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2,642,676

PREHEATER AND CONDITIONER UNIT

Filed June 14, 1950

3 Sheets-Sheet 1

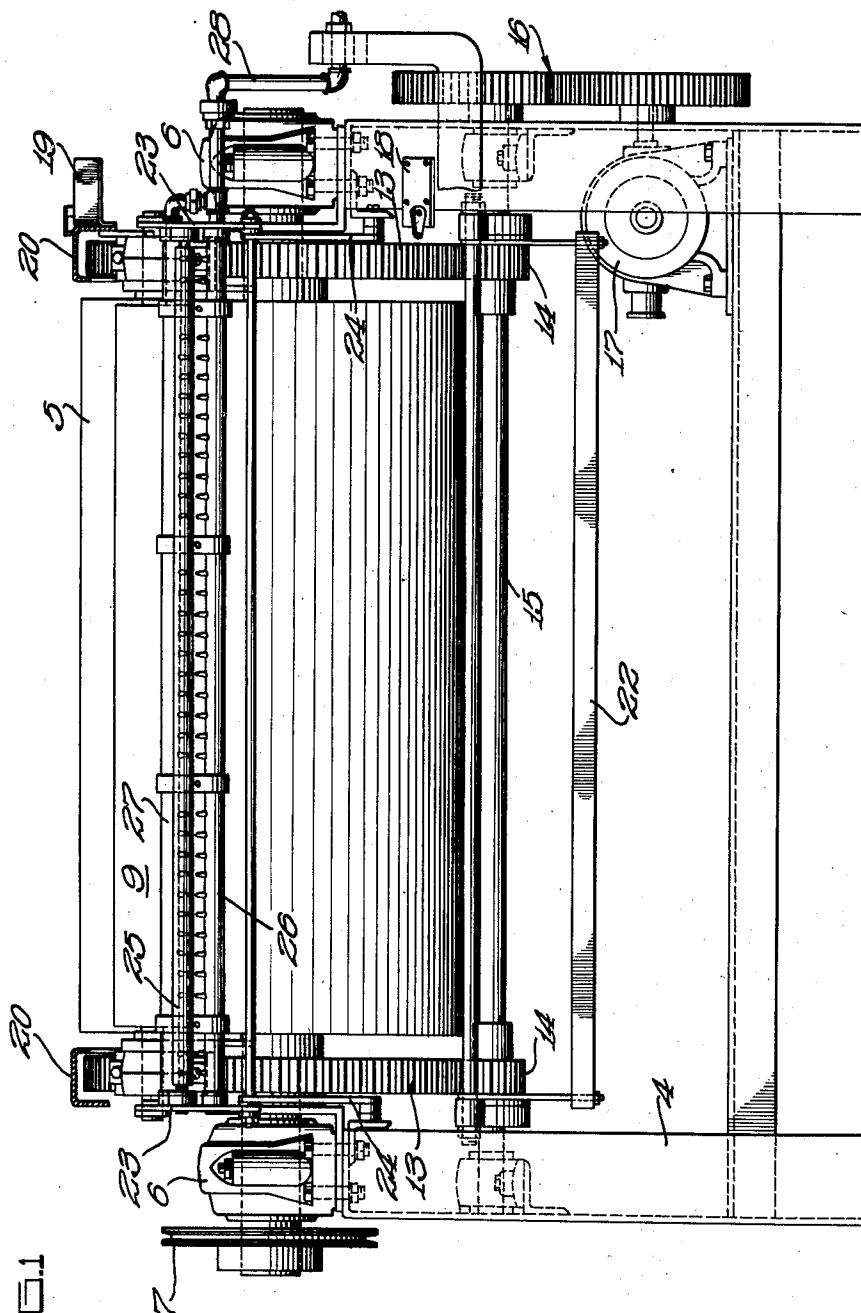


FIG. 1

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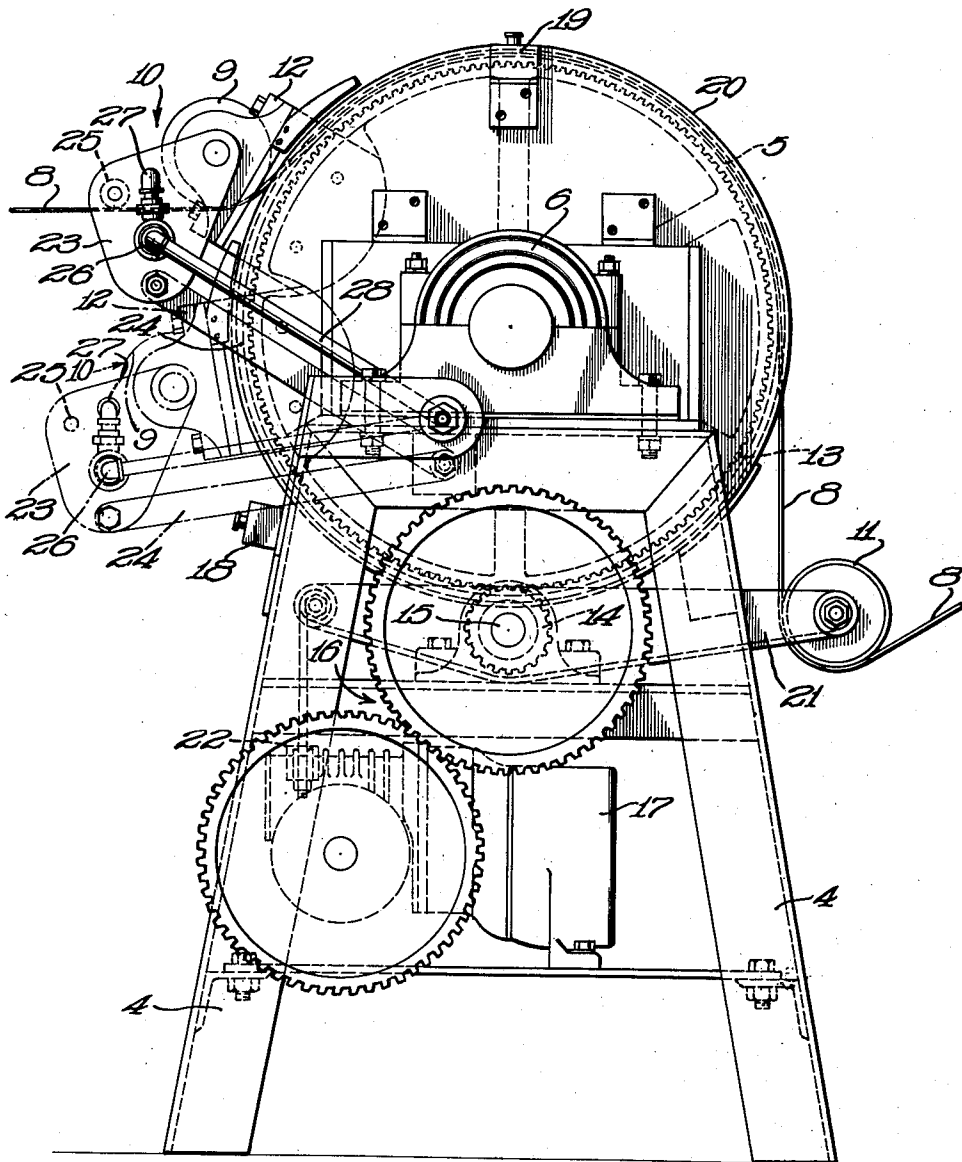
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3 Sheets-Sheet 2

FIG. 2



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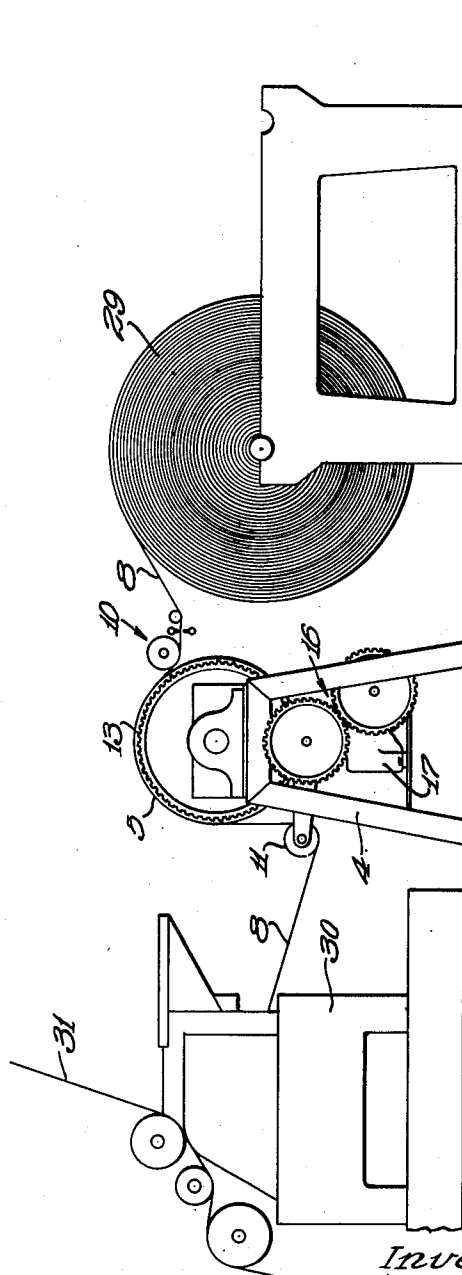
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PREHEATER AND CONDITIONER UNIT

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FIG. 3



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UNITED STATES PATENT OFFICE

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PREHEATER AND CONDITIONER UNIT

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6 Claims. (Cl. 34-122)

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This invention relates to apparatus for conditioning paper strips, and more particularly to an improved preheater and conditioner unit for controlling the moisture content of a paper strip used in making corrugated paper. The preheater and conditioner unit is adapted to apply moisture to a paper strip and to control the moisture content by passing the strip in contact with the outer surface of a heated roll.

The primary object of the invention is to provide an improved unit for conditioning paper strips wherein a guiding unit is circumferentially adjustable about a conditioner roll to vary the amount of surface of the conditioner roll in contact with the paper strip and a moistening unit is provided on the guiding unit in such a manner that the moistening unit will always remain upright.

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

Figure 1 is an elevational view of the preheater and conditioner unit partly broken away; Fig. 2, an end elevational view of the unit shown in Fig. 1; and Fig. 3, a diagrammatic vertical sectional view of a portion of a corrugating unit showing one position in which the unit may be placed.

The preheater and conditioner unit has a base frame 4 supporting a conditioner roll 5 journaled in bearings 6. The conditioner roll may be of the type disclosed in Grimm Patent No. 2,374,745. The conditioner roll is driven by an electric motor (not shown) connected with a drive wheel 7. One shaft of the roll is hollow to receive a high pressure steam connection (not shown).

A paper strip 8, which is to be conditioned, passes to the preheating and conditioning unit where it contacts the guide roll 9 of the guiding unit 10, passes over the surface of the conditioner roll 5 and around an idler roll 11, then passes on to the next apparatus in the corrugating unit. The guiding unit 10 is attached by members 12 to the webs of a pair of gears 13, each of which is journaled on the frame 4 at an end of and coaxially with the roll 5. The guide roll is journaled in the members 12, and by rotating the gears 13 the position of the guide roll may be adjusted circumferentially of the conditioner roll 5, to vary the amount of surface of the roll in contact with the paper strip 8. The gears 13 may be moved by a rotatable drive mechanism consisting of gears 14 on shaft 15, associated gearing 16 and motor 17. The motor may be manually controlled and limit switches 18, 19,

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mounted on the frame and gear cover 20 respectively, limit the circumferential movement of the guiding unit by stopping motor 17 when the guiding unit contacts either switch. The idler roll 11 is journaled on pivoted arms 21 from the other end of which a bar 22 depends for receiving weights to vary the weight of the idler roll on the paper strip. This roll does not, however, materially change its position relative to the conditioner roll.

A pair of brackets 23 are pivotally mounted on the members 12 of the guiding unit and are each connected by a link 24 to the base frame. As illustrated in Fig. 2, the links 24 tilt the brackets to maintain them in upright position in all positions of the guiding unit. A second guide roll 25 is journaled in the brackets and so positioned that the paper strip 8 contacts both rolls 25 and 9 before coming in contact with the conditioner roll 5. Positioned between the rolls 25 and 9 are a pair of fluid conduits 26, 27, having opposed openings or nozzles for directing a moistening fluid (usually steam) onto both sides of the paper strip 8. A fluid connection 28 supplies the conduits with moistening steam, the amount being controlled by a valve (not shown).

As shown in Fig. 3, a paper strip 8 is borne from the roll 29 to the guiding unit 10 where it may be moistened, then around the conditioner roll 5 where the strip is heated. The strip then passes to a gluing machine 30 where the strip 8 is brought into contact with a corrugated strip 31. It is important that the strip 8 have the proper moisture content which may be easily and accurately controlled by the preheater and conditioner unit.

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:

1. A unit for conditioning paper strips, comprising: a frame; a conditioner roll journaled in said frame and adapted to heat a paper strip in contact with its outer surface; a guiding unit; supporting mechanism on said frame for holding the guiding unit in selected positions about the conditioner roll; a first guide roll journaled in said unit with its axis parallel to the axis of said conditioner roll; a pair of brackets pivotally suspended from said first guide roll; a second guide roll parallel to the first guide roll and journaled in said brackets; and mechanism for holding said brackets in upright position.

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2. A unit for conditioning paper strips as specified in claim 1, in which a fluid conduit is supported by said brackets adjacent the guide roll for directing fluid against a paper strip traveling toward the conditioner roll.

3. A unit for conditioning paper strips, comprising: a frame; a conditioner roll journaled in said frame and adapted to heat a paper strip in contact with its outer surface; a guiding unit; supporting mechanism on said frame for holding the guiding unit at selective positions about said roll; a guide roll journaled in said unit with its axis parallel to the axis of the conditioner roll; brackets on said guiding unit linked to the base frame to maintain said brackets in upright position; and a second guide roll journaled in said brackets.

4. In a corrugating unit for making a corrugated paper strip assembly, a preheater and conditioner, comprising: a base frame; a conditioner roll journaled in said frame and adapted to heat a paper strip in contact with its outer surface; a pair of gears each journaled on the frame coaxially with the conditioner roll; a guiding unit supported by said gears for circumferential movement about said roll; a first guide roll journaled in said unit with its axis parallel to the axis of the conditioner roll; said guiding unit being provided with brackets linked to the base frame for maintaining said brackets upright; a second guide roll journaled in the brackets; spaced fluid conduits supported on said brackets between the

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guide rolls and provided with opposed openings for directing fluid against both sides of a paper strip traveling toward the conditioner roll; and rotatable drive mechanism having driving gears meshed with said gears for turning said gears simultaneously to adjust the position of the guide unit.

5. A preheater and conditioner as specified in claim 4, in which the brackets are maintained in a position such that the axes of the guide rolls will lie in parallel planes in all positions of the guiding unit relative to the conditioner roll.

6. A preheater and conditioner as specified in claim 4, in which the drive mechanism includes a motor for moving the guide unit and automatic limit switches are provided on the frame for controlling said motor and limiting the circumferential movement of the guiding unit about the conditioner roll.

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References Cited in the file of this patent UNITED STATES PATENTS

Number	Name	Date
514,637	Allbe	Feb. 13, 1894
1,409,235	Pope	Mar. 14, 1922
1,724,644	De Long	Aug. 13, 1929
2,208,126	Fitchett	July 16, 1940
2,374,745	Grimm	May 1, 1945
2,440,839	Apgar et al.	May 4, 1948