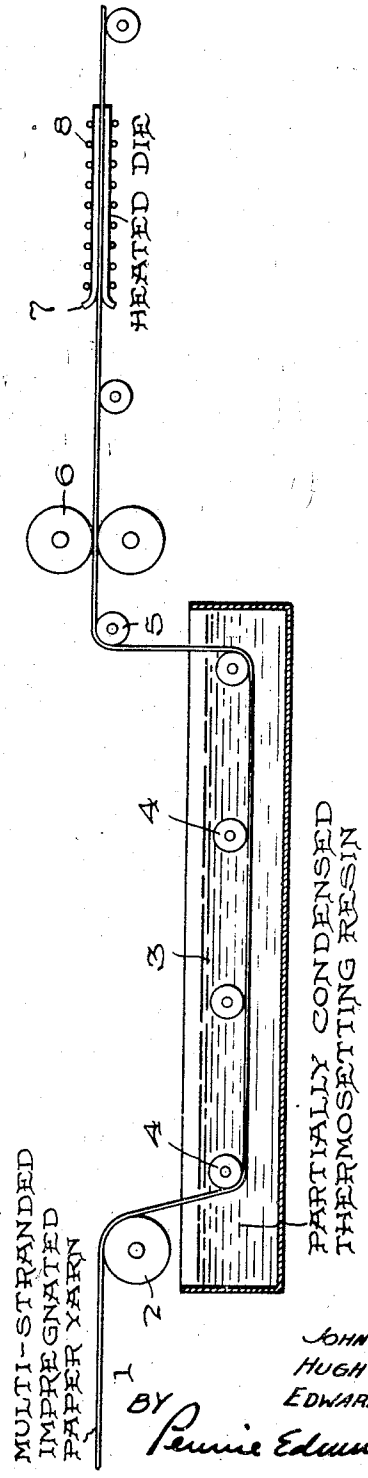
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MANUFACTURE OF STRING OR THE LIKE

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INVENTORS
JOHN HILL WATSON
HUGH EDWARD ANDERSON
EDWARD REEVE ANGEL

BY Pennie Edmonds Morton & Barrows

ATTORNEYS

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MANUFACTURE OF STRING OR THE LIKE

John Hill Watson and Hugh Edward Anderson, Linwood, Scotland, and Edward Reeve Angel, Beaconsfield, England

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1 Claim. (Cl. 28—75)

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This invention relates to the manufacture of string and binder twine produced from paper yarn, more especially yarn formed from paper in which the paper web is treated, before drying, with the constituents of a polymerisable or condensible synthetic resin and thereafter set by heating.

According to the present invention, the paper string or twine formed from paper treated as described above is coated or impregnated with 2½ to 3% of its dry weight of partially condensed thermosetting artificial resin, e. g., urea-formaldehyde or phenol-formaldehyde resin, that is not yet fully condensed or polymerised, and then drawn through a heated die to effect condensation and bonding, so that subsequent unravelling of the strands is prevented or made difficult.

The coating or impregnation may be effected by causing the string or twine to pass through a bath containing a solution of the uncondensed resin, then between rolls, and then through a heated die, the rate being so adjusted that the temperature of the string or twine rises to the neighbourhood of 130° C.

The string or twine so treated may be subjected to subsequent heat treatment to effect complete condensation or polymerisation of the resin.

The quantity of resin used in coating or impregnating the string is about 2½% to 3% reckoned on the weight of the dry string.

Important properties of string or twine manufactured as described are (*a*) strength, both when dry and wet, (*b*) water repellency, (*c*) insect and mildew proofness, and (*d*) flexibility, as for handling in binders and tying machines.

In other words, bearing in mind that the paper string or twine comprises a multiple number of strands, there are realised maximum tensile strength, optimum flexibility, water repellency, high wet strength, and resistance to attack by insects and mildew.

The invention will be further described in connection with the attached drawing which diagrammatically illustrates one form of apparatus which may be used in producing the impregnated cordage.

Referring to the drawing, the cordage 1 is formed from a plurality of strands of paper impregnated with the constituents of a thermo-setting resin and passed over a guide rule 2 into a bath 3 of a partially condensed or partially

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polymerized thermosetting resin. The cordage is guided through the bath 3 by a series of guide rules 4 beneath which the cordage passes. On emerging from the bath, the cordage passes around a guide rule 5 and then between rolls 6, after which it is passed through a die 7 heated in any appropriate manner, as by an electric coil 8. The die shapes the cordage to the desired final form and exerts sufficient pressure against it to cause the several strands thereof to be bonded to one another. The die is heated to such temperature that the cordage in passing therethrough is heated to a temperature in the neighborhood of 130° C. so that further condensation of the resin will take place simultaneously with the forming of the cordage into its final form.

If desired, the cordage after leaving the die 7 may be subjected to further heat treatment in order to effect complete condensation or polymerization of the resin.

We claim:

The method of producing impregnated cordage which comprises forming cordage from a plurality of strands of paper impregnated with constituents of a thermo-setting, synthetic resin, impregnating the cordage thus formed with a partially condensed thermo-setting, artificial resin, drawing the impregnated cordage through a die of such size and at such temperature that it is shaped to desired cordage form and the strands forming it are bonded to one another simultaneously with further condensation of the thermo-setting resin.

JOHN HILL WATSON.
HUGH EDWARD ANDERSON.
EDWARD REEVE ANGEL.

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