

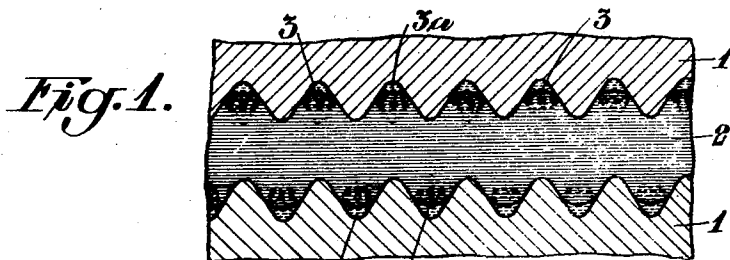
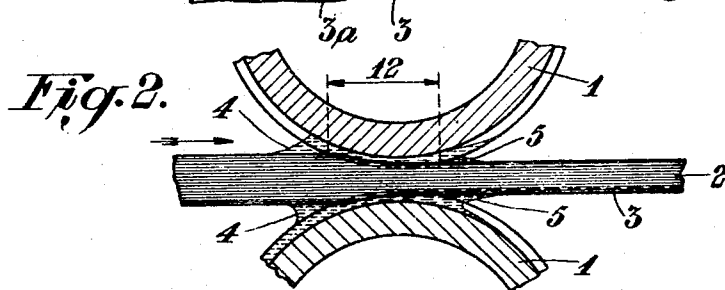
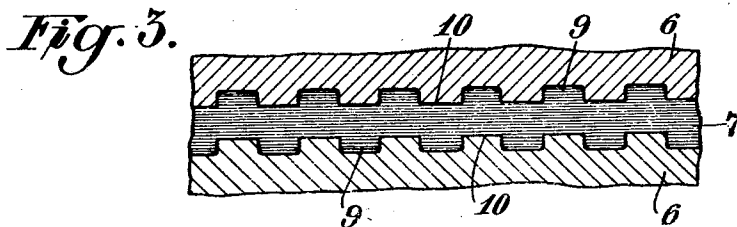
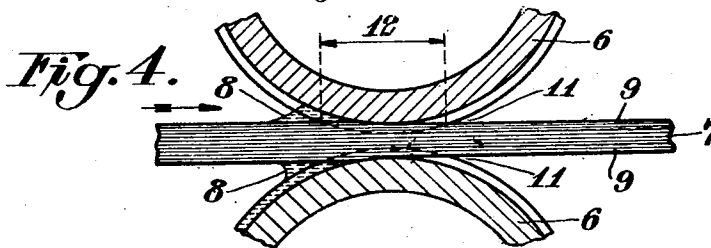
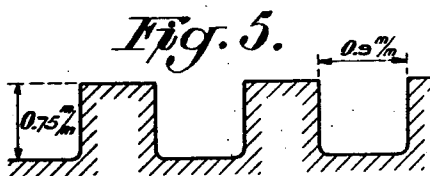
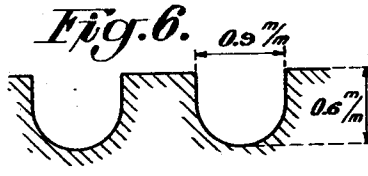
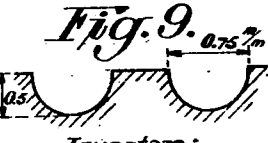
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R. E. WAGNER

PRESS ROLLER FOR PRESSING OUT WATER FROM WOOD PULP, CELLULOSE, AND THE LIKE

Filed July 28, 1920



Inventor:
 RUDOLF ERNST WAGNER
 By George Bayard Jones ATTORNEY

UNITED STATES PATENT OFFICE.

RUDOLF ERNST WAGNER, OF KARLSTAD, SWEDEN, ASSIGNOR TO AKTIEBOLAGET KARLSTADS MEKANISKA VERKSTAD, OF KARLSTAD, SWEDEN, A MANUFACTURING COMPANY OF SWEDEN.

PRESS ROLLER FOR PRESSING OUT WATER FROM WOOD PULP, CELLULOSE, AND THE LIKE.

Application filed July 28, 1920. Serial No. 399,507.

To all whom it may concern:

Be it known that I, RUDOLF ERNST WAGNER, a subject of the King of Sweden, residing at Karlstad, in the Kingdom of Sweden, have invented a new and useful Improvement in Press Rollers for Pressing Out Water from Wood Pulp, Cellulose, and the like, of which the following is a specification.

In the manufacture of wood-pulp and cellulose press rollers having different kinds of surface grooves or channels have been used for pressing out water from wood-pulp or cellulose webs or sheets. Hitherto it has been held to be established that grooves or channels having a greater width than 3 millimeters and a less width than 1 millimeter do not give good results.

It has now been found, however, that very favourable results are obtained when pressing with rollers which are provided with surface grooves of other dimensions than those heretofore used. It will be understood that when pressing with rollers having such surface grooves, ribs or ridges will always be produced in the surface of the web of material in which ridges the greater portion of the water pressed out will remain so long as the surface grooves are too large, and consequently, the said ridges do not become pressed. It has been established by a great number of experiments in this respect that considerably better results are obtained by means of grooves the width and depth of which are less than 1 millimeter, than with grooves as heretofore used. It is also advantageous to choose the depth slightly less than the width. For example, grooves or channels having a width of 0.75 millimeter and a depth of 0.5 millimeter give exceedingly favourable results. The cross section of the grooves or channels may be given different shapes, and it may be rectangular, or rounded, or it may be formed in any other suitable manner. The favourable result obtained by means of these new surface grooves or channels is principally due to the fact that material pressed into the grooves or channels will actually reach the bottoms of the channels and will also be subjected to a suitable pressing against said bottoms so that considerably less water will remain in the ribs or ridges formed by the grooves or

channels on the web of material, and that no water will be brought along in the bottoms of the grooves or channels through and between the web of material and the rollers, or through the pressing place or region, and that there can be no re-absorption of the water after the material has been pressed.

In the accompanying drawing, Figs. 1 and 2 illustrate diagrammatically and to an enlarged scale the manner in which the pressing out of the water will take place between press rollers having surface grooves or channels as heretofore used. Figs. 3 and 4 illustrate in what manner the pressing out takes place with rollers having the new surface grooves according to the present invention. Figs. 5 to 9 inclusive show different profiles of grooves or channels with which especially good results are obtained.

Referring to Figs. 1 and 2, 1 denotes portions of press rollers provided with surface grooves as heretofore used, 2 denotes the web of material, for instance cellulose, being pressed, and 3 denotes the ribs or ridges produced in the surface of the web of material into which ridges the water will be pressed during the pressing. During the pressing there will also be formed small intermediate spaces 3^a between the said ridges and the bottoms of the grooves, through which spaces a portion of the water 4 pressed out in front of the rollers will be brought along during the rotation of the rollers through the pressing place or region 12 to the point 5 behind the rollers where it will be re-absorbed by the web of material 2 and will thus impair the degree of dryness after the pressing.

Figs. 3 and 4 show press rollers having the novel surface grooves according to the present invention. 6 denotes portions of the press rollers, and 7 the web of material during the pressing. Figs. 5 to 9 inclusive illustrate to an enlarged scale a few embodiments of the novel surface grooves. If the surface grooves are made within the limits given above, that is to say so that the width and the depth are less than 1 millimeter and the depth slightly less than the width, the water will be pressed out in such manner that it will flow off at 8 in front of the pressing place or region, and the pressure will act also on the ridges 9 formed in the

web of material, slightly less than at 10 but sufficiently for preventing the water from forcing itself through the pressing place 12 to the point 11. In this manner there can
5 thus be no re-absorption of water after the web of material has been pressed, and consequently, said web leaves the pressing apparatus at a considerably higher degree of dryness. Figs. 5 to 9 inclusive show different
10 sizes and shapes of profiles of the novel surface grooves, but it will be understood that also other shapes may be used, and also that the grooves may be placed at different distances from one another, preferably in such manner that the width of
15 the portion of the cylindrical surface remaining between two adjacent surface grooves is at least equal to the width of the surface groove.

20 I claim:

1. A press roller for pressing wood-pulp, cellulose and the like, provided with sur-

face grooves the width of which is less than 1 millimeter and the depth of which is such that material pressed into the grooves will become pressed by the bottoms of the grooves, said grooves being located at such distances from one another that the width of the portion of the cylindrical surface of the roller remaining between two adjacent grooves is at least equal to the width of the groove.

2. A press roller for pressing wood-pulp, cellulose, and the like, provided with surface grooves the width of which is less than 1 millimeter and the depth of which is less than the width, said grooves being located at such distances from one another that the width of the portion of the cylindrical surface of the roller remaining between two adjacent grooves is at least equal to the width of the groove.

RUDOLF ERNST WAGNER.