Sept. 5, 1933. C. A. DICKHAUT 1,925,092

SMOOTHING DEVICE

Filed Sept. 26, 1932 2 Sheets-Sheet 1

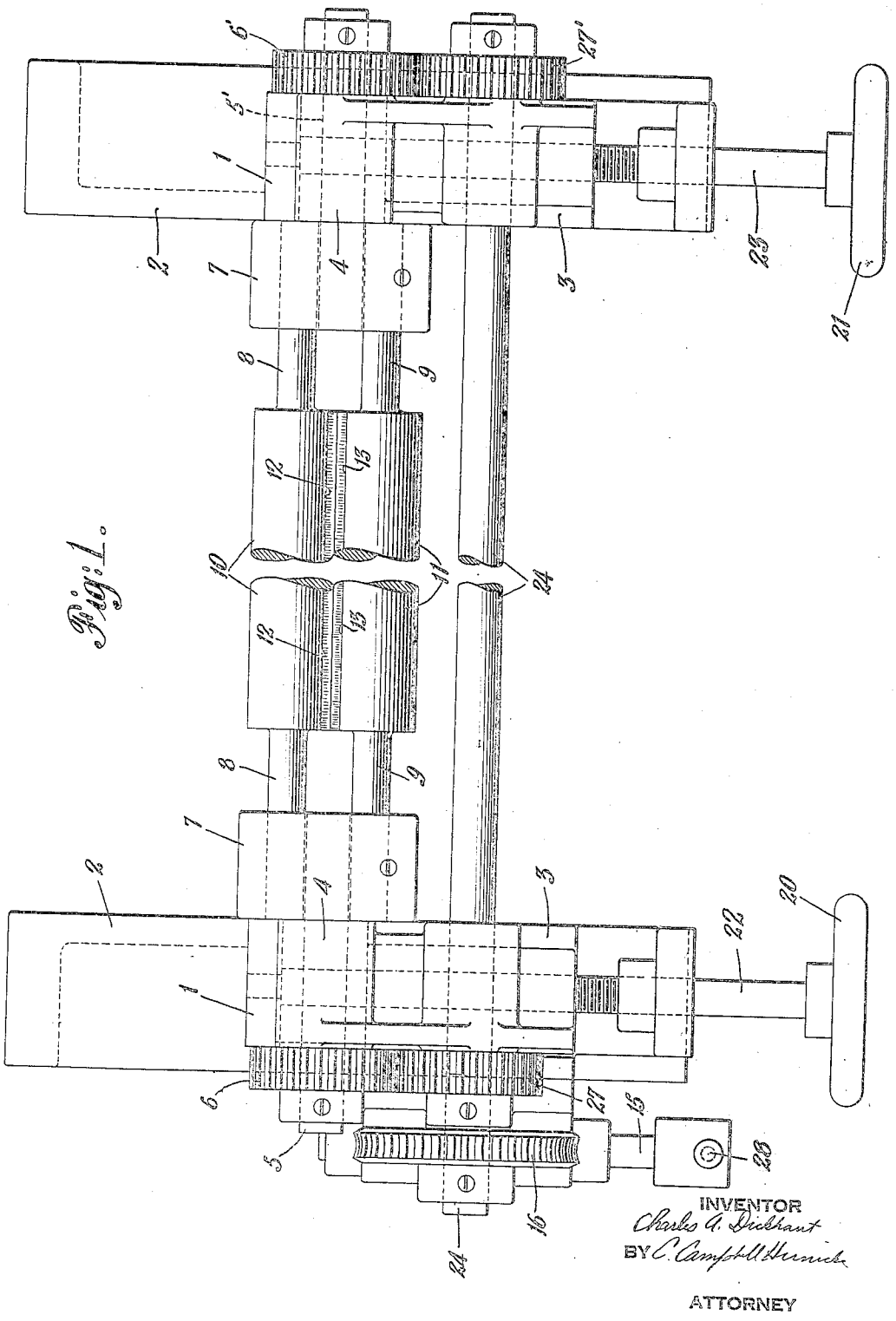


Fig. 1.

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Fig. 3.

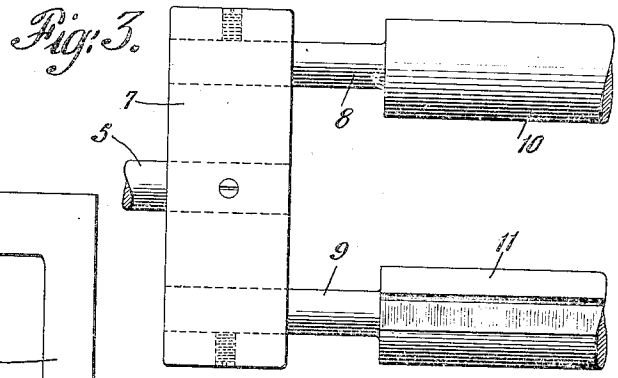
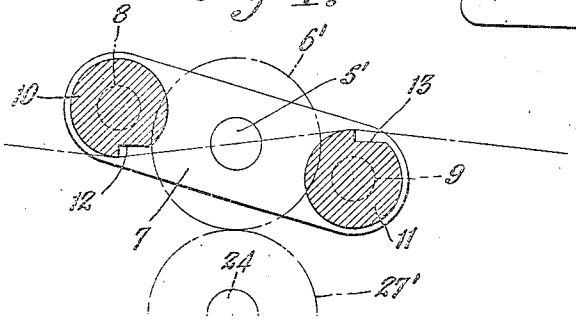


Fig. 2.

Fig. 4.



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UNITED STATES PATENT OFFICE

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SMOOTHING DEVICE

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Application September 26, 1932
Serial No. 634,810

2 Claims. (Cl. 91—53)

This invention relates to smoothing devices.

In the application of coatings of all kinds upon paper, textiles and the like, various methods of coating have been used such as by coating rolls, brushes, etc. In order to obtain the correct depth of coating, even appearance without brush marks, streaking or ribbing, various auxiliary devices have been required such as doctors, brushes or rolls and combinations thereof.

One of the objects of this invention is to provide a device that will give a smooth even coating of uniform appearance without ribbing, streaking or other marks.

Another object of the invention is to provide a device whereby a uniform thickness of coating may be had.

Still another object of the invention is to provide a smoothing device the pressure of which may be varied with precision dependent upon the desired result.

A still further object of the invention is to provide a smoothing device for double coated material whereby the depth of coating and the uniformity and smoothness of the surface will be the same for both sides.

A still further object of the invention is to provide smoothing rolls for double coated material whereby a single adjustment will adjust the smoothing device for both sides to give identical results.

A still further object of the invention is to provide smoothing devices of simplified and unique construction whereby better results can be obtained than have heretofore been possible.

Referring to the drawings:

Figure 1 is an end view of a device embodying the principles of my invention.

Figure 2 is a view in side elevation of Figure 1.

Figure 3 is a detail view of the smoothing devices showing the adjustment screws for lining up the rolls in proper relationship.

Figure 4 is a diagrammatic view showing the smoothing devices in adjusted position for increased pressure and a modified form with a plurality of notches.

In carrying out my invention I propose to provide on frame 2 adjacent the coating rolls 25 or other coating means the smoothing device which consists of carriages 1 having blocks 3 supported by said carriages. Blocks 3 are adjustable with respect to carriages 1 by means of handwheels 20, 21, secured to rotatable threaded shafts 22, 23. Blocks 3 being threaded so that upon rotation of shafts 22, 23, by handwheels 20, 21, the position of block 3 with respect to carriages 1 may be altered thereby permitting of adjustment in alinement of the two rolls 10 and 11 with respect to the frame 2 of the machine. Blocks 3 have frames 4 secured thereto. These frames may be integral or not as desired. Within frames 4 are journaled shafts 5, 5'. At the ends respectively of shafts 5, 5', are gears 6, 6', secured to rotate therewith. End plates 7, 7', are likewise secured to shaft 5, 5' to rotate therewith. Shafts 8 and 9 are journaled in end plates 7, 7'. Shafts 8 and 9 have smoothing devices 10 and 11 either integral with the shaft or forming a sleeve. The surface of smoothing devices 10 and 11 have notches 12 and 13 formed in their surface running lengthwise thereof. One side of the notches is preferably cut back a little, thus giving a cleaner edge as the material leaves the smoothing device. The two smoothing devices 10 and 11 are preferably adjusted in the end plates so that the material as it leaves the smoothing devices 10 and 11 is almost at a tangent to the circumference or almost at a right angle to the side of the notch. In other words the material leaves a smoothing device at the edge of the notch. Referring to Figure 4 where the smoothing devices 10 and 11 are adjusted for increased pressure it will be noted that the material is bent around the cylindrical part of the smoothing devices adjacent the notches 12 and 13 and then leaves the smoothing devices 10 and 11 on the edge of the notches thereby exerting a smoothing action by the cylindrical surface with a sharp edge to prevent ribbing and streaking and to give a uniform depth of coating. If desired each roll may have a plurality of notches (see Figure 4). If the notch requires cleaning the operator may revolve the roll 180° to clean the edge on the side away from the material without taking the roll off the material and without either shutting down the machine or removing the roll to clean same while the device is in operation. When smoothing devices 10 and 11 have been set in end plates 7, 7', as shown in Figure 2 then if they are adjusted through gears 6, 6', to exert added pressure they will automatically be in proper position as the material is merely bent around the cylindrical surface adjacent the notches 12 and 13 as shown in Figure 4. The adjustment of the smoothing devices to change their effect is by means of worm 14 mounted on a bracket on carriage 3 which meshes with gear 16 on shaft 24 journaled in frames 4. Gears 27, 27', are also secured to shaft 24 and mesh with gears 6, 6', to rotate the smoothing devices 10 and 11. Worm 14 is turned by pin 28 through shaft 15.

The operation of the device is as follows:

Blocks 3 are set in their proper relationship with respect to carriages 1 by rotation of the handwheels 20, 21. The material that has been coated is threaded between smoothing devices 10 and 11. Worm 14 is rotated to rotate gear 16 which in turn rotates shafts 24 to rotate gears 27, 27', to rotate gears 6, 6' on shafts 5, 5' turning smoothing devices 10, 11, until the desired tension has been placed on the material.

It will thus be seen that I have invented a smoothing device of simple construction the action of which is easily regulated and which in operation effectively smooths and renders uniform the coating both as to appearance and depth.

What I claim is:

1. A smoothing device comprising a pair of cylindrical rolls in parallel spaced relationship, means for passing the coated material between said rolls, means for simultaneously rotating said rolls about an axis whereby said rolls each apply predetermined pressure equally on opposite sides of the paper.

2. A smoothing device comprising a pair of cylindrical rolls in parallel spaced relationship, means for passing the coated material between said rolls, the surface of each roll having a notch lengthwise thereof, means for rotating said rolls about an axis whereby said rolls each apply predetermined pressure and means for adjusting said rolls whereby the coated material leaves the cylindrical surface of each roll at the notch regardless of the applied pressure.

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