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METHOD OF MAKING COMPOSITE PAPER

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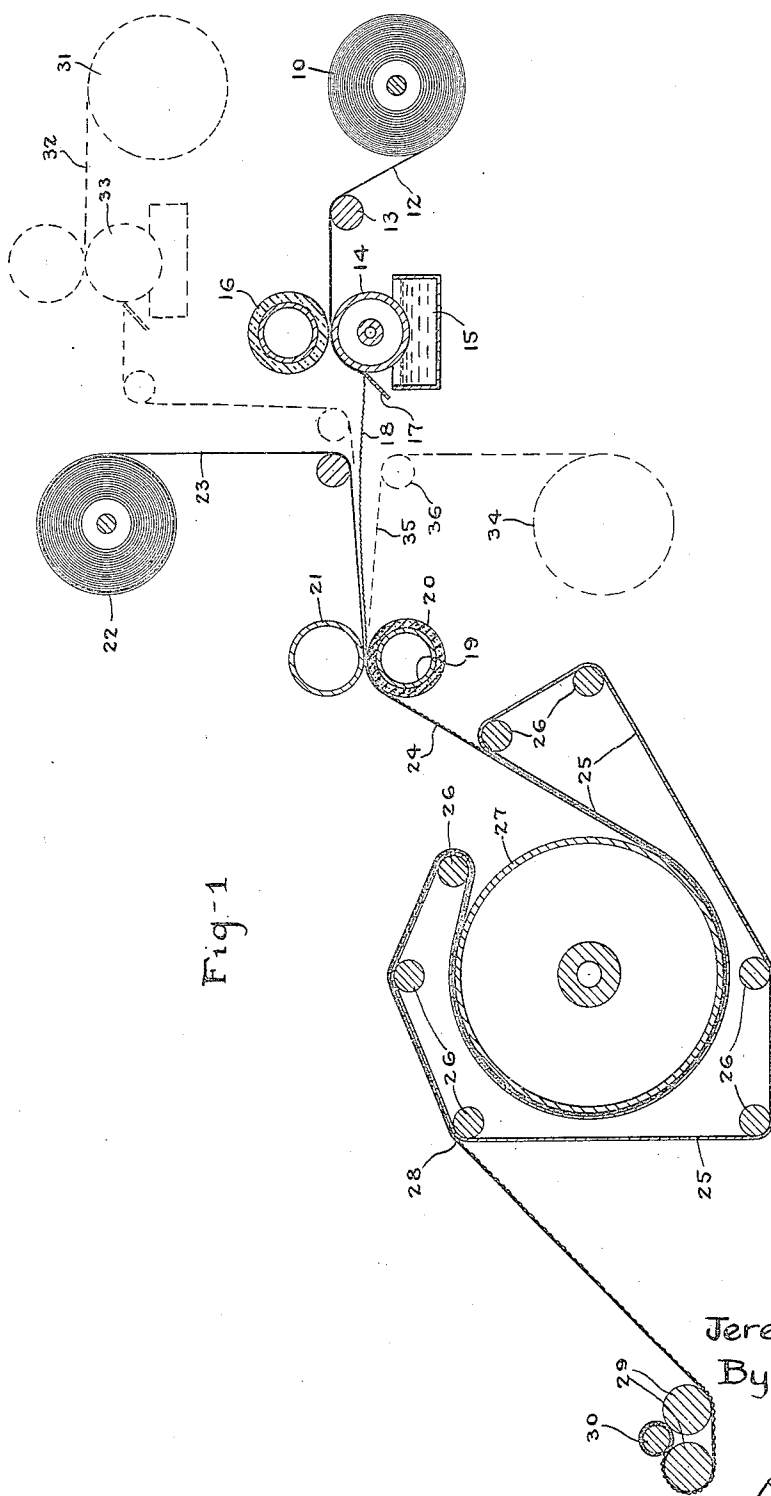


Fig-2

Fig-3

Fig. 4

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METHOD OF MAKING COMPOSITE PAPER

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2 Claims. (Cl. 154—33)

My invention relates to a method of making composite paper. It is the object of my invention to prepare a paper embodying two or more sheets or portions, one of which shall be firm and tough and preferably smooth surfaced, and the other of which shall be a soft, loose fiber paper preferably crinkled or creped, said two parts being held together by capillary attraction resulting from the pressing together of the tough fiber sheet and the soft fiber sheet while the latter is still moist from the crinkling operation.

It is a further object of my invention to employ a method of feeding in the tough and smooth surfaced paper with the moist creped paper between rollers, of which the roller adjacent the tough paper will be a smooth surfaced hard roller and the roller adjacent the creped paper a soft roller, whereby the parts are pressed tight together, and thereafter feeding the same around a drying roller with the hard surfaced paper adjacent the hard surface of said roller.

The full objects and advantages of my invention will appear in connection with the detailed description thereof and its novel features are particularly pointed out in the claims.

In the drawing, illustrative of certain forms of my invention,

Fig. 1 is a diagrammatic sectional elevation view showing the various instrumentalities in operative relation. Fig. 2 is a transverse section of a composite paper made by my process embodying one layer of tough paper and one layer of soft creped paper. Fig. 3 is a view similar to Fig. 2 wherein there are two layers of soft or creped paper. Fig. 4 is a sectional view of a composite paper similar to that of Fig. 3 except that there is an additional layer of tough paper so that the layers of loose crepe paper lie between layers of tough paper.

As shown, a roll 10 of soft, loose paper sheet 12 is carried over a guide roller 13 between a water-carrying roller 14 which dips into the water of a tank 15 and a rubber-covered roller 16. These rollers revolve at the same speed, carrying the moistened soft paper down on the roller 14, so that the paper sticking to the wet surface of the roller 14 is removed by a doctor or scraper 17, with the result that it piles up at the scraper edge of 17, forming a crinkling effect known as creping. From the edge of scraper plate 17 the creped paper 18 passes between a roller 19 having thereon an outer layer 20 of some soft material, as felt or rubber, and a hard, smooth-surfaced steel roller 21. From a roll 22 a sheet of tough and preferably smooth-surfaced paper 23 is fed

along with the moistened crepe paper 18, being subjected to considerable pressure between rollers 21 and 19. This pressure, because of the soft surface of roller 20, does not iron out the creping of the crepe paper 18, but presses the fibers thereof against and into the tough paper 23, tending to moisten it. From between the rollers 19, 20 the composite sheet 24 passes upon an endless belt 25 which runs over a multiplicity of rollers 26 positioned so as to carry the belt 25 and the sheet 24 about the major part of the surface of a steam drum 27 which has the same rate of surface speed as that of the rollers 20 and 21. Here the composite sheet is dried in a well-known way, passing from the endless belt 25 at 28, and from there to the winding rolls 29, where it is rolled up on a roller 30.

The effect of this operation is to produce a fiber contact which by capillary action and pressure of moist surfaces together and subsequent drying gives sufficient adhesion so that the soft, crepe paper will be held united to the tough top paper with a degree of permanence to permit the same to be rolled and unrolled again and to be used as a single sheet, without the use of fillers, gums or other adhesive materials.

It may be desirable to put together two or more layers of the soft or creped paper, and this is indicated diagrammatically in dotted lines at 31, 32 and 33, where a second sheet of soft paper from the second set of creping rolls is fed along with the creped paper 18 under the tough paper 23.

Further, in some instances it may be desirable to have one or more sheets of the creped paper held between two sheets of the tough paper, and this may be effected by leading in a second sheet of tough paper, as indicated in dotted lines at 34, 35 and 36.

The advantages of my invention will be apparent from the detailed description thereof heretofore given. The requirement for the use of soft, non-abrasive paper is obvious, yet when such paper is employed it has not the stability to resist strains, and breaks up too readily. The tough paper backing prevents this and at the same time permits all the advantages of the use of the soft, loose paper stock.

I claim:

1. A process of making a composite sheet of paper which consists in simultaneously feeding a strip of tough paper and a strip of soft paper between a pair of rollers, moistening and creping the soft paper before it reaches said rollers,

and thereafter drying the united sheets while keeping them closely pressed together.

2. A process of making a composite sheet of paper which consists in simultaneously feeding a strip of tough paper and a strip of soft paper, moistening and creping the soft paper, thereafter and while the soft paper is wet bringing the

two strips together with an unyielding pressure on the tough paper, and a yielding pressure on the soft paper, and thereafter drying the united sheets while keeping them closely pressed together.

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