

Nov. 3, 1942.

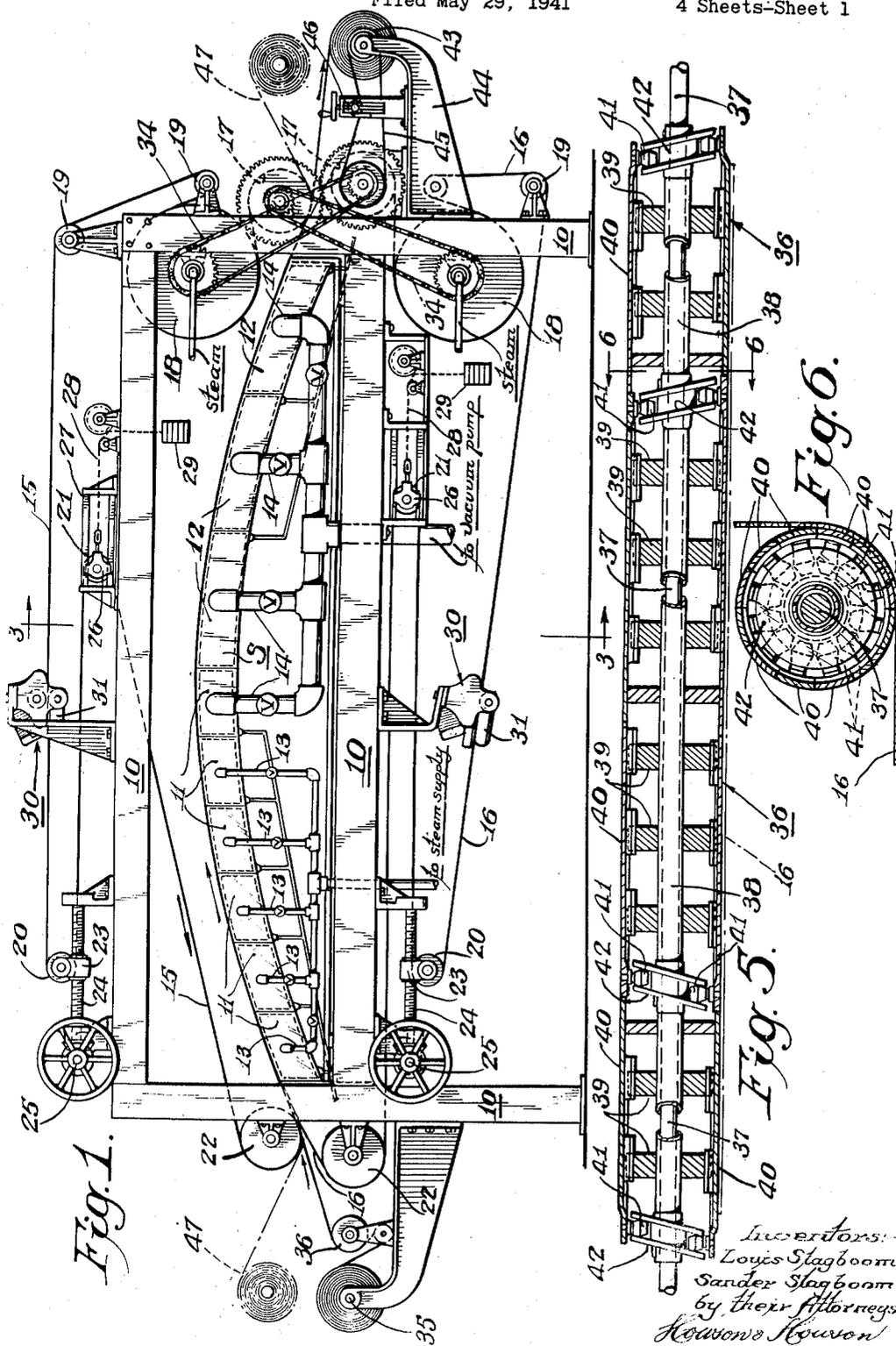
L. SLAGBOOM ET AL

2,300,982

DECATING MACHINE

Filed May 29, 1941

4 Sheets-Sheet 1



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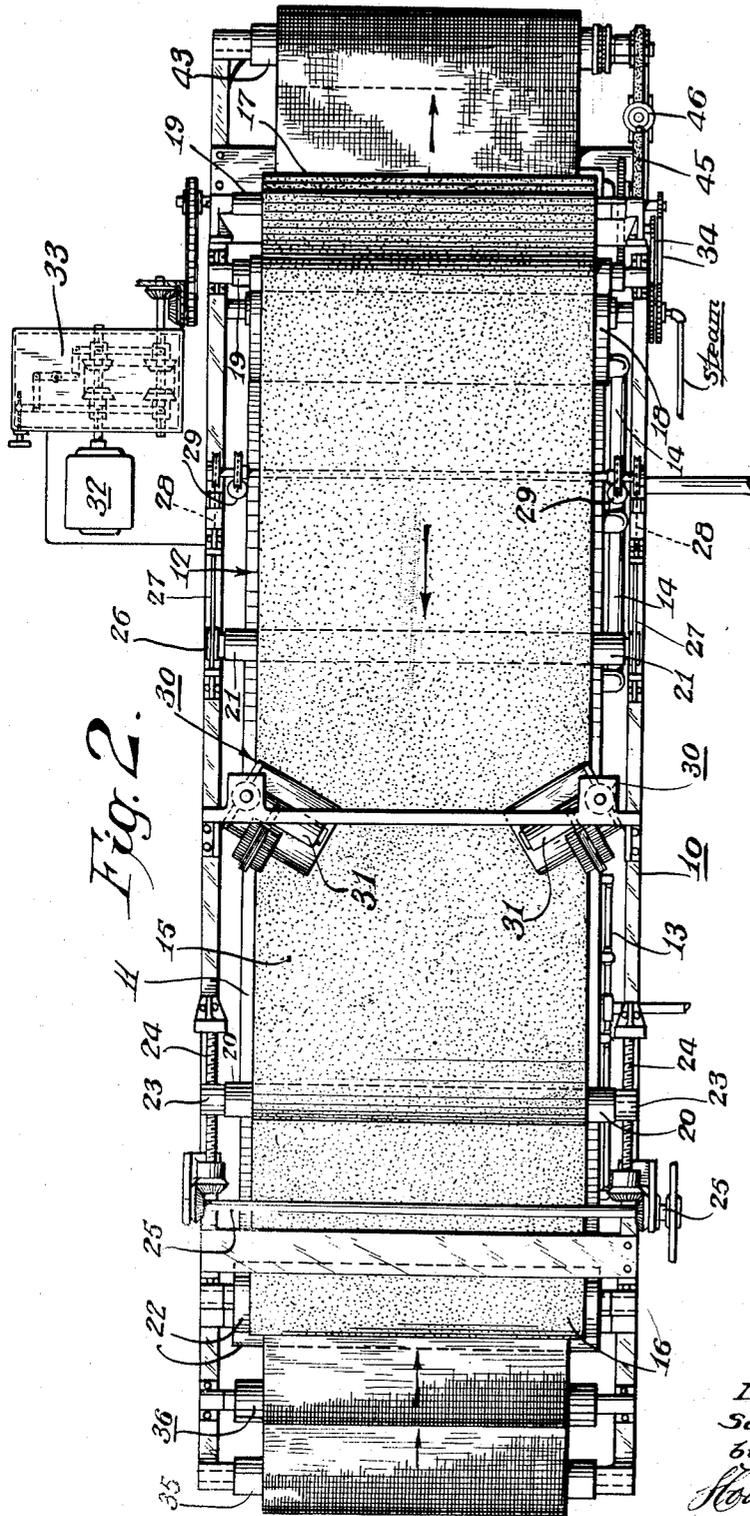


Fig. 2.

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Fig. 3.

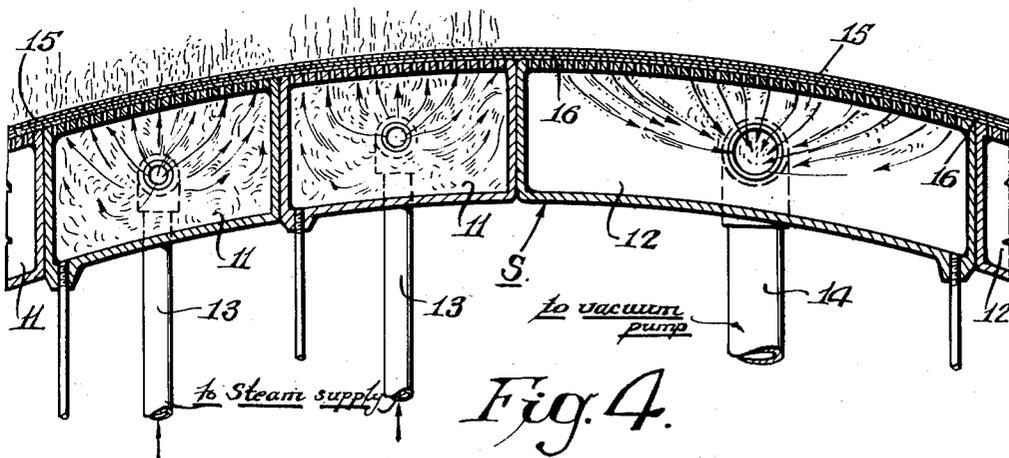
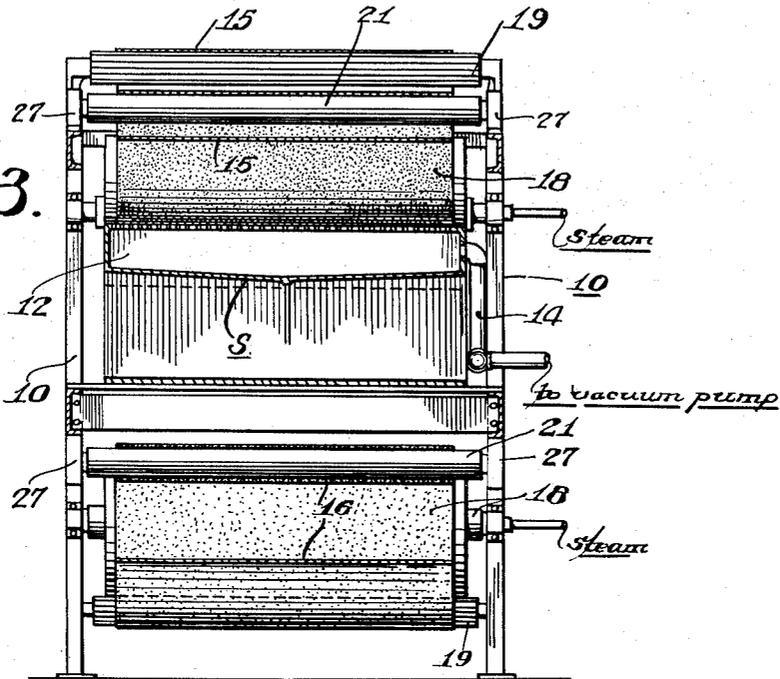


Fig. 4.

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4 Sheets-Sheet 4

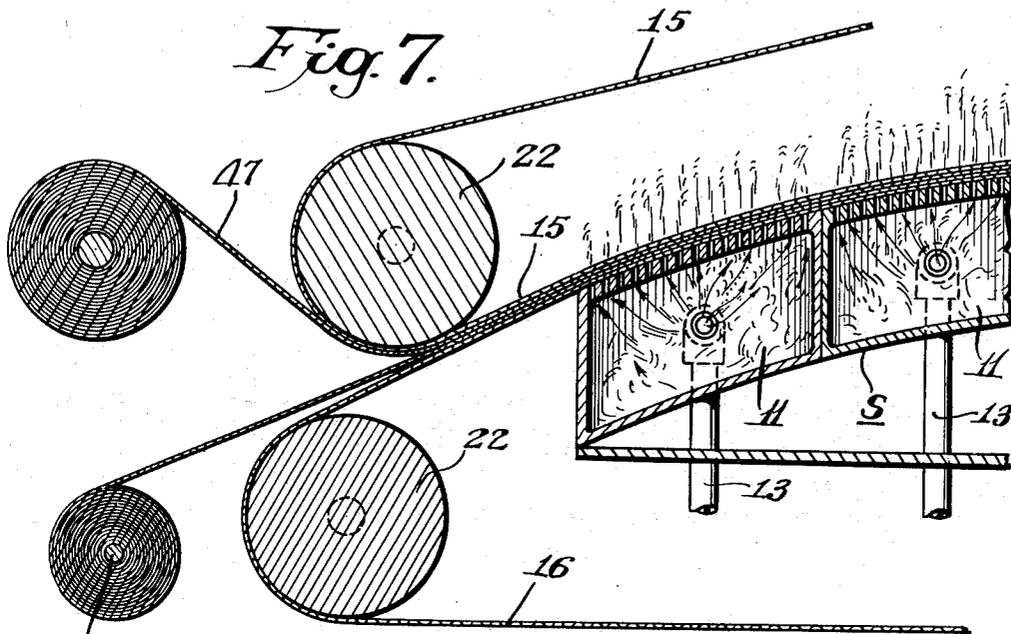
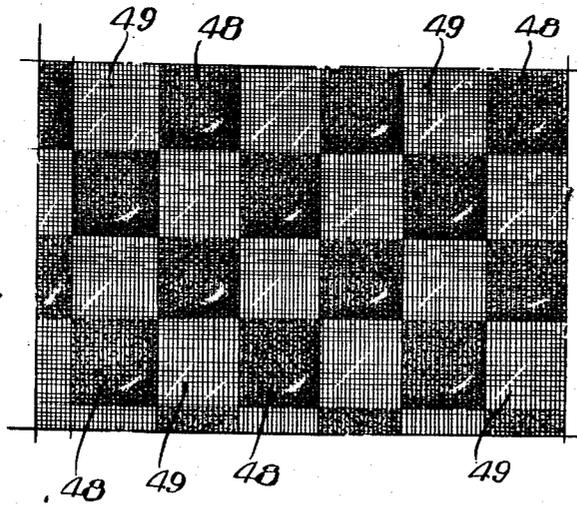


Fig. 8.



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UNITED STATES PATENT OFFICE

2,300,982

DECATING MACHINE

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Application May 29, 1941, Serial No. 395,862.

5 Claims. (Cl. 38—2)

This invention relates to decating machines and has for an important object thereof the provision of a convenient means for continuously decating cloth.

As pointed out in our prior application, Serial No. 286,378, filed July 25, 1939, for Decating machines and method of decating, of which this application is a continuation-in-part, the process of decating cloth as heretofore carried out has been time-consuming and highly inefficient. As previously carried out, decating consisted in winding the cloth, together with a felt blanket, upon the surface of a perforated steaming drum. Following steaming, the cloth was removed from the drum and then placed upon either the same or a second drum, being reversed from end to end since, due to the great mass of the material, it was, obviously, impossible to secure uniform treatment with a single steaming application. It will also be obvious that under this method the length of cloth which could be treated in any one operation was limited.

In accordance with the present invention, we provide means for treating goods in any desired length and, furthermore, provide means whereby the extent of the treatment may be regulated to secure a wide variety of effects in the completed goods. Generally considered, the apparatus constructed in accordance with our invention comprises a pair of endless felts between which the cloth is passed, these felts passing over steaming and vacuum compartments in such fashion that the goods are first steamed and then cooled and partially dried by drawing atmospheric air therethrough. Means are provided whereby the tension upon the felts may be regulated so that during their working passage they will provide a uniform pressure on the material. Means are also provided for insuring against any possible puckering of the felt since this would tend to mark the goods. In the accompanying drawings, in which we have illustrated a preferred form of the apparatus,

Fig. 1 is a side elevation of our decating machine;

Fig. 2 is a plan view thereof;

Fig. 3 is a section on line 3—3 of Fig. 1;

Fig. 4 is a sectional view through the treating chambers;

Fig. 5 is a longitudinal sectional view through a preferred form of cloth-feeding roll;

Fig. 6 is a section on line 6—6 of Fig. 5;

Fig. 7 is a partially diagrammatic sectional view illustrating simultaneous feeding of a piece

of fabric to be treated and a stencil for patterning the surface of the material; and

Fig. 8 is a fragmentary illustration of a piece of fabric treated in the presence of a stencil.

Referring now more particularly to the drawings, the numeral 10 generally designates a frame supporting an arched treating structure S composed of a series of individual chambers. These chambers are divided into steaming chambers 11 and vacuum chambers 12, there being a plurality of chambers in each group and the groups being arranged at opposite ends of the arched structure. The chambers 11 are each connected through an individual valved inlet 13 with a source of steam under pressure while the chambers 12 are connected through similar inlets 14 with a vacuum pump. Associated with the arched treating structure S is a pair of endless felts 15 and 16. Each of these felts passes over the arched structure from end to end thereof and at that end of the arched structure formed by the vacuum chambers passes over a driving drum 17 and thence about a steam-heated drying drum 18.

Leaving the drying drum 18, the felt passes about suitable guide rolls 19, thence about a take-up roll 20, over a tension roll 21, and thence about an idler guide roll 22 to its arch-engaging run. As at present illustrated, the take-up roll 20 is mounted in bearings 23 the supports of which comprise nuts operating upon worms 24 simultaneously adjustable through a shaft 25 geared thereto. Tension roll 21 is mounted in bearings 26 slidable in suitable guide frames 27. These bearings are connected through flexible elements 28 to adjustable counterweights 29 through which the pressure with which the felts will engage against the arched treating surface may be adjustably regulated. In its passage to the take-up roll 20, or at some other convenient point immediately following its drying by passage over drum 18, the felt is engaged by a suitable stretching and positioning mechanism 30 which may conveniently comprise pairs of diagonally placed rolls 31 which forcibly engage the felt to shift the same whenever the felt edges become displaced either through shrinkage or transverse displacement. Such a structure is illustrated in the prior patent to R. Hetherington, No. 2,082,799, June 8, 1937, for Cloth guider, and forms no part of the present invention except in combination with the remaining mechanism.

The drums 17 are shown as geared together and one of these drums is driven by motor 32 through a variable transmission 33 which is pref-

erably of the continuously variable type such as that known as the Reeves drive. The drums 17 are chain-and-sprocket connected as at 34 to the steam drums 18 to drive the same, the drum 17 for each felt being connected to drive the drum 18 of the other of the felts in order that the drums may be given the proper direction of rotation.

That end of the machine at which the drums 17 are disposed constitutes the outlet end of the machine for treated cloth, and at the opposite end thereof the frame 10 supports a cloth let-off beam 35 and a spreader roll 36. The spreader roll may be of any suitable construction, but it is preferred that it be of that type shown in Figures 5 and 6. In these figures the numeral 37 designates a stationary shaft supporting, through sleeves 38 and guides 39, a plurality of longitudinal slats 40 which combine to form the outer surface of the roll. These slats 40 are in relatively short sections and each is provided with a roller 41 engaging in a groove 42 in the periphery of a cam fixed to the stationary shaft 37. The grooves of the cams at opposite sides of the center of the roll are oppositely inclined and the positions of these cams are such that at a given point of the rotation the slats at opposite sides of the roll center are caused to move outwardly, this point coinciding with the point of contact with the cloth in its passage about the roll and the outward movement of the slats continuing as long as the cloth is engaged with the roll.

At the opposite, or discharge, end of the machine a cloth take-up roll 43 is provided, this roll being suitably driven through any preferred type of slip drive which will maintain a proper tension on the cloth as it leaves the felts. As at present shown, this roll is mounted upon brackets 44 and is belt-driven as at 45 from the lower drum 17. The tension of the belt drive is regulated as at 46 to admit of a proper slip to maintain the selected tension on the cloth.

It will be obvious that an apparatus of this type is not only much more efficient in cloth treatment, from the standpoint of time losses and uniformity of the finished product, but likewise provides flexibility in operation which is altogether impossible with any prior apparatus for this purpose. It is possible to regulate the steaming period not only by regulating the speed of movement of the felts and, accordingly, of the material arranged therebetween, but likewise by varying this treatment through cutting off one or more of the steam chambers. Similarly, the extent to which the material is cooled and/or dried in its treatment may be varied to the desired extent. Furthermore, the tension upon the felts may be regulated at will, thus enabling the operator to produce a material which, in its finished state, is smooth and evenly treated or which is creped. It is likewise obviously possible to pattern the goods by passing with the cloth a stencil indicated in construction lines in Figure 1 and in solid lines in Figure 7 at 47. The solid portions of the stencil will prevent the passage of the steam, thus providing treated and untreated areas 48 and 49 in the finished material. Any such treatment would obviously be impossible under the old system due to the inability of the operator to exactly replace the stencil in its original position. Particular attention is directed to the fact that means are provided whereby the tension on the material is maintained constant. In the absence of some tension-

regulating means, such as that illustrated at 21, the tension upon the material would constantly vary since a felt subjected to constant steaming and subsequent drying is continuously varying in length and would, accordingly, exert varying pressures on the cloth. Since these pressures have a considerable effect upon the finish, and it is obviously desirable that the finish of a cloth piece be uniform, any apparatus of this type which fails to include some such means of regulation is substantially useless.

Attention is directed to the fact that the guide rolls 17 and 22, and particularly the guide rolls 17, should not be in pressure contact with one another since any pressure nip at these rolls would tend to alter the effects produced by variations in the cloth treatment effected over the arch S.

Since the construction illustrated is capable of considerable modification without departing from the spirit of the invention, we do not wish to be understood as limiting ourselves thereto except as hereinafter claimed.

We claim:

1. In a decating machine, a treating arch comprising successively arranged steaming and vacuum zones, a pair of endless traveling felts trained over said arch and successively passing over said zones, means to control the effective lengths of said zones, a drying means for each felt, means to transversely stretch each felt following its coaction with said drying means, and means to maintain a regulatable constant tension on each felt.

2. In a decating machine, a treating arch comprising successively arranged steaming and vacuum zones, a pair of endless traveling felts trained over said arch and successively passing over said zones, means to control the effective lengths of said zones, a drying means for each felt, means to transversely stretch each felt following its coaction with said drying means, means to maintain a regulatable constant tension on each felt, and driving means for said felts including an infinitely variable speed transmission.

3. In a decating machine, a treating arch comprising successively arranged steaming and vacuum zones, said zones each comprising a plurality of chambers arranged in side to side relation and extending transversely of the arch, means to selectively render said chambers inoperative, a pair of endless traveling felts trained over said arch and successively passing over said zones, a drying means for each felt, means to transversely stretch each felt following its coaction with said drying means, and means to maintain a regulatable constant tension on each felt.

4. In a decating machine, a treating arch comprising successively arranged steaming and vacuum zones, said zones each comprising a plurality of chambers arranged in side to side relation and extending transversely of the arch, means to selectively render said chambers inoperative, a pair of endless traveling felts trained over said arch and successively passing over said zones, a drying means for each felt, means to transversely stretch each felt following its coaction with said drying means, means to maintain a regulatable constant tension on each felt, and driving means for said felts including an infinitely variable speed transmission.

5. In a decating machine, a treating arch comprising successively arranged steaming and vacuum zones, a pair of endless traveling felts trained over said arch and successively passing

over said zones, a drying means for each felt, means to transversely stretch each felt following its coaction with said drying means, means to maintain a regulatable constant tension on each felt, driving means for said felts including an infinitely variable speed transmission, and guiding means for said felts including pairs of rolls ar-

ranged adjacent opposite ends of the arch, the rolls at that end of the arch at which the vacuum zone is disposed being in spaced relation to one another.

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