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MANUFACTURE OF MODELS, MOLDINGS, AND CASTS FOR MEDICAL PURPOSES.

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It has already been proposed instead of making casts, moldings and models of wax or paraffin, which are easily broken and damaged, to make them of papier mâché, the paper pulp being filled with various substances, such as chalk, gypsum, kaolin and impregnated with adhesives, such as gelatin, casein and the like.

Owing to the fillers, the models made of papier mâché are too heavy: they have a thick cross-section, are not flexible and do not reproduce the surface with the necessary fineness. Furthermore, the models made of layers of paper or cardboard by pressing are not suitable for taking deep reliefs and for reproducing parts of the body with many sides. They are also not suitable for being painted, unless they are first grounded.

It has also been proposed to make a paper pulp for producing reliefs in plate form and ornaments by dissolving shredded, softened paper so as to form a semi-liquid, pulpy mass to which before pressing it into the mold ochre, umber or similar earth pigments are admixed, so as to correspond to the shades of colour to be given to the ornaments or the like. The addition of mineral colours to the pulp determines in advance the colour of the model to be formed, which will be a monotone, and on which no fine shades of colour can be produced.

These disadvantages are overcome by the process according to the present invention. The process makes it possible to produce models, moldings and reproductions of the human body or the bodies of animals and separate organs of the same, and of the surfaces of articles of any kind, such that an absolutely accurate reproduction of the normal form or of the diseased state can be made.

The models, moldings and casts made by the new process are exceedingly light, flexible and unbreakable and are exceedingly resistant to the action of the atmosphere and to sudden and great changes in the temperature of the air.

The process is characterized in this, that, after the pulpy paper mass made of unsized paper, for instance paper shavings, has been stamped, after the water has been pressed out of it, into a suitable mold and has been dried in the same, the model thus obtained after being taken out of the mold, is treated with solutions of resin-containing soaps in alcohol, turpentine, benzene or other hydrocarbons.

Thus, in the new process it is not necessary as was hitherto the case, to add fillers, colouring matter and adhesives to the paper pulp before it is pressed into the molds.

The process according to the present invention thus differs fundamentally from the processes already suggested, for making models, for instance animal forms out of papier mâché. Such papier mâché models had to be sized, and the colour applied after sizing can only adhere in the form of a coating on the surface.

According to the present invention the resinous soaps are dissolved by heating and agitating the soaps in the liquid solvent, until the desired consistency is obtained. After the moldings or casts, models and the like have been treated with soap solutions they are dried again. In this way the object is given the required strength and compactness and a sufficient resistance to the action of the atmosphere. The material retains its flexibility.

After the articles have been dried again as described they are treated with pigments of any shade, which penetrate into the material and thus produce an excellent effect of depth and consequently enable a natural reproduction to be made. This uniform penetration of the pigment is made possible by the previous treatment with resinous soap solutions.

What I claim is:

1. A process for the manufacture of models, moldings and casts, more particularly of parts of the bodies of human beings and animals for medical purposes, comprising moistening unsized paper such as blotting paper with water to form a plastic mass, squeezing out all the excess water, ramming the plastic mass into a mold, letting the said mass dry in the mold, taking the mass out of the mold when dry, and impregnating it with a solution of resins, without the addition of adhesives and fillers.

2. A process for the manufacture of models, moldings and casts, more particularly of parts of the bodies of human beings and animals for medical purposes, comprising moistening unsized paper such as blotting paper with water to form a plastic mass, squeezing out all the excess water, ramming the plastic mass into a mold, letting the said

mass dry in the mold, taking the mass out of the mold when dry, and impregnating it with a solution of compounds made from resins without the addition of adhesives and fillers.

3. A process for the manufacture of models, moldings and casts, more particularly of parts of the bodies of human beings and animals for medical purposes, comprising moistening unsized paper such as blotting paper with water to form a plastic mass, squeezing out all the excess water, ramming the plastic mass into a mold, letting the said mass dry in the mold, taking the mass out of the mold when dry, and impregnating it with a solution of resin-containing soaps without the addition of adhesives and fillers.

4. A process for the manufacture of models, moldings and casts, more particularly of parts of the bodies of human beings and animals for medical purposes, comprising ramming a plastic mass made by moistening unsized paper into a mold, and impregnating the said mass, after removal from the mold, with a solution of resin-containing soaps.

5. A process for the manufacture of models, moldings and casts, more particularly of parts of the bodies of human beings and animals for medical purposes, comprising moistening unsized paper such as blotting paper with water to form a plastic mass, squeezing out all the excess water, ramming the plastic mass into a mold, letting the said mass dry in the mold, taking the mass out of the mold when dry, impregnating it with a solution of resins without the addition of adhesives and fillers, drying the impregnated model, and impregnating it with a colouring material that penetrates into the pores of said model without leaving any coating on the surface.

6. A process for the manufacture of models, moldings and casts, more particularly of parts of the bodies of human beings and animals for medical purposes, comprising moistening unsized paper such as blotting paper with water to form a plastic mass, squeezing out all the excess water, ramming the plastic mass into a mold, letting the said mass dry in the mold, taking the mass out of the mold when dry, impregnating it with a solution of compounds made from resins without the addition of adhesives and fillers, drying the impregnated model, and impregnating it with a colouring material that penetrates into the pores of said model without leaving any coating on the surface.

7. A process for the manufacture of models, moldings and casts, more particularly of parts of the bodies of human beings and animals for medical purposes, comprising moistening unsized paper such as blotting paper with water to form a plastic mass, squeezing out all the excess water, ramming the plastic mass into a mold, letting the said mass dry in the mold, taking the mass out of the mold when dry, impregnating it with a solution of resin-containing soaps without the addition of adhesives and fillers, drying the impregnated model, and impregnating it with a colouring material that penetrates into the pores of said model without leaving any coating on the surface.

8. A process for the manufacture of models, moldings and casts, more particularly of parts of the bodies of human beings and animals for medical purposes, comprising ramming a plastic mass made by moistening unsized paper into a mold, impregnating the said mass, after removal from the mold, with a solution of resin-containing soaps, drying the impregnated model, and impregnating it with a colouring material that penetrates into the pores of said model without leaving any coating on the surface.

In testimony whereof I have signed my name to this specification.

WLADIMIR WOROBJEW.