March 22, 1932. V. O. ROBINSON 1,850,895

PAPER LIKE MATERIAL

Filed Oct. 23, 1930

Fig. 2.

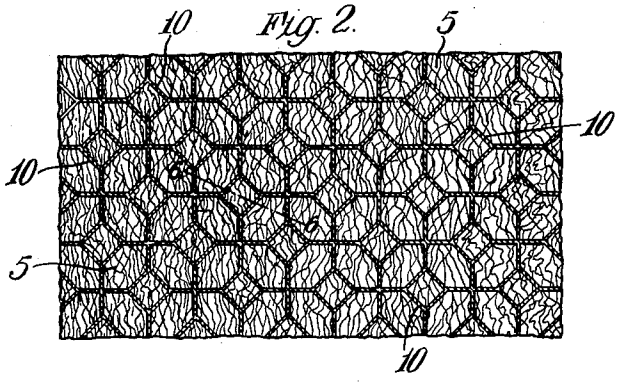


Fig. 3.



Fig. 4.

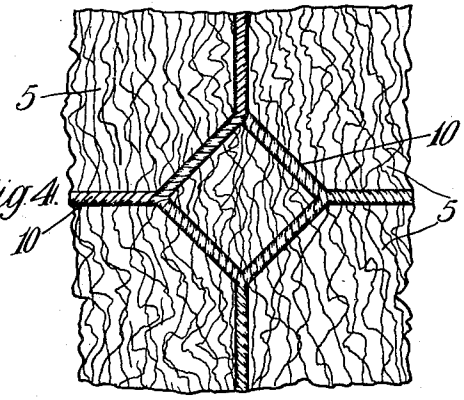


Fig. 5.

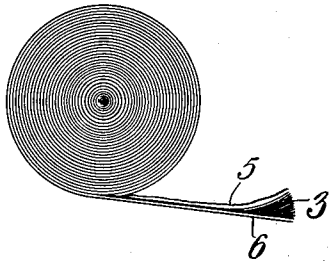
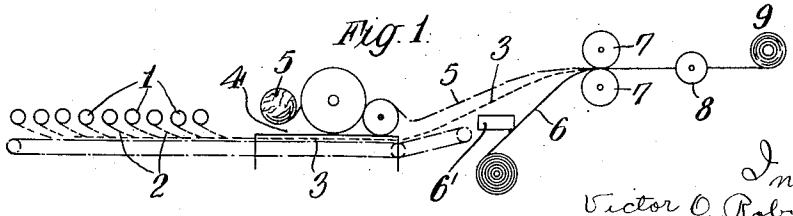


Fig. 6.



Fig. 1.



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UNITED STATES PATENT OFFICE

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PAPER-LIKE MATERIAL

Application filed October 23, 1930, Serial No. 490,774, and in Great Britain February 28, 1930.

This invention relates to improvements in the manufacture of paper or paper-like material. The kind of paper concerned is a composite paper comprising cellulose wadding or the like which is compressed and carried by a comparatively tough backing of non-absorbent or comparatively non-absorbent material such as waterproof paper by means of a layer of relatively long fibres adhered to the backing along various lines preferably forming a pattern.

According to the present invention the paper comprises a relatively tough and waterproof backing to which is caused to adhere a pad of soft fibrous material which is so constructed and patterned that a substantial degree of rubbing will not disintegrate the surface even when the latter is moist.

Preferably the paper has a surface layer of fibrous material which is more coherent, e. g. has longer fibres, than the cellulose wadding interposed between it and the waterproof backing.

The preferred material for the surface layer is carded cotton, and the impressed pattern is so chosen that, generally speaking, each cotton fibre will be pressed down into the cellulose wadding or the like and adhered to a backing at at least two separated places. It is found that the improved product will withstand considerable rubbing even when moistened without disintegrating and breaking away. Such is not the case when cellulose wadding is used without a covering or more coherent material and backing for the fibres are so short that no impressed pattern, which leaves sufficient areas in relief to maintain the required softness, will bind the material so as to prevent disintegration.

Such a paper is particularly suitable for toilet purposes although it can be used for various other purposes such as wrapping and packing pastry.

The invention is illustrated in the accompanying drawing in which Figure 1 shows diagrammatically the apparatus for manufacturing the paper. Figure 2 is a plan view of a strip of paper made in accordance with the invention, Figure 3 a section through the paper on a greatly enlarged scale, whilst Figure 4 is an enlarged view of a portion of the paper shown in Figure 2. Figure 5 shows a roll of paper according to the invention and with one end split up to show its constituents whilst Figure 6 is a section on the line 6—6, Figure 1 of the paper after it has been passed through embossing rollers.

The process of manufacture of a roll of paper according to the invention will now be described with reference to Figure 1 of the accompanying drawings.

A single layer of cellulose tissue of the necessary width, for example 30″, is taken from a paper machine and wrapped in continuous lengths into a roll of the required size, by a suitable device. As many of such rolls 1 as may be required, say sixteen, are placed in position on the cellulose wrapping machine, and a single layer 2 from each roll superimposed on the others making a sheet 3 sixteen layers thick, the same length as the rolls one layer thick.

The sheet 3, sixteen layers thick is taken beneath a cotton carding machine 4, specially raised up from the ground for the purpose and a layer 5 of carded cotton is superimposed on the cellulose; immediately afterwards a layer of water-proof paper 6 which has first passed under a container 6′ from which an adhesive is applied to the top side or other suitable material is fed on the underside of the cellulose. The whole sheet comprising one layer of carded cotton, sixteen layers of cellulose and one sheet of waterproof material is then passed through two embossing rollers 7 and embossed with a pattern. This has the effect of making the waterproof material adhere to the cellulose, of combining the sixteen layers of cellulose and yet on the whole leaving the soft nature of this

material unchanged, and of combining the cotton wool layer to the cellulose.

The average length of the cotton fibre is 5/8" and the embossing pattern is so chosen that each cotton fibre 5 will be attached to the cellulose 3 and this latter to the waterproof backing so that if the finished product is rubbed the protecting layer of cotton wool 5 will not distintegrate and come away in small pieces. After embossing, the whole combined sheet is taken to a slitter 8 and winding machine 9, as usually employed for the manufacture of toilet rolls, and there made into rolls of the required width and length.

The pattern impressed upon the combined sheet is of such character that the distance between adjacent lines of the pattern is less than the length of the cotton fibres forming the top layer of the pad.

The order of performing the operations may be varied or carried out on separate machines.

Figure 2 shows a strip of the finished paper on which the pattern comprises lines or grooves 10 forming polygonals having central squares at the apexes of which radiate arms.

Figure 3 shows the layer of waterproof paper 6, the sixteen layers of cellulose tissues 3 and the superimposed layer 5 of carded cotton in the form in which it is passed to the embossing rollers 7.

In Figure 4 which as stated above is an enlarged view of a portion of the paper illustrated in Figure 2, the paper has been passed under the embossing rollers 7. It will be seen that the fibres 5 of the carded cotton run substantially longitudinally throughout the paper and that they pass under and are gripped by the lines or grooves 10 of the pattern so that the layer of carded cotton will not distintegrate when rubbed.

Figure 6 shows a section through the paper on the same scale as that shown in Figure 4. The fibres 5 are depressed at the grooves 10 so that each fibre becomes attached to the cellulose wadding (aided by the action of the adhesive applied to the waterproof backing) and on rubbing the fibres are held by these grooves so that they do not split up and come away in small pieces.

Although the invention as above described is applied particularly to composite paper comprising cellulose wadding it is not intended that there shall be excluded from the scope of the invention a modification which merely consists in replacing cellulose wadding wholly or in part by other fibrous material such for example as cotton fibre.

What I claim is:—

1. A paper comprising a relatively tough and water proof backing and a pad of soft fibrous material adhering thereto, the main body of the pad being composed of relatively short fibres and having superposed on it a surface layer of relatively long fibres, the whole being impressed with a pattern the distance between whose lines is shorter than the average length of the surface fibres.

2. A paper comprising a relatively tough and water proof backing, a pad of cellulose wadding adhering thereto, and a surface layer of carded cotton, the whole being impressed with a pattern.

In testimony that I claim the foregoing as my invention I have signed my name this 24th day of September, 1930.

VICTOR OWEN ROBINSON.