugating unit for making corrugated paper strip assembly, a balanced high-pressure steam preheater and conditioner roll comprising: a hollow metal cylindrical body having a polished outer surface to engage a paper strip, a pair of opposed inwardly dished concavo-convex heads welded to the inner marginal portions of said body, an outwardly extending stub shaft welded to each of said heads and serving as journals for the roll, one of said stub shafts being hollow to receive high pressure steam connections for said roll, and a plurality of outer reinforcing ribs at each end of the roll, said ribs being welded to the adjacent head and stub shaft and disposed entirely between the planes of the ends of the roll.

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